



InSight User Manual

Firmware Version 8.0

Ag Leader PN 2002877 Rev. H

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GENERAL INFORMATION

INTRODUCTION

COMPANY PROFILE

ABOUT US

Welcome to the **Ag Leader Technology** family. **Ag Leader Technology, Inc.** is the global leader in yield monitor and precision farming systems and is committed to meeting the present and future needs of the agriculture industry by providing high quality products and first class customer support.

INNOVATION

Ag Leader Technology manufactures and sells products which support a wide array of precision farming practices. These include grain and cotton yield monitoring, application rate control and monitoring, variable rate fertilizer application, site-verification, GPS guidance and interface to Autopilot technologies.

COMPATIBILITY

Ag Leader Technology offers compatibility and supports integration of many different types and brands of equipment used for precision farming. The latest equipment available is supported as well as older series of combines, cotton pickers, planters, sprayers, tillage equipment, etc.

QUALITY AND SUPPORT

Ag Leader Technology stands behind its products with a two-year warranty and continues to provide the best customer support in the industry. Precision farming doesn't come without questions. Ag Leader is committed to providing the most responsive, knowledgeable and friendly technical support available. Our technical support team is available seven days a week during peak seasons to answer your questions on the operation of Ag Leader products.

WE WANT TO HEAR FROM YOU!

Feel free to call and discuss:

- Operational questions about the display
- Features you would like to see implemented to improve the system
- Features you would like to see added to the system to increase functionality

ABOUT THE DISPLAY

The display is a GPS-compatible universal monitor/controller for use in crop production and protection. It can easily be transferred between multiple vehicles through out the growing season to maximize your return on investment cost.

The display has its own internal memory for recording GPS and logging all information collected during various field activities. The display internal memory differs from other traditional systems in that no external data card is needed for in-field data collection.

The display has been built to withstand the harsh environment associated with today's agricultural industry. The weather-tight enclosure is designed to seal out any dirt and moisture that is encountered during normal operating conditions.



Note: The card door slot must be fully closed for the display to remain weather-tight

Service

There are no user-serviceable parts inside the display. Contact Ag Leader Technical Support for a Return Material Authorization (RMA).

ph: (515) 232-5363

FAX: (515) 232-3595

e-mail: support@agleader.com



CAUTION: *This display has an internal lithium coin cell battery and an internal nickel metal hydride battery. There is a risk of explosion if either battery is replaced by an incorrect type. Dispose of used batteries according to the battery manufacturer's instructions.*

Display Uses

- Grain yield monitoring
- Hybrid variety tracking
- Liquid spray system control
- AutoSwath™ boom section control
- NH₃ application control
- Granular and liquid fertilizer application
- Multiple product application
- Mapping tillage operations
- Mapping and logging product application
- Mapping of all field boundaries, sub-boundaries, waterways and terraces
- Split planter data mapping and recording
- Autopilot steering control



Note: *For a complete description of all supported file types and their uses, see “InSightVision File Formats” on page 173.*

Features

- Large 10.4-inch display
- Sunlight -readable screen
- Large internal memory
- Rugged sealed enclosure
- On-screen help with detailed operating and configuration information
- Compatible with most NMEA GPS receivers
- Direct access keys give you one-touch access to home, setup, summary/report, and run screens
- DirectCommand product control using industry-standard CAN-bus interface
- Adjustable volume control
- Backed by a 2-year warranty

Data Card Usage

The display uses a compact flash card for transferring data in and out of the display. The display is compatible with all current card sizes; 64 MB is the minimum recommended size for use with the display.

Color Touch Screen

The display features a 10.4 inch color touch screen display. The touch screen allows easy and intuitive navigation through the screens on the display without the need for any external keypad or mouse devices. Here are a few key things to remember if you are new to using a touch screen device.

Do not use any sharp objects for running the touch screen device, this could result in damage to the display. Using the tip of a finger is the recommended method of operating the display touch screen.

Do not use any harsh chemicals to clean the touch screen. Using a damp soft cloth or an anti-static wipe made specifically for cleaning computer displays is the correct way to clean the screen and the enclosure.

The touch screen requires only a gentle touch of about 1/2 second in duration to operate correctly.

A common mistake new users make is to try to navigate too quickly through the display using firm taps instead of gentle presses on the display screen.

CAN-bus Technology

The display uses Controller Area Network (CAN) technology. CAN systems are comprised of individual modules, each with their own high speed processor, connected through a high-speed communications cable. CAN has many benefits including greater ability to configure and expand the system, compatibility, simpler installs with less wiring and increased system dependability. The display is not compatible with previous Ag Leader Technology yield monitor systems. New cabling and sensors are required when upgrading to the display.

Technical Specifications

Do not exceed the specifications below:

- **Storage Temperature:** -22° F to 158° F (-30° C to +70° C)
- **Operating Temperature:** 14° F to 149° F (-10° C to +65° C)
- **Operating Input Voltage:** - 9 - 6 V DC



CAUTION: Exceeding these specifications may result in degraded operation and/or damage to the display.

Upgrades

Ag Leader Technology . will periodically provide operating program updates that will improve the performance of your display. Required software updates will be available free of charge for download from www.agleader.com. On occasion major releases will be made available that have significant product feature additions or enhancements. These optional software updates may have an additional fee associated with them.

Product Registration

When registering your **Ag Leader Technology** products by one of the following methods, you can elect to receive notice of any new product updates or features.

Register by mail: Ag Leader Technology

2202 South Riverside Dr

P.O. Box 2348

Ames, IA 50010

Register by Fax: 515-232-3595

Register at the Ag Leader Web site at <http://www.agleader.com>

DIAGRAMS REFERENCE

To view detailed diagrams for various machine configurations, go to the Support Tab of the Ag Leader Web site, which can be referenced via the following URL:



Note: To view and/or print the diagrams, you will need the Adobe Acrobat or Adobe Reader .pdf file format. The Adobe Reader software comes pre-installed on most personal computers. If Adobe Reader is not installed on your computer the program is available for download at no charge. A link to the Adobe download site is located at the Ag Leader Web site.

CONVENTIONS USED IN THIS MANUAL

Cautions And Warnings

The user manual uses the following text formatting schemes to call attention to information related to simplifying display operation and proper operating practices to prevent accidental data loss. If in doubt about the results of performing an action or deleting an item from the display, back up all system files to the external storage card prior to proceeding with the action.



Note: Provides informative tips to assist with system setup, calibration, and operation.



CAUTION: Indicates specific settings, calibrations, and procedures that must be followed for proper system performance and operation.



WARNING: Indicates specific instructions to avoid accidental loss of data and system configurations settings.

Cross-References And Web Links

Throughout this manual, numerous cross-references are provided to other pages or sections. These cross-references are always shown in blue, italic text; and list the title and page number as in the following example: To see how to view this manual online, go to *“Viewing this manual online” on page 4*. If you are viewing this manual in a .PDF format, you can click on this blue text and go directly to the link.

Links to web sites are shown in blue, italicized, and underlined text, as in the following example: To see the Ag Leader Technology Web site, go to this Web link: www.agleader.com.

Viewing this manual online

This user manual can be viewed online at Ag Leader's Web site. To view an online version, go to the Ag Leader Web site, and click the **Support** link. You should see a page titled “Manuals and Quick Reference Sheets.” Click on the link titled **InSight**. Or, you may go directly to this web link:

<http://www.agleader.com/support.php?Page=manuals>

To view and/or print the User Manual online, you will need the Adobe Acrobat or Adobe Reader .pdf file format. The Adobe Reader software comes pre-installed on most personal computers. If Adobe Reader is not installed on your computer the program is available for download at no charge. A link to the Adobe download site is located at:

<http://www.agleader.com/support.php?Page=manuals/insight>

How to find information you're looking for

What do you do if you cannot find the information that you're looking for? There are three different ways at your disposal to find specific information quickly. These steps can include:

1. Look up the information in the Table of Content.
2. Look up the information in the section indexes that are located at the end of each manual section (Planting, Tillage, Application, and Harvest).

3. Use the Adobe Reader's search function. While viewing this manual online in PDF format, press the **CTRL F** buttons on your keyboard. A search menu should appear, and from here, you may enter in a search term.

INSTALLATION INSTRUCTIONS

All machine installation and mounting kits are shipped with instructions specific to that kit. Instructions include special details relating to mounting, wiring and display configuration.

Mounting The Display

Mount the display to a secure support inside the vehicle cab. The following must be considered when choosing a mounting location.

- The display must be readily accessible to the machine operator.
- The display must not obstruct the machine operator's normal driving view.
- The display must not interfere with or limit access to any of the existing machine controls.
- The CAN system cabling be routed and secured without interfering with existing machine controls.



WARNING: If drilling holes is required during the mounting process, care must be taken to insure that damage is not done to existing vehicle wiring, mechanicals, or cab structure. Refer to vehicle manufacturer documentation for specific details on your equipment. Follow all OEM instructions, cautions, and warnings when working around equipment.

Display Hardware



Rear View of Display

1. Compact Flash Card Slot

The compact flash card slot has a sensor that allows the display to know when the door is open or closed. If the door is opened when a card is in the display, an on-screen warning will appear indicating when the card can safely be removed. The display comes with a compact flash card. The compact flash card will be required to transfer files from the display to a desktop computer.

2. Speaker

The built in speaker is used for audible warnings. The speaker volume can be adjusted through the display setup routine.

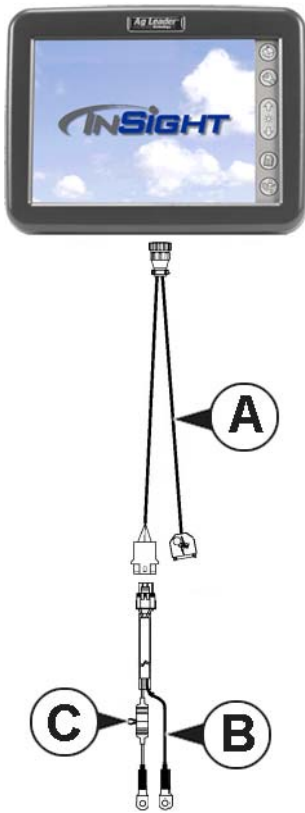
3. 28-Pin Connector

The 28-Pin round connector contains CAN, RS-232 serial, and system power and ground connections.

4. Power/Reset Switch

The Power/Reset switch is used for turning the display on and off in installations where the system is connected to a continuous power supply.

If the display ever stops responding, the manual power switch may be held in for five seconds to restart the display. Only do this as a last resort, data loss could occur during times of improper shutdown.



Fuse Installation and Replacement

- a. 4000319-1
- b. 2000452-4
- c. Fuse Holder

Fuse Type: 3AG, 1/4 X 1-1/4., Fast Acting

Rating: 5A, 250 VAC



CAUTION: The fuse is to be placed in the fuse holder in-line with the battery power cable and used with the display only.

POWER UP

The display comes with an AC power supply. Using the AC power supply, familiarize yourself with the display features. We suggest taking the time to step through the initial configuration process with the aid of this user guide prior to installing any of the display hardware in your equipment.

SETUP

HOME SCREEN

The Home Screen will be shown each time the display is started. The table below describes the functionality of each of the buttons present on the Home Screen.



Press to access the built-in user guide. Navigate the on-screen content using the forward arrow, back arrow, and text hyperlinks.



Press to access information on new products and features.



Press to select a machine operator from the drop-down list. Machine operator information will be logged with all field operations.



Press to copy all logged data files to the external storage card and remove from the internal memory of the display.



Press to load program upgrade files from the external storage card.



Press to shut down the display.

NAVIGATION BUTTONS



The display navigation buttons on the right edge of the display are used to move between the different areas within the display. The navigation button functionality is consistent through out all different modes of operation.



1. Home

Press to access the Home screen on the display. Options available at the Home screen are, Copy to Card, Upgrade System, User Guide, Change Operator and Shut Down.



2. Setup

Press to access the menus and wizards used for display configuration. General setup item groups include, Grower-Field Management, Field Notes, Display, and GPS configurations. Use specific setup item groups include, Planting, Product Application, Tillage, and Harvest configurations.



3. Brightness

Press the Brightness Control to set display back light intensity to fit current operating conditions.



4. Summary

Press to display a summary screen showing totals for the current field operation you are performing.



5. Run

Press to launch the Run Screen. The Run Screen provides control of all field operations and the data logging associated with, Harvest, Planting, Tillage, and Product Application.

RUN SCREEN COMMAND BUTTONS



Regardless of the current mode of operation, these common buttons and the associated functionality is always present at the run screen. For more information on the Run Screen command buttons, see ["Run Screen Menu Tree" on page 163.](#)

1. DGPS

Displays the quality of GPS signal in use by the display. If both differential and GPS signals are available, this button will display DGPS. If GPS is available without differential correction, the button will display GPS. If neither GPS or differential signal is available, two dashed lines (--) will be displayed on the button. Press the DGPS button to display detailed GPS and differential correction information. For more information, see [“GPS Diagnostics” on page 49.](#)

2. SYSTEM

Press to launch information screens that include various tabbed pages for display of system operating status. These pages include statistics on memory usage, diagnostics, and readings from various sensors and system components connected to the display.

3. REGION

A region is used to subdivide a field into smaller sections. The region that is currently being logged to is shown below the Region button. A new region can be created at any time as you are performing a field operation. To change between or add a new region to a field, press the Region button and follow the on screen instructions.

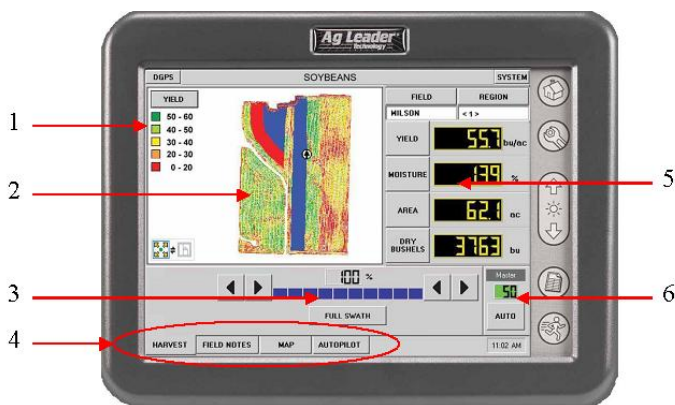


Note: Regions and Fields are created in the Run Screens' Grower/Field Management Setup and are both discussed in greater detail within each Operation section of this manual (such as Application, Tillage, etc.).

4. FIELD

The field that is currently being logged to is shown below the Field button. To change Fields, press the Field button and select the desired field. The Operating Configuration and Product are also selected during this process.

RUN SCREEN DISPLAY AREA



The following tables describe the main features and functionality of the Run screen. These features remain constant between the different modes of operation.

For more information on this Run Screen display area, see [“Run Screen Menu Tree” on page 163.](#)

1. Legend

This area displays a choice of several legends appropriate to the type of field operation taking place. By pressing the legend, a dialog is displayed that allows creating and saving custom legends.

2. Map Area

This area of the screen is dedicated to displaying the many different map objects available in the display. Depending on the current field operation, one or more of the following different maps are made available.

- Field boundaries
- Crop yield and moisture
- Planter variety
- Field Notes marks
- Prescription maps

- Applied rate maps
- Product coverage maps
- Reference map

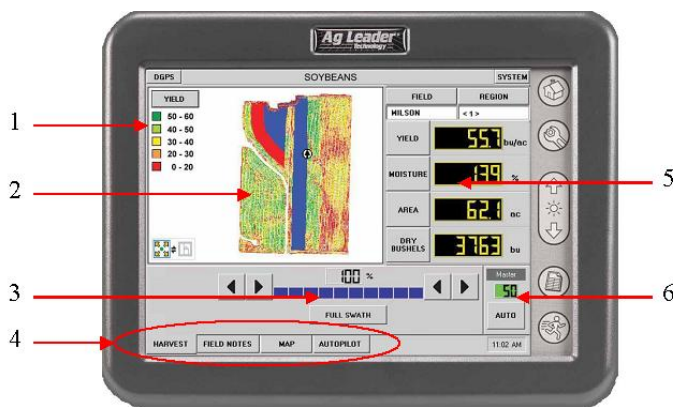
3. Swath Bar

This area of the Run Screen displays the current swath being harvested or applied. When operating in Harvest mode, as shown in the figure above, width can be modified from the left or right to match the swath width that is actually being harvested. When operating in Application Rate mode, this area will display individual boom sections and their current status.

4. Control Tabs

Each Control Tab contains content specific to the current mode of operation. Examples of the various tabs functionality include using the Field Notes feature, viewing and setting product control parameters, and interaction with Ag Leader lightbars and Autopilot navigation controllers.

DISPLAY ITEMS AND AREA COUNT



5. Run Screen Display Items

This area of the screen displays the user's choice of four different data items. The type of field operation being performed determines what items are available for selection. Any of the four display items can be changed by pressing on that item and choosing a different data item from a pop up list that is shown on the display screen.

Examples of the different items made available are:

- Harvest:
- Yield
- Moisture
- Area
- Application Rate:
- Applied rate
- Applied area
- Total applied

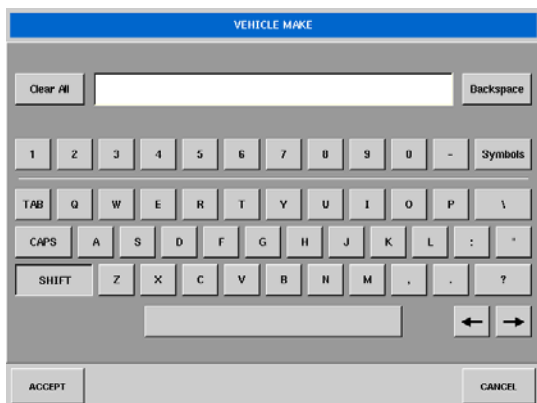
6. Area Count Status

This button will be present when appropriate during harvest, planting, tillage operations and any other time data is being logged to the display without controlling application rate. The button functions as a master area count on/off switch. Area count can be turned on/off manually by pressing the button or will turn on/off automatically when a header or implement switch is being used with the current operating configuration.

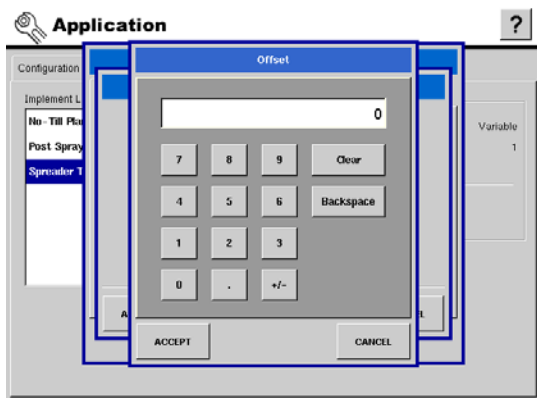
GETTING STARTED

Entering Data Into the Display

The following control buttons are made available for entering names and calibration values into the display.



An on-screen **Keyboard** is made available when appropriate for use during all setup processes. Press the keyboard button to access the on-screen text entry screen shown at the right.

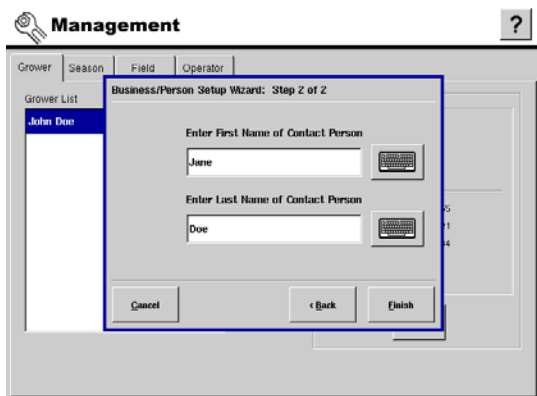


An on-screen **Numeric Keypad** is made available for changing configuration settings and calibration numbers. Press the keypad button to access the on-screen numeric entry screen shown at the right.



SETUP TIPS

Setup Wizard Use



Most configuration of the display is accomplished by using setup wizards. Setup wizards are a series of on-screen dialogs that move the user through the configuration process in a simple to follow step-by-step manner.

Functionality



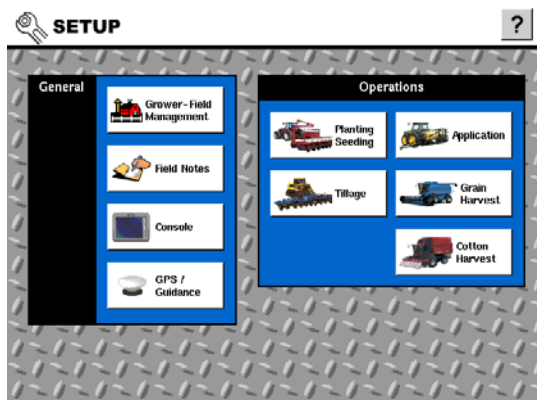
Much of the functionality of the display is not available at the Run Screen until the basic setup process is completed. Prior to initial setup the Run Screen will look like the following figure. Other than the information available under the **DGPS** (--) and **SYSTEM** buttons no functionality will be present.

Required initial configuration steps include the following:

- Grower/Field Management Setup
- Equipment Operating Configuration Setup
- Product Setup

GENERAL SETUP

GENERAL SETUP OVERVIEW



This section of the User Guide covers the setup items and processes that are common to all operations within the display. All setup screens and wizards are made available by pressing on each of the buttons on the General Setup section of the display. Below is a description of the basic functionality of each of the main control buttons, with cross references to more descriptive information.



Grower-Field Management

Press to access the Management screen where Grower, Season, Field, and Machine Operator are set up and edited. For more information, see [“Grower And Field Management Setup” on page 13](#).



Field Notes

Press to access the Field Notes function setup. Field Notes are tools that allow marking points and logging data to those points while performing any field operations while in the run screen. Settings related to automating product application reporting are also contained in Field Notes setup. For more information, see [“Field Setup” on page 18](#); as well as [“Field Notes Setup Screen” on page 22](#) and [“Using Field Notes” on page 33](#).



Console

Provides access to setting date/time, unit of measure settings, display owner information setup, unlocking any optional features purchased with the display, as well as some basic memory and storage card maintenance functionality. For more information, see [“Display Setup” on page 26](#).



GPS

Press to configure Ag Leader Technology TSIP GPS receivers, lightbars and Autopilot systems. For detailed information, see [“GPS General Setup Tab” on page 37](#) and [“Autopilot Setup” on page 54](#).

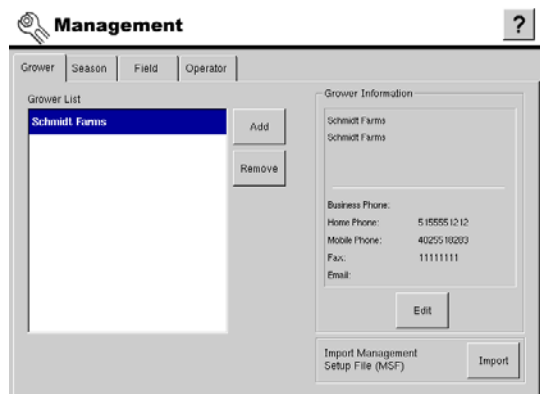
ON SCREEN HELP



On screen help is made available by pressing the Help button in the upper right corner of the screen.

GROWER AND FIELD MANAGEMENT SETUP

FIELD OPERATION DATA STORAGE



All data is stored in a hierarchical data structure for use within the display and desktop GIS software packages. As needed, the on-screen keyboard is made available for typing when performing actions like naming Growers and Fields.

- **Grower**

The Grower tab is used to set up the businesses or people that own one or more farms. For more information, see [“Grower Setup Screen” on page 13](#).

- **Season**

The Season Tab is used to set up the crop season. The season is defined as the calendar year that the crop, relating to the current field operation, will be harvested. For more information, see [“Season Setup Screen” on page 14](#).

- **Field**

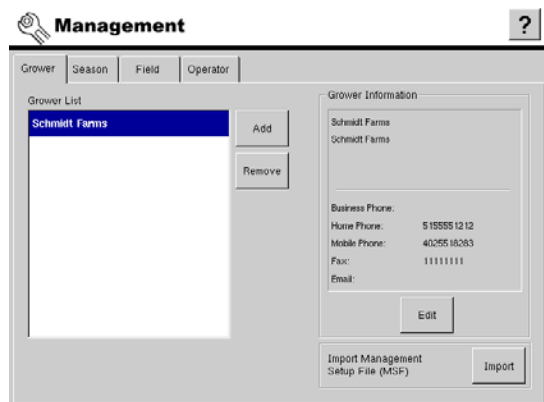
The Field Tab is used to set up fields and all descriptive information relating to them. For more information, see [“Field Setup Screen” on page 18](#).

- **Operator**

The Operator Tab is used to set up machine operator and Certified Custom Applicator license information. For more information, see [“Operator Setup Screen” on page 20](#).

SEASON SETUP

GROWER SETUP SCREEN



The Grower is a global setting that refers to the business or person that the display is in operation for.

Contact information can also be entered for each Grower. The Grower information will be passed into mapping software for automatic Grower setup within desktop software.

- **Grower List**

Displays all Growers configured within the display.

- **Add button**

Press to launch the software wizard used to create a new grower. For more information, see [“Adding A New Grower” on page 15.](#)

- **Remove button**

Press to remove a selected entry in the Grower list.

When the Remove button is pressed the following warning will be presented allowing the user to cancel the remove process if desired.



WARNING: When removing a grower all data in the fields and regions relating to that grower are also removed!

- **Grower Information**

This region of the screen displays all the optional information that is stored for a specific Grower.

- **Edit button**

Press to access a data entry screen for adding or editing the optional Grower information. For more information, see [“Adding or Editing Grower Personal Information” on page 16.](#)

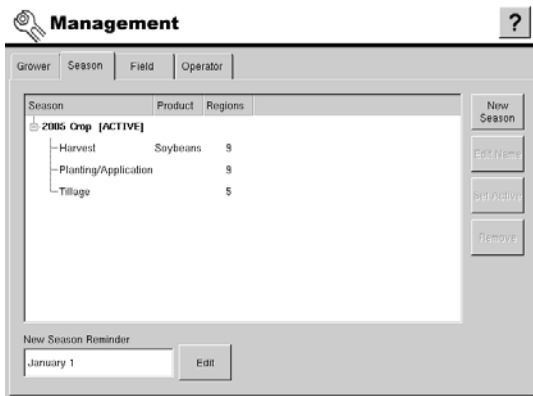
- **Management Setup File (MSF)**

Displays the Import button used for .MSF files.

- **Import button**

Press to import a Management Setup File (.MSF) of Grower, Farm and Field information exported from desktop software and stored on your Compact Flash Card. For more information, see [“Importing A Management Setup File” on page 16.](#)

SEASON SETUP SCREEN



A season is defined as the calendar year that the crop will be harvested. Creating a season and setting it to active is required prior to the display logging any data.

- **Summary list box**

Displays a list of all seasons set up in the display.

- **New Season**

Press to create a new season. When a new season is created, it is set to active by default. No data will be logged to any inactive seasons that are present in the display.

- **Edit Name**

Press to edit the name of the season currently selected in the summary list box.

- **Set Active**

Press to set the season selected in the Summary list box to the active season.



Note: All data is logged to the active season.

- **Remove**

Press to remove the season that is currently selected in the Summary list box.



WARNING: All the data pertaining to operations, regions, and maps for a season will be removed when the season is removed.

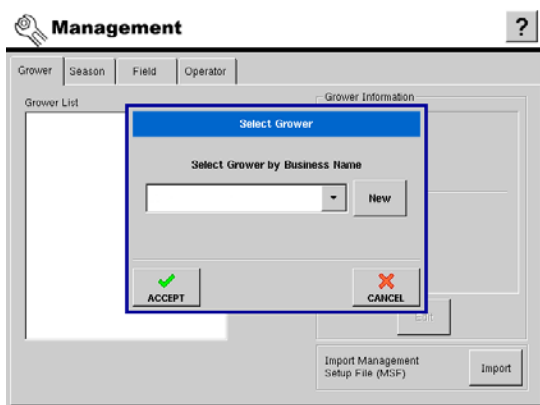
- **New Season Reminder**

Press to set the date that the display will prompt the user to create a new season.

GROWER SETUP

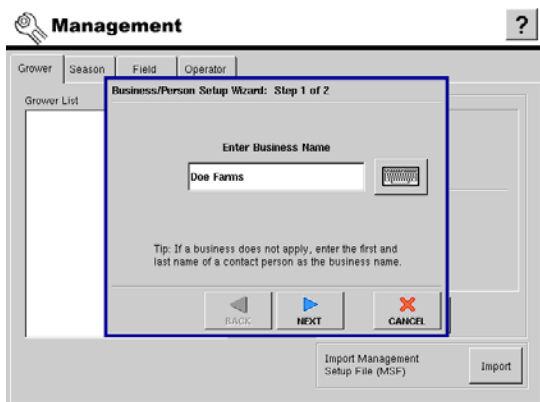
ADDING A NEW GROWER

The following screen shots represent the steps involved with setting up a new Grower.



1. Select Grower

After pressing the Add button on the Grower screen, the Select Grower dialog is shown. The drop down list box displays all businesses within the display and makes them available for selection as a Grower. If the Grower is not present in the display as a business contact or machine operator, press the New button to start the process of adding new grower information.



2. Business/Person Setup

Because in most cases Growers are Business or Farm owners, the first step of the setup process asks that a Business Name be entered into the display. On the rare occasion that the grower is neither a business or farm owner, it is recommended that the person's first and last name be entered as a Business Name.

After entering the Business Name into the display, press **Next** to proceed to the final step in the setup process.



Note: If you are using desktop software, it is recommended that you use the same names as in the software.

3. Business/Person Setup

Enter the first and last name to be used as a contact for the Grower information then press Finish to complete the new Grower setup process.

ADDING OR EDITING GROWER PERSONAL INFORMATION

1. Accessing the Edit Screen

Select a Grower from the Grower List and press the Edit button to enter or edit any of the data displayed in the Grower Information frame.

2. Personal Information Data Entry

After pressing the desired control button, the on-screen keyboard or numeric keypad will show to allow data entry into the display. Press OK to complete the process.



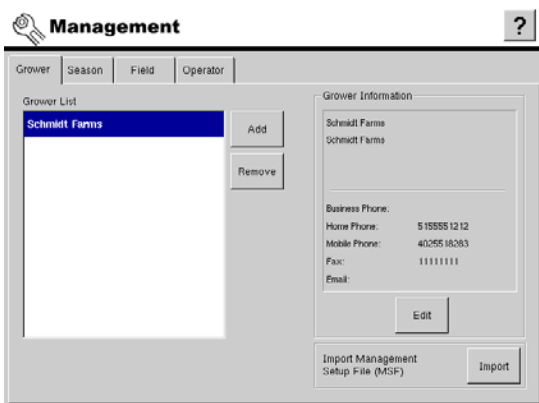
Note: Information on the screen can be added or edited at any time.

IMPORTING A MANAGEMENT SETUP FILE

A Management Setup File (.msf) is a file format that allows the display to import Grower and Field information from desktop software via a Compact Flash Card. Follow the process outlined below to import desktop software information from your Compact Flash Card.



Note: When importing management items from an .MSF setup file, the imported data will always update or be added to existing management data and will not overwrite it.



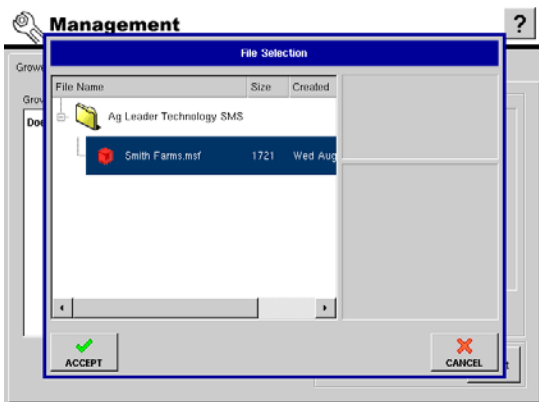
1. Press the Import button

Press the Import button on the Grower tab of the Management screen. (Be sure that your Compact Flash Card is already placed in the display).



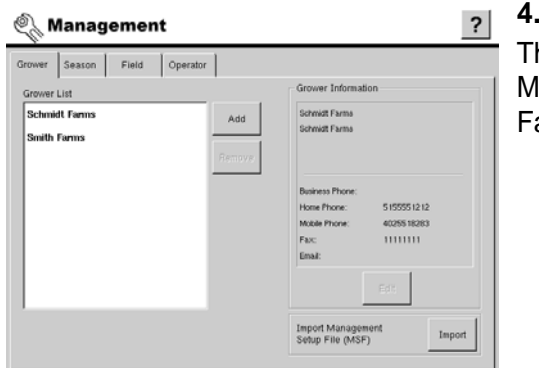
2. Locate your file on the Compact Flash Card

The File Selection Screen appears. The folder titled "Ag Leader Technology SMS" contains your .MSF files. Open this folder by pressing the Plus (+) sign to the left of the folder.



3. Accept the .MSF file

Press the .MSF file to highlight it. A blue bar highlights your selected .MSF file, as shown at left. Press the Accept button to import this file.

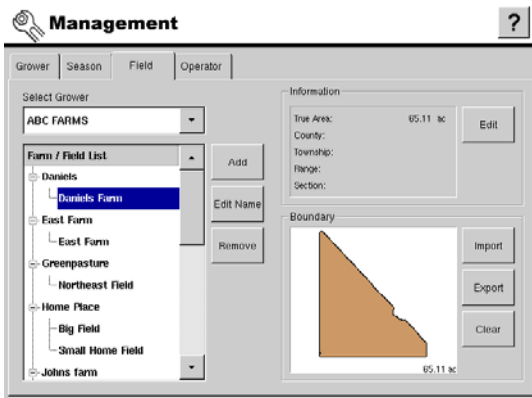


4. Display shows information from .MSF

The Grower information now appears in the Grower tab of the Management screen. In the example at left, information for Smith Farms now appears on the Management screen.

FIELD SETUP

FIELD SETUP SCREEN



A field consists of one or more outer boundaries. Each outer boundary can contain one or more inner boundaries used to define any combination of roadways, waterways, building sites, or bodies of water. If the display will be used for multiple Growers, enter each Grower business name and associate the field names with the correct grower when the fields are setup within the display.

Select Grower

Used to select which grower's fields to display in the Farm/Field list.

Farm / Field List

Displays a list of all farms and fields associated with the selected grower.

- **Add**

Press to launch the new field creation wizard. For more information, see [“Adding a New Field” on page 19](#).

- **Edit Name**

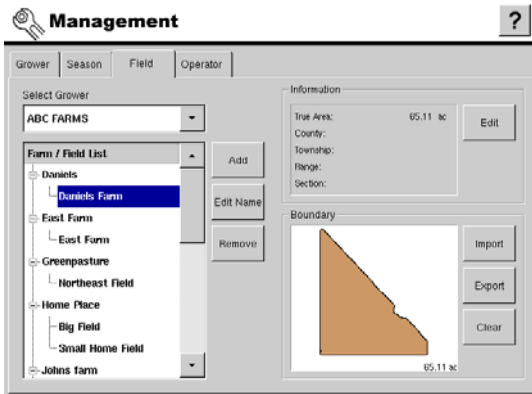
Press to edit the name of the item selected in the Farm/Field list.

- **Remove**

Press to remove the item selected in the Farm/Field list.



WARNING: When a field is removed, all data for that field will be removed!



Information Frame

When a farm is selected in the Farm/Field list, the grower name is displayed in this frame. When a field is selected in the Farm/Field list, all descriptive text for legal description and field geographic location is displayed in this frame.

- **Edit**

Press to summon the Field Information window, where you can add or edit any of the information stored for the field selected in the Farm/Field list. For more information, see [“Field Information” on page 19](#).

Boundary Frame

When a field is selected in the Farm/Field list any collected boundaries and total area will be displayed in this frame. For more information on creating field boundaries, see [“Field Boundary Creation” on page 36](#).

- **Import**

Press to import a field boundary from the external storage card. For more information, see [“Importing / Exporting Boundaries” on page 20](#).

- **Export**

Press to export a selected field boundary to the external storage card. For more information, see [“Importing / Exporting Boundaries” on page 20](#).

- **Clear**

Press to delete a field boundary from the display.



WARNING: All inner and outer boundaries associated with a field will be deleted from the display when clearing a boundary.

Field Information

Pressing the **Edit** button underneath the Edit portion of the Field Tab summons the Field Information window, as shown. Here you can enter or edit field information and the legal description of that field; clear the Map Bounds; and choose or enter a new Farm with the Farm Setup Wizard.



Note: Pressing the **Clear Bounds** button centers the map on the current GPS position. This is particularly useful if you have flyer points or have logged a point outside the mappable range of your current location.

ADDING A NEW FIELD

1. Select Farm

Use the drop down list to choose the correct Farm. To enter a new Farm name press the New button and use the on-screen keyboard to enter in a name.

Press **NEXT** to continue.

2. Add Field Name

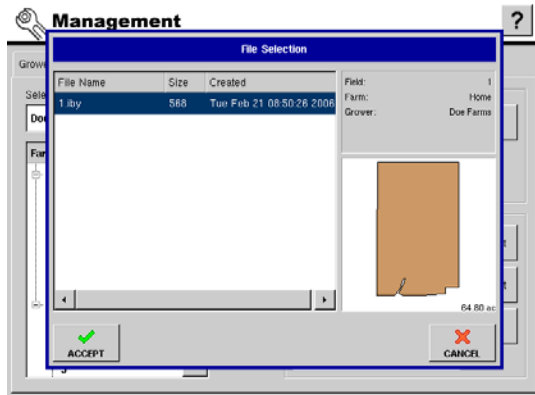
Use the New button to enter the new Field name. More than one field can be created at this time.

Press **FINISH** to complete the setup process.

IMPORTING / EXPORTING BOUNDARIES

Field Boundaries

Boundaries can be created with the display or imported from desktop GIS software. Any boundary files present in the display can also be exported for use in desktop mapping software.

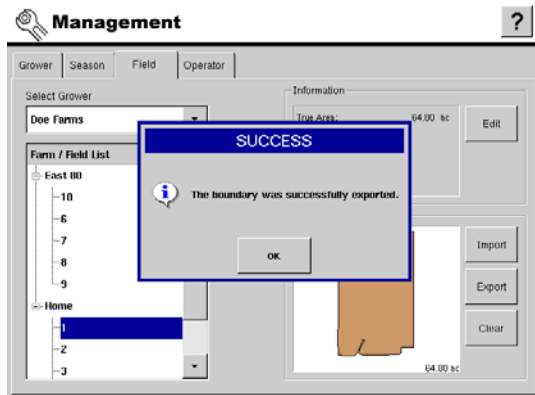


• Boundary Import

To import a boundary from the external data card, highlight the correct field in the Farm/Field list.

Press **Import**, select the desired file.

Press **Accept** to complete the import process.



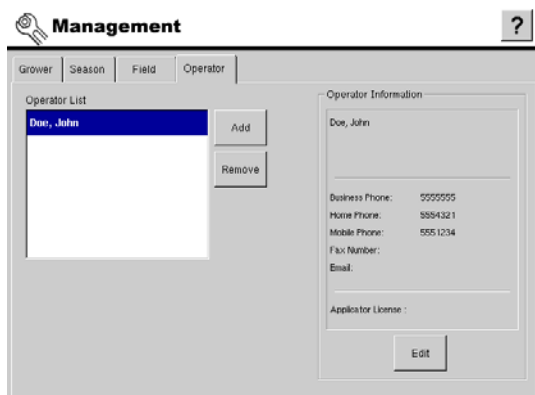
• Boundary Export

If you would like to export a boundary to the external data card highlight the correct field in the Farm/Field list. Then press the export button. A window will appear telling you that the boundary was exported successfully.

Press **OK** to return to the field setup screen.

OPERATOR SETUP

OPERATOR SETUP SCREEN



A machine operator must be selected at initial startup of the display and can be changed as needed from the Home screen.

Operator List

Displays a list of all machine operators configured within the display.

• Add

Press to add a new machine operator. The first and last name of any people entered into the display as contact information for a business or grower will be made available for selection from a list. New people can be added to the display by following the setup wizard steps. For more information, see [“Adding A New Operator” on page 21](#).

- **Remove**

Press this button to remove the selected entry from the Operator List.

- **Operator Information Frame**

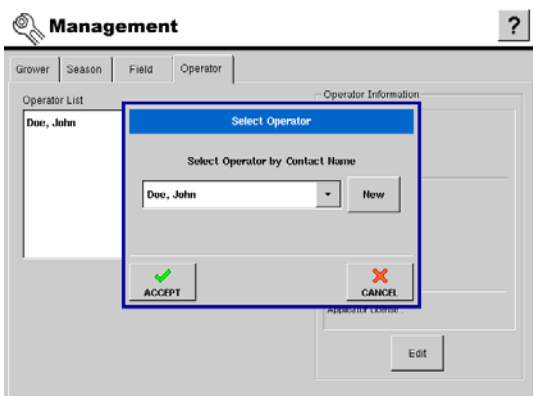
Displays all information stored within the display for the selected entry in the Operator List.

- **Edit**

Press to edit any information stored for a selected operator. For more information, see [“Adding or Editing Operator Personal Information” on page 22.](#)

ADDING A NEW OPERATOR

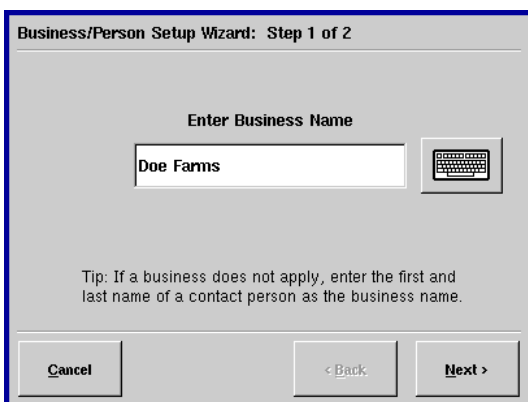
New Operators are added to the display by following the simple process outlined below.



1. Business/Person Setup

After pressing the Add button on the Operator screen, the Select Operator dialog is shown. The drop down list box displays all people setup within the display and makes them available for selection as an Operator.

If the Operator is not present in the display as a business or farm contact, press the **New** button to start the process of adding Operator information.



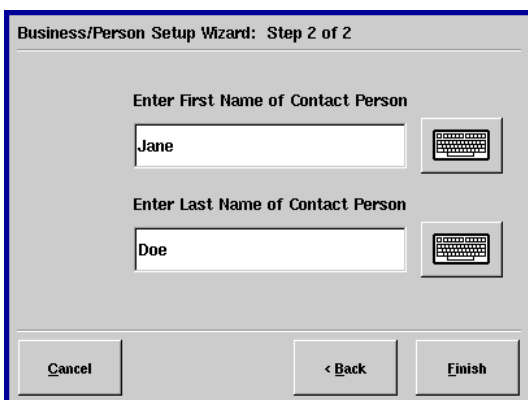
2. Business/Person Setup

Because Operators are directly related to a Business or Farm owner, the first step of the setup process asks that a Business Name be entered into the display.

After entering the Business Name into the display, press **Next** to proceed to the final step in the setup process.



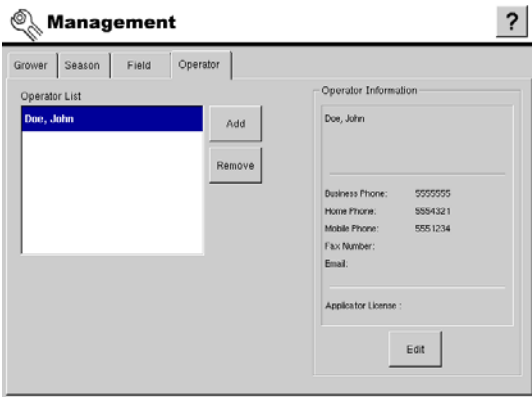
Note: For situations where the Operator is not the primary owner of an existing business or farm, it is recommended that the person's first and last name be entered as a Business Name.



3. Business/Person Setup

Enter the first and last name for the Operator and press Finish to complete the new Operator setup process.

ADDING OR EDITING OPERATOR PERSONAL INFORMATION



1. Accessing the Edit Screen

Select an Operator from the Operator List and press the Edit button to enter or edit any of the data displayed in the Operator Information frame.

The screenshot shows the 'Personal Information' data entry screen. It has two columns of input fields. The left column includes: Business Name (John Doe), Business Phone (5555555), Fax (empty), Address (Any where), City (Any town), State/Province (Any state), Postal Code (empty), Country (empty), and Memo (empty). The right column includes: First Name (John), Last Name (Doe), Applicator License (empty), Home Phone (5554321), Mobile Phone (5551234), and Email (empty). An 'OK' button with a green checkmark is at the bottom center.

2. Personal Information Data Entry

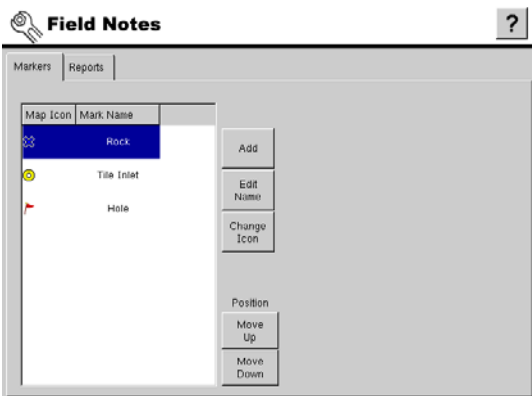
After pressing the desired control button, the on-screen keyboard or numeric keypad will be shown to allow data entry into the display. Press OK to complete the edit process.



Note: Information on the screen can be added or edited at any time.

FIELD NOTES CONFIGURATION

FIELD NOTES SETUP SCREEN



Markers are a collection of point objects that are available on the Field Notes tab of the run screen. As the name suggests, markers allow mapping points on the go to identify specific features within a field.

Displays all Markers and the icon in use for each Marker.

- **Add**

Press to display the keyboard screen to create and name a new marker. For more information, see [“Creating a New Marker” on page 23.](#)

- **Edit Name**

Press to display the keyboard screen to edit the name of any selected marker. For more information, see [“Editing A Marker Name” on page 24.](#)

- **Change Icon**

Press to change the icon of any selected marker. For more information, see [“Changing A Marker Icon” on page 25.](#)

- **Move Up**

Press to move a selected marker up one position in the markers list. This also changes the order in which the Markers are displayed on the Run Screen.

- **Move Down**

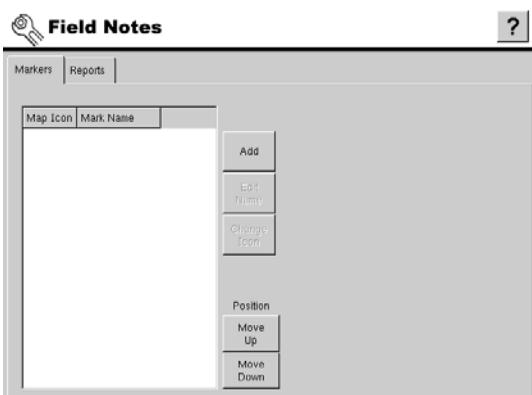
Press to move a selected marker down one position in the markers list. This also changes the order in which the Markers are displayed on the Run Screen.

- **Reports Tabs items**

The settings and options contained on the Reports tab of the Field Notes configuration settings determine the behavior of the display at the Run Screen during the process of creating application reports. For more information, see [“Application Reporting” on page 244.](#)

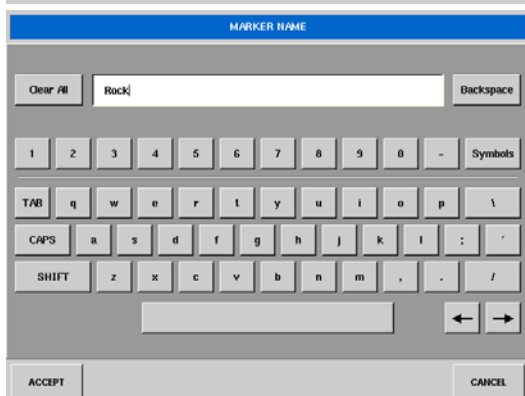
CREATING A NEW MARKER

The steps below outline the process of setting up Markers within the display.



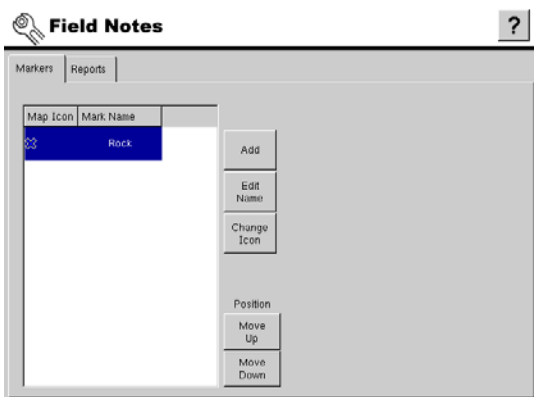
No Markers

Field Notes screen prior to any markers being configured.



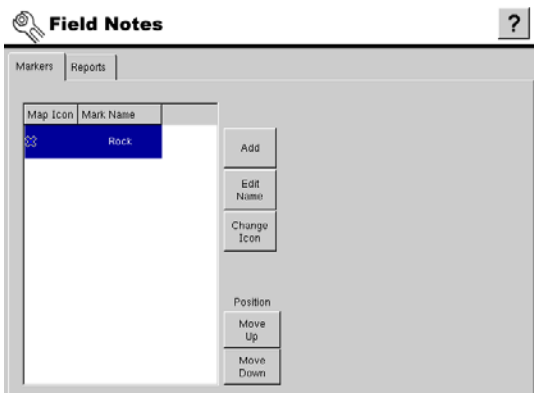
Adding A Marker

Press the **ADD** button on the Field Notes setup screen to launch the on screen keyboard. Enter any combination of letters, numbers, and symbols up to 10 characters long to be used as the name for the new Marker. Press the **ACCEPT** button to finish adding the Marker to the display.



Field Notes setup screen after adding a Marker named Rock.

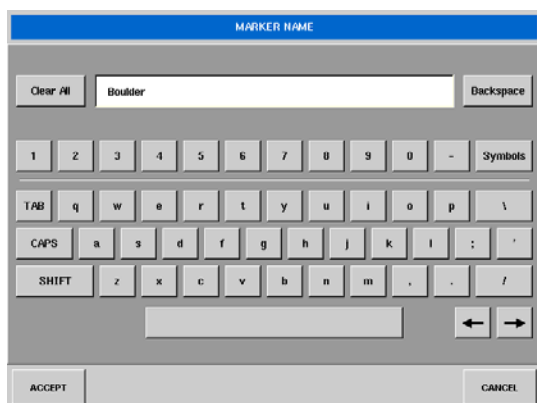
EDITING A MARKER NAME



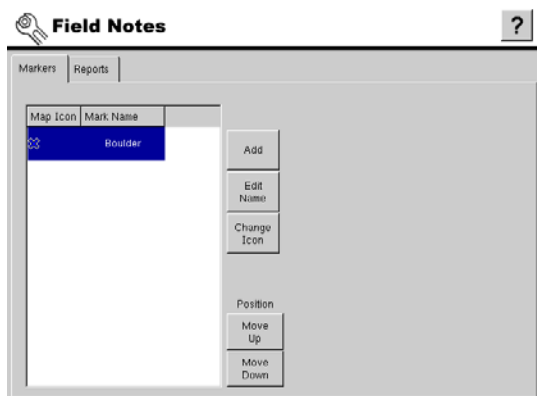
The process of renaming a Field Notes Marker is outlined in the steps below.

Existing Marker Name

Field Notes screen with an existing Marker named Rock. Select Rock from the list box and press the **EDIT NAME** button to rename the Marker.



Enter the new name for the existing Marker, press **ACCEPT** to save the change.



Field Notes screen with Marker renamed to Boulder.

CHANGING A MARKER ICON

✖ is the default icon assigned by the display for all new Markers. A different icon can be assigned to a Marker by following the steps outlined below.

Field Notes



Select Marker To Edit

To change the icon for a Marker, select the desired Marker from the list and press the **CHANGE ICON** button.

Field Notes



Select the desired icon from the list and press **ACCEPT** to save the change.

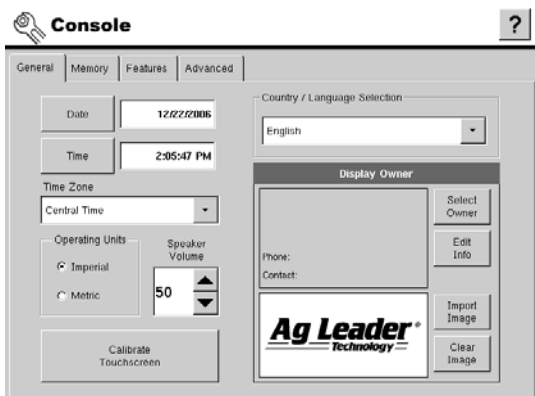
Field Notes



Field Notes setup after changing the rock icon.

DISPLAY SETUP

GENERAL DISPLAY SETUP TAB



The General Tab contains settings related to time, date, and display Owner information.

- **Date**

Press to set current date.

- **Time**

Press to set current time.

- **Time Zone**

Select the correct time zone for your area from the drop down list box.

- **Operating Units**

Select between using Imperial or Metric units for calibration and control units.

- **Speaker Volume**

Press the arrows to set the volume of on-board speaker.

- **Calibrate Touchscreen**

Press to launch the touch screen calibration wizard. For more information on calibrating the touch screen, see [“Touch Screen Calibration” on page 26](#).

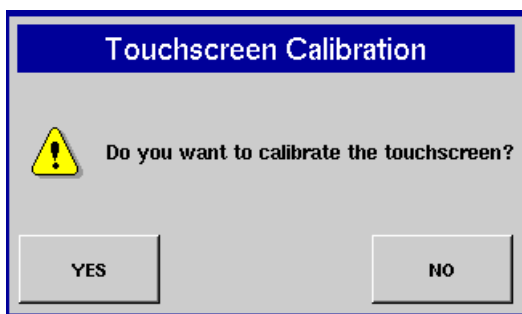
- **Display Owner**

This area of the display contains functionality for setting up a Display Owner and making any needed edits to the owner personal information. The Display Owner information is used in the product application report feature of application rate control. An image for the Display Owner can be imported for inclusion on product application reports. For more information on the Display Owner Setup, see [“Display Owner Setup” on page 27](#).

TOUCH SCREEN CALIBRATION

Do not use any sharp objects to operate the touch screen or the display may be damaged.

Confirm Touchscreen Calibration



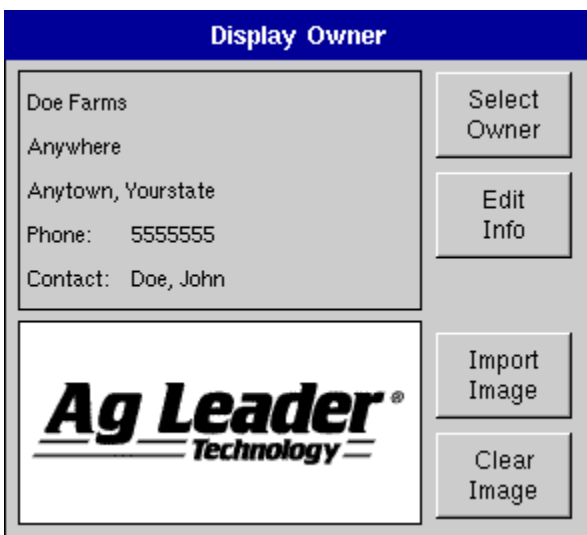
Press **YES** to confirm the start of the touchscreen calibration process.

Calibration Wizard



Calibrate the touchscreen following the on-screen instructions.

DISPLAY OWNER SETUP



• Select Owner

Press to display a list of all farm and business contacts set up in the display. The on-screen dialog that is displayed will give option to select an existing person/business or create a new one to be used as the Display Owner.

• Edit Info

Press this button to edit or add the personal information for the Display Owner.

• Import Image

Press to import the image file that is displayed with the Display Owner information on any application reports that are created. The display currently supports .bmp and .png file formats. Size is limited to a maximum of 200 pixels wide x 100 pixels tall. For more information, see ["Display Owner](#)

[Image Import" on page 27.](#)

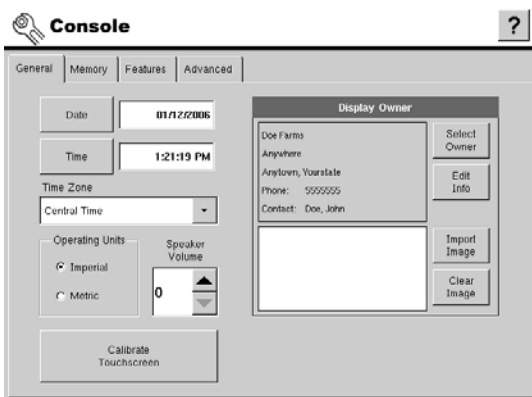
• Clear Image

Press to delete the Business Owner image.

Display Owner Image Import

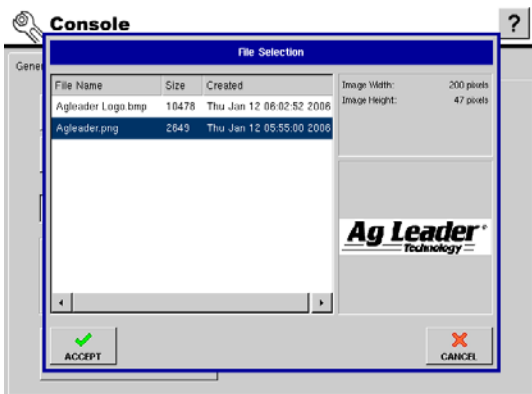
Follow the steps outlined below to import a Display Owner image.

Before Image Import



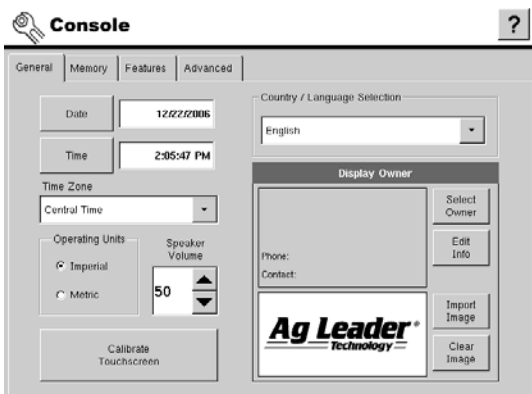
Display General setup screen prior to a Display Owner image being imported.

Image File Selection



After pressing the **Import Image** button the dialog at the left is displayed to allow the selection of a file to import. Press the **ACCEPT** button to import the selected file.

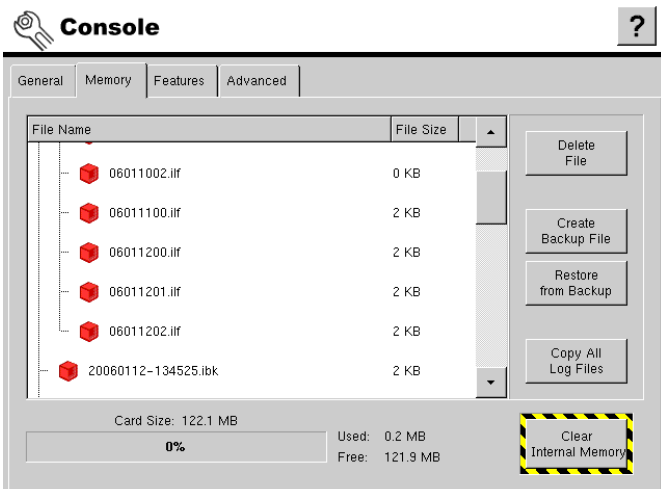
After Image Import



Display General setup screen after importing a Display Owner image.

DISPLAY SETUP MEMORY TAB

Card Management Features



• Delete File

Press to delete a selected file from the external memory card.

• Create Backup File

Press to create a backup file of all configuration settings, products, and Grower-Field Management data structure on the external memory card. Backup files are stored using the .ibk file format.

• Restore from Backup

Press to restore a backup file from the external data card to the internal memory of the display.

• Copy All Log Files

Press to copy all logged data to the external memory

card. Log files are stored using the .ilf file format.

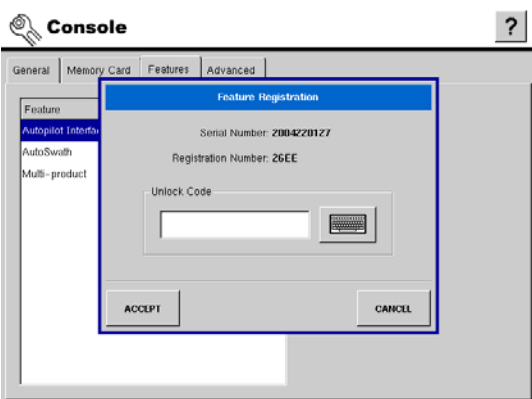
• Clear Internal Memory

Press this button to clear the internal memory of the display. The display will present a warning dialog box and ask if you would like to create a backup file prior to clearing the memory.



CAUTION: The display will be returned to “new out of box” unconfigured state when the memory is cleared.

DISPLAY FEATURES



Enabling Display Features

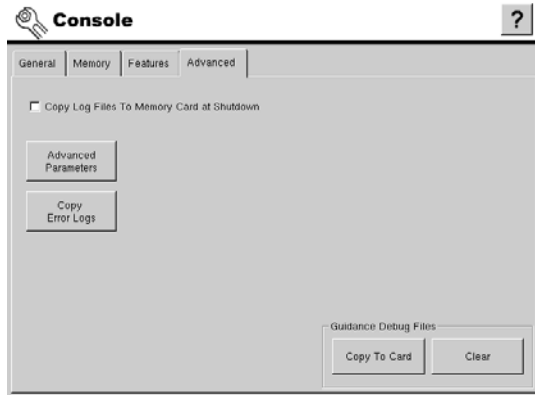
Unlocking Features

Unlock codes are unique to the serial number of each display and the feature registration number. You must supply these numbers to your Ag Leader dealer when purchasing any unlock codes. Use the on-screen keyboard to enter the unlock code and press **ACCEPT** to enable the feature.



Note: Once a feature is unlocked, that feature remains with that display and cannot be transferred to another.

ADVANCED



Advanced Display Settings

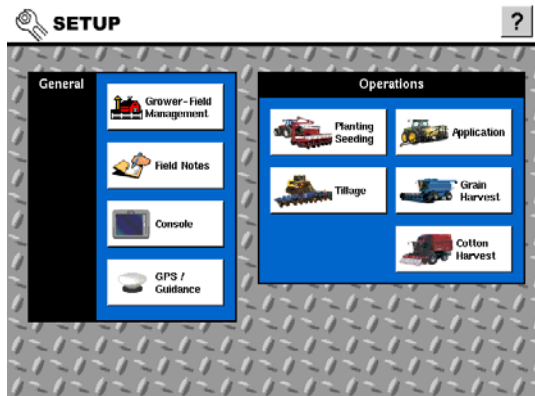
The Advanced Tab contains the following functions of interest to most users:

- **Copy Log Files to Memory Card at Shutdown** - Checking this check box will copy all log files to the external memory card when the monitor is turned off.



WARNING: The Advanced Parameters, Copy Error Logs, and Guidance Debug Files functionality on the Advanced tab is reserved for use by Ag Leader Engineering. DO NOT change any of these settings without specific instruction from Ag Leader Technology.

OPERATIONS SETUP



OPERATIONS SETUP BASICS



Planter Seeding

Press to access setup of planter logging, mapping, and population control configurations. For more information, see [“Planting And Seeding Setup” on page 31](#).



Tillage

Press to access setup of tillage operation mapping configurations. For more information, see [“Tillage Operation Setup” on page 31](#).



Application

Press to access setup of product application logging, mapping, and rate control configurations. [“Application Setup” on page 32](#).



Grain Harvest

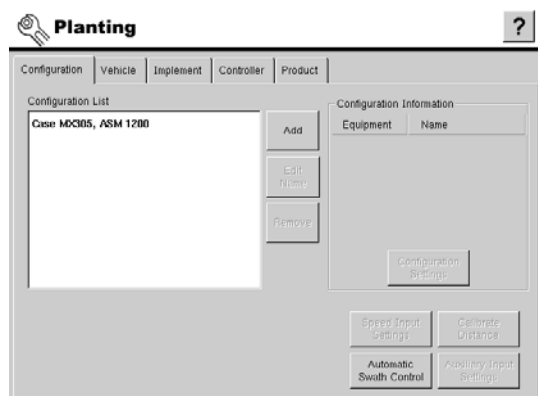
Press to access setup of Grain Harvest yield monitoring configurations. For more information, see [“Grain Harvest Yield Monitoring Setup” on page 32](#).



Cotton Harvest

Press to access setup of Cotton Harvest yield monitoring configurations. For more information, see [“Cotton Harvest Yield Monitoring Setup” on page 33](#)

PLANTING AND SEEDING SETUP



The Planting setup screens contain all the necessary settings to configure the display for logging, mapping, and population control of all supported planting operations. For more information, see *“Planting Setup Tabs” on page 89.*

• Configuration

Add and edit operating configurations. Operating configurations are a combination of Vehicle, Implement, and Controller.

Configuration examples:

- Tractor and planter mapping seed varieties.
- Tractor and planter using seed population control.

• Vehicle

Add and edit vehicle configurations. Settings include GPS offsets of rear axle and implement mounts in relation to GPS antenna.

• Implement

Add and edit implement configurations. Settings include locations for product dispense and swath locations in relation to GPS antenna and vehicle hitch.

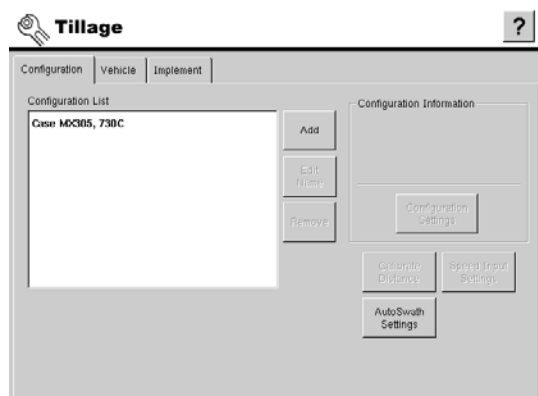
• Controller

Add and edit product population rate control channels.

• Product

Add and edit seed type and varieties.

TILLAGE OPERATION SETUP



The Tillage setup screens contain all the necessary settings to configure the display for mapping tillage operations. For more information, see *“Tillage Setup Tabs” on page 75 .*

• Configuration

Add and edit operating configurations. Operating configurations are a combination of Vehicle, and Implement.

Configuration examples:

- Tractor with pull-type field cultivator.
- Tractor with mounted cultivator.
- Tractor with mounted chisel plow.

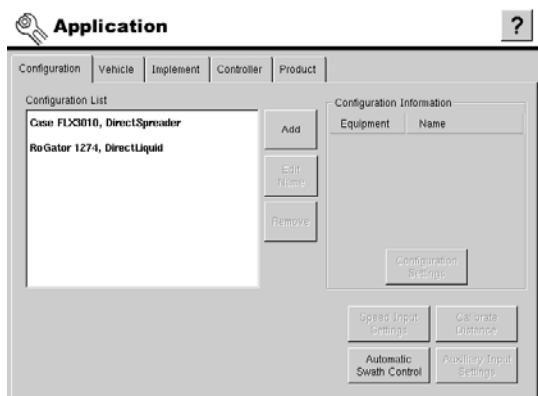
• Vehicle

Add and edit vehicle configurations. Settings include GPS offsets of rear axle and implement mounts in relation to GPS antenna.

• Implement

Add and edit implement configurations. Settings include locations for tillage point in relation to GPS antenna and vehicle hitch.

APPLICATION SETUP



The Application setup pages contain all the necessary settings to configure the display for logging, mapping, and rate control of supported methods of product application. For more information, see *“Application Setup Tabs” on page 167*.

• Configuration

Add and edit operating configurations. Operating configurations are a combination of Vehicle, Implement, and Controller(s).

Configuration examples:

- Self propelled sprayer with PWM valve rate control.
- Pull-Type sprayer with servo valve rate control.
- Single product self-propelled fertilizer spreader with hydraulic

servo valve control.

• Vehicle

Add and edit vehicle configurations. Settings include GPS offsets of rear axle and implement mounts in relation to GPS antenna.

• Implement

Add and edit implement configurations. Settings include product dispense and swath locations in relation to GPS antenna and vehicle hitch.

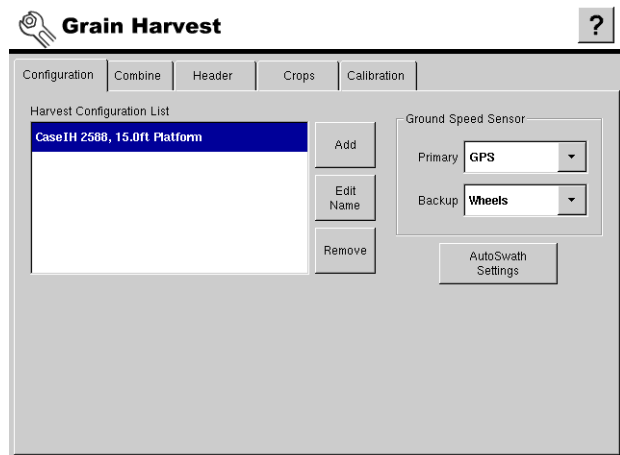
• Controller

Add and edit product control channels. Settings include product control valve and response threshold values.

• Product

Add and edit crop nutrient and protection products. Allows configuration of fertilizer blends and tank mixes.

GRAIN HARVEST YIELD MONITORING SETUP



The Grain Harvest setup screens contain all the necessary settings for configuration of yield monitoring operations. For more information, see *“Grain Harvest Setup Tabs” on page 281*.

• Configuration

Add and edit operating configurations. Operating configurations are a combination of Combine and Header.

• Combine

Add Combines from a list of all supported platforms.

• Header

Add and edit row, pickup, and platform style headers. Settings include platform width and header lift switch configuration.

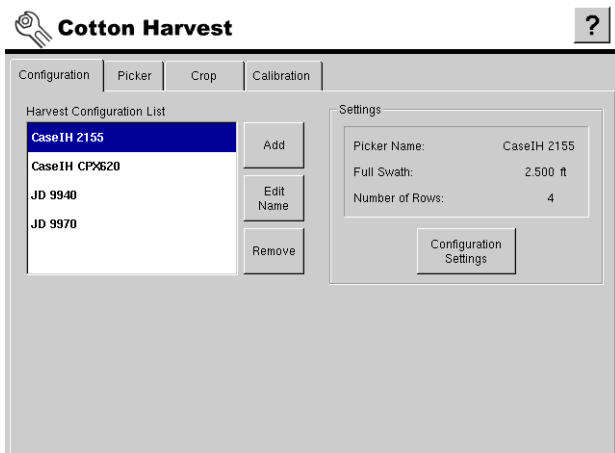
• Crops

Add and edit crop type and varieties.

• Calibration

Provides access to all calibration settings related to an operating configuration.

COTTON HARVEST YIELD MONITORING SETUP



The Cotton Harvest setup screens contain all the necessary settings for configuration of yield monitoring operations. For more information, see the Cotton Harvest Insert (Ag Leader Part No. 2002881).

• Configuration

Add and edit operating configurations. Operating configurations are a combination of picker and head type.

• Picker

Add pickers from a list of all supported platforms.

• Crop

Add and edit crop and varieties.

• Calibration

Provides access to all calibration settings related to an operating configuration.

RUN SCREEN GENERAL TABS

FIELD NOTES TAB



When an active configuration is selected at the Run Screen, the Field Notes and related functionality will be present.



MARKERS

Press the **Note** button to launch an on-screen dialog that allows attaching a text memo to the current field location.

Multiple text memo items can be created in each field.



USER DEFINED MARKERS

Press to add a point in the field with the desired attribute. The use of these markers are described further in [“Using Field Notes”](#)

[on page 33.](#)



Press the **Fill Empty** button to access the container fill events dialog. This functionality is only used during liquid product application. For more details, see [“Fill/Empty Events”](#) [on page 250](#) in the Application section.

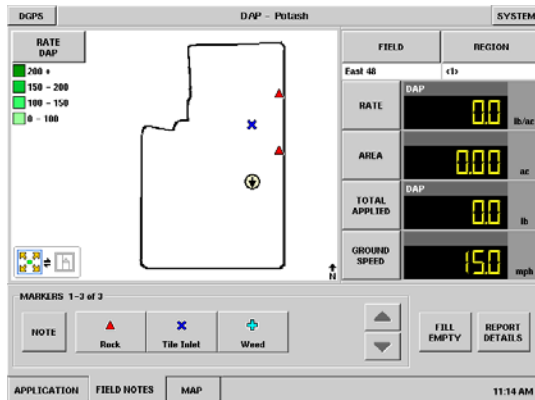


Press the **Report Details** button to add specific, detailed content to product application reports. For more information, see [“Application Reporting”](#) [on page 244](#) in the Application section.

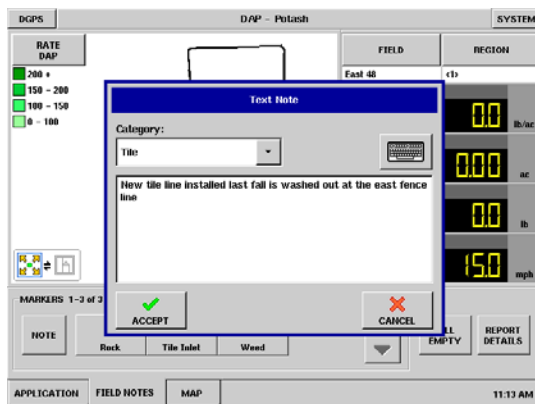
USING FIELD NOTES

The Field Notes tab contains functionality to mark points and attach text memos to points in a field at the Run Screen. The Field Notes information is stored in the data log file for use with desktop GIS software.

Markers Created At Run Screen



Press a markers button to map points with attached data in the field. The example at the left shows a field that two rocks and one tile inlet have been mapped in. Markers are defined in Field Notes. For more information on Field Notes, see [“General Setup Overview” on page 12.](#)



Press the **NOTE** button to launch an on-screen dialog that allows attaching a text memo to the current field location.

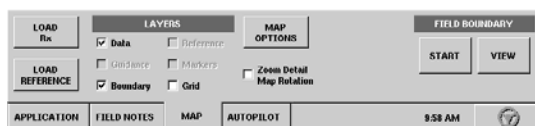
Multiple text memo items can be created in each field.

Select the type of Text Note from the items in the Category list box. The pre-defined types available are: General, Pest, Weed, Field, and Tile.

Use the on-screen keyboard to enter the text note and press **ACCEPT** to finish.

MAP TAB

MAP TAB BASICS



When an active configuration is selected at the Run Screen, the Map tab and related functionality will be present.

**LOAD
Rx**

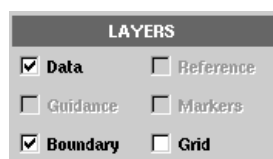
Press the **Load Rx** button to load a GPS-referenced product application rate map. For more information, see [“Variable Rate File Basics” on page 252](#), and subsequent pages in the Application section.

**LOAD
REFERENCE**

Press the **Load Reference** button to load and display a background map from another operation. An example of this is loading a reference map of a planted seed variety while harvesting a crop. From the on-screen dialog box, select the desired operation and attribute to display. Press **Accept** to continue.

**CLEAR
REFERENCE**

The **Clear Reference** button is not active until there is a reference map loaded. Press this button to clear the current reference map from the Run screen.



The Layers part of the Map Tab includes the following check box options:

- **Data** - Shows data displayed on current map.
- **Guidance** - Shows A line and B line for Autopilot or Lightbar users.
- **Boundary** - Displays boundaries loaded into the display.
- **Reference** - Shows reference map.

- **Markers** - Displays markers specified in Field Notes.

- **Grid** - Overlays a grid on the map.



Press the **Map Options** button to display an on-screen dialog box that presents options for removing mapped data from the screen. These map options are:

- **CLEAR MAP** = Permanently removes all logged data from the active field operation.
- **CLEAR MARKS** = Permanently removes all mapped marks from the active field.



Check the Zoom Detail Map Rotation check box to enable zoom detail, which displays a rotating map with the vehicle at the center of the display. For more detail, see [“Map Zoom Detail” on page 35](#).



Press the **Start** button to display a dialog box that starts the process of creating a field boundary. For more details see [“Field Boundary Creation” on page 36](#).



The **Stop** button is only active after a boundary has been started. Press to finish collecting the active boundary object.



Press the **View** button to view all mapped boundaries and associated area for the active field. Boundary objects can be selected and deleted from the View Boundary dialog box.



The **PAUSE** and **RESUME** buttons are only displayed at the appropriate times during the process of mapping a field boundary. A common use of these buttons would be pausing boundary collection while driving around an obstruction in a fence line and resuming boundary collection after clearing the obstruction. The display will automatically connect the points where boundary collection was paused and resumed and show the actual field boundary, without the obstruction.

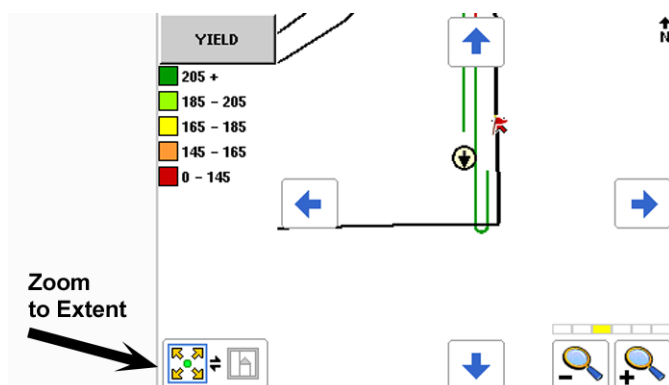
MAP ZOOM DETAIL

The Zoom Detail changes the Run Screen’s appearance so that the vehicle icon is always shown pointed to the top.

Check Zoom Detail Map Rotation box



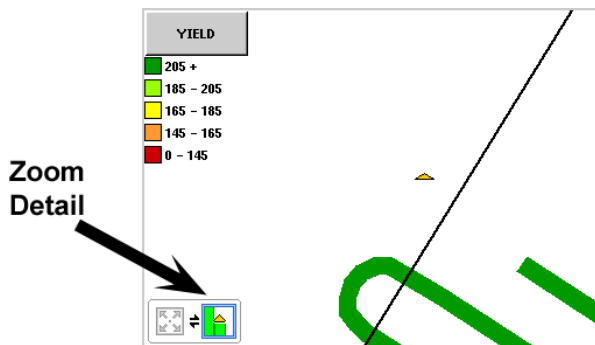
To enable the Zoom Detail feature, check the **Zoom Detail Map Rotation** check box on the Map Tab.



Zoom to Extent

On the Run Screen, an icon at bottom left gives you the option of either Zoom to Extent (normal view) or Zoom Detail.

At left is the Zoom to Extent view. The vehicle is traveling southbound, and as such, is shown pointing toward the bottom of the Run screen. As it approaches the upcoming turn, the vehicle icon will change direction.



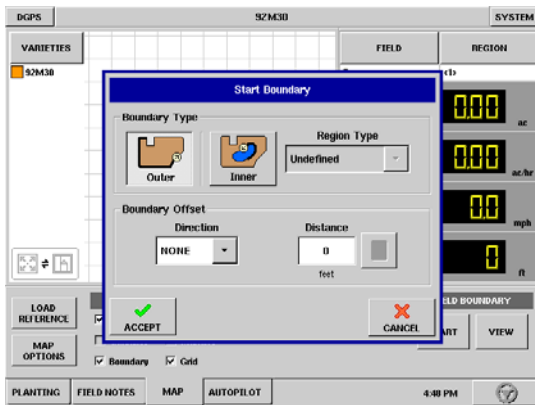
Zoom Detail

Change to Zoom Detail by pressing the Zoom Detail icon at bottom left. The view changes so that the vehicle icon is shown pointed toward the top, even as it turns corners.

In other words, in Zoom Detail, the rest of the field is shown with its spatial relationship changed in accordance with the vehicle, not the other way around.

FIELD BOUNDARY CREATION

The following image shows the dialog box that is displayed after pressing the **START** field boundary button.



Boundary Type

The boundary type can either be an Outer or an Inner boundary. If inner boundary is chosen, select the type of boundary from the Region Type list box. Region types are:

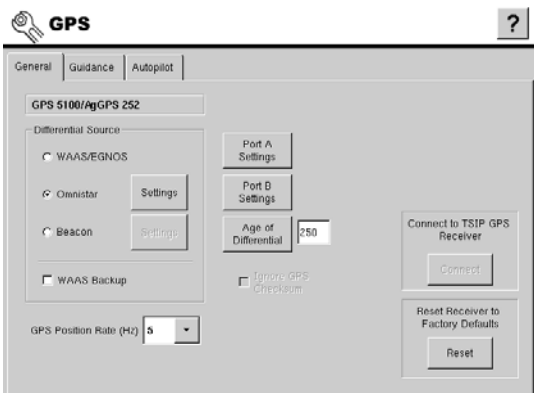
- Roadway
- Body of water
- Waterway
- Buildings
- Undefined

Boundary Offset

The boundary offset feature enables mapping a boundary at a user-defined distance to the left or right of the GPS antenna centerline.

GPS

GPS SETUP



GPS SETUP PAGES

The GPS settings only apply to InSight Displays connected to one of the Ag Leader Technology approved TSIP receiver/lightbar combinations. These settings do not apply when using the EZ-Guide Plus or EZ-Steer products.

The settings contained on the Autopilot Tab only apply to InSight systems connected to Trimble Autopilot systems with a navigation controller.

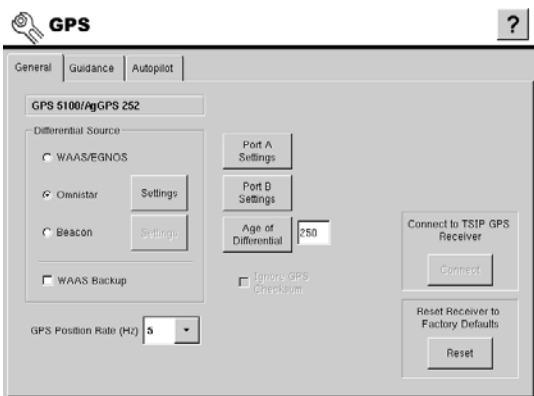
(FURTHER GPS REFERENCES)

For detailed information, see the following:

- [“GPS General Setup Tab” on page 37,](#)
- [“GPS Serial Port Settings” on page 39.](#)
- [“OmniSTAR Differential Setup” on page 40](#)
- [“Beacon Differential Setup” on page 41](#)
- [“External Lightbar” on page 45](#)
- [“TSIP Lightbar Settings” on page 45](#)
- [“GPS Diagnostics” on page 49.](#)
- [“Autopilot Diagnostics” on page 53.](#)
- [“Autopilot Setup” on page 54.](#)
- [“Autopilot Guidance Options” on page 63.](#)
- [“Autopilot Guidance Operation” on page 66.](#)

GPS TABS

GPS GENERAL SETUP TAB



AgGPS 252.

General GPS settings relate to choosing differential source and NMEA messages output by the Ag Leader Technology TSIP receiver. Details are explained below.

- For more information on other tabs which may appear on the GPS screen next to the **General** tab, see [“GPS Diagnostics” on page 49.](#)
- For a GPS/Guidance Menu, see [“GPS/Guidance Menu Tree” on page 172.](#)

• GPS Receiver box

Displays the name of your GPS Receiver on the upper left-hand side of the GPS window. In the example shown above, the GPS receiver used is either an Ag Leader GPS 5100 or a Trimble

- **Differential Source**

Select choice of WAAS/EGNOS, Satellite (OmniSTAR®) or Beacon (Coast Guard) differential sources.

- **WAAS Backup**

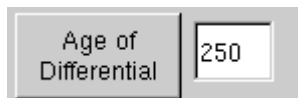
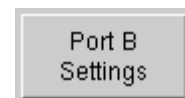
Check the WAAS Backup selection if using Satellite or Beacon differential and you want the receiver to automatically switch to WAAS in case of signal loss from the primary differential source.

- **GPS Position Rate (Hz)**

The GPS Position Rate drop-down menu represents the cycles per second that the display receives guidance information from viewable satellites. You can select 1 Hz, 2 Hz, 4 Hz, 5 Hz or 10 Hz from the drop-down menu.



These represent two physical, parallel ports that are located on the receiver. Both of these ports can individually configured to serve a variety of different functions. For more information, see [“GPS Serial Port Settings” on page 39](#).



Displays the elapsed time since reception of last differential correction signal.



Note: *The Age of Differential button is only functional when GPS is connected.*

Ignore GPS Checksum

Check this to ignore intermittent GPS message errors.

Connect to TSIP GPS Receiver

Forcibly connects to TSIP GPS receiver. Pressing this button will force the port to TSIP communication.



Note: *This button is functional only if the TSIP GPS receiver is physically connected.*



Press the **Reset** button to restore TSIP receiver settings to the factory default. This will remove all custom TSIP settings.



Note: *Differential settings and NMEA messages will need to be configured for the display to function properly after resetting factory defaults.*

GPS SERIAL PORT SETTINGS

SERIAL PORT SETTINGS

To view the Serial Port Settings window, go to the GPS screen and press the buttons labeled **Port A Settings** or **Port B Settings**.

- **Port**

Indicates the physical (secondary) port that you are configuring.

- **Connected to Port**

Indicates the physical port that you are connected to.

- **Output Type**

Displays what type of protocol the receiver is using. (NMEA, TSIP or Lightbar).

- **Output Baud Rate**

Displays the speed at which the receiver communicates with the display. Some common Baud rates include:

4800 - Used by most yield monitors.

19200 and **38400** - Used by DirectCommand and SeedCommand.

- **Output Parity**

Displays either Odd or None.

- If using TSIP, this setting should be **Odd**.
- If using NMEA, this setting should be **None**.



Note: Parity refers to a technique for checking data integrity after transmission.

- **GPS Position Rate (Hz)**

Represents the cycles per second (shown in Hz) that the display receives position information from viewable satellites.

(This is the same number as shown on GPS Position Rate drop-down list menu located on the **General** tab).

- **Output Rate (Hz)**

Represents the cyclical rate (in Hz) at which the receiver sends information to the display. This field shows a value of either 1 or ASAP.

The default rate is **1 Hz**.

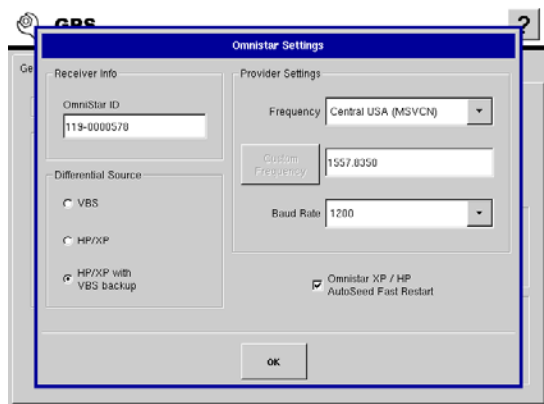
ASAP represents a Hz value of more than 1.

NMEA Messages

These check boxes represent various communication protocols or formats that have been set by the National Marine Electronics Association (NMEA), and used in information "strings" or sentences output by the GPS Receiver. At present, the display only uses two NMEA Message formats: GGA and VTG.

- **GGA** - This NMEA message format is the data fix that establishes your position in longitude and latitude.
- **VTG** - This NMEA message format stands for ground speed (velocity) in area over distance
- **GLL, GSV, GSA, ZDA, RMC, MSS** - Leave these other NMEA message formats unchecked, unless you are connected to a third-party monitor and have been directed to do so.

OMNISTAR DIFFERENTIAL SETUP



The use of OmniSTAR® differential requires purchase of a subscription from OmniSTAR®. Settings related to using satellite differential correction vary based upon your geographic location. Setup details are explained in the following table. More specific information can be obtained by contacting OmniSTAR.



Note: You will need to know this number when contacting OmniSTAR in order to set up the receiver.

• Differential Source

The choices include VBS, HP/XP, and HP/XP with VBS backup. These three options are described below.

• VBS

OmniSTAR VBS (Virtual Base Station) is a "sub-meter" level of service.

• Xp

The OmniSTAR XP service is more accurate than VBS, but slightly less accurate than HP. It provides short-term accuracy of a few inches and long term repeatability of better than 20 centimeters.

• HP/XP

The OmniSTAR HP (High Performance) service is the most accurate of the three options.

• HP/XP with VBS backup

If this option is chosen, and you lose your HP/XP signal, your receiver will automatically switch to VBS.

• Frequency

In the Frequency drop-down list box, select the geographic region where you are located. In the example above, the Central USA has been selected. If you wish to enter a Custom Frequency, select Custom, located at the bottom of this drop-down list box.

• Custom Frequency

If you wish to enter a Custom Frequency, select Custom from the Frequency drop-down list box. Then enter the frequency number in the text box below.



Note: Ag Leader Technology does not provide custom frequency numbers. Enter a number only if directed to by OmniSTAR.

• Baud Rate

The baud rate represents the speed at which your receiver obtains information from the satellite.



Note: Although three different baud rates are shown in this list, you should always keep the baud rate set at 1200.

• **AutoSeed™ Fast Restart**

Checking this box before the vehicle is shut down allows the receiver to utilize shutdown time to acquire the appropriate satellites in order to ensure a quick and efficient startup. This reduces the time taken for satellite convergence after startup, and thus increases accuracy in the field.



Note: To get the most benefit from AutoSeed technology, you should shut down the vehicle in a place where the receiver has a clear view of the sky. Do not move the vehicle before powering up again.

OmniStar Contact Information

The table below contains contact information for OmniSTAR for all locations in the world. A map of these service regions can be found at www.Omnistar.com.

• **North & South America**

1-888-883-8476

1-713-785-5850

• **Europe & North Africa**

31-70-317-0900

• **Australia & Asia**

61-8-9322-5295

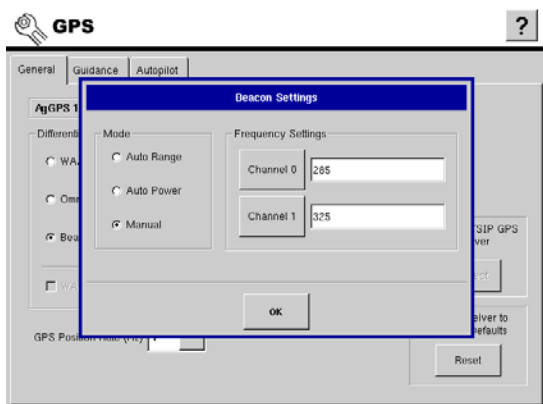
• **Southern Africa**

27-21-552-0535

BEACON DIFFERENTIAL SETUP

The Beacon Settings window is where you can enter settings for a Coast Guard Beacon differential correction source. This signal is ground-based and generally available throughout the United States, but may be limited in some areas. The signal is free, but requires a Beacon-capable receiver.

There are three different methods of determining the specific Beacon tower that the GPS system uses for differential corrections: **Auto Range**, **Auto Power** and **Manual**. The details of these settings are outlined in the following table.



• **Mode**

Determines what method the GPS receiver uses to select a Beacon tower location and differential signal.

• **Auto Range**

Uses the frequency for the closest Beacon differential tower.

• **Auto Power**

Uses the strongest available Beacon differential signal.

• **Manual**

Uses the manually-configured Beacon Frequency Settings

• **Frequency Settings**

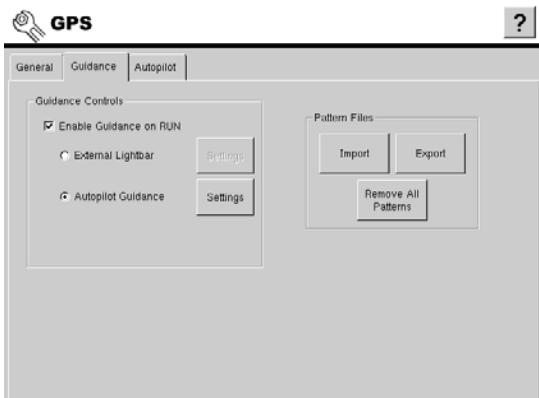
Enter frequencies for use with Manual mode selection. Frequency settings for Channel 0 and Channel 1 can range between 283.5 and 325.0.



Note: *Call Ag Leader Technical Support if you have questions about changing frequencies in manual mode.*

GUIDANCE

GUIDANCE TAB



The Guidance Tab, located on the **GPS** screen includes some general settings for the Autopilot and External Lightbar features. Further information on Autopilot functions can be found at the Autopilot tab on the GPS screen.

For a menu detailing GPS Guidance Settings, see [“GPS/Guidance Menu Tree” on page 172.](#)

• Guidance Controls

The Guidance Controls area of the Guidance Tab includes information specific to the external lightbar and Autopilot Guidance.

• Enable Guidance on RUN

Checking this box allows you to use the settings shown on the Autopilot tab on the Run screen.

• External Lightbar option button

Press this option button if you wish to use a lightbar in addition to the display.

• Autopilot Guidance option button

Press this option button if you have purchased the display's autopilot feature.

• Settings Button

This button will appear next to either the External Lightbar or Autopilot Guidance option buttons, depending upon which you have selected.

- For information on the External Lightbar settings, see [“TSIP Lightbar General Settings” on page 45.](#)

- For information on the Autopilot Guidance settings, see [“Autopilot Guidance General Settings” on page 44.](#)

• Pattern Files

The Pattern Files area of the Guidance Tab allows you to move .pat (pattern) files between the display and the compact flash card.

• Import

Imports guidance pattern files from the compact flash card. For more information, see [“Pattern Import/Export” on page 69.](#)

• Export

Exports guidance pattern files from the display to the compact flash card. Upon pressing this button, the Guidance Pattern window appears. Choose the desired Grower and Field and press the Accept button. To export all field patterns, clock the Export All Field Patterns check box and press Accept. For more information, see [“Pattern Import/Export” on page 69.](#)

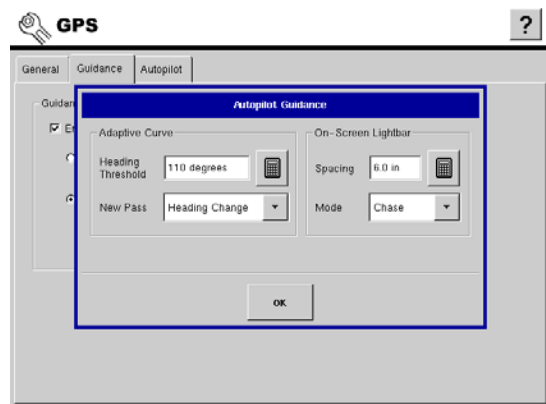
• Remove All Patterns

This will remove all guidance pattern files from the display. Upon pressing this button, the Remove Pattern window appears, with a message stating "All Guidance Patterns will be permanently erased from memory." Press the Accept button to remove all patterns from the display's internal memory.

AUTOPILOT GUIDANCE GENERAL SETTINGS

If you select the Autopilot Guidance option button on the GPS screen's Guidance Tab, the Autopilot Guidance window appears as shown. At this window, you can adjust the display's logging information for new passes and lightbar operations.

For a detailed menu that includes Autopilot Guidance Settings, see ["GPS/Guidance Menu Tree" on page 172.](#)



Adaptive Curve

The Adaptive Curve area of the Autopilot Guidance window contains settings that tell the Autopilot where to log a new pass.

• Heading Threshold

Enter in the degree of turning angle your vehicle will need to make before creating another pass.



Note: You should always set this Heading Threshold number past 90 degrees. The default number is 110 degrees.

• New Pass

This sets the conditions for the display to log a new pass. Select either Area Count or Heading Change.

- Area Count generates the next pass, based on coverage area of the previous pass. The display must be logging coverage data to generate the next pass.
- Heading Change logs the next pass when the vehicle turns past the heading threshold.

• On-Screen Lightbar

The On-Screen Lightbar area of the Autopilot Guidance window contains settings that affect how you can use the lightbar to keep your vehicle centered on the AB Line. These settings include Spacing and Mode.

• Spacing

Enter in an amount specifying the distance represented by each square of the on-screen lightbar. You can enter in a number ranging between 6 and 72 inches.

• Mode

This determines which method to use the GPS information provided on the display's Run screen to center the vehicle on the AB Line. Select either Chase or Pull

- If you select Chase, then in order to center the vehicle on the AB Line, you must follow the indicator lights on the on-screen lightbar.
- If you select Pull, then in order to center the vehicle on the AB Line, you must turn the vehicle in the opposite direction of the indicator lights on the on-screen lightbar.



Note: For more information on how the Chase and Pull modes work in the field, see ["Using the Lightbar" on page 61.](#)

EXTERNAL LIGHTBAR

TSIP LIGHTBAR GENERAL SETTINGS

The display is able to control an AgGPS 21A lightbar when hooked up to an Ag Leader Add on GPS, such as the model 3050, 3100 and 4100.



Note: For further TSIP compatibility information, see [“TSIP Compatibility Reference” on page 45.](#)

GPS

The screenshot shows the GPS settings window with the following tabs: General, Satellite Differential, Beacon Differential, TSIP Lightbar, and Autopilot. The TSIP Lightbar tab is active. It contains several sections: Power (On/Off), Units (English/Metric), LED Brightness (a slider set to 5), Lightbar Settings (Mounting Position: DASH, Text Display Mode: PASS & ERROR, LED Spacing Mode: SCALED), LED Spacing (2 feet), End Distance (25 feet), LED Sensitivity (0 feet), Guidance Settings (Pattern: NONE, Headlands: NONE, Swath Direction: LEFT, Contour Log Interval: SWATH CHANGE, LED Display Mode: SHOW ERROR), Look Ahead (sec) (0), Swath Width (0.0 feet), and Antenna Offset (0.0 feet).

The Power, Units, and LED Brightness frames are general lightbar settings.

The Power frame allows you to turn the lightbar on and off through the display since there is no power switch on the lightbar.

The Units frame allows the selection on Imperial or Metric units.

The LED Brightness frame adjusts lightbar display intensity. Use the up and down arrow keys to adjust the brightness.



Note: For further information on TSIP Lightbar settings, see [“TSIP Lightbar Settings” on page 45.](#)

TSIP COMPATIBILITY REFERENCE

TSIP is an acronym for Trimble Standard Interface Protocol, which is used by receivers manufactured by Trimble Navigation Ltd. For receivers with appropriate capabilities, TSIP can be used to control TSIP and satellite DGPS parameters and external sensor configurations.

At present, the following TSIP receivers are supported by Ag Leader Technology products:

Ag Leader® model number

- GPS 3000
- GPS 3050
- GPS 3100
- GPS 4050
- GPS 4100
- GPS 5100

TSIP LIGHTBAR SETTINGS

The lightbar settings frame includes settings that are used to configure the lightbar for a specific installation and set of needs.

Mounting Position

Ceiling mounting of the lightbar requires that it be inverted. This setting will allow the text to be inverted also.

Text Display Mode

- **No Text**

No text is displayed on the screen.

- **Pass & Error**

Provides the pass number and error from the center of the swath.

- **GPS Status**

Displays GPS and Differential information on the text screen.

- **Pass Number**

Displays the current pass number for that field.

- **Start Line Distance**

Displays the distance from the start of a pass (increasing).

- **End Line Distance**

Displays the distance from the end of a pass (decreasing).

- **True Heading**

Displays the actual degree heading from True North.

- **X Track Err**

Displays the error between current position and swath.

- **Heading Err**

Displays the degree error for the heading from the center of the swath.

- **Ground Speed**

Displays ground speed only.

- **Pass & Speed**

Provides pass number and ground speed.

- **Demo Mode**

Used for demonstration only, cycles power on and off.

- **Curve Arrows**

Displays arrows indicating the direction and magnitude of the correction, more arrows indicate a sharper turn. For curved modes only.

- **Pts On Curve**

Displays the number of points that have been logged on the pass.

LED Spacing Mode

Use the Linear or Scaled settings to set the spacing interval of the lightbar LED's.

- **Linear**

Set the light bar to show off-line distance on a line. i.e. A setting of one foot off line from the center of the swath will be represented by one LED. The second LED will represent two feet etc.

- **Scaled**

Sets the first 10 LED's each side of the lightbar on a linear scale. The outer 7 LED's on each side are scaled to represent an end value setting.

LED Spacing

This setting establishes LED spacing distance. If the setting is 3 feet, the LED slides one unit to the left or right for every 3 feet off line.



Note: The smaller the LED spacing the more precise guidance the lightbar will provide.

End Distance

This setting is used when in Scaled for LED Spacing Mode. You cannot set an end value smaller than the LED spacing multiplied by 17 (there are 17 LEDs on each side of the lightbar.)

LED Sensitivity

This setting sets the sensitivity for the PAUSE function. It only affects the large center LED of the Light Bar. The large LED changes color as you approach headlands, or the Pause/Resume point.



Note: LED sensitivity should be set larger as ground speed increases.

TSIP GUIDANCE SETTINGS

The Guidance Settings frame includes settings that are used for setting up the guidance pattern.

Pattern

Determines which guidance pattern is driven.

- **None**

Configures straight line guidance parallel to the beginning and end of the first swath driven.

- **Curve Spiral**

Use this curve setting to drive spirals or closed rings.

- **Curve**

Activates last curve following. Positions are logged during current swath. The next swath is parallel to the previous swath driven.

- **Skip Pass**

Provides parallel guidance in a racetrack pattern with a user specified swath skip. This setting is for equipment with a large turn radius.

- **A+ Heading**

Allows establishing a reference line from True North.

Headlands

Determines the type of headland used.

- **None**

In this mode, swath lengths are infinite. The center LED remains one color, never changing to indicate end of swath.

- **C-Clamp**

Field ends are sprayed as headlands so parallel passes may be used with minimal overlap.

- **Curved**

Logs irregular boundary shapes for guidance.

- **Closed**

Defines headlands with a series of user entered points. The last point connects to the first point to form a closed loop.

- **A-B End Zones**

A & B points mark the center of the boundary swath. When the system is inside the boundary area the center LED illuminates green. The center LED glows red when beyond the boundary area.

Swath Direction

This setting determines whether the swath is manually or automatically incremented.

- **Auto**

Automatically increments in the direction turned after the first swath. The swath increments when the vehicle turns more than 110 degrees.

- **Right**

Swaths are manually incremented to the right of the A-B line.

- **Left**

Swaths are manually incremented to the left of the A-B line.

- **Snap**

Automatically increments swath number to the closest swath. (Not available with Pass Skip and Curve following.) This is the default setting.

Contour Log Interval

The settings are Swath Change and Heading Change. Heading change is the default and recommended setting. With the Contour Log Interval set to Heading Change a reference point will be logged whenever the heading changes slightly.

LED Display Mode

Determines which direction from the center of the light bar the LEDs light indicate off-line error.

Show Error

Displays the extent and direction of the error between current position and swath line. Steer vehicle to "pull" lights back to center of the lightbar.

Show Correction

Displays the extent and direction of the necessary correction to match the swath line. Steer vehicle by "chasing" lights left or right.

Look-Ahead

The value that allows the system to predict future error. This accounts for system delays, including operator response time. 3 seconds is the default setting.

Swath Width

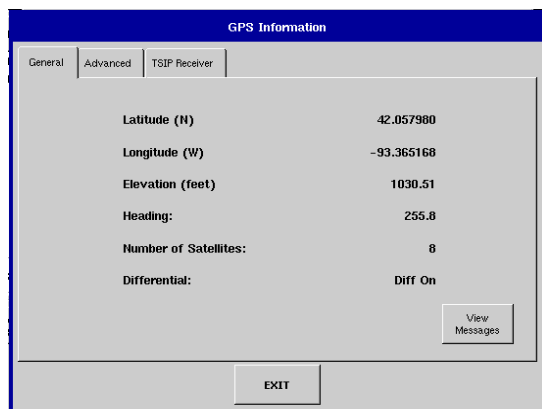
Adjust in .5 ft increments from 1 to 999 ft. Set the swath width to 1 ft less than the actual swath width to reduce skip. Set the swath width 1 ft more than the actual swath to reduce overlap.

Antenna Offset

The distance from the antenna, ahead or behind the spray boom so that guidance information is referenced to the spraying boom instead of the antenna. It is adjusted in 0.5 ft increments from 0 to 100 ft. The antenna must be placed along the vehicle's centerline. Negative numbers are used for a boom in front of the antenna, positive numbers are for a boom behind the antenna.

OPERATING THE DISPLAY

GPS DIAGNOSTICS



There are three main tabs under the **DGPS** button that display detailed information about the GPS signal and receiver. If the display is interfaced to an autopilot navigation controller, an additional tab will be present with appropriate diagnostic information.

- **Latitude, Longitude, Elevation**

Displays current position (in longitude and latitude) and elevation.

- **Heading**

Displays degree heading of travel

- **Number of Satellites**

Displays the number of satellites currently being tracked by the receiver.

- **Differential**

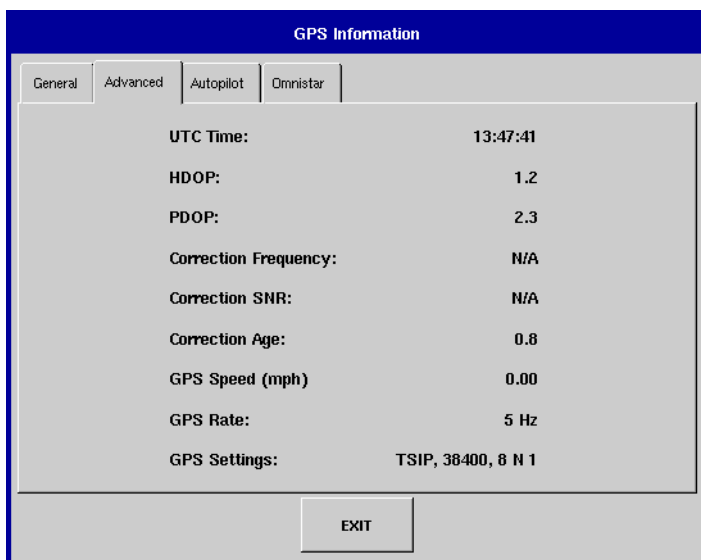
If a TSIP receiver is being used, the differential status will display the differential source, (i.e. WAAS, Beacon or OmniSTAR). This message field will display either Diff On or Diff Off.

- **Diff On** - indicates the receiver is receiving a differential GPS signal.
- **Diff Off** - indicates the receiver is not receiving a differential GPS signal.

- **View Messages**

To view the NMEA and/or TSIP messages coming from the receiver, press the View Messages button.

GPS ADVANCED TAB



The Advanced Tab displays further diagnostic information about the GPS receiver. The Universal time, position errors (HDOP, PDOP), GPS speed, and update rate are displayed for receivers.

- **UTC Time**

UTC is an acronym for Coordinated Universal Time, a high-precision atomic time standard that defines local time throughout the world. Different versions of universal time use atomic clocks to correct for irregularities in the Earth's rotation and orbit. UTC is used in navigation, astronomy, aviation, Internet broadcasts, and amateur radio.

If you are receiving information from the satellite, then the UTC Time should automatically update.

- **HDOP**

Horizontal Dilution of Precision (HDOP) indicates the quality of the horizontal GPS position. Lower HDOP numbers are optimal, higher numbers are undesirable.

- **PDOP**

Position Dilution of Precision (PDOP) is a unitless measure indicating when the satellite geometry can provide the most accurate results. When satellites are spread around the sky, the PDOP value is low and the computed position is more accurate. When satellites are grouped close together, the PDOP is high and the positions are less accurate. Lower PDOP numbers are optimal, higher numbers are undesirable.

- **Correction Frequency**

The Correction Frequency indicates the GPS satellite frequency used by the receiver.



Note: The Correction Frequency diagnostic does not show for WAAS connections. Description.

- **Correction SNR**

If your receiver is using Beacon differential corrections, the frequency and signal to noise ratio (SNR) will be displayed.

Signal-to-Noise Ratio (SNR) indicates the strength of the differential correction signal in relation to the amount of background noise that can interfere with signal reception.

- **Correction Age**

The length of time since the GPS receiver has obtained its last update.



Note: The age of the DGPS corrections (as delivered to the GPS receiver) will vary from one second to several seconds, depending on the characteristics of the individual satellite signals.

- **GPS Speed (mph)**

The speed of the vehicle.

- **GPS Rate**

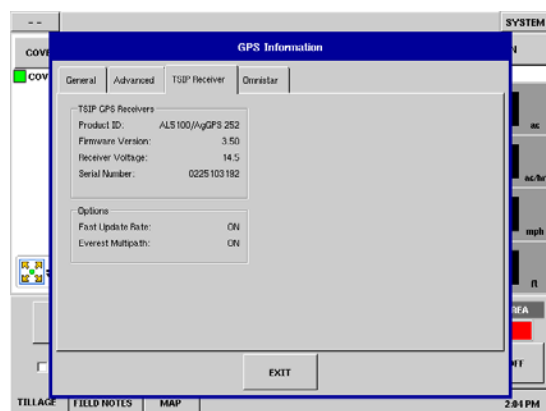
The update rate from the GPS receiver, shown in Hz.

- **GPS Settings**

These settings include the following, which are displayed from left to right in the Advanced Tab picture on the previous page:

- (Left) The protocol being used by the receiver. In the above instance, the receiver is using the TSIP protocol.
- (Middle) The Baud Rate of the data received. In the above instance, the Baud Rate is 38,400.
- (Right) The data bits, parity, and stop bits of the GPS signal. In the above instance, the data bits are 8, the parity is 0, and the stop bits are 1. This number is used in error detection, as it determines the integrity of data received after transmission.

TSIP RECEIVER TAB



If a TSIP receiver is being used, the TSIP Receiver tab will display appropriate diagnostics information. The receiver Product ID, Firmware Version, and Voltage are displayed in the top frame. The options frame tells you if the Fast Update Rate or Everest Multipath features are enabled.

- **TSIP GPS Receiver information**

Displays Product ID, Firmware Version, and Voltage.

- **Fast Update Rate**

The Fast Update Rate indicates whether your receiver is capable of outputting an update rate faster than 1 Hz per second.

- If the Fast Update Rate is ON, then your receiver is capable of outputting an update rate faster than 1 Hz per second.
- If the Fast Update Rate is OFF, then currently your receiver is only capable of an update rate of 1 Hz per second. Contact Ag Leader Technical Support to see if your receiver can be upgraded to a faster update rate. This may require an unlock code from Ag Leader Technical Support.

• Everest Multipath

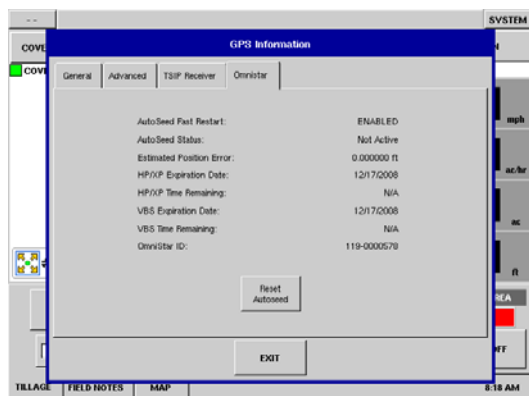
The Everest Multipath feature helps eliminate errors caused by signal deflection off of buildings or other structures. If this is ON, then your receiver has this feature; if it is OFF then your receiver does not.



Note: Some older receivers may not be capable of the Everest Multipath feature.

OMNISTAR TAB

The OmniSTAR diagnostic tab will appear if you have purchased this wide-area differential GPS correction service.



The AutoSeed™ Fast Restart feature reduces the time needed for your receiver to reconverge (re-average) your GPS position, thus insuring a quick and efficient startup. The Fast Restart field indicates one of three types of status: Disabled, Reading or User Rejected.

- **Disabled** - The AutoSeed feature is off.
- **Reading** - The AutoSeed feature is currently being used.
- **User Rejected** - The AutoSeed feature has been disabled by the user.

• AutoSeed Status

The AutoSeed status indicates Active or Not Active, depending upon whether this feature is on or off.

• Estimated Position Error

The estimated position error relative to your actual position, shown in feet. This may be a greater number when you first start up your GPS system, but it should diminish with time.

• HP/XP Expiration Date

The HP/XP Expiration Date is the date on which your HP/XP subscription ends. For more information, contact OmniSTAR.

• HP/XP Time Remaining

The HP/XP Time Remaining is the amount of time left on your HP/XP subscription. For more information, contact OmniSTAR.

• VBS Expiration Date

The VBS Expiration Date is the date on which your VBS subscription ends. For more information, contact OmniSTAR.

• VBS Time Remaining

The VBS Time Remaining is the amount of time left on your VBS subscription. For more information, contact OmniSTAR.

• R User ID

The receiver's OmniSTAR Identification number. Reference this number when contacting OmniSTAR to purchase subscriptions.

- **Reset Autoseed button**

Allows you to reconverge your GPS position. This reset feature should be used if the vehicle has moved after the GPS receiver was turned off.

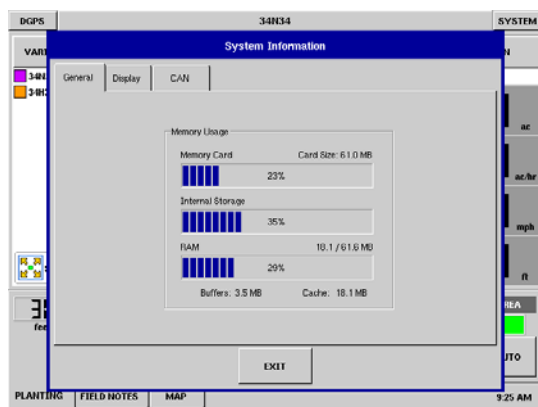


Note: After you press this button, the receiver will take a certain amount of time as the reconvergence takes place. Therefore, your GPS position will be less accurate for a time until the reconvergence is completed.

DIAGNOSTIC BUTTON

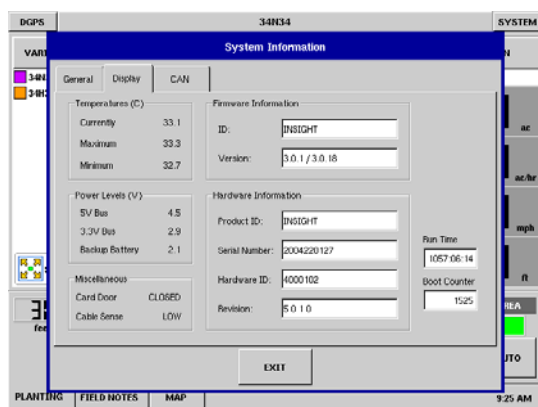
By pressing the **System** button, you can view the System Information window, which includes the General, Display, and CAN tabs. This window shows generalized Diagnostic information, such as memory, display, CAN device and firmware version information. Technical support may request that you look at this window to help in diagnosing a problem. Additional tabs, appropriate to the connected modules, are present as needed. For information on these additional tabs, see the Application section under [“System Diagnostic Button” on page 257](#); and the Grain Harvest section under [“System Diagnostic Button” on page 307](#). Information on LED diagnostic states can be found at [“Module LED Diagnostic States” on page 174](#).

General Tab



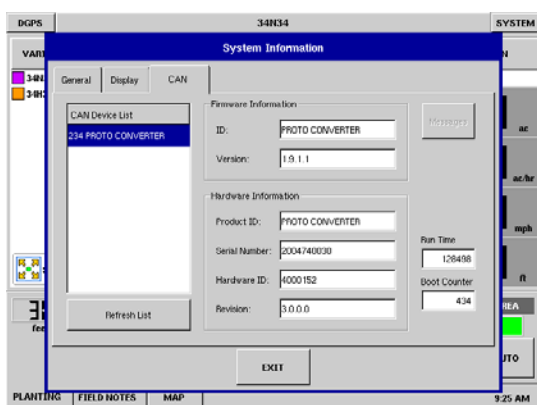
The General Tab contains information about the external storage card and display memory usage.

Display Tab



The Display tab shows general and diagnostic information about the display. Information includes:

- Display temperature
- Display and CAN Bus voltage
- Firmware information
- Hardware information
- Display run time hours:minutes:seconds
- Display boot counter



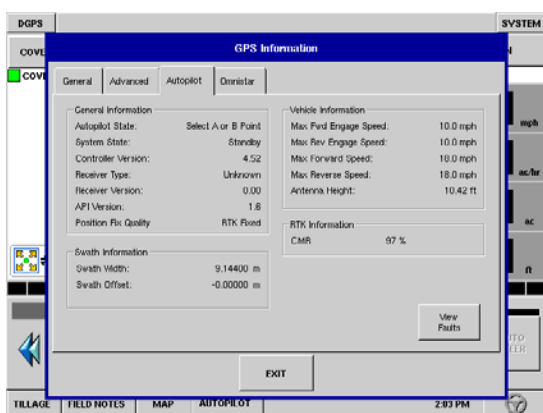
CAN Tab

The CAN Device List displays the modules that are connected to the CAN Bus. Press the **Refresh List** button to have the display search for any new modules that are connected to the CAN Bus. Select a device to display specific details in the Firmware and Hardware Information frames of the CAN tab,



Note: Check the CAN device list to ensure that all modules appear there.

AUTOPILOT DIAGNOSTICS



The Autopilot Tab under the **DGPS** button displays diagnostic information about the Autopilot system.

• General Information

The General Information frame shows diagnostic information about the Autopilot system.

• Autopilot State

Displays either Select A or B Point, or AB Point Set.

• System State

Displays either Engaged or Standby.

• Controller Version

Firmware version of the Autopilot's Nav Controller.

• Receiver Version

Firmware version of the GPS receiver.

• API Version

Version of the Application Programming Interface.

• Position Fix Quality

Lists your specific source for differential correction (DGPS, RTK Fixed, RTK Float, OmniSTAR HP/XP Unconverged, or OmniSTAR HP/XP Converged).

• Vehicle Information

The Vehicle Information frame displays Autopilot vehicle settings.

- **Max Fwd Engage Speed**

Maximum forward speed limit for engaging the Autopilot.

- **Max Rev Engage Speed**

Maximum reverse speed limit for engaging the Autopilot.

- **Max Forward Speed**

Maximum forward speed allowed for the Autopilot to remain engaged.

- **Max Reverse Speed**

Maximum reverse speed allowed for the Autopilot to remain engaged.

- **Antenna Height**

Measured height of the antenna as it is placed on the vehicle.

- **Swath Information**

The Swath Information frame shows swath width and offset settings.

- **Swath Width**

Width of the implement's swath.

- **Swath Offset**

The swath distance right or left of the antenna.

- **RTK Information**

If RTK is used, the RTK Information frame shows the quality of the signal from the RTK base station by displaying the CMR percentage value.



Note: Trimble RTK stations transmit data in a dual-frequency format called CMR (Compact Measurement Record).

- **View Faults**

If a system fault has occurred, it can be viewed and cleared under the View Faults button.

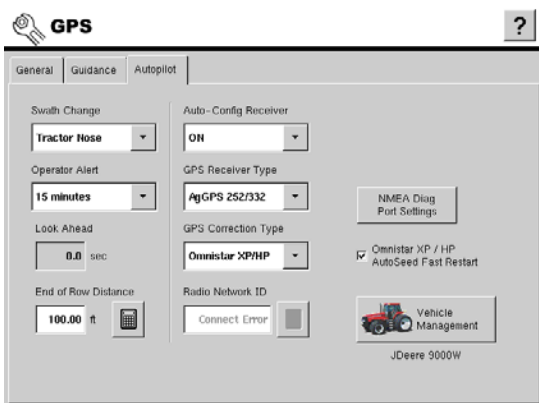
AUTOPILOT INTERFACE

AUTOPILOT SETUP

The display can be used to interface the Trimble Autopilot navigation controller. User settings for the system are contained on the Autopilot tab of the GPS setup screens.



Note: The Show Autopilot Controls on Run Screen checkbox must be selected for the appropriate control tab to display on the Run Screen.



Swath Change

The Swath Change setting shows the point of the vehicle at which the Autopilot switches over to the next guidance pass. This point is located either at the Tractor Nose or your antenna location.

• Operator Alert

The Operator Alert determines the period of time that the Autopilot system will run without any interaction from the machine operator before displaying an on-screen warning message. If the message is not acknowledged, the Autopilot system will disengage.

• Look Ahead

The Look Ahead setting allows the Autopilot to anticipate the future vehicle position in relation to the guidance line. This setting has more of an impact when driving at higher speeds.

• End of Row Distance

This setting determines the distance from the end of row that the system will display a warning message. Press the numeric keypad button to edit this value.

• Auto-Config Receiver

Set to ON (recommended) for the Autopilot Navigation Controller to automatically configure the GPS receiver for the correct Autopilot settings.

• GPS Receiver Type

Choose the GPS receiver currently being used from the list.

• Radio Network ID

This allows you to select your RTK radio network ID number. (Choose the correct network ID number that references the RTK base station in your area). Edit using the numeric keypad button..



Note: The Network IDs range between 1 and 250.

• NMEA Diagnostic Port Settings

This setting is for use by Autopilot users who wish to output data to a secondary device, such as a hand-held device or planter monitor. For more information, see [“NMEA Diagnostic Port Settings” on page 56](#).

• OmniSTAR XP/HP AutoSeed Fast Restart

This setting applies to Omnis tar XP or HP differential correction sources only. This setting causes the receiver to use the last known position to derive a converged differential signal faster. If you are using this option, you must not move the vehicle from the point where the GPS was previously shut off.



This button allows you to pick your active vehicle profile, and import or export saved vehicle configurations. .



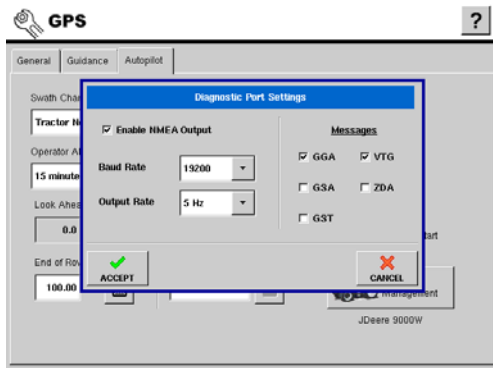
Note: For more information on Vehicle Management profiles, see [“Autopilot Vehicle Configuration Profile Management” on page 56](#).

NMEA Diagnostic Port Settings

The Diagnostic Port Settings window, shown below, appears after you press the **NMEA Diagnostic Port Settings** button on the Autopilot Tab. This window is where Autopilot users can specify that the display should output data to a secondary device, such as a hand-held device.



Note: Enter the settings specified in the User Manual of your connected device.



• Enable NMEA Output

Check this checkbox to enable the Autosteer controller to send data to a secondary device.

• Baud Rate

Speed at which the Autosteer controller communicates with the connected device.

• Output Rate

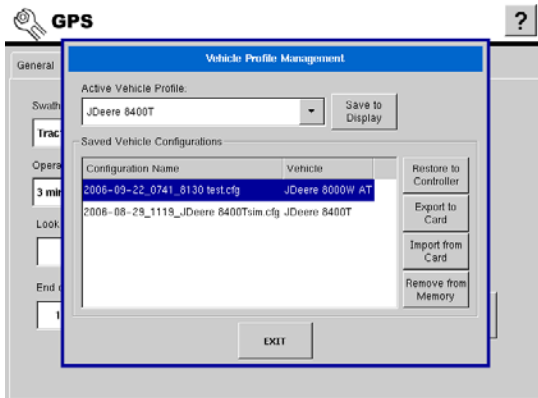
Represents the cyclical rate (in Hz) at which the Autosteer controller sends data to the connected device.

• Messages

These check boxes represent various communication protocols or formats that have been set by the National Marine Electronics Association (NMEA), and used in information "strings" or sentences output by the GPS Receiver. For more information, see ["GPS Serial Port Settings" on page 39](#).

VEHICLE PROFILE MANAGEMENT

AUTOPILOT VEHICLE CONFIGURATION PROFILE MANAGEMENT



These calibrations should have been pre-set by your product dealer. The vehicle profile can be saved and transferred from the display to the Nav Controller with a .cfg (configuration) file.



CAUTION: Do not change vehicle profiles unless you are authorized to do so.

• Active Vehicle Profile

Lists the vehicle profile currently used in the Nav Controller.

• Save to Display

This button allows you to save and/or rename a vehicle profile in the display's internal memory.

For more information, see ["Naming Vehicle Profiles" on page 57](#).

- **Saved Vehicle Configurations**

Lists all of the vehicle configurations that you have saved in the display.

- **Configuration Name**

The name of the configuration files that you have saved in the display.

- **Vehicle**

The vehicle associated with that configuration file.

- **Restore to Controller**

This button allows you to send a vehicle profile saved in the display's internal memory to a Nav Controller.

For more information, see [“Restoring Vehicle Configuration Profiles” on page 58.](#)

- **Export to Card**

This button allows you to send a vehicle profile saved in internal memory of the display onto the compact flash card when it is in the display.

For more information, see [“Exporting Vehicle Configuration Profiles” on page 58.](#)

- **Import from Card**

This button allows you to download the vehicle profile from the compact flash card onto the display's internal memory.

For more information, see [“Importing Vehicle Configuration Profiles” on page 59.](#)

- **Remove from Memory**

This button removes the vehicle profile from the internal memory of the display. For more information, see [“Removing Vehicle Configuration Profiles” on page 59.](#)

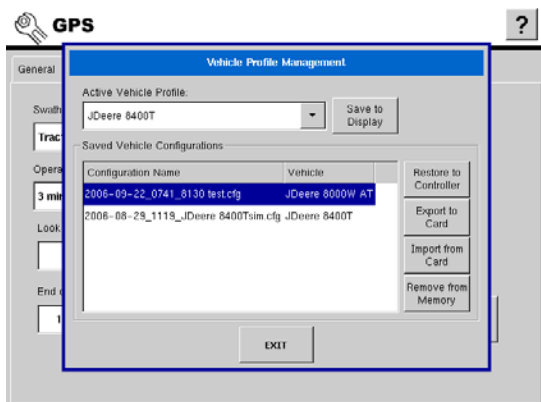


Note: This button will not remove the vehicle profile from either the compact flash card or the Nav Controller.

NAMING VEHICLE PROFILES

You can rename an active vehicle configuration profile when saving it in the display's internal memory. To rename the vehicle profile, follow this procedure.

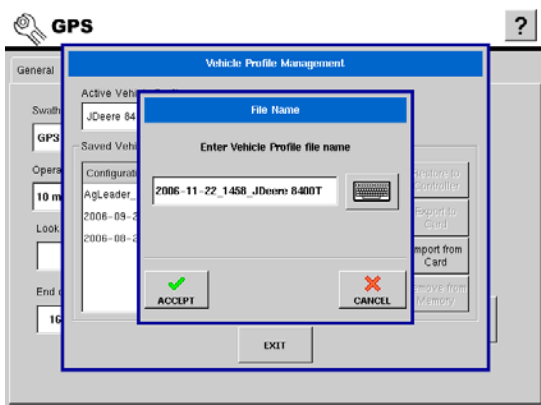
Press the Save to Display button



From the GPS screen, press the **Vehicle Management** button. The Vehicle Profile Management window appears, as shown at left. Highlight the desired vehicle profile as it appears in the Saved Vehicle Configurations section of the window.

Press the **Save to Display** button.

Enter vehicle profile name

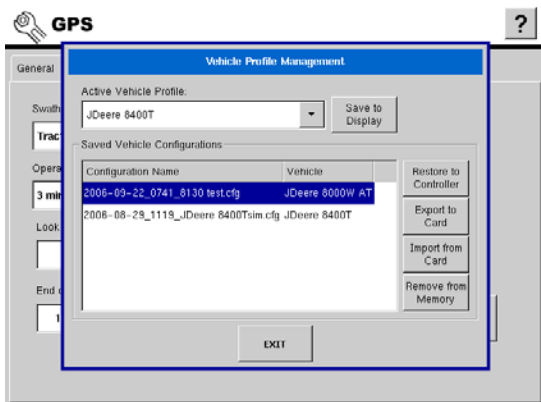


The File Name window appears, as shown at left. Use the keypad to enter the new Vehicle Profile file name.

Press **Accept**.

RESTORING VEHICLE CONFIGURATION PROFILES

The following procedure allows you to send a vehicle configuration (.cfg) profile saved in the display's internal memory to a Nav Controller.



1. Choose vehicle configuration profile

At the Autopilot tab on the GPS screen, press the Vehicle Management button. When the Vehicle Profile Management screen appears, press and highlight the vehicle profile you wish to export that is shown in the Configuration Name window.

Press the Restore to Controller button.

2. Accept the Restore File operation

The Restore File window shows, as appears as left.

Press the Accept button.

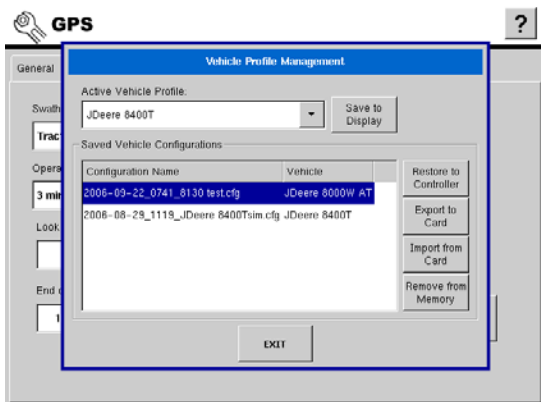
3. Accept the Autopilot Liability Notice

A message appears stating "Configuration Successfully Restored." When you receive this message, the Nav Controller reboots. The Autopilot Liability Notice appears.

Press the **Accept** button.

EXPORTING VEHICLE CONFIGURATION PROFILES

This procedure allows you to export a .cfg (vehicle configuration) file that has been saved in the internal memory of the display onto the compact flash card when it is in the display.



1. Choose the Configuration File to Export

At the Autopilot tab on the GPS screen, press the Vehicle Management button. When the Vehicle Profile Management screen appears, press and highlight the vehicle profile you wish to export that is shown in the Configuration Name window.

Press the Export to Card button.

2. Export either one or all files

A message appears, asking if you would like to export the selected file, or all files.

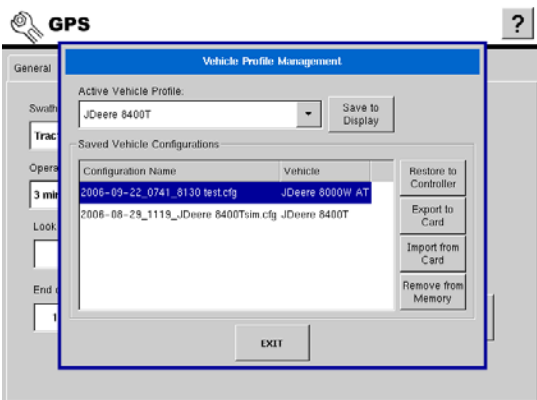
Press either the **Selected File** or **All Files** button.

3. Confirm Configuration Export

A message appears, stating "Configuration Successfully Exported." Press OK.

IMPORTING VEHICLE CONFIGURATION PROFILES

The following procedure allows you to download the vehicle profile from the compact flash card onto the display's internal memory.



Choose the Configuration File to Import

At the Autopilot tab on the GPS screen, press the **Vehicle Management** button. When the Vehicle Profile Management screen appears, press and highlight the vehicle profile you wish to export that is shown in the Configuration Name window. Press the **Import from Card** button.

Accept the File Selection

The File Selection window appears.

Press **Accept**.

Accept the Vehicle Profile



Note: If the name of the vehicle configuration file you wish to import already exists in the display, a message will appear asking you to rename the new configuration file.

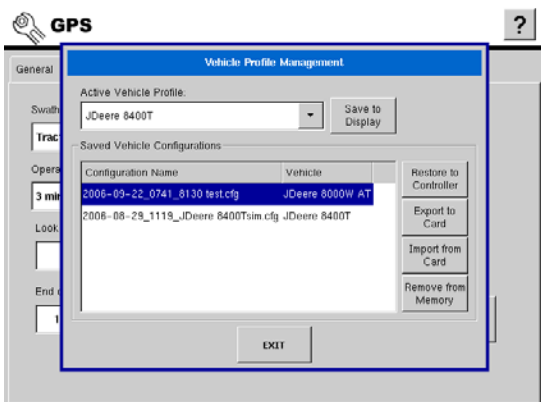
The Vehicle Profile window appears, as shown at left. A message in this window states "Successfully imported." Press **OK**.

REMOVING VEHICLE CONFIGURATION PROFILES

The following procedure removes the vehicle configuration profile from the internal memory of the display.



Note: This procedure will not remove the vehicle profile from either the compact flash card or the Nav Controller.



1. Chose the Configuration File to Remove from Memory

At the Autopilot tab on the GPS screen, press the Vehicle Management button. When the Vehicle Profile Management screen appears, press and highlight the vehicle profile you wish to export that is shown in the Configuration Name window. Then press the Remove From Memory button.

2. Delete the File

The Delete File window appears, as shown at left. Press the Accept button to permanently erase your file from the display's memory.

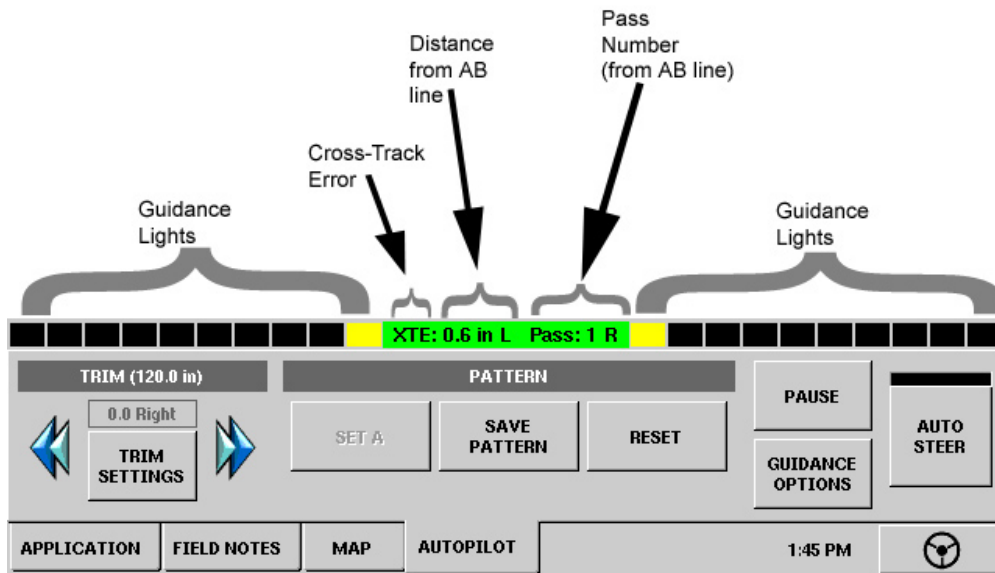
AUTOPILOT FUNCTIONS

AUTOPILOT TAB AND LIGHTBAR

Autopilot is compatible with the Trimble Autopilot system. For the Autopilot Tab and Lightbar to appear, you must have:

- Purchased the Autopilot unlock code.
- Connected the Autopilot system in your vehicle.
- Enabled Autopilot guidance on the **Run** screen.

When an active configuration is selected at the Run Screen and the system is communicating with an Autopilot navigation controller, the Autopilot tab and lightbar will be present.



- **Guidance lights**

The guidance lights indicate directional changes as you steer the vehicle right or left. You can specify the distance each guidance light indicates (for example, 6 inches or 1 foot).

- **Cross-Track Error (XTE) and Distance from AB Line**

The Cross-Track Error indicates your vehicle's distance from the AB Line.

This Distance from AB Line number, located to the right of the XTE acronym, shows the length between the location of your vehicle's GPS antenna and the guidance line of that vehicle's pass.

- **Pass Number**

The number of passes (either right or left) from the AB Line.

- **New Pattern**

allows you to select a new pattern type. Use the drop down list to select the pattern type. For more information, see [“Set New Pattern” on page 70](#).

- **Load Pattern**

will appear when there is not an active pattern. It allows you to load an existing pattern. Highlight the pattern in the list and press accept. For more information, see [“Load Pattern” on page 72](#).

- **Save Pattern**

will appear when there is an active pattern. It allows you to save the current guidance pattern. Use the keyboard button to enter in a pattern name and then press accept. For more information, see [“Save Pattern” on page 72](#).

- **Reset**

clears out the current guidance pattern. It will allow saving the pattern prior to clearing it. If you save the pattern, you must press the Reset button again.

- **Set A**

appears after a new guidance pattern has been accepted. Press Set A to set the A point for the new pattern.

- **Set B**

appears after the A point has been set. Press Set B to set the B point for the pattern.

- **Remark A**

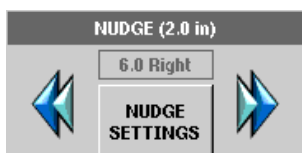
appears after the Remark A option is selected under the Guidance Options button. This will move the A-point to the current position while maintaining the same heading.

- **Pause**

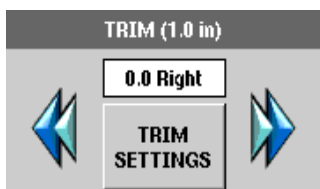
allows your display to stop logging points along an AB Line. Once this button is pressed, a Resume button will take its place until you press this button and Pause reappears.

- **Guidance Options**

button has four settings in it that allow you to Remark A, Shift, Trim/Nudge, and Adjust Steering. For more details, see *"Autopilot Guidance Options" on page 63*.



The **Nudge Settings** will appear if WAAS or OmniSTAR is selected as the differential GPS source. The **Nudge Settings** button allows you to adjust the swaths by a specified distance while leaving the AB line in its original location.



Otherwise, the **Trim Settings** button will appear if RTK is selected as the differential GPS source. The **Trim Settings** button allows you to adjust the swaths by a specified distance while leaving the AB line in its original spot.



Press the **Auto Steer** button to engage the Autopilot System.

- When the system is engaged the button displays green, as shown at left.
- If the system is not engaged, (but still able to be engaged), the button displays black.
- If the system cannot be engaged, the **Auto Steer** button is grayed out.



Engage button

(shaped like a wheel with two hands on its sides) displays the Autopilot status, and also allows you to engage the Autopilot System.

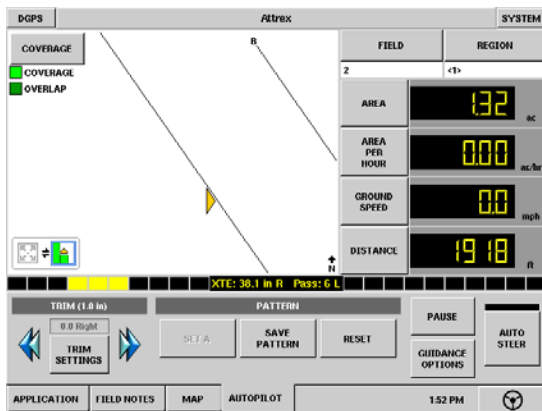
- If the system is engaged, it shows two hands next to the steering wheel.
- When disengaged, the steering wheel is shown minus the two hands.
- If conditions don't permit engaging the Autopilot, the steering wheel will be grey and the control button is disabled until the condition is no longer present.

USING THE LIGHTBAR

The display's on-screen lightbar remains black unless you set an AB Line. When you set an AB Line, and a pattern is active, the on-screen lightbar activates.



Note: For information on how to set the lightbar for either Chase Mode or Pull Mode, see the Autopilot General Settings page in the Guidance Tab section.

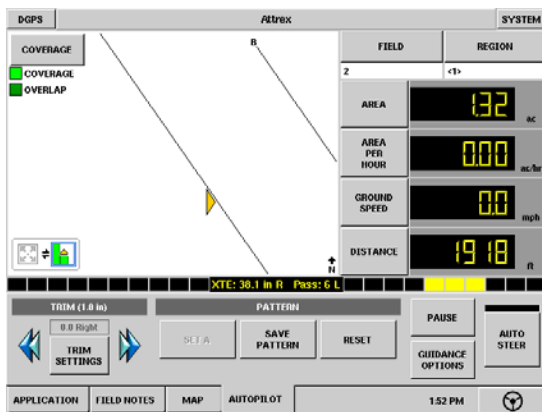


Chase Mode

To bring the vehicle back to the AB Line, follow the indicator lights.



Note: In this example, the operator must move the vehicle 38.1 feet to the left (the same direction as the indicator lights).



Pull Mode

To bring the vehicle back to the AB Line, turn the vehicle in the opposite direction of the indicator lights.



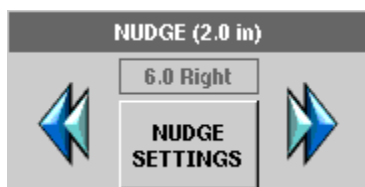
Note: In this example, (as with the one above), the operator must move the vehicle 38.1 feet to the left. Notice, however, that the yellow indicator lights are to the right of the lightbar.

AUTOPILOT TRIM AND NUDGE SETTINGS

The **Nudge Settings** will appear if WAAS or OmniSTAR is selected as the differential GPS source. The **Nudge Settings** button allows you to adjust the swaths by a specified distance while leaving the AB line in its original location.

Otherwise, the **Trim Settings** button will appear if RTK is selected as the differential GPS source. The **Trim Settings** button allows you to adjust the swaths by a specified distance while leaving the AB line in its original spot.

Nudge Settings



Adjust AB Line (optional)

The blue arrows allow you to adjust the AB Line by the specified distance left or right. To change the specified distance, press the **Nudge Settings** button.

Adjust swaths (optional)

The **Nudge Settings** button allows you to adjust the swaths by a specified distance while leaving the AB line in its original spot. Use the Up and Down arrows or the Number Pad button to enter a distance to move the swaths. To clear out the adjustment and go to the original position, press **Clear**.

Trim Settings

Adjust AB Line (optional)

The blue arrows allow you to adjust the AB Line by the specified distance left or right. To change the specified distance, press the **Trim Settings** button.

Adjust swaths (optional)

The **Trim Settings** button allows you to adjust the swaths by a specified distance while leaving the AB line in its original spot. Use the Up and Down arrows or the Number Pad button to enter a distance to move the swaths. To clear out the adjustment and go to the original position, press **Clear**.

AUTOPILOT GUIDANCE OPTIONS

The Guidance Option window appears when you press the **Guidance Option** button on the Run screen's Autopilot tab.

• **REMARK A**

The Remark A button "re-marks" the A point by moving it to the current position while maintaining the same heading. Press Remark A on this screen and then press the Remark A button on the Autopilot tab when you are ready to reset your A point.

- **For more information, see** *"Autopilot Re-Mark A" on page 64* .

- **SHIFT**

The Shift button moves all of the swaths by a specified distance to the left or right, (including the AB line). The swaths can be shifted by a distance or number of rows.

- **For more information, see** *"Shift Pattern" on page 65* .

- **ADJUST STEERING**

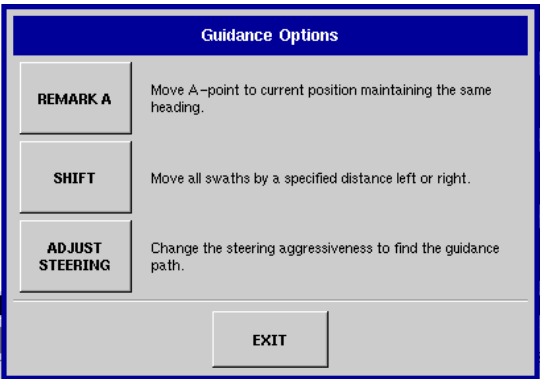
The Adjust Steering button will adjust the steering aggressiveness, which is the rapidity of response that the Autopilot will use to restore the vehicle's proper position on the AB line. You can adjust the aggressiveness between 50 and 150 percent (with 150 percent being the most aggressive).

For more information, see *"Adjust Autopilot Steering " on page 66*.

Autopilot Re-Mark A

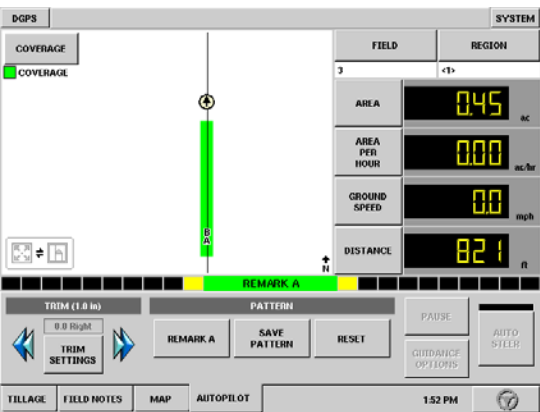
You can move the AB Line to the correct position, by re-marking it with the following procedure.

Select Remark A in Guidance Options window



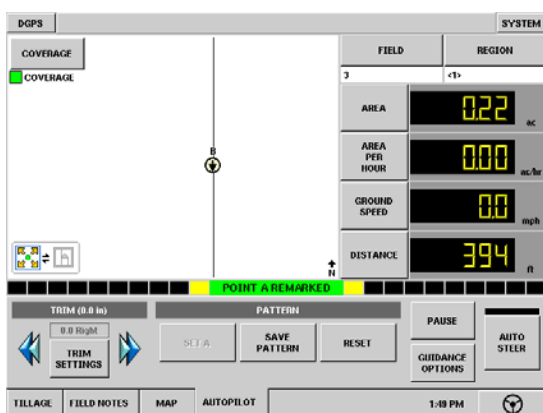
On the Run Screen's Autopilot tab, press the **Guidance Options** button. The Guidance Options window appears, as shown at left. Press the **Remark A** button on this window.

Re-Mark the AB Line



After returning to the Run screen's Autopilot tab, press the **Remark A** button on the tab. The AB Line moves to your vehicle's current position.

Point A Remarked

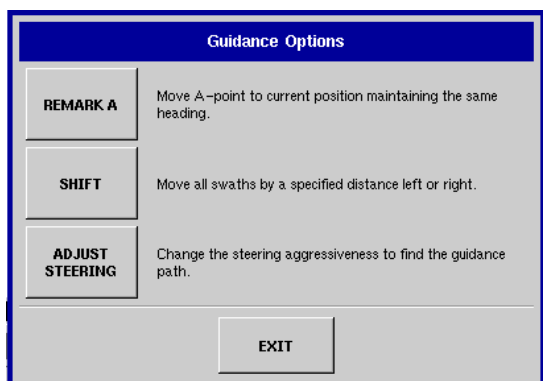


The AB Line now appears in the center of the vehicle icon shown on the display. A brief message appears in the green bar of the display, stating "Point A Remarked."

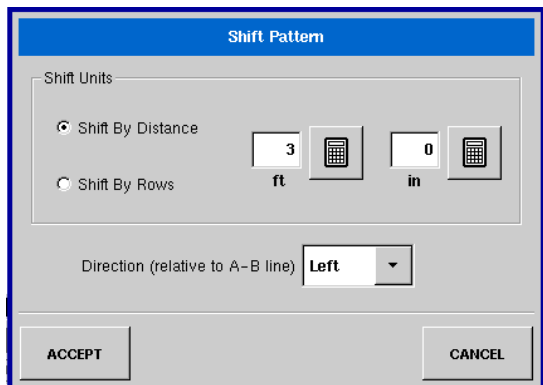
Shift Pattern

The Shift Pattern window appears after you have pressed the **Shift Pattern** button on the Guidance Option window. From this window, you can select one of two ways to shift the Autopilot's Guidance Pattern: either Shift by Distance or Shift by Rows.

Press Shift button

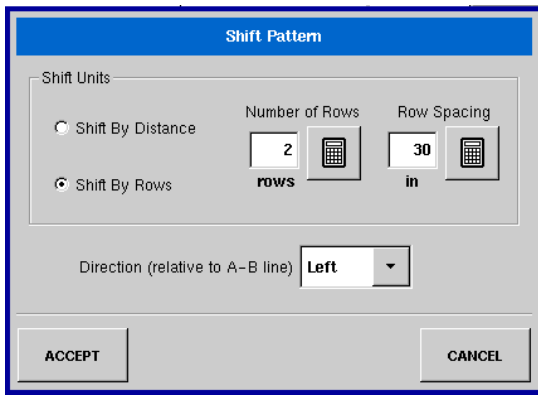


On the Guidance Options window, press the **Shift** button.
Shift by Distance option



The Shift Pattern window appears, as shown at left. If you have chosen the Shift by Distance option, use the numeric keypads to select the distance, in feet and inches, that you wish to shift the pattern.

Use the bottom drop-down menu to enter the direction, (either left or right), which you wish to shift the pattern relative to the AB Line. Last, press **Accept**.



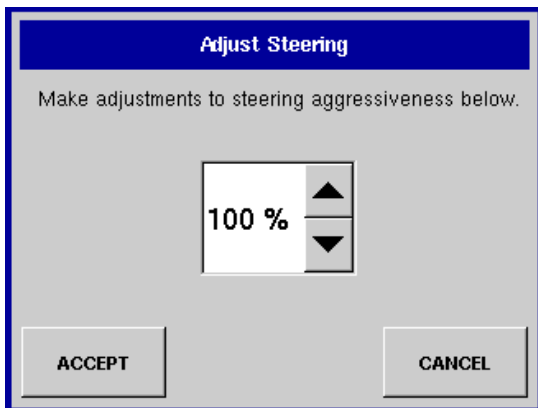
The 'Shift Pattern' dialog box has a blue header. Below it, 'Shift Units' are selected: 'Shift By Rows' is checked. 'Number of Rows' is set to 2 (rows) and 'Row Spacing' is set to 30 (in). A 'Direction (relative to A-B line)' dropdown is set to 'Left'. 'ACCEPT' and 'CANCEL' buttons are at the bottom.

Shift by Rows option

If you have chosen the Shift by Rows option, use the first numeric keypad to select the number of rows you wish to shift. Next, use the second numeric keypad to select the row spacing in inches that you wish to shift the pattern.

Use the bottom drop-down menu to enter the direction, (either left or right), which you wish to shift the pattern relative to the AB Line. Last, press **Accept**.

ADJUST AUTOPILOT STEERING



The 'Adjust Steering' dialog box has a blue header. Below it, the text says 'Make adjustments to steering aggressiveness below.' A percentage input field shows '100 %' with up and down arrows. 'ACCEPT' and 'CANCEL' buttons are at the bottom.

Adjust your vehicle's steering aggressiveness (defined as how fast it responds to steering changes) by entering information in the window below.

percentage number

Use the up and down arrows to select a percentage number. This number must fall between 50 and 150 percent, and will vary depending upon soil conditions, line acquisition time, as well as your vehicle's size and steering axle movement.

• Accept

Press the Accept button after you have entered the desired steering aggressiveness.

AUTOPILOT GUIDANCE OPERATION

About Guidance Patterns

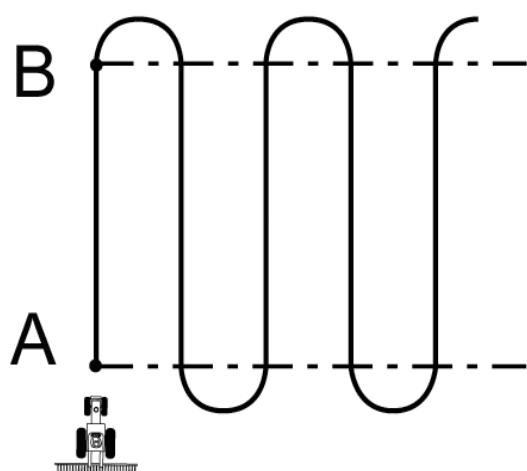
The following pages define the available guidance patterns.

The AB Line is a line that runs between Point A and Point B, although you may not always set a Point B. In most cases, the AB Line is the reference line for subsequent swaths.

When you press the **Set A** button on your display, the "A" point will appear on your display's screen.

When you press the **Set B** button, the "B" point will also appear on the screen, and the line between the two points serves as your AB Line.

AB Pattern

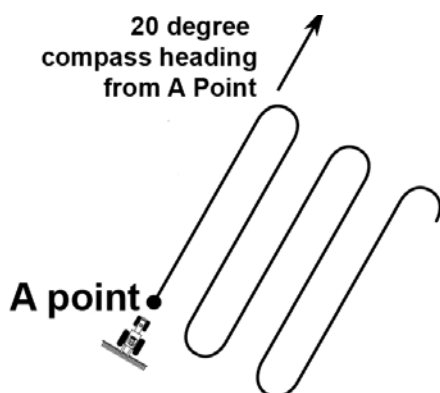


Use the AB line pattern when no headlands are required and you drive the field in parallel straight lines.

1. At the start of the first swath, map Point A.
2. Drive to the other end of the field, and at the end of the first swath, map Point B.
3. Turn left or right for the next swath. The next swath is automatically generated.
4. Steer the vehicle so that you center the green lights on the lightbar as you drive forward along the swath.
5. Press **Engage**.



Note: On straight AB lines, if you complete a swath that is longer than the previous one, the display automatically extends the guidance path for the following swaths so that headland warnings do not appear prematurely.



A+ Pattern

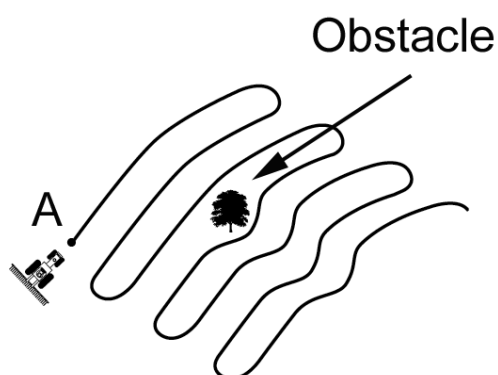
An A+ line is also a straight line. It is defined by a single point on the line (the A point) and the heading of the line. Use this pattern when you wish to make a straight line based on a compass heading.

The A+ line extends 1 mile (1.6 km) before and after the A point.

1. To map the start of the first swath, map Point A.

The heading of the AB line equals either the previous AB heading of the manually-entered heading (if the current vehicle is within plus or minus 90 degrees of the AB heading). Otherwise, the A+ heading is in the opposite direction.

2. Follow the AB line for guidance down the first swath.
3. Turn left or right for the next swath. The next swath is automatically selected.
4. Steer the vehicle so that you center the green lights in the lightbar as you drive forward along the swath.
5. Press **Engage**.

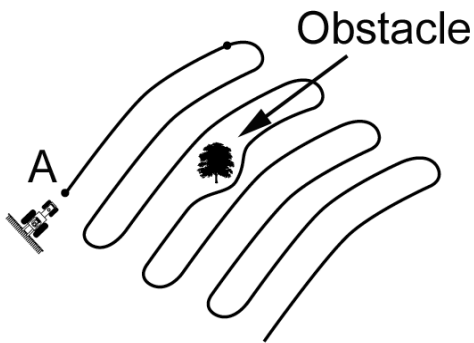


Adaptive Curve

Use the Adaptive curve pattern to follow gentle contours in the field, or when you need to avoid obstacles. This pattern provides guidance based on the last curve driven.



Note: Guidance extends beyond the end of curved swaths. This makes it possible to get LED guidance back onto the swath if the vehicle drives past the end of a swath.



Identical Curve

Use the Identical curve pattern when you want to work the field with gentle curves. This pattern provides guidance based on the initial curve. It ignores any deviation around an obstacle.

1. At the start of the first swath, map Point A.
2. Drive the initial curve. At the other end of the first swath, map Point B.
3. Turn left or right for the next swath. The next swath is automatically selected.
4. Steer the vehicle so that you center the green lights in the lightbar as you drive forward along the swath.

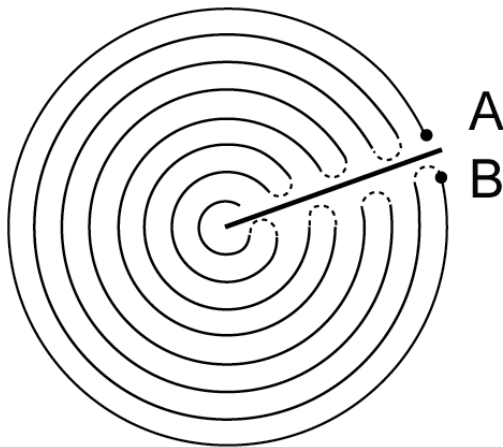
lightbar as you drive forward along the swath.



Note: Guidance extends beyond the end of curved swaths. This makes it possible to get LED guidance back onto the swath if the vehicle drives past the end of a swath. The extended swath lines do not appear on screen.

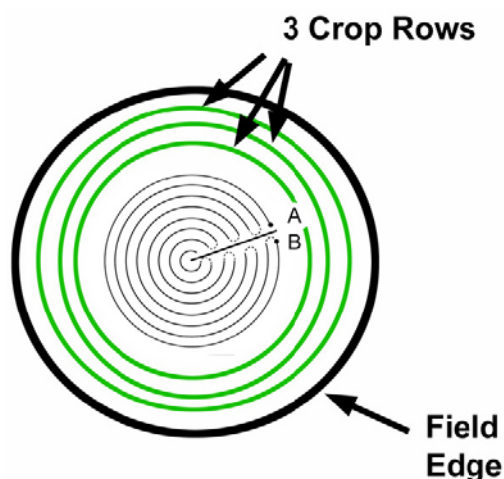
5. Press **Engage**.

Center Pivot



Center Pivot AB Line

Pivot Field Edge window (shown for Shift by Rows)



Shift By Rows example

Use the Center-pivot pattern for a field that is irrigated using a center-pivot. With this pattern, you can drive concentric circles around the center-pivot. The display will calculate the center point based on where you have driven. Otherwise, you can enter in the latitude and longitude of the center point, if known.



Note: If necessary, enter the Longitude value as a negative number

1. Position one wheel of the vehicle in a pivot wheel rut, with the rear of the vehicle to the pivot arm.
2. To **start the pivot**, set **Point A**.
3. **Drive around the field. Keep the vehicle wheel in the rut. The lightbar does not yet provide guidance.**
4. **When you are almost back to the pivot arm or the edge of the field, set Point B.**
 Next, you must set the Field Edge. You may do this when the Pivot Field Edge window appears on your display, as shown at left. From here, you may choose one of three options:
 - **Shift By Distance** - This sets the field edge as the distance and direction in relation to the AB Line created. In the Pivot Field Edge Distance portion of the window, enter the distance in feet and inches.
 - **Shift By Rows** - This sets the field edge as the number of crop rows multiplied by the number of spacing. In the Pivot Field Edge Distance portion of the window, enter the Number of Rows and Row Spacing. In the example shown at bottom, if you entered 3 rows and 30 inch-spacing, the field edge would equal 90 inches.
 - **Cancel** - The vehicle uses the driven pass as the AB Line.
 Use the numeric keypads to enter the Number of Rows and Row Spacing. Choose the direction relative to the AB Line (either Outward or Inward), and press **Accept**.
5. Turn left or right for the next swath. The next swath is automatically selected.
6. Steer the vehicle so that you center the green lights in the lightbar as you drive forward along the path.



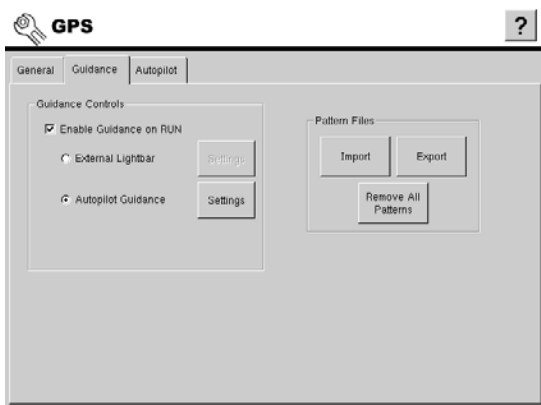
Note: To work from the center of the field outwards, the initial pivot must have:

- A radius of at least two swath widths.
- An arc length of at least two swath widths.

7. Press **Engage**.

PATTERN IMPORT/EXPORT

You can import or export a .pat (pattern) file to and from the display by following the procedure below.



1. Choose a file selection option

From the GPS screen, select the Guidance tab, as shown at left. Here you can select either Import, Export, or Remove All Patterns. The import and procedures are explained below.

2. Select Guidance Pattern

To import a guidance line from your external storage card, press the Import button. A window will pop up and display the guidance patterns on the card. Highlight the pattern you wish to import and press Accept.

3. Select Field

Choose the Grower and Field to import the pattern into and press

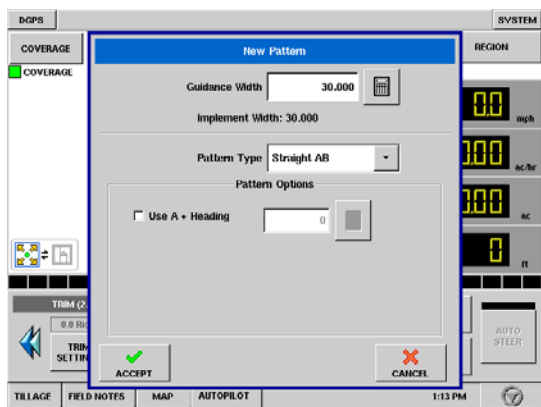
Accept.

4. Export Guidance Pattern

To export a pattern, either choose the grower and field you would like to export patterns from, or select the Export All Field Patterns check box. This selection will export all patterns in the display. Press Accept.

Set New Pattern

You can create a new pattern for a field by using the following procedure to set an AB pattern.



1. Choose new pattern

At the Autopilot tab on the Run screen, press the **New Pattern** button. The New Pattern window appears, as shown at left. Select the pattern type in the drop-down menu. Pattern types include:

- Straight AB Line
- A+ Pattern
- Pivot
- Adaptive Curve
- Identical Curve



Note: If you would like to use an A+ Heading, check the check box and use the number pad to enter in the heading (in degrees). Then press Set A (you do not need to set the B point, as this is done automatically).

2. (Optional) Enter Guidance Width

At the top of the New Pattern window, a default Guidance Width is shown, based on the Implement Width that you specified in Implement Configuration.

If you wish to change this Guidance Width, enter the new number using the numeric keypad.

When finished, press **Accept**.

3. Set the A point

To set the A point, press the Set A button on the Autopilot tab. You must now drive the vehicle for the distance of at least 100 feet before you can set the B point. (The Set B button will not highlight until you have driven that distance).

4. Set the B point

After setting the A point, you will see a message flash at the center of the lightbar stating "Need B". You must now set a B point.

After driving at least three swath widths, the Set B button appears, allowing you to Set the B point.

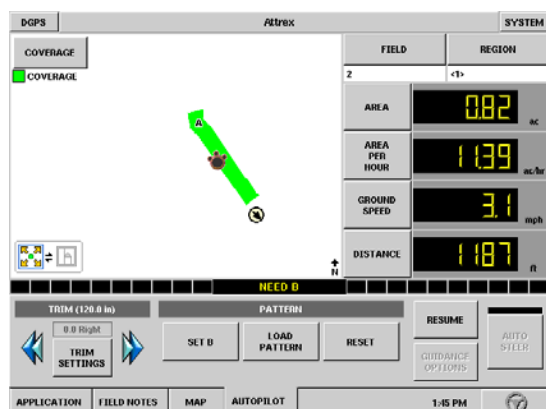
Set the B point by pressing the **Set B** button. You now have created an AB line.

5. Engage AutoSteer

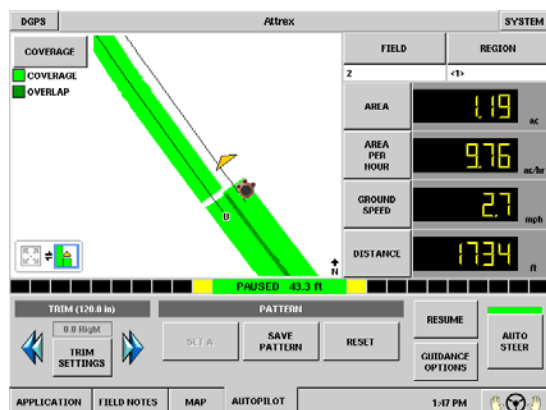
After setting the AB Line, the lightbar will become active. At the green-colored center of the newly-activated lightbar, the XTE (Cross-Track Error) message is now displayed.

- To engage the AutoSteer on the current line, you can either press the Auto Steer button immediately.
- Or
- To engage the Auto Steer on the next pass, drive the vehicle to that pass, and after you turn the vehicle around, press the Auto Steer button.

Pause and Resume a Pattern



If you are using the display to follow a set AB Line and wish to temporarily deviate from this line, you can use the **Pause** button to pause the display's logging activity. This feature could be used, for example, by a vehicle operator who must refill a sprayer. When paused, the display will continue to give the distance back to the original pause point position.



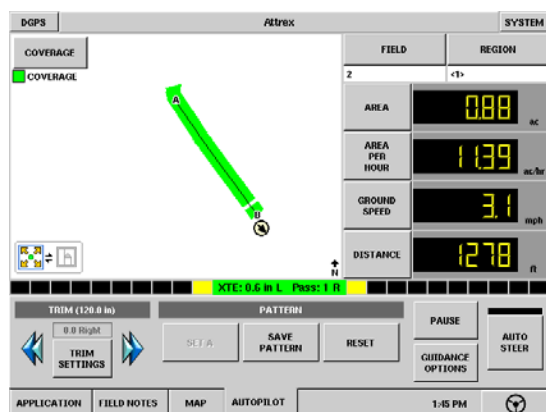
You can pause a pattern by pressing the **Pause** button on the Autopilot tab. Once you do so, a "paws" print will appear

on your display's screen, as shown here. 

This paws print indicates the physical location where you paused the display.



Note: You can pause a pattern even if you have not set the "B" point yet (see top example). If you do so, the message in the lightbar will read "Need B." If you pause the pattern after you have set your AB Line, then the lightbar will indicate the distance your vehicle must travel to return to the pause point (see lower example).



Resume a pattern

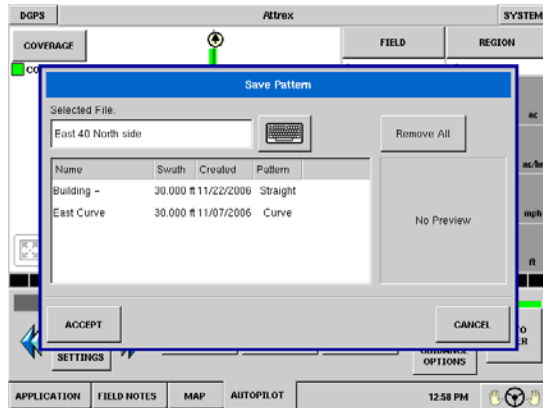
To resume your pattern, press the **Resume** button to resume logging on your AB Line.



Note: If you press the Resume button before you have returned to the original AB Line, your display will select the closest AB Line to your vehicle.

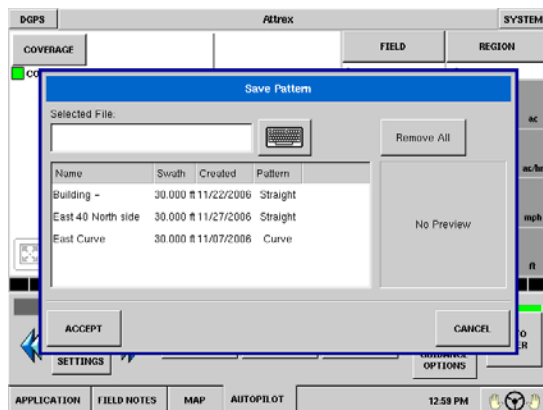
Save Pattern

To save a pattern (.pat file), follow the procedure below.



Open the Save Pattern window

First, press the **Save Pattern** button located at the **Run** screen's Autopilot Tab. The Save Pattern window appears, as shown at left.



Name the pattern

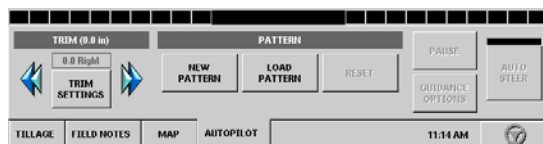
Press the keyboard button and enter a unique pattern name. Press **Accept**.



Note: To verify that the pattern is saved, you can open the Save Pattern window again by pressing the Save Pattern button. Your newly saved or named pattern should now appear in the Save Pattern window.

Load Pattern

You can load a pattern from the display's internal memory to the current field by using the following procedure.



1. Press the Load Pattern button

Press the **Load Pattern** button on the Run screen's Autopilot tab.

2. Select a pattern

The Load Pattern window appears, as shown at left. Select and

highlight the desired pattern.

If the pattern you selected was an AB Line, that pattern now appears on the Run screen.

Press **Accept** to continue.

3. (Optional) Enter Guidance Width

After pressing the **Accept** button, the Shift Pattern window appears. At the top of this window, the default Guidance Width is shown, based on the Implement Width that you specified in Implement Configuration.

If you wish to change this Guidance Width, enter the new number using the numeric keypad.

Press **OK** to continue.

4. If curve, choose Identical or Adaptive

Select either the **Identical Curve** or **Adaptive Curve** options. The curve pattern now appears on the Run screen.



Note: If you selected a curve pattern in Step 2, the Autopilot window will appear, as shown.

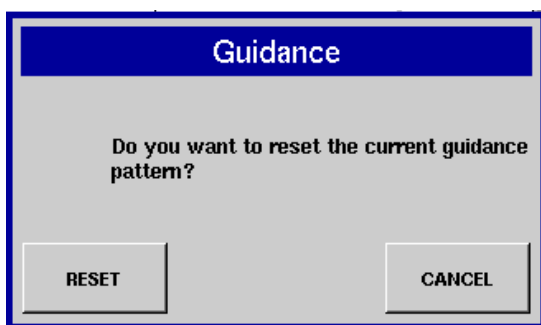
Reset Existing Pattern

If you have been using an already-saved pattern, and wish to switch over to a different pattern in the same field, you can use the Reset Pattern feature by following the steps below.

RESET

1. Press Reset

Press the Reset button on the Run screen's Autopilot tab.



2. Press Reset again

The Guidance window appears as shown at left, asking you to reset the current guidance pattern. Press Reset on the Guidance window.

3. Create new pattern (optional)

The pattern is now reset. You may now create a new pattern, if desired.

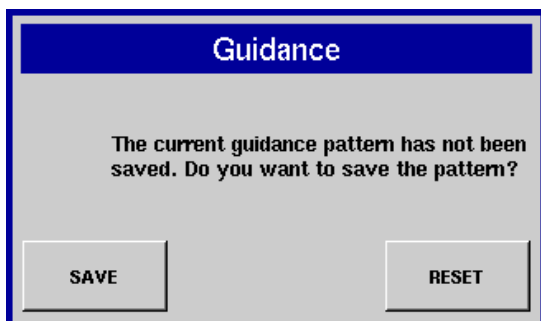
Reset New Pattern

If you have just created one pattern, and wish to use a different pattern in the same field, you can use the Reset Pattern feature by following the steps below.

RESET

1. Press Reset

Press the Reset button on the Run screen's Autopilot tab.



2. Save or Reset Existing Pattern

If you have not saved your existing pattern, the Guidance window appears, warning that your guidance pattern has not been saved.

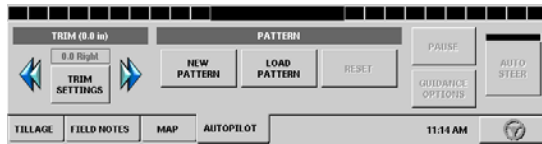
- If you choose **Save**, the existing pattern is saved to the display's internal memory. (For more information see ["Save Pattern" on page 72](#).)
- If you choose **Reset**, then the existing pattern will be deleted from the display's internal memory, and the pattern will be reset.

Step 3: Create new pattern (optional)

If you pressed the **Reset** button, you may now create a new pattern, if desired.

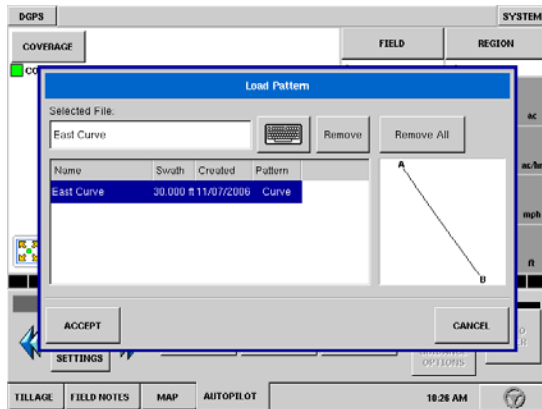
Remove Patterns

You can remove one or all pattern files from the display's internal memory by following the procedure below.



1. Press the Load Pattern button

The Load Pattern button can be accessed on the Autopilot tab, (as long as a pattern is not currently active).



2. Highlight the pattern

Select and highlight the pattern that you wish to remove from the display. When this pattern is highlighted, the Remove and Remove All buttons become active.

3. Remove the Pattern

On the Load Pattern window, press either the **Remove** or **Remove All** buttons to delete pattern.

- If you select the **Remove** button, your selected pattern will be removed from the display's internal memory.
- If you select the **Remove All** button, then all guidance patterns for the current field will be removed from the display's internal memory.

4. Accept the Remove or Remove All message

The Remove Pattern window appears. The content of this window varies depending upon whether you chose the Remove or Remove All options.

- If you selected the **Remove** button, the window states: "This pattern will be permanently removed from memory."
- If you selected the **Remove All** button, the window states: "All guidance patterns in this field will be permanently erased from memory."

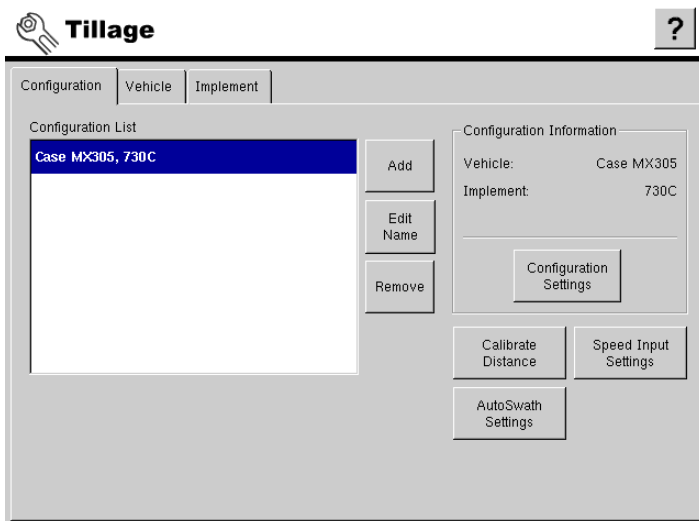
5. The pattern is removed

Press the **Accept** button on the Remove Pattern window. After pressing this button, the pattern file disappears from the Load Pattern window. Press **Accept** again.

TILLAGE

TILLAGE SETUP TABS

CONFIGURATION



The Tillage setup pages contain all the necessary settings to configure the display for logging, mapping, and rate control for Tillage operations. The combination of Vehicle, Implement, and Controller are referred to as a **Configuration** within the display.

• Configuration

The Configuration Tab is where you can add and edit operating configurations. For more information, see [“Configuration Tab Buttons” on page 75](#).

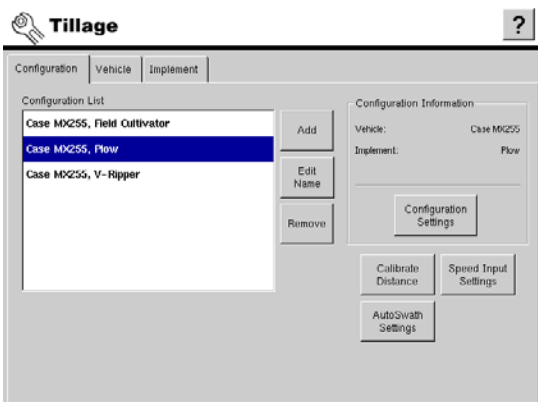
• Vehicle

The Vehicle Tab is where you can add and edit vehicle configurations. For more information, see [“Vehicle Tab Buttons” on page 79](#).

• Implement

The Implement Tab is where you can add and edit implement configurations. For more information, see [“Implement Tab Buttons” on page 81](#).

CONFIGURATION TAB BUTTONS



The configuration tab is where tillage configurations are made and displayed. The configuration settings are also edited on this tab. Press the **Setup** button and then the **Tillage** button to reach this screen.

- To see a Tillage Configuration Menu, see [“Tillage Menu Tree” on page 170](#).

• Add button

Press to add a new tillage configuration. An on-screen wizard will walk you through the setup process in a step-by-step manner. New Vehicles and Implements can be created during the setup process. For detailed information see [“Adding a New Configuration” on page 76](#).

- **Edit button**

Press to edit the name of a selected configuration. The on-screen keyboard will be displayed to complete the desired text edits.

- **Remove button**

Press to remove a configuration. The vehicle and implement associated with the configuration will not be deleted.



WARNING: When deleting a configuration all regions and data logged with that configuration will be deleted!

- **Configuration Settings**

Press to edit the implement switch polarity. For detailed information, see [“Configuration Settings” on page 77](#).

- **Calibrate Distance**

Press to launch speed sensor calibration wizard. For detailed information, see [“Calibrate Distance” on page 77](#).

- **Speed Input Settings**

Press to select speed input device.

- **AutoSwath Settings**

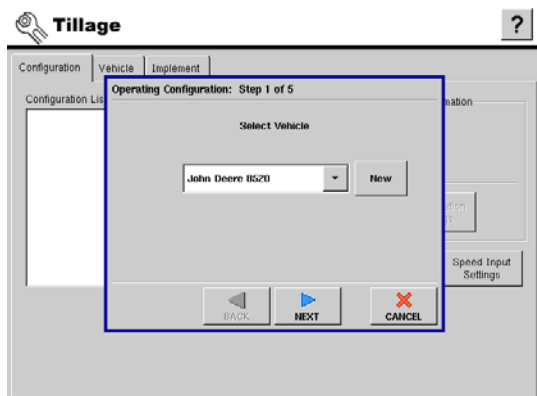
The AutoSwath feature automatically increases or decreases the logged width of the tillage equipment, according to your field's boundaries and previously-tilled areas. The AutoSwath feature includes sensitivity levels, which compensate for varying degrees of GPS performance. To change these sensitivity levels, press the AutoSwath Settings button.



Note: You must have an unlock code to activate the AutoSwath feature. If you have been using AutoSwath with the DirectCommand™ system, the feature is already activated and ready to use. If you have not unlocked the AutoSwath feature yet, the code can be purchased through your local Ag Leader dealer.

ADDING A NEW CONFIGURATION

To add a new configuration press the **Add** button. The Operating Configuration Wizard appears, as shown.



1. Select a Vehicle

Using the drop down box select the vehicle you would like to use in this configuration. If there are no vehicles in the list press the New button.

For help with the adding a new vehicle wizard see [“Adding A New Vehicle” on page 80](#).

Press **Next** to continue.

2. Select Implement

Using the drop down box select the implement you would like to use in this configuration. If there are no implements in the list, press the New button.

For help with the adding a New Implement Wizard, see [“Adding A New Implement” on page 82.](#)

Press **Next** to continue.

3. Select Implement Switch Polarity

If you will be using an implement switch, choose standard or reversed polarity. If an implement switch is not in use, select None.

Press **Next** to continue.

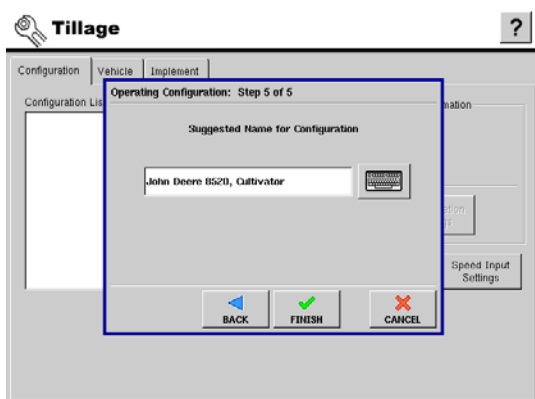
4. Select Ground Speed Source

Select your ground speed source. If you will be using GPS as the primary you will need to select a secondary source.

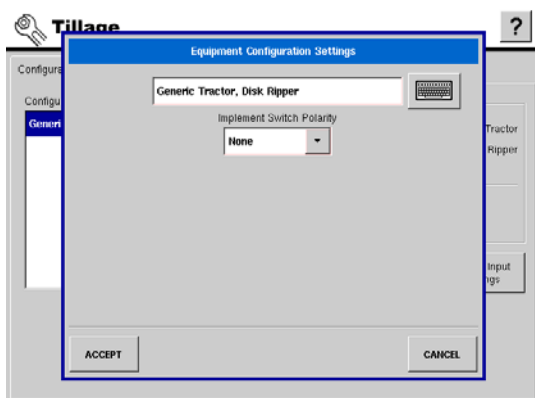
Press **Next** to continue.

5. Edit Configuration Name

Use the Keyboard button to edit the suggested configuration name. Press Finish to complete the configuration process.



CONFIGURATION SETTINGS



To access the equipment configuration settings screen first highlight a configuration in the list and then press the **Configuration Settings** button.

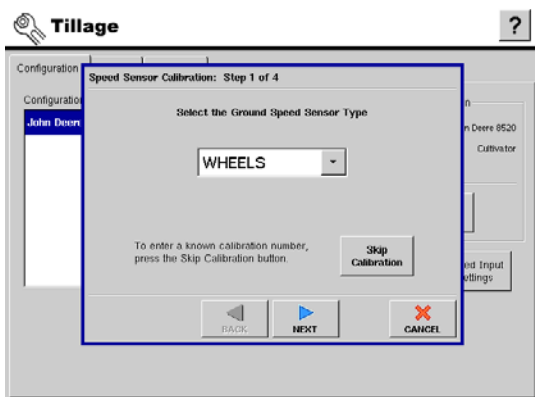
Implement Switch Setting

If you will be using an implement switch choose standard or reversed polarity. If an implement switch is not in use, select none. Press **Accept** when done.

CALIBRATE DISTANCE

If you are not using GPS for ground speed, then after you have created a configuration you must calibrate the ground speed input for accurate speed and area calculations. If you are using GPS, it is recommended to calibrate distance in the event of GPS loss.

Select a **Configuration** from the list and press the **Calibrate Distance** button to calibrate the radar, track or wheel speed sensor. This calibration is specific to that combination of **Vehicle**, **Implement**, and **Controller**.



1. Select Speed Input

The Speed Sensor Calibration wizard appears, as shown at left. Select the sensor type to calibrate.

Press **NEXT** to continue.

2. Calibration Distance

The display defaults to 100 feet (meters) distance for calibration. Press Edit Distance to change if needed. This value must match the actual distance of the course driven for calibration.

Press **NEXT** to continue.

3. Start Driving Course

Follow the on-screen directions and press START to begin the calibration process.

4. Course Completed

Drive vehicle over the measured course and press STOP.

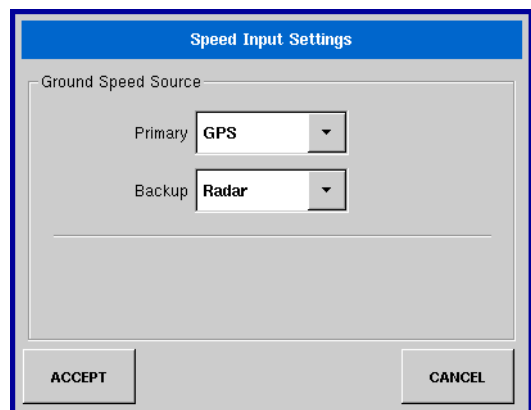
Press **NEXT** to continue to final step.

5. Calibration Completed

Press FINISH to complete calibration and store the calculated value.



Note: Calibration settings can be manually adjusted if desired by pressing Enter CAL Number and making small changes to the setting.

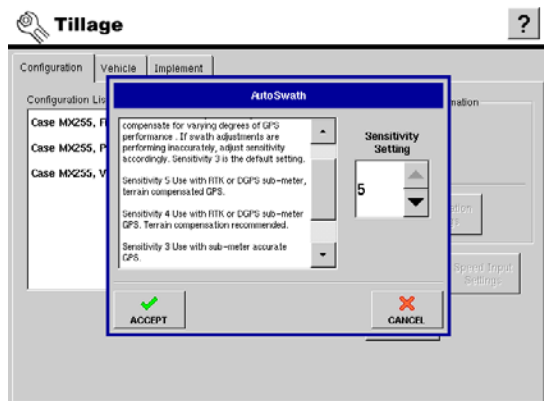


Speed Input Settings

• Speed Input Settings Tab

Press the Speed Input Settings button on the Configuration Tab, and the Speed Input Settings window appears, as shown at left. From here, select the primary and backup Ground Speed Source.

AUTOSWATH SENSITIVITY SETTINGS



The AutoSwath feature automatically increases or decreases the logged width of the tillage equipment, according to your field's boundaries and previously-tilled areas. For a more detailed explanation of the AutoSwath feature, see [“Automatic Swath Control, Run Screen Operation” on page 86.](#)

The AutoSwath feature includes sensitivity levels, which compensate for varying degrees of GPS performance. To change sensitivity levels, select the **Configuration** tab, and press the **AutoSwath Settings** button. These sensitivity settings are specific to that combination of Vehicle and Implement.

If swath adjustments are performing inaccurately, adjust the sensitivity accordingly. Sensitivity 3 is the default setting. Other settings include:

- **Sensitivity 5**

Use with RTK or DGPS sub-meter, terrain-compensated GPS.

- **Sensitivity 4**

Use with RTK or DGPS sub-meter GPS. Terrain compensation recommended.

- **Sensitivity 3**

Use with sub-meter accurate GPS.

- **Sensitivity 2**

Use with 1+ meter accurate GPS.

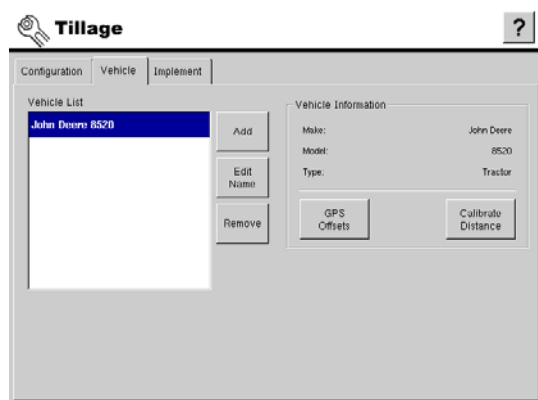
- **Sensitivity 1**

Swath segments are all on or all off. Use with 1+ meter accurate GPS.

You must have an unlock code to activate the AutoSwath feature. If you have been using AutoSwath with the DirectCommand™ system, the feature is already activated and ready to use. If you have not unlocked the AutoSwath feature yet, the code can be purchased through your local Ag Leader dealer.

VEHICLE CONFIGURATION

VEHICLE TAB BUTTONS



The vehicle tab provides functionality for setting up and configuring additional vehicles. The vehicle list will show any vehicles that have already been created.

To see a Tillage Configuration Menu that includes Vehicle Tab information, see [“Tillage Menu Tree” on page 170](#).

- **Add**

button allows you to add a new vehicle. A wizard will walk you through setting up the vehicle. For detailed information see [“Adding A New Vehicle” on page 80](#).

- **Edit Name**

button allows you to edit the name of a vehicle in the list. To edit highlight the name of a vehicle in the list and then press this button. Use the on screen keyboard to edit the name.

- **Remove**

button allows you to remove a vehicle. The implement and any regions and configurations using it will be deleted.



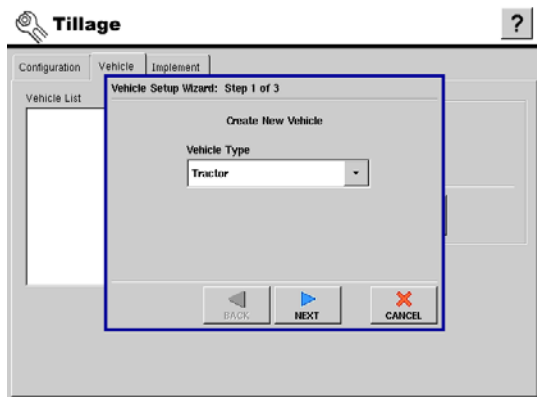
WARNING: When deleting a vehicle all regions and configurations using it will be deleted!

- **GPS Offsets**

button allows you to specify the location of the GPS antenna in relation to the vehicle. A wizard will walk you through these edits. It also allows you to enter the distances from the rear axle to the different implement mounting positions on the tractor. See [“GPS Offsets” on page 80](#).

ADDING A NEW VEHICLE

To start the process of adding a new vehicle press the **Add** button.



1. Choose Vehicle Type

Choose the vehicle type from the drop down list.

Press **Next** to continue.

2. Enter Vehicle Make and Model

Use the keyboard buttons to enter the vehicle's make and model.

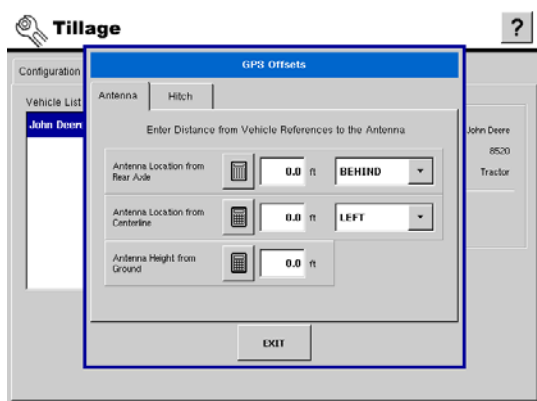
Press **Next** to continue.

3. Finish

Use the keyboard button to edit the name of the vehicle.

Press **FINISH** to complete the setup process.

GPS OFFSETS



After completing the process of setting up a **Vehicle**, advanced GPS Offsets must be configured. The GPS Offsets define where machine rear axle and hitch is in relation to the GPS antenna. These settings are used by mapping, product control, and Automatic Swath Control.

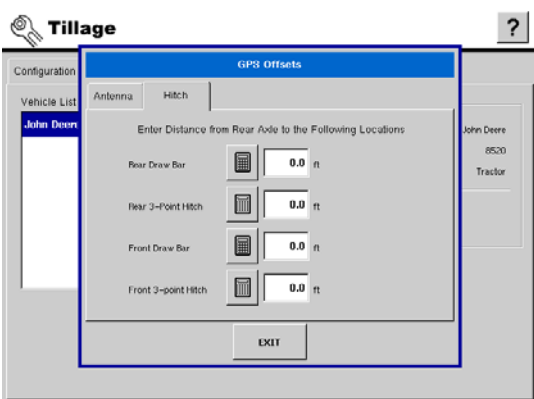
Antenna Offsets

The Antenna Tab contains three different settings. Accuracy when measuring for a specific setting is essential to ensure proper machine performance.

- Measure and enter the horizontal distance from the rear axle to the position of the GPS antenna. Select **IN FRONT** or **BEHIND** from the list box to indicate the position of the antenna in relation to the rear axle.
- Measure and enter the horizontal distance from the center line of the vehicle to the position of the GPS antenna. Select **LEFT** or **RIGHT** to indicate the position from the vehicle centerline.
- Measure and enter the vertical height of the antenna above the ground.



Note: Accuracy when measuring for a specific setting is essential to ensure proper machine performance.



Hitch Tab Settings

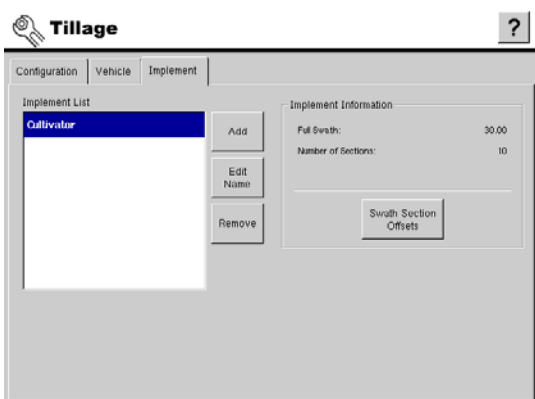
The Hitch tab allows you to enter in the distance from four different mounting positions on the tractor to the rear axle. Use the **Number Pads** to enter these values in if using the hitch point.



Note: Accuracy when measuring for a specific setting is essential to ensure proper machine performance.

IMPLEMENT CONFIGURATION

IMPLEMENT TAB BUTTONS



Individual implements are setup and configured from the implement tab. The implement list displays all previously setup implements that are available for use when creating new configurations.

To see a Tillage Configuration Menu that includes information on the Implement Tab, see [“Tillage Menu Tree” on page 170](#).

- **Add button**

Press to add a new implement. A wizard will walk you through setting up the implement. For detailed information see [“Adding A New Implement” on page 82](#).

- **Edit Name button**

Press to edit the name of a selected implement from the list. The on-screen keyboard will be available to make any required edits.

- **Remove button**

Press to remove a selected implement. The implement and any regions and configurations using it will be deleted.



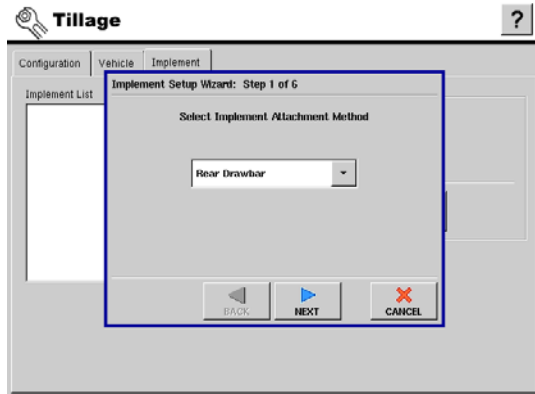
WARNING: When deleting an implement all regions and configurations using it will be deleted!

- **Implement Offsets button**

Press to edit the implement offsets, distance from tractor hitch to application point, and distance from front hitch to rear hitch of the implement. An on-screen wizard will walk you through the edit process. For detailed information see [“Implement Offsets” on page 82](#).

ADDING A NEW IMPLEMENT

To add a new implement, press the **Add** button. The Implement Setup Wizard appears, as shown.



1. Select Attachment Method

Use the drop down list to select an implement attachment method.

Press **NEXT** to continue.

2. Enter Full Swath Width

Use the numeric keypad to enter the full swath width of the implement.

Press **Next** to continue.

3. Enter Hitch to Application Point Distance

Enter the distance from the hitch to the application point using the

numeric keypad.

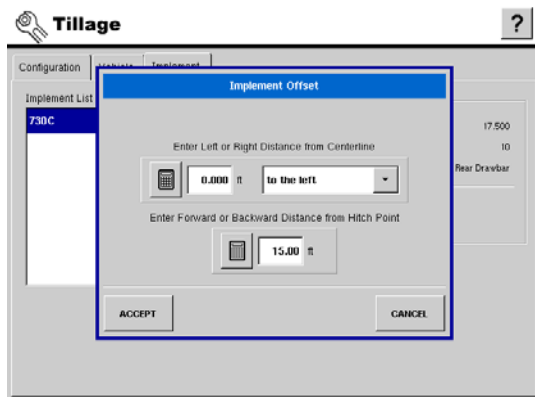
Press **Next** to continue.

4. Enter the Implement Name

Use the keyboard button to enter a name for the implement.

Press **Finish** to complete the implement setup process.

IMPLEMENT OFFSETS



After completing the initial process of configuring an Implement, you must enter accurate values in the Implement Offsets. Press the **Implement Offset** button, and the Implement Offset window appears, as shown.

Enter distances from hitch point and centerline

- Use the first numeric keypad to enter the distance from the mid-point of the swath section to the machine's centerline. Select **to the left/to the right** to indicate the direction the swath section is located from the vehicle centerline.
- Use the second numeric keypad to enter the distance that the swath section is located from the hitch point.

Press the **Accept** button when finished.



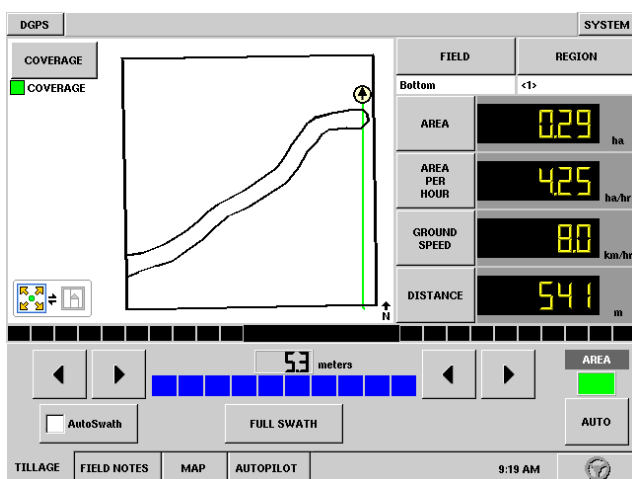
WARNING: Accuracy when measuring and entering implement offsets is required to ensure proper machine performance.

RUN SCREEN OPERATION

RUN SCREEN BUTTONS



Note: In order to log data on the Run Screen, you must first go to the field button and accept a field, configuration, and region. For detailed information see [“Field Button \(While Not Logging\)” on page 84](#).



- **Field button**

The Field button functionality changes based upon the status of the master switch. If the master is off it allows you to change grower, farm, field, and configuration. If the master status is on it allows you to view field totals. For more information, see [“Field Button \(While Not Logging\)” on page 84](#), and [“Field Button While Logging” on page 85](#).

- **Region button**

Press to change and name regions of the field. For more information, see [“Region Button” on page 85](#).

- **System button**

Press to access diagnostic information about the internal memory, display information, and CAN module information.

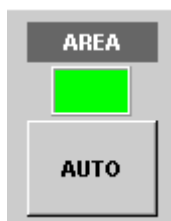
- **DGPS button**

- **AutoSwath check box**

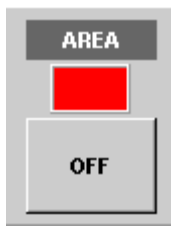
The AutoSwath feature automatically increases or decreases the logged width of the tillage equipment according to your field's boundaries and previously-tilled areas. Check the AutoSwath check box to enable the AutoSwath feature. For more information, see [“Automatic Swath Control, Run Screen Operation” on page 86](#).



Note: You must have an unlock code to activate the AutoSwath feature. If you have been using AutoSwath with the DirectCommand™ system, the feature is already activated and ready to use. If you have not unlocked the AutoSwath feature yet, the code can be purchased through your local Ag Leader dealer.



The master button controls area logging. When the switch is set to green area is being recorded and displayed on the map.



When the master button is set to off area is not being recorded and the map will stop drawing. The box will remain red until the button is pushed again to set it to auto.

RUN SCREEN - MAIN TABS

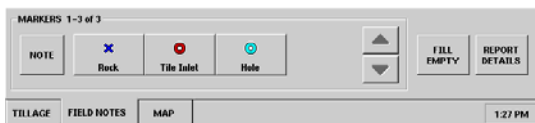
Tillage Tab



The tillage tab on the Run Screen contains controls related to data logging during tillage operations.

- Use the master switch to turn area logging off and on.
- The Swath display allows you to change the amount of swath that is being mapped for area calculation. The full implement width is displayed as 10 sections and can be changed in 10% increments. To adjust the swath width use the arrow keys on either side of the swath display. The full swath button allows you to go from any partial swath back to the full swath position.

Field Notes Tab

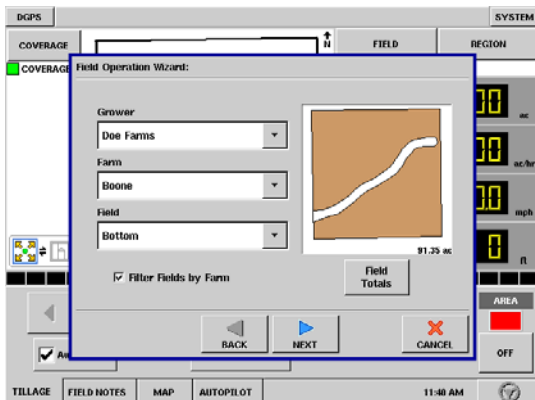


Map Tab



FIELD BUTTON (WHILE NOT LOGGING)

Start of tillage in a field is accomplished by setting up a Field Operation at the Run Screen. This process is similar regardless of the type of field operation currently taking place. To begin, press the Field button on the Run screen, and the Field Operation Wizard appears, as shown.



1. Select Grower, Farm, Field

Choose the field for tillage by making the proper selections from the Grower, Farm, and Field list boxes.

If the **Filter Fields by Farm** check is cleared, the display will display all fields in the **Field** list box regardless of what farm the fields are associated with.

Press **NEXT** to continue.

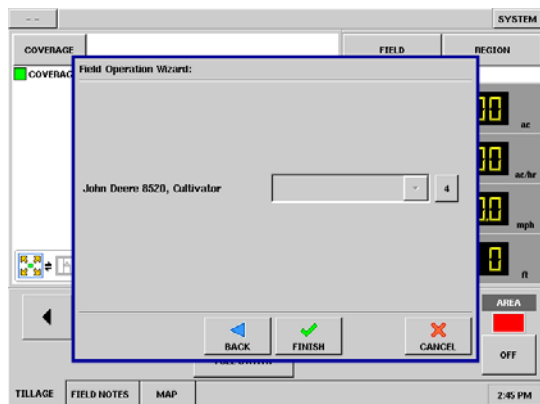


Note: You may view *Field Totals* by pressing the **Field Totals** button on the Field Operation Wizard. For more information on field totals, see “*Field Button While Logging*” on page 85.

2. Choose Configuration

Select the Operating Configuration that relates to the equipment in use.

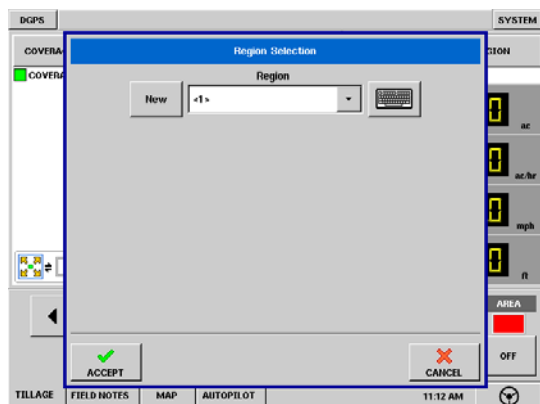
Press **NEXT** to continue.



3. Finish

Press Finish to start the tillage operation.

REGION BUTTON

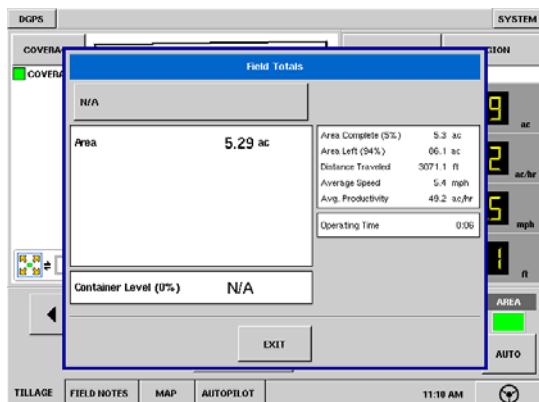


The **Region Selection** window is made available during initial tillage operation setup and anytime during a tillage operation by pressing the **REGION** button.

Press **New** to add a region to an existing tillage operation. The display uses sequential numbers to assign default names to field regions.

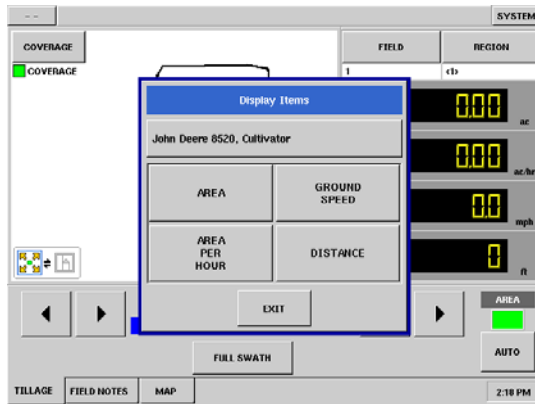
Press the keyboard button to edit the Region name.

FIELD BUTTON WHILE LOGGING



If the **Field** button is pressed while logging data, the Field Totals window will show the field totals.

DISPLAY ITEMS



The display items selection window can be accessed by pressing any one of the four display items that are active on the Run screen.

Once the display items window is visible, press on the display item you would like to display. It will then be available on the Run screen.

- **Area button**

Displays the area that has been tilled in that field region.

- **Area Per Hour button**

Shows the instantaneous productivity.

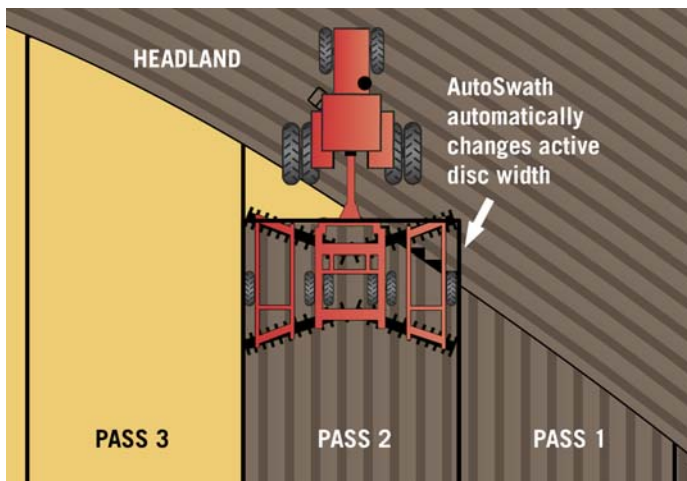
- **Ground Speed button**

Shows the instantaneous ground speed.

- **Distance button**

Shows the total distance driven in the region.

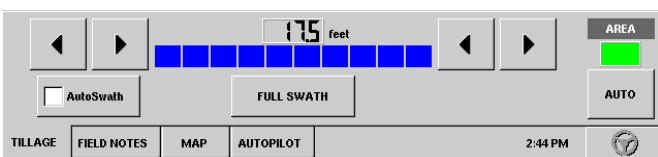
AUTOMATIC SWATH CONTROL, RUN SCREEN OPERATION



The AutoSwath feature automatically increases or decreases the logged width of the tillage equipment according to your field's boundaries and previously-tilled areas. By doing so, the display records a change in logging data, even though no mechanical change has actually taken place. By recording changes to your logging data, AutoSwath ensures the display's correct area calculation, which also improves the accuracy of your field summaries and reports

AutoSwath explained

As your vehicle travels beyond a tilled area, the AutoSwath feature automatically changes the active width of the tillage equipment by the use of a "stair-step" method, in which the logged width is reduced by successive amounts.



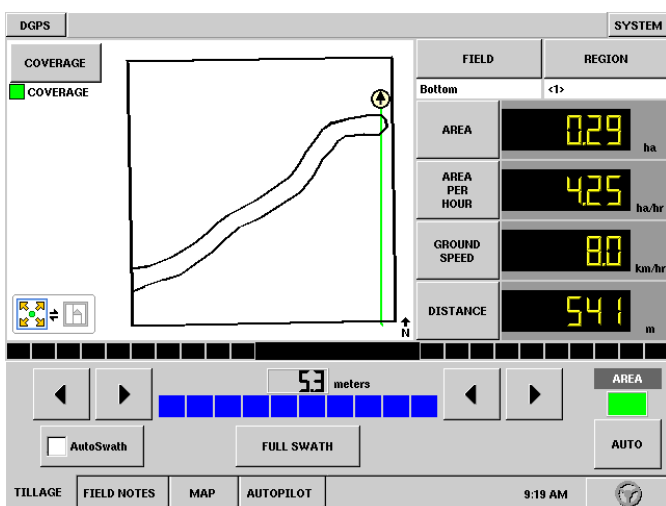
Select the AutoSwath Checkbox

To enable the AutoSwath feature, select the AutoSwath checkbox, located at the bottom left-hand side of the Run screen, above the tabs.

The section width represented by the indicator bar was automatically configured for you when you created the configuration on your implement. At times, this section width may change if you make adjustments to the AutoSwath's sensitivity settings. These sensitivity levels compensate for varying degrees of GPS performance.

For more information, see *"AutoSwath Sensitivity Settings"* on page 78.

TILLAGE COVERAGE MAP

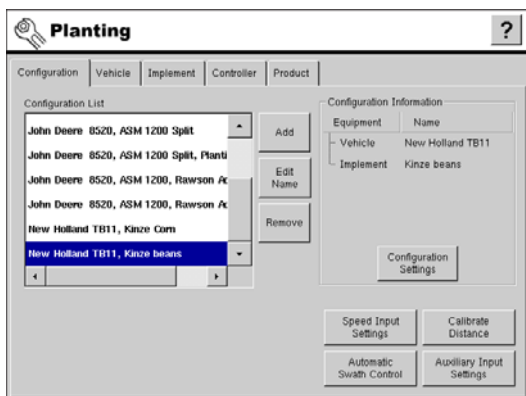


During a tillage operation, a coverage map showing all worked areas of the field will be displayed. Coverage area mapping is turned off and on by the implement switch or on-screen Area logging button..

PLANTING

PLANTING SETUP TABS

CONFIGURATION



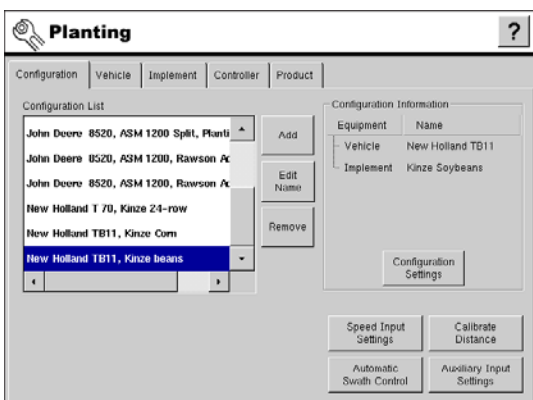
The Planting setup pages contain all the necessary settings to configure the display for logging, mapping, and rate control for planting operations. The combination of Vehicle, Implement, and Controller are referred to as a **Configuration** within the display.

- The **Configuration** tab is where you can add and edit operating configurations. For more information, see [“Configuration Tab Buttons” on page 89](#).
- The **Vehicle** tab is where you can add and edit vehicle configurations. For more information, see [“Vehicle Tab” on page 103](#).
- The **Implement** tab is where you can add and edit implement configurations. For more information, see [“Implement Tab” on](#)

[page 105](#).

- The **Controller** tab is where you can add and edit controllers for use during planting. For more information, see [“Controller Tab” on page 108](#).
- The **Product** tab is where you can add and edit new products or edit existing products for planting and seeding. For more information, see [“Product” on page 117](#).

CONFIGURATION TAB BUTTONS



The Configuration Tab is where planting and seeding configurations are made and displayed. The configuration settings are also edited on this tab. To go to this window, press the **Setup** button and then the **Planting/Seeding** button.

- To see a Planting Configuration Menu, see [“Planting/Seeding Menu Tree” on page 165](#).

• Add button

Press to add a new planting or seeding configuration. An on-screen wizard will walk you through the setup process in a step-by-step manner. New Vehicles, Implements, and Controllers can be created during the setup process. For site verification wizard guidance, see [“Adding A New Area Logging \(Site Verification\) Configuration” on page 91](#). For rate control/ logging wizard guidance, see [“Adding A New Rate Control/ Logging Configuration” on page 92](#).

• Edit Name button

Press to edit the name of a selected configuration. The on-screen keyboard will be displayed to complete the desired text edits.

• Remove button

Press to remove a configuration. The vehicle and implement associated with the configuration will not be removed.



WARNING: When removing a configuration all regions and data logged with that configuration will be removed!

- **Configuration Settings button**

Press to display and edit planting/seeding settings specific to a vehicle, implement, controller combination. For more information, see [“Configuration Settings” on page 97](#).

- **Speed Input Settings button**

Press to select speed input device.

- **Calibrate Distance button**

Press to launch speed sensor calibration wizard. For detailed information, see [“Calibrate Distance” on page 100](#).

- **Automatic Swath Control button**

Press to display and edit automatic swath control settings.

- For more information, see [“Automatic Swath Control Settings” on page 98](#).
- You must have an unlock code to activate the AutoSwath feature. If you have been using AutoSwath with the DirectCommand™ system, the feature is already activated and ready to use. If you have not unlocked the AutoSwath feature yet, the code can be purchased through your local Ag Leader dealer.

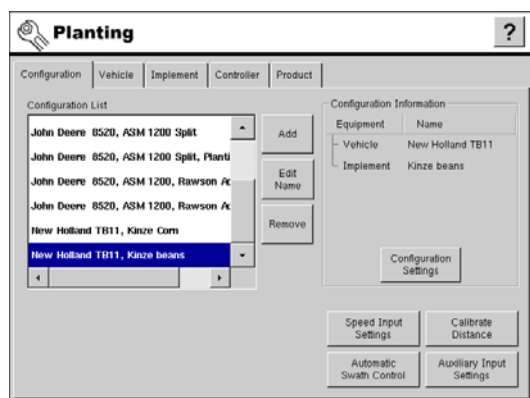
- **Auxiliary Input Settings button**

Press to display master switch input setting. For more information, see [“Auxiliary Input Settings \(Switch Mapping\)” on page 101](#).

CREATING A NEW CONFIGURATION

CONFIGURATION BASICS

The process of creating a new **Configuration** is done in a step-by-step manner. An on-screen wizard guides you through the process of creating **Vehicle**, **Implement**, and **Controller** combinations.



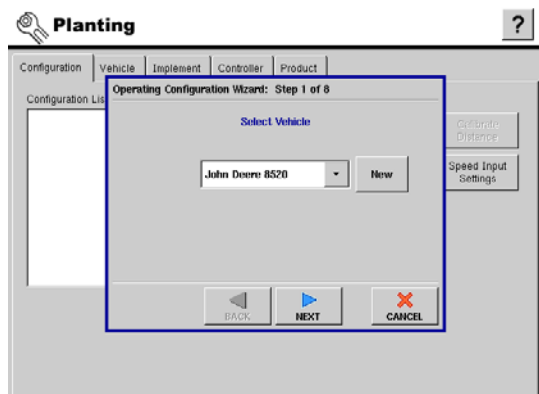
Planting configurations

In most cases, **Configurations** will be created by pressing the **Add** button on the Configuration tab. Step-by-step examples of creating configurations include the following:

- [“Adding A New Area Logging \(Site Verification\) Configuration” on page 91](#)
- [“Adding A New Rate Control/ Logging Configuration” on page 92](#)
- [“Adding an Additional Equipment Configuration” on page 96](#)
- [“KINZE Population Monitor Configuration” on page 131](#)
- [“Row Shutoff Configuration” on page 119](#)

It is recommended that all new equipment configurations be set up from the Configuration tab. If the need arises, new **Vehicles**, **Implements** or **Controllers** can be created individually from each tab.

ADDING A NEW AREA LOGGING (SITE VERIFICATION) CONFIGURATION



To add a new site verification planting or seeding configuration, press **Add**. The Operating Configuration Wizard appears.

1. Select Vehicle

- Select the vehicle you would like to use in this configuration. If there are no vehicles in the list press **New**.
- Press **NEXT** to continue.



Note: For help with the Adding a New Vehicle Wizard, see [“Adding A New Vehicle” on page 103](#).

2. Select Implement.

- Using the drop down box, select the implement you would like to use in this configuration.
- If there are no implements in the list, press **New**.
- Press **Next** to continue.



Note: For help with the Adding a New Implement Wizard, see [“Adding A New Implement” on page 106](#).

3. Select Operation Type.

- Select the operation type. You can either choose Area Logging (Site Verification), or Rate Logging/ Control. In this case choose Area Logging (Site Verification).
- Press **Next** to continue.



Note: If the multiple product unlock has not been purchased skip to [“Select Implement Switch.” on page 92](#).

4. Select Planting Method.

- Use the drop down box to select the planting method. You can either choose Single Variety or Split Planter.
- Press **Next** to continue.



Note: The Split Planter Configuration cannot be used for Single Variety planting. If you are planting a single variety, you must create a Single Variety configuration.

5. Add Additional Equipment.

- (Optional) If you would like to apply another product with your selected implement, or add an additional implement to apply another product, press **Add**.
- Press **Next** to continue.



Note: For help with adding or creating an additional equipment configuration see [“Adding an Additional Equipment Configuration” on page 96](#).

6. Select Implement Switch.

- If you are using an implement switch, choose whether it is set up as Standard or Reversed. Otherwise press **None**.
- Press **Next** to continue.

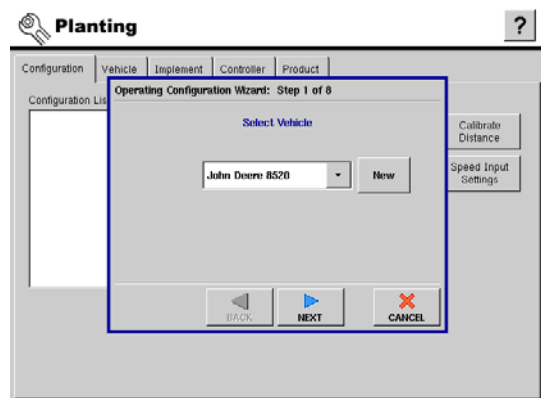
7. Choose Ground Speed Source.

- Select your ground speed source. If you will be using GPS as the primary you will need to select a secondary ground source.
- Press **Next** to continue.

8. Edit Configuration Name.

- Use the keyboard button to edit the name of the configuration.
- Press **Finish** to complete the setup process.

ADDING A NEW RATE CONTROL/ LOGGING CONFIGURATION



To add a new serial controlled planting or seeding configuration press the **Add** button.

1. Select a Vehicle.

- Using the drop down box select the vehicle you would like to use in this configuration.
- If there are no vehicles in the list press **New**.
- Press **Next** to continue.



Note: For help with the adding a new vehicle wizard see [“Adding A New Vehicle” on page 103](#).

2. Select Implement.

- Using the drop down box select the implement you would like to use in this configuration.
- If there are no implements in the list press **New**.
- Press **Next** to continue.



Note: For help with the adding a new implement wizard see [“Adding A New Implement” on page 106](#).

3. Select Operation Type.

- Select the operation type. You can choose Area Logging (Site Verification) or Rate Logging/ Control. In this case, choose Rate Logging/ Control.
- Press **Next** to continue.

4. Select Controller.

- Select the controller you will be using from the drop down list. If a new controller must be created press **New**.
- Press **Next** to continue.



Note: See [“Adding A New Controller” on page 116](#) for help with the wizard.

5. Controller Information.

- After selecting the controller, controller settings will need to be entered. In this case a Rawson ACCU-PLANT or ACCU-RATE was selected and has one page of setup.
- Press **Next** to continue.



Note: If the multiple product unlock has not been purchased skip to “Choose Ground Speed Source.” on page 93.

6. Add Additional Equipment.

- (Optional) If you would like to apply another product with your selected implement or add an additional implement to apply another product, press **Add**.
- Press **Next** to continue.



Note: For help with adding or creating an additional equipment configuration see “Adding an Additional Equipment Configuration” on page 96.

7. Choose Ground Speed Source.

- Select your ground speed source. If you will be using GPS as the primary you will need to select a secondary source.
- Press **Next** to continue.

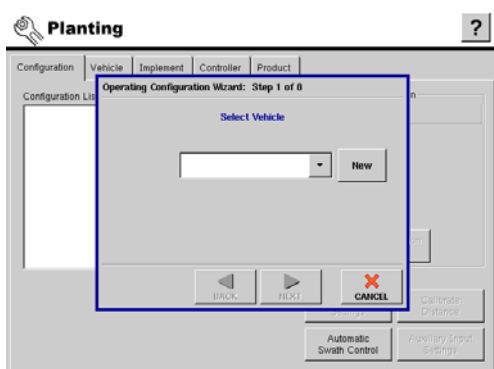
8. Edit Configuration Name.

- Use the keyboard button to edit the name of the configuration.
- Press **Finish** to complete the setup process.

ADDING A MULTI-VARIETY PLANTING CONFIGURATION



Note: The following procedure describes how to configure a multi-variety planting configuration. This is an optional feature of the display. An unlock code must be purchased and installed to enable this feature. Call your local Ag Leader dealer for details and pricing.



To add a new multi-variety planting configuration, press the **Add** button. The Operating Configuration Wizard appears.

1. Select Vehicle.

- Using the drop down box select the vehicle you would like to use in this configuration.
- If there are no vehicles in the list, press **New** and the Vehicle Setup Wizard appears.
- Press **Next** to continue.



Note: For help with the adding a new vehicle, see “Adding A New Vehicle” on page 103.

2. Enter Tractor Make and Model.

- Use the on-screen keyboard to enter in the make and model of the tractor.
- Press **Next** to continue.

3. Enter Suggested Tractor Name.

- A suggested tractor name appears. If necessary, use the on-screen keyboard to edit the name of the tractor.
- Press **Finish**, and the Operating Configuration Wizard reappears.

4. Select Implement.

- a. Using the drop down box select the implement you would like to use in this configuration. If there are no implements in the list, press **New**.
- b. Press **Next** to continue.



Note: For help with the adding a new implement wizard, see [“Adding A New Implement” on page 106](#).

5. Select Planter/Seeder Type.

- a. The Implement Setup Wizard appears. From the top drop-down menu, select Planter or Seeder/Drill.
- b. From the bottom drop-down menu, select either Rear Drawbar or Rear 3-Point Hitch.
- c. Press **Next** to continue.

6. Implement Options.

- a. Select the following options, depending upon your desired configuration:
 - **Planter Monitor drop-down menu** - Choose **None**; or choose either the **KINZE Planter Monitor Module** or **Seed Monitor Module** functions.
 - **Split Rows Enabled** – Check this box to enable the display to log data from the planter’s Split Row units. (For Split Row-enabled planters, you will need to create separate implement configurations for Split row and non-Split Row operations).
 - **Planter Section Row Shutoff** – Check this box to enable the SeedCommand planter clutches.
- b. Press **Next** to continue.

7. Enter Number of Rows and Spacing.

- a. Use the up and down arrow keys to enter the number of implement sections.
- b. Press **Next** to continue.

8. Enter Number of Implement Sections.

- a. Use the up and down arrow keys to enter the number of sections that you want to appear on the Planting Tab on the Run screen. You may enter up to three implement sections (assuming that you did not check any Implement Options in previous steps).
 - If using a one- or two-section split planter, enter two implement sections.
 - If using three varieties, choose one or three sections.
- b. Press **Next** to continue.



Note: Do not enter the number of individual rows. Enter the number of swath sections that can be independently turned on and off.

9. Enter Section Widths from Left to Right.

- a. For implements with more than one swath section, the display will default to the appropriate number of equal width swath sections. In this instance, two equal sections of eight rows.
- b. To edit any of the swath values, select the desired section from the list and press the numeric keypad to enter in a new width.
- c. Press **Next** to continue.

10. Enter Distance from Hitch to Application Point.

- a. Enter the distance from the hitch to the application point using the numeric keypad button.
- b. Press **Next** to continue.

11. Enter Implement Name.

- a. Use the keyboard button to enter a name for the implement.
- b. Press the **Finish** button to complete the implement setup process and continue with the Operating Configuration Wizard.

12. Select Operation Type.

- Select the operation type. Since we are creating a split planter configuration, you must choose Area Logging (Site Verification).
- Press **Next** to continue.



Note: A split planter configuration cannot be used with a serial controller.

13. Select Planting Method.

- Use the drop down box to select the planting method. You may choose either Single Variety or Split Planter. In this case, select a Split Planter option.
- Press **Next** to continue.



Note: Your choices that appear in the drop-down box have been predetermined based upon the sections that you specified in Step 8. If you choose split planter, the number of varieties must equal the number of sections that you previously specified.

14. Add Additional Application Equipment.

- (Optional) If you would like to apply another product with your selected implement, or add an additional implement for the application of another product, press the **Add**.
- Press **Next** to continue.



Note: For help with adding or creating an additional equipment configuration see [“Adding an Additional Equipment Configuration” on page 96.](#)

15. Select Implement Switch

- If you are using implement switch, choose whether it is set up with **Standard** or **Reversed** polarity. Otherwise, choose **None**.
- Press **Next** to continue.



Note: If you selected any SeedCommand functions in previous steps (such as KINZE PMM, Interplant, or Row Shutoff), this step will not appear. Skip ahead to next step

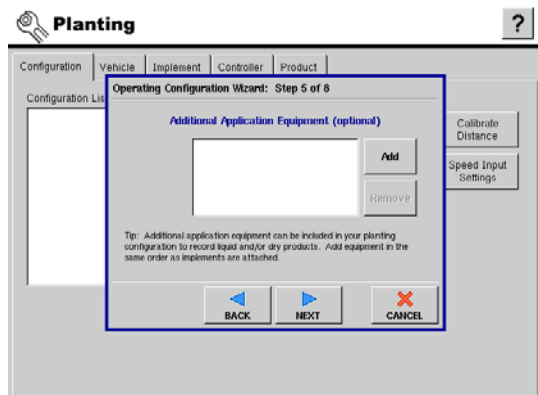
16. Select Ground Speed Source.

- Select your ground speed source. If you will be using GPS as the primary you will need to select a secondary source.
- Press **Next** to continue.

17. Enter Suggested Name for Configuration.

- Use the keyboard button to edit the name of the configuration.
- Press **Finish** to complete the setup process.

ADDING AN ADDITIONAL EQUIPMENT CONFIGURATION



Adding an additional equipment configuration allows you to record and or control up to five products. This wizard will allow you to add an application implement that is already made or create a new one. This wizard is accessed from the **Add** button and the Multi-product unlock must be enabled.

- The equipment added can either be a site verification, serial controlled, or DirectCommand implement.
- Add the implements in the same order they are attached.

1. Add Equipment.

- a. Press **Add** to add an additional application implement.

2. Select Implement.

- a. Using the drop down box select the implement you would like to use in this configuration. If there are no implements in the list press **New**.
- b. Press **Next** to continue.



Note: For help with adding a new implement wizard, see [“Adding A New Implement” on page 106.](#)

3. Select Operating Mode.

- a. The implement can either record a product or control and record one.
 - To only record the product, choose **Area Logging Only**.
 - To control the product, choose **Rate Logging/ Control**. If Rate Logging is chosen, see [“Serial Controlled Planting” on page 143.](#)
- b. Press **Next** to continue.

4. Select Implement Switch.

- a. If using an implement switch choose whether it is setup as Standard or Reversed. Otherwise choose **None**.
- b.

5. Select Container.

- a. Select the container that will be used to hold the product being applied by the additional implement from the drop down list.
- b. Press **Next** to continue.

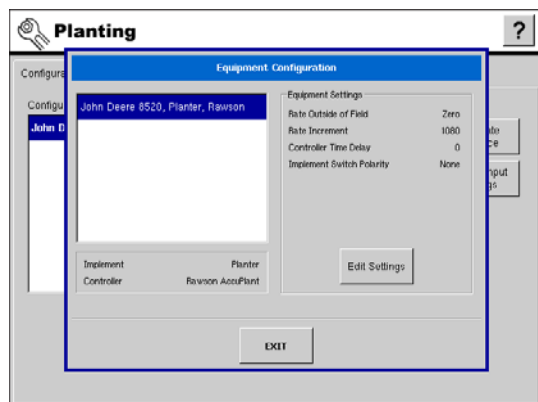


Note: If a new one must be created see [“Adding a New Vehicle” on page 175.](#)

6. Edit Name.

- a. Use the keyboard button to edit the name of the configuration.
 - Press **Finish** to complete the setup process.
 - Press **Add** to add more implements and go back to step one.
- b. If all the required implements are added press **Next**.

CONFIGURATION SETTINGS

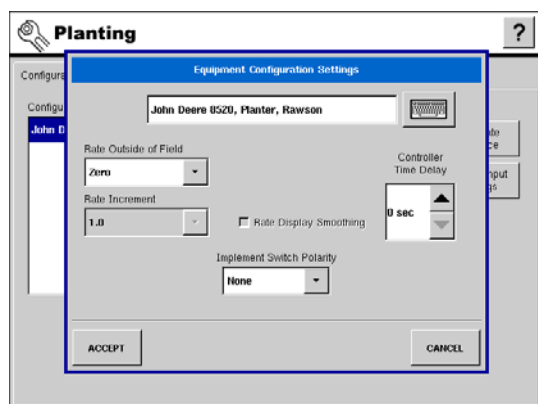


To access the equipment configuration settings screens first highlight a configuration in the list and then press the **Configuration Settings** button.



Note: If a site verification configuration with an implement switch is being used the only option available will be implement switch polarity.

The window at left will display after selecting an operating configuration and pressing the **Configuration Settings** button. Implement and controller name for the configuration are displayed at the lower left on the dialog. Settings related to controller operation for the configuration are displayed on the right. Press **Edit Settings** to display detailed information or edit any of these settings.



The configuration name can be changed by pressing the on-screen keyboard screen.

-The **Rate Outside of Field** selection determines product control channel behavior when the field boundary is exited.

- **Zero** = Product application will turn off.
- **Last Good** = Product application will continue at the last value used by the control system.
- **TGT Default** = Product will be applied at the default rate setting

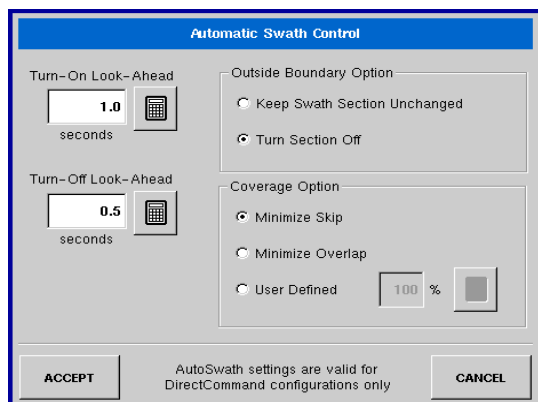
-The **Rate Increment** setting can be modified from the original value set during the controller configuration process. This setting determines the amount that the target application rate setting will change when the up or down arrow key is pressed on the target

rate dialog at the run screen.

-The **Rate Display Smoothing** setting determines how the feedback from the control channel rate sensor will be displayed on the run screen. When de-selected, the display will show raw feedback from the rate sensor. When checked, the display will show target rate when the actual rate is within 10% of the target rate setting.

-The **Controller Time Delay** setting compensates for any latency in the control system when changing between different product flow rates during variable rate application. The typical setting range for this is 0 - 1 seconds.

AUTOMATIC SWATH CONTROL SETTINGS



The **Automatic Swath Control** feature turns sections off and on automatically based upon the following conditions:

- Entering and exiting internal and outer field boundaries.
- Entering and exiting mapped product recommendation areas.
- Entering and exiting previously applied areas within a field.



Note: The Automatic Swath Control functionality is an optional feature of both the DirectCommand and SeedCommand Systems. An unlock code must be purchased and installed to enable this feature. Call your local Ag Leader dealer for details and pricing.

To access the Automatic Swath Control settings, select the **Configuration** tab, and press the **Automatic Swath Control** button to access the related settings. These settings affect the automatic swath control operation and are specific to that combination of **Vehicle**, **Implement**, and **Controller**.

• Turn-On Look-Ahead

This setting determines how far ahead the display looks to turn the sections back on. This setting compensates for delay in the product control system when the implement sections are turned on. To see what these numbers should look like for Row Shutoff Modules, see [“Row Shutoff Look-Ahead Numbers” on page 99](#).

• Turn-Off Look-Ahead

This setting determines how far ahead the display looks to turn the sections off. This setting compensates for delay in the product control system when the sections are turned off. To see what these numbers should look like for Row Shutoff Modules, see [“Row Shutoff Look-Ahead Numbers” on page 99](#).

• Outside Boundary Option

Select one of the two options to determine display behavior when a section exits a field boundary or prescription mapped area.

• Coverage Option

In the Coverage Option area, you must choose between three options:

- The **Minimize Skip** option turns off the implement section after the entire section is *fully inside* your coverage area. This prevents the possibility of skips.
- The **Minimize Overlap** option turns off the implement section when that section first *enters* your coverage area. This prevents the possibility of overlaps.
- The **User Defined** option allows you to choose what percentage of the implement section is within the coverage area before that section turns off. For example, if you choose **50%**, then the section will switch off when half of it is within your coverage area.

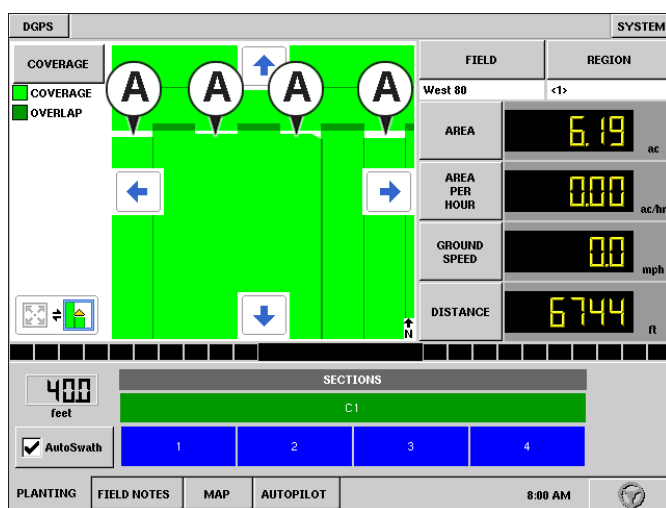
Row Shutoff Look-Ahead Numbers

This table references the Turn-On Look-Ahead and Turn-Off Look-Ahead numbers for both Electric Clutch and Air Row Shutoff Modules.

Planter Unit Seed Meter Type	On/Off	Electric Clutch	Air Clutch
Finger Units	Turn On	0.9	1.1
	Turn Off	0.3	0.3
Vacuum	Turn On	0.9	1.1
	Turn Off	0.4	0.4



Note: Using the above settings will produce accurate field results. However, small gaps may appear on the display, as in the example shown below left. These gaps do not reflect actual machine performance or log data.



IF GAPS APPEAR WITHIN ON-SCREEN MAP:

Shown is a typical example of a SeedCommand coverage map.

When operating AutoSwath, do not make changes to the look-ahead settings based on data from the on-screen map.

The look-ahead settings in the Planter Unit Seed Meter Type table were created from field testing and machine observations to determine the appropriate settings for each combination of clutch and seed meter. These should be accurate settings unless your planter has been modified.

Small skips and overlaps (A) in the map may be expected but should not require you to adjust

settings without first observing your machine's performance.

To determine if a setting change is necessary, perform the procedure detailed in [“Checking AutoSwath Performance for Row Shutoff” on page 99](#) to observe the actual machine performance. Following this procedure will give you additional data to use with that already received from the on-screen map.



CAUTION: IF GAPS APPEAR WITHIN ON-SCREEN MAP:

AutoSwath Notes

To use AutoSwath for planting operations, you are required to use a 5 Hz or higher GPS output rate. AutoSwath control will not allow sections to be turned on until the master and planting section switches are on. If you have less than a 5 Hz GPS output rate and you select AutoSwath, a warning appears, telling you that AutoSwath Control is not available at less than 5 Hz.

Checking AutoSwath Performance for Row Shutoff

The settings given in the above AutoSwath look-ahead table have been tested with each clutch and seed meter combination to work for your planter. However, if you are looking for a method to verify the performance of SeedCommand, then you should attempt the following procedure:

1. Stop the planter within 20 feet of the planted headland.
2. Select one row unit from each planter swath section to observe.
3. Remove the down pressure from the closing wheel of each selected row unit.
4. Hold the closing wheels off the ground by attaching a chain or strap from the hopper support panel to the closing wheel arm. (This prevents the closing wheels from closing the seed trench).



Note: Securing these closing wheels up allows you to observe the planted seed in the trench so that you can observe when the display is turned off and on during the seed application.

5. Resume planting in your normal fashion, then stop when you are 20 feet out of the headland of the next pass.
6. Stop the planter and observe the AutoSwath shutting off and turning on to see if the results are acceptable.
 - If the results are correct, then return the closing wheels to their previous operational state. Close the seed trench on the observed rows and return to planting.
 - If you suspect the results are incorrect, then adjust the appropriate look-ahead setting one-tenth (.1) second per trial. When making changes to the look-ahead settings, make sure to adjust these settings only one-tenth (0.1) second per trial. Larger adjustments can cause unintentional large changes in the AutoSwath's performance.



Note: When adjusting the look-ahead numbers from the suggested settings, it is recommended that you observe multiple trials to confirm the operations' accuracy.

- If you encounter overplanting or underplanting problems, see ["Fixing Overplanting and Underplanting in AutoSwath" on page 100.](#)

Fixing Overplanting and Underplanting in AutoSwath

AutoSwath Function	Problem	Recommended Action	Result
Turn Off Look-Ahead	Overplanting	Increase look-ahead number.	The Autoswath anticipates headlands sooner and turns the planter off sooner.
	Underplanting	Decrease look-ahead number.	The Autoswath anticipates headlands later and turns the planter off later.
Turn On Look-Ahead	Overplanting	Decrease look-ahead number.	The Autoswath anticipates headlands later and turns the planter on later.
	Underplanting	Increase look-ahead number.	The Autoswath anticipates headlands sooner and turns the planter on sooner.

CALIBRATE DISTANCE

If you are not using GPS for ground speed, then after you have created a configuration you must calibrate the ground speed input for accurate speed and area calculations. If you are using GPS, it is recommended to calibrate distance in the event of GPS loss.

Select a **Configuration** from the list and press the **Calibrate Distance** button to calibrate the radar, track or wheel speed sensor. This calibration is specific to that combination of **Vehicle**, **Implement**, and **Controller**. The Speed Sensor Calibration wizard appears.

1. Select Speed Input.

- Select the sensor type to calibrate and press NEXT to continue.

2. Calibration Distance

- The display defaults to 100 feet (50 meters) distance for calibration. Press **Edit Distance** to change if needed. This value must match the actual distance of the course driven for calibration.
- Press **NEXT** to continue.

3. Start Driving Course

- Follow the on-screen directions and press START to begin the calibration process.

4. Course Completed

- Drive vehicle over the measured course and press STOP.
- Press **NEXT** to continue to final step.

5. Calibration Completed

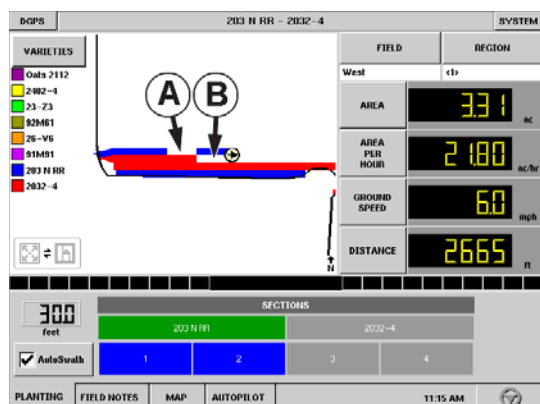
- Press **FINISH** to complete calibration and store the calculated value.



Note: Calibration settings can be manually adjusted if desired by pressing Enter CAL Number and making small changes to the setting.

AUXILIARY INPUT SETTINGS (SWITCH MAPPING)

The Auxiliary Input Settings feature, (also called “Switch Mapping”) allows you to specify which switches on a DirectCommand switch box can control the boom sections of your implement. This process is used for DirectCommand and SeedCommand, and configurations. (It is not used for serial controllers or site verification scenarios).



The example at left shows Switch Mapping at work in the field. In this instance, the operator is planting two varieties using an implement with four boom sections. The operator has used the Auxiliary Input Settings window, shown below, to map the switches so that Switch 1 controls Sections 1 & 2; and Switch 2 controls sections 3 & 4.

As the vehicle travels to the right of the screen, the operator first used Switch 1 to **turn off Sections 1 & 2 (A)**; then the operator used Switch 2 to **turn off Sections 3 & 4 (B)**.

Auxiliary Input Settings Window

The Auxiliary Input Settings window appears when you press the **Auxiliary Input Settings** button. This Switch Mapping function is active only for users with DirectCommand or Seed Command features.

The Auxiliary Input Settings window, shown at left, displays settings for the Master Switch and other switch inputs.

The Master Switch drop down menu, shown at the top, controls the master switch for your entire configuration. You may see the following options underneath this menu:

- **Switch**

Controls the master switch.

- **External 2**

This setting can control an optional, floor-mounted master switch.

- **External 1, 3 & 4**

Not used at this time.

The F1-F10 cells on the left can be assigned to any implement sections. You can use these to choose the switches that control a particular implement or planting clutch. From here, you can also make the following changes to the switch settings.

- Add a switch setting. (See below).
- Remove a switch setting.
- Reset to default switch settings.

Add Auxiliary Input Settings

If you wish to add a switch setting, press the **Add** button, and a second Auxiliary Input Settings window appears, as shown at left. This window shows the following drop down menus:

- **Control Module**

Specifies the function of your DirectCommand or Planting Row Shutoff. (For example, Spinner Spreader or Granular Strip Till controller).

- **Channel**

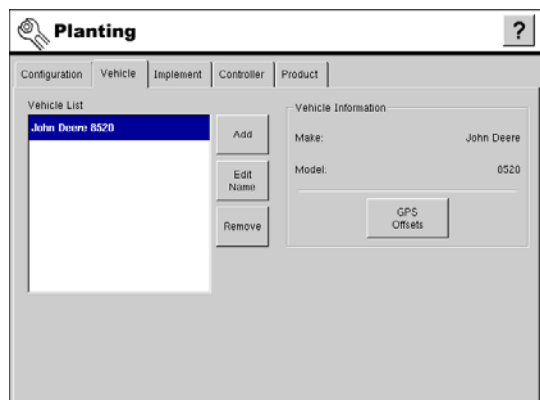
Select the channel to control. Used for Strip Till or Spinner Spreader modules.

- **F1 (Master) Function**

Turns the implement section on and off.

VEHICLE TAB

VEHICLE TAB SETTINGS



The vehicle tab provides functionality for setting up and configuring additional vehicles. The vehicle list will show any vehicles that have already been created.

To see a Planting Menu that includes vehicle information, see *"Planting/Seeding Menu Tree" on page 165*.

- **Add button**

Allows you to add a new vehicle. A wizard will walk you through setting up the vehicle. For detailed information, see *"Adding A New Vehicle" on page 103*.

- **Edit Name button**

Allows you to edit the name of a vehicle in the list. To edit, highlight the name of a vehicle in the list and then press this button. Then use the on-screen keyboard to edit the name.

- **Remove button**

Allows you to remove a vehicle. The implement and any regions and configurations using it will be deleted.



WARNING: When deleting a vehicle all regions and configurations using it will be deleted!

- **GPS Offsets button**

Allows you to specify the location of the GPS antenna in relation to the vehicle. A wizard will walk you through these edits. It also allows you to enter the distances from the rear axle to the different implement mounting positions on the tractor. See *"GPS Offsets" on page 104*.

ADDING A NEW VEHICLE

To start the process of adding a new vehicle press the **Add** button.

- 1. Enter Vehicle Make and Model.**

- Use the keyboard buttons to enter the vehicle's make and model.
- Press **Next** to continue.

- 2. Edit Vehicle Name.**

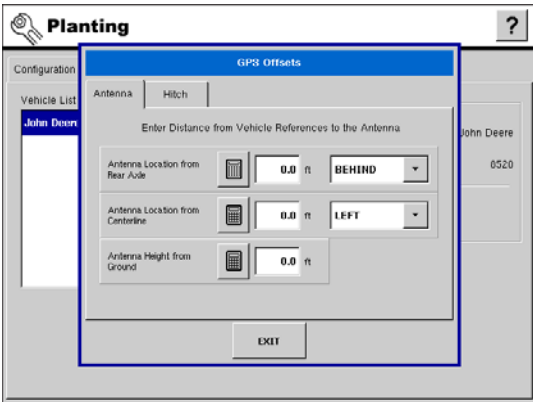
- Use the keyboard button to edit the name of the vehicle.
- Press **FINISH** to complete the setup process.

VEHICLE TAB - ADVANCED SETTINGS

GPS OFFSETS

After completing the process of setting up a Vehicle, advanced GPS Offsets must be configured. The GPS Offsets define where machine rear axle, hitch, and product placement is in relation to the GPS antenna. These settings are used by mapping, product control, and Automatic Swath Control.

Antenna Offsets

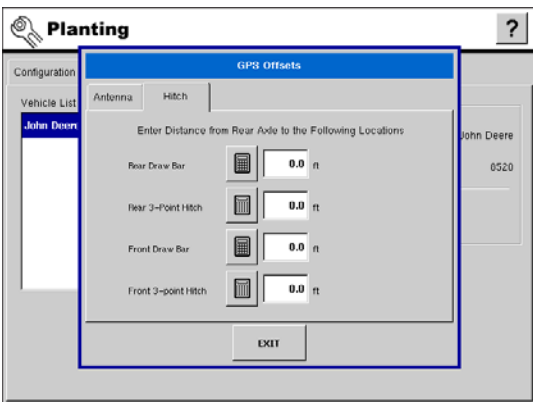


The Antenna Tab contains three different settings. Accuracy when measuring for a specific setting is essential to ensure proper machine performance.

- Measure and enter the horizontal distance from the rear axle to the position of the GPS antenna. Select **In Front** or **Behind** from the list box to indicate the position of the antenna in relation to the rear axle.
- Measure and enter the horizontal distance from the centerline of the vehicle to the position of the GPS antenna. Select **Left** or **Right** to indicate the position from the vehicle centerline.
- Measure and enter the vertical height of the antenna above the ground.



Note: Accuracy when measuring for a specific setting is essential to ensure proper machine performance.



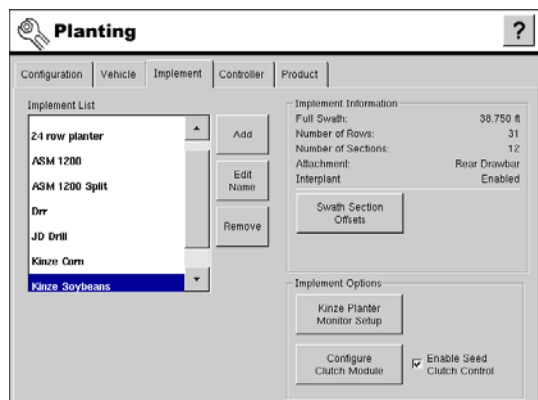
Hitch Tab Settings The hitch tab allows you to enter in the distance from four different mounting positions on the tractor to the rear axle. Use the **Number Pads** to enter these values in for the respective hitch point.



Note: Accuracy when measuring for a specific setting is essential to ensure proper machine performance.

IMPLEMENT TAB

IMPLEMENT TAB SETTINGS



Individual implements are set up and configured from the Implement Tab. The implement list displays all previously set up implements that are available for use when creating new configurations.

To see a Planting Configuration Menu that includes Implement Tab settings, see [“Planting/Seeding Menu Tree” on page 165](#).

- **Add button**

Press to add a new implement. A wizard will walk you through setting up the implement. For detailed information, see [“Adding A New Implement” on page 106](#).

- **Edit Name button**

Press to edit the name of a selected implement from the list. The on-screen keyboard will be made available to make any required edits.

- **Remove button**

Press to remove a selected implement.



WARNING: When deleting an implement all regions and configurations using it will be deleted!

- **Swath Section Offsets button**

Press to edit the swath section offsets, distance from tractor hitch to application point, and distance from front hitch to rear hitch of the implement. An on-screen wizard will walk you through the edit process. For detailed information see [“Swath Section Offsets” on page 107s](#).

- **Kinze Planter Monitor Setup**

Allows the operator to adjust configuration settings for the Planter, Sensor and Alarms. For more information, see [“KINZE Planter Monitor Setup” on page 133](#).

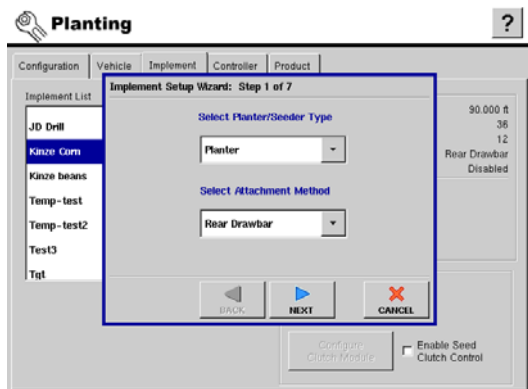
- **Configure Clutch Modules button and Enable Seed Clutch Control check box**

The Enable Seed Row Shutoff check box allows you to configure a Row Shutoff Module, which is a function of SeedCommand. For step-by-step information on configuring the Row Shutoff Modules, see [“Row Shutoff Configuration” on page 119](#); and more specifically, see [“Enable Seed Row Shutoff” on page 120](#).



Note: You must have the Enable Row Shutoff Module check box selected in order to have the Configure Row Shutoff button enabled.

ADDING A NEW IMPLEMENT



This procedure describes how to set up an implement configuration for a generic planter. Row Shutoff users should see [“Row Shutoff Configuration” on page 119](#); Module users should see [“Seed Tube Monitor Module Configuration” on page 126](#), and KINZE Planter Monitor users should see [“KINZE Population Monitor Configuration” on page 131](#).

To add a new implement press the **Add** button. The Implement Setup Wizard appears.

1. Select Attachment Method and Planter/Seeder Type.

a. From the top drop-down menu, select either Planter or Seeder/Drill. Then use the bottom drop-down menu to select either Rear Drawbar or Rear 3-Point Hitch.

b. Press **Next** to continue.

2. Select the following options, depending upon your desired configuration:

- **Planter Monitor drop-down menu** - Choose **None**; or choose either the **KINZE Planter Monitor Module** or **Seed Monitor Module** functions.
- **Split Rows Enabled** – Check this box to enable the display to log data from the planter’s Split Row units. (For Split Row-enabled planters, you will need to create separate implement configurations for Split Row and non-Split Row operations).
- **Planter Section Row Shutoff** – Check this box to enable the SeedCommand planter clutches.

Press **Next** to continue.

3. Enter Number Of Rows and Spacing.

- Use the up and down arrow keys to enter the number of implement sections.
- Press **Next** to continue.

4. Enter Number of Implement Sections.

- Use the up and down arrow keys to enter the number of sections on the implement.
- Press **Next** to continue.



Note: Do not enter the number of individual rows. Enter the number of swath sections that can be independently turned on and off.

5. Enter Section Widths from Left to Right.

- For implements with more than one swath section, the display will default to the appropriate number of equal width swath sections. To edit any of the swath values, select the desired section from the list and press the number pad to enter in a new width.
- Press **Next** to continue.

6. Enter Distance From Hitch to Application Point.

- Enter the distance from the hitch to the application point using the number pad button.
- Press **Next** to continue.

7. Enter the Implement Name.

- Use the keyboard button to enter a name for the implement.
- Press **Finish** to complete the implement setup process.

IMPLEMENT TAB - ADVANCED SETTINGS

SWATH SECTION OFFSETS

After completing the initial process of configuring an **Implement**, accurate values must be entered in the **Swath Section Offsets** to ensure proper machine performance. **Swath Section Offsets** are configured as outlined in the following steps.

Implement Offsets

Section Offsets | Hitch Offset

Swath Section Offsets From Hitch Point

Section #	F/B Offset	L/R Offset
1	15.00 ft behind	7.50 ft left
2	15.00 ft behind	7.50 ft right

Edit

F / B = Forward or Backward L / R = Left or Right

EXIT

1. Select Section

Select the desired section from the list and press Edit to modify the offset values.

Implement Section Offsets

Section 2

Enter Left or Right Distance from Hitch Point

7.50 ft to the right of hitch

Enter Forward or Backward Distance from Hitch Point

15.00 ft

ACCEPT CANCEL

2. Enter left to right distance from hitch point

Use the keypad to enter the distance the mid-point of the swath section is from the machine centerline. Select to the left/to the right to indicate the direction the swath section is located from the vehicle centerline.

Enter the distance that the swath section is located from the hitch point.

Press **Accept** when done.

Implement Offsets

Section Offsets | Hitch Offset

Enter Distance from Front Hitch to Rear Hitch

0.00 ft

EXIT

3. Enter distance from front hitch to rear hitch

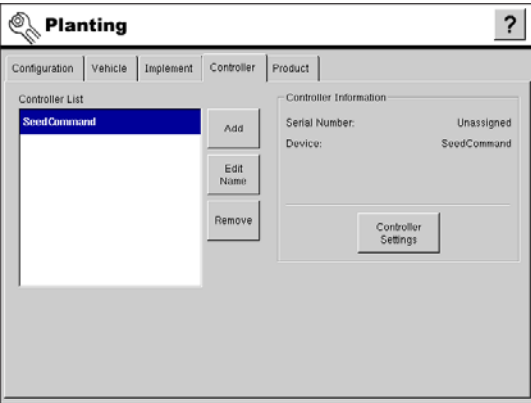
Use the numeric keypad to enter the distance from front hitch, if present, to rear hitch point. (This option will not be present on self-propelled vehicles.) Press **Exit** when done.



WARNING: Accuracy when measuring and entering swath section GPS offsets is required to ensure proper machine performance.

CONTROLLER TAB

CONTROLLER TAB SETTINGS



Use the Controller Tab to add and configure controllers for use during planting.

To see a Planting Configuration Menu that includes Controller Tab settings, see [“Planting/Seeding Menu Tree” on page 165](#).

- **Add button**

Press to add a new controller. A wizard will walk you through setting up the controller. For detailed information see [“Adding A New Controller” on page 116](#).

- **Edit Name button**

Press to edit the name of a selected controller from the list. The on-screen keyboard will be made available to make any required

edits.

- **Remove button**

Press to remove a controller. The controller and all regions and configurations using it will be deleted.



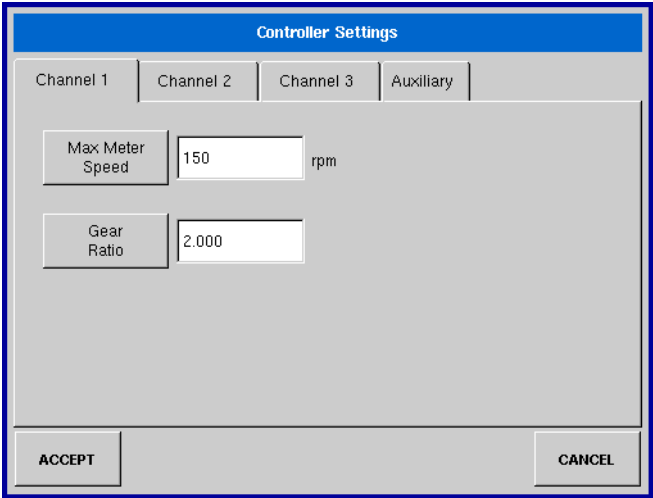
WARNING: When deleting a controller all regions and configurations using it will be deleted!

- **Controller Settings button**

Allows the user to view valve settings for hydraulic flow and pulses per revolution. For more information, see [“Controller Settings for Hydraulic Seed Control” on page 109](#) and [“Controller Settings - Auxiliary Tab” on page 112](#).

CONTROLLER SETTINGS FOR STEPPER SEED RATE MOTOR DRIVES

The Controller Settings used by operators of the Stepper Seed Rate Control feature should be set before entering a meter calibration number or performing field operations. To begin, go to the **Controller** Tab and highlight your controller configuration underneath the Controller list. Press the **Controller Settings** button, and the Controller Settings window appears, as shown. Each channel is displayed with its own tab, and the Auxiliary Tab is where you adjust the Minimum Allowable Ground Speed.



Channel Tabs

- **Max Meter Speed**

This number represents the maximum recommended RPM of the seed meter, and is specified by the manufacturer. A warning informs you if this threshold is exceeded.

- **Gear Ratio**

The ratio of the revolutions of the hydraulic drive motor to turn the seed meter one revolution.



Note: For more information regarding how to calculate the Gear Ratio, see “Gear Ratio Calculations for Seed Rate Motors” on page 113.

Auxiliary Tab

- **Minimum Allowable Ground Speed**

The display will simulate this specified ground speed when you press the Jump Start switch. This fixed ground speed setting compensates for delays in acquiring an initial ground speed when starting from a standstill.

CONTROLLER SETTINGS FOR HYDRAULIC SEED CONTROL

CHANNEL TABS

- **Shaft Speed Cal**

Calibration number representing the pulses that equal one revolution of the hydraulic motor.

- **Control Valve Configuration**

Setting determines the type of control valve being used for the hydraulic motor. Choices include Servo or PWM.

- **Response Threshold**

Determines the responsiveness to rate change.

- **Valve Response 1**

Determines the speed of the servo valve when product control error exceeds the Response Threshold setting.

- **Valve Response 2**

Determines the speed of the servo valve when product control error is less than the Response Threshold setting.

- **Allowable Error**

Determines the percent of error that is allowed prior to the product control system making any flow rate changes.

- **Max Meter Speed**

Setting determines the maximum RPM of the seed meter.

- **Gear Ratio**

Ratio of the revolutions of the hydraulic drive motor to turn the seed meter one revolution.

- **PWM Frequency**

The frequency that the PWM control valve is pulsed at.

- **PWM Gain**

Determines how aggressively the control valve responds when making rate change adjustments. The higher the value the more aggressive the response is.

- **Zero Flow Offset**

Represents the maximum duty cycle that is sent to the control valve without producing any hydraulic flow from the PWM valve. Using too high of a Zero Flow Offset value can cause the product control system to not properly control low rates.

Hydraulic Seed Controller Settings for Specific Planters

Hydraulic Controller Settings - John Deere Planters	
Control Valve Configuration	PWM
PWM Frequency	175
PWM Gain	110
Zero Flow Offset	40
Gear Ratio (chain drive) (ProShaft)	2.374 2.417
Pulses/Rev	360

Hydraulic Controller Settings - White Planters	
Control Valve Configuration	PWM
PWM Frequency	200
PWM Gain	90
Zero Flow Offset	30
Gear Ratio	5.5
Pulses/Rev	360

Hydraulic Controller Settings - Case IH Planters	
Control Valve Configuration	PWM
PWM Frequency	100
PWM Gain	95
Zero Flow Offset	40
Gear Ratio	6.803
Pulses/Rev	360



Note: If you are encountering a problem with skips in the field or if the hydraulic drive is not shutting off properly, you may need to adjust the Zero Flow Offset settings. For more information, see [“Zero Flow Offset Variation” on page 161](#).

Hydraulic Seed Meter Calibration Numbers

Prior to calibrating the Hydraulic Seed Meter, the numbers that appear in the Meter Calibration box in the Planter Control window should be similar to the numbers that appear below. If they are not, then your seed meter may be working incorrectly, or you may have set the Gear Ratio incorrectly. In these cases, contact Ag Leader Technical Support for further assistance.

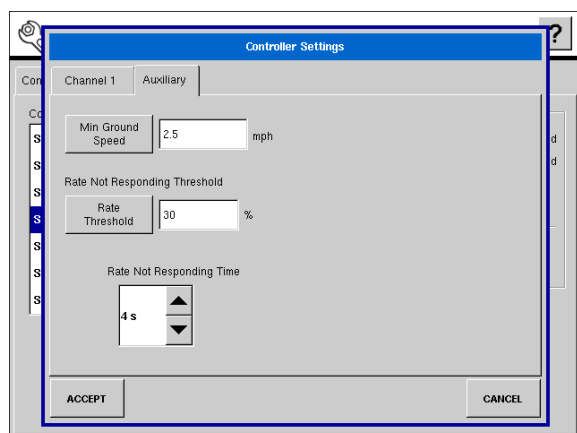


Note: Check your operator's manual for more specific information on other seed disk options.

Planter Brand and Type	Corn	Soybeans	Cotton Standard Rate	Sorghum
John Deere				
Vacuum: Standard	30	108	64	45
Vacuum: ProMax™	40			
Vacuum: Precision Planting eSet®	30			
Vacuum: VenHuizen AccuVac Kit	40			
Mechanical: Finger	12			
Mechanical: Brush Meter		56		
Case IH				
Vacuum	48	60	80	80
Cyclo®	36	240		
White				
	30	60		
KINZE				
EdgeVac®	39	60	54	60
Mechanical: Finger	12	56	48	60

Planter Brand and Type	Corn	Soybeans	Cotton Standard Rate	Sorghum
Great Plains				
Mechanical: Standard	12	110	120	102
Mechanical: Twin Row	6	100		135

Controller Settings - Auxiliary Tab



The Auxiliary Tab of the Controller Settings window adjusts the minimum speed, rate threshold and rate time of the motion detection sensor that turns the Hydraulic Drive on.

• Min Ground Speed

The Minimum Ground Speed performs two functions: It determines the speed at which the motion detection sensor disengages and actual ground speed is used for rate control; and also determines the target seed meter RPM when the motion detection sensor is active.



Note: Planter operators should set this to **2.0 mph**.

• Rate Threshold

The percentage of seed rate error that triggers the Hydraulic Seed Control alarms.

• Rate Not Responding Time

The amount of time that the error occurs before the alarm sounds.

GEAR RATIO CALCULATIONS FOR SEED RATE MOTORS

The Gear Ratio is a setting that appears on the Controller Tab to users of the Stepper Seed Meter Motor Drive. It is the ratio of the revolutions of the hydraulic drive as compared to one revolution of the seed meter. This setting is used to determine how fast the Stepper Seed Rate Motor should operate to achieve the proper RPM of the seed meter during planting operations.

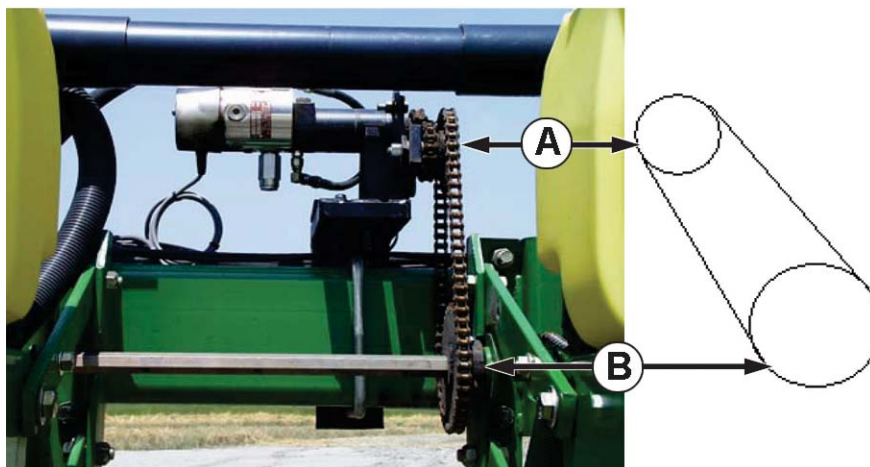
SeedCommand users (such as those using the Stepper Seed Rate Controller) who are required to manually enter in a Gear Ratio in the Controller Settings window should calculate this Gear Ratio based on information provided below and on the following page. The Gear Ratio number is calculated by multiplying all the gear ratio combinations, from the Seed Rate Drive Motor to the Seed Meter.



Note: Gear Ratio number is the number of revolutions of the motor to turn the seed meter one revolution.

Gear Ratio Drawing - For Single Motor Drive

Seed Rate Drive Setting (Calculating drive gear ratio)



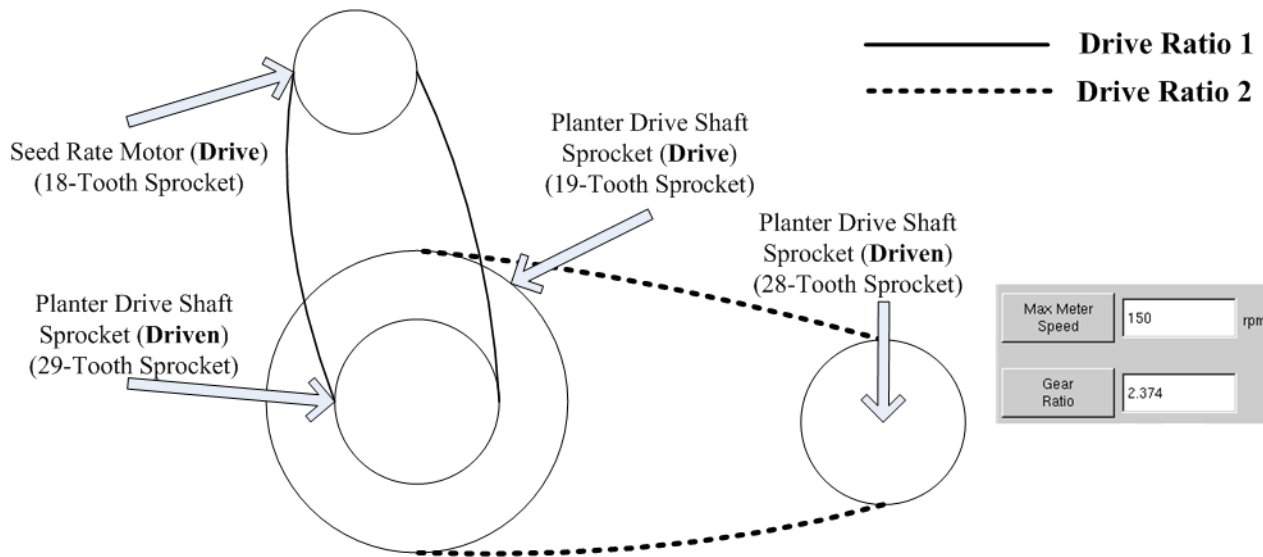
- (A) Seed Rate Motor (Drive) 18 Tooth Sprocket
- (B) Planter Drive Shaft Sprocket (Driven) 29 Tooth Sprocket

$$\frac{\text{\# of Teeth on the Driven Sprocket}}{\text{\# of Teeth on the Drive Sprocket}} = \text{Gear Ratio}$$

*Each drive combination (Drive/Driven) from Seed Rate Motor Drive to Seed Meter shaft sprocket needs to be factored for the Total Gear Ratio.

Gear Ratio Drawing - For Multiple Drive Combinations

Seed Rate Drive Setting (Calculating a Gear Ratio for Multiple Drive Combinations)



$$\frac{29}{18} \times \frac{28}{19} = \frac{812}{342} = 2.374$$

Drive/Driven 1 X Drive/Driven 2 = Gear Ratio

$$\frac{\text{Planter Drive Sprocket}}{\text{Seed Rate Motor}} \times \frac{\text{Seed Meter Shaft}}{\text{Planter Drive Shaft}} = \text{Gear Ratio}$$

Drive/Driven 1 X Drive/Driven 2

Carry the Decimal place to the nearest 0.001 for accurate results.

Seed Ratio Calculation Example Procedure

The example outlined below assumes that you have a single planter drive motor. Step 5 notes that this process has multiple steps if you have more than one Stepper Seed Motor Drives.

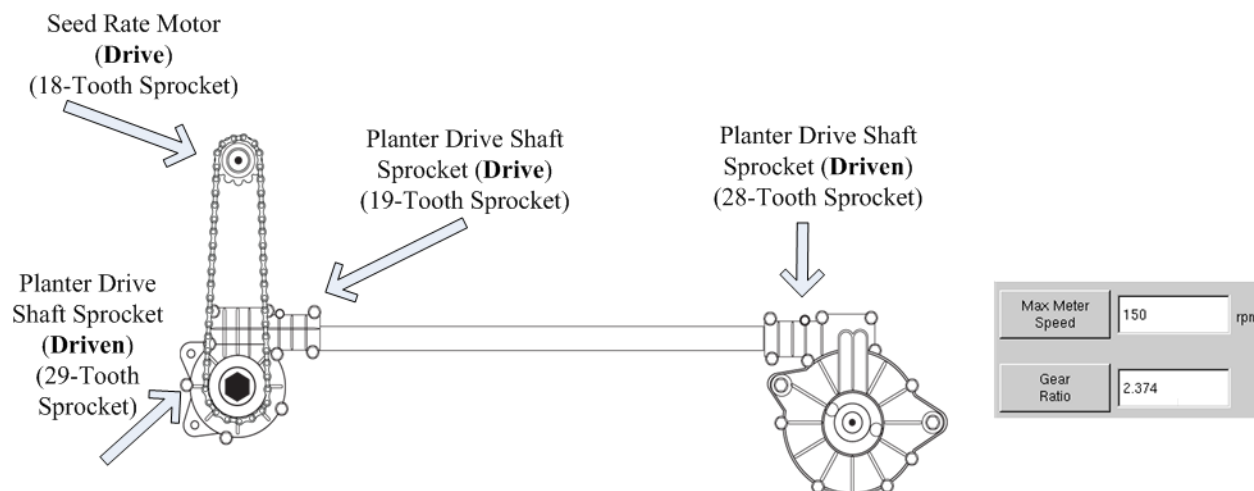
1. Beginning with the Seed Rate Motor, count the number of teeth on the drive sprocket. Then count the number of teeth on the driven sprocket.
2. Divide the number of teeth on the driven sprocket by the number of teeth on the drive sprocket. This is the ratio of the Seed Rate motor.
3. Repeat the process for each sprocket combination in the drive system back to the meter.
4. Take the ratio of the Seed Rate Motor and multiply it by the ratio of the other sprocket combinations.
5. Repeat this process if you have multiple hydraulic drives. Enter the gear ratio for each motor under the appropriate tab on the display.



Note: If you have additional motor drives on the planter and these motor drives have the same total gear ratio, enter that number into the other channels.

Gear Ratio Drawing - For John Deere Pro-Shaft™ Drives

Seed Rate Drive Setting (Calculating a Gear Ration for John Deere Pro-Shaft Drives)



$$\frac{29}{18} \times \frac{28}{19} = \frac{812}{342} = 2.374$$

Drive/Driven 1 X Drive/Driven 2 = Gear Ratio

$$\frac{\text{Planter Drive Sprocket}}{\text{Seed Rate Motor}} \times \frac{\text{Seed Meter Shaft}}{\text{Planter Drive Shaft}} = \text{Gear Ratio}$$

Drive/Driven 1 X Drive/Driven 2

Carry the Decimal place to the nearest 0.001 for accurate results.

Seed Ratio Calculation Example Procedure - for Pro-Shaft™ Drives

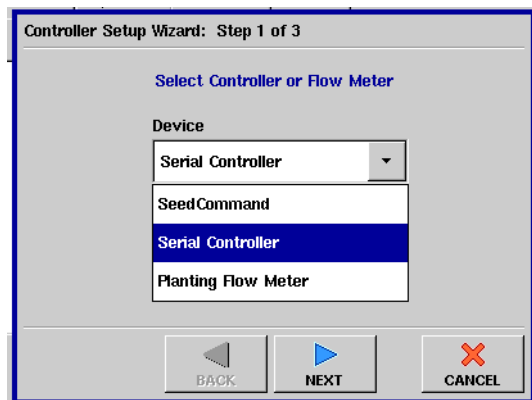
The example outlined below assumes that you have a single planter drive motor. Step 5 notes that this process has multiple steps if you have more than one Stepper Seed Motor Drives.

1. Beginning with the Seed Rate Motor, count the number of teeth on the drive sprocket. Then count the number of teeth on the driven sprocket.
2. Divide the number of teeth on the driven sprocket by the number of teeth on the drive sprocket. This is the ratio of the Seed Rate motor.
3. Repeat the process for each sprocket combination in the drive system back to the meter. On the Pro-Shaft Drive, the number of teeth on the driven sprocket is always **28**, and the number of teeth on the drive sprocket is always **19**.
4. Take the ratio of the Seed Rate Motor and multiply it by the ratio of the other sprocket combinations.
5. Repeat this process if you have multiple hydraulic drives. Enter the gear ratio for each motor under the appropriate tab on the display.



Note: If you have additional motor drives on the planter and these motor drives have the same total gear ratio, enter that number into the other channels.

ADDING A NEW CONTROLLER



Supported controllers for a Planting or Seeding operation include the Rawson ACCU-PLANT, ACCU-RATE, and the Flexicoil FlexControl. To add one of these controllers, press the **Add** button. The Controller Setup Wizard appears, as shown.

1. Select Controller or Flow Meter Device

- Use the Device drop down box to select a device such as SeedCommand, Serial Controller, or a Planting Flow Meter from the drop down box.
- Press **Next** to continue.

2.

If you selected **Serial Controller**;

- Select Controller Type
- Choose the make and model of your controller from the drop down menus.
- Press **Next** to continue.

If you selected **Planting Flow Meter**:

- Enter Flow Meter Calibration Number
- Enter the flow meter calibration number in seeds per pulse using the numeric keypad.
- Press **Next** to continue.



Note: This equation determines the number of seeds per pulse for a planting flowmeter. (# of seeds dispensed per rev of sprocket, per row) / (# of sprocket teeth) * (total # of rows).

If you selected **SeedCommand**, use the **Device Type** drop down menu to select either **Stepper Seed Control** or **Hydraulic Seed Control**.

Stepper Seed Control

- use the up and down arrows to enter in the number of stepper seed motor drives on your planter.
- Press **Next** to continue.

Hydraulic Seed Control

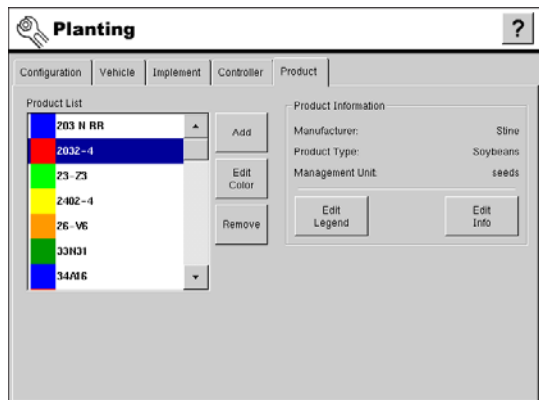
- use the up and down arrows to enter in the number of hydraulic drives on your planter.
- Press **Next** to continue.

3. Edit Name

- A suggested controller name appears. If necessary, use the on-screen keyboard to edit the name of the controller.
- Press **Finish** to complete the controller setup process.

PRODUCT

PRODUCT TAB SETTINGS



The Product Tab allows you to add new products or edit existing products for planting and seeding.

- To see a Planting Configuration Menu that includes Product Tab settings, see [“Planting/Seeding Menu Tree” on page 165](#).
- When setting up planter configurations, you must set up seed varieties as products in a similar fashion as when you add new products in Application. For more information, see [“Single Component Product Types” on page 187](#).

• Add button

Allows you to add a new product. A wizard will walk you through setting up the product. For detailed information see [“Adding A New Product” on page 117](#).

• Edit Color button

Allows you to edit the color associated with a product. To edit, highlight the name of a product in the list and then press this button. If a new color is selected only data logged after the color change will use the new color.

• Remove button

Allows you to remove a product. The product and any regions using it will be deleted.



WARNING: When deleting a product all regions using it will be deleted!

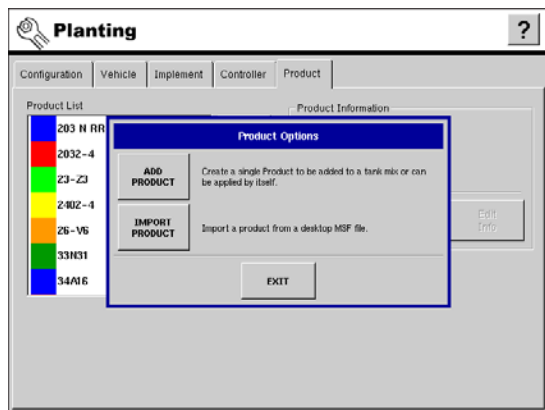
• Edit Legend button

Launches a wizard that allows you to change the legend associated with the selected product. For further information, see [“Edit Legend and Edit Info” on page 118](#).

• Edit Info button

Allows you to specify the manufacturer of a variety in the Product Information. For further information, see [“Edit Info” on page 119](#).

ADDING A NEW PRODUCT



To add a new product press the **Add** button located on the Product Tab. The Product Options window appears, as shown.

Select Product Option

Press the **Add Product** button located on the Product Options window. The Variety Setup Wizard appears, as shown in the following step.

The **Import Product** button allows you to import a product from a desktop .msf file. For more information on importing products from desktop .msf files, see [“Import Product” on page 118](#).

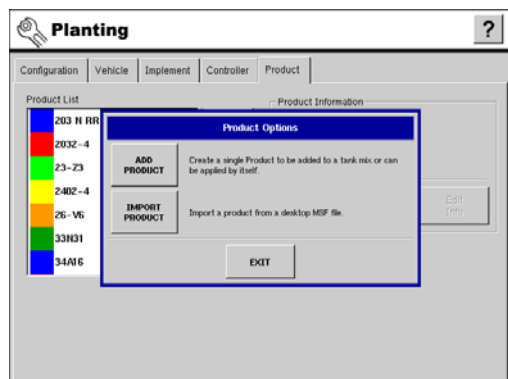
1. Select Crop Type

- The Variety Setup Wizard appears. Select a Crop type and the Units As Planted from the drop down menus.
- Press **Next**. to continue.

2. Enter Variety Information

- Enter the manufacturer name and the variety or hybrid. Only the variety or hybrid name is required.
- Press **Finish**.

IMPORT PRODUCT



To import a product from a desktop .msf file, press the **Add** button located on the Planting Tab. The Product Options window appears, as shown.

Select Product Option

Press the **Import Product** button located on the Product Option window.

1. Select Product and Type

- Select the Product and Type from the drop down menus.
- Press **Next**.to continue.

2. Select Units

- Select the units of the product.
- Press **Next**. to continue.

3. Enter Manufacturer and Common Name

- Enter the Manufacturer and Common Name, if desired.
- Press **Next**.to continue.

4. Enter Product Name

- Use the keypad to enter or change the product name.
- Press **Finish** when complete.

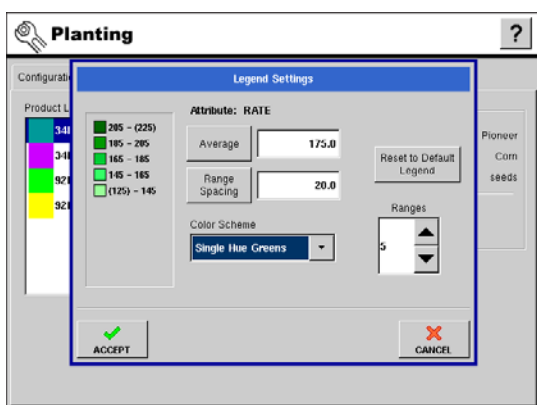
EDIT LEGEND AND EDIT INFO

Edit Legend

To access the Legend Settings box, press the **Edit Legend** button on the Product Tab.



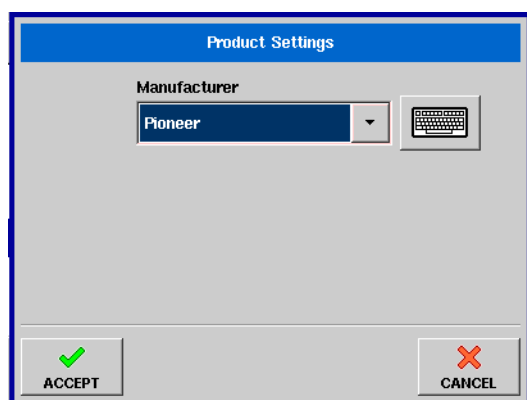
Note: Alternatively, you can access this window on the Run screen by pressing the range portion of the map legend. For more information, see [“Map Legend” on page 147](#).



Legend Settings window

The Legend Settings window allows you to change the default legend for the rate applied. The legend settings that are made here will affect all regions. The average button will change the average rate for the legend. The range spacing button changes the difference between the rates in one color range. The ranges arrows change how many ranges are displayed in the legend. The color scheme can be modified by using the drop down list. To reset the legend to the default press the reset to default legend button.

Edit Info



Product Settings window

To access the Product Settings window, press the **Edit Info** button on the Product Tab.

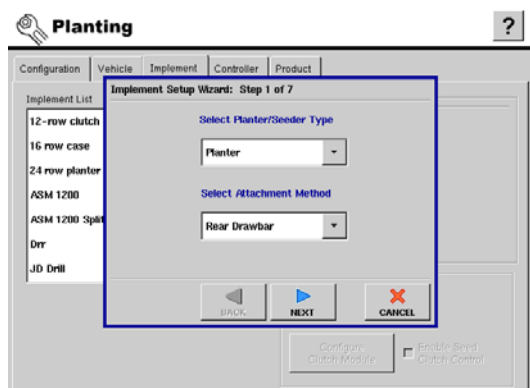
Product Settings window

The Product Settings window allows you to specify or change the manufacturer of a specific variety. Select a new manufacturer in the drop-down menu, or use the keypad to enter in a new manufacturer.

The manufacturer's information will be displayed in the Production Information area of the Product Tab. It can also be used in SMS Software.

MACHINE-SPECIFIC CONFIGURATIONS (FOR SEEDCOMMAND™)

ROW SHUTOFF CONFIGURATION



The following procedure describes how to configure a Row Shutoff Module, which is a function of SeedCommand. This procedure includes several sub-tasks, including configuring an implement, configuring the clutch modules, and creating a planting configuration.



Note: This procedure assumes that you have already configured a vehicle. If you have not configured a vehicle, see *"Planting Setup Tabs" on page 89*.

1. Set Implement Attachment Wizard

- On the Implement Tab, press the Add button. The Implement Setup Wizard appears.

- b. Use the top drop-down menu to select the planter or seeder type.
- c. Use the bottom drop-down menu to select the Implement Attachment Method.
- d. Press **Next** to continue.

2. Select Implement Options

- a. Select the following options, depending upon your desired configuration:
 - **Planter Monitor drop-down menu** - Choose **None**, or choose either the **KINZE Planter Monitor Module** or **Seed Monitor Module** functions.
 - **Split Rows Enabled** – Check this box to enable the display to log data from the planter's split row units. (For split row-enabled planters, you will need to create separate implement configurations for split row and non-split row operations).
 - **Planter Section Row Shutoff** – Check this box to enable the SeedCommand planter clutches.
- b. Press **Next** to continue.



Note: The Planter Section Row Shutoff check box must be checked in order to use Row Shutoff functionality.

3. Enter Number of Rows and Spacing

- a. Use the up and down arrows to enter the number of rows and spacing.
- b. Press **Next** to continue.

4. Enter Number of Implement Section(s)

- a. Use the up and down arrows to enter the number of clutch sections.
- b. Press **Next** to continue.



Note: Do not enter the number of individual rows. Enter the number of swath sections that can be independently turned on and off.

5. Enter Section Widths from Left to Right

- a. The Enter Section Widths from Left to Right window appears. This window shows the number of sections and number of rows in your configuration.
- b. Press **Next**, or Highlight the section number, and use the numeric keypad to change the section row numbers.
- c. Press **Next** to continue.



Note: The implement is divided up into equal section sizes by default. To modify the sections, press the keypad button for each section that needs to be changed.

6. Enter Distance from Hitch to Application Point

- a. Use the numeric keypad to enter the distance from the implement hitch to the application point (from front to back).
- b. Press **Next** to continue.

7. Enter Implement Name

- a. Use the keypad to enter a name for the implement.
- b. Press **Next** to continue.

8. Enable Seed Row Shutoff



Note: You must have the Enable Row Shutoff Module check box selected in order to have the Configure Row Shutoff button enabled.

- a. On the Implement Tab, first highlight the desired implement from the Implement List.
- b. Check the Enable Seed Row Shutoff check box. Next.

- c. Press the **Configure Clutch Modules** button.

9. Enter number of clutch sections

- a. Enter the same number of clutch sections that you specified in Step 4.
- b. Press Accept.



Note: If you enter in a different number of clutch sections other than that specified in the earlier implement configuration, the clutch module configuration will fail. Instead, you will see a message stating that “The number of detected module outputs does not equal the number of planter sections.”

You will also see this same message if you have not connected the clutches to the module. Thus, check these connections also.

10. Configuration complete

- a. A message window appears, stating “Configuration Complete.”
- b. Press OK.

11. Create an Operating Configuration

Now that you have completed the Row Shutoff Configuration, you must now create an operating configuration.

Go to the Configuration Tab.

- a. Press **Add**.
- b. The Operating Configuration Wizard appears. Select a vehicle.
- c. Press **Next** to continue.

12. Select Implement

- a. Use the drop-down menu to select an implement.
- b. Press **Next** to continue.

13. Select Area Logging (Site Verification)

- a. The Select Operation Type window appears. The window gives you the choice of Rate Logging/Control or Area Logging (Site Verification).
- b. Choose Area Logging (Site Verification).
- c. Press **Next** to continue.

14. Select Planting Method

- a. Choose either Single Variety, Two-Variety Split, or Three Variety.



Note: Single Variety records only one variety for the entire planter/seeder. Split Planting allows two or three varieties to be recorded and mapped simultaneously.

However, the Split Planter Configuration cannot be used for Single Variety planting. If you are planting a single variety, you must create a Single Variety configuration.

- b. Press **Next** to continue.

Auxiliary Step: Assign Sections to Splits on Planter (if split planter)

- a. If you have chosen a Split Planter, then a window appears where you may assign sections to splits on the planter.
- b. Use the numeric keypad to enter in a different number of sections.



Note: Enter the correct number of swath sections for each variety split on the planter.

15. Add Additional Application Equipment (Optional)

The Add Additional Application Equipment window appears. From here, you may add additional equipment or controllers to your planting configuration so that you may record liquid or dry products. For example, if you are using DirectCommand to spray a liquid application, or if you are using a serial controller, you should add this equipment to your configuration at this window.

- a. Add equipment by pressing **Add** and following the Equipment Configuration Wizard
- b. Press **Next** to continue.



Note: If you choose to add additional equipment, add them in the same order as the implements are attached.

Step 16: Select Implement Switch (None)

- a. The Select Implement Switch window appears. Choose None.
- b. Press **Next** to continue.

Step 17: Select Ground Speed Source

- a. Select your ground speed source. If you will be using GPS as the primary source, you will need to select a secondary source.
- b. Press **Next** to continue.



Note: If you are not using GPS for ground speed, then after you have created a configuration you must calibrate the ground speed sensor for accurate speed and area calculations. For more information, see [“Calibrate Distance” on page 100](#).

Step 18: Enter Configuration Name

- a. A window appears, asking you to enter a suggested configuration name. Use the keypad to enter a name.
- b. Press Finish.

Your Row Shutoff Configuration is now complete.

HYDRAULIC SEED CONTROL CHECKLIST

The Hydraulic Seed Control Module is an Ag Leader SeedCommand product that allows users to control up to three hydraulic motor drives via the display. Configure the Hydraulic Seed Rate Control Module in the following order:

1. Configure Hydraulic Seed Rate Control Module.

See [“Hydraulic Seed Control Configuration” on page 123](#).

2. Enter Controller Settings

Including the Max Meter Speed, Gear Ratio and Minimum Allowable Ground Speed. See [“Hydraulic Seed Control Configuration” on page 123](#), [“Hydraulic Seed Controller Settings for Specific Planters” on page 110](#) and also [“Controller Settings - Auxiliary Tab” on page 112](#).

3. Prime the Hydraulic Seed Meter.

See [“Seed Meter Prime \(Hydraulic Seed Control feature\)” on page 152](#)

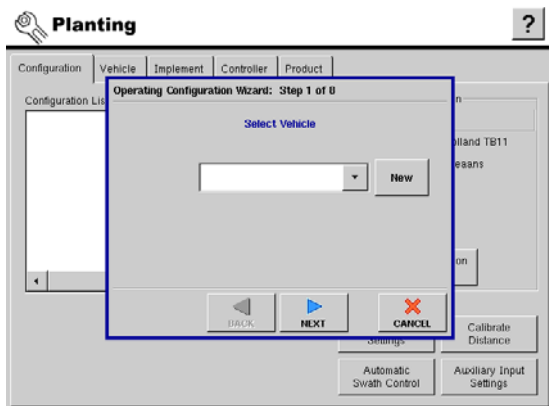
4. Enter Meter Calibration Number.

This number, representing seeds per revolution, is set according to the number of seeds dropped per one revolution of the seed meter. See [“Hydraulic Seed Control on Run Screen” on page 149](#) and also [“Hydraulic Seed Control Seed Meter Calibration Numbers” on page 149](#).

5. Perform a Seed Meter Calibration.

A new calibration should be performed if your as-applied seed rate does not match the population found in the ground. See [“Hydraulic Seed Control Seed Meter Calibration” on page 151](#).

HYDRAULIC SEED CONTROL CONFIGURATION



To create a configuration which uses the Hydraulic Seed Control feature, you must create a configuration that includes a hydraulic controller. To begin, press the **Add** button. The Operating Configuration Wizard appears.

At the Configuration Tab, press the **Add** button and the Operating Configuration Wizard appears.

1. Select Vehicle

- Select an existing Vehicle from the drop-down menu, or press the Add button and create a new vehicle with the Vehicle Setup Wizard.
- Press **Next** to continue.

2. Select Implement

- Using the drop-down box, select the implement you would like to use in this configuration. If there are no implements in the list, press **New**.
- Press **Next** to continue.



Note: For help with the Adding a New Implement Wizard, see [“Adding A New Implement” on page 106](#).

3. Select Operation Type

- Select the Rate Logging/Control operation type.
- Press **Next** to continue.

4. Auxiliary Step: Select Controller

Select an existing controller from the drop-down menu, or press the **New** button and use the Controller Setup Wizard to create a controller.

- Select Device and Seed Command Type

After pressing the **New** button, the Controller Setup Wizard appears.

- select **SeedCommand** as your device.
- select **Hydraulic Seed Control** as the SeedCommand Type.

- Press **Next** to continue.

5. Enter number of drives

- Use the up and down arrows to enter in the number of hydraulic drives on your planter.
- Press **Next** to continue.

6. Enter suggested controller name

- A suggested controller name appears. If necessary, use the on-screen keyboard to edit the name of the controller.
- Press **Finish** when complete.

7. Select Planting Method

The Operating Configuration Wizard reappears. Here you must select either Single Variety or a split planter configuration based upon the number of drives that you entered in Step 5. In that instance, we

entered three drives, so here the display gives the option of entering either a Single Variety or a Three-Variety Split.



Note: *Single Variety records one variety (and one target rate) for the entire planter/seeder. Split Planting shows two or three varieties (each with its own individual target rate) to be recorded and mapped simultaneously.*

Press **Next** to continue.

8. Add Additional Application Equipment (Optional)

- a. If you would like to apply another product with your selected implement, or add an additional implement for the application of another product, press the Add button.
- b. Press **Next** to continue.



Note: *For help with adding or creating an additional equipment configuration see “Adding an Additional Equipment Configuration” on page 96.*

9. Select Ground Speed Source

- a. Select your ground speed source. If you will be using GPS as the primary you will need to select a secondary source.
- b. Press **Next** to continue.

10. Enter Suggested Name for Configuration

- a. Use the keyboard button to edit the name of the configuration.
- b. Press **Finish** to complete the setup process.

STEPPER SEED RATE CONTROL CHECKLIST

The Stepper Seed Control module allows Rawson ACCU-RATE Variable Rate Controller users to control up to three hydraulic motor drives via the display. If you have purchased the Stepper Seed Rate Control module, you should configure it in the following order.

1. Configure Stepper Seed Rate Control module.

See “[Stepper Seed Rate Control Configuration](#)” on page 125

2. Enter Controller Settings

Include the Max Meter Speed, Gear Ratio and Minimum Allowable Ground Speed. See “[Controller Settings for Stepper Seed Rate Motor Drives](#)” on page 108 and also “[Gear Ratio Calculations for Seed Rate Motors](#)” on page 113. Users who have John Deere products that use ProShaft drives should see “[Gear Ratio Drawing - For John Deere Pro-Shaft™ Drives](#)” on page 115.

3. Prime the Stepper Seed Meter

This fills the seed meter with seed, and thus allows you to avoid skips in your field. See “[Priming the Stepper Seed Rate Meter](#)” on page 154.

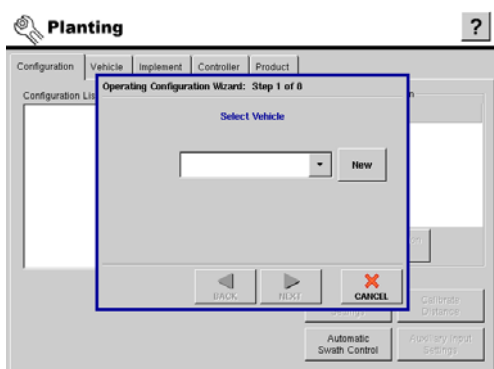
4. Enter Meter Calibration Number

This number, representing seeds per revolution, is set according to the number of seeds dropped per one revolution of the seed meter. See “[Stepper Seed Rate Planter Control](#)” on page 153.

5. Perform a Seed Meter Calibration

A new calibration should be performed if your as-applied seed rate does not match the population found in the ground. The Planter Monitor can be used to double-check the population planted. See “[Calibrating the Stepper Seed Rate Meter](#)” on page 154.

STEPPER SEED RATE CONTROL CONFIGURATION



The following procedure describes how to configure a Stepper Seed Control Module, which is a function of SeedCommand. To begin, press the **Setup** button and go to the Configuration Tab. Press the **Add** button, and the Operating Configuration Wizard appears.

1. Select Vehicle

- Use the drop down box to select the vehicle you would like to use in this configuration.
- Press **Next** to continue.



Note: If there are no vehicles in the list, press **New** and the Vehicle Setup Wizard appears. For help with adding a new vehicle, see [“Adding A New Vehicle” on page 103](#).

2. Select Implement

- Use the drop-down box to select the implement you would like to use in this configuration.
- Press **Next** to continue.



Note: If there are no implements in the list, press the **New** button and the Implement Setup Wizard appears. For help with adding a new implement, see [“Adding A New Implement” on page 106](#).

3. Select Rate Logging/Control

- Select the Rate Logging/Control operation type.
- Press **Next** to continue.

4. Select Controller

- The Select Controller window appears. Press **New** to create a new Stepper Seed Rate Controller.

5. Select Stepper Seed Control

- The Controller Setup Wizard appears. Select a controller.
 - Underneath the **Device** drop-down menu, select **SeedCommand**.
 - Underneath the **Device Type** drop-down menu, select **Stepper Seed Control**.
- Press **Next** to continue.

6. Select Number of Drives

- Use the up and down arrows to enter in the number of stepper seed motor drives on your planter.
- Press **Next** to continue.

7. Enter Suggested Controller Name

- A suggested controller name appears. If necessary, use the on-screen keyboard to edit the name of the controller.
- Press **Finish** to exit the Controller Setup Wizard and continue the configuration.

8. Select Planting Method



Note: Single Variety records one variety (and one target rate) for the entire planter/seeder. Split Planting shows two or three varieties (each with its own individual target rate) to be recorded and mapped simultaneously.

The Operating Configuration Wizard reappears.

- a. Here you must select either Single Variety or a split planter configuration based upon the number of drives that you entered in Step 6. In that instance, we entered three drives, so here the display gives the option of entering either a Single Variety or a Three-Variety Split.
- b. Press **Next** to continue.

9. Add Additional Application Equipment (Optional)

- a. This is an optional step. If you would like to apply another product with your selected implement, or add an additional implement for the application of another product, press the Add button.
- b. Press **Next** to continue.



Note: For help with adding or creating an additional equipment configuration see [“Adding an Additional Equipment Configuration” on page 96.](#)

10. Select Ground Speed Source

- a. Select your ground speed source. If you will be using GPS as the primary you will need to select a secondary source.
- b. Press **Next** to continue.

11. Enter Suggested Name for Configuration

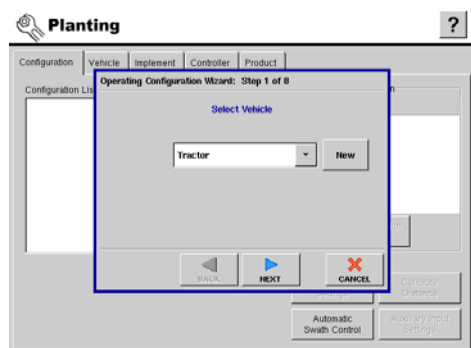
- a. Use the keyboard button to edit the name of the configuration.
- b. Press **Finish** to complete the setup process.

SEED TUBE MONITOR MODULE

The Seed Tube Monitor Module provides population monitoring for DICKEY-john seed tube sensors used on several different brands of planters. If you have purchased the Seed Tube Monitor Module, you should configure it in the following order.

1. STMM Configuration procedure. See procedure below.
2. Press the **Seed Monitor Setup** button on Implement Tab. This summons the Seed Monitor Setup window, where you may adjust Sensor Configuration and Alarms, if necessary). See [“Seed Tube Monitor Options” on page 157](#); as well as [“Seed Tube Sensor Configuration” on page 129](#) and [“Seed Monitor Alarms” on page 130](#).
3. Seed Monitor Options at Run Screen. See [“Seed Tube Monitor on Run Screen” on page 156](#).

SEED TUBE MONITOR MODULE CONFIGURATION



At the Configuration Tab, press the **Add** button and the Operating Configuration Wizard appears.

1. Select Vehicle

- a. Select an existing Vehicle from the drop-down menu, or press the Add button and create a new vehicle with the Vehicle Setup Wizard.
- b. Press **Next** to continue.

2. Select Implement

- a. Using the drop-down box, select the implement you would like to use in this configuration. If there are no implements in the list, press **New**.

- b. Press **Next** to continue.



Note: For help with the Adding a New Implement Wizard, see “Adding A New Implement” on page 106.

3. Select Planter/Seeder Type and Attachment Method

- Select the Planter setting (top drop-down menu).
- Select an appropriate attachment Method (bottom drop-down menu).
- Press **Next** to continue.

4. Select Implement Options

- Under the Planter Monitor drop-down menu, select Seed Monitor Module.
 - **Split Rows Enabled** - Check this box to enable the display to log data from the planter's Split Row units. (For split row-enabled planters, you will need to create separate implement configurations for Split Row and non-Split Row operations).
 - **Planter Section Row Shutoff** - Check the **Planter Section Row Shutoff** check box if you are using Row Shutoff.

5. Enter Number of Rows and Spacing

- Use the up and down arrow keys to enter the number of rows and spacing.



Note: These numbers will vary depending upon the crop that you are planting. For example, corn may require a 16 row, 30-inch spacing configuration; while soybeans could possibly require a 31 row, 15-inch spacing configuration.

- When finished, press **Next**.

6. Enter Number of Implement Sections

- Use the up and down arrow keys to enter the number of implement sections.
- Press **Next** to continue.



Note: Do not enter the number of individual rows. Enter the number of swath sections that can be independently turned on and off.

7. Enter Distance from Hitch to Application Point

- Use the numeric keypad to enter the distance from the implement hitch to the application point (from front to back).
- Press **Next** to continue.

8. Enter Implement Name

- Use the keyboard button to enter an Implement Name.
- Press Finish.


9. Select Operation Type

The Operating Configuration Wizard reappears. You must select an operation type.

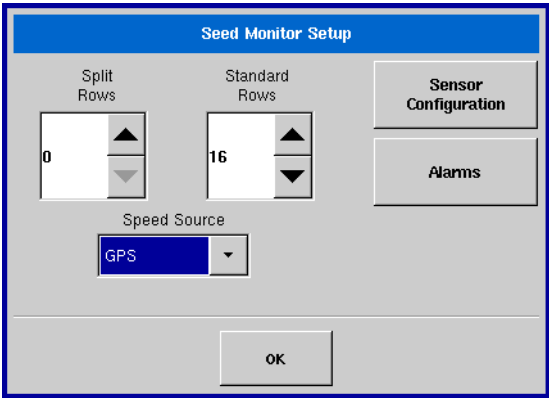
Select either

- **Area Logging** (used for a Site Verification operation)
- **Rate Logging/Control** (used for population control).


Complete the configuration procedure by continuing through the wizard by making selections regarding controllers, additional equipment, and Ground Speed Source that is particular to your planting operation.

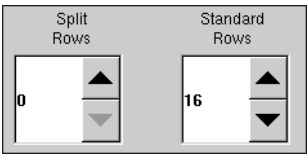
 **Note:** After completing this configuration, in order for it to become active, you must perform an AutoConfig procedure, which assigns individual rows to the appropriate pins on the Seed Tube Monitor Module. To do this, first go to the Implement Tab, press on the Seed Monitor Setup button, and the Seed Monitor Setup screen appears, as shown at “Seed Tube Monitor Module Setup” on page 128. Press the **Sensor Configuration** button and the Sensor Configuration screen appears, as shown at “Seed Tube Sensor Configuration” on page 129. Press the **AutoConfig** button to perform this procedure.

SEED TUBE MONITOR MODULE SETUP

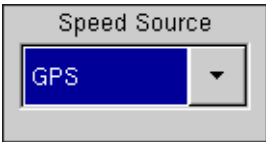


Press the **Seed Monitor Setup** button on the Implement Tab to summon the Seed Monitor Setup window, as shown. Here you may adjust row and ground speed source settings, adjust sensor configuration and set alarm thresholds.

 **Note:** New settings entered at this screen are sent directly to the Seed Tube Monitor Module; thus you do not need to enter new configuration settings for each planting implement unless the number of rows change.



Shows the number of rows found on the planter that the Seed Tube Monitor Module supports. Use the up and down arrows to enter the total number of rows found on the planter.



Shows the selected Ground Speed Source input for the Seed Tube Monitor Module.

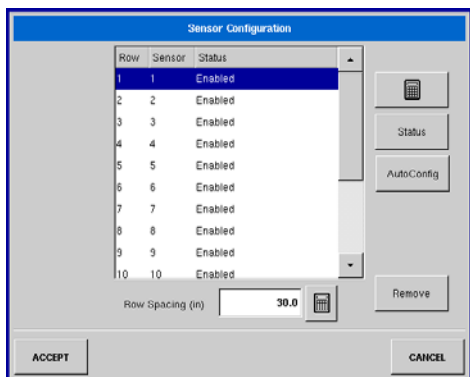
- **Sensor Configuration button**

Press to summon the Sensor Configuration window, which shows which rows are assigned to the individual pins on the Seed Tube Monitor Module. For more information, see “Seed Tube Sensor Configuration” on page 129 and also “Seed Monitor Sensor Selection” on page 129.

- **Alarms button**

Press to summon the Seed Monitor Alarms window, which shows each row and the alarm threshold for that row. For more information, see “Seed Monitor Alarms” on page 130.

Seed Tube Sensor Configuration



The Sensor Configuration window shows which rows are assigned to the individual pins on the Seed Tube Monitor Module.



The numeric keypad to move the sensor to a different location, in case you need to make configuration changes for custom planting operations.



Note: To return to the default, press the **AutoConfig** button.

- **Status button**

Enables and disables a Seed Tube sensor.



Note: A row with a failed sensor can be ignored until a replacement sensor is installed.

- **AutoConfig button**

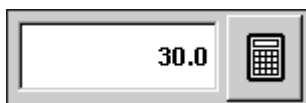
Sends the planter settings to the Seed Tube Monitor Module.



Note: After creating a Seed Tube Monitor Module configuration, in order for it to become active you must perform an AutoConfig procedure.

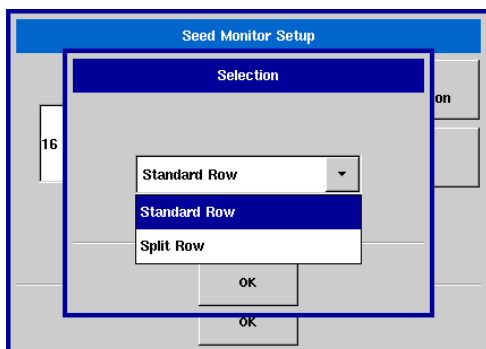
- **Remove button**

Removes an individual Seed Tube sensor.



The row spacing keypad is where you must enter in the row spacing that your planter will be planting.

Seed Monitor Sensor Selection



If you specified a split-row planting configuration in the drop-down list shown on the Seed Monitor Setup window (See [“Seed Tube Monitor Module Setup” on page 128.](#)), then the Selection window will appear (as shown) after the first time that you press the **Sensor Configuration** button on the Seed Monitor Setup window. Choose between **Standard Row** or **Split Row** and press **OK**.



Note: Split-row users must configure the Seed Tube Monitor Module for both Standard Row configurations and Split Row configurations. Both configurations are then saved in the module, and settings for each planting configuration are automatically applied when you specify the machine configuration on the Run Screen.

Seed Monitor Alarms

Row	Low	High
1	70%	120%
2	70%	120%
3	70%	120%
4	70%	120%
5	70%	120%
6	70%	120%
7	70%	120%
8	70%	120%
9	70%	120%
10	70%	120%

Pressing the **Alarms** button on the Seed Monitor Options window summons the Seed Monitor Alarms window, as shown.

The **High** and **Low** buttons assign a percentage of error that will trigger the rate alarm.

The **Disable High** and **Disable Low** buttons deactivate the respective high or low rate alarms.

The **Select All** button selects all rows so that you may change the alarm threshold for the entire group.

KINZE PLANTER MONITOR

The KINZE Planter Monitor is a feature that receives planting data from a KINZE Population Monitor on the run screen. If you have purchased the KINZE Population Monitor product, you should configure it in the following order.



Note: Steps 1-4 must be performed by everyone who has purchased a KINZE Planter Monitor; steps 5-6 are performed by customers who have purchased those specific features.

1. Display setup.

This creates a configuration that is used for KINZE Planter Monitor operations. If you have a KINZE Population Monitor, see [“KINZE Population Monitor Configuration” on page 131](#), especially the part of the procedure dealing with selecting implement options.



Note: If you have a Hydraulic Seed Control Configuration, see [“Hydraulic Seed Control Configuration” on page 123](#). If you have a Seed Tube Monitor Module Configuration, see [“Seed Tube Monitor Module Configuration” on page 126](#).

2. Monitor Module setup.

Including front and rear unit settings, Shaft RPM sensor settings, and row spacing settings. This step allows the display to detect the physical KINZE Planter devices. To begin, see [“KINZE Planter Monitor Setup” on page 133](#) and then continue on to [“KINZE Planter Configuration” on page 134](#).

3. Sensor detection process.

This allows the display to detect the proper number of muxbus sensors on the row units. See [“Muxbus Sensor Detection \(for KINZE Planter Monitor\)” on page 136](#).

4. Set alarm thresholds.

This allows you to determine the level at which the seed monitor alarms will sound. See [“KINZE Seed Monitor Alarms” on page 139](#).

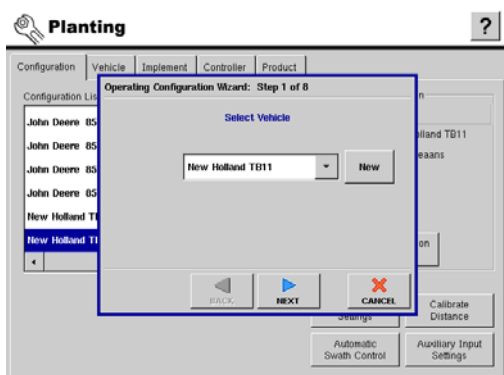
5. Calibrate the Magnetic Pickup Coil.

This step, which is performed by customers who have purchased the Magnetic Pickup Coil Speed Sensor allows the Monitor Module to receive data from this sensor, which measures the ground speed of the planter. See [“KINZE Magnetic Coil Speed Sensor Calibration” on page 139.](#)

6. EdgeVac® calibration.

This step, which is performed by customers who have purchased the EdgeVac® seed meters, allows the display to receive accurate data from the meters. See [“KINZE EdgeVac Calibration” on page 140.](#)

KINZE POPULATION MONITOR CONFIGURATION



The following procedure describes the complete process of configuring a SeedCommand KINZE Planter Monitor. To begin, press the **Setup** button and go to the Configuration Tab. Here you can select the equipment configuration type.

At the Configuration Tab, press the **Add** button and the Operating Configuration Wizard appears.



Note: This procedure assumes that you have already set up a Vehicle configuration. If you have not done so, see [“Adding A New Vehicle” on page 103.](#)

1. Select Vehicle

- Select an existing Vehicle from the drop-down menu, or press **Add** and create a new vehicle with the Vehicle Setup Wizard.
- Press **Next** to continue.

2. Select Implement

- Using the drop-down box, select the implement you would like to use in this configuration. If there are no implements in the list, press **New**.
- Press **Next** to continue.



Note: For help with the Adding a New Implement Wizard, see [“Adding A New Implement” on page 106.](#)

3. Select Planter/Seeder Type and Attachment Method

The Implement Setup Wizard appears.

- Select the **Planter** setting (top drop-down menu).
- Select an appropriate attachment Method: **Rear Drawbar** or **Rear 3-Point Hitch** (bottom drop-down menu).
- Press **Next** to continue.

4. Select Implement Options

- Select the following options, depending upon your machine's configuration:
 - Planter Monitor drop-down menu** - Choose the **KINZE Planter Monitor Module**.
 - Split Rows Enabled** – Check this box to enable the display to log data from the planter's Split Row units. (For Split Row-enabled planters, you will need to create separate implement configurations for Split Row and non-Split Row operations).
 - Planter Section Row Shutoff** – Check this box to enable the Row Shutoff and planter clutches.
- Press **Next** to continue.

5. Enter the Number of Rows and Spacing

- Use the up and down arrow keys to enter the number of rows and spacing.
- When finished, press **Next**.



Note: These numbers will vary depending upon the crop that you are planting. For example, corn may require a 16 row, 30-inch spacing configuration; while soybeans could possibly require a 31 row, 15-inch spacing configuration.

6. Enter the Number of Implement Sections

- Use the up and down arrow keys to enter the number of implement sections.
- Press **Next** to continue.



Note: Do not enter the number of individual rows. Enter the number of swath sections that can be independently turned on and off.

7. Enter Section Widths from Left to Right

- If you entered more than one section in Step 6 above, the Enter Section Widths from Left to Right window appears. This window shows the number of sections and number of rows in your configuration. From here you can:
 - Press **Next**, or Highlight the section number, and use the numeric keypad to change the section row numbers; then press **Next**.



Note: The implement is divided up into equal section sizes by default. To modify the sections, press the keypad button for each section that needs to be changed.

8. Enter Distance from Hitch to Application Point

- Use the numeric keypad to enter the distance from the implement hitch to the application point (from front to back).
- When finished, press **Next**.

9. Enter Implement Name

- Use the keyboard button to enter an Implement Name,
- Press Finish to complete the Implement Setup Wizard.

10. Select Operation Type

The Operating Configuration Wizard reappears.

Select an operation type — **Area Logging (Site Verification)** or **Rate Logging/Control**.

For configurations that do not include the Hydraulic Seed Control Module or Stepper Seed Control options, you must choose **Area Logging (Site Verification)**. Press **Next** to continue.

For configurations that include a Hydraulic Seed Control Module or the Stepper Seed Control option, you must choose **Rate Logging/Control**. Press **Next** to continue. Complete the configuration procedure by continuing through the wizard by making selections regarding controllers, additional equipment, and Ground Speed Source that is particular to your planting operation.

Step 10a: Select Planting Method

If you selected more than one Implement Section in previous steps, then the Select Planting Method window appears.

Select either Single Variety or Split Planting (**Two Variety Split** or **Three Variety Split**). Press **Next** to continue.

If you selected Single Variety, continue at Step 11, "Add Additional Application Equipment."

If you selected a Split Planting method, continue at Step 10b, "Assign Sections to Splits on Planter."

Step 10b: Assign Sections to Splits on Planter

Press the touchpad and choose the Planter Side where you wish to assign sections. Then press the numeric keypad to enter the number of sections.

Press **Next** to continue.

11. Add Additional Application Equipment (optional)

- If you plan to use additional application equipment for a secondary operation (such as a liquid starter control), press the Add button and use the Equipment Configuration Wizard to add equipment.
- Press **Next** to continue.

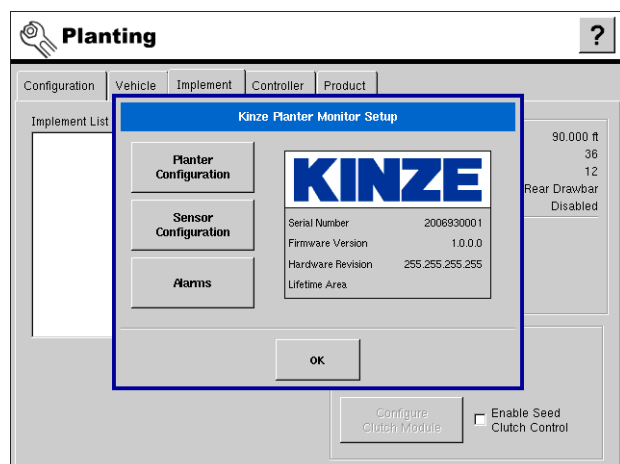
12. Select Ground Speed Source

- Select a Primary and Backup Ground Speed Source, (such as GPS, Wheels, Track or Radar).
- Press **Next** to continue.

13. Enter Suggested Name for Configuration

- A suggested configuration name appears. If necessary, edit this name by pressing the keyboard button and entering a new name with the on-screen keypad.
- Press **Finish** when complete.

KINZE PLANTER MONITOR SETUP



The **KINZE Planter Monitor Setup** button, located on the Implement Tab, allows the operator to adjust configuration settings for the Planter, Sensor and Alarms. When this button is pressed, the Seed Monitor Setup window appears, as shown.

• Planter Configuration button

Opens the Planter Configuration window. For more information, see [“KINZE Planter Configuration” on page 134](#).

• Sensor Configuration button

Shows the Sensor Configuration window. For more information, see [“KINZE Planter Sensor Configuration” on page 135](#).

• Alarms button

Pulls up the Seed Monitor Alarms window, where the operator can set a threshold for the alarm at 10%, 50%, or 70% or a user-specified percentage; or disable the alarm entirely. For more information, see [“KINZE Seed Monitor Alarms” on page 139](#); see also [“Alarms on KINZE Planter Monitor” on page 163](#).

KINZE PLANTER CONFIGURATION

To view the Planter Configuration window, go to the Implement Tab, press the **KINZE Planter Monitor Setup** button, and when the KINZE Planter Monitor Setup window appears, press the **Planter Configuration** button.

- **Reset button**

Returns settings to factory defaults allowing operator to run Muxbus Sensor Detection process.

- **Front Units/Rear Units**

Use the up and down arrow keys to adjust the number of front and rear planting units, if necessary.



Note: Enter the total number of row units on the planter (include Split Row units).

- **Shaft RPM Sensors**

Use the up and down arrows to adjust the number of **Shaft RPM Sensors**, if necessary.



Note: There is one shaft sensor per transmission.

- **Seed Tube Sensitivity**

Use the up and down arrows to adjust, if necessary.

- **Row Spacing**

Shows the minimum row spacing of the planter. Use the numeric keypad to adjust the Row Spacing.



Note: Enter the narrowest row spacing that the planter is capable of planting. The display will automatically apply the correct row spacing based on planter configuration.

- **Magnetic Pickup**

Check the box only if the planter is equipped with the Magnetic Pickup Sensor. This setting should then be left unchanged. For information on calibrating the Magnetic Coil Speed Sensor, see [“KINZE Magnetic Coil Speed Sensor Calibration” on page 139](#).



Note: Customers who do not have the magnetic pickup sensor who check this box will see a window stating, “Bad Configuration: No Magnetic Pickup sensor currently found.”

• Speed Source

Selects the type of speed source for the planter monitor. It includes the following options:

- GPS (recommended). With this selection, the PMM looks to the display for a GPS ground speed.
- Auxiliary (Auxiliary Input Module). With this selection, the PMM looks to the display from radar.
- Planter Monitor Module (PMM). With this selection, the PMM looks for ground speed from the magnetic speed sensor on the planter. Magnetic pickup needs to be checkmarked and calibrated to get an accurate seed population reading.



Note: This speed selection only affects the PMM. The ground speed source must still be selected.

• EdgeVac Sensors

Use the arrows to enter the number of EdgeVac® sensors on your planter. You will also need to calibrate the EdgeVac sensors once per year. To start this process, press the **Calibrate** button. For more information, see [“KINZE EdgeVac Calibration” on page 140](#).

• Tank Pressure

Check the box only if the planter is equipped with tank pressure sensor. You will also need to calibrate the sensor once per year. To start this process, press the **Calibrate** button.

• Other Sensors

- **Down Pressure** - Check this box if the planter has pneumatic down pressure.
- **Oil Sensor** - Leave this box unchecked.
- **SDS Sensors** - Check this box if the planter has a mechanical Seed Distribution System (SDS) installed.

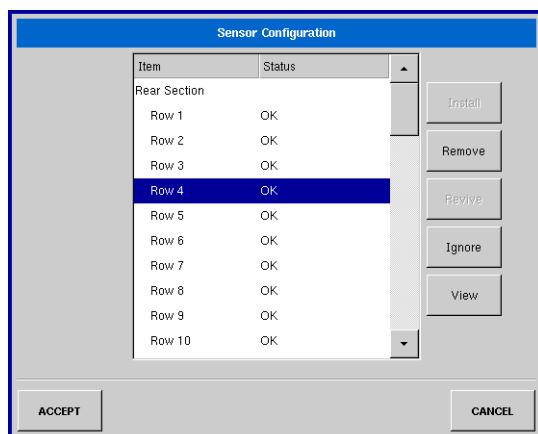
• Accept button

To save configuration settings, press button.



Note: If you have changed the number of sensors on the Planter configuration, the **Accept** button starts the Muxbus Detection procedure. For more information, see [“Muxbus Sensor Detection \(for KINZE Planter Monitor\)” on page 136](#).

KINZE PLANTER SENSOR CONFIGURATION



To view the Sensor Configuration Window, go to the Implement Tab, press the **KINZE Planter Monitor Setup** button, and when the KINZE Planter Monitor Setup window appears, press the **Sensor Configuration** button. The Sensor Configuration window, shown below, is for system maintenance of the KINZE Population Monitor.

• Install button

Installs a row sensor.



Note: Upon your initial configuration of the KINZE Planter Monitor, you must complete the Sensor Muxbus Detection process. For more information, see [“Muxbus Sensor Detection \(for KINZE Planter Monitor\)”](#) on page 136.

- **Remove button**

Removes the highlighted sensor of any type.

- **Revive button**

Allows the display to reattempt communication with the highlighted sensor of any type.

- **Ignore button**

Tells the display to cease communications with a row sensor.

- **View button**

Shows the Sensor Information window. For further information, see [“Sensor Information \(for KINZE Planter Monitor\)”](#) on page 138.

- **Accept button**

Saves configuration settings.

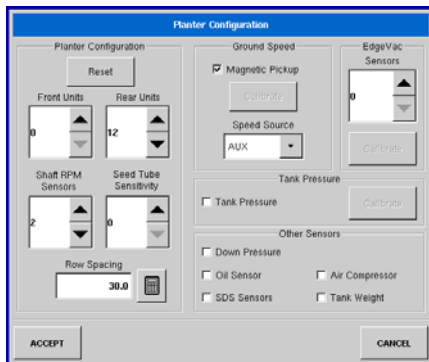
MUXBUS SENSOR DETECTION (FOR KINZE PLANTER MONITOR)

Upon your initial configuration of the KINZE Planter Monitor, you must complete the Sensor Muxbus Detection process. This process allows the PMM to detect each sensor on the planter. In order for the display to show the correct Planter Monitor information, you must complete the detection process for each muxbus sensor.



Note: Be sure that all of your planter sensors are unplugged before you begin the Muxbus Detection process. If any of your sensors are still plugged in, the Muxbus Detection process will abort. If this occurs, unplug the remaining sensors and retry the procedure.

To start the Sensor Muxbus Detection process, go to the Implement Tab, press the **KINZE Planter Monitor Setup** button, and when the KINZE Planter Monitor Setup window appears, press the **Planter Configuration** button. The Planter Configuration window appears, as shown.



1. Make Settings Adjustments on Planter Configuration window

When the Planter Configuration window appears, make any changes to the Planter Configuration Settings that are necessary. For more information on these settings, see [“KINZE Planter Configuration”](#) on page 134.

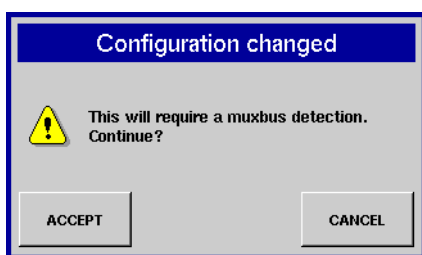
When you are finished making adjustments to the settings, press **Accept**.



Note: The Muxbus detection process will only start if you have changed the sensor configuration. If you have not changed your configuration, it will not repeat the muxbus detection process but instead will exit to the Implement Tab.

2. Disconnect Planter Sensors from Sensor Harness

- Make certain all planter sensors are disconnected from the planter harness.



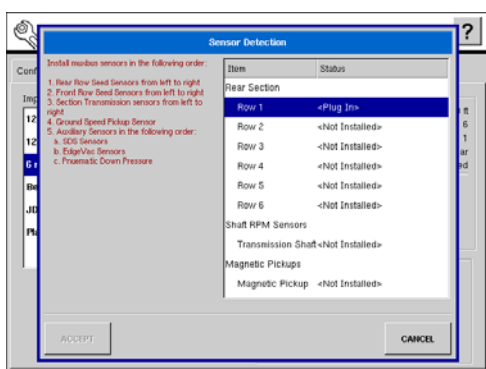
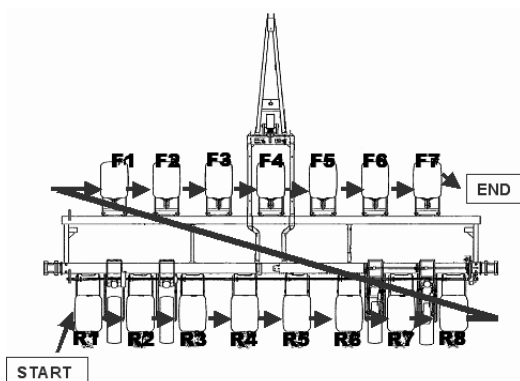
3. Accept the Muxbus Detection warning

A window appears, informing you that your configuration has changed and that it will require a muxbus detection. Once all sensors are disconnected, press the **Accept** button on the Configuration Changed window. The Muxbus Detection Process can now begin.

4. Plug in Sensors

Order of Muxbus sensor installation

Plug in each physical sensor plug into the muxbus wiring harness on the planter, in the order the sensors will be viewed on the display, and follow the on-screen instructions.



Install the sensors in the order they are to be viewed on the display

Rear Row Seed sensors from left to right.

Front Row Seed sensors from left to right.

Auxiliary Sensors in the following order:

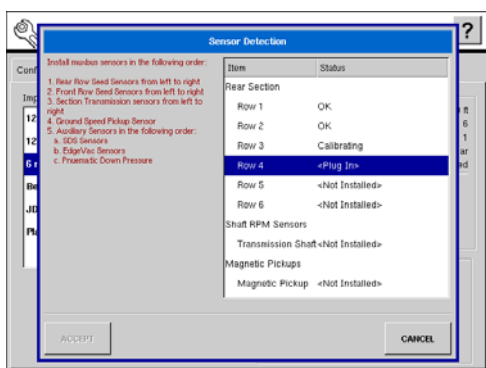
-a. Auxiliary Section Transmission Sensors, from left to right.

-b. Auxiliary Ground Speed Pickup Sensor.

-c. EdgeVac® Sensors.

-d. Pneumatic Down Pressure.

-e. Seed Scale Sensor, Air Compressor Sensor, and ASD Sensor.

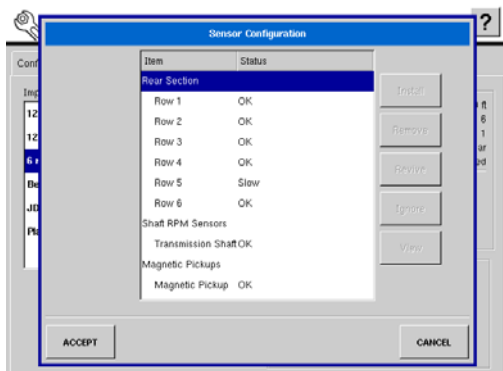


When the row unit sensor is plugged in, the display will beep once and show the status as "**Calibrating**". When calibration is complete, the display will beep again and display either "**OK**" or "**Slow**".



5. Detect Complete

When the Muxbus Detection process is complete, a message displays, stating "All sensors found" as shown at left.



6. Resolve Any Possible Errors

When the Muxbus Detection Process begins, each row unit will display “N/A” (Not Available) underneath the status. But as the Muxbus Detection process takes place, each row unit should state “Calibrating” for a time, then should indicate “OK”, as in the case of Row Units 1-4 and Row Unit 6, shown at left.

After calibration, the sensor status displays either one of two different states:

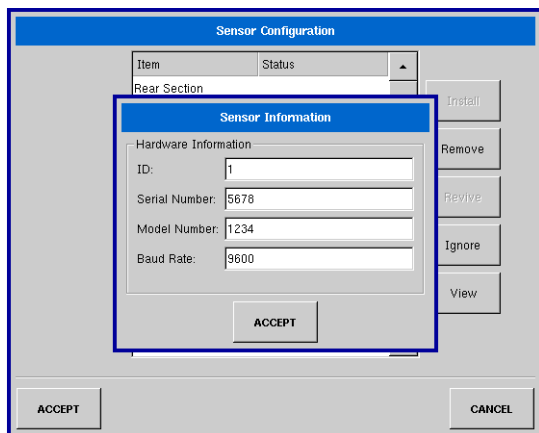
OK - The sensor is working and is communicating at a 9600 baud rate.

Slow - The sensor is working, but is communicating at a 2400 baud rate.



Note: Some older KPM 1, II, and III systems have slower sensors with black connectors that communicate at a 2400 baud rate. The KPM I, II, and III systems with blue connectors communicate at a 9600 baud rate. **A slower baud rate does not result in decreased performance.**

SENSOR INFORMATION (FOR KINZE PLANTER MONITOR)



The Sensor Information window displays hardware information for each seed tube sensor and also each seed sensor. Technical support may request that you look at this window to help in diagnosing a problem. To view the Sensor Information window, go to the Implement Tab, press the **KINZE Planter Monitor Setup** button, and when the KINZE Planter Monitor Setup window appears, press the **Sensor Configuration** button. When the Sensor Configuration window appears, press the **View** button.

- **Hardware ID number**

Unique number for each sensor on the muxbus.

- **Serial Number**

Varies for each individual unit of seed sensor and seed tube sensor.

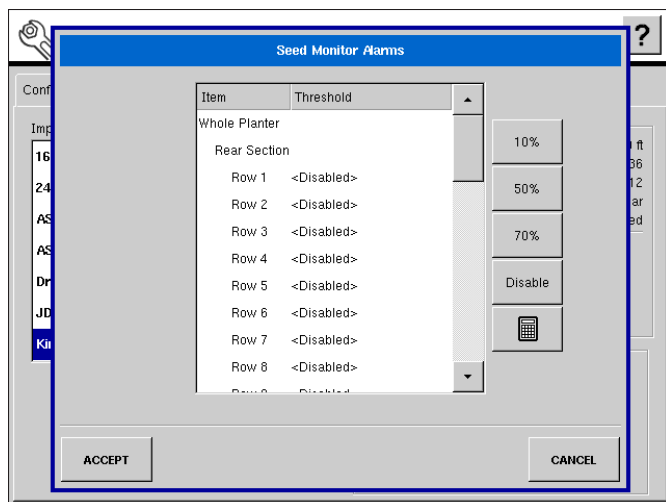
- **Model Number**

Shared by each unit of the same model of seed tube sensor.

- **Baud Rate number**

Speed of transmission between the muxbus sensor and the PMM module.

KINZE SEED MONITOR ALARMS



To view the Seed Monitor Alarms window, go to the Implement Tab, press the **KINZE Planter Monitor Setup** button, and when the KINZE Planter Monitor Setup window appears, press the **Alarms** button. For more information, see [“Alarms on KINZE Planter Monitor” on page 163](#).

You can change the alarm threshold for each individual row unit, or for an individual section, or the whole planter. To change the threshold of an alarm, highlight the row unit, then press either a given percentage number (**10%**, **50%**, **70%**, or use the numeric keypad to create your own value). The alarm will then sound only when the population drops below that numeric threshold value.

If you wish to turn the threshold of the alarm to

zero, press the **Disable** button.



Note: The default alarm setting is at **50%**.

KINZE MAGNETIC COIL SPEED SENSOR CALIBRATION

KINZE Planter Monitor customers who have a magnetic coil speed sensor must check the Magnetic Pickup check box on the Planter Configuration window when the first enter a configuration. This setting should then be left unchanged. For reference, see [“KINZE Planter Configuration” on page 134](#) and the settings described on the following page.

These customers will need to calibrate the Magnetic Coil Speed Sensor at least once per season. To do this, go to the Implement Tab, press the **KINZE Planter Monitor Setup** button, and press the **Planter Configuration** button. When the Planter Configuration window appears, press the **Calibrate** button. The Magnetic Coil Speed Sensor Calibration wizard appears.

1. Enter distance of calibration

- The default distance for calibrating the magnetic coil speed sensor is 100 feet (50 meters). If you wish to calibrate at another distance, enter the new distance.
- Press **Next** to continue.

2. Drive from start to end points

- Position the vehicle at the start marker. Press the green-colored Start button and drive the vehicle for the predetermined distance.
- Press **Next** to continue.



Note: The display must be set on 0.0 before you begin driving the calibration distance.

3. Stop at end of calibration distance

- When the vehicle crosses the end marker of the predetermined distance, press the red-colored Stop button.
- Press **NEXT** to continue.

4. Calibration complete

- The speed sensor calibration number has been calculated from the actual distance driven.

b. Press **FINISH** to complete calibration and store the calculated value.



Note: Calibration settings can be manually adjusted if desired by pressing Enter CAL Number and making small changes to the setting.



Note: To verify the calibration, repeat the previous steps.

KINZE EDGEVAC CALIBRATION

EdgeVac® Calibration window

Customers who have purchased the EdgeVac® seed meters should perform an EdgeVac Calibration once a year to make sure that it is correct. Use the numeric keypad to enter the actual value taken from the hand-held calibration sensor at the seed sensor.



Note: Enter the level of vacuum measured at the row unit. Measurements should be taken with fans on and seed meter charged.

RUN SCREEN OPERATION

RUN SCREEN BUTTONS

Planter Run Screen

Before the Run screen can become active, you must go to the **Field** button and accept a field, configuration, product, and region. For detailed information see [“Field Button \(While Not Logging\)” on page 144](#).

- **Field button**

Functionality changes based upon the status of the master switch. If the master is off it allows you to change grower, farm, field, and configuration. If the master status is on it allows you to view field totals. For more information, see [“Field Button While Logging” on page 145](#); and [“Field Button \(While Not Logging\)” on page 144](#).

- **Region button**

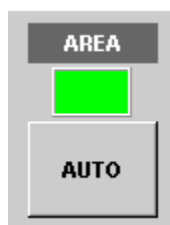
Allows you to change and name regions of the field. For more information, see [“Region Button” on page 144](#).

- **System button**

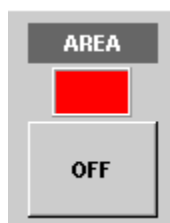
Displays diagnostic information about the internal memory of the display, display information, and CAN module information.

• DGPS button

Press to display information about the GPS.



The master button controls area logging. When the switch is green, area is being recorded and displayed on the map. This option will not be available when using a **Serial Controller**.



When the master button is set to **OFF**, the area is not being recorded and the map will stop drawing. The switch will remain red until the button is pushed again to set it to auto. This option will not be available when using a **Serial Controller**.



Master Switch - On The Master Switch Indicator, shown for SeedCommand functions, shows if the master switch is on (green).



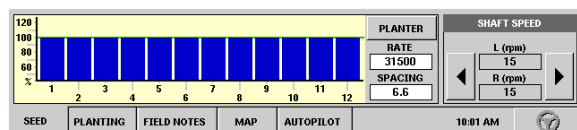
Master Switch - Off The Master Switch is off (red). The master switch is shown in the **F1** position on the Auxiliary Input Settings window. For more information, see [“Auxiliary Input Settings \(Switch Mapping\)” on page 101](#).



Note: Run screen settings for individual configurations are discussed on the following pages.

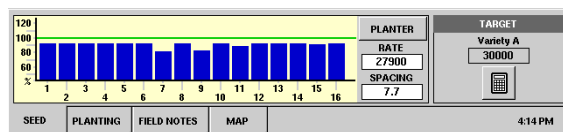
RUN SCREEN MAIN TABS

Seed Tab (for KINZE Population Monitor)



The Seed Tab is shown for the KINZE Population Monitor, a SeedCommand product. For more information, see [“KINZE Population Monitor on Run Screen” on page 157](#).

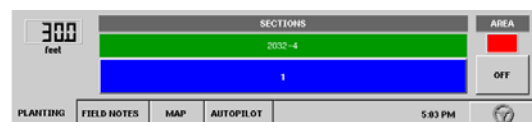
Seed Tab (For Seed Tube Monitor Module)



The Seed Tab also appears for users of another SeedCommand product, the Seed Tube Monitor Module. The appearance of this Tab varies, depending upon whether the module is being used with an Ag Leader Seed Control module or if it used for a Site Verification operation.

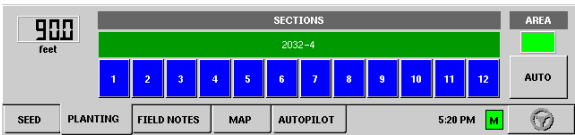
For more information, see [“Seed Tube Monitor on Run Screen” on page 156](#).

Planting Tab (for Site Verification)



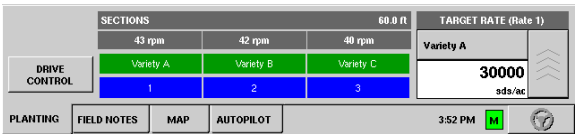
For more information on the Planting Tab, see [“Planting Tab - Site Verification” on page 142](#).

Planting Tab (for Row Shutoff)



The appearance of the Planting Tab varies, depending upon whether you are using the Row Shutoff, a SeedCommand product. For more information, see [“Row Shutoff Configuration” on page 119](#). The example below shows an implement with 12 sections.

Planting Tab (for Stepper Seed Control)



The Planting Tab for a Stepper Seed Control configuration is shown with three seed control drive motors. The top blue bar shows the speed of the seed meter, in RPM, and changes to a grey color when the drive is off. The green bar shows the names of the varieties planted, and

changes to a grey color when the drive is off. The bottom row shows the number of sections on the planter. The **Drive Control** button summons the Planter Control window, where you can perform a Stepper Seed Meter calibration, or prime the Seed Meter and adjust the Seed Meter Calibration number. For more information, see [“Stepper Seed Rate Control, Run Screen Operation” on page 153](#).

Planting Tab (for Hydraulic Seed Control)



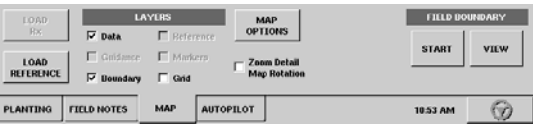
The appearance of the Planting Tab also varies if you are using the Hydraulic Seed Control feature, with one or more hydraulic drive motors. The top blue bar shows the speed of the seed meter in RPM., and changes to a grey color when the drive is off. The green bar shows the name of the variety

planted and changes to a grey color when the drive is off. The bottom row shows the number of sections on the planter. The **Drive Control** button summons the Planter Control window, where you can enter a meter calibration number, perform a seed meter calibration, or use the Seed Meter Prime.

Field Notes Tab

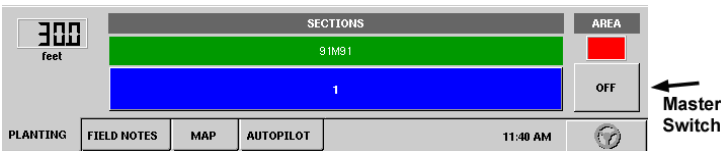


Map Tab

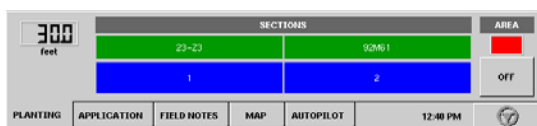


AREA AND RATE LOGGING/ CONTROL

Planting Tab - Site Verification



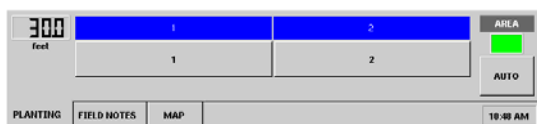
The Planting Tab is where area is controlled for site verification and split planter logging. The planter sections display buttons that have section names. When the section is active and logging data it will have a blue bar above it.



To turn individual sections on or off press the section button. The full swath width of the active sections is displayed in the upper left hand corner of the tab. The master switch on the right side of the tab controls area logging.

- If the master switch is set to **Off**, no area will be logged.
- When the master switch is set to **Auto**, the display will log data.
- If an implement switch is being used, it must be set to **Auto**, and the Implement Switch must be in the data logging position, the master switch will be green.

Planting Flow Meter (Shaft Speed Sensor)



The Planting Tab is where area is controlled for planting with a Shaft Speed Sensor. The planter sections will have buttons with section numbers on them. When the section is on and logging data, it displays a blue bar above it. If it is turned off

and not logging data it will have a grey bar above it. To turn individual sections on or off, press the Section button. The full swath width of the sections that are turned on is displayed in the upper left-hand corner of the tab. The master switch on the right side of the tab controls area logging. If it is set to **Off**, no area will be logged.

Serial Controlled Planting

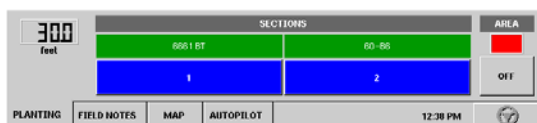


The Planting Tab is where the rate control of a serial controller takes place. When the section is active and is logging data, it will have a blue bar above it.

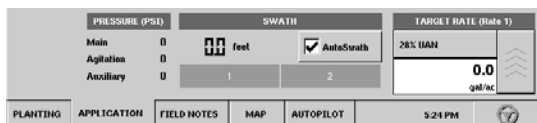
To load a map-based prescription file, press the **Load Rx** button. This will allow you to choose a prescription file off of the external card. Once selected the button will change to **Clear Rx**. This will allow you to clear out the selected prescription.

To manually change the Target Rate, press the arrow button in the target rate box. In the Target Rate dialog, you are allowed to set two preset rates. Press the **Preset Rate 1** or **Preset Rate 2** button and use the up and down arrow buttons to change the rate. Press **OK** when finished.

Multiple Implement Configurations



If you are using a configuration with multiple implements, each implement is displayed on its own tab.



Planting Simultaneously with Starter Fertilizer

Target Rate

Certain planting configurations use the **Target Rate** button, as shown in the right-hand side of the tab immediately shown above. These planting configurations include:

- A serial control configuration with a hydraulic drive, such as a Rawson ACCU-RATE.
- A Liquid DirectCommand module.



Note: For more information on the Target Rate button and screen, see [“Target Rate” on page 223](#).

FIELD BUTTON (WHILE NOT LOGGING)

The start of planting or seeding in a field is accomplished by setting up a Field Operation at the Run Screen. This process is similar regardless of the type of field operation currently taking place. To begin, press the **Field** button on the Run screen, and the Field Operation Wizard appears, as shown.

1. Select Grower, Farm, Field

- a. Choose the field for planting or seeding by making the proper selections from the Grower, Farm, and Field list boxes.
 - If the **Filter Fields by Farm** check is cleared, the display will show all fields in the **Field** list box regardless of what farm the fields are associated with.
- b. Press **Next** to continue.



Note: You may view **Field Totals** by pressing the **Field Totals** button on the Field Operation Wizard. For more information on field totals, see [“Field Button While Logging” on page 145](#).

2. Choose Configuration

- a. Select the Operating Configuration that relates to the equipment in use.
- b. Press **Next** to continue.

3. Select Product

- a. Select the correct product from the list box. In cases of multiple product application, make the appropriate selection for each channel of product control.
- b. Press **Finish** to complete the Field Operation portion of the setup wizard.

The Region Selection window should appear next. To learn more about the Region Selection window, see [“Region Button” on page 144](#).

REGION BUTTON

To access the Region Selection window, either complete the wizard under the **Field** button or press the **Region** button.

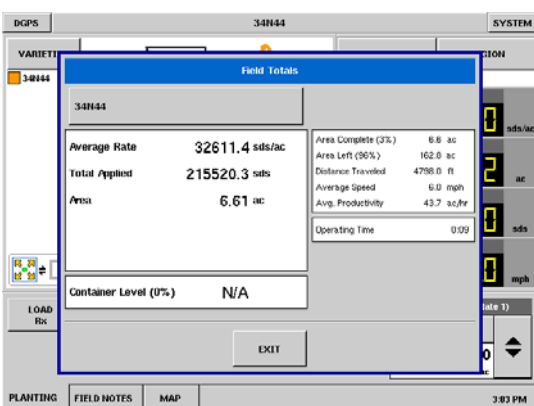
Region Button

A region is an area within a field. A field is a collection of one or more regions.

Use the on-screen keyboard to change the region name from the display default if desired.

The display will control application based upon the product and units as defined in product setup.

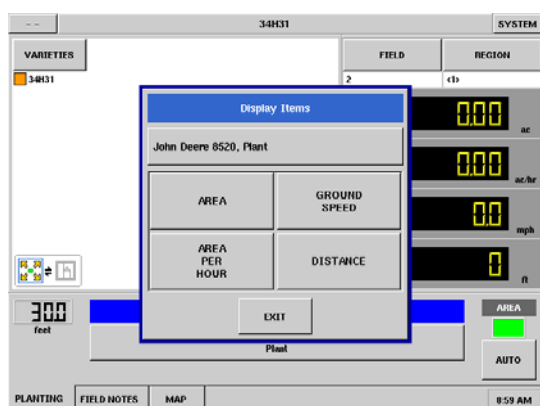
FIELD BUTTON WHILE LOGGING



Field Button shown while Run Screen is logging data

If the **Field** button is pressed while logging data, the Field Totals window will show your field totals.

SITE VERIFICATION DISPLAY ITEMS



The display items selection dialog box can be accessed by pressing on any one of the four display items that are active on the Run screen.

Once the Display Items window is visible press on the display item you would like to display. It will then be available on the Run screen.

- **AREA**

Displays the area that has been planted or seeded in the region.

- **AREA PER HOUR**

Shows the instantaneous productivity.

- **GROUND SPEED**

Shows the instantaneous ground speed.

- **DISTANCE**

Shows the total distance driven in the region.

RATE CONTROL/ LOGGING DISPLAY ITEMS

Display Items		
Case IH 7220, 24 Row, AccuRate		
RATE	GROUND SPEED	FLOW
AREA	AREA PER HOUR	CONTAINER LEVEL
TOTAL APPLIED	DISTANCE	
EXIT		

The Display Items selection dialog box can be accessed by pressing on any one of the four display items that are active on the Run screen.

Once the Display Items window is visible, press the display item you would like to appear on the Run screen.

- **RATE**

Displays the actual rate per acre being applied.

- **AREA**

Displays the area that has been planted or seeded in the region.

- **TOTAL APPLIED**

Shows the total amount of seed applied for the region.

- **GROUND SPEED**

Shows the instantaneous ground speed.

- **AREA PER HOUR**

Shows the instantaneous productivity.

- **DISTANCE**

Shows the total distance driven in the region.

- **FLOW**

Shows the instantaneous flow rate of seed per minute.

- **CONTAINER LEVEL**

This is not currently being used in a Planting or Seeding operation.

VIEWABLE MAPS

There are four different types of viewable maps in planting depending on the type of configuration being used. A site verification configuration will only have coverage and varieties available, a rate control/ logging configuration will have all four. The maps are accessed by pressing the button in the legend that is either labeled **Coverage**, **Varieties**, **Rate**, or **Rx**.





COVERAGE



OVERLAP

The coverage map shows the area of the field that has been planted or seeded. Overlaps are also indicated here. This legend is not editable.



RATE

-  32k +
-  31k - 32k
-  30k - 31k
-  29k - 30k
-  0 - 29k

The rate map displays the actual rate being applied if a rate control/logging configuration is being used. This legend is editable. For more information, see [“Rate Legend” on page 147](#).



Varieties Map

VARIETIES

-  92M92
-  92M90

The varieties map shows the areas of the field where the varieties are planted. For more information, see [“Variety Legend Selections” on page 148](#) and Varieties Legend.

**Rx
Variety A**

-  28k
-  26k
-  24k
-  22k
-  20k

The Rx map displays the prescription rate from the target file. This legend is not editable.

MAP LEGEND

RATE LEGEND

The rate legend can be edited by pressing on the range portion of the Run screen legend. (the boxes underneath the **Rate** button).



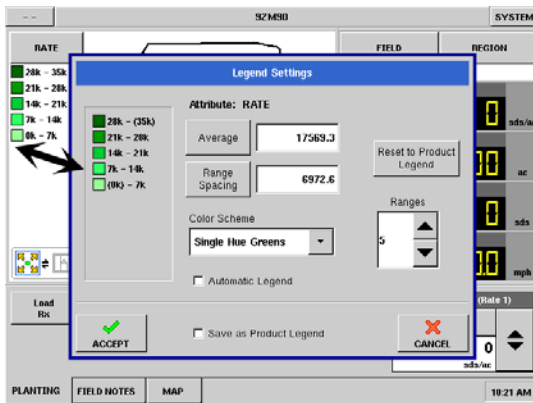
Note: Alternatively, you can access this window underneath the Product Tab by pressing the **Edit Legend** button. For more information, see [“Edit Legend and Edit Info” on page 118](#).

The average, spacing, colors, and ranges can be edited for this map. Use the drop down boxes and arrows to adjust these values.

If the automatic legend option is selected the average will automatically set itself to the field average and update as the field average changes.

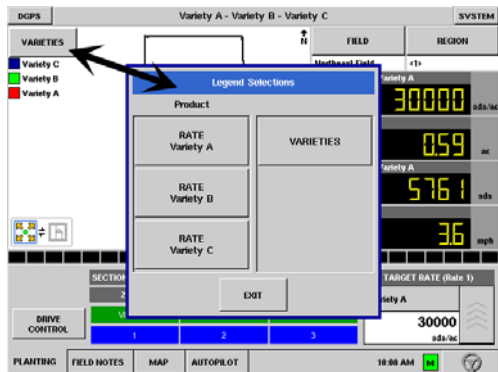
If you choose to set the current legend as the default legend for all regions of the same product, select the **Save As Product** legend option. This will also reset the legend settings discussed in [“Product Tab Settings” on page 117](#). To reset to the default values go to **Setup, Planting, Product** and press the **Edit Legend** button.

If you wish to reset this legend to the values saved under the Product tab, press the **Reset to Product Legend** button.



To view the Rate Legend Settings window, press the range portion of the legend (in this instance, the green boxes underneath the Run screen's rate button).

VARIETY LEGEND SELECTIONS



If you are planting multiple varieties, you can display different individual varieties, or change the colors that those varieties appear on the Run screen map.

Legend Selection

Press the **Varieties** button to view the Legend Selections window, as shown at left. Here you can either:

- Press a **Rate** button (as shown by the first three buttons on the left of the screen) to view only that variety's rate on the Run screen.
- Press the **Varieties** button to view all varieties on the Run screen.

Press **Exit** when finished.



Varieties Legend Settings

To change the colors of the varieties that appear on the Run screen map, press the range portion of the legend that appears underneath the **Varieties** button.

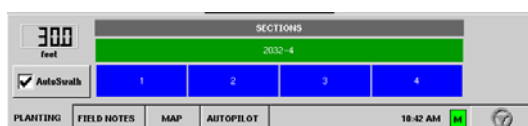
A list of the varieties shown on the Run screen map appears on the left-hand side of this screen. To change the color of one of these varieties, highlight that variety and then press a color on the color palette at right.

Press **Accept** when finished.

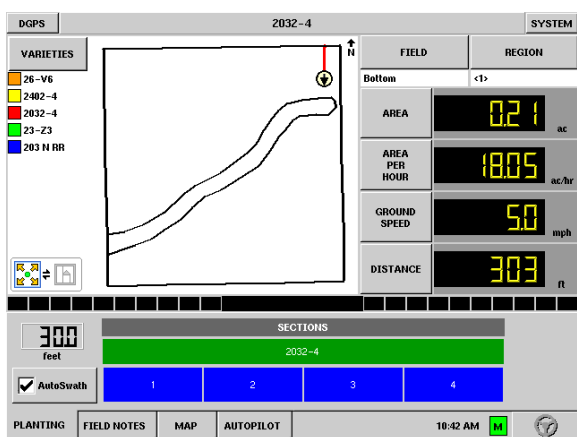
RUN SCREEN OPERATIONS FOR SPECIFIC CONFIGURATIONS

ROW SHUTOFF, RUN SCREEN OPERATION

To create a Row Shutoff configuration, see [“Row Shutoff Configuration” on page 119](#).



Select the AutoSwath checkbox to enable automatic section control.



The AutoSwath feature for Row Shutoff configurations will automatically turn individual planting unit sections on and off based upon the following mapped features in a field operation.

Entering and exiting outer field boundaries

Entering and exiting internal field boundaries

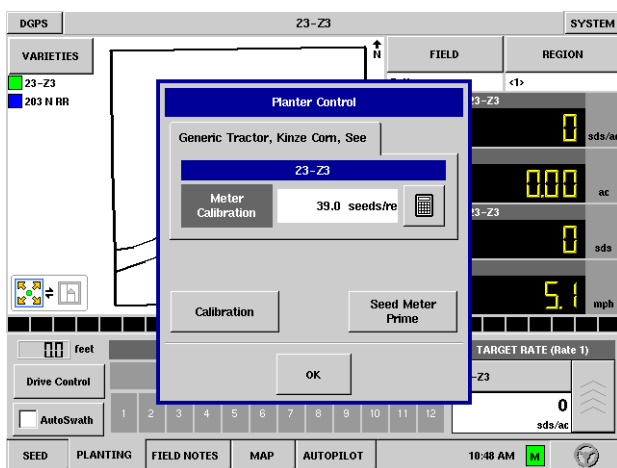
Entering and exiting mapped product recommendation areas

Entering and exiting previously applied areas within a field

At left is an example of AutoSwath control used with a Row Shutoff configuration.

HYDRAULIC SEED CONTROL ON RUN SCREEN

PLANTER CONTROL FOR HYDRAULIC SEED CONTROL



The Planter Control window is where Hydraulic Seed Control users can view or change the seed meter calibration number. To check the Planter Control window, press the **Drive Control** button on the Run screen.

• Meter Calibration

The meter calibration setting displays the seed meter calibration number, in seeds per revolution. You may wish to adjust this setting according to the number of seed cells on the seed meter. If so, use the numeric keypad to edit this setting.



Note: To optimize the Hydraulic Seed Control correctly, perform a seed meter calibration as explained in *"Hydraulic Seed Control Seed Meter Calibration"* on page 151.



Note: Prior to a Hydraulic Seed Control Seed Meter calibration, the numbers appearing in the meter calibration setting should be appropriate for the type of planter seed meter being used. See the table at *"Hydraulic Seed Control Seed Meter Calibration Numbers"* on page 149.

• Calibration button

Starts the Hydraulic Seed Control seed meter calibration procedure. For more information, see *"Hydraulic Seed Control on Run Screen"* on page 149.

• Seed Meter Prime

Rotates the disk so that the seed meter is properly filled with seed to begin planting. For more information, see *"Seed Meter Prime (Hydraulic Seed Control feature)"* on page 152.

Hydraulic Seed Control Seed Meter Calibration Numbers

Prior to calibrating the Hydraulic Seed Meter, the numbers that appear in the Meter Calibration box in the Planter Control window should be similar to the numbers that appear below. If they are not, then your

seed meter may be working incorrectly, or you may have set the Gear Ratio incorrectly. In these cases, contact Ag Leader Technical Support for further assistance.



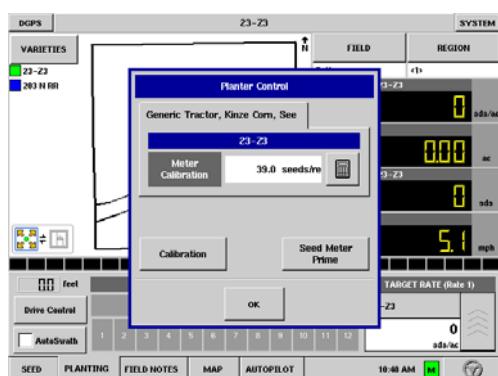
Note: Check your operator's manual for more specific information on other seed disk options.

Planter brand and type	Corn	Soybeans	Cotton Standard Rate	Sorghum
John Deere				
Vacuum: Standard	30	108	64	45
Vacuum: ProMAX™	40			
Vacuum: Precision Planting eSet®	30			
Vacuum: VenHuizen AccuVac Kit	40			
Mechanical: Finger	12			
Mechanical: Brush Meter		56		
Case IH				
Vacuum	48	60		
Cyclo®	36	240		
KINZE				
EdgeVac®	39	60	54	60
Mechanical	12	56	48	60
White				
	30	60		
Great Plains				
Mechanical: Standard	12	110	120	102
Mechanical: Twin Row	6	100		135

HYDRAULIC SEED CONTROL SEED METER CALIBRATION



Note: Before calibrating the Hydraulic Seed Control Seed Meter, first make any necessary adjustments to the Controller Settings. For more information, see “Controller Settings for Hydraulic Seed Control” on page 109 and “Controller Settings - Auxiliary Tab” on page 112.



Operators using the Hydraulic Seed Control feature should calibrate the seed meter at least once a year. To begin, press the **Drive Control** button on the Run screen.

Press Calibration button on Planter Control window

On the Planter Control window, press the Calibration button, and the Meter Calibration Wizard appears.



Note: Make sure a Meter Calibration Number greater than 0 is entered before starting the calibration procedure.

1. Select Drive to Calibrate

- Select the drive you wish to calibrate.
- Press **Next** to continue.

Acknowledge the Warning

- A warning appears, which you should read and then acknowledge by pressing **OK**.



WARNING: Maintain a safe distance from the planter during the calibration routine. The planter should be lowered near the ground with the seed meter fully charged with seed and all necessary fans and/or auxiliary metering devices on.

- Press **Next** to continue.

2. Enter Simulated Ground Speed

- Enter the target ground speed of your vehicle during the planting operation.
- Press **Next** to continue.

3. Enter Simulated Target Rate

- Enter the average target rate of seed distribution during the planting operation.
- Press **Next** to continue.

4. Press the Start Button

- Press Start, and the calibration procedure begins.



Note: Before starting the calibration procedure, be sure that you have seed loaded in the planting box, and the vacuum turned on, if appropriate.

Wait while dispensing seed

Text flashes at the top of the Meter Calibration Wizard window, stating that the seed is dispensing. The drive will stop automatically when calibration is finished.

Also the green button changes to red, indicating that you may stop the calibration procedure if necessary.

Seed dispensing complete.

New text appears, informing you that seed dispensing is complete.

Press **Next** to continue.

5. Enter number of dispensed seeds

- Count the number of seeds that were distributed from one tube, then use the numeric keypad to enter this number.



Note: For more accurate results, you may wish to count the number of seeds distributed by more than one tube, and then enter the average in this window.

- Press **Next** to continue.

6. Calibration complete

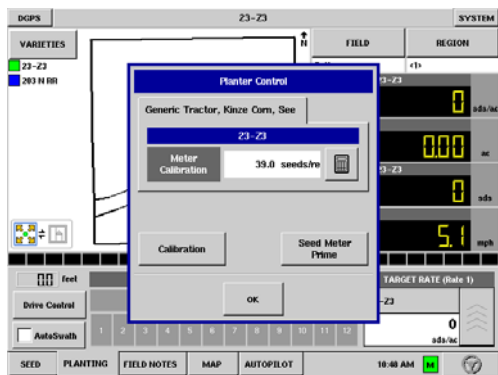
- The calibration is complete, and the new meter calibration number appears.
- From here you may: Repeat the calibration, or Press **Finish**.



Note: Before starting the actual planting procedure in the field, you may wish to make sure the seed disks are primed - in other words, that the seed meter has seeds on the meter cells so that it is ready to plant. To prime the seeds, see “Seed Meter Prime (Hydraulic Seed Control feature)” on page 152.

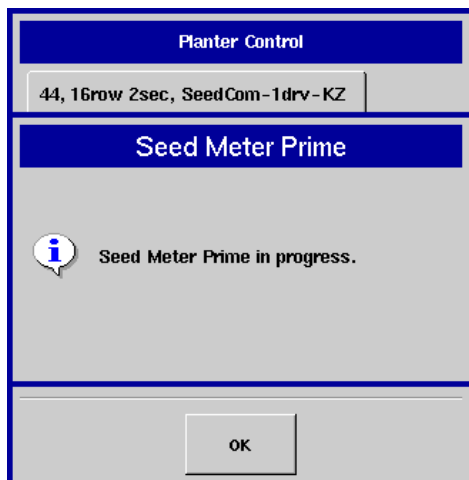
SEED METER PRIME (HYDRAULIC SEED CONTROL FEATURE)

You can use the Seed Meter Prime to populate the seed meter anytime that there are no seeds in it. To begin, press the **Drive Control** button on the Run screen. The Planter Control window appears, as shown.



1. Press Calibration button on Planter Control window

On the Planter Control window, press the **Seed Meter Prime** button.



2. Seed Meter Prime in progress

A window appears, informing you that the seed meter prime is in progress. During this time, the seed meter disks will turn one revolution.

Press **OK** to close the Planter Control window and begin planting.

STEPPER SEED RATE CONTROL, RUN SCREEN OPERATION

SECTIONS			60.0 ft	TARGET RATE (Rate 1)
43 rpm	42 rpm	40 rpm		Variety A
Variety A	Variety B	Variety C		30000
1	2	3		sds/ac

The Stepper Seed Control feature allows Rawson ACCU-RATE Variable Rate Controller users to control up to three hydraulic motor drives via the display. To create a Stepper Seed Control configuration, see [“Stepper Seed Rate Control Configuration” on page 125](#).

• DRIVE CONTROL

The Drive Control button is where you can access the Planter Control window, which is where you view or edit the Seed Meter calibration number, perform Seed Meter calibrations and prime the Seed Meter. For more information, see [“Stepper Seed Rate Planter Control” on page 153](#).

STEPPER SEED RATE PLANTER CONTROL

The Stepper Seed Rate Planter Control window, shown above, is where you can view or edit the meter calibration number, perform Seed Meter calibrations and prime the Seed Meter. The calibration settings for each individual Stepper Seed Rate motor is shown underneath its own tab, which is named according to the Implement name. Underneath the tab header is the name of that particular section. The example above shows three different eight-row sections, comprising a total of 24 rows.

The **Meter Calibration** setting displays the seed meter calibration number, in seeds per revolution. Enter a number based on the number of seeds dropped per one revolution of the seed meter.

- **Calibration**

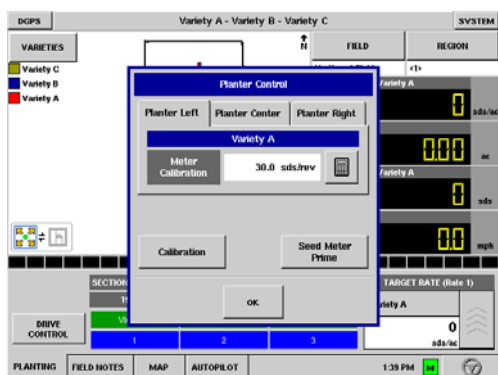
A new calibration should be performed if your as-applied seed rate does not match the actual population planted. To begin calibrating the Seed Meter, press the Calibration button. For more information, see [“Calibrating the Stepper Seed Rate Meter” on page 154.](#)

- **Seed Meter Prime**

Press the Seed Meter Prime button to turn the Seed Meter one revolution. For more information, see [“Priming the Stepper Seed Rate Meter” on page 154.](#)

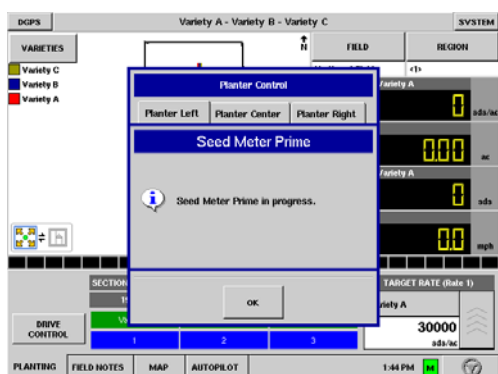
- **Priming the Stepper Seed Rate Meter**

The Seed Meter Prime is used to charge the seed meter when filling with seed, or after turning on the vacuum for vacuum planters. To begin, press the Drive Control button on the Run screen. The Planter Control window appears, as shown in next step.



1. **Press Seed Meter Prime**

Press the **Seed Meter Prime** button.



2. **Seed Meter Prime in Progress**

A message displays, stating “Seed Meter Prime in Progress.” When complete, you will return to the Planter Control window.



Note: While this message displays, the seed meter will turn one (and only one) revolution automatically.

CALIBRATING THE STEPPER SEED RATE METER

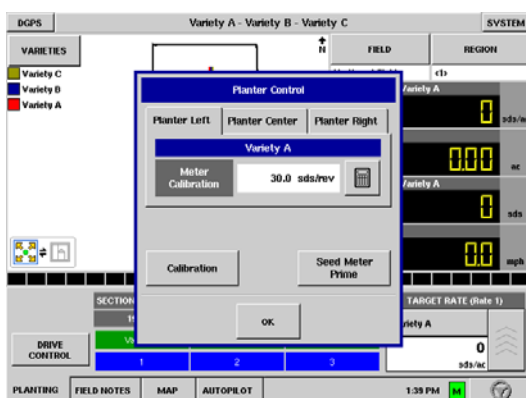
The Meter Calibration number allows the seed meter to communicate the correct seed population to the display. Assuming the Controller Settings are correct for the seed rate, this Meter Calibration number, which is based on the number of cells on the seed meter, should not need to be adjusted. However, you may wish to recalibrate before changing seed types and treatments. You should also recalibrate if the as-applied seed rate does not match the population shown on the planter monitor.



Note:

- The stepper seed rate meter calibration does not recalibrate any previously-logged planting data.
- This calibration number applies to a specific crop type, i.e., corn. Normally, you should not need to recalibrate when switching varieties within the same crop type.

- Before beginning a calibration, make sure that you have primed the seed meter. For more information, see *“Priming the Stepper Seed Rate Meter” on page 154.*



To begin, press the **Drive Control** button on the Run screen. The Planter Control window appears.

1. Press the Calibration button.

- Press the Calibration button.

2. Acknowledge the Warning

- A warning appears, stating the following:
 - “Maintain a safe distance from the planter during the calibration routine. The planter should be lowered near the ground with the seed meter fully charged with seed and all necessary fans and/or auxiliary metering devices on.”
- Acknowledge this warning by pressing **OK**.

3. Select Drive to Calibrate

- Select the drive that you wish to calibrate.
- Press **Next** to continue.

4. Enter Simulated Ground Speed

- Enter the simulated ground speed for the calibration procedure.
- Press **Next** to continue.

5. Enter Simulated Target Rate

- Enter the simulated target rate of the calibration procedure.
- Press **Next** to continue.

6. Press Start

- Press the green-colored Start button to begin dispensing the seed.

7. Dispensing Seed

- The seed meter turns for five revolutions. As the seed meter dispenses seed, the button will change its color to red, and a message informs you that the seed dispersion is in process.

8. Seed Dispensing Complete

- When the meter is finished dispensing seed, the button will change back to its original green color, and will once again display the word Start.
- Press **Next** to continue.

9. Enter Number of Dispensed Seeds

- Use the numeric keypad to enter the number of dispensed seeds that you counted in Step 7.
- Press **Next** to continue.



Note: The meter calibration will be calculated from the actual seed amount dispensed.

10. Calibration Complete

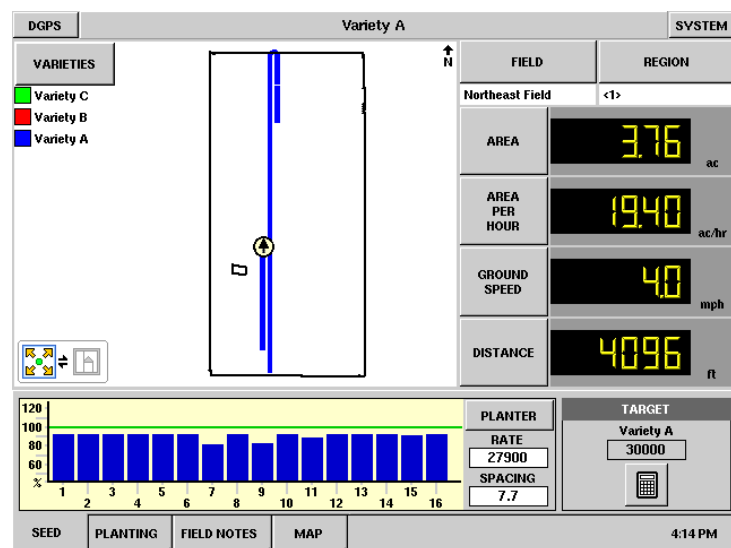
- The calibration is complete. The meter calibration number appears in seeds per revolution.

b. Either: Repeat the calibration or press **Finish** to complete the calibration.

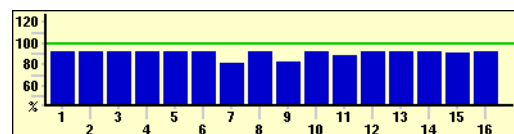
11. Auxiliary Step: Apply Number to All Planter Drives

- As an optional step, you can apply the seed meter calibration number to all of the planter drives.
- Press either **Yes** or **No** and the calibration is now complete.

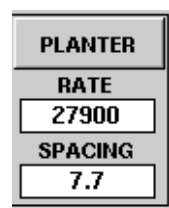
SEED TUBE MONITOR ON RUN SCREEN



The Seed Tube Monitor Module provides population monitoring for DICKEY-john seed tube sensors used on several different brands of planters.

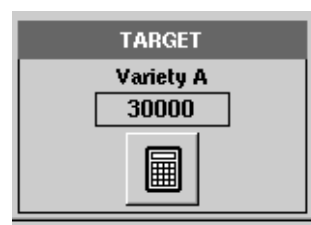


The Seed Tube Monitor bar graph consists of a number of bars representing row units. Each bar's row height represents that row's population in comparison with the target rate which you specify with the Target numeric keypad (see bottom row of this table).



The **Planter** button brings up the Seed Monitor Options window, which is discussed further on [“Seed Tube Monitor Options” on page 157](#).

The **Rate Display** and **Spacing Display** are where Instantaneous Average Rate and Spacing are displayed either for the entire planter, or for each row, depending upon settings in the Seed Monitor Options.

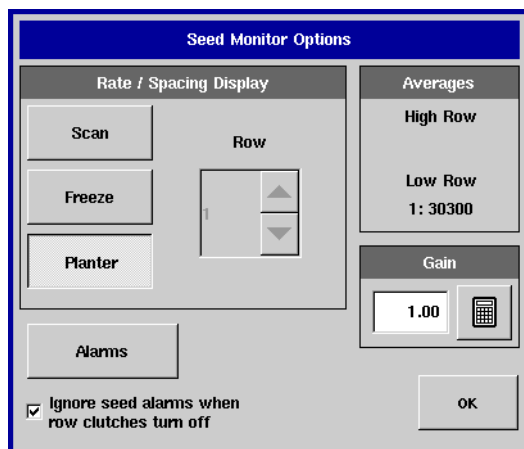


The numeric keypad under the Target portion of the Run screen allows you to enter the target population to display on the bar graph. Each row unit will then appear on the bar graph showing the seed rate percentage of the number you entered in this keypad.



Note: If you enter an incorrect number in this keypad, this will cause information shown in the bar graph to appear out of scale.

SEED TUBE MONITOR OPTIONS



Press the **Planter** button on the Run Screen, and the Seed Monitor Options window appears, as shown.

• Scan

Scan Mode specifies the Rate/Spacing on a row-by-row scan on all the planter's row units, displayed in sequence from left to right

• Freeze

Freeze Mode specifies that the Rate/Spacing Display continuously shows only one specified row chosen by the operator. Use the up and down arrow buttons to specify which row to "freeze".

• Planter

Planter Mode is the default setting for the Rate/Spacing Display. This mode specifies the instantaneous average population and seed spacing for the entire planter.

• Alarms button

Summons the Seed Monitor Alarms window, which shows each individual row and the alarms threshold for that row. For more information, see ["Seed Monitor Alarms" on page 130](#).

• Ignore seed alarms when row clutches turn off check box

Disables the seed alarms when the planter clutches turn off during row turns (as an example). This box is checked by default; uncheck if desired.

• Averages

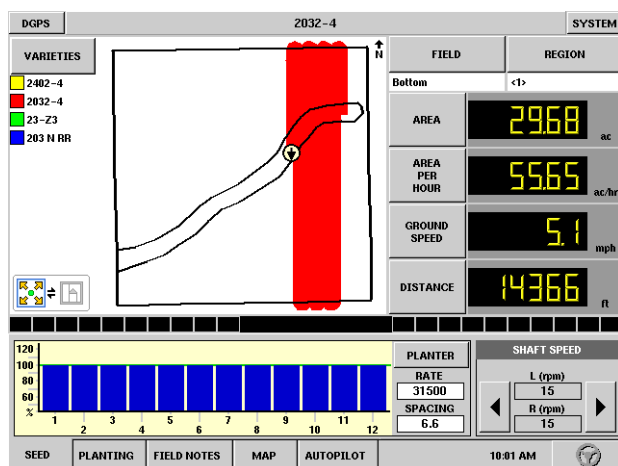
Shows the individual row number and planting rate of the row with the highest and lowest planting rate.

• Gain

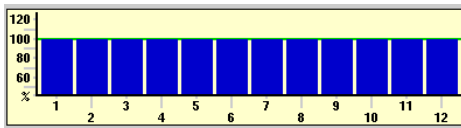
Shows the population adjust value used to adjust the population if the seed tube is not sensing the actual seed population.

- For the correct Gain setting for your operation, please refer to your planter's operator manual.
- For corn, do not change the default Gain setting of 1.

KINZE POPULATION MONITOR ON RUN SCREEN



The KINZE Planter Monitor Module allows a user to manage compatible KINZE electronic seed monitoring and variable rate drive systems.



The **KINZE Population Monitor Bar Graph** consists of a number of bars representing row units. Each bar's row height represents that row's population in comparison with the planter average.

If a row unit drops below a user-defined threshold, the bar turns red, an audible alarm sounds and an error message appears on the window.

The **Planter** button brings up the Planter Monitor Options window, which is discussed further on ["KINZE Planter Monitor Options" on page 159](#).

PLANTER
RATE
31500
SPACING
6.6

The **Rate Display** and **Spacing Display** are where Instantaneous Average Rate and Spacing are displayed either for the entire planter, or for each row, depending upon settings in Planter Monitor Options.

SHAFT SPEED		
	1 (rpm)	
◀	60	▶
	2 (rpm)	
	60	

The **Shaft Speed** displays the speed of the planter drive shafts, in RPM.

TANK WEIGHT		
	L (lb)	
◀	498	▶
	R (lb)	
	494	

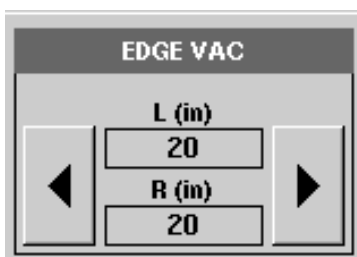
The **Tank Weight** displays the weight of seed in each tank.

TANK AREA LEFT		
	L (ac)	
◀	304	▶
	R (ac)	
	304	

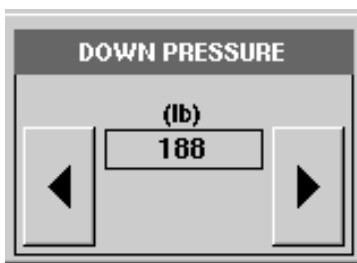
The **Tank Area Left** displays the number of acres (hectares) that can be planted with the amount of seed remaining in the tanks.

TANK PRESSURE		
	(PSI)	
◀	74	▶

The **Tank Pressure** displays the air pressure level for the Air Seed Delivery (ASD) system.

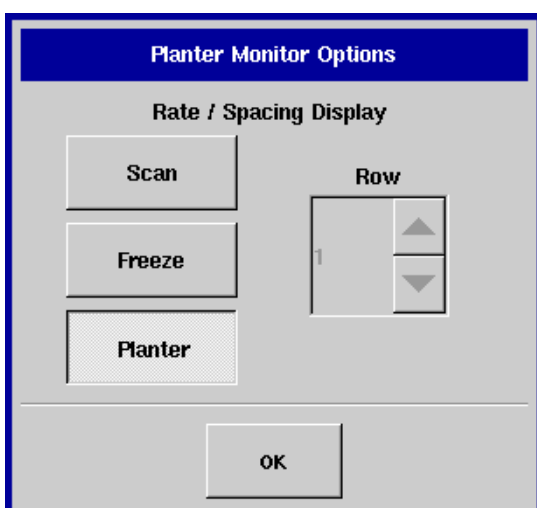


The **EdgeVac®** level is a measurement of seed meter vacuum. This measurement, shown in inches of water, is displayed for each vacuum fan.



The **Pneumatic Down Pressure** is a measurement of down force, shown in pounds (kilograms), that the air bag places on the row unit.

KINZE PLANTER MONITOR OPTIONS



The Planter Monitor Options window, which appears when the operator presses the **Planter** Button on the Run Screen, is where the operator can change settings displayed on the Rate/Spacing Display. Options include Planter Mode, Scan Mode and Freeze Mode, explained below.

- **Planter**

Planter Mode is the default setting for the Rate/Spacing Display. This mode specifies the instantaneous average population and seed spacing for the entire planter.

- **Scan**

Scan Mode specifies the Rate/Spacing on a row-by-row scan on all the planter's row units, displayed in sequence from left to right.

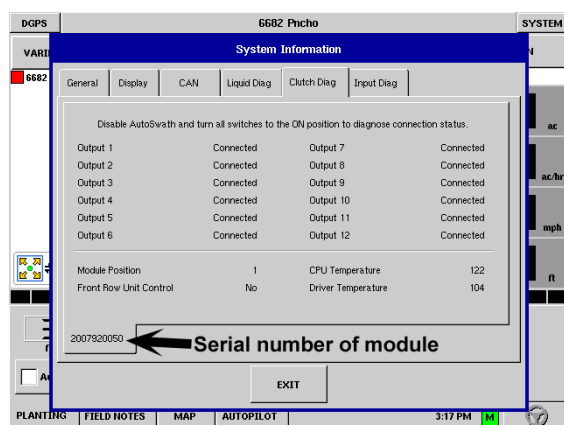
- **Freeze**

Freeze Mode specifies that the Rate/Spacing Display continuously shows only one specified row chosen by the operator.

DIAGNOSTIC BUTTON

Specific diagnostics information, which pertains to planting functions, can be viewed when you press the Run Screen's **System** button. This diagnostic information includes Clutch Diagnostics (for Row Shutoff), Seed Diagnostics (for the Seed Tube Monitor Module and also the KINZE Population Monitor), and Input Diagnostics. Technical support may request that you look at this window to help in diagnosing a problem. For generalized diagnostic information, such as memory, display, CAN device and firmware

version information, see the General section. Information on LED diagnostic states can be found in the Index at [“Module LED Diagnostic States” on page 174.](#)

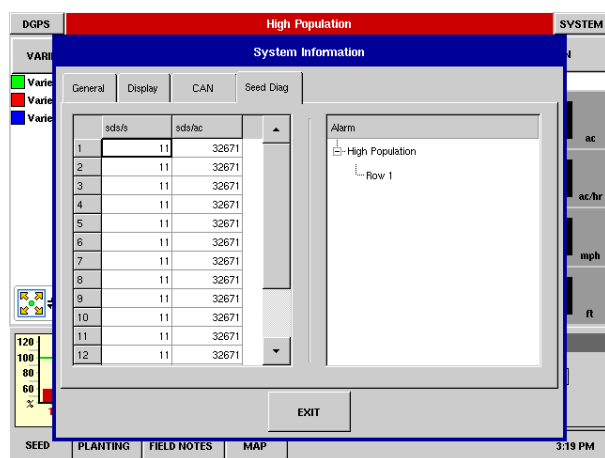


Clutch Diagnostics (for Row Shutoff)

The Clutch Diagnostics Tab shows the voltage flowing from each of the 12 pins in the Row Shutoff module.

To see more about the Row Shutoff module, see [“Row Shutoff Configuration” on page 119.](#)

The bottom left-hand part of this tab shows the serial number of the module.



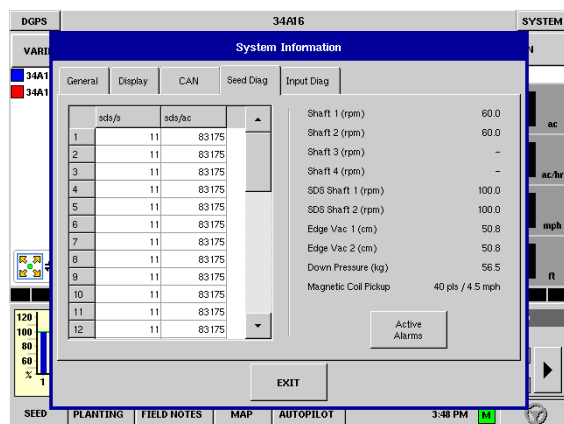
Seed Diagnostics (for Seed Tube Monitor Module)

The Seed Diagnostics Tab shows row data from rows monitored by the Seed Tube Monitor Module, including the following:

- Row unit seeds per second
- Row unit seeds per acre

Additionally, alarms are shown in the right portion of the Seed Diagnostics Tab. In this instance, a High Population alarm has sounded at the Run Screen. This alarm appears in a list, and the rows affected by the alarm appear underneath.

For more information on Seed Tube Monitor Module alarms, see [“Seed Monitor Alarms” on page 130.](#)



Seed Diagnostics (for KINZE Population Monitor)

The Seed Diagnostics Tab shows row data from the PMM, including the following:

- Row unit seeds per second
- Row unit seeds per acre

• Shaft 1-4

The speed, in revolutions per minute, sent by the transmission shaft's drive seed meter on the planter.

• SDS Shaft 1 & 2

The SDS displays the speed of the metering auger found in the bulk containers, in RPM.

• EdgeVac 1 & 2

The EdgeVac level is a measurement of seed meter vacuum. This measurement, shown in centimeters of water, is displayed for each vacuum fan.

• Down Pressure

The pneumatic down pressure is a measurement of down force (shown in kilograms) that the air bag places on the row unit.

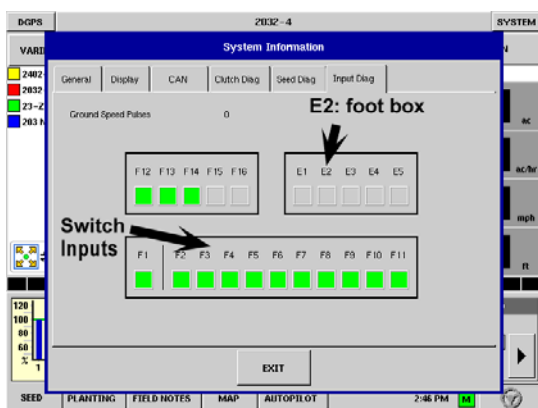
• Magnetic Coil Pickup

The diagnostic for ground drive transmission of the planter, this signal of which is sent from the Planter Monitor Module (PMM) on the planting unit. Shown in pulses per second and speed of the planter.

• Active Alarms

The Active Alarms button displays the Active Alarms window, which is described further in *“Alarms on KINZE Planter Monitor” on page 163.*

• Input Diagnostics



The Input Diagnostic Tab lists the number of Ground Speed Pulses coming in from the radar to the Auxiliary Module.

Additionally, the bottom row of boxes lists the active switches. These color-coded boxes display the following diagnostics:

• Green

The switch box is connected to the Auxiliary Module in the On position.

• Black

The switch box is connected to the Auxiliary Module, but is in the Off position.

• Grey

The switch box is not connected to the Auxiliary Module.



Note: The **E2** position is the indicator for the foot box.

TROUBLESHOOTING

ZERO FLOW OFFSET VARIATION

Zero flow offset is an operator-entered setting. Zero Flow Offset represents the maximum duty cycle that is sent to the control valve without producing any hydraulic flow from the PWM valve. Using too high of a Zero Flow Offset value can cause the product control system to not properly control low rates. Zero flow offset may vary somewhat by system and by operating conditions.

Below, problems and causes relating to Zero Flow Offset are listed. Use the Confirmation Techniques to determine if you have this problem; and then follow the appropriate solution.

Problem

- Drive is slow to begin turning.

Possible Cause

- Zero Flow Offset is set too **low**.

Confirmation Technique

1. Turn the Master Switch off. Enter a manual ground speed and enter a new region.
2. From the Run screen, open the product application rate window, and highlight the appropriate product. Select Manual control mode.
3. Switch the Master Switch on.
4. Press the up button one time. Now press the down button one time. If the drive is not turning, the Zero Flow Offset is likely to be too low.

Solution

1. Turn the Master Switch off. Enter a manual ground speed and create a new region.
2. Increase Zero Flow Offset by 2.
3. From the Run screen, open the product application rate window, and highlight the appropriate product. Select Manual control mode.
4. Switch the Master Switch on.
5. Press the up button one time. Now press the down button one time. The drive should be turning. If not, repeat this procedure starting with Step 2.



Note: Zero Flow Offset should never be greater than 60. If 60 is insufficient, there must be some other problem causing the skips. Contact Ag Leader Technical Support for further assistance.

Problem

- Hydraulic drive not shutting off properly, or minimum controllable speed is greater than specified.

Possible Cause

- Zero Flow Offset is set too high.

Confirmation Technique

1. Turn the Master Switch off. Enter a manual ground speed and create a new region.
2. From the Run screen, open the product application rate window, and highlight the appropriate product. Select Manual control mode.
3. Switch the Master Switch on.
4. Press the up button one time. Now press the down button three times. If the drive is still turning, the zero flow offset is likely to be too high.

Solution

1. Turn the Master Switch off. Enter a manual ground speed and enter a new region.
2. Reduce Zero Flow Offset by 2.
3. From the Run screen, open the product application rate window, and highlight the appropriate product. Select Manual control mode.
4. Switch the Master Switch on.
5. Press the up button one time. Now press the down button three times. The drive should not be turning. If it is, repeat this procedure, starting with step 2.



Note: Zero Flow Offset should never be less than 25. If 25 still seems as if this number is too high, there must be some other problem. Contact Ag Leader Technical Support for further assistance.

STEPPER SEED CONTROL METER ALARMS

Error Message: "Drive Out of Synch Error Drive #"

Possible Cause: Not enough hydraulic fluid is flowing to the seed meter.

Solution: Examine the stepper seed drive's hydraulic components for restrictions.

- Make sure the tractor's hydraulic outlet is turned on.
- Make sure the hydraulic flow settings are correct.

Error Message: "Drive Stalled Drive #"

Possible Cause: The hydraulic drive motor has stopped rotating.

Solution: Check the stepper seed motor to see if it is restricted from turning, and that the hydraulic drive is working.

Error Message: “Meter Not Moving - Drive #”

Possible Cause: Either the Seed Meter Calibration failed, or the Seed Meter Prime failed.

Solution: Make sure that the tractor’s hydraulic outlet is turned on.

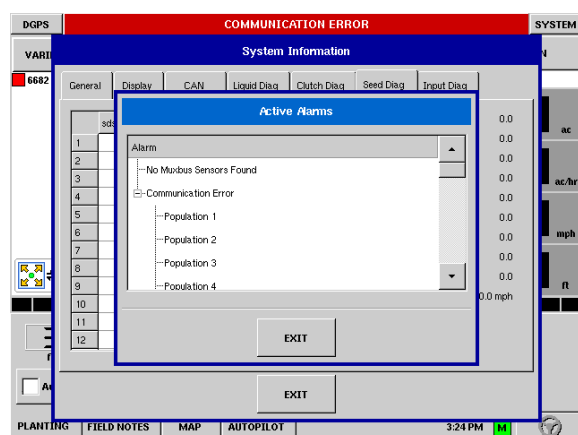
Error Message: “Seed Drive at Maximum RPM Drive #”

Possible Cause: If you start the priming routine and the hydraulic motor is not on.

Solution: - Slow the planter unit’s ground speed.

- Reduce the Planting Target Rate.

ALARMS ON KINZE PLANTER MONITOR



KINZE Planter Monitor users who see the Active Alarms window (as shown) can use the scroll bar on the right hand side to locate the row units where the alarm is occurring. Acknowledge the alarm by pressing the **Exit** button. After you have dismissed the alarm, you may continue planting, however, the alarm will continue showing in the title bar. You may also review the alarm information underneath the Seed Tab of the System Information window, which can be accessed by pressing the **System** button.

The table below describes various alarms that may occur at display startup. The following pages describe errors that could occur during field operations.

Error Message: “Sensors calibrating wait for calibration”

Possible Cause: PMM startup

Solution: Wait for Planter Monitor Module (PMM) to finish before beginning operation.

Error Message: “(Row #) sensor not detected”.

Possible Cause: Population sensor did not begin communicating with the PMM.

Solution: Acknowledge the error by pressing **OK**. Check the LED on the sensor to see if it is working properly. If it has failed, then replace the sensor. Refer to the KINZE Planter Operator’s manual for further instructions.

Error Message: “Clean or replace sensor (Row #) as necessary”.

Possible Cause: Population sensor dirty.

Solution: Press **OK** to dismiss the error. Then clean the sensor and restart the display.

Error Message: “(Row #) mux bus data line short to mux bus ground”.

Possible Cause: Population sensor’s mux bus signal wire is shorted to ground.

Solution: Press **OK** to dismiss the error. The display then replaces the message window with an alarm text on the header bar at the top of the Run screen. This alarm text continues until the wire is fixed or the sensor is disabled. Inspect the wire at the first opportunity.

Error Message: “(Row #) mux bus data line short to mux bus power”.

Possible Cause: Population sensor’s mux bus signal wire is shorted to power wire.

Solution: Press **OK** to dismiss the error. The display then replaces the message window with an alarm text on the header bar at the top of the Run screen. This alarm text

continues until the wire is fixed or the sensor is disabled. Inspect the wire at the first opportunity.

Error Message: "(Row #) mux bus data line short to mux bus ground".

Possible Cause: Population sensor's mux bus signal wire is shorted to ground.

Solution: Press **OK** to dismiss the error. The display then replaces the message window with an alarm text on the header bar at the top of the Run screen. This alarm text continues until the wire is fixed or the sensor is disabled. Inspect the wire at the first opportunity.

Error Message: "(Row #) mux bus data line short to mux bus power".

Possible Cause: Population sensor's mux bus signal wire is shorted to power wire.

Solution: Press **OK** to dismiss the error. The display then replaces the message window with an alarm text on the header bar at the top of the Run screen. This alarm text continues until the wire is fixed or the sensor is disabled. Inspect the wire at the first opportunity.

Error Message: "(Row #) communication lost".

Possible Cause: Seed tube sensor stops communicating with the PMM.

Solution: Press **OK** to dismiss the error. The display then replaces the message window with an alarm text on the header bar at the top of the Run screen. This alarm text continues until the wire is fixed or the sensor is disabled. Inspect the sensor at the first opportunity.

Error Message: "(Inner or Outer; Right, or Left) Shaft Communication Lost"

Possible Cause: Transmission sensor stops communicating with the PMM.

Solution: Press **OK** to dismiss the error. The display then replaces the message window with an alarm text on the header bar at the top of the Run screen. This alarm text continues until the wire is fixed or the sensor is disabled. Inspect the sensor at the first opportunity.

Error Message: "(Left or Right) Edge-Vac sensor communication lost".

Possible Cause: Edge-Vac sensor stops communication with the PMM.

Solution: Press **OK** to dismiss the error. The display then replaces the message window with an alarm text on the header bar at the top of the Run screen. This alarm text continues until the wire is fixed or the sensor is disabled. Inspect the sensor at the first opportunity.

Error Message: "(Left or Right) SDS shaft sensor communication lost".

Possible Cause: SDS shaft sensor stops communicating with the PMM.

Solution: Press **OK** to dismiss the error. The display then replaces the message window with an alarm text on the header bar at the top of the Run screen. This alarm text continues until the wire is fixed or the sensor is disabled. Inspect the sensor at the first opportunity.

Error Message: "Low hydraulic oil level".

Possible Cause: Hydraulic oil level drops.

Solution: Check oil level on the planter, add as necessary.

Error Message: "High hydraulic oil temperature"

Possible Cause: Hydraulic oil temperature level rises.

Solution: Stop planter in order to cool down oil temperature. Inspect for cause of overheating.

Error Message: "Voltage Error Alarm".

Possible Cause: Occurs if the battery voltage drops below 10 volts, or rises above 15 volts.

Solution: Check tractor's electrical system.

Error Message: "(Row #) Seed Rate Alarm".

Possible Cause: The seed rate of one or more rows is less than the alarm threshold setting and the corresponding transmission shaft sensor detects rotation.

Solution: Press **OK** to dismiss the error. If the alarm state is still present, the graph will state the rows where the errors are occurring, and the Title Bar will flash the type of alarm. Inspect row units to confirm that each has seed, and that all mechanical drive shaft parts are working properly.



Note: If desired, the alarm threshold for the row unit may be set to **0%**, which will silence the seed rate alarm. However, the bar graph will continue to operate and the row will still be calculated in the planter average population. For instructions on changing the alarm threshold, see "[KINZE Seed Monitor Alarms](#)" on page 139.

Error Message: "Low Down Force Air Pressure"

Possible Cause: Low pressure in the pneumatic down pressure system.

Solution: Press **OK** to dismiss the error. Check for air leaks and compressor failure.

Error Message: "Left (or Right) Tank Seed Level Low".

Possible Cause: The Seed Scale weight has dropped below the user-entered threshold.

Solution: Press **OK** to dismiss the error. Refill the tank to clear the error completely.

Error Message: "Seed Tank Pressure Too Low".

Possible Cause: The minimum air flow for seed delivery is not present.

Solution: Press **OK** to dismiss the error. Check fan on the ASD system.

Error Message: "Air Compressor Sensor Too Low."

Possible Cause: The minimum air compressor tank pressure is not present.

Solution: Press **OK** to dismiss the error. Check the air compressor.

APPLICATION

MISCELLANEOUS ITEMS REFERENCE

The back of this chapter also references important materials for specific application configurations. Depending upon your configuration, you may wish to reference the following materials:

- [“Troubleshooting DirectCommand Liquid Applications” on page 258](#)
- [“Troubleshooting Direct Injection Configurations” on page 261](#)
- [“Troubleshooting DirectCommand Granular Applications” on page 265](#)
- [“Troubleshooting Serial Control Applications \(Liquid and Granular\)” on page 266](#)
- [“Fertilizer Default Product Settings” on page 271](#)
- [“John Deere Specific Instructions” on page 272](#)
- [“Control Valve Settings” on page 273](#)
- [“Servo Control Valve Settings \(By Manufacturer\)” on page 274](#)
- [“Control Valve Settings for Self-Propelled Sprayers” on page 275](#)
- [“Liquid Servo Settings Description” on page 277](#)
- [“Liquid PWM Control Valve Settings Description” on page 278](#)
- [“Spinner Spreader Servo Settings Description” on page 278](#)
- [“Spinner Spreader PWM Control Valve Settings Description” on page 279](#)

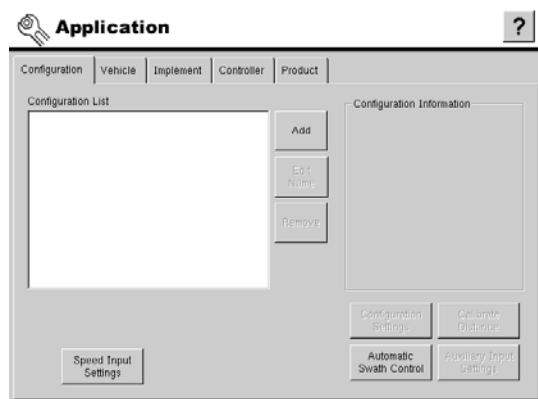
APPLICATION SETUP TABS

CONFIGURATION

The Application setup pages contain all the necessary settings to configure the display for logging, mapping, and rate control of nutrient inputs and crop protection products through a product application system. The combination of Configuration, Vehicle, Implement, Controller and Product are referred to as a Configuration.



Note: To see a Application Configuration Menu, see [“Application Menu Tree” on page 167](#).



The Configuration Tab is where you can add and edit operating configurations. For more information, see [“Configuration Tab Buttons” on page 168](#).

• Vehicle tab

Add and edit vehicle configurations. For more information, see [“Vehicle Configuration Tab” on page 175](#).

• Implement tab

Add and edit implement configurations. For more information, see [“Implement Configuration Tab” on page 177](#).

• Controller tab

Add and edit product control channels. For more information, see

[“Controller Tab Settings” on page 180](#).

• Product Tab

Edit crop nutrient and protection products. Contains a list of pre-defined products and allows configuration of tank mixes and fertilizer blends. For more information, see [“Product Tab” on page 185](#).

CREATING A NEW CONFIGURATION

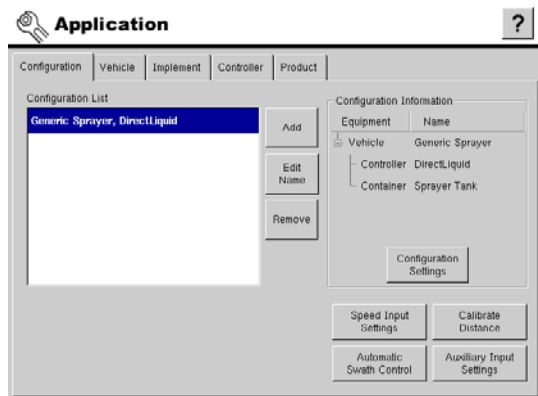
CONFIGURATION TAB BUTTONS

The process of creating a new Configuration involves the creation of Vehicle, Implement, and Controller combinations. The Configuration Tab is where application configurations are made and displayed; and configuration settings are also edited on this tab. To go to this window, press the Setup button and then the Application button.

- To see a Application Configuration Menu, see [“Application Menu Tree” on page 167](#)

In most cases, Configurations will be created by pressing the Add button on the Configuration tab. Step-by-step examples of creating configurations include the following:

- [“Adding a Serial-Controlled Single Product Configuration” on page 195](#)
- [“Adding a Multiproduct Configuration for DirectCommand and a Serial Controller” on page 199](#)
- [“Configuring Self-Propelled Sprayer \(DirectCommand\)” on page 208](#)
- [“Granular Spinner \(DirectCommand\)” on page 210](#)
- [“Strip-Till Configuration \(for Multiple Products\)” on page 212](#)
- [“Liquid Control Application Rate Tab” on page 242](#)



- **Add button**

Press to add a new application configuration. An on-screen wizard will walk you through the setup process in a step-by-step manner. New Vehicles, Implements, and controllers can be created during the setup process.

- **Edit Name button**

Press to edit the name of a selected configuration. The on-screen keyboard will be displayed to complete the desired text edits.

- **Remove button**

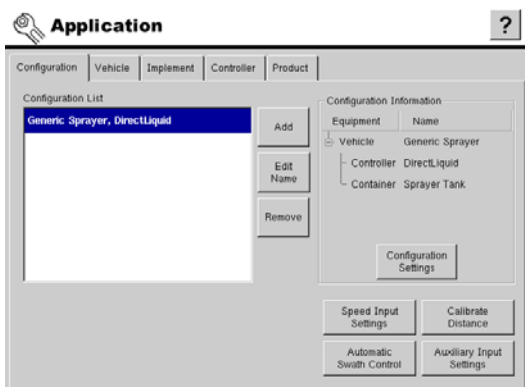
Press to remove a configuration. The vehicle and implement associated with the configuration will not be deleted.



WARNING: When deleting a configuration all regions and data logged with that configuration will be deleted!

CONFIGURATION TAB - ADVANCED SETTINGS

ADVANCED SETTINGS OVERVIEW



After completing the process of setting up a Configuration, advanced settings for that Vehicle, Implement, and Controller combination must be made. These settings are accessed from each of the main tabs. The advanced settings for the configuration tab are outlined in the table and related pages that follow.



Note: To see an Application Configuration Menu that includes Advanced Settings, see *“Application Menu Tree” on page 167.*

- **Configuration Settings button**

Press to display and edit product control settings specific to a vehicle, implement, controller combination. For more information, see *“Configuration Settings” on page 170.*

- **Speed Input Settings button**

Press to select speed input device and manual speed setting. For more information, see *“Speed Input Settings” on page 171.*

- **Automatic Swath Control button**

Press to display and edit Automatic Swath Control settings. For more information, see *“Automatic Swath Control Settings” on page 172.*

You must have an unlock code to activate the AutoSwath feature. If you have been using AutoSwath with the DirectCommand™ system, the feature is already activated and ready to use. If you have not unlocked the AutoSwath feature yet, the code can be purchased through your local Ag LeaderKINZE dealer.

- **Calibrate Distance button**

Press to launch speed sensor calibration wizard. For more information, see *“Calibrate Distance” on page 171.*

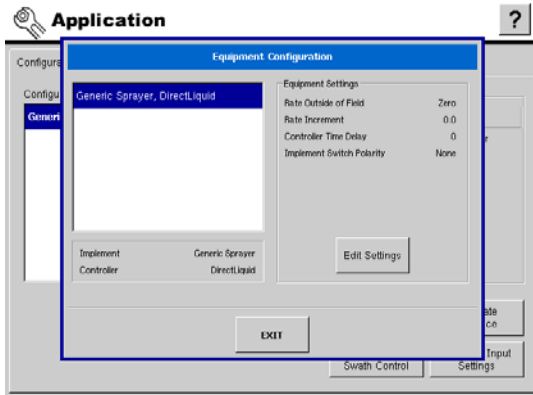
- **Auxiliary Input Settings button**

Press to display master switch input setting. For more information, see *“Add Auxiliary Input Settings” on page 174.*

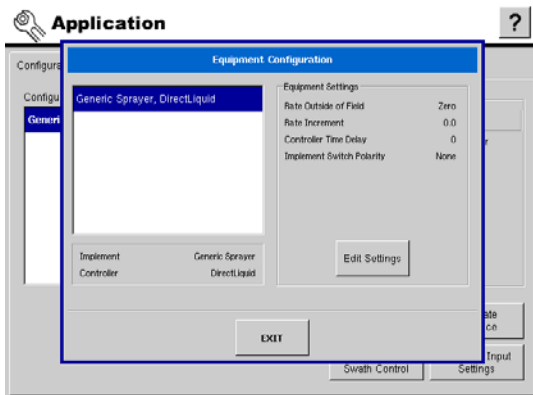


WARNING: For granular spinner bed configurations this should not be changed from the default setting of Standard.

CONFIGURATION SETTINGS



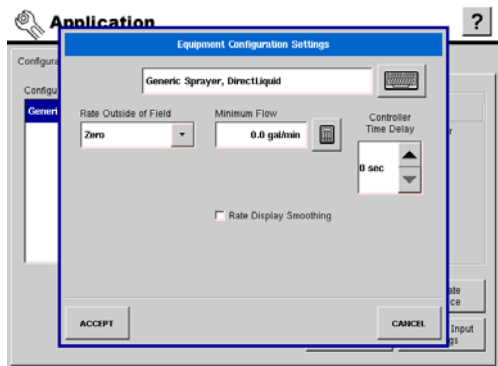
Select a Configuration from the list and press the Configuration Settings button to access the related settings. These settings are directly related to that specific combination of Vehicle, Implement, and Controller.



The Equipment Configuration window, shown at left, will display after selecting an operating configuration and pressing the Configuration Settings button.

Implement and controller name for the configuration are displayed at the lower left on the dialog box. Settings related to controller operation for the configuration are displayed on the right.

Press Edit Settings to display detailed information or edit any of these settings.



The configuration name can be changed by pressing the on-screen keyboard screen.

The Rate Outside of Field selection as defined in the table below determines product control channel behavior when the field boundary is exited.

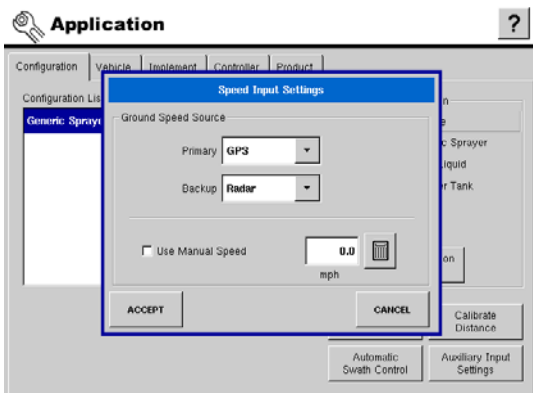
- Zero = Product application will turn off.
- Last Good = Product application will continue at the last value used by the control system.
- Rx Default = Product will be applied at the default rate setting

The Minimum Flow setting is used to maintain a consistent spray pattern. The display will not allow flow to drop below the entered setting. Set to flow at the lowest operating pressure for the selected spray tips with all sections on. When spraying with one or more boom sections off, the display automatically reduces the minimum flow setting according to the reduced spray width. To adjust this setting, select the keyboard button and enter the desired numeric value.

The Rate Display Smoothing setting determines how the feedback from the control channel rate sensor will be displayed on the run screen. When de-selected, the display will show raw feedback from the rate sensor. When checked, the display will show target rate when the application rate is within 10% of the target rate setting.

The Controller Time Delay setting compensates for any latency in the control system when changing between different product flow rates during variable rate application. The typical setting range for this is 0 - 1 seconds.

SPEED INPUT SETTINGS

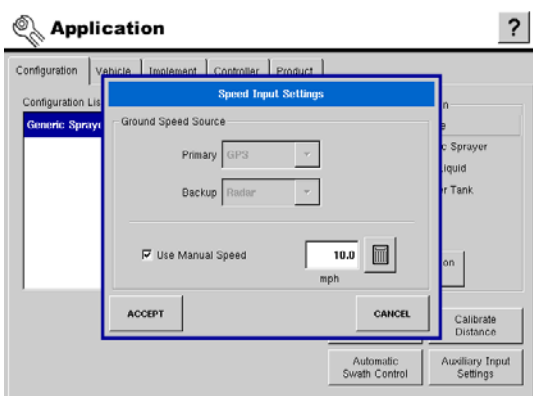


Select a Configuration from the list and press the Speed Input Settings button to access the related settings. These settings are specific to that combination of Vehicle, Implement, and Controller.

Primary And Backup Speed Inputs

By default the display uses GPS as a primary speed input and the choice of radar, wheel, or track sensor as a backup speed input. If radar, wheel, or track sensor is selected as the primary speed input, the backup option will not be available.

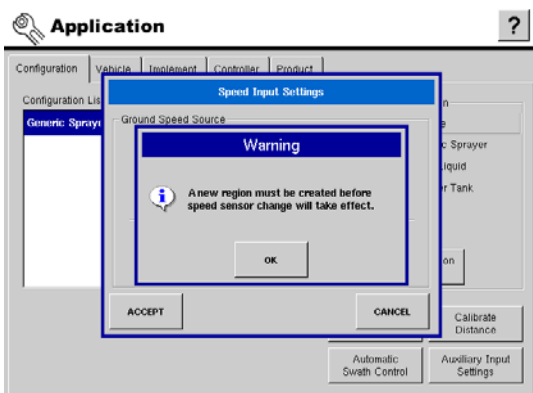
Manual Speed Settings



If neither primary or backup speed input devices are functioning properly, check the Use Manual Speed option and enter the desired simulated speed.



WARNING: Using this option can result in over or under application of products. The display will behave as if the vehicle is traveling at the manual speed until the option is deselected.

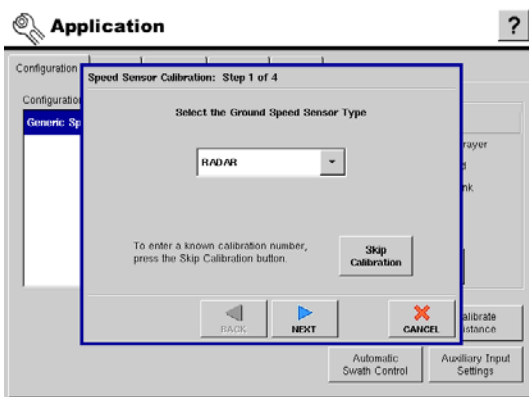


If the Primary speed input selection is changed, the display will read an on-screen dialog indicating that a new field region must be created at the Run Screen for the display to resume logging data to an existing field operation.

CALIBRATE DISTANCE

If you are not using GPS for ground speed, then after you have created a configuration you must calibrate the ground speed input for accurate speed and area calculations. If you are using GPS, it is recommended to calibrate distance in the event of GPS loss.

Select a Configuration from the list and press the Calibrate Distance button to calibrate the radar or wheel speed sensor. This calibration is specific to that combination of Vehicle, Implement, and Controller.



1. Select Speed Input

Select the sensor type to calibrate and press NEXT to continue.

2. Calibration Distance

The display defaults to 100 feet (meters) distance for calibration.

Press Edit Distance to change if needed. This value must match the actual distance of the course driven for calibration.

Press NEXT to continue.

3. Start Driving Course

Follow the on-screen directions and press START to begin the calibration process.

4. Drive vehicle over the measured course and press STOP.

Press NEXT to continue to final step.

5. Calibration Completed

Press FINISH to complete calibration and store the calculated value.



Note: Calibration settings can be manually adjusted if desired by pressing Enter CAL Number and making small changes to the setting.

AUTOMATIC SWATH CONTROL SETTINGS

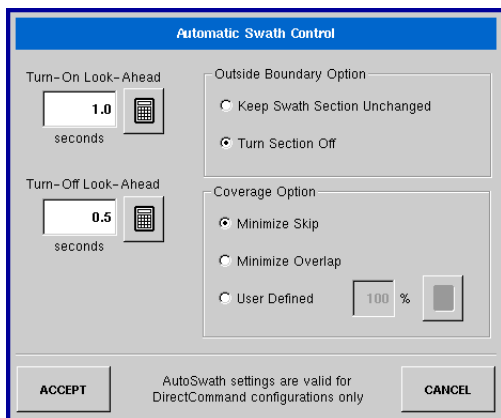
The Automatic Swath Control feature turns swath sections off and on automatically based upon the following conditions:

- Entering and exiting internal and outer field boundaries.
- Entering and exiting mapped product recommendation areas.
- Entering and exiting previously applied areas within a field.

To access the Automatic Swath Control settings, select the Configuration tab, and press the Automatic Swath Control button to access the related settings. These settings affect the automatic swath control operation and are specific to that combination of Vehicle, Implement, and Controller. For more information, see [“Automatic Swath Control” on page 243](#).



Note: The Automatic Swath Control functionality is an optional feature of the DirectCommand System. An unlock code must be purchased and installed to enable this feature. Call your local Ag LeaderKINZE dealer for details and pricing.



• Turn-On Look-Ahead

This setting determines how far ahead the display looks to turn the swath sections back on. This setting compensates for delay in the product control system when the boom sections are turned on.

• Turn-Off Look-Ahead

This setting determines how far ahead the display looks to turn the swath sections off. This setting compensates for delay in the product control system when the boom sections are turned off.

• Outside Boundary Option

Select one of the two options to determine system behavior when a swath section exits a field boundary or prescription mapped area.

• Coverage Option

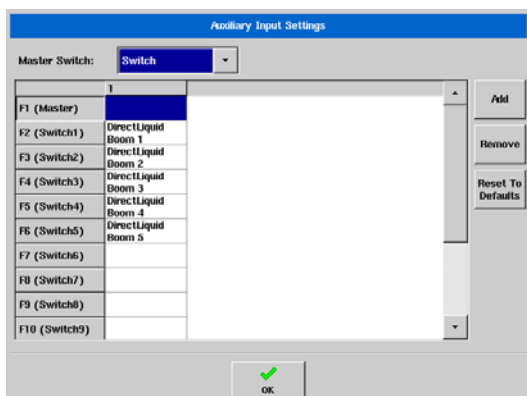
In the Coverage Option area, you must choose between three options:

- The Minimize Skip option turns off the boom section after the entire boom section is fully inside your coverage area. This prevents the possibility of skips.
- The Minimize Overlap option turns off the boom section when that boom section first enters your coverage area. This prevents the possibility of overlaps.
- The User Defined option allows you to choose what percentage of the boom section is within the coverage area before that boom section turns off. For example, if you choose 50%, then the boom section will switch off when half of it is within your coverage area.

AutoSwath Notes

- It is strongly recommended to use a 4 Hz or higher GPS output rate. AutoSwath control will not work until the master and boom section switches are on. A less than 4 Hz GPS output rate can result in your boom sections turning on and off too slow, even at speeds below 10 mph. If you have less than a 4 Hz GPS output rate and your speed goes above 10 mph, a warning appears, advising you to use a 4 Hz GPS rate.
- If using AutoSwath on an implement that is raised out of the ground when not applying, it is recommended to install an implement switch on the toolbar. This will prevent the display from turning on product flow when the implement is out of the ground and the vehicle encounters unapplied area.

AUXILIARY INPUT SETTINGS (DIRECTCOMMAND)



The Auxiliary Input Settings feature, (also called “Switch Mapping”) allows you to specify which switches on a DirectCommand switch box controls the boom sections of your implement. This process is used for DirectCommand. (It is not used for serial controllers or site verification scenarios).

The Auxiliary Input Settings window, shown at left, displays settings for the Master Switch and other switches on a DirectCommand Switch Box.

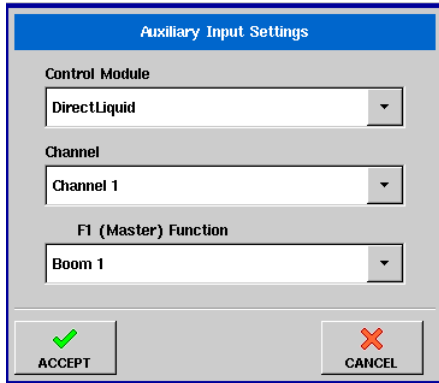
The Master Switch drop-down menu, shown at the top, controls the master switch for your entire configuration. You may see the following options underneath this menu:

- Switch - Controls the master switch.
- External 2 - This setting can control an optional, floor-mounted master switch.
- External 1, 3 & 4 - Not used at this time.

The F1-F10 cells on the left can be assigned to any implement sections. You can use these to choose the switches that control a particular boom section. From here, you can also make the following changes to the switch settings.

- Add a switch setting. (See below).
- Remove a switch setting.
- Reset to default switch settings.

Add Auxiliary Input Settings



If you wish to add a switch setting, press the Add button, and a second Auxiliary Input Settings window appears, as shown at left. This window shows the following drop-down menus:

Control Module - Specifies the function of your DirectCommand Switch Box. (For example, Spinner Spreader or Granular Strip Till controller).

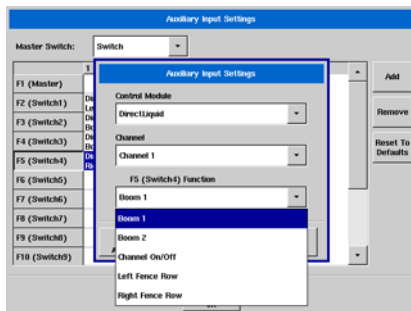
Channel - Selects the channel to control. Used for Strip Till or Spinner Spreader modules.

F1 (Master) Function - Turns the boom section on and off.

Fence Row Nozzle Indicators

You can control fence row nozzles through a DirectCommand switch box by mapping the switches in Auxiliary Input Settings. The fence row nozzles can be mapped to any switch. Use the following procedure to add fence row nozzles to Auxiliary Input Settings.

To begin, go to the Configuration Tab. Highlight your configuration on the Configuration List, then press the Auxiliary Input Settings button. The Auxiliary Input Settings window appears.

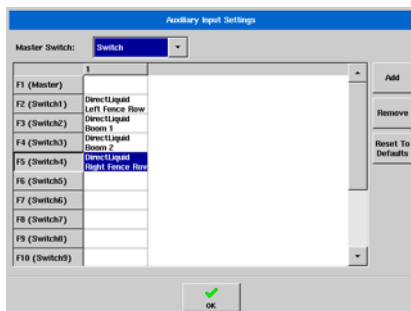


1. Remove and Add Switch Settings

Use the Remove and Add buttons to adjust switch mapping functions.

When you press the Add button, a second Auxiliary Input Settings window appears, as shown at left. Use the Function drop-down menu, located at the bottom of this window, to select the correct Boom or Fence Row Nozzle to be controlled by that switch. Press Accept when finished.

Repeat for each switch setting.



2. Save switch settings

The new switch settings appear in the Auxiliary Input Settings window, as shown in the example at left.

In this instance the Auxiliary Input Settings are adjusted so that the left fence row nozzle is controlled by F2 (Switch 1); the two sprayer booms are controlled by F3 (Switch 2) and F4 (Switch 3); and the right fence row nozzle is controlled by F5 (Switch 4).

Press OK to save these settings.

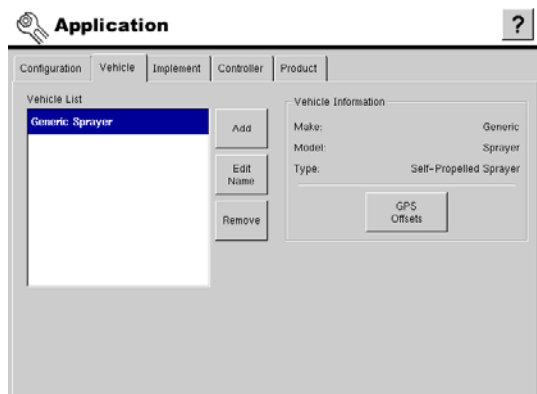
3. Fence row nozzle indicators on Run screen

After completing these Auxiliary Input Settings changes, the Fence Row Nozzle Indicators, which are shaped like triangles, appear on either side of the Swath Section indicators of the Run Screen's Application Tab.



VEHICLE CONFIGURATION TAB

Vehicle Tab Settings



The Vehicle Tab provides functionality for setting up and configuring additional vehicles. The vehicle list will show any vehicles that have already been created.

For a detailed Application menu that includes information on the Vehicle Tab, see [“Application Menu Tree” on page 167](#).

- **Add button**

Allows you to add a new vehicle. A wizard will walk you through setting up the vehicle. For detailed information, see [“Adding a New Vehicle” on page 175](#).

- **Edit Name button**

Allows you to edit the name of a vehicle in the list. To edit highlight the name of a vehicle in the list and then press this button. Then use the on-screen keyboard to edit the name.

- **Remove button**

Allows you to remove a vehicle. The implement and any regions and configurations using it will be deleted.



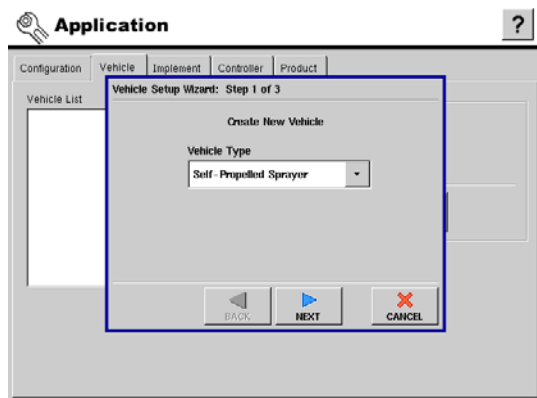
WARNING: When deleting a vehicle all regions and configurations using it will be deleted!

- **GPS Offsets button**

Allows you to specify the location of the GPS antenna in relation to the vehicle. A wizard will walk you through these edits. It also allows you to enter the distances from the rear axle to the different implement mounting positions on the tractor. For detailed information, see [“GPS Offsets” on page 176](#).

ADDING A NEW VEHICLE

To start the process of adding a new vehicle press the Add button.



1. Choose Vehicle Type

Choose the vehicle type from the drop-down list.

Press NEXT to continue.

2. Enter Vehicle Make and Model

Use the keyboard buttons to enter the vehicle's make and model.

If a Self-Propelled Sprayer or Self-Propelled Spreader was selected press NEXT to continue.

For all other vehicle types, skip to [“Finish” on page 176](#).

3. Enter Full Swath Width

Use the Number Pad button to enter the full swath width of the vehicle.

Press NEXT to continue.

4. Enter Number of Boom Sections

Use the up and down arrow buttons to enter in the number of boom sections on the vehicle.

Press NEXT to continue.

5. Enter Boom Section Widths

Highlight the boom sections in the list and use the Number Pad button to change the individual swath section widths.

Press NEXT to continue.

6. Finish

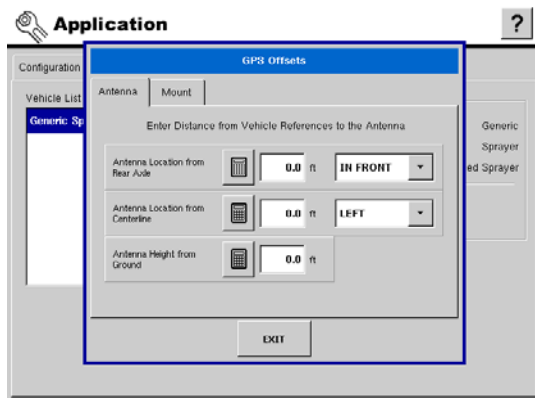
Use the keyboard button to edit the name of the vehicle.

Press FINISH to complete the setup process.

VEHICLE TAB - ADVANCED SETTINGS

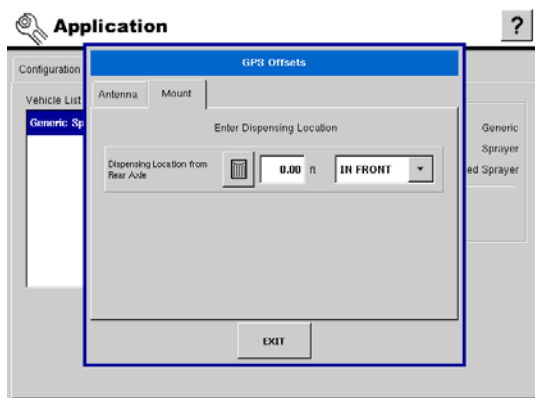
GPS OFFSETS

After completing the process of setting up a Vehicle, advanced GPS Offsets must be configured. The GPS Offsets define where machine rear axle, hitch, and product placement is in relation to the GPS antenna. These settings are used by mapping, product control, and Automatic Swath Control.



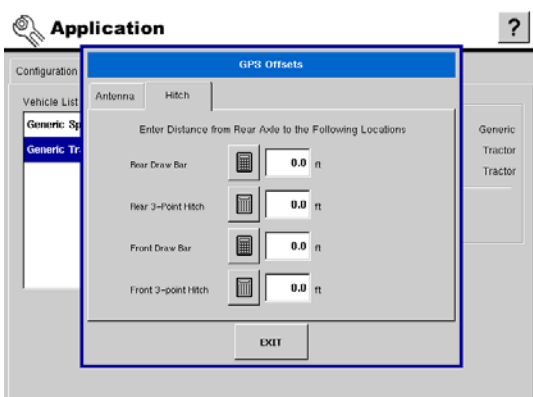
The Antenna Tab contains three different settings. Accuracy when measuring for a specific setting is essential to ensure proper machine performance.

- Measure and enter the horizontal distance from the rear axle to the position of the GPS antenna. Select IN FRONT or BEHIND from the list box to indicate the position of the antenna in relation to the rear axle.
- Measure and enter the horizontal distance from the centerline of the vehicle to the position of the GPS antenna. Select LEFT or RIGHT to indicate the position from the vehicle centerline.
- Measure and enter the vertical height of the antenna above the ground.



The Mount Tab will only be available when using a self-propelled vehicle. This allows you to enter in the application location from the rear axle. Use the Number Pad to enter in the distance and the drop-down box to select if it is in front or behind of the axle.

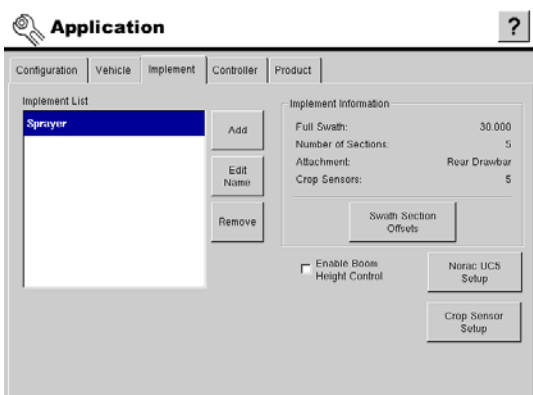
Hitch Tab Settings



The Hitch Tab is only available if using a pull behind or mounted implement. This allows you to enter in the distance from four different mounting positions on the tractor to the rear axle. Use the numeric keypads to enter these values in if using the hitch point.

IMPLEMENT CONFIGURATION TAB

Implement Tab Settings



Individual implements are set up and configured from the Implement Tab. The implement list displays all previously set up implements that are available for use when creating new configurations.

For a detailed Application menu that includes information on the Implement Tab, see [“Application Menu Tree” on page 167](#).

- **Add button**

Press to add a new implement. A wizard will walk you through setting up the implement. For detailed information, see [“Adding a New Implement” on page 178](#).

- **Edit Name button**

Press to edit the name of a selected implement from the list. The on-screen keyboard will be made available to make any required edits.

- **Remove button**

Press to remove a selected implement. The implement and any regions and configurations using it will be deleted.



WARNING: When deleting an implement all regions and configurations using it will be deleted!

- **Swath Sections Offsets button**

Press to edit the swath section offsets, distance from tractor hitch to application point, and distance from front hitch to rear hitch of the implement. An on-screen wizard will walk you through the edit process. For detailed information, see [“Swath Section Offsets” on page 179](#).

- **Norac UC5 Setup button**

Appears for users of the NORAC UC5 Spray Height Controller, summons the Norac UC5 Setup box. For more information, see [“NORAC UC5 Setup” on page 215](#).

- **Enable Boom Height Control check box**

Allows NORAC UC5 Spray Height Controller users to see the Boom Height Tab on the Run Screen. For more information, see [“Boom Height Tab” on page 222](#).

- **Crop Sensor Setup button**

Used by OptRx Crop Sensor module users. This button opens the Sensor Setup window, where you can adjust the rate displayed on the Crop Sensor Tab’s VI Bar Graph. For more information, see [“Crop Sensor Settings” on page 232](#).

ADDING A NEW IMPLEMENT

To add a new implement, go to the Implement Tab, press the Add button, and the Implement Setup Wizard appears, as shown.



1. Select Implement Attachment Method

Use the drop-down list to select an implement attachment method.

If the implement is a spinner spreader, check the Spinner Spreader Implement Type option.

Press NEXT to continue



Note: If spinner spreader was selected, skip to [“Enter Distance From Hitch to Application Point” on page 178](#) to continue implement setup.

2. Enter Full Swath Width

Use the numeric keypad to enter the full swath width of the implement.

Press NEXT to continue.

3. Enter Number of Boom Sections

Use the up and down arrow keys to enter the number of sections of the implement.

Press NEXT to continue.

4. Enter Boom Section Widths from Left to Right

For implements with more than one boom section, the display will default to the appropriate number of equal width boom sections. To edit any of the boom values, select the desired section from the list and press the number pad to enter in a new width.

Press NEXT to continue.

5. Enter Distance From Hitch to Application Point

Enter the distance from the hitch to the application point (from front to back) using the number pad button.

Press NEXT to continue.

If using the OptRx Crop Sensor, check the OptRx Crop Sensor Check box.



Note: If you selected OptRx Crop Sensor, see the OptRx configuration procedure at [“OptRx Crop Sensor Configuration” on page 228](#). Otherwise, press NEXT.

6. Enter the Implement Name

Use the keyboard button to enter a name for the implement.

Press Finish to complete the implement setup process.

Adding A Container

A container is a dry product bin or liquid tank. Containers are configured using the following steps during the process of setting up an implement.

1. Enter Capacity

Use the Number Pad button to enter in the capacity of the container and then use the drop-down list to select the Units that correspond. Press NEXT to continue.

2. Name the Container

Use the Keyboard button to enter in the desired name for the container.

Select Vehicle or Implement to indicate mounting location of the product container.

Press Finish to complete the container setup process.

IMPLEMENT TAB - ADVANCED SETTINGS

SWATH SECTION OFFSETS

After completing the initial process of configuring an Implement, accurate values must be entered in the Swath Section Offsets to ensure proper machine performance. Swath Section Offsets are configured as outlined in the following steps.

Section	Width	F/B Offset	L/R Offset
1	7.50 ft	0 ft	33.75 ft left
2	7.50 ft	0 ft	26.25 ft left
3	7.50 ft	0 ft	18.75 ft left
4	7.50 ft	0 ft	11.25 ft left
5	7.50 ft	0 ft	3.75 ft left

F / B = Forward or Backward L / R = Left or Right

1. Select swath section

Select the desired section from the boom list and press Edit to modify the offset values.

2. Enter left or right distance from hitch point

Use the keypad to enter the distance the mid-point of the swath section from the machine centerline. Select to the left/to the right to indicate the direction the swath section is located from the vehicle centerline.

Enter the distance that the swath section is located from the hitch point. (This option will not be present on self-propelled vehicles.)

Press Accept when done.

3. Enter distance from front hitch to rear hitch

Use the numeric keypad to enter the distance from front hitch, if present, to rear hitch point. (This option will not be present on self-propelled vehicles.)

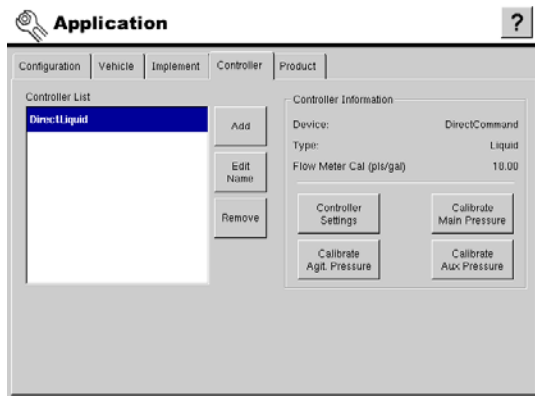
Press Exit when done.



WARNING: Accuracy when measuring and entering swath section GPS offsets is required to ensure proper machine performance.

CONTROLLER TAB

CONTROLLER TAB SETTINGS



Use the controller tab to add and configure controllers for use during product application while planting, spraying, or spreading fertilizer.

For an Application menu that includes information on the Controller Tab, see [“Application Menu Tree” on page 167](#).

For more information on Controller settings, see [“Controller Settings” on page 268](#).

- **Add button**

Press to add a new controller. An on-screen wizard will walk you through setting up the controller. For detailed information see [“Adding a New Controller” on page 180](#).

- **Edit Name button**

Press to launch the on-screen keyboard to edit the name of any selected controller.

- **Remove button**

Press to remove a controller. The controller and all regions and configurations using it will be deleted.



WARNING: When deleting a controller all regions and configurations using it will be deleted!

- **Controller Settings button**

Press to view the settings for your specific controller. (Only active with DirectCommand product control configurations).

- **Calibrate Agit Pressure button**

Press to launch the Pressure Calibration Wizard (Only active with a DirectCommand Liquid Controller).

- **Calibrate Main Pressure button**

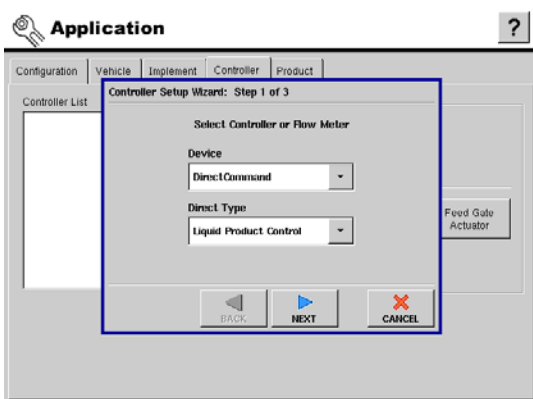
Press to launch the Pressure Calibration Wizard (Only active with a DirectCommand Liquid Controller).

- **Calibrate Aux Pressure button**

Press to launch the Pressure Calibration Wizard (Only active with a DirectCommand Liquid Controller).

ADDING A NEW CONTROLLER

Press the Add button on the Controller tab to set up a new controller. The Controller Setup Wizard appears, as shown.



1. Select Controller or Flow Meter

Select the controller type from the Device list box. For all selections other than Serial Controller a second list box will be present requiring choice of liquid or granular product control.

If setting up a serial controller, press NEXT.

If setting up a liquid DirectCommand controller or flow meter logging system, press NEXT and continue with Step 3.

If setting up a granular DirectCommand controller, continue with Step 3.

2. Select Serial Controller Make and Model

If you selected Serial Controller in the previous step, you should now enter the Serial Controller make and model from the appropriate list boxes and press NEXT. Continue at [“Finish Controller Setup” on page 181](#).

3. Enter Calibration Number

Enter the Flow Meter calibration number using the Number Pad. Press NEXT to continue.



Note: For individual product information, see [“New Controller Product Notes” on page 181](#)

4. Finish Controller Setup

Edit controller name if desired and press FINISH to complete the process of configuring a new controller.

New Controller Product Notes

As you add a new controller, keep in mind the following regarding these application products.

- **Raven**

Raven flow meter tags represent pulses per 10 gallons. Divide the calibration number by 10 before entering into the display. For more information, see [“Controller Settings: Direct Injection Pump Calibration” on page 269](#).

- **Tee Jet**

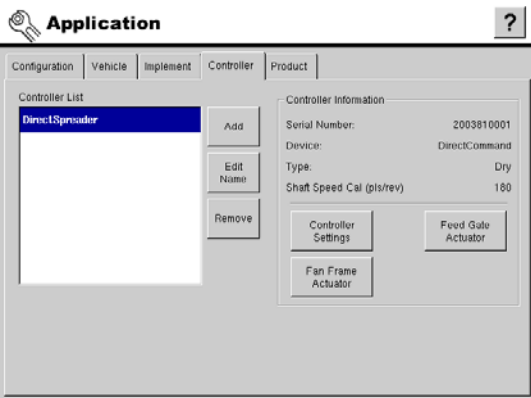
Tee Jet meter calibration numbers represent pulses per liter. To convert the number, multiply the value found on the flow meter by 3.79 to find the pulses per gallon needed for the display.

- **Mid-Tech**

Mid-Tech flow meters sometimes have a cable with a module. The calibration number found on this cable is in pulses per gallon/divided by 16. The display should bypass this module and plug directly into the flow meter. If that is the case then multiply the calibration number by 16 before entering it into the display.

CONTROLLER TAB - ADVANCED SETTINGS

GRANULAR SPINNER SPREADER SETTINGS

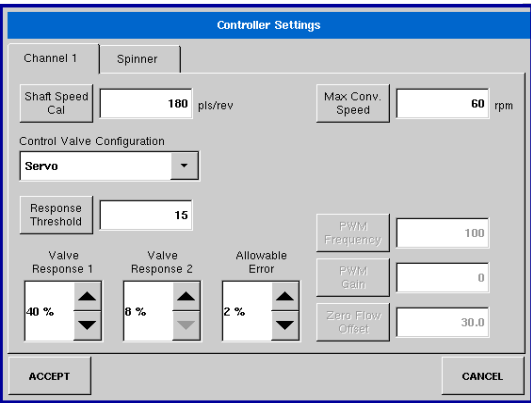


The settings determine hydraulic control valve performance for the product conveyor and spinner speed control.

Select the desired controller from the list and press Controller Settings to access the value setting windows. The Controller Settings window appears.



Note: The **Fan Frame Actuator** and **Feed Gate Actuator** buttons are used by operators who have purchased a New Leader Linear Actuator unlock code. For a further explanation of these buttons, see [“Spinner Spreader Settings - Fan Frame & Feed Gate Actuator” on page 183.](#)

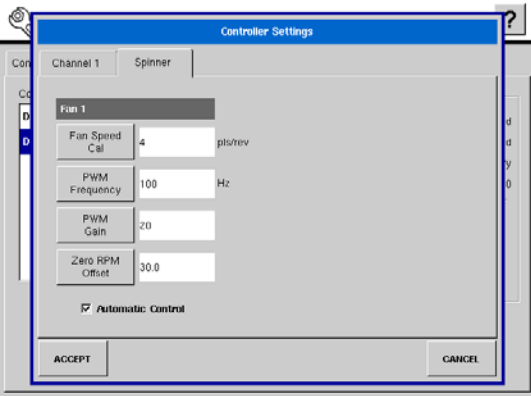


The picture at left shows the default settings for the conveyor control hydraulic servo valves.

For tables listing all definitions and default values, see the following in the Index:

- [“Spinner Spreader Servo Settings Description” on page 278.](#)
- [“Spinner Spreader PWM Control Valve Settings Description” on page 279.](#)

Minor adjustments may be required for proper performance of individual applicators.



The picture at left shows the default setting for the optional fan speed monitor.

- The Fan Speed Cal number is the number of pulses that are generated by the sensor during one revolution of the spinner dish.
- For descriptions of other Spinner Tab settings, see [“Spinner Speed PWM Valve Settings Description” on page 279.](#)

SPINNER SPREADER SETTINGS - FAN FRAME & FEED GATE ACTUATOR

Linear Actuator Calibration Wizard:

Instructions:

Press NEXT button to move actuator to first set point.

Reset Calibration


BACK NEXT CANCEL

Spinner Spreader operators using a Fan Frame and Feed Gate Actuator must calibrate these settings each time that they change the granular product applied. Each calibration procedure is described below.

Pressing either the Fan Frame Actuator or Feed Gate Actuator button loads the Linear Actuator Calibration Wizard, as shown at left. Press the NEXT button to move the actuator to the first set point.

Linear Actuator Calibration Wizard: Step 1 of 3

Enter Fan Frame Position 1



inches

Press NEXT button to move actuator to second set point.

BACK NEXT CANCEL


1. If you pressed the Fan Frame Actuator button on the Controller Tab, you may use the numeric keypad to enter the position of the first set point. Press NEXT to continue.

2. Enter the position of the second set point. Press NEXT to continue.

3. Calibration Complete. Press Finish to accept the new calibration or Cancel to continue using the previous calibration.

Linear Actuator Calibration Wizard: Step 1 of 3

Enter Feed Gate Position 1



inches

Press NEXT button to move actuator to second set point.

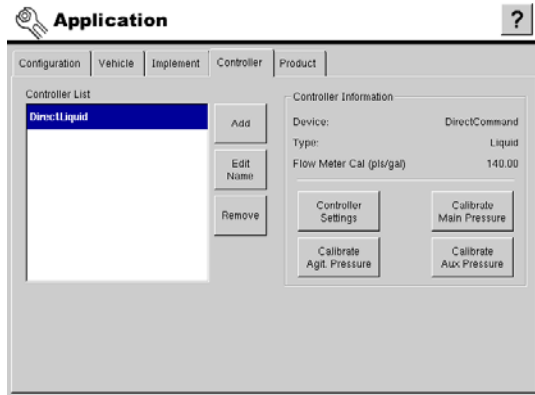
BACK NEXT CANCEL

1. If you pressed the Feed Gate Actuator button on the Controller Tab, you may use the numeric keypad to enter the position of the first set point. Press NEXT to continue.

2. Enter the position of the second set point. Press NEXT to continue.

3. Calibration Complete. Press Finish to accept the new calibration or Cancel to continue using the previous calibration.

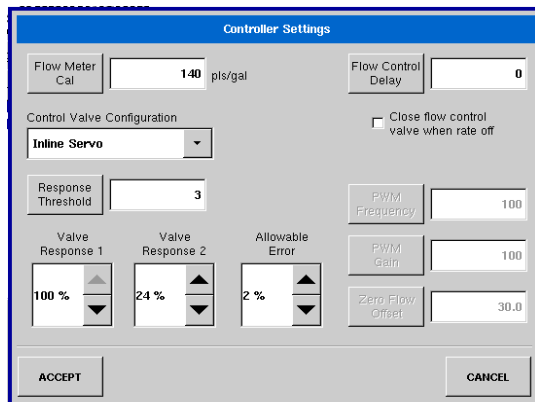
LIQUID DIRECTCOMMAND CONTROLLER SETTINGS



The settings contained on this configuration window determine liquid product control valve performance.

Controller Setup Screen

Under the Controller Tab, press Controller Settings to access the advanced setting screens.



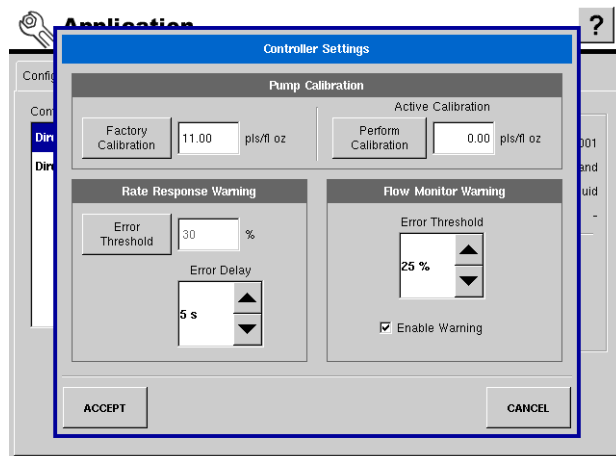
The picture at left shows the default settings for the liquid product inline servo valve. Bypass servo, PWM 12-volt, PWM Ground, Calibrated Reflow and Pump Servo Control method are also supported by the DirectCommand system.

- Definitions for these settings can be found at [“Controller Settings” on page 268](#)
- A table listing default values can be found at [“Liquid Product Control Valve Configuration Options” on page 273](#).



Note: Minor adjustment may be required for proper performance of individual applicators.

DIRECT INJECTION CONTROLLER SETTINGS



The settings contained on this configuration window determine Direct Injection product pump performance. To view the Direct Injection Controller Settings window, go to the Controller Tab, highlight the desired controller, and press Controller Settings.

• Pump Calibration

- Factory Calibration: This number is found on the tag of the Digital Pump Speed Sensor. This tag number represents pulses per 10 fluid ounces. Divide the tag number by 10 and enter this number. Once entered, this number should not be changed.

- Perform Calibration: Press the Perform Calibration button to begin the calibration procedure for the Direct Injection pump. The pump will not run until this calibration has been performed. For more information, see *"Calibrating an Injection Pump" on page 207*.

- **Rate Response Warning**

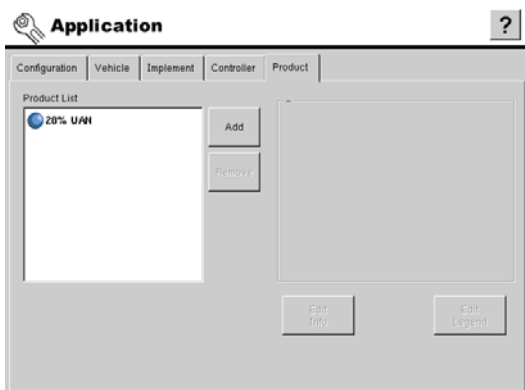
- Error Threshold: The user-defined percentage of actual rate error allowed before an alarm sounds.
- Error Delay: The number of seconds that the actual rate falls out of the error threshold before an alarm sounds.

- **Flow Monitor Warning**

- Error Threshold: The percentage of perceived application error, based on the discharge flow sensor.
- Enable Warning: The Enable Warning check box allows you the option of displaying the Flow Monitor Warning.

PRODUCT TAB

PRODUCT TAB BUTTONS



The display requires that products be set up prior to performing any in-field application, planter logging, or planter control. To set up a product, go to the Product Tab and press Add to launch the Setup Wizard.

For an Application menu that includes information on the Product Tab, see *"Application Menu Tree" on page 167*.

- **Add button**

Allows you to add a new product. A wizard will walk you through setting up the product. For more information, see *"Product Options" on page 186* and *"Adding A New Product" on page 188*.

- **Remove button**

Allows you to remove a product. The product and any regions using it will be deleted.



WARNING: When deleting a product, all regions using that product will be deleted!

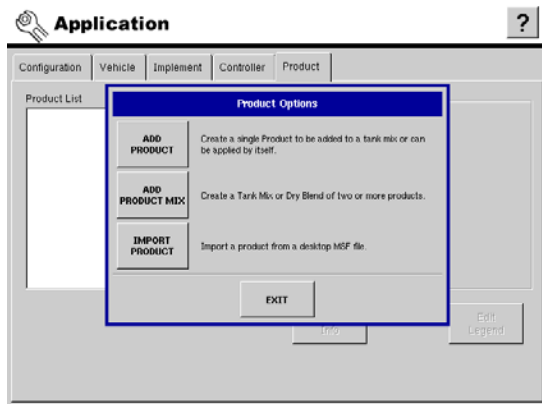
- **Edit Info button**

Allows you to specify the manufacturer of a variety in the Product Information. For more information, see *"Product Settings" on page 186*.

- **Edit Legend button**

Launches a wizard that allows you to change the legend associated with the selected product. For more information, see *"Map Legend" on page 226*.

PRODUCT OPTIONS



The Product Options window is where you can add or import products, or add product mixes. To go to the Product Options window, press the Add button on the Product Tab. The Product Options window appears, as shown. Choose from the following options described in the following table.

- **Add Product button**

Adds a single component product type. For more information, see [“Adding A New Product” on page 188](#).

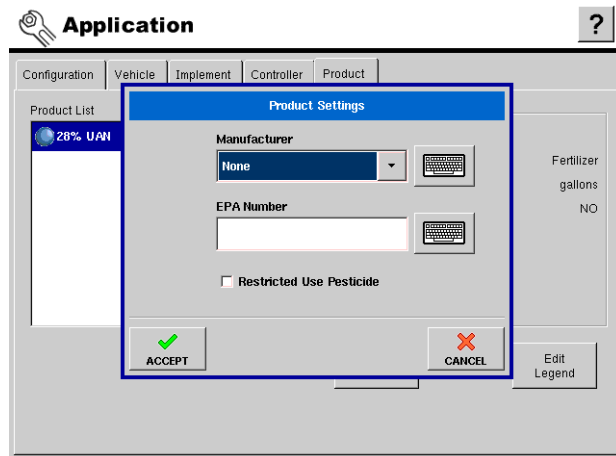
- **Add Product Mix button**

Adds a mix of products, either a tank mix or dry blend. For more information, see [“Tank Mix Setup” on page 191](#) and [“Dry \(Granular\) Fertilizer Blend Setup” on page 193](#).

- **Import Product button**

Imports a Management Setup File (.msf) from desktop software. For more information, see [“Import Product” on page 189](#).

PRODUCT SETTINGS



The Product Settings window is where you can edit product information for an existing product in the Product List. To go to the Product Settings window, press the Edit Info button on the Product Tab. The Product Options window appears, as shown.

- **Manufacturer**

Enter the Manufacturer and Common Name, if desired.

- **EPA Number**

Enter the EPA Registration Number which is listed on the product's container label.

- **Restricted Use Pesticide check box**

If the product is a Restricted Use Pesticide, press the check box. This information will also be included for your

records. For more information on Restricted Use Pesticides, see [“Restricted Use Pesticide Setup” on page 190](#).

PRODUCT TYPE DESCRIPTION

The following product types can be set up and used during product application with the display. Each is explained in detail within subsequent sections of the manual.

The display comes with a pre-defined set of commonly used fertilizer products.

N-P-K percentages and default product densities are stored with each combination of product and control channel. For more information, see [“Single Component Fertilizer Products” on page 187](#).

Single Component — Single component products are setup by pressing the ADD PRODUCT button. Setup allows creation of fertilizers, pesticides, defoliant, growth regulators, adjuvants, and product carriers. For more information, see *“Single Component Product Types” on page 187*.

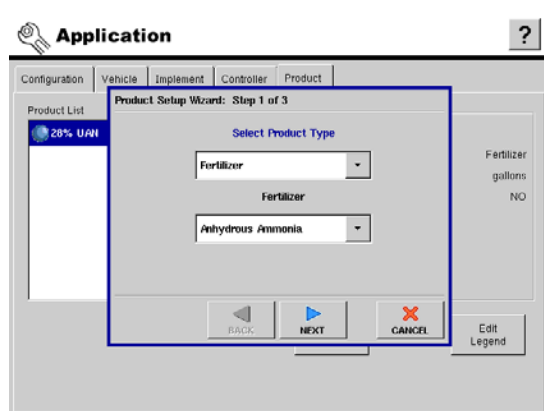
- **Dry Blend**

Combination of dry components with the ability to add liquid components to create "impregnated fertilizer blends". Press ADD PRODUCT MIX to access setup. For more information, see *“Dry (Granular) Fertilizer Blend Setup” on page 193*.

- **Tank Mix**

Mix of liquid components and additives. Press ADD PRODUCT MIX to access setup. For more information, see *“Tank Mix Setup” on page 191*.

SINGLE COMPONENT PRODUCT TYPES



When you press the Add Product button, the Product Setup Wizard appears, as shown.

Here you must choose a single component product from any of the pre-defined types described below that can be created and added to the product list. After initial setup, single component products can be used individually or can be combined to create dry blends and liquid product mixes.

The display allows adding three different types of granular fertilizers to the Product List.

- Pre-defined fertilizers
- User defined N-P-K fertilizers
- Other
- Herbicide

The display allows adding non-fertilizer products of the pre-defined types. Product setup between the types is similar. During the setup process, the display allows the user to input the following information.

- Controlling units
- EPA #
- RUP indication
- Manufacturer and product names
 - Insecticide
 - Fungicide
 - Nematicide
 - Rodenticide
 - Defoliant
 - Growth Regulator
 - Adjuvant
 - Carrier

SINGLE COMPONENT FERTILIZER PRODUCTS

Single component fertilizers of the following types can be setup. These components can be combined later to create dry mixes.

- Fertilizer Type

- Description
- Pre-defined

The display has many of the commonly used fertilizers pre-defined within the display. N-P-K content and default density are stored with each product. Product density is the only attribute of a pre-defined fertilizer that can be edited. The following pre-defined products are setup within the display.

- Anhydrous Ammonia
- 28%, 30%, & 32% UAN
- Ammonium Polyphosphate
- Ammonium Nitrate
- Ammonium Phosphate
- DAP
- MAP
- Ammonium Sulfate
- Urea
- Potash
- Triple Superphosphate
- Ordinary Superphosphate
- Potassium Nitrate
- Ag Lime
- Pell Lime

User- defined

N-P-K

The display allows setting up a custom fertilizer based upon the N-P-K content of the product.

- Controlling units
- N-P-K percentages by weight
- Product density
- Product name

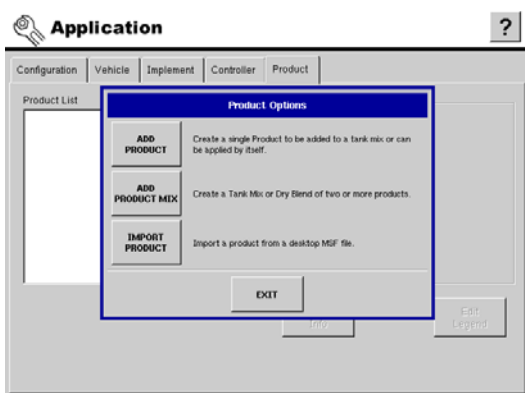
Other

Other granular products can be setup that are not based upon N-P-K content of the product. Examples of these products are:

- Sulfur
- Zinc
- Magnesium

ADDING A NEW PRODUCT

To add a new product press the Add button located on the Product Tab. The Product Options window appears, as shown.



1. Select Product Option

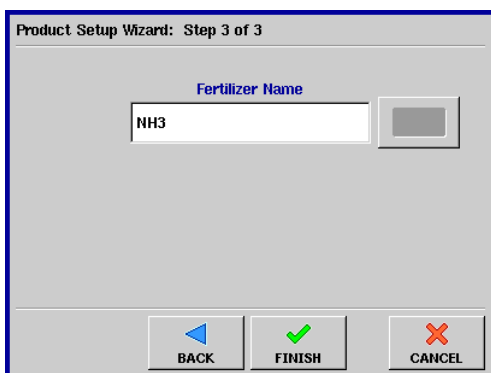
Press the Add Product button located on the Product Options window. The Product Setup Wizard appears, as shown in the following step.

The Import Product button allows you to import a product from a desktop .msf file. For more information on importing products from desktop .msf files, see [“Import Product” on page 189](#).

2. Select Product Type and Fertilizer

Select a product and fertilizer type and from the drop-down menus.

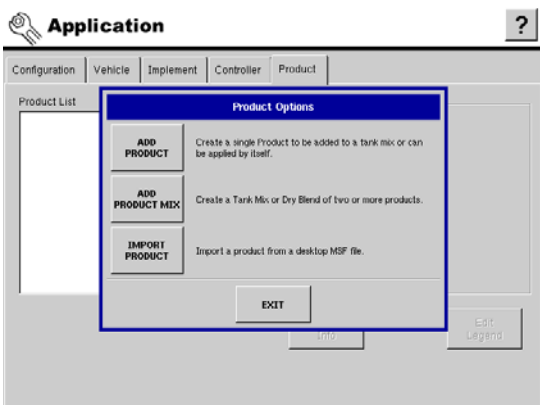
Press NEXT.



3. Enter Fertilizer Name

Enter the fertilizer name and press Finish.

IMPORT PRODUCT



To import a product from a desktop .msf file, press the Add button located on the Product Tab. The Product Options window appears, as shown.

Select Product Option

Press the Import Product button located on the Product Option window. The Product Import Wizard appears, as shown in the NEXT step.



1. Select Product and Type

Select the Product and Type from the drop-down menus.

2. Select Units

Select the units and density of the product.

3. Enter EPA Number

Enter the EPA Registration Number which is listed on the product's container label.

This information will be stored in the display, and will be available for you to retrieve when you print a Smart Report. For more information on Smart Reports, see [“Creating A Smart Report™” on page 245](#).

If the product is a Restricted Use Pesticide, press the check box. This information will also be included for your records. For more information on Restricted Use Pesticides, see [“Restricted Use Pesticide Setup” on page 190](#).

Product Import Wizard: Step 5 of 5

Enter Product Name

FERTILIZER 1

Keypad icon

BACK FINISH CANCEL

4. Enter Manufacturer and Common Name

Enter the Manufacturer and Common Name, if desired.

5. Enter Product Name

Use the keypad to enter or change the product name.

RESTRICTED USE PESTICIDE SETUP

Application

Configuration Vehicle Implement Controller Product

Product List

Product Options

ADD PRODUCT: Create a single Product to be added to a tank mix or can be applied by itself.

ADD PRODUCT MIX: Create a Tank Mix or Dry Blend of two or more products.

IMPORT PRODUCT: Import a product from a desktop MSF file.

EXIT

Edit Legend

The display supports setup of restricted use pesticides, and the related information of EPA product numbers and manufacturer name. The images and instructions in the following steps represent setting up a common RUP herbicide.

Application

Configuration Vehicle Implement Controller Product

Product List

Product Setup Wizard: Step 1 of 3

Select Product Type

Herbicide

BACK NEXT CANCEL

Edit Legend

1. Start Adding New Product

Press Add at the Product Tab to launch the Product Setup Wizard.

Press ADD PRODUCT to start setup of a new product.

2. Select Product Type

Select the product type to set up. In this example, an herbicide is shown. Other choices are:

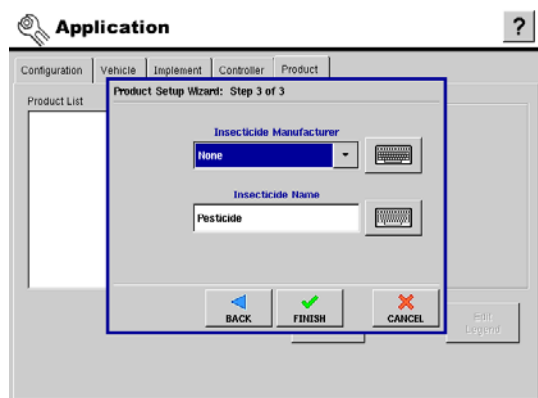
- Insecticide
- Fungicide
- Nematicide
- Rodenticide

- Defoliant
- Growth Regulator

Press NEXT to continue.

3. Set Controlling Units

Select the controlling units for product application. Press NEXT to continue.



4. EPA Information

Enter the EPA product registration number and select the RUP check box where appropriate. Press NEXT to continue.

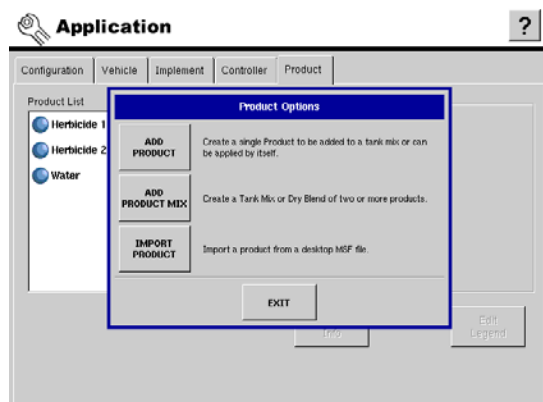
5. Product Name

Enter manufacturer and product names.

Press FINISH to complete the product setup process.

TANK MIX SETUP

Tank Mixes are set up by using the on-screen wizard. A tank mix can contain up to seven individual components. The following example shows the process of creating a 1,000 gallon tank mix of Herbicide 1, Herbicide 2, and water. The tank mix is setup for application at a target rate of 10 GPA.



1. Adding A Product Mix

Press the Add button on the product setup screen to display the dialog at the left.

Press the Add Product Mix button to start the process of creating a tank mix.

2. Creating A Tank Mix

Select Tank Mix from the list box.

Press NEXT to continue.

3. Base Amount And Units Selection

Enter a Base Amount of product and the controlling Units for

the tank mix.

Press NEXT to continue.



Note: The Base Amount is the total volume of all the components of the tank mix. The Base Amount does not need to match the actual volume of product that will be sprayed, but is used only to establish the ratio of all products to the total volume.

4. Start Adding Components

Press the Add button to start the process of adding components to the tank mix.

5. Select Component

Select the desired component from the list box.

Press NEXT to continue.



Note: If the desired product is not already set up, press New to set up the product.

6. Component Base Amount

Enter the Base Amount of the component.

Press FINISH to complete the process of adding the component.



Note: The Base Amount is the total volume of product that would be present in the 1000 gallon mix applied at a 10 GPA rate.

7. Add Additional Components

Press Add to start setting up the second mix component.

8. Select Mix Component

Select the desired component from the list box.

Press NEXT to continue.



Note: If the desired product is not already set up, press New to set up the product.

9. Enter Component Base Amount

Enter the Base Amount of the component.

Press FINISH to complete the process of adding the component.



Note: The Base Amount is the total volume of the component that would be present in the 1,000 gallon mix applied at a 10 GPA rate.

10. Add Product Carrier

Mix/Blend contents screen showing herbicides added to the tank mix.

No additional active ingredients are required for this tank mix, the water used as the carrier is the only additional component.

Press Add to begin the process of adding water as a carrier for the active components.

11. Carrier Selection

Select water from the list box.

Press NEXT to continue.



Note: If the desired product is not already setup, press New to set up the product.

12. Carrier Base Amount

As displayed in step 10 of the example, 965 gallons of water are required to complete setting up this tank mix.

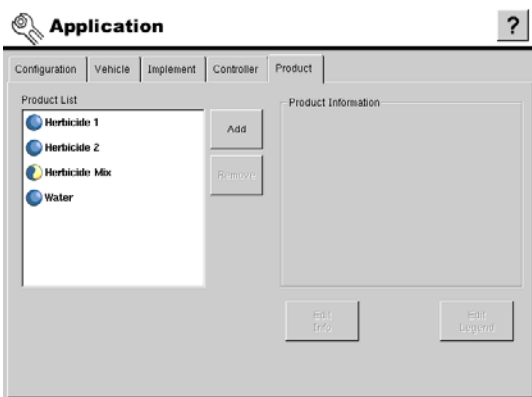
Enter 965 as the base amount of water.

Press FINISH to complete the process of adding the carrier.

13. Tank Mix Component Setup Completed

The dialog box at left shows the tank mix with all components added.

Press NEXT to continue.



14. Name Tank Mix

Enter a unique name for the liquid tank mix.

Press Finish to complete the setup process.

15. List Showing Tank Mix Details

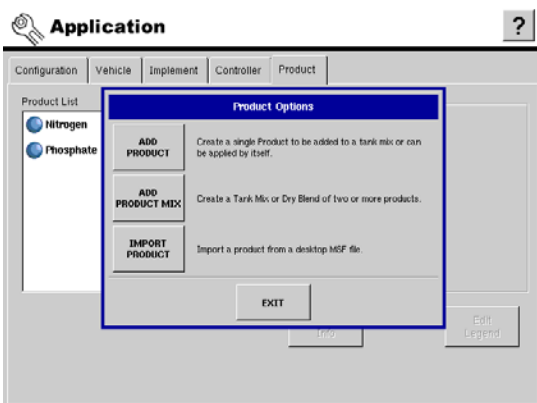
Shown at left is the Product Tab showing the new tank as a selection in the Product List.



Note: Select a product to view the individual components and amounts in the Mix/Blend Information frame.

DRY (GRANULAR) FERTILIZER BLEND SETUP

Dry fertilizer blends are set up by using the on-screen wizard described in the following steps. A dry blend can contain up to seven individual components.



1. Adding A Product Mix

Press the Add button on the product setup screen to display the dialog at left.

Press the Add Product Mix button to start the process of creating a dry product blend.

2. Creating A Dry Blend

Select Dry Blend from the list box.

Press NEXT to continue.

3. Base Amount And Units Selection

Enter a Base Amount of product and the controlling Units for

the dry product blend.

Press NEXT to continue.



Note: The Base Amount is the total weight of product for the fertilizer blend. The Base Amount does not need to match the actual volume of product that will be applied, but is used only to establish the ratio of all products to the total volume.

4. Start Adding Components

Press the Add button to start the process of adding components to the fertilizer blend.



Note: Any liquid herbicides set up within the display can be added to create an impregnated blend product.


5. Select Component

Select the desired component from the list box. New components can be set up at this time if required.

Press NEXT to continue.


6. Component Base Amount

Enter the base amount of the first component.
Press Finish to complete the process of adding the first component.

 **Note:** The Base Amount is the total weight of this component of the fertilizer blend.

7. Add Additional Components

A dry mix can contain up to seven individual components.
Press Add to start adding an additional component.


 **Note:** The remaining base amount that is available after adding product components is shown at the bottom of the on-screen list box.

8. Select Additional Components

Select the second component for the dry mix.
Press NEXT to continue.

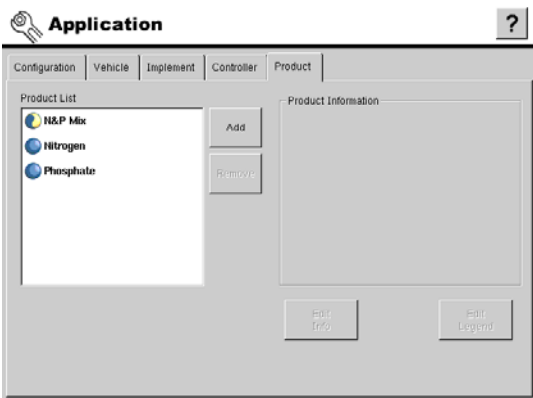
9. Set Product Base Amount

Enter the base amount of the component.
Press FINISH to complete the process of adding the component.

 **Note:** The Base Amount is the total weight of this component of the fertilizer blend.

10. Second Component Added

Mix/Blend contents screen showing the second product added.
Add additional components as desired.
Press NEXT after final blend component has been added.




11. Name Blend

Enter Manufacturer name if applicable.
Use the on-screen keyboard to enter a unique name for the blend.
Press Finish to complete the process of setting up the dry blend.

12. List Showing New Blend

Product screen showing the new dry blend as a selection in the Product List.

 **Note:** Select a product to view the individual components and amounts in the Mix/Blend Information frame.

MACHINE SPECIFIC CONFIGURATIONS

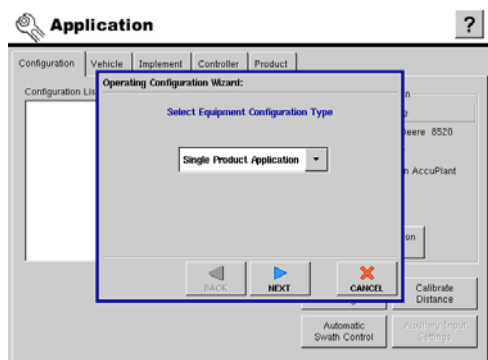


Note: The following section describes configuration procedures that are particular to specific configuration scenarios. These procedures are provided as examples; your own machine's configuration may vary.

ADDING A SERIAL-CONTROLLED SINGLE PRODUCT CONFIGURATION

The following procedure describes how to create a serial-controlled configuration for a single liquid product as applied by a self-propelled sprayer.

- To see a menu detailing serial control configuration options, see [“Serial Control Menu Tree” on page 169](#).
- For an explanation of how to create a serial-controlled configuration with a flow meter, see [“Adding a Single Product Application with Flow Meter” on page 197](#).
- For an explanation of how to create a multi-product configuration that includes a DirectCommand and serial-controlled application controllers, see [“Adding a Multiproduct Configuration for DirectCommand and a Serial Controller” on page 199](#).)



1. Select Single Product

To add a new serial-controlled configuration press the Add button on the Configuration Tab. The Operating Configuration Wizard appears, as shown at left.

Use the drop-down list to select this configuration to apply to a Single Product Application.

Press NEXT to continue.

2. Select Vehicle

Select the Vehicle to be used in the configuration from the drop-down list. If a new vehicle needs to be made, press the New

button.

Press NEXT to continue.

3. Create New Vehicle

The Vehicle Setup Wizard appears. Since this procedure describes how to configure a self-propelled sprayer, you may select Self-Propelled Sprayer from the Vehicle Type list box.

Press NEXT to continue.

4. Enter Vehicle Information

Use the keyboard buttons to enter names for the Vehicle Make and Model.

Press NEXT to continue.

5. Enter Full Swath Width

Enter the full width of the spray boom expressed in feet or meters for metric applications.

Press NEXT to continue.

6. Enter Number of Boom Sections

Enter the total number of boom sections.

Press NEXT to continue.

7. Enter Boom Section Widths from Left to Right

The display automatically divides the boom into equal length sections. Select individual sections and use the on-screen keypad to edit boom section lengths if needed.

Press NEXT to continue.

8. Enter Vehicle Name

The display combines the Vehicle Make and Model for use as a Vehicle Name.

Use the on-screen keyboard to edit the vehicle name if desired.

Press Finish to complete Vehicle setup and continue with the configuration process.

9. Select Operating Mode

The Operating Configuration Wizard reappears. Use the drop-down list to select Rate Logging / Control.

Press NEXT to continue.

10. Select Controller

Use the drop-down list to select the desired controller. If the controller you wish to use is not in the list press New.

Press NEXT to continue.

11. Select Serial Controller

Select Serial Controller from the drop-down list.

Press NEXT to continue.

12. Select Controller Make and Model

Use the drop-down list to select the desired controller. If the controller you wish to use is not in the list press New.

Press NEXT to continue.

13. Enter Suggested Controller Name

Use the keyboard button to enter a controller name.

Press Finish to continue with the Operating Configuration Wizard.

14. Set Controller Operating Mode

Select an operating mode for either liquid or granular products. In the example at left, the liquid operating mode is selected.

Press NEXT to continue.

15. Select Container

Use the drop-down list to select the Container that will be used with the equipment. Examples of containers are spray solution and NH₃ tanks. Press New to add a container if required.

Press NEXT to continue.

16. Enter Container Capacity and Units

The Container Setup Wizard appears. Enter the container Capacity using the on-screen keypad.

Select Units used to represent the Capacity of the container.

Press NEXT to continue.

17. Enter Container Name and Location

Use the keyboard button to edit the Container that will be used with the equipment. Examples of containers are spray solution and NH₃ tanks. Then use the drop-down menu to select the container location.

Press Finish to return to the Operating Configuration Wizard.

18. Select Ground Speed Source

The Operating Configuration Wizard reappears. Select your ground speed source. If you will be using GPS as the primary you will need to select a secondary source.

Press NEXT to continue.



Note: If you are not using GPS for ground speed, then after you have created a configuration you must calibrate the ground speed sensor for accurate speed and area calculations. For more information, see [“Calibrate Distance” on page 171](#).



19. Enter Suggested Name for Configuration

A suggested name appears, which has been created from the Vehicle, Implement and Controller names. If this name does not fully describe the configuration, use the keyboard button to edit the suggested configuration name.

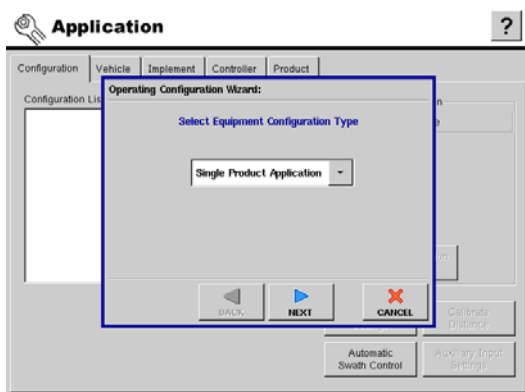
Press Finish to complete configuration setup.

The configuration should now be displayed in the configuration list.

ADDING A SINGLE PRODUCT APPLICATION WITH FLOW METER

The following procedure describes how to create a single product application with a flow meter. To see a menu detailing serial control configuration options, see [“Serial Control Menu Tree” on page 169](#).

- For an explanation of how to create a serial-controlled configuration for a single product, see [“Adding a Serial-Controlled Single Product Configuration” on page 195](#).
- For an explanation of how to create a multi-product configuration that includes a DirectCommand and serial-controlled application controllers, see [“Adding a Multiproduct Configuration for DirectCommand and a Serial Controller” on page 199](#).



1. Select Single Product Configuration Type

To add a new flow meter configuration press the Add button on the Configuration Tab. The Operating Configuration Wizard appears, as shown at left.

Use the drop-down list to select this configuration to apply to a Single Product Application.

Press NEXT to continue.

2. Select Vehicle

Select the Vehicle to be used in the configuration from the drop-down list. If a new vehicle needs to be made, press the New button.

Press NEXT to continue.

3. Create New Vehicle

Select the Vehicle to be used in the configuration from the drop-down list. If a new vehicle needs to be made, press the New button. Press NEXT to continue.

4. Enter Vehicle Information

Use the on-screen keyboard to enter names for the Vehicle Make and Model.

Press NEXT to continue.

5. Enter Full Swath Width

Enter the full width of the spray boom expressed in feet or meters for metric applications.

Press NEXT to continue.

6. Enter Number of Boom Sections

Use the up and down arrow buttons to enter the total number of boom sections.

Press NEXT to continue.

7. Enter Boom Section Widths from Left to Right

The display automatically divides the boom into equal length sections. Select individual sections and use the on-screen keypad to edit boom section lengths if needed.

Press NEXT to continue.

8. Enter Vehicle Name

The display combines the Vehicle Make and Model for use as a Vehicle Name.

Use the on-screen keyboard to edit the vehicle name if desired.

Press Finish to complete Vehicle setup and continue with the configuration process.

9. Select Operating Mode

Use the drop-down list to select Rate Logging / Control.

Press NEXT to continue.

10. Select Controller

Use the drop-down list to select the desired controller. If the controller you wish to use is not in the list press New.

Press NEXT to continue.

11. Select Flow Meter

Since we are setting up a single, liquid product application with a flow meter, choose the following settings.

Select Flow Meter from the Device drop-down menu.

Select Liquid from the Flow Meter Type drop-down menu.

Press NEXT when finished.

12. Enter Flow Meter Calibration Number

Enter the pulses/unit calibration number for the product flow meter.

Press NEXT to continue.

13. Enter Suggested Controller Name

The display assigns a default name to the controller.

Use the on-screen keyboard to edit name if desired.

Press Finish to complete Controller setup and continue with the configuration process.

14. Select Implement Switch

Select None for the Implement Switch. Press NEXT to continue.

15. Select Container

Use the drop-down list to select the Container that will be used with the equipment. Examples of containers are spray solution and NH₃ tanks. Press New to add a container if required.

Press NEXT to continue.

16. Enter Container Capacity and Units

Enter the container Capacity using the on-screen keypad.

Select Units used to represent the Capacity of the container.

Press NEXT to continue.

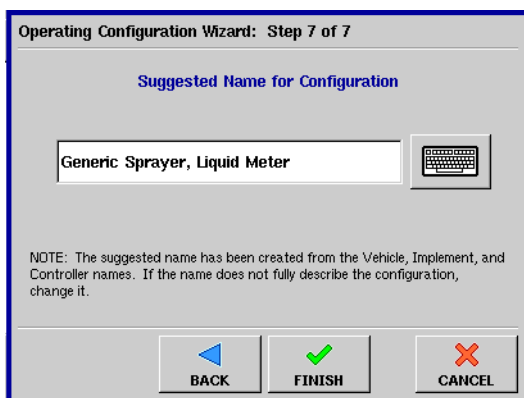
17. Enter Container Name and Location

Use the on-screen keyboard to assign a name to the Container.

Example Names:

- SS Tank
- 1000 Gal Tank

Press Finish to complete the Container setup process and continue with the Operating Configuration Wizard.



18. Select Ground Speed Source

Select your ground speed source. If you will be using GPS as the primary you also will need to select a secondary source.

Press NEXT to continue.


19. Enter Suggested Name for Configuration

Use the keyboard button to edit the suggested configuration name.

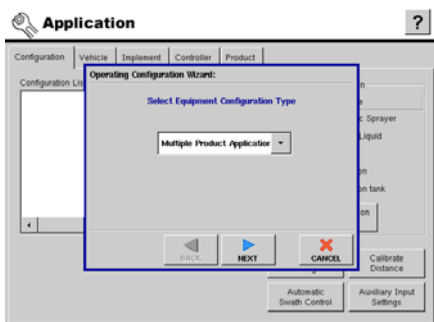
Press Finish to complete configuration setup.

The configuration should now be displayed in the configuration list.

ADDING A MULTIPRODUCT CONFIGURATION FOR DIRECTCOMMAND AND A SERIAL CONTROLLER

 **Note:** To see a menu detailing serial control configuration options, see [“Serial Control Menu Tree” on page 169.](#)

To add a configuration that includes both a DirectCommand and serial controller press the Add button. The Operating Configuration Wizard appears, as shown.



1. Select Multiple Product Application Equipment Configuration

Use the drop-down list to select this configuration to apply to a Multiple Product Application.

Press NEXT to continue.

2. Select Vehicle

Select the vehicle to be used in the configuration from the drop-down list. If a new vehicle needs to be made, press the New button.

Press NEXT to continue.

3. Create New Vehicle

The Vehicle Setup Wizard appears. Select Self-Propelled Sprayer from the Vehicle Type list box.
Press NEXT to continue.

4. Enter Vehicle Information

Use the on-screen keyboard to enter names for the Vehicle Make and Model.
Press NEXT to continue.

5. Enter Full Swath Width

Use the Number Pad button to enter the full swath width of the vehicle.
Press NEXT to continue.

6. Enter Number of Boom Sections

Enter the total number of boom sections.
Press NEXT to continue.

7. Enter Boom Section Widths from Left to Right

The display automatically divides the boom into equal length sections. Select individual sections and use the on-screen keypad to edit boom section lengths if needed.
Press NEXT to continue.

8. Enter Vehicle Name

The display combines the Vehicle Make and Model for use as a Vehicle Name.
Use the on-screen keyboard to edit the vehicle name if desired. Press Finish to complete Vehicle setup and return to the Operating Configuration Wizard.

9. Add Equipment for Multiple Product Configuration

The Add Additional Application Equipment window appears. From here, you may add additional equipment or controllers to your configuration. Add equipment by pressing the Add button and following the Equipment Configuration Wizard.



Note: If you choose to add additional equipment, add them in the same order as the implements are attached.

10. Select Operating Mode

Use the drop-down list to select Rate Logging / Control.
Press NEXT to continue.

11. Select Controller

Use the drop-down list to select the desired controller. If the controller you wish to use is not in the list press New.
Press NEXT to continue.

12. Select Controller or Flow Meter

Select DirectCommand from the Device drop-down list box.
Select Liquid Product Control from the Direct Type list box.
Press NEXT to continue.

13. Enter Flow Meter Calibration Number

Enter the pulses/unit calibration number for the product flow meter.

Press NEXT to continue.

14. Enter Suggested Controller Name

Use the keyboard button to enter a controller name.

Press Finish to continue with the Operating Configuration Wizard.

15. Select Container

Use the drop-down list to select the Container that will be used with the equipment. Examples of containers are spray solution and NH₃ tanks. Press New to add a container if required.

Press NEXT to continue.

16. Enter Container Capacity and Units

Enter the container Capacity using the on-screen keypad.

Select Units used to represent the Capacity of the container.

Press NEXT to continue.

17. Enter Container Name and Location

Use the keypad to enter a Container Name, and use the drop-down menu to enter a Container Location.

Press Finish and you will return to the Operating Configuration Wizard.

18. Enter Suggested Name for Configuration

Use the default name or enter a new name for the configuration.

Press FINISH, and continue the configuration process.

19. Add Equipment for Multiple Product Application

The Add Additional Application Equipment window appears. From here, you may add additional equipment or controllers to your configuration. Add equipment by pressing the Add button and following the Equipment Configuration Wizard.



Note: *If you choose to add additional equipment, add them in the same order as the implements are attached.*

20. Select Operating Mode

Select Rate Logging/Control from the drop-down list box.

Press NEXT to continue.

21. Select Controller

Press New to start the process of adding a new product control channel.

22. Select Serial Controller

Select Serial Controller from the drop-down list.

Press NEXT to continue.

23. Select Controller Make and Model

Use the drop-down list to select the desired controller.

Press NEXT to continue.

24. Enter Suggested Controller Name

Use the keyboard button to enter a controller name.

Press Finish to continue with the Operating Configuration Wizard.

25. Select Container

Use the drop-down list to select the Container that will be used with the equipment. Examples of containers are spray solution and NH₃ tanks. Press New to add a container if required.

Press NEXT to continue.

26. Enter Container Capacity and Units

The Container Setup Wizard appears. Enter the container Capacity using the on-screen keypad.

Select Units used to represent the Capacity of the container.

Press NEXT to continue.

27. Enter Container Name and Location

Use the keypad to enter a Container Name, and use the drop-down menu to enter a Container Location.

Press Finish and you will return to the Equipment Configuration Wizard.

28. Enter Suggested Name for Configuration

Use the keyboard button to edit the suggested configuration name.

Press Finish to continue the multiproduct configuration procedure.

29. Add Equipment for Multiple Product Application

The Operating Configuring Wizard reappears. From here, you may add additional equipment or controllers to your configuration.

- Add equipment by pressing the Add button and following the Equipment Configuration Wizard, or
- Press NEXT to continue.



Note: If you choose to add additional equipment, add them in the same order as the implements are attached.

30. Select Ground Speed Source

Select Primary and Backup speed inputs from list boxes.

Press NEXT to continue.

31. Enter Suggested Name for Configuration

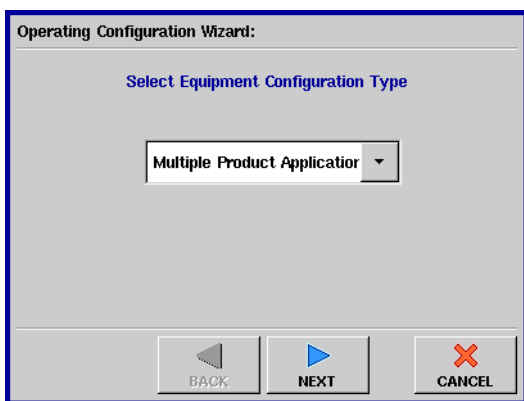
A suggested name appears, which has been created from the Vehicle, Implement and Controller names. If this name does not fully describe the configuration, use the keyboard button to edit the suggested configuration name.

Press Finish to complete configuration setup.

The configuration should now be displayed in the configuration list.

ADDING A DIRECT INJECTION CONFIGURATION

To create a Direct Injection configuration, go to the Configuration Tab and press the Add button. The Operating Configuration Wizard appears, as shown.



1. Select Equipment Configuration Type

Use the drop-down list to select this configuration to apply to a Multiple Product Application.

Press NEXT to continue.



Note: You must have purchased a Multi-Product unlock code from Ag LeaderKINZE in order to use the Multiple Product Configuration.

2. Select Vehicle

Select the vehicle to be used in the configuration from the drop-down list. If you wish to configure a new vehicle, press the New button.

If you selected an existing vehicle configuration, press NEXT to continue.



Note: For a description of how to add a vehicle configuration, see [“Adding a New Vehicle” on page 175](#).

3. Add Equipment for Multi-Product Application

The Add Equipment for Multiple Product Application window appears. From here, you may add additional equipment or controllers to your configuration.

Add equipment by pressing the Add button and following the Equipment Configuration Wizard.



Note: In this procedure, a DirectCommand Liquid controller will be created first, and secondly a Direct Injection controller will be created.

4. Select Implement

- If you are using a self-propelled sprayer, skip ahead to Step 5 below.
- If you are not using a Self-Propelled Sprayer the Equipment Configuration Wizard appears.

From here, either:

- Select an Implement from the drop-down list menu, and press NEXT to continue.
- Or, press the New button to create a new implement.



Note: For a description of how to add a new implement, see [“Adding a New Implement” on page 178](#).

5. Select Rate Logging/Control

Use the drop-down menu to select Rate Logging/Control. Press NEXT.

6. Select Controller

Use the drop-down menu to select a controller for the Direct Command Liquid Configuration. Otherwise, press the New button to add a controller.



Note: If you selected an existing controller, skip ahead to [“Select Container” on page 204](#).

7. Select Controller or Flow Meter

Chose DirectCommand as the Device, and Liquid Product Control as the Direct Type.

Press NEXT to continue.

8. Enter the Flow Meter Calibration Number

Enter the pulses/unit calibration number for the product flow meter.

Press NEXT to continue.

9. Enter Suggested Controller Name

A default name of DirectLiquid appears. Use the default name or enter a new name for the DirectCommand Liquid configuration.

Press Finish, and continue the configuration process.

10. Select Container

The Equipment Configuration Wizard reappears. Use the drop-down list to select an existing container, and press NEXT to continue. Otherwise press New to add a container.



Note: If you selected an existing container, skip ahead to [“Enter Suggested Name for Configuration” on page 204](#).

11. Enter Container Capacity and Units

If you chose to create a new container in the previous step, the Container Setup Wizard appears.

Enter the container Capacity using the on-screen keypad.

Select the Units used to represent the Capacity of the container.

Press NEXT to continue.

12. Enter Container Name and Location

Use the on-screen keyboard to assign a name to the Container.

Press Finish to complete the Container setup process and return to the Operating Configuration Wizard.

13. Enter Suggested Name for Configuration

Use the keyboard button to edit the suggested configuration name.

Press Finish to continue the multiproduct configuration procedure.

14. Press Add Injection button

The Operating Configuration Wizard reappears. Highlight your first equipment configuration and begin adding a Direct Injection configuration by pressing the Add Injection button.

15. Select Controller

The Equipment Configuration Wizard appears. Press New to start the process of adding a new product control channel.



Note: If you selected an existing injection controller, skip ahead to [“Select Container” on page 205](#).

16. Enter Controller Name

Once you have pressed the New button, the on-screen keyboard appears. Use this keyboard to enter a controller name. Press Accept when finished.

17. Select Container

Use the drop-down menu to select a container, or press the New button to enter a new container. Press NEXT to continue.



Note: If you selected an existing container, skip ahead to [“Enter Suggested Name for Configuration” on page 205](#).

18. Enter Container Capacity and Units

If you chose to create a new container in the previous step, the Container Setup Wizard appears.

Enter the container Capacity using the on-screen keypad.

Select the Units used to represent the Capacity of the container.

Press NEXT to continue.

19. Enter Container Name and Location

Use the on-screen keyboard to assign a name to the Container.

Press Finish to complete the Container setup process.

20. Enter Suggested Name for Configuration

Use the keyboard button to edit the suggested configuration name.

Press Finish to continue with the procedure.

21. Add Equipment for Multiple Product Configuration

At the next window in the Operating Configuration Wizard, your configuration is listed with the Direct Injection controller attached. From here, you may either:

- Add a second Direct Injection configuration.
- Add another product application configuration.
- Remove a configuration.
- Make no adjustments, and press NEXT to continue.

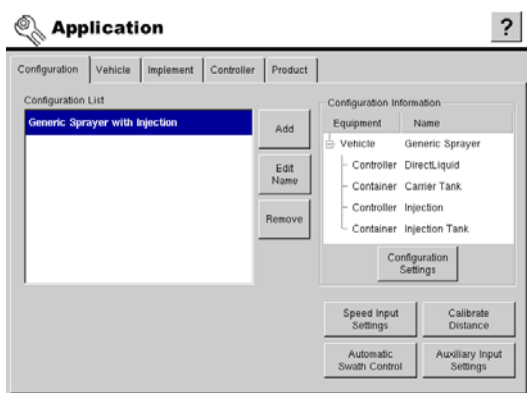


Note: The Direct Injection feature can connect up to four injection modules.

22. Select Ground Speed Source

Select the Ground Speed Source for your Direct Injection configuration. Select both the Primary and Backup speed inputs from list boxes.

Press NEXT to continue.



23. Enter Suggested Name for Configuration

Use the keyboard button to edit the suggested configuration name.

Press Finish to complete the setup process.

24. Configuration Complete

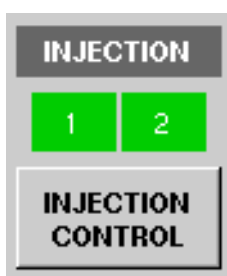
The Application Setup Configuration Tab is shown after completing the setup procedure. The Vehicle, Controller and all containers are shown in the Configuration Information portion of the Configuration Tab.

PRIMING AN INJECTION PUMP

If you are using a Direct Injection configuration, you must prime the Injection Pump each time you flush or refill a tank, or change products. This ensures that air is not in the product lines.

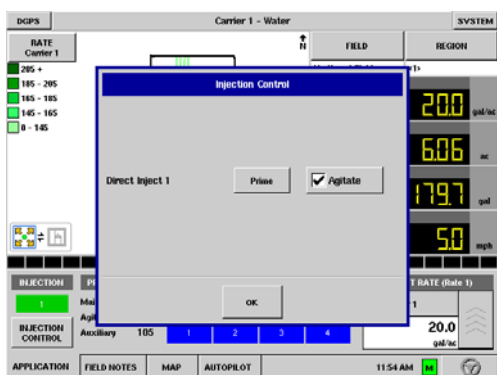


CAUTION: Failure to perform this priming procedure before beginning a Direct Injection application could result in skips at the start of field operations.



1. Press the Injection Control Button

On the Run screen, press the Injection Control button, located at the lower left-hand side of the Application Tab.



2. Press the Prime Button

The Injection Control window appears, as shown at left. Press the Prime button to begin the priming procedure.

- You may agitate the Direct Injection tank by pressing the Agitate check box. Once pressed, this Agitate setting will continue even after the Priming process is finished, until you press this check box a second time. To determine if a product should be agitated, check the product specifications.
- In order for the Direct Injection tank to agitate the product, you must set the agitator motor switch on Run (which agitates the product continuously) or Pulse (which agitates the product intermittently).

3. Acknowledge the Warning

Press OK to continue.



WARNING: Before beginning the priming procedure, circulate the product back to the Direct Injection tank.

4. Start Pump and Set Desired Speed

The Injection Pump Prime window appears, as shown at left. The countdown time remaining is shown in the black box. The bar underneath turns green when the pump is operating.

Use the up and down arrows to manually increase or decrease the pump speed.



Note: The recommended priming time is three minutes (3:00) but the routine can be ended at any time by pressing **Exit**.

5. Acknowledge the Warning

Press OK to continue.



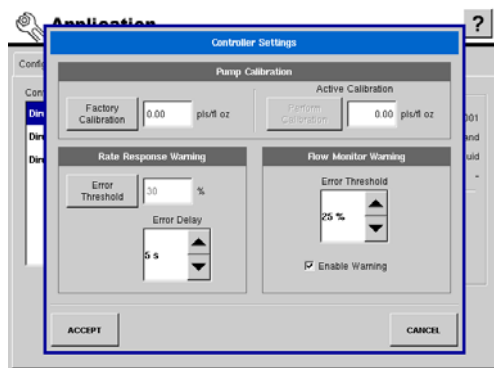
WARNING: Circulate the product back to a field-ready condition.

6. Press OK.

Press OK to return to the Run screen.

CALIBRATING AN INJECTION PUMP

Direct Injection users should calibrate the Injection Pump at the beginning of each season, and any time that repairs are made. To begin, go to the Controller Tab, highlight the desired controller in the Controller List, then press the Controller Settings button. The Controller Settings window appears, as shown.



1. Enter Factory Calibration

Before entering a Direct Injection Calibration, a Factory Calibration must be entered. If you have not already done so, enter the Factory Calibration Number by pressing the Factory Calibration button.

This number is found on the tag of the Digital Pump Speed Sensor. This tag number represents pulses per 10 fluid ounces. Divide the tag number by 10 and enter this number. Once entered, this number should not be changed.

2. Press Perform Calibration

Underneath Pump Calibration, press the Perform Calibration button.

3. Prime the Direct Injection Pump

The Pump Calibration Wizard appears, as shown at left. Before beginning this calibration procedure, it is recommended that you first prime the Injection pump. Press the Prime button and continue along with the priming procedure as described in the preceding section, beginning with *"Acknowledge the Warning" on page 206*.

After the priming procedure is finished, you will return to this Pump Calibration Wizard window. Press NEXT to continue.

4. Enter Dispense Amount

Enter the amount that you want dispensed. Press NEXT to continue.

5. Acknowledge the Warning

Prepare to catch any product dispensed in an appropriate container.

Press OK to continue.

6. Start Calibration

Press the green-colored Start button to begin the calibration procedure.

The Pump Calibration Wizard automatically counts up to the amount that you specified in *“Enter Dispense Amount” on page 207*. The button will turn red and display STOP while the product is being dispensed, as shown at left.

When the procedure is finished, the button will again turn green, as shown left.

Press NEXT to continue.



Note: You may press the Reset button if you wish to start the calibration procedure over.

7. Enter Actual Dispense Amount

Enter in the actual amount of the product that was dispensed.

Press NEXT to continue.

8. Calibration Complete

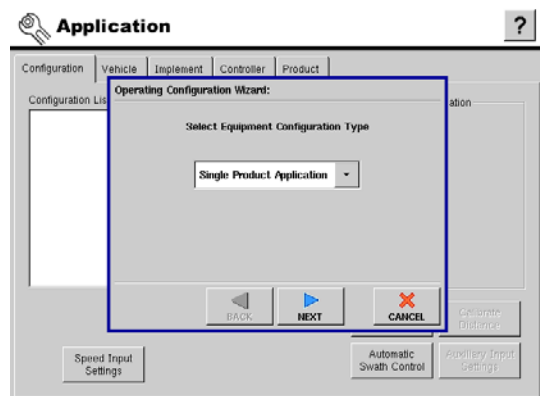
The Pump Calibration number appears. You may either:

- Repeat the calibration by pressing the Repeat Calibration button.
- Press Finish to complete the calibration and exit the Pump Calibration Wizard.

The New Injection Pump Calibration Number now appears in the Pump Calibration window, as shown at left.

CONFIGURING SELF-PROPELLED SPRAYER (DIRECTCOMMAND)

The following figures and text represent the complete process to configure a self-propelled sprayer control system. From the Configuration Tab, press the Add button, and the Operating Configuration Wizard appears, as shown.



1. Select Equipment Configuration Type

Select Single Product Application from the on-screen dialog. Press NEXT to continue.

2. Select Vehicle

Press New to create a new vehicle.

3. Create New Vehicle

Select Self-Propelled Sprayer from the Vehicle Type drop-down list box.

Press NEXT to continue.

4. Enter Vehicle Information

Use the on-screen keyboard to enter names for the Vehicle Make and Model.

Press NEXT to continue.

5. Enter Full Swath Width

Enter the full width of the spray boom expressed in feet or meters for metric applications.

Press NEXT to continue.

6. Enter Number of Boom Sections

Enter the total number of boom sections.

Press NEXT to continue.

7. Enter Boom Section Widths from Left to Right

The display automatically divides the boom into equal length sections. Select individual sections and use the on-screen keypad to edit boom section lengths if needed.

Press NEXT to continue.

8. Enter Vehicle Name

The display combines the Vehicle Make and Model for use as a Vehicle Name.

Use the on-screen keyboard to edit the vehicle name if desired.

Press Finish to complete Vehicle setup and return to the Operating Configuration Wizard.

9. Select Operating Mode

Select Rate Logging/Control from the drop-down list box.

Press NEXT to continue.

10. Select Controller

Press New to start the process of adding a new product control channel.

11. Select Controller or Flow Meter

Select DirectCommand from the Device drop-down list box.

Select Liquid Product Control from the Direct Type list box.

Press NEXT to continue.

12. Flow Meter Calibration Number

Enter the pulses/unit calibration number for the product flow meter.

Press NEXT to continue.

13. Suggested Controller Name

The display assigns a default name to the controller.

Use the on-screen keyboard to edit name if desired.

Press Finish to complete Controller setup and continue with the configuration process.

14. Select Container

Press New to start the process of adding the liquid product tank.

15. Enter Container Capacity and Units

Enter the container Capacity using the on-screen keypad.

Select Units used to represent the Capacity of the container.

Press NEXT to continue.

16. Enter Container Name

Use the on-screen keyboard to assign a name to the Container.

Example Names:

- SS Tank
- 1000 Gal Tank

Press Finish to complete the Container setup process.

17. Select Ground Speed Source

Select Primary and Backup speed inputs from list boxes.

Press NEXT to continue.

18. Enter Suggested Name for Configuration

Use the default name or enter a new name for the configuration.

Press Finish to complete the configuration process.

GRANULAR SPINNER (DIRECTCOMMAND)

CONFIGURING A SPINNER SPREADER

The following procedure describes the complete process of configuring a granular spinner bed control system (for a single product). To begin, go to the Configuration Tab, press the Add button, and the Operating Configuration Wizard appears, as shown.



1. Select Equipment Configuration Type

Because this procedure describes a single-product configuration, select Single Product Application from the drop-down list, then press NEXT to continue.



Note: You must have purchased a Multi-Product unlock code from Ag LeaderKINZE in order to use the Multiple Product Configuration.

2. Select Vehicle

Use the drop-down list to select an existing vehicle from the Vehicle list, or press New to launch the Vehicle Wizard to create a new vehicle.



Note: If you do not need to create a new vehicle, skip ahead to [“Select Rate Logging/Control” on page 211](#).

3. Create New Vehicle

If you pressed New, the Vehicle Setup Wizard appears.

-OR-

Self-Propelled Spreader operators should:

- Select Self-Propelled Spreader from the Vehicle Type list box.
- Select Spinner from the Spreader Type list box.

Other operators should:

- Select another vehicle type under the Vehicle Type list. In the example at left, a Vehicle Type of Tractor is selected.

When the appropriate vehicle type is selected, press NEXT to continue.

4. Enter Vehicle Information

Use the on-screen keyboards to enter names for the Vehicle Make and Model.

Press NEXT to continue.

5. Enter Vehicle Name

The display combines the Vehicle Make and Model for use as a Vehicle Name.

Use the on-screen keyboard to edit the vehicle name, if desired.

Press Finish to complete Vehicle setup and continue with the configuration process.

- If you selected Self-Propelled Spreader in *“Create New Vehicle” on page 210*, then skip ahead to *“Select Rate Logging/Control” on page 211*.
- If you selected another type of vehicle, then continue below.

6. Select New Implement

Select an Implement from the drop-down list menu, or press the New button to create a new implement.

7. Select Implement Attachment Method

Use the drop-down list to select an implement attachment method. Check the Spinner Spreader Implement Type check box.

Press NEXT to continue.

8. Enter Distance from Hitch to Application Point

Enter the distance from the hitch to the application point using the number pad button.

Press NEXT to continue.

9. Enter Implement Name

Use the keyboard button to enter a name for the Implement. Press Finish to complete the Implement setup process and return to the Operating Setup Wizard.

10. Select Rate Logging/Control

Select Rate Logging / Control from the drop-down list box as the operating mode.

Press NEXT to continue.

11. Select Controller

Use the drop-down menu to select a controller, or press the New button to add a controller.

Press NEXT to continue.



Note: If you do not need to create a new controller, skip ahead to *“Select a Controller Channel” on page 212*.

12. Select Controller (for Spinner Spreaders or Stepper Spreader Control)

-OR-

If you chose to enter a new controller, the Controller Setup Wizard appears. Select DirectCommand from the Device drop-down list box.

Choose the appropriate Direct Type according to the module's part number:

- 4000395 - Spinner Spreader Control 1 CH
- 4000396 - Spinner Spreader Control 3 CH
- 4001611 - Spinner Spreader Control 5 CH
- 4000397 - Spreader Stepper Control

Press NEXT to continue.

13. Enter Suggested Controller Name

The display assigns a default name of DirectSpreader to the controller. Use the on-screen keyboard to edit the name, if desired.

Press Finish to continue with the configuration process.



Note: If you selected Stepper Spreader Control in “Select Controller (for Spinner Spreaders or Stepper Spreader Control)” on page 211, then skip ahead to Step 15.

14. Select a Controller Channel

The Select Controller Channel window appears.

Use the drop-down menu to select a controller channel, then press NEXT.

15. Select Container

Press New to start the process of adding a product Container (BIN) to the display



Note: If you are using an existing container, and you do not need to enter a Container Name, skip ahead to Step 18. Select Ground Speed Source.

16. Enter Container Capacity and Units

Use the numeric keypad to enter a capacity, and the drop-down menu to enter in the type of units.

Press NEXT to continue.

17. Enter Container Name and Location

Use the keypad to enter a Container Name, and then use the drop-down menu to enter a Container Location (either Implement or Vehicle).

Press Finish and you will return to the Operating Configuration Wizard.

18. Select Ground Speed Source

Select Primary and Backup speed inputs from the drop-down menus.

Press NEXT to continue.

19. Enter Suggested Name for Configuration

The display combines the Vehicle and Controller names used during the setup process to use as the Configuration name. Use the on-screen keyboard to edit this name, if desired.

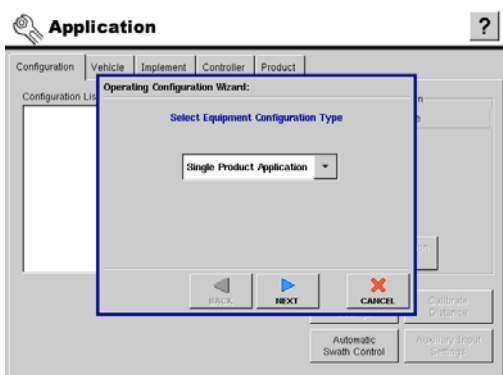
Press Finish to complete the setup process.

Configuration Complete

The Application Setup Configuration Tab is shown after completing the setup procedure. The Vehicle, Configuration Controller and all containers are shown in the Configuration Information portion of the Configuration Tab.

STRIP-TILL CONFIGURATION (FOR MULTIPLE PRODUCTS)

The following setup procedure describes how to configure a Strip Till Module for a multiple product application. To begin this procedure, to the Configuration Tab in Application and press the Add button. The Operating Configuration Wizard appears, as shown.



Select Equipment Configuration Type

Select either Single Product Application, or Multiple Product Application. As this particular procedure describes how to configure a Multiple Product Application, we have chosen this setting.



Note: You must have purchased a Multi-Product unlock code from Ag Leader KINZE in order to use the Multiple Product Configuration.

1. Select Vehicle

Use the drop-down menu to choose a vehicle, or press the New button to enter a new vehicle. Press NEXT to continue.



Note: Select an existing vehicle from the Vehicle List. If a new vehicle needs to be added, press the **New** button to launch the Vehicle Wizard.

2. Add Equipment for Multiple Product Configuration

The Add Additional Application Equipment window appears. From here, you may add additional equipment or controllers to your configuration.

- Add equipment by pressing the Add button and follow the Equipment Configuration Wizard, or
- Press NEXT to continue.



Note: If you choose to add additional equipment, add them in the same order as the implements are attached.

3. Select Implement

Select an Implement from the drop-down list menu, or press the New button to create a new implement. Press NEXT to continue.



Note: For more information on Implement Setup, see [“Adding a New Implement” on page 178](#)

4. Select Operating Mode

Use the drop-down menu to select Rate Logging/Control. Press NEXT.

5. Select Controller

Press the New button to add a controller; then press NEXT.

6. Select Controller Device and Device Type

Select DirectCommand from the Device drop-down list box.

Scroll down on the Direct Type list box and select Granular Strip-Till Control.

Press NEXT to continue.

7. Enter Suggested Controller Name

A default name of DirectStripTill appears.

Press Finish, or use the on-screen keyboard to enter a new name, if desired.

Auxiliary Step: Select Controller Channel

Use the drop-down menu to select a controller channel, then press NEXT to continue.

8. Select Container

Use the drop-down menu to select a container, or press the New button to enter a new container. Press NEXT to continue.

9. Enter Container Capacity and Units

The Container Setup Wizard appears. Use the numeric keypad to enter the container capacity and the drop-down menu, located underneath, to enter units. Press NEXT to continue.

10. Select Container Name and Location

Use the keypad to enter a Container Name, and the drop-down menu underneath to enter a Container Location (either Implement or Vehicle).

Press Finish and the configuration continues at the Equipment Configuration Wizard.

11. Enter a Suggested Configuration Name

Use the keypad to enter a different name for the configuration (if desired), and press Finish.

The configuration continues at the Operating Configuration Wizard on the following page..



Note: A suggested name has been provided, based on your previous selections. If this name does not fully describe the configuration, you may change it here.

12. Add Equipment for a Multiple Product Application

The Operating Configuration Wizard reappears. Because we specified that we were configuring a multiple product application in the first step of this procedure, [“Select Equipment Configuration Type” on page 213](#), we are now asked to add more equipment to our configuration. Repeat steps 2-8 starting at [“Add Equipment for Multiple Product Configuration” on page 213](#).

When you have repeated these steps and have come back to the Add Equipment window, press the NEXT button.

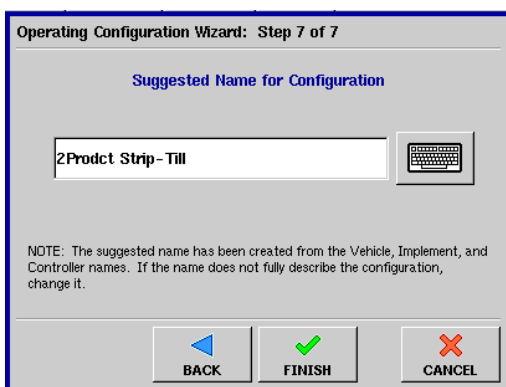
13. Select Ground Speed Source

Select your ground speed source. If you will be using GPS as the primary you will need to select a secondary source.

Press NEXT to continue.



Note: If you are not using GPS for ground speed, then after you have created a configuration you must calibrate the ground speed sensor for accurate speed and area calculations. For more information, see [“Calibrate Distance” on page 171](#).



14. Enter Suggested Configuration Name

Use the keypad to enter a suggested name for your configuration.

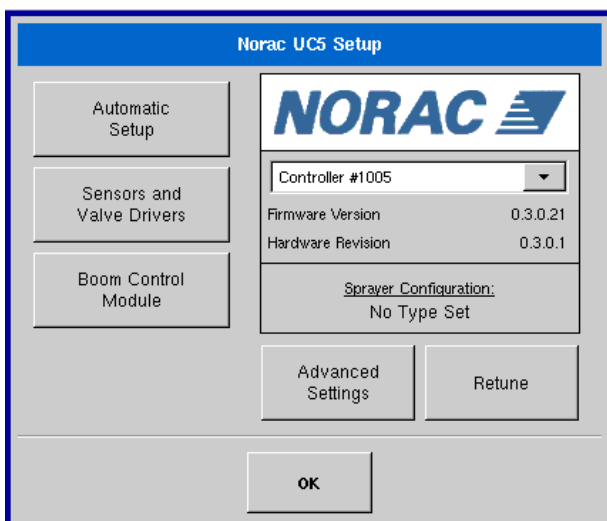
Press Finish when complete.



Note: A suggested name has been provided, based on your previous selections. If this name does not fully describe the configuration, you may change it here.

NORAC UC5 SETUP

NORAC UC5 SETUP WINDOW



NORAC UC5 Setup window

To view the NORAC UC5 Setup window, go to the Implement Tab in Application setup, select the desired sprayer from the Implement list, check the Enable Boom Height Control check box and press the NORAC UC5 Setup button. The NORAC UC5 setup window appears.



Note: In order to view this window, the NORAC UC5 Spray Height Controller must be installed on your sprayer and this feature must be communicating on the CAN bus.



• The drop down menu shows the devices communicating on the NORAC UC5 CAN Bus along with the serial number of each device. The Firmware Version and Hardware Revisions of your NORAC UC5 devices are shown underneath.

• Sprayer Configuration

Displays the sprayer model configured during the Automatic Setup procedure

• Automatic Setup

Loads the Select Sprayer window, which starts the Automatic Setup process. For more information, see [“Automatic Setup” on page 216](#).

- **Sensors and Valve Drivers**

Loads the Sensor and Valve Driver Settings window, where users can set minimum height mode; adjust minimum height settings and manually edit sensor, valve and input settings. For further information, see [“Minimum Height Settings” on page 217](#). Also, consult the NORAC UC5 manual for more information.

- **Boom Control Module**

- **Advanced Settings**

NORAC non-user menu

- **Retune**

Retunes the UC5 electronics to your sprayer’s hydraulics. For more information, see [“Retune” on page 216](#).

Automatic Setup

Automatic Setup walks through a series of steps that configures the NORAC UC5 electronics to the sprayer hydraulic functions. You must perform an Automatic Setup routine after the NORAC UC5 system is installed. The following items are configured during an Automatic Setup routine:

- Sprayer Make and Model
- Input module wiring and configuration
- Number of sensors and location
- Sensor zero point
- Valve deadzone and gain values



Note: For detailed Automatic Setup information, see the NORAC UC5 manual.

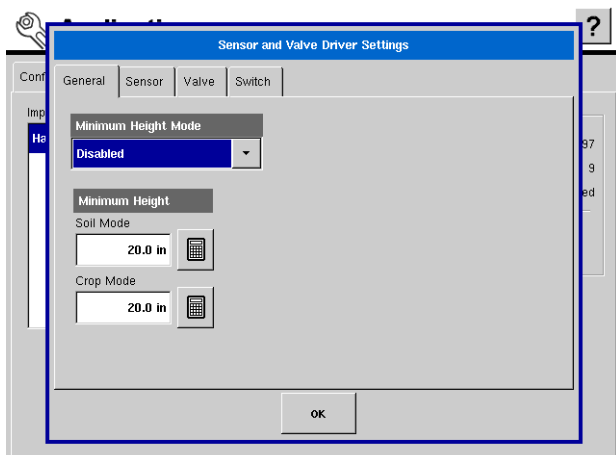
Retune

From time to time it may be necessary to recalibrate (Retune) the UC5 electronics to your sprayer’s hydraulics. Examples of such times are:

- When a hydraulic solenoid valve is changed.
- When the hydraulic pump is changed or adjusted.
- When the normal working temperature of the hydraulic oil has shifted significantly from when the system was previously calibrated.

If you are running a pull type sprayer and use different tractors to operate the sprayer, you should run the Retune procedure each time the tractor is changed. If you have a flow control for the boom hydraulics, set it prior to tuning. If you change the flow setting by more than 20 percent, you should Retune.

Minimum Height Settings



Pressing the Sensors and Valve Drivers button on the NORAC UC5 window opens the Sensor and Valve Driver Settings window. The following settings appear on the General Tab.

Minimum Height Mode

The Minimum Height Mode drop-down menu includes three selections:

- **Absolute**

In Absolute Mode, no sensors are allowed to move closer to the target than the minimum height setting.

- **Relative**

In Relative Mode, no sensors are allowed to move closer to the target than the distance of the target height minus the minimum height setting.

- **Disabled**

Disables the minimum height mode.

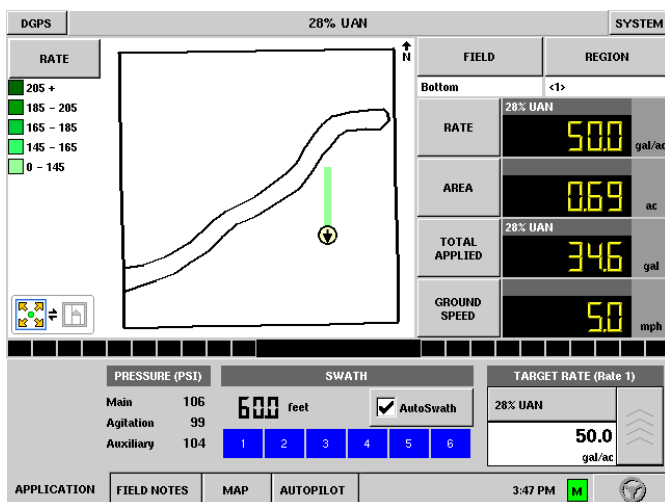
- Minimum Height: Soil Mode — The minimum height setting when operating in soil mode.
- Minimum Height: Crop Mode — The minimum height setting when operating in crop mode.



Note: “Target” refers to the ground in Soil Mode, and the crop canopy in Crop Mode.

RUN SCREEN OPERATION

RUN SCREEN BUTTONS - GENERAL



Before the Run screen can become active, you must go to the Field button and accept a field, configuration, product, and region. The Run screen's appearance will vary, depending upon the Application configuration you have selected. Below, a configuration for a DirectCommand liquid application is shown. Button functions for various different configurations are explained on the following pages.

- **FIELD button**

Functionality changes based upon the status of the master switch. If the master is off it allows you to change grower, farm, field, and configuration. If the master status is on it allows you to view field totals. For more information, see *“Field Button (While Not Logging)” on page 219* and also *“Field Button (While Logging)” on page 220*.

- **REGION button**

Allows you to change and name regions of the field. If a flow meter or serial control configuration is being used it will also allow you to choose the controlling product and the units it is recorded in.

- **SYSTEM button**

Displays diagnostic information about the internal memory of the display, display information, and CAN module information. For more information, see *“System Diagnostic Button” on page 257*.

- **DGPS button**

RUN SCREEN BUTTONS - SITE VERIFICATION

The following Run Screen buttons are found on site verification configurations. These buttons are not shown if you are using a Serial Controller.



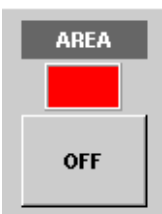
On Site Verification configurations, the swath bar allows you to change the amount of swath that is being mapped for area calculation. To adjust the swath width use the arrow keys on either side of the swath display.



The Full Swath button allows you to go from any partial swath back to the full swath position.



On site verification configurations, the master button controls area logging. When the switch is green, area is being recorded and displayed on the map.



On site verification configurations, when the master button is set to OFF, the area is not being recorded and the map will stop showing new information being logged. The switch will remain red until the button is pushed again to set it to Auto.

RUN SCREEN BUTTONS - DIRECTCOMMAND

The following Run Screen buttons are found on DirectCommand configurations such as Spinner Spreader configurations, Strip-Till configurations, and various liquid product application configurations.

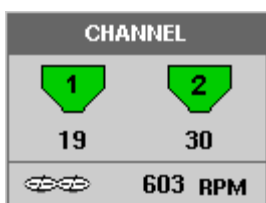
Application Buttons and indicators (for Direct Command)



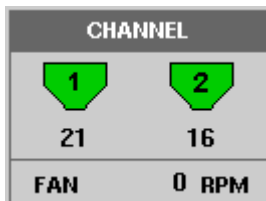
Press the AutoSwath button to enable the AutoSwath feature. For more information, see *“Automatic Swath Control Settings” on page 172* and *“Automatic Swath Control” on page 243*.



The boom section indicators show the active and inactive booms used on a liquid DirectCommand configuration.

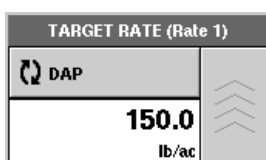


On Spinner Spreader and Strip Till configurations, the channel indicators display the status of the product control channel. When the fertilizer bin icon is grey, no product application is taking place. When product is being applied, the fertilizer bin will turn green.



Spinner Spreader operators who wish to read more information should see [“Spinner Spreader Application Rate Control Tab” on page 234.](#)

Strip-Till application operators who wish to read more information should see [“Strip Till Application Rate Control Tab” on page 239.](#)



On DirectCommand configurations you will see the Target Rate button displayed. Press the Target Rate button to see the Target Rate window, which shows product application rate settings and rate control settings. For more information, see [“Target Rate” on page 223.](#)

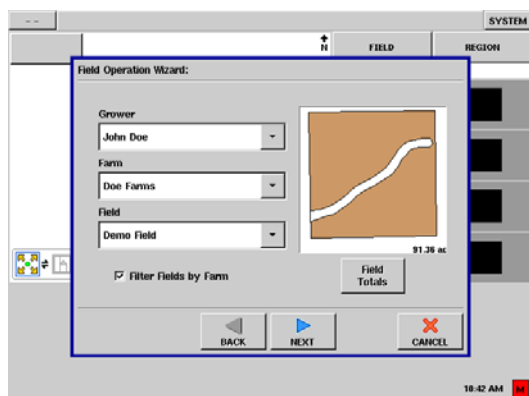


The Master Switch Indicator shows if the master switch is on (green) or off (red). The master switch is shown in the F1 position on the Auxiliary Input Settings window. For more information, see [“Auxiliary Input Settings \(DirectCommand\)” on page 173.](#)



FIELD BUTTON (WHILE NOT LOGGING)

The start of an application in a field is accomplished by setting up a Field Operation at the Run screen. This process is similar regardless of the type of field operation currently taking place. To begin, press the FIELD button to launch the Field Operation Wizard.



1. Select Grower, Farm, Field

Choose the field for application by making the proper selections from the Grower, Farm, and Field list boxes.

If the Filter Fields by Farm check is cleared, the display will show all fields in the Field list box regardless of what farm the fields are associated with.

Press NEXT to continue.



Note: You may view Field Totals by pressing the **Field Totals** button on the Field Operation Wizard. For more information on field totals, see [“Field Button \(While Logging\)” on page 220.](#)

2. Choose Configuration

The Field Operation Wizard appears. Select the Operating Configuration that relates to the equipment in use. Vehicle and Controller information is also displayed in this window.

Press NEXT to continue.

3. Create new map or add to last map

If you are applying a product that has already been applied to a field, you may see the New Instance window. Choose whether you wish to start a new map, or add the logging information from your current application to a preexisting map.

4. Select Product

Select the correct product from the list box. In cases of multiple product application, make the appropriate selection for each channel of product control.

Press Finish to complete the Field Operation portion of the setup wizard.

After pressing Finish, the Region Selection window appears.



Note: If you are selecting an Application product, you may check the box marked **Show Only Tank Mixes and Blends** at the Product Selection Screen. If this box is checked, the display will only allow the selection of tank mixes that were previously set up.

5. Region and Controlling Units Selection

The Region Selection window appears, as shown at left. A region is an area within a field. A field is a collection of one or more regions.

Use the on-screen keyboard to change the region name from the display default if desired.

The display will control application based upon the product and units as defined in product setup.

In the instance shown here, the user has an option to control application based upon the N-P-K nutrient value of the product by selecting that component from the Controlling Product list box. Appropriate controlling units for the nutrient component can be selected from the Units list box.

6. Setup Completed

Shown at left is the Run Screen with Field Operation configured and ready for product application.

To access this screen either complete the wizard under the Field button or press the Region button.

A region is an area within a field. A field is a collection of one or more regions.

Use the on-screen keyboard to change the region name from the display default if desired.

The display will control application based upon the product and units as defined in product setup.

FIELD BUTTON (WHILE LOGGING)

The screenshot shows a 'Field Totals' dialog box with the following data:

Field Totals	
20% UAN	
Average Rate	50.2 gal/ac
Total Applied	150.0 gal
Area	2.99 ac
Container Level (0%) 0.0 gal	
EXIT	

Additional statistics shown on the right side of the dialog:

Area Complete (6%)	3.0 ac
Area Left (93%)	40.5 ac
Distance Traveled	2354.5 ft
Average Speed	4.4 mph
Productivity	29.8 ac/hr
Operating Time	0:08

The background shows a control interface with tabs for RATE, FIELD, and REGION. The FIELD tab is active. On the left, there are color-coded rate ranges: 205+, 185-205, 165-185, 145-165, and 0-145. On the right, there are unit selection buttons for gal/ac, ac, gal, and mph. At the bottom, there are buttons for APPLICATION, FIELD NOTES, MAP, and AUTOPILOT, along with a clock showing 11:42 AM.

If the field button is pressed while logging data, a dialog will show your field totals.

RUN SCREEN - MAIN TABS

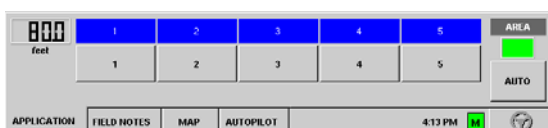
The Application Tab on the Run Screen contains controls related to data logging during application operations. Shown below and on the following page are sample configurations for Site Verification, Liquid Application for DirectCommand, Serial Controllers, Spinner Spreader, Strip Till, and Direct Injection.

Application Tab - Site Verification



The configuration shown is typical for Site Verification. The Full Swath width is displayed and Area Logging is active.

Application Tab - Flow Meter

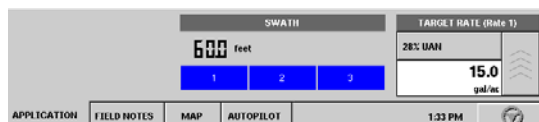


The configuration shown below is typical for rate logging using a flow meter. You can turn off individual section logging on the display if you wish to apply product using less than a full swath width.



Note: Turning the Flow Meter section logging on and off in the display does not actually affect their in-field performance – only their display logging status.

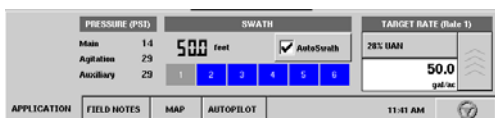
Application Tab - Serial Controller



The Application Tab shown below is a typical configuration for a Serial Controller controlling a three-boom implement. Notice that, unlike the DirectCommand Run screens shown on the NEXT page, no pressure information is communicated to the display, as this cannot be done for serial configurations. On the right is the Target Rate Application button.

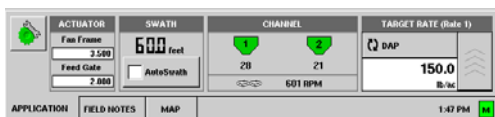
DIRECT COMMAND RUN SCREEN EXAMPLES

Application Tab - Liquid Application for DirectCommand



The Application Tab shown below shows a typical configuration for a liquid application in DirectCommand. The left portion of the Application Tab shows pressure sensors. In the center is the AutoSwath status. On the right is the Target Rate Application button. For more information, see [“Liquid Application Controls” on page 242](#)

Application Tab - Spinner Spreader



The Application Tab shown below is a typical configuration for a Spinner Spreader with a New Leader Linear Actuator. The Spreader Control button is shown at the top left. For more information, see [“Spinner Spreader Application Rate Control Tab” on page 234.](#) and [“Spinner Spreader Control Settings” on page 235.](#)

Application Tab - Strip Till



The Application Tab shown below is a typical configuration for a Strip Till module. Because this configuration is set up to apply multiple products, two channels are shown. (The Strip-Till Control button is shown at the top left. For more information, see [“Strip-Till” on page 239](#), and [“Strip Till Control Settings” on page 240](#).

Application Tab - Direct Injection



The Application Tab shown below is a typical configuration for a Direct Injection configuration. The Direct Injection button is shown at bottom left; the bar displays green when the Direct Injection pump is operating. For more information, see [“Liquid Control Application Rate Tab” on page 242](#). and [“Direct Injection Controller Settings” on page 184](#).

Boom Height Tab - NORAC UC5 Spray Height Controller

For more information, see [“NORAC UC5 Run Screen Environment” on page 222](#).

GENERAL APPLICATION TABS

Field Notes Tab

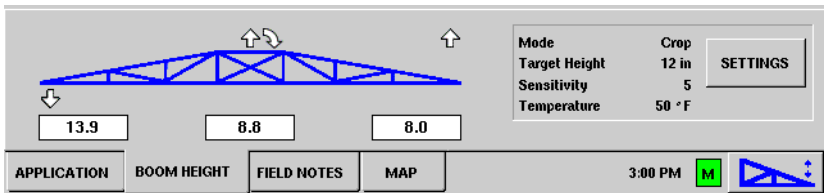


Map Tab



NORAC UC5 RUN SCREEN ENVIRONMENT

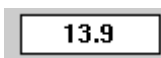
BOOM HEIGHT TAB



When the NORAC UC5 Spray Height Controller is configured on the display, the Boom Height Tab appears on the Run Screen, just behind the Application Tab.



The Boom Icon appears as blue when in Automatic Mode; and black when in Manual Mode. The right, left and center sections appear independently on this icon.



The numbers that appear below the Boom Icon show the distance between the boom section and the target.



Indicates the direction that the boom section is being commanded to move. The arrows shown around the boom appear either 1) In Automatic Mode, or 2) When the boom is in Manual Mode and the user is manually moving the boom section.



Loads the Boom Height Control Options window, which allows you to change the mode, sensitivity and target height. For more information, see [“Boom Height Control Options” on page 223](#).

- **Mode**

Indicates whether the Boom is in Crop Mode or Soil Mode.

- **Target Height**

The desired boom height above the ground (for Soil Mode), or the crop canopy (for Crop Mode).

- **Sensitivity**

Adjusts the boom response. Higher values make the height control more responsive.

- **Temperature**

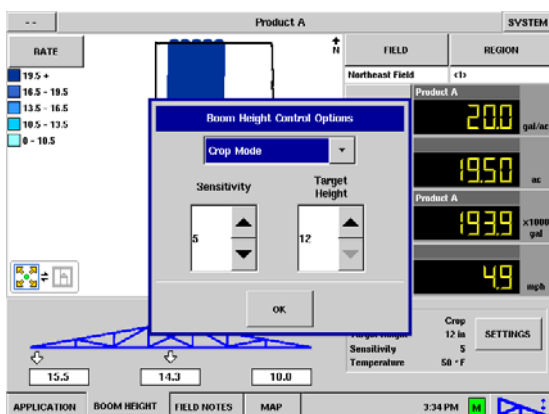
Shows the measurement of the outside ambient air temperature.



The Engage button enables boom height control. This button can toggle back and forth between Automatic Mode and Manual Mode.

- When you enable Automatic Mode, this button turns blue and the display beeps three times.
- When you disable Automatic Mode on any part of the boom and the display switches to Manual Mode, this button turns black and the display beeps twice. If less than the full boom remains in Manual Mode, the display will continue beeping twice every three seconds.

BOOM HEIGHT CONTROL OPTIONS



You can adjust the mode, sensitivity and target height by pressing the Settings button on the Run Screen. The Boom Height Control Options window appears, as shown.

The drop-down menu is where you can choose one of two modes:

- **Soil Mode**

UC5 controls boom height relative to the distance from the soil.

- **Crop Mode**

UC5 controls boom height relative to distance from the crop canopy.

- **Sensitivity**

Adjusts the boom response. Higher values make the height control more responsive; settings range from 0-10.

- **Target Height**

User-defined desired boom height in relation to the selected control mode.

Target Rate



To open the Target Rate window, press the Target Rate button. This button has three grey chevrons on it, as shown here.

Target Rate Screen - shown for DAP

The Target Rate window will appear for all target rates being applied; (for instance, Serial Controllers, Liquid DirectCommand applications, and Granular DirectCommand applications). Press this button again when you wish to return to the Run screen.

Product Application Rate

The Product Application Rate settings, shown at the left of the Target Rate window, lists the Product, Target Rate, Actual Rate, and Flow Rate of the product.

- **Product**

The Product lists the name of the product being applied. In the example above, the product applied is DAP.

- **Target**

The Target Rate is the amount of product that you wish to apply.



Note: In some conditions, the Target Rate may increment more quickly than the Actual Rate.

- **Actual**

The Flow Sensor returns the actual rate of the product that you are applying.



Note: In some conditions, the Actual Rate may increment slower than the Target Rate, or its numeric values may vary before matching the Target Rate.

- **Flow Rate**

The Flow Rate is shown in units per minute.

- **Rate Control**

The Rate Control buttons, listed below and on the following page, allow you to enter the specific rate applied.



The Manual Valve Control button allows operators to specify the position of the control valve. Operators use this option to prime the system before application or clean out equipment at the end of the day.



Note: The Manual Valve Control setting is only available in DirectCommand. It is not available for serial configurations.



The Rate 1 and Rate 2 settings represent preset application rates that allow operators to quickly change between desired target rates for each individual product.



Note: The active rate button appears with a green background behind it.



The Target Rate Increment button allows operators to specify the increase or decrease amounts used when Rate 1 or Rate 2 is selected. Use the numeric keypad to enter the desired increment.



The Increase and Decrease buttons allow Product Application Rate to be changed according to the Target Rate Increment.



In using manual valve control, the increase and decrease buttons allow the possibility of the control valve to be defined by the operator.



Press the Down Chevron button, shown at left, to return to the Run Screen.

RATE CONTROL/LOGGING DISPLAY ITEMS

The Display Items selection window can be accessed by pressing on any one of the four display items that are active on the Run screen.

Display Items		
Case FLX3010, DirectLiquid		
RATE	GROUND SPEED	FLOW
AREA	AREA PER HOUR	CONTAINER LEVEL
TOTAL APPLIED	DISTANCE	
EXIT		

Once the Display Items window is visible, press on the display item you would like to display. It will then be available on the Run screen.

- **RATE button**

Displays the actual rate per acre being applied.

- **AREA button**

Displays the area that has been applied for the region.

- **TOTAL APPLIED button**

Shows the total amount applied for the region.

- **GROUND SPEED button**

Shows the instantaneous ground speed.

- **AREA PER HOUR button**

Shows the instantaneous productivity.

- **DISTANCE button**

Shows the total distance driven in the region.

- **FLOW button**

Shows the instantaneous units per minute being applied.

- **CONTAINER LEVEL button**

Used for basic tank level information.

VIEWABLE MAPS

There are three different types of viewable maps in Application, depending on the type of configuration being used. A site verification configuration will only have coverage available, whereas a rate control/ logging configuration will have all three. The maps are accessed by pressing the button in the legend that is either labeled COVERAGE, RATE, or Rx (Prescription).



Coverage

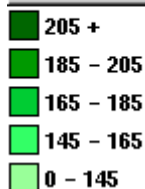


The coverage map shows the area of the field where an application has taken place. Overlaps are also indicated here. This legend is not editable.

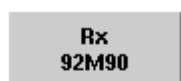
Rate



The rate map displays the actual rate being applied if a rate control/ logging configuration is being used. This legend is editable.



Rx (Prescription)



The Rx (prescription) map displays the prescription rate from the target file. This legend is not editable.



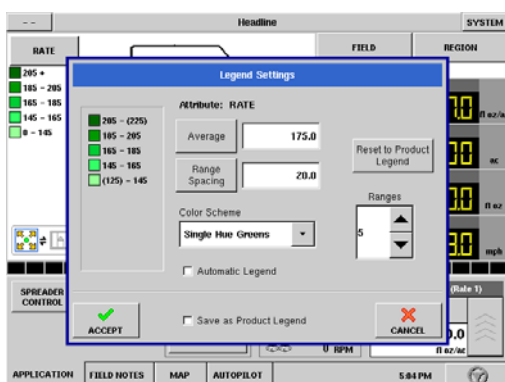
MAP LEGEND

The rate legend is the only Application legend that can be edited. To edit this legend, press on the range portion of the Run screen legend. (the boxes underneath the Rate button).

The average, spacing, colors, and ranges can be edited for this map. Use the drop-down boxes and arrows to adjust these values.

If the automatic legend option is selected the average will automatically set itself to the field average and update as the field average changes.

If you choose to set the current legend as the default legend for all regions of the same product select the save as product legend option. This will also reset the legend settings discussed in [“Product Tab” on page 185](#). To reset to the default values go to Setup, Planting, Product and press the Edit Legend button. If you wish to reset this legend to the values saved under the Product Tab, press the Reset to Product Legend button.



The Legend Settings window is shown at left. You can access this window by pressing on the range portion of the legend as it appears on the Run Screen.

OPTRX CROP SENSOR MODULE

ABOUT OPTRX

The OptRx Crop Sensor Module controls active light sensors that measure crop vigor by measuring light reflectance. These OptRx sensors can detect nitrogen (N) deficiency of growing crops and prescribe nitrogen rates on the go. The sensor can also be used to collect vegetative index data.

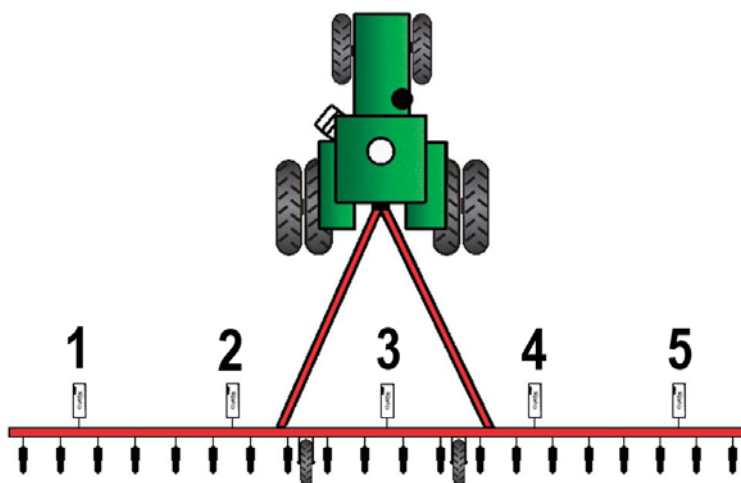
REMOTE SENSING EXPLAINED

Remote Sensing is the measurement of reflected values of a plant by a recording device that is not in physical contact with the object.

HOW THE ACTIVE LIGHT SENSOR WORKS

The OptRx sensor shines white light on the crop. The sensor then measures the reflected light from the crop, and creates a Vegetative Index (VI) value. This value can be used to identify crop vigor.

OPTRX SENSOR CABLE INSTALLATION



The INTEGRA display supports up to 10 OptRx sensors. For swaths that are 80 feet or larger, five sensors or more should be used. For swaths less than 80 feet, a minimum of three sensors is recommended.

When installing sensor cables, you must install them in the correct order from left to right. An example is shown.



CAUTION: If you do not install the sensors in their proper places, then the map created by the INTEGRA display will not accurately reflect actual field conditions according to row sensor placement.

OptRx Installation Checklist

- Sensors should be equally spaced apart. Sensors should not be mounted on the ends of the booms.
- Each sensor should be mounted so that it is centered over the top of a crop row.
- Ideally, the sensor should be located between 30 and 36 inches (76-91 cm.) above the crop canopy.
- The sensor can be located a minimum of 20 inches (51 cm.) or a maximum of 50 inches (127 cm.) above the crop canopy.

OPTRX CROP SENSOR CONFIGURATION

To begin this procedure, go to the Application Setup Configuration Tab and press the Add button. The Operating Configuration Wizard appears.



1. Select Equipment Configuration Type

Select either Single Product Application, or Multiple Product Application, and press NEXT.



Note: You must have purchased a Multi-Product unlock code from Ag Leader in order to use the Multiple Product Configuration.

2. Select Vehicle

Use the drop-down menu to choose a vehicle, or press the New button to enter a new vehicle. Press NEXT to continue.



Note: Select an existing vehicle from the Vehicle List. If a new vehicle needs to be added, press the **New** button to launch the Vehicle Wizard.

3. Select Implement Attachment Method

Use the drop-down list to select an implement attachment method. Press NEXT to continue.

4. Enter Full Swath Width

Use the numeric keypad to enter the full swath width of the implement. Press NEXT to continue.

5. Enter Number of Boom Sections

Use the up and down arrow keys to enter the number of sections of the implement. Press NEXT to continue.

6. Enter Boom Sections from Left to Right

For implements with more than one boom section, the display will default to the appropriate number of equal width boom sections. To edit any of the boom values, select the desired section from the list and press the number pad to enter in a new width. Press NEXT to continue.

7. Enter Distance from Hitch to Application Point

Enter the distance from the hitch to the application point (from front to back) using the number pad button. Press NEXT to continue.

8. Implement Options

Check the OptRx Sensor check box to choose this option. Press NEXT to continue.

9. Enter Number of Crop Sensors

Enter the number of Crop Sensors on your implement. Press NEXT to continue.

10. Enter Implement Name

Use the keyboard button to enter a name for the implement. Press Finish to complete the implement setup process.

11. Enter Operating Mode

Use the drop-down menu to select Rate Logging/Control; then press NEXT.

12. Select Controller

Use the drop-down menu to select a controller, or press the New button to add a controller; then press NEXT.

13. Select Container

Use the drop-down menu to select a container, or press the New button to enter a new container; then press NEXT to continue.

14. Enter Container Capacity and Units

The Container Setup Wizard appears. Use the numeric keypad to enter the container capacity and the drop-down menu, located underneath, to enter units. Press NEXT to continue.

15. Select Container Name and Location

Use the keypad to enter a Container Name, and the drop-down menu underneath to enter a Container Location.

16. Select Ground Speed Source

Select your ground speed source. If you will be using GPS as the primary you will need to select a secondary source.

Press NEXT to continue.



Note: The Ground Speed Sensor must be calibrated for accurate speed and area calculations, under the Vehicle Tab.

17. Enter Suggested Configuration Name

Use the keypad to enter a suggested name for your configuration.

Press Finish when complete.



Note: A suggested name has been provided, based on your previous selections. If this name does not fully describe the configuration, you may change it here.

CREATE AN OPTRX V.I. REFERENCE VALUE

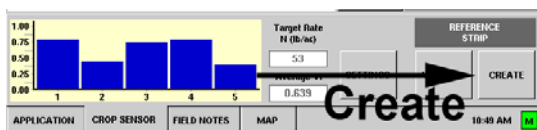
In order for the OptRx Crop Sensor Module to recommend an N rate, you must scan the field to find a V.I. Reference Value. To find a Reference Value, choose the healthiest portion of your field where the tallest and greenest plants are located, and scan this portion for 300 seconds (5 minutes). This V.I. Reference Value is a baseline of optimum crop performance that the display can compare against other cropland.

Scan a Reference Strip

This procedure describes how to scan a reference strip into the display. It assumes that you have already performed the following tasks:

- Identified that your crop is at the appropriate growth stage.
- Created an OptRx module configuration. For more information, see [“OptRx Crop Sensor Configuration” on page 228](#).
- Created a Grower, Farm and Field configurations at the Run screen.

Recording a Reference Value



1. Press Create Button

Press the Create button, located underneath the Reference Strip indicator on the Crop Settings tab of the Run screen.



Note: If a reference strip has already been created, a warning appears, notifying you that this will unload the current reference strip. Press **Yes** to continue.

2. Enter Reference Strip Information

The Reference Strip Information window appears. Use the on-screen keyboard to enter the Name, Growth Stage, and Variety.

Press Accept when finished.

3. Drive Reference Strip

A window appears, stating that you should drive the applicator to the start of the reference strip. When ready, press the Start button and drive the reference strip.

4. Recording Reference Strip

When you are driving the Reference Strip, the area on the Crops Tab where the Reference Strip indicator normally appears turns green and states "Recording."



Note: In order to create an accurate Reference Strip, record for at least 300 seconds (5 minutes).

5. File Name

The File Name window appears, showing the new Reference Strip file name.

Press the Accept button, or use the on-screen keyboard to edit, if necessary.



Note: The target rate created with data from the reference strip appears on the Rate Screen and is marked with a green leaf icon.

Optional: View Reference Strip



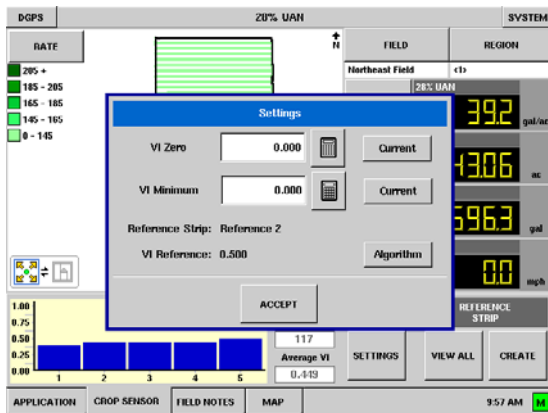
View All Button

Reference Strip Selection	
File Name	Created
2009-04-22_1054.rfs	Wed Apr 22 10:54:28 2009
2009-04-22_1124.rfs	Wed Apr 22 11:24:04 2009
2009-04-22_1629.rfs	Wed Apr 22 16:30:54 2009
Current Filename	None
Current Strip Name	None
SensorRx	Corn
Strip Name	Reference 1
VI Reference Value	0.500
Field Name	Northeast Field
Crop Growth Stage	V6
Crop Variety	38B84C
LOAD	DELETE
CANCEL	

Reference Strip Selection

If desired, you may review this reference strip by pressing the View All button. The file name of the new reference strip appears in the Reference Strip Selection window.

CROP SENSOR SETTINGS



The Settings window is where you can adjust application rate settings specified by the OptRx Crop Sensor module. The VI Zero and VI Minimum settings are used as a buffer to prevent applying the wrong amount of N or applying it in areas where doing so would be ineffective. To access the Settings window, go to the Run Screen and press the Settings button.

- **VI Zero**

The threshold below which the Crop Sensor applies a zero rate. This setting is used to prevent applying N over bare ground or permanently damaged crops. You may enter in a value either by using the numeric keypad, or you may enter in the current VI Reference Value by pressing the Current button.

- **VI Minimum**

The threshold below which the Crop Sensor applies the minimum rate. This setting is used to apply a minimum amount of N on ground with damaged or diseased crops.

You may enter in a value either by using the numeric keypad, or you may enter in the current VI Reference Value by pressing the Current button.



Note: The minimum rate may be adjusted at the Crop Sensor screen, which is accessed by pressing the **Algorithm** button. For more information, see [“Crop Sensor Settings” on page 232](#).

- **Reference Strip**

The name of the Reference Strip that you entered during the Configuration procedure.

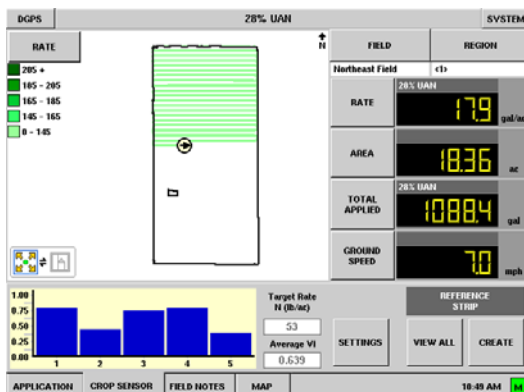
- **VI Reference**

Value of a healthy crop biomass used in reference for calculating the proper N application rate.

- **Algorithm**

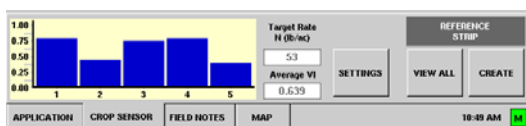
Press this button to access the Sensor Setup screen, where you can adjust the rate displayed on the Crop Sensor tab's VI Bar Graph. For more information, see [“Crop Sensor Settings” on page 232](#).

CROP SENSOR TAB SETTINGS



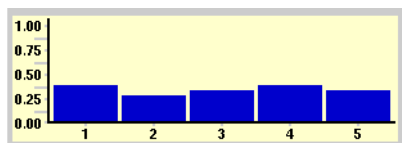
Users of the OptRx Crop Sensor have a specific tab, the Crop Sensor Tab, appear at the Run Screen, as shown.

The following settings appear on the Crop Sensor Tab of the Run screen.



Crop Sensor tab

Typical configuration for a Crop Sensor module shown at left.



VI (Vegetative Index) bar graph

Shows the VI Reference value reading for each sensor in your Crop Sensor configuration. This ratio indicates the healthiness of the crop. A higher number means a healthier crop.

- **Target Rate N**

The recommended amount of N per acre (hectare).

- **Average VI**

The Average VI shows the average VI value for all sensors.

- **Settings**

The Settings button summons the Settings window, where you can view and adjust the VI Zero and VI Minimum values. For more information, see [“Crop Sensor Settings” on page 232](#).



The bar at the right-hand side of the Crop Sensor Tab indicates the two Reference Strip buttons underneath.



When creating a Reference Strip, this button turns green and indicates that the display is recording new data for a reference strip.

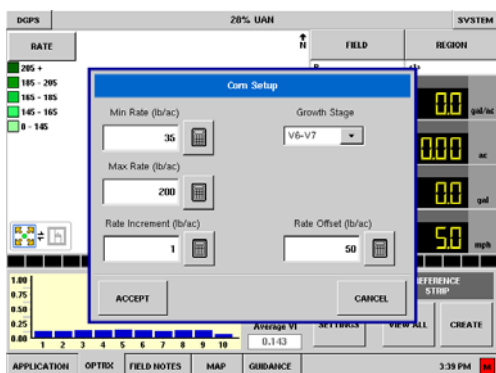
- **View All**

The View All button summons the Reference Strip Selection screen, where you can load or delete.rfs (Reference Strip) files.

- **Create**

The Create button initiates the creation of a Reference Strip.

Crop Sensor Setup



At the Crop Sensor Setup window, press the button named for your individual crop. As an example, for the corn algorithm, press the Corn button.

- **Min Rate**

Use the numeric keypad to enter the lowest amount of N that should be applied, if desired.

- **Max Rate**

Use the numeric keypad to enter the highest amount of N that should be applied, if desired.

- **Rate Increment**

Use the numeric keypad to enter in an increment that the N rate applied will be rounded, if desired.

For example, if the number 5 is entered, if you are applying a rate of 27 the number will be rounded to 25.

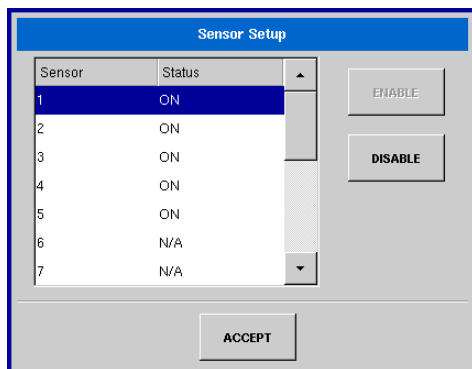
Growth Stage — The Growth Stage of the corn plant. Choices are:

- V6-V7
- V8-V10

- **Rate Offset**

If desired, use the numeric keypad to modify the applied rate in the event of significant field stresses during a season, such as drought conditions; or to make adjustments because of soil type.

Sensor Setup



You can review the status of individual OptRx sensors at the Sensor Setup window. To view this window, go to the Implement Tab, press the Crop Sensor Setup button and the Crop Sensor Setup window appears. Press the Sensor Configuration button, and the Sensor Setup window appears, as shown. Each sensor is shown, with the status of “ON” or “OFF”.

- **Enable button**

Turns on the individual OptRx sensor.

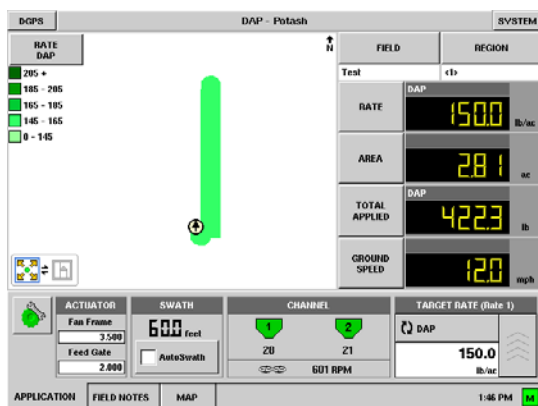
- **Disable button**

Turns off the individual OptRx sensor.

GRANULAR APPLICATION CONTROLS

SPINNER SPREADER

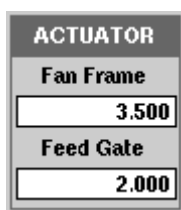
Spinner Spreader Application Rate Control Tab



The Application tab for spinner spreader control has several buttons and status display areas that are specific to granular product control. The following table and pages outline the details of these controls.



Press the Spreader Control button to display the Spreader Control window and settings. For further information, see [“Spinner Spreader Control Settings” on page 235](#).



The setting at left appears on the Application Tab for operators using Fan Frame & Feed Gate Actuators. The Actuator portion displays both the Fan Frame distance setting and the Feed Gate opening.

- These settings cannot be adjusted on the Application Tab. Instead, you may change them by pressing the Spreader Control button and making any changes at the Spreader Control window.

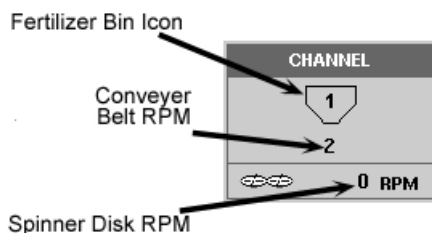
- In order to view these settings, you must have purchased a New Leader Linear Actuator

unlock code.

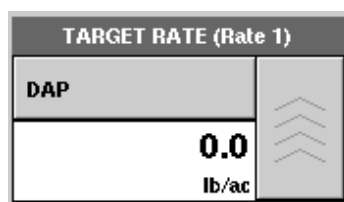


Displays active spread pattern width.

The AutoSwath check box allows the enable/disable of the Automatic Swath Control functionality.

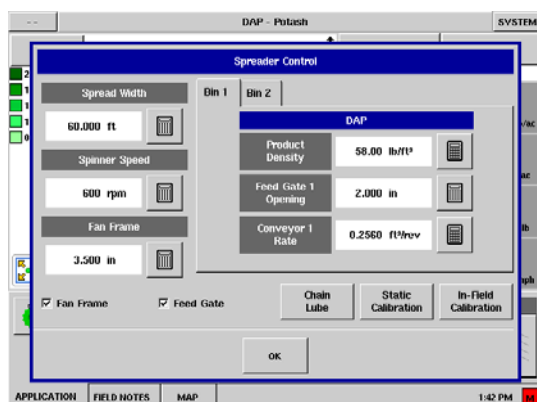


Displays the status of the product control channel. When the fertilizer bin icon is grey, no product application is taking place. When product is being applied, the fertilizer bin will turn green. Directly underneath the fertilizer bin icon, the Conveyor Belt RPM shows the revolutions per minute of the conveyor belt. The Spinner Disk RPM, located to the right of the Spinner icon, shows the revolutions per minute of the spinner disks.



Displays the current target application rate. Press the up arrow button to go to the Target Rate Application window. For more information, see [“Target Rate” on page 223](#).

Spinner Spreader Control Settings



When you press the Spreader Control button on the Application Tab of the Run Screen, the Spreader Control window appears, as shown. General Settings are described on this page along with settings specific to Fan Frame & Feed Gate Actuator users; Product Settings are described on the following page.

Each of these settings described below must be set for each individual Product Channel (bin).

The Spread Width, Spinner Speed, Product Density, Feed Gate 1 Opening and the Conveyor 1 Rate are all stored with each combination of product and control channel.



WARNING: Changing any of these settings in the display does not make the needed adjustments on the product applicator. Setting value and physical setting on the spinner bed must be verified for correctness prior to any product application. However, if your machine is equipped with Fan Frame & Feed Gate

Actuators, and you have also purchased a New Leader Linear Actuator unlock code, the settings on the spinner bed will automatically change.

• Spread Width

Use the numeric keypad to edit this value.

• Spinner Speed

The spinner speed required for accurate product placement in relation to the spread width setting.



Note: The spinner speed is controlled automatically based upon this setting when the system uses an optional PWM spinner speed control valve. For more information, see [“Spinner Speed PWM Valve Settings Description” on page 279](#).

• Static & In-Field Calibration

Performs a Spinner Spreader Conveyor Calibration. For more information, see [“Spinner Spreader Static Conveyor Calibration” on page 237](#) and also [“Spinner Spreader In-Field Conveyor Calibration” on page 238](#).

- **Fan Frame**

Displays the distance between the spinner bed and the spinner assembly. Use the numeric keypad to edit this value.

- **Fan Frame Checkbox**

Checking this box enables the Fan Frame Actuator.

- **Feed Gate Checkbox**

Checking this box enables the Feed Gate Actuator.

- **Chain Lube**

Automatically performs a chain oiling routine. For more information, see [“Spinner Spreader Chain Lube” on page 238](#).

Spinner Spreader Control Product Settings

These settings are shown in the Controller Settings window, accessed via the Spinner Control button on the Run screen.



Note: Each of these settings described below must be set for each individual Product Channel (bin).

Changing any of these settings in the display does not make the needed adjustments on the product applicator. Setting value and physical setting on the spinner bed must be verified for correctness prior to any product application.

- **Product Density**

This density value (shown in pounds per cubic foot, or lb./ft.³), is stored with each product and control channel. Use the keypad to edit if needed.



Note: For proper machine performance and accuracy, you should check the Product Density daily.

- **Feed Gate 1 Opening**

Represents the feed gate opening for Conveyor 1. Measure the depth of product on the conveyor to ensure an accurate feed gate setting value.



Note: By changing the Feed Gate value, the actuator will automatically change position to the desired position.

- **Conveyor 1 Rate (CFR Number)**

This setting represents the volume of product dispensed by one revolution of the conveyor drive shaft (cubic foot per revolution, or ft.³/rev.) This number is shown with the assumption that the conveyor shaft has a 1-inch gate opening. This conveyor rate remains constant, regardless of the height of the feed gate opening.



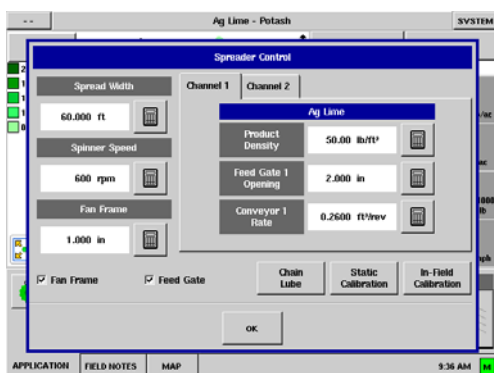
CAUTION: New products will have a default CFR number the first time they are used. You must either manually enter or perform a CFR calibration routine for each product once that product is created, otherwise misapplication will occur.

Spinner Spreader Static Conveyor Calibration

Because the Spinner Speed settings can only be accurately determined by performing a spread pattern catch test, you must perform a conveyor discharge calibration for each granular product control channel (bin) for the equipment configuration. This process is outlined on the following pages. The static calibration procedure is performed before applying in field conditions.



To begin, press the Spreader Control button on the Run screen. The Spreader Control window appears, as shown in Step 1 below.



1. Start Calibrate Conveyor routine

Press Static Calibration to start the Static Conveyor Rate calibration routine.

2. Disable Spinner Hydraulic Circuit

The display will present a warning to disable the spinner hydraulic circuit.

Press OK to continue after the hydraulic circuit is disabled.



WARNING: Manually disable or shut off the spinner hydraulic circuit. If the spinner runs unexpectedly, injury could occur.

3. Select Conveyor to Calibrate

Press NEXT to continue.

4. Enter Dispense Amount

Enter the desired target amount of product to dispense (the recommended amount is 500 pounds or 250 kilograms).

Press NEXT to continue.

5. Start Dispensing Product

Press Start to begin dispensing the product.

6. Product Dispensing

The conveyor will stop when the display perceives the target amount of product has been dispensed.

The Stop button can be pressed at any time to manually shut off the conveyor.

7. Product Dispensing Stops

Next appears the window after dispensing the display's target amount.

This value can be reset and the process started again for a larger sample size, if desired.

Press NEXT to continue.

8. Enter Actual Dispense Amount

Enter the actual weight of the product dispensed.

Press NEXT to continue.

9. Finish Calibration

At left is displayed the window showing the new calibration number.

- Press Cancel to exit calibration without saving the value.

- Press Repeat Calibration to begin the process again.
- Press Finish to save the value and exit the calibration routine.

10. Restart spinner hydraulic circuit

Restart the spinner hydraulic circuit.

A warning will appear when exiting the calibration wizard, instructing you to return the spinner control hydraulic circuit to a field-ready condition.



WARNING: Make sure the spinner is free of material before restarting the spinner hydraulic circuit.

Spinner Spreader In-Field Conveyor Calibration

The In-Field Conveyor Calibration procedure performs an automated routine to adjust the calibration number for the selected spinner bin. This calibration is performed if there is a difference between the amount of product logged as compared to what was actually applied. To do an In-Field Calibration procedure, press the In-Field Calibration button on the Spreader Control window. The In-Field Conveyor Rate Calibration Wizard appears, as shown.

1. Select Conveyor to Calibrate

Select the channel to calibrate, and press NEXT.

2. Enter Actual Weight

The Accumulated Weight is shown in the top portion of the window.

Use the numeric keypad to enter the Actual Weight, and press NEXT.

3. Calibration Complete

A message appears, stating that your calibration is complete, and showing the CFR amount in cubic feet per revolution.

Press Finish.

Spinner Spreader Chain Lube

If you are using a Fan Frame & Feed Gate Actuator, you can automatically perform a chain oiling routine by pressing the Chain Lube button on the Spreader Control window and following the steps below.

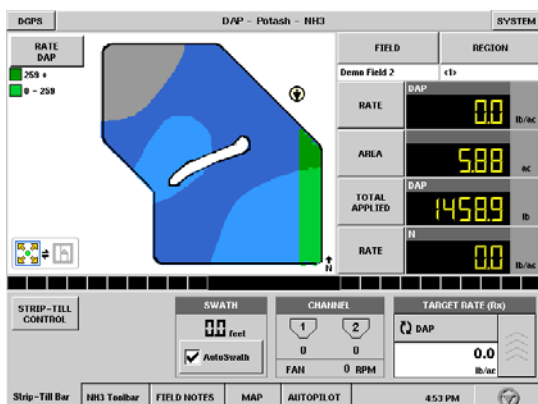


Note: Perform a chain oiling routine daily.

1. Acknowledge the first warning. Manually disable or shut off the spinner hydraulic circuit.
2. Enter a Routine Duration. Enter the routine time that it takes to turn the conveyor one revolution.
3. Press Start. Press the Start button, and when the routine is finished press OK.
4. Acknowledge the second warning. Return the spinner hydraulic control to a field-ready condition.

STRIP-TILL

STRIP TILL APPLICATION RATE CONTROL TAB



The Application Tab for Strip Till has several buttons and status display areas that are specific to its functionality. The following table and pages outline the details of these controls.

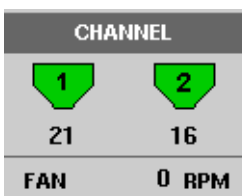
STRIP-TILL CONTROL

Press to display the Strip Till window and settings. For further information, see [“Strip Till Control Settings” on page 240](#).

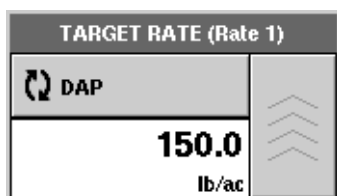


Displays active swath width.

The AutoSwath check box allows the enable/disable of the Automatic Swath Control functionality.

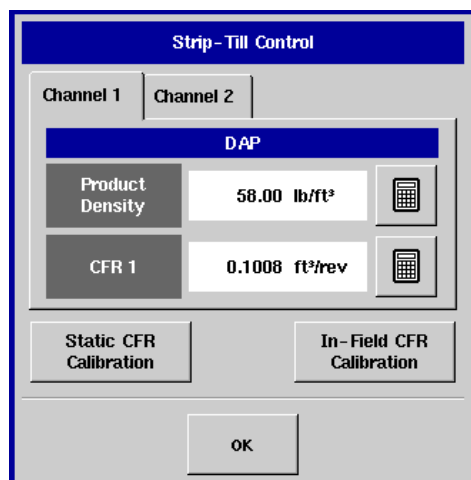


Displays the status of the product control channel. When the fertilizer bin is grey no product application is taking place. When product is being applied, the fertilizer bin will turn green, as shown at left.



Displays the current target application rate. Press the up arrow button to go to the Target Rate Application window. For more information, see [“Target Rate” on page 223](#).

STRIP TILL CONTROL SETTINGS



Press the Strip Till Control button, located on the left-hand side of the Application Tab, for the Strip-Till Control window to appear, as shown. From here, you can calibrate the Product Density and CFR settings.

- **Strip Till Settings (for two channels)**

This density value (shown in pounds per cubic foot, or lb./ft.³), is stored with each combination of product and control channel. Use the keypad to edit, if needed.



Note: For proper machine performance and accuracy, you should check the Product Density daily.

- **CFR 1**

The amount of product that is distributed with each revolution of the metering circuit. Shown in Cubic Feet per Revolution (ft.³/rev).



CAUTION: New products will have a default CFR number the first time they are used. You must either manually enter or perform a CFR calibration routine for each product once that product is created, otherwise misapplication will occur.

- **Static CFR Calibration**

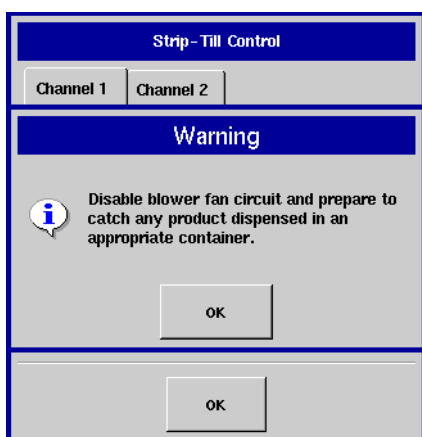
Press the Static CFR Calibration button to perform an automated routine to calibrate each metering circuit. This calibration is performed before applying in field conditions. For more information, see [“Static CFR Calibration Procedure \(Strip-Till\)” on page 240](#).

- **In-Field CFR Calibration**

Press the In-Field CFR Calibration button to perform an automated routine to adjust the calibration number for the selected metering circuit. This calibration is performed if there is a difference between the amount of product logged as compared to what was actually applied. For more information, see [“In-field CFR Calibration Procedure \(Strip-Till\)” on page 241](#).

Static CFR Calibration Procedure (Strip-Till)

The Static CFR Calibration Procedure performs an automated routine to calibrate each metering circuit. This calibration is performed before applying in field conditions. To perform the Static CFR Calibration, press the Static CFR Calibration button in the Strip-Till Control Window.



1. Read Static Calibration warning

A warning appears, advising to disable the blower fan circuit and prepare to catch any product dispensed in an appropriate container.

Press OK.

2. Select Metering Circuit to Calibrate

The CFR Calibration Wizard appears. Choose the desired channel to calibrate, and press NEXT.

3. Enter Dispense Amount

Use the numeric keypad to enter the amount of product to be dispensed into the container, and press NEXT.

4. Enter Simulated Target Rate

Use the numeric keypad to enter a simulated target rate, shown in pounds per acres. Press NEXT when finished.

5. Start Target Rate Countdown

Press the green Start button to begin the target rate countdown. As the countdown is started, the button will turn red and state Stop.

When the countdown is complete, press the NEXT button.

6. Enter Actual Dispense Amount

Enter the actual dispense amount, in pounds.



Note: The CFR will be calculated from the actual product amount dispensed.

7. Calibration Complete

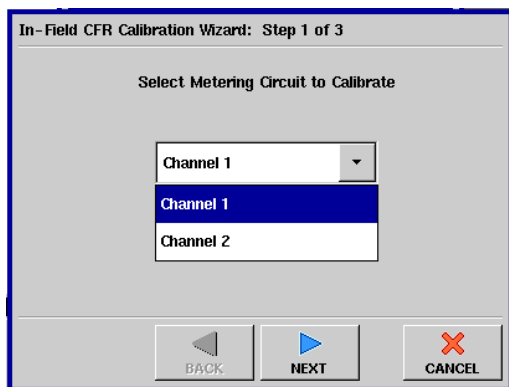
A message appears, stating that your calibration is complete, and showing the CFR amount, in cubic feet per revolution. Either:

Press the Repeat Calibration button, or

Press Finish.

In-field CFR Calibration Procedure (Strip-Till)

The In-Field CFR Calibration procedure performs an automated routine to adjust the calibration number for the selected metering circuit. This calibration is performed if there is a difference between the amount of product logged as compared to what was actually applied. To do an In-Field Calibration procedure, press the In-Field Calibration button on the Strip-Till Control window. The In-Field CFR Calibration Wizard appears, as shown.



1. Select Metering Circuit to Calibrate

Select the channel to calibrate, and press NEXT.

2. Enter Actual Weight

The Accumulated Weight is shown in the top portion of the window.

Use the numeric keypad to enter the Actual Weight, and press NEXT.

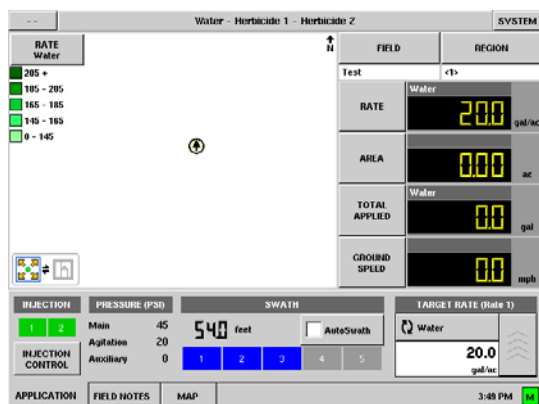
3. Calibration Complete

A message appears, stating that your calibration is complete, and showing the CFR amount, in cubic feet per revolution.

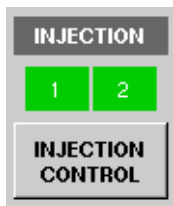
Press Finish.

LIQUID APPLICATION CONTROLS

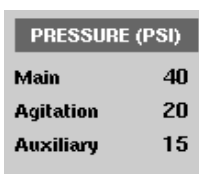
LIQUID CONTROL APPLICATION RATE TAB



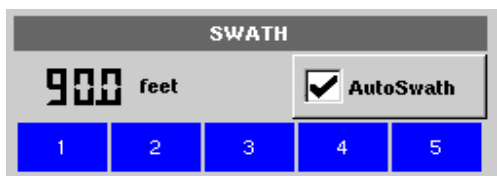
The Application tab for liquid application control has several buttons and status display areas that are specific to various liquid product control configurations. The following table and pages outline the details of these controls, which may differ depending upon your specific configuration.



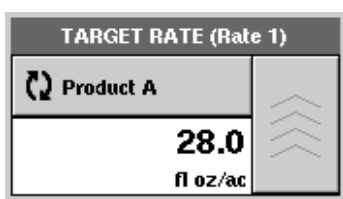
If you have included one or more Direct Injection controllers in the configuration, the number of these controllers appears in the box above the Injection Control button. This button, shown at left, displays green for each injection module when the discharge sensor is detecting flow from the pump. Press the Injection Control button to prime the Injection Pump. For more information, see [“Priming an Injection Pump” on page 206](#).



Displays pressure from up to three different pressure sensors.



Displays swath on/off status. The example at left represents a 5-section boom with all the booms turned on. Status indicators 1-5 are colored blue when the respective boom sections are turned on.

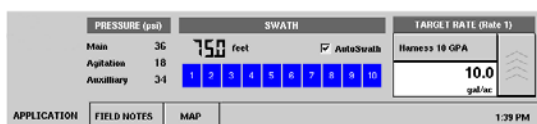


Displays the current target application rate. Press the up arrow button to display the application rate settings dialog. For more information, see [“Target Rate” on page 223](#).

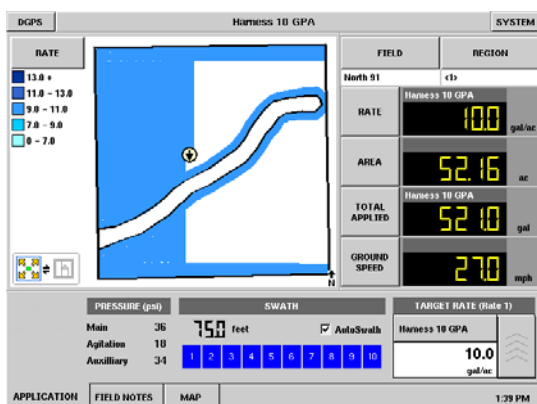
AUTOMATIC SWATH CONTROL

AUTOMATIC SWATH CONTROL, RUN SCREEN OPERATION

The AutoSwath Control feature requires an unlock code that can be purchased from Ag LeaderKINZE. For other information on AutoSwath's Run Screen operation, see [“Automatic Swath Control Settings” on page 172](#).



Select the AutoSwath checkbox to enable automatic section control.



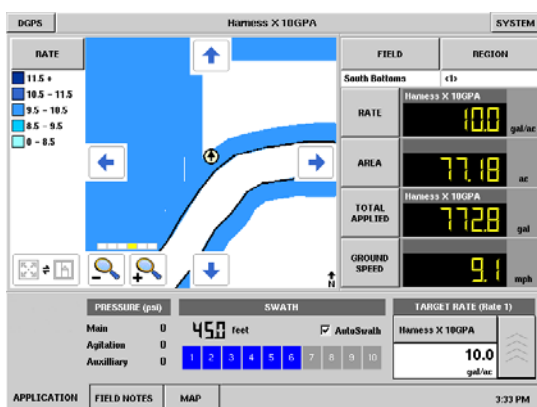
The AutoSwath feature for DirectCommand will automatically control boom section on/off state based upon the following mapped features in a field operation.

Entering and exiting outer field boundaries

Entering and exiting internal field boundaries

Entering and exiting mapped product recommendation areas

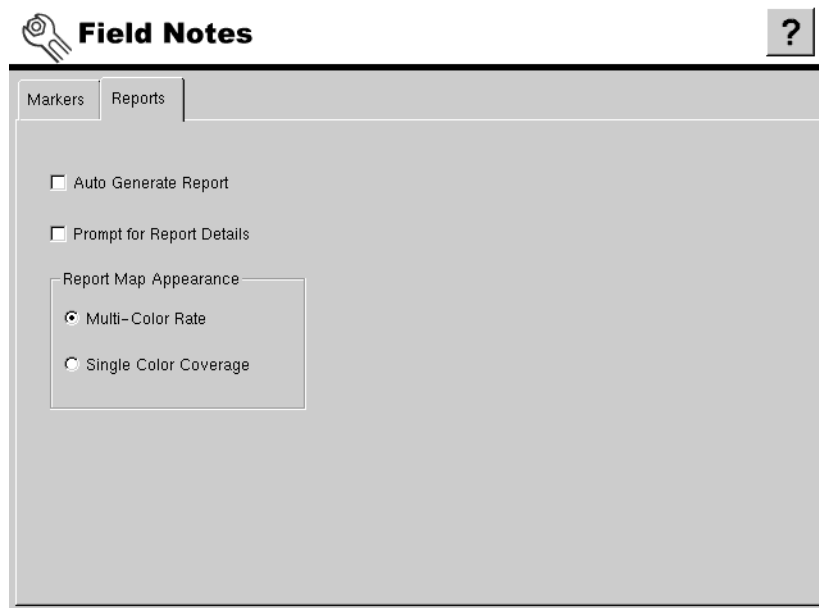
Entering and exiting previously applied areas within a field



Example of AutoSwath control with a mapped waterway.

APPLICATION REPORTING

REPORT SETTINGS



The screenshot shows the 'Field Notes' application window with the 'Reports' tab selected. The window has a title bar with a key icon and the text 'Field Notes'. Below the title bar are two tabs: 'Markers' and 'Reports'. The 'Reports' tab is active and contains the following settings:

- ☐ Auto Generate Report
- ☐ Prompt for Report Details
- Report Map Appearance
 - ☒ Multi-Color Rate
 - ☐ Single Color Coverage

The settings and options contained on the Reports Tab of the Field Notes configuration settings determine the behavior of the display at the Run Screen during the process of creating application reports. Brief descriptions of these settings are outlined in the table below and continue on [“Creating A Smart Report™” on page 245](#).



Note:

• Auto Generate Report

Check this option to have the display automatically generate an application report each time product application is completed and the Field button is selected. For more information, see [“Creating A Smart Report™” on page 245](#).

• Prompt for Report Details

Check this option to have the display automatically launch the region summary data collection dialog box each time a new region is created at the Run screen during application rate control.

• Report Map Appearance

- Multi-Color Rate - Select this option to have application reports display the application maps using rate legend as displayed on the run screen.
- Single Color Coverage - Select this option to have the application reports display single color product coverage maps.

ENTERING REPORT DETAILS

When a new product application is started in a field and each time a new region is created, the Report Details window displays. When the Report Details window appears, you may edit any of the report items by selecting that item and pressing the Edit button. This information will then be compiled into a Smart Report.™ For more information on Smart Reports, see [“Creating A Smart Report™” on page 245](#).

Attribute	Value
Growth Stage	Pre Plant
Application Timing	Pre Plant
Crop Name	Corn
Soil Moisture Level	Optimal
Soil Condition	Medium
Crop Residue Level	High
Air Temp	55 ° F
Soil Temperature	52 ° F

The General tab is where you can enter the following information:

- Crop information
- Application timing
- Weather information
- Soil condition

Report Details - Configuration

Attribute	Value
Spray Nozzle Part Number	XR0015
Boom Pressure	45 PSI
Spray Boom Height	24 in
Crop Rotation Restrictions	No
REI	No
Application Placement Method	Surface Broadcast
Target Pest 1	
Target Pest 2	

An Equipment Configuration Tab will be present for each control channel being used.

When you press the Edit button, you may enter the following details, based upon your specific configuration:

- Machine and equipment information as appropriate
- Product REI and rotation restriction
- Application placement method
- Up to four target pests for the product being used

All common information is populated at the same time when multiple control channels are in use. Multiple instances of data can be entered by creating new regions within the field.



Note: A common use for this functionality is to enter multiple instances of weather data when a product application is completed over the course of multiple days.

CREATING A SMART REPORT™

The following procedure describes how to create a product application Smart Report using the Auto Generate feature. For information on manually creating Smart Reports, see [“Manually Creating Application Reports”](#) on page 246.

Field Notes

Markers Reports

☒ Auto Generate Report

☐ Prompt for Report Details

Report Map Appearance

☒ Multi-Color Rate

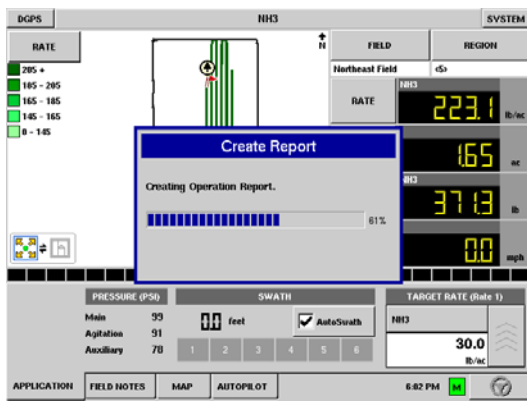
☐ Single Color Coverage

1. Select Auto Generate Report

At the Reports Tab in the Field Notes window, select the Auto Generate Report option. This setting will then create an application report each time you switch to a new field operation.



Note: For more information on the Reports tab, see [“Report Settings”](#) on page 244.



2. Press the Field button

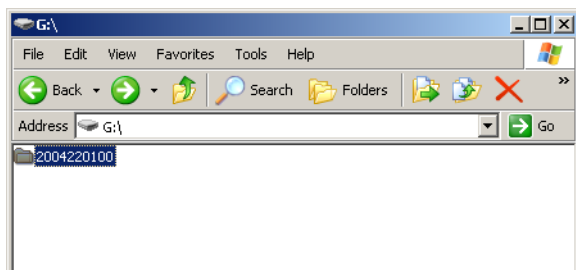
With the Auto Generate Report option selected, press the Field button, and the Create Report window appears, as shown at left. A bar quickly extends across this window as the application report is created.



3. Report Completed

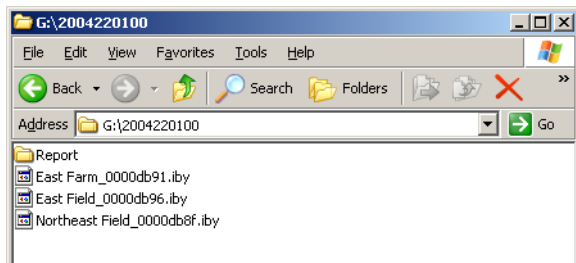
The Create Report window at left displays after the application report is copied to the external data storage card.

Press OK to start setting up a new field operation.



4. Smart Report Data Card File Storage

Top folder



Report folder

Product application reports are automatically stored on the external data card at the time of report creation. Reports are created and stored inside folders that are created with the following sequential information provided by the display:

- Ten-digit serial number of the display. Example: 2007250001. (Another example is shown at left).
- Grower
- Farm
- Field Name
- Configuration Name
- Unique ID #
- Date of most recent product application

Example: East 91_Post Sprayer_DirectLiquid_0000177a_060506.pdf

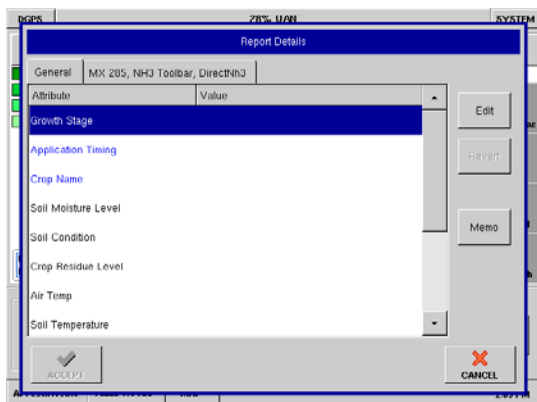
MANUALLY CREATING APPLICATION REPORTS

If desired, application reports can be created manually by following the steps detailed below.



1. Field Notes Tab

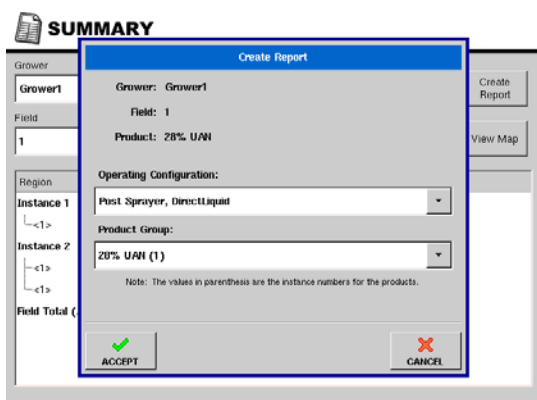
At the Field Notes tab on the Run screen, press the Report Details button to launch the window shown below.



2. Report Details

Enter report information and press Accept to store the information in the display and return to the Run Screen.

Report Generated At The Run Screen



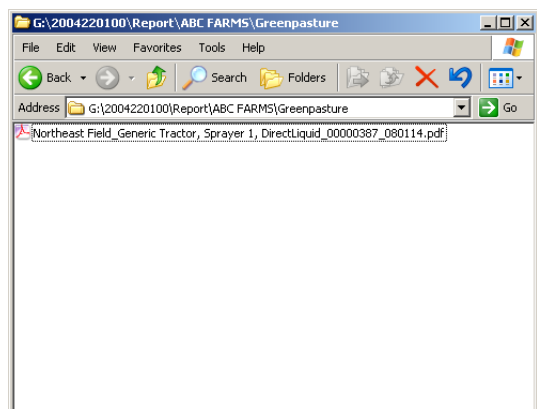
Manual creation of individual reports is done at the Summary Screen. Select the correct Grower and Field from the list boxes and press Create Report.

Select the Operating Configuration and Product Group from the Create Report window shown at left.

Press Accept to create the application report.

VIEWING SMART REPORTS

Viewing Smart Reports on your PC

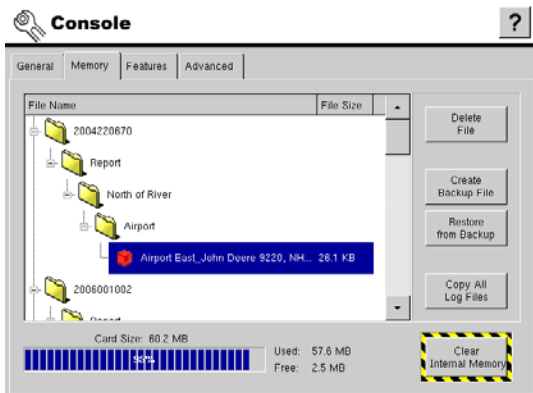


Smart Report™ creates printed documentation of all in-field product application events. This report can either be created through the Auto Generate Report, or manually.

Viewing PDFs

Product application reports are created in the Adobe Acrobat .PDF file format. The Adobe Reader software required to view and print application reports come pre-installed on most computers. If Adobe Reader is not installed on your computer the program is available for download at no charge. A link to the Adobe download site is located with the operator's manual and quick reference sheets at

Viewing Smart Reports on the Display



To view the Smart Report while it is still stored in the memory card inside the display, follow the instructions below.

A file browser is located on the Memory tab of Display Setup. Folders and files can be deleted from the storage card by using the Delete File function at this screen.

All application reports are stored in a common folder named Report on the root of the external storage card.

Sub-folders are automatically created as needed for each grower and field as reports are created.



WARNING: Appropriate warning are given by the display prior to the files being deleted from the storage card. Deleted data cannot be recovered from the card.

Control Channel Report Content

Grower Doe Inc. 123 Any Street Anywhere, IA 55555 555-567-2436		Field Field: Demo Field 2 Farm: Doe Farms County: Dallas Description: Township: Union Range: Section:																																					
Equipment Configuration Vehicle: Generic Sprayer Implement: Generic Sprayer Boom Height: 36 in		Application Timing: Post Emerge Placement: Surface Broadcast Nozzle PN: XR8008 Boom Pressure: 45 PSI																																					
Application Date/Time Start Time: 06/11/2008 10:56 AM End Time: 06/11/2008 11:33 AM																																							
Product: Herbicide Mix Applied Area: 79.65 ac <div style="display: flex; align-items: flex-start;"> <div style="flex: 1;"> <p>Rate (gal):</p> <ul style="list-style-type: none"> 32.0 + 24.0 - 32.0 16.0 - 24.0 8.0 - 16.0 0 - 8.0 </div> <div style="flex: 2; text-align: center;"> </div> </div> <p>Total Field Area: 74.26 ac</p>																																							
Crop Crop: Corn Growth Stage: 5 Leaf		Restrictions Crop Rotation Restrictions: No Restricted Entry Interval (REI): 12 Hours																																					
Target Pests <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Not Observed</td> <td>Not Observed</td> </tr> <tr> <td>Not Observed</td> <td>Not Observed</td> </tr> </table>				Not Observed	Not Observed	Not Observed	Not Observed																																
Not Observed	Not Observed																																						
Not Observed	Not Observed																																						
Product Summary <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Name</th> <th>Manufacturer</th> <th>EPA #</th> <th>RUP</th> <th>Amount</th> <th>Average Rate</th> </tr> </thead> <tbody> <tr> <td>Herbicide Mix</td> <td>Acme Company</td> <td></td> <td>No</td> <td>1596.00 gal</td> <td>20.04 gal/ac</td> </tr> <tr> <td>Herbicide A</td> <td>Acme Company</td> <td>435-7865</td> <td>Yes</td> <td>2553.61 fl oz</td> <td>32.06 fl oz/ac</td> </tr> <tr> <td>Herbicide B</td> <td>Acme Company</td> <td>332-9876</td> <td>No</td> <td>2234.41 fl oz</td> <td>28.05 fl oz/ac</td> </tr> <tr> <td>Crop Oil</td> <td>Acme Company</td> <td></td> <td>No</td> <td>79.80 pt</td> <td>1.00 pt/ac</td> </tr> <tr> <td>Water</td> <td></td> <td></td> <td>No</td> <td>1548.60 gal</td> <td>19.44 gal/ac</td> </tr> </tbody> </table>				Name	Manufacturer	EPA #	RUP	Amount	Average Rate	Herbicide Mix	Acme Company		No	1596.00 gal	20.04 gal/ac	Herbicide A	Acme Company	435-7865	Yes	2553.61 fl oz	32.06 fl oz/ac	Herbicide B	Acme Company	332-9876	No	2234.41 fl oz	28.05 fl oz/ac	Crop Oil	Acme Company		No	79.80 pt	1.00 pt/ac	Water			No	1548.60 gal	19.44 gal/ac
Name	Manufacturer	EPA #	RUP	Amount	Average Rate																																		
Herbicide Mix	Acme Company		No	1596.00 gal	20.04 gal/ac																																		
Herbicide A	Acme Company	435-7865	Yes	2553.61 fl oz	32.06 fl oz/ac																																		
Herbicide B	Acme Company	332-9876	No	2234.41 fl oz	28.05 fl oz/ac																																		
Crop Oil	Acme Company		No	79.80 pt	1.00 pt/ac																																		
Water			No	1548.60 gal	19.44 gal/ac																																		
Operator/Supervisor Information <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2" style="text-align: center;">Signature</td> </tr> <tr> <td>Operator:</td> <td>License:</td> </tr> <tr> <td>Operator:</td> <td>License:</td> </tr> <tr> <td>Supervisor:</td> <td>License:</td> </tr> </table>				Signature		Operator:	License:	Operator:	License:	Supervisor:	License:																												
Signature																																							
Operator:	License:																																						
Operator:	License:																																						
Supervisor:	License:																																						

Demo Field 2_Generic Sprayer, GS DirectLiquid_0000012d_080611.pdf

Page 1 of 2

The content of all product application reports is divided into two distinct groups. The first page(s) of the report represent field and product control channel specific information. In cases of multiple product application, multiple pages will be generated, one for each channel of product control.

Control Channel Content

- Service Provider Information
- Grower Information
- Field Information
- Farm Name and Description
- Equipment Configuration Information
- Application Information
- Date/Time Information
- Crop Information
- Rotation Restrictions and REI
- Multiple Target Pests
- Applied Product Information
- Operator and Supervisor Information

Region Summary Report Content

REGION SUMMARY		
Item	Region 1	Region 2
Region Name	<1>	
Operator Name		
Application Details		
Area	79.65 ac	
Herbicide Mix Amount	1596.00 gal	
Application Start Time	06/11/2008 10:56 AM	
Application End Time	06/11/2008 11:33 AM	
Soil Conditions		
Soil Temperature	58 ° F	
Soil Moisture Level	Optimal	
Soil Condition	Medium	
Crop Residue Level	Low	
Tillage Type	Conventional	
Environmental		
Air Temperature	74 ° F	
Wind Speed	5 mph	
Wind Direction (From)	NE	
Sky Condition	Partly Sunny	
Humidity	24 %	
Additional Information		
Memo		

The last pages of the application report contain field region summary data. Multiple regions can be created as needed in each field. Each region can document changes in weather and other critical information. The user has the ability to log changes in temperature, weather and machine operators simply by creating a new field region. Additional Region Summary pages are created as needed if more than two field regions are created for an individual field.

Regional Summary Information

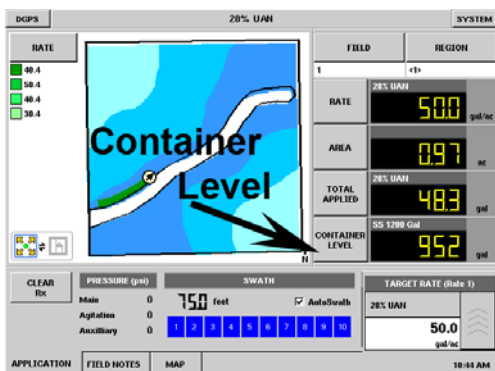
- Region Name
- Machine Operator By Region
- Applied Area
- Applied Volume
- Application Start/Stop Time and Date
- Soil Condition Information
- Environmental Information
- Region Text Memo

Demo Field 2_Generic Sprayer, GS DirectLiquid_0000012d_080611.pdf

Page 2 of 2

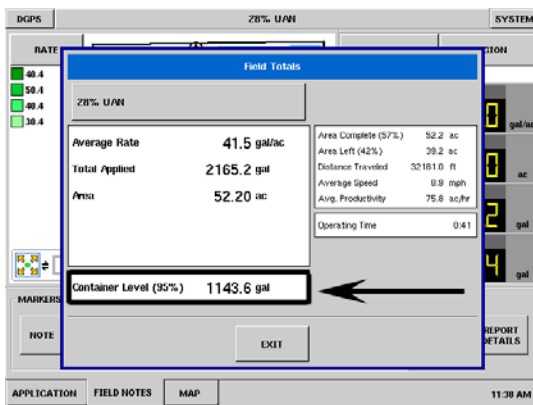
LIQUID CONTAINER LEVEL TRACKING

LIQUID CONTAINER LEVEL MONITORING AT RUN SCREEN



You can track the liquid product level of a spray solution tank both on the Run screen as well as the Field Totals window. In order for the display to show the correct amount of product contained in the solution tank, you must update the container amount information by pressing the Fill/Empty button on the Run screen's Field Notes Tab. For more information, see ["Fill/Empty Events" on page 250](#).

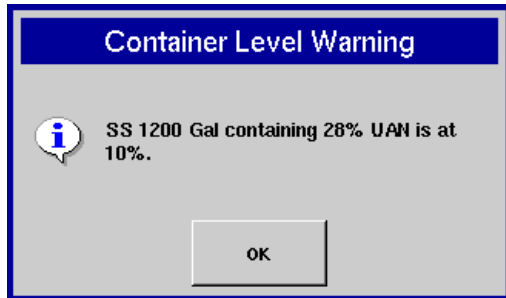
The Container Level is shown as a display item on the Run Screen. Container Level on Field Totals window



The container level's percentage and current amount is also shown at the bottom left-hand side of the Field Totals window.

To display the Field Totals window, press the Field button on the Run Screen while data is being logged in the field.

Low Container Level Warning

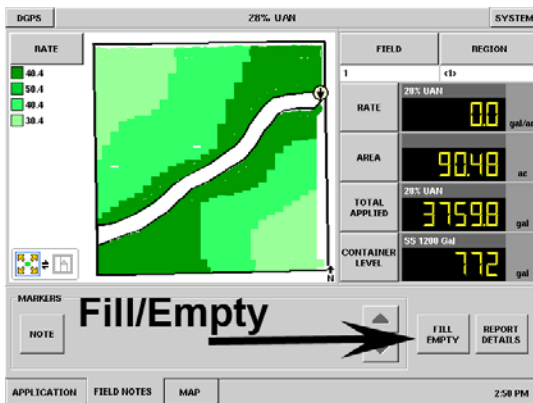


The Container Level Warning appears when spray solution tank level counts down to a specified percentage or liquid measurement of the container's capacity.

- When this warning occurs, refill your tank as necessary. As you refill your tank, you should follow the Fill/Empty event procedure described at [“Fill/Empty Events” on page 250.](#)
- You can adjust this warning level by pressing the bell icon on the Fill/Empty event window. For more information, see [“Optional Step: Set Low Container Level Settings” on page 251.](#)

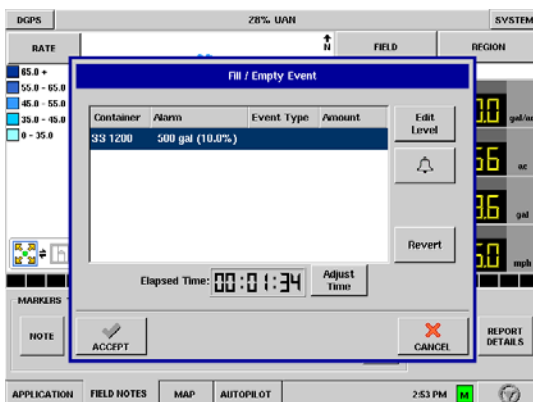
FILL/EMPTY EVENTS

When filling or emptying the solution spray tank, you may update the amount shown on the display's run screen by using the following procedure.



1. Press Fill/Empty button

On the Run screen's Field Notes tab, press the Fill Empty button to display the container Fill Empty Event window.



2. Edit Fill/Empty Event information

The Fill/Empty window appears. Use the buttons on the right-hand side of this window to perform the following tasks:

Press Edit Level to select an Event Type to enter into the display, such as Fill, Empty, Partial Fill, or Partial Empty. For more detail, see [“Choose Fill/Empty Event Type” on page 251.](#)



• Press the bell icon button to change Low Container Level Settings, as shown. This button brings up the Low Container Level Settings window. For more information, see *“Optional Step: Set Low Container Level Settings” on page 251.*

- Press Revert to return Fill/Empty event settings to defaults.

3. Choose Fill/Empty Event Type

The Fill/Empty Details window appears. Underneath the Event Type drop down menu, you may select the following Event Types to enter into the display:

- Fill = Select this when you fill the spray solution tank to maximum level.
- Empty = Select this when you move all remaining volume from the spray solution tank.
- Partial Fill = Select this when you add a volume to a spray solution tank to bring the tank level to some point less than full.
- Partial Empty = Select this when you move a portion of the remaining volume in the spray solution tank.

4. Enter Amount

NEXT, use the numeric keypad to enter the amount that you wish to either fill or empty.

Press Accept after entering both the Event Type and amount.

5. Fill/Event Complete

The Fill/Empty window reappears, in this instance after the operator has added a partial fill. Four columns in this window display the following information.

- Container shows the Container Name.
- Alarm shows the threshold at which point the Low Container Settings will display. To change this, press the bell icon button. For more information, see the optional step below.
- Event Type shows the Event Type you just entered into the display.
- Amount shows the amount you entered into the display.



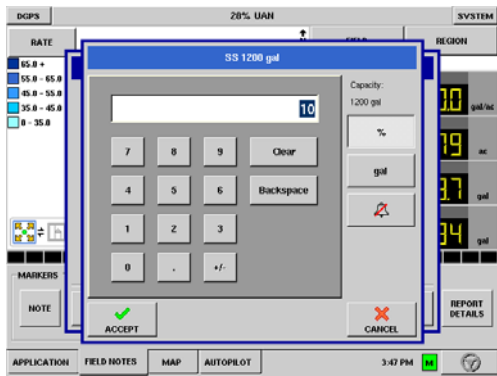
Note: The amount of time it takes for a specific Fill/Empty event to occur is shown at the Elapsed Time portion of this window. You may edit the time shown by pressing the Adjust Time button.

Press Accept to return to the Run Screen.

Optional Step: Set Low Container Level Settings



Low Container Settings bell icon



Example of Low Container Level Settings window

You may adjust the Low Container Level warnings threshold by first pressing the bell icon button at the Fill/Event window. A window then appears, which is named according to the name of your solution tank (see picture at lower left).

Use the following buttons on the right-hand side of the Low Container Level Settings window to adjust the warnings.

- The percentage (%) button sets the warning threshold according to the percentage of solution left in the tank. In the example at left, the threshold is set at 10 percent.
- The units of measurement button sets the warning threshold according to the amount of solution left in the tank. This button is named according to the container's units of measurement you specified during the Controller configuration procedure.
- The Disable Low Container Level icon, which appears as a bell with a red slash across it, shuts off the Low Container Level warning.

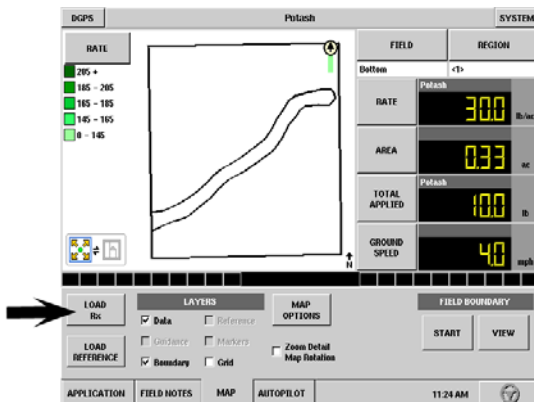
Press Accept to return to the Run Screen.

VARIABLE RATE PRODUCT APPLICATION

VARIABLE RATE FILE BASICS

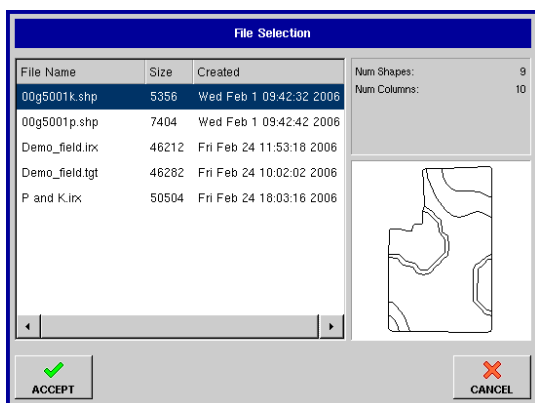
The display supports applying product based upon GPS-referenced recommendation files. Product recommendation files are stored on root (not placed inside of any folders) of the external storage card. Variable rate application files are loaded from the Application Tab of the Run Screen. When a Rx (prescription) file is loaded, the display defaults to controlling product application based upon the target rates from the Rx file.

Loading Prescription Files



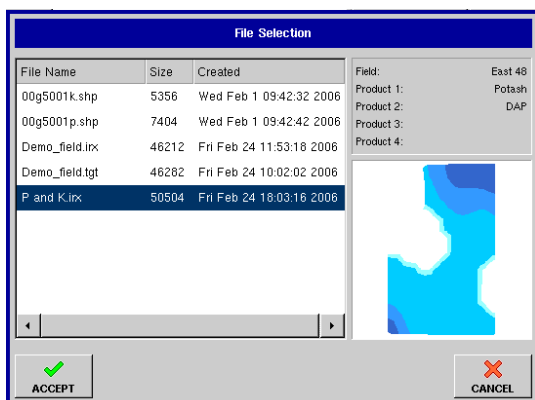
Press the LOAD Rx button on the Map Tab of the Run Screen to load a variable rate prescription file.

Selecting Rx Files



The File Selection window shown at left displays all product recommendation files that are available for selection from the external storage card.

RX FILE FORMATS



The display supports the use of three different variable rate file formats. The differences between the file formats is outlined in the table below.

- ***.irx (Rx File)**

The *.irx file is a new file format designed specifically for use in this display. Unlike earlier Ag Leader file formats, the *.irx file supports multiple product recommendations in a single file. For more information, see ["Irx File Use for Multiple Product Application" on page 253](#).

- ***.tgt (Target File)**

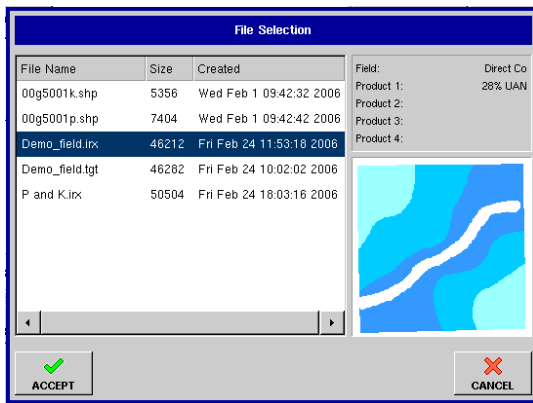
The *.tgt file format was initially developed for use in the Ag Leader PF model displays. This file format is limited to one product recommendation per file. The display is restricted to single product variable rate application when using this file type. For more information, see ["Irx File Use for Multiple Product Application" on page 253](#) and ["Tgt File Use for Single Product Variable Rate Application" on page 255](#).

- ***.shp, *.dbf, *.shx (Shape Files)**

What is commonly called a shape file is actually a collection of three different files. All three of the files are required and must be present on the external storage card for the display to use shape file groups for variable rate product application. A single "shape file" can contain recommendation rates for multiple products. For more information, see ["Shape File Conversion" on page 255](#).

IRX FILE USE FOR MULTIPLE PRODUCT APPLICATION

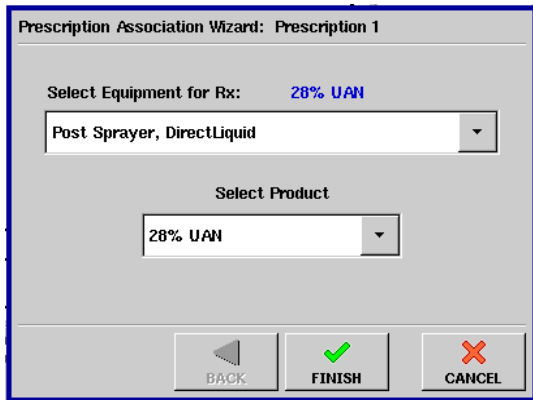
A single *.irx file can contain recommendation rates for multiple products. In cases of multiple product application, step 2 of the process is repeated for each product recommendation.



1. .irx File Selection

Press the Load Rx on the Map Tab of the Run Screen to load a variable rate prescription file.

Select the desired *.irx file from the file selection dialog shown at left.



2. Select Product Component

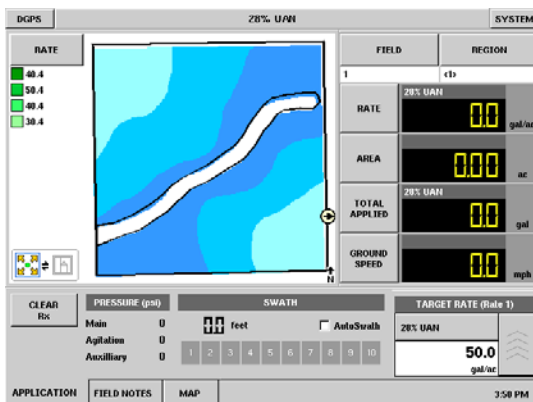
The Prescription Association Wizard appears, as shown at left.

- From the Select Equipment for Rx (top), select the control channel that will dispense the product (28% in this instance).
- From the Select Product list (bottom), make the selection that matches the units that the Rx map was exported for. For example, the map could have been made to represent gallons of 28% UAN or pounds of actual nitrogen.

To continue, press Finish.



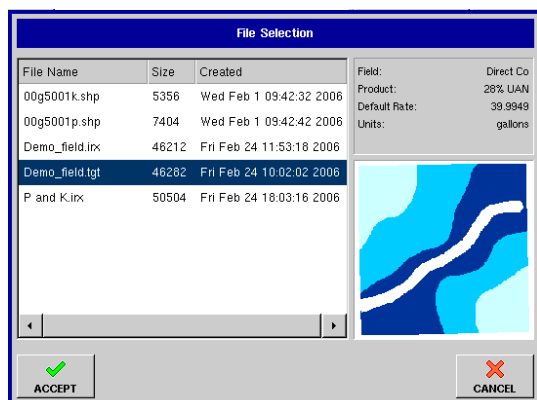
Note: In situations where a multi-product file is being used, repeat this step for all channels of product control.



3. Run Screen After Loading Rx File

Run Screen after loading a product recommendation file for 28% UAN.

TGT FILE USE FOR SINGLE PRODUCT VARIABLE RATE APPLICATION

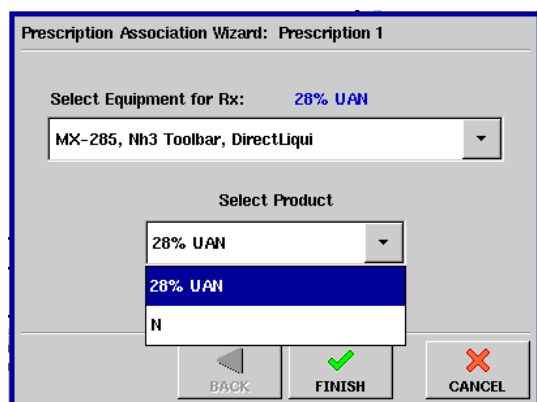


The display can use the *.tgt file format for controlling single product variable rate application.

1. Rx File Selection

Press the LOAD Rx on the Map tab of the Run Screen to load a variable rate prescription file.

Select the desired *.tgt file from the file selection dialog shown at the left.

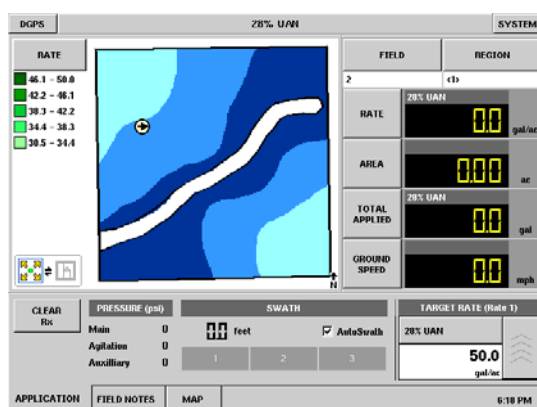


2. Select Product Component

From the top list box, select the control channel that will dispense the product (28% in this instance).

From the bottom list box, make the selection that matches the units that the Rx map was exported for. Example: The map could have been made to represent gallons of 28% UAN or pounds of actual nitrogen.

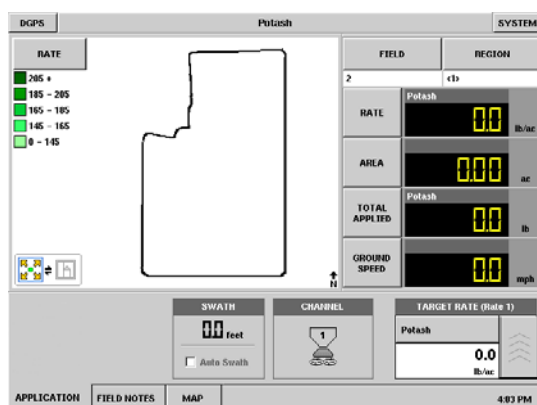
Press Finish to continue.



3. Run Screen After Loading Rx File

Run Screen after loading a product recommendation file for 28% UAN.

SHAPE FILE CONVERSION



1. Run Screen With Boundary

At left is shown a Run Screen prior to loading a prescription map file.

Press LOAD RX on the Map tab to start the process of converting a shape file group to an *.irx file.

2. Selecting Shape File

Select the desired file for conversion.

Press Accept to continue.

3. Read instructions and disclaimer

Read instructions and disclaimer regarding the shape file conversion process. User knowledge of the column name containing the product recommendation is required to complete this process. Press NEXT to continue.

- If you are loading a prescription for a multiple product configuration, proceed to *"Select the Number and Products for Variable Rate" on page 256.*
- If you are loading a prescription for a single product configuration, skip ahead to *"Product And Units Selection" on page 256.*

4. Select the Number and Products for Variable Rate

If you have more than one product that can be controlled loaded on the Run Screen of the display, the window appears.

Use the up and down arrows to select the number of products for a variable-rate prescription.



Note: Enter the number of products that require a prescription. Manually-controlled products do not require a prescription and should not be included.

5. Select Equipment Configuration for Prescription

If you selected more than one product in the previous step, then the window appears.

Select the appropriate equipment configuration to apply the prescription.

Press NEXT to continue.

6. Product And Units Selection

From the product list box, make the selection that matches the units that the Rx map was exported for.

Select the controlling units for product application.

Press NEXT to continue.



Note: In this case, the recommendation could have been generated to represent units of Potash or units of K.

7. Select Data From Shape File

From the list on the left, select the column that contains the product recommendation rate. The list on the right side of the dialog shows sample data from the selected column.

Press NEXT to continue.



WARNING: Selection of the wrong data column or unit will result in misapplication of product.

8. Default Rate Setting

The display assigns a default rate, use the on-screen keypad to edit the value if desired.



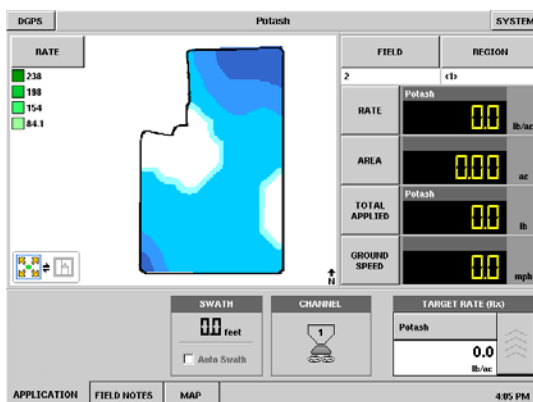
Note: The only time the default rate is used by the display is during product application is if the Rate Outside of Field selection is set to "TGT Default". This setting is located in the equipment configuration settings portion of configuration setup. If the Rate Outside of Field selection is set to "TGT Default", the default target rate will be used for product application when the vehicle exits a mapped field area.



9. Name New IRX File

If desired, rename the newly created *.irx file from the display assigned default.

Press FINISH to complete the shape file conversion process.



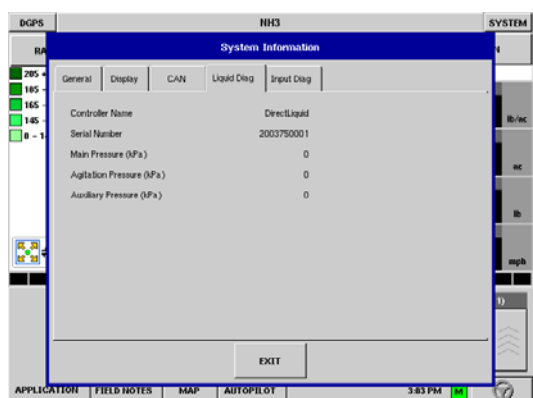
10. Conversion Completed

Run Screen showing product recommendation file.

SYSTEM DIAGNOSTIC BUTTON

Specific diagnostics information, which pertains to application functions, can be viewed when you press the Run Screen's System button. This diagnostic information includes Liquid Diagnostics, Spreader Diagnostics (for Spinner Spreaders), Injection Diagnostics (for Direct Injection configurations) and Input Diagnostics. Technical support may request that you look at this window to help in diagnosing a problem.

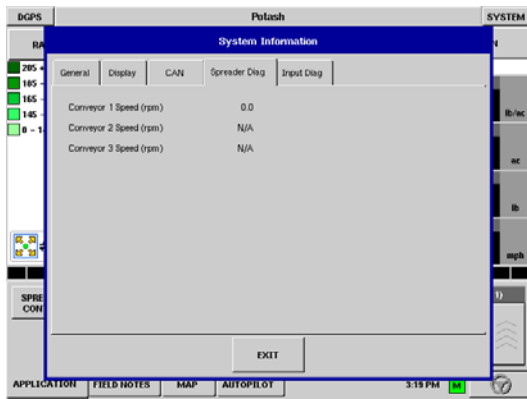
- For generalized diagnostic information, such as memory, display, CAN device and firmware information, see the General section.
- For more information on LED diagnostic states, see *"Module LED Diagnostic States" on page 174.*



Liquid Diagnostics

The Liquid Diagnostic Tab includes the Active Controller name and the Serial Number of the module.

Other information provided includes the Main Pressure, Agitation Pressure, and Auxiliary Pressure. These raw sensor readings are shown in kilopascals (kPa).



Spreader Diagnostics (for Spinner Spreaders)

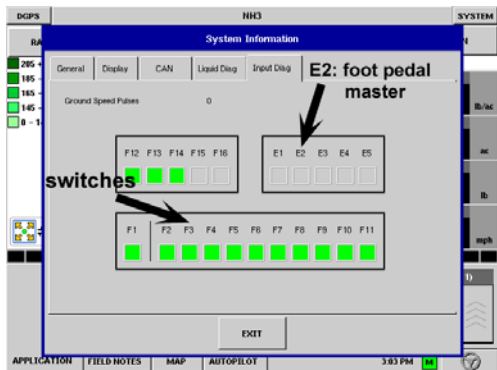
The Spreader Diagnostic Tab includes the speed of the conveyor, shown in revolutions per minute (rpm).



Injection Diagnostics (for Direct Injection)

The Injection Diagnostic Tab provides raw values from sensors verifying that the pump's output is working.

- Digital Pump Speed: Displays volume information, shown in Hz.
- Analog Pump Speed: Displays varying voltage as pump speed is increased or decreased.
- Discharge Flow Monitor: Displays information showing that flow is being discharged for every piston stroke.
- Flow/Speed Sensor Ratio: The ratio that the display derived for calibration.



Input Diagnostics

The Input Diagnostic Tab lists the number of Ground Speed Pulses coming in from the radar to the Auxiliary Module.

Additionally, the bottom row of boxes lists the active switches. These color-coded boxes display the following diagnostics:

- Green: The switches connected to the Auxiliary Module are in the On position.
- Black: The switches connected to the Auxiliary Module are in the Off position.
- Grey: The switches are not connected to the Auxiliary Module.



Note: The **E2** position is the indicator for the foot pedal master.

TROUBLESHOOTING

TROUBLESHOOTING DIRECTCOMMAND LIQUID APPLICATIONS

Boom indicators on the run screen do not turn blue.

1. Make sure ground speed is registering a value greater than zero on the display.
2. Verify a target rate greater than zero is entered into the display.
3. Check the switch status found on the Run screen under System and Input Diagnostics. As the boom switches are turned on and off, the Input Diagnostics window should change from black to green (if they do not, then refer to the installation instructions to verify boom switch connections).
4. Check high current connection into the Liquid Control Module.

5. Make sure the implement cable PN 4000495-1 is plugged in. If plugged in, then test for 12 volts on pins A and B.

Boom indicators on the Run screen of the display turn blue, but the booms do not open.

1. Check wiring connections for all of the boom valves.
2. Verify that the cabling is providing 12 volts to the boom valve on the signal pin



Note: You can also check for 12 volts on pins 1-10 on the boom connection of the liquid module.

Boom valves pause up to 5 seconds before turning on by manual control.

1. Verify that the display and Liquid Control Module are both updated to the latest available firmware.
2. The boom switch cable may be wired incorrectly. For details, refer to the installation instructions.



Note: This issue should only occur on John Deere sprayers. Make sure the black wires in the switch cable are connected.

Booms will not turn on when the foot pedal is on.

Make sure the Master Switch Input is set to "External 2" under the Auxiliary Input Settings.
AutoSwath turns on the boom too fast or too slow.

1. Check GPS offsets in the vehicle setup to verify all the measurements are correct.
2. Verify the boom offsets are appropriate for the sprayer.



Note: Boom offsets are measured from the center of the vehicle to the center of the boom section.

3. Adjust the turn on look-ahead and turn off look-ahead to fine-tune Automatic Swath Control performance.
4. Verify the boom offsets are appropriate for the sprayer.

No "As Applied" rate

1. Check cabling from the channel connection of the Liquid Control Module to the flow meter.
2. Check flow meter for product buildup and proper operation.

Rate is erratic

1. Verify that the rate display smoothing option is checked in the setup of the configuration.
2. Check the controller settings of the active configuration. Verify that the valve setting for your particular type of control valve agrees with the settings given in the Quick Reference Guide.
3. Use manual valve control to see if the rate stays constant.

Erratic behavior from the flow meter and boom valves.

Verify that the display firmware and module firmware are both current.

No boom pressure at the start of the field.

Before product application begins, use manual valve control to build boom pressure. Select either Rate 1 or Rate 2 once pressure is set to desired level. Enter the pass and allow automatic control to take over once the sections are turned on.

AutoSwath feature not shown.

The display must have the AutoSwath feature password unlocked before the feature is available to the operator.

AutoSwath checked on, but booms will not turn on.

1. Make sure the ground speed is registering a value greater than zero on the display and not in the covered area.
2. Make sure there is a target rate greater than 0.
3. Make sure the applicator is inside of the field boundary.

Booms turn on in the middle of the pass.

1. Check the display and module firmware to see if they are the latest version released.
2. Make sure the ground speed does not go to 0.
3. Make sure the GPS is not losing the differential source.

Rate not responding (error flashing)

1. Make sure the flow meter calibration number matches the tag on the flow meter.



Note: For Raven flow meters, divide the calibration number by 10.

2. Make sure the pump is not maxed out for the flow being applied.
3. Use manual valve control to see if the control valve will open or close.
4. Check the tip manufacturer's charts to make sure they are in the operating range of the application.
5. Check for any product buildup in the flow meter.
6. Check product filter for debris.

Booms turn on when outside of the boundary.

1. Make sure the Rate Outside of Field option is set to zero under the active configuration settings.
2. Make sure the Outside Boundary Option is set to Turn Section Off under the Automatic Swath Control options.
3. Make sure there is not a gap between the boundary and the first pass of the headlands



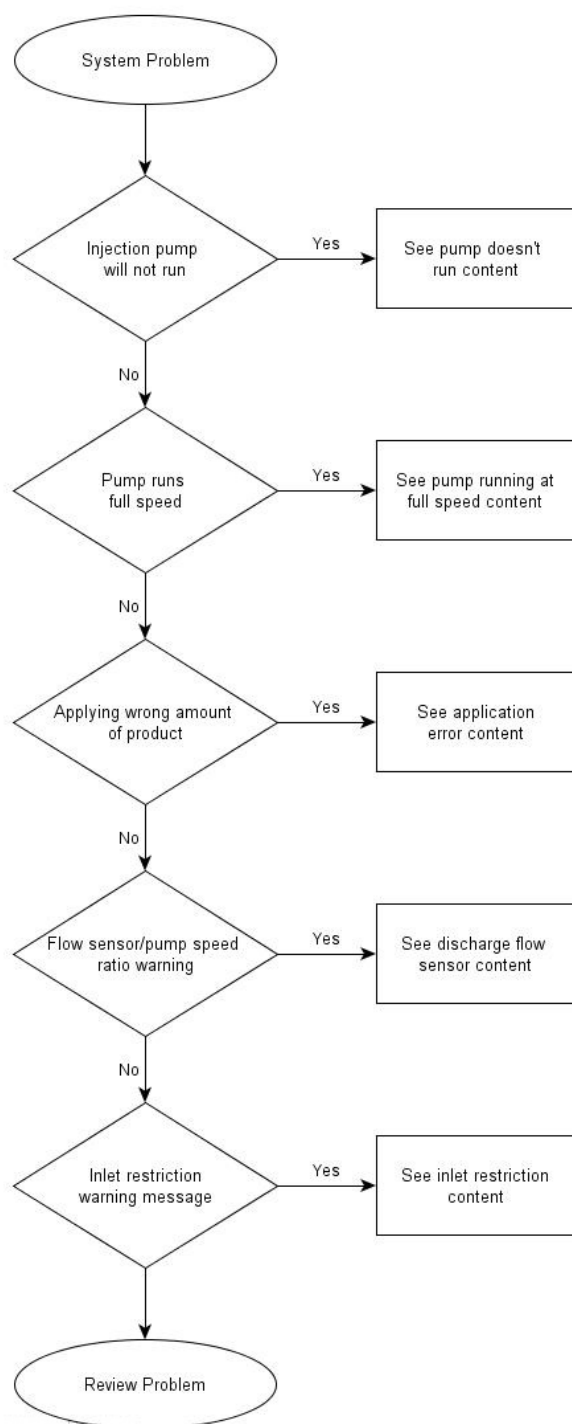
Note: For best results, run a new boundary when spraying the first pass of the headlands.

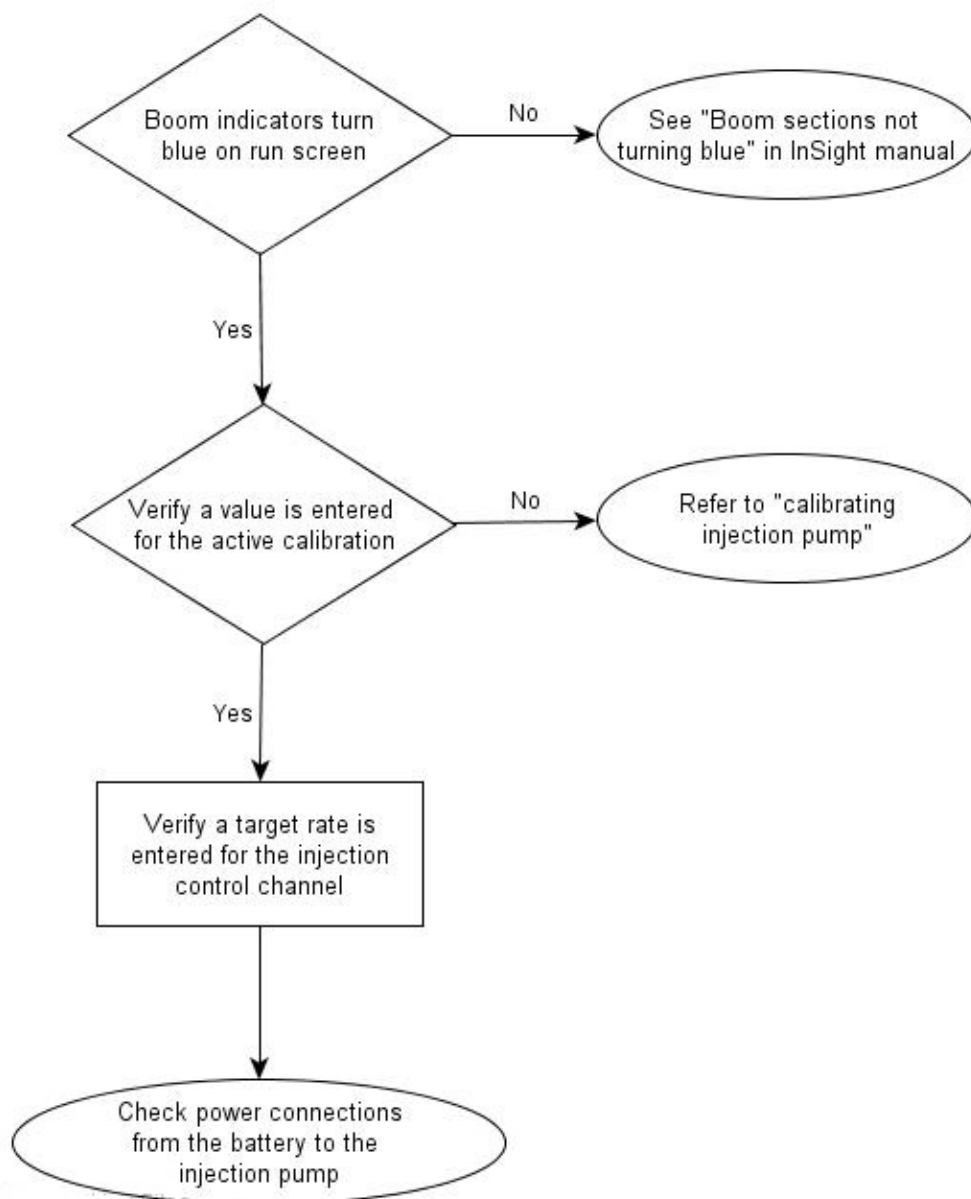
Booms turn on for a split second in the headlands

1. Make sure that the turn on look-ahead is greater than the turn off look-ahead.
2. Make sure GPS offsets are correct.
3. Make sure look aheads are less than three seconds each.

TROUBLESHOOTING DIRECT INJECTION CONFIGURATIONS

When controlling a chemical injection pump using the Injection Module PN: 4000896 the configuration requires the use of a Liquid Module PN: 4000394. The injection control is based off of the vehicle that has been configured for the liquid DirectCommand control channel. Once configured, the Injection pump uses the same switch inputs and ground speed input that has been configured for the liquid system.





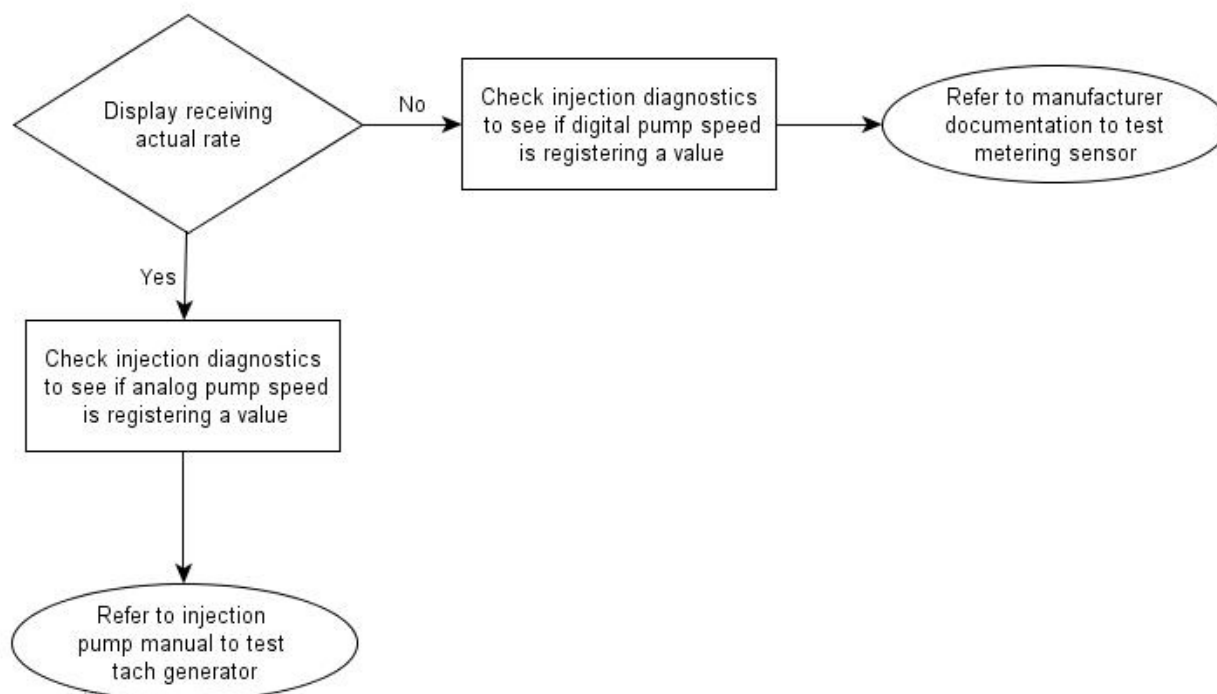
Direct Injection: Pump Doesn't Run

Power can be checked at multiple locations. First is the connection at the Injection module where the battery power cable plugs in. The second location is the output connection found on the injection module. The third is found at the 2 pin weather-pak tower found on the injection cable PN: 4000851-3. See table below.

BATTERY POWER PIN OUTS

	2 Pin Deutsch Plug	2 Pin Deutsch Receptacle	2 Pin WP Tower
Power 12 V	1	1	A
Ground	2	2	B

Direct Injection: Pump Runs Full Speed



Digital Pump Speed Sensor - The injection pump's digital pump speed sensor is used to provide actual rate feedback to the display. If the display is not receiving an actual rate the pump will run full speed and provide a "Rate Not Responding" warning message. See Digital Pump Speed Pin out table below for pin locations. With the section valves on the cabling can be tested by pulsing the signal and ground pins to verify the total applied increases, it is always best to pulse the pins at least 10 times to make sure the total applied will increase by a noticeable amount.

DIGITAL PUMP SPEED PIN OUTS

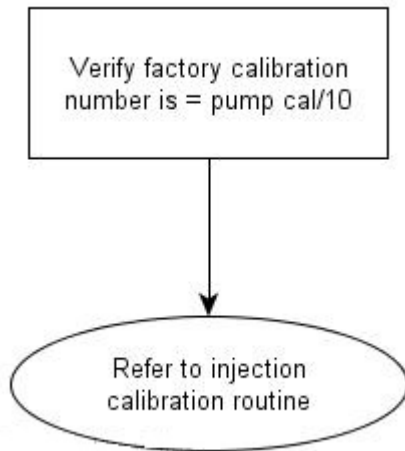
	Module Auxiliary Connection 12-Pin Socket	3-Pin Conxall
Power (5V)	12	2
Signal (5V)	3	3
Ground	6	1

Analog Pump Speed Sensor – The injection pump's analog speed sensor is used in conjunction with the digital pump speed sensor to provide accurate rate feedback. The sensor is a generator that produces a varying voltage dependent on the speed of the pump. The injection module will only get feedback from this sensor when the pump is rotating. If the analog sensor is not providing a feedback to the module, the pump will run full speed and the user will not have the ability to manually change the speed.

ANALOG SPEED PIN OUTS

	2 Pin WP Shroud	Varying Voltage
Signal	A	>9v at max pump speed
Ground	B	

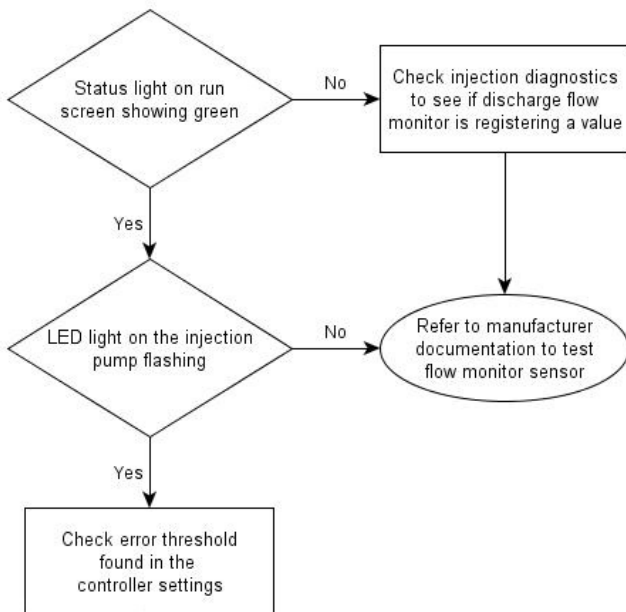
Direct Injection: Application Error



The injection module requires that a pump calibration be performed before actual application can occur. The calibration number found on the tag of the injection pump's digital speed sensor needs to be divided by a factor of 10 before entering it as the factory calibration number. If the factory cal number is entered wrong, the pump calibration routine will not finish due to a high application error.

- The pump calibration will fail if error is >10% from the factory calibration number.
- If the calibration fails check pump and plumbing for physical damage or excess wear.

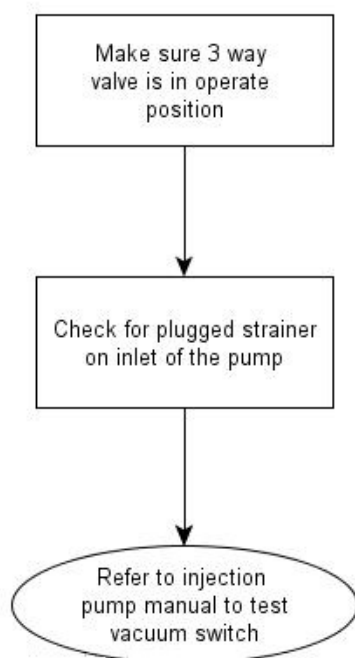
Direct Injection: Discharge Flow Sensor Error



The discharge flow sensor is used as a system check to see if product is actually exiting the output of the pump. The sensor is a shuttle valve that allows feedback for every stroke of the pump. If the user has enabled the Flow Monitor Warning the display will provide a message if the discharge flow sensor falls out of its calibrated value. See table below for pin locations.

DISCHARGE FLOW SENSOR PIN OUTS

	Module Auxiliary Connection 12-Pin Socket	3-Pin WP Shroud
Power (12V)	11	A
Signal	9	B
Ground	8	C



Direct Injection: Inlet Restriction

The injection pump has a vacuum switch that is used to warn operators of any restriction at the inlet of the pump. The sensor is a normally closed switch that opens if a restriction is encountered in the injection system. A warning will be displayed for the operator if the vacuum switch opens due to restriction. See table below for pin locations. The operator can test the system by unplugging the sensor, which will trigger the warning. If the operator jumps pins A and C, the warning will end.

VACUUM SWITCH PIN OUTS

	Module Auxiliary Connection 12-Pin Socket	3-Pin WP Tower
Power (12V)	2	C
Signal	10	A

TROUBLESHOOTING DIRECTCOMMAND GRANULAR APPLICATIONS

Run screen Granular channel(s) green light spreader indicator will not turn on

1. Make sure ground speed is registered a value greater than zero on the display.
2. Verify a target rate greater than zero is entered into the display.
3. Check the switch status found on the Run screen under System and Input Diagnostics. As the master switch is turned on and off, the Input Diagnostics window should change from black to green (if they do not, then refer to the installation instructions to verify switch connections).
4. Check high current connection into the Granular Control Module.

Master switch will not turn on when the foot pedal is on.

Make sure the Master Switch Input is set to "External 2" under the Auxiliary Input Settings.

AutoSwath turns on the booms too fast or too slow.

Check GPS offsets in the vehicle setup to verify all of the measurements are correct.

AutoSwath feature is not shown

The display must have the AutoSwath feature password-unlocked before the feature is available to the operator.

AutoSwath is checked on, but the spreader will not turn on.

1. Make sure the ground speed is registering a value greater than zero on the display.

2. Make sure the applicator is inside of the field boundary.

Conveyor turns off in the middle of the pass

Check the display and module firmware to see if they are running the latest version.

Total Applied does not match Actual Weight Applied

1. Make sure the shaft speed pls/rev are set correctly in the controller settings.
2. Make sure the controlling product is set to the correct units.

Rate not responding

1. Make sure there is a ground speed registering on the display.
2. Make sure the shaft speed pls/rev are set correctly in the controller settings. (You must make sure to account for sprocket ratios if chain driven).

$$\frac{\text{Driven Teeth}}{\text{Drive Teeth}} \times \text{Rate Sensor Pulses} = \text{True Pulses}$$

3. Check the user-defined value found under the controller settings for Strip-till.
4. The CFR number may need to be adjusted.

TROUBLESHOOTING SERIAL CONTROL APPLICATIONS (LIQUID AND GRANULAR)

Rate changes on the display, but not on the controlled console.

1. Verify the current firmware is running on the display and Application Rate module.
2. Check the settings specific to your controlled console. (For more information, refer to the Quick Reference Guide).
3. Check cabling and all connections.
4. Disconnect the serial connection and determine if the controller is functioning properly without the display.

TROUBLESHOOTING SERIAL CONTROL APPLICATIONS (LIQUID ONLY)

The display rate and serial-controlled rate do not match

1. Verify the current firmware on the display and the Application Rate Module.
2. Check the percent rate change. (Refer to the Quick Reference Guide for more information).

TROUBLESHOOTING SERIAL CONTROL APPLICATIONS (GRANULAR ONLY)

The display rate and serial-controlled rate do not match

1. Verify the current firmware on the display and Application Rate Module.
2. Check to make sure the nominal rate in the display matches the nominal rate in the serial-controlled console.

GLOSSARY OF APPLICATION SETTINGS

Configuration settings

- **Rate Outside of Field**

Rate that will be used outside of the field boundary. Zero stops product application. Last Good uses the previous rate before exiting the boundary. Rx Default uses the default rate written in the prescription file loaded.

- **Rate Display Smoothing**

Determines how the feedback from the control channel's rate sensor will be displayed on the run screen. When checked, the display will show the target rate when the application rate is within 10% of the target rate setting. When unchecked the display will show the raw feedback from the rate sensor.

- **Minimum Flow**

This setting is used to maintain a consistent spray pattern. The display will not allow flow to drop below the entered setting. Set to flow at the lowest operating pressure for the selected spray tips with all sections on. When spraying with one or more boom sections off, the display automatically reduces the minimum flow setting according to the reduced spray width. To adjust this setting, select the keyboard button and enter the desired numeric value.

- **Controller Time Delay**

Compensates for any delay in the control system when changing between different product flow rates during variable rate application.

Speed Input Settings

- **Primary Speed Source**

Main speed input source used by the display.

- **Backup Speed Source**

If the primary speed source fails, the display will use the backup if one is available.

- **Manual Speed**

If both of the speed input sources are unavailable, manual speed can be used in order for the control channel to provide application. Manual speed setting for use during static machine testing or by the control system in the absence of primary and backup speed signals.

Automatic Swath Control Settings

- **Turn-On Look-Ahead**

Determines how far ahead the display looks to turn the swath sections back on. This setting compensates for any delay in the product control system when the sections are turned on.

- **Turn-Off Look-Ahead**

Determines how far ahead the display looks to turn the swath sections off. This setting compensates for delay in the product control system when the boom sections are turned off.

- **Outside Boundary Option**

Determines the behavior of the sections when exiting the field boundary or prescription-mapped area.

- **Coverage Option**

Based on the coverage option selected, this setting determines the behavior of the swath section when entering/exiting an already applied area or field boundary. Options available include: Minimize Skip, Minimize Overlap, and User Defined Percentage.

Auxiliary Input Settings

- **Master Switch**

Switch that performs global master control of all rate control channels.

- **F1 – F11**

Settings determine the switch(s) that will operate the controlling channel specified from the configuration setup. Single switches can be used to control multiple channels and swath sections.

Controller Settings

- **Flow Meter Cal**

Calibration value representing the number of pulses that equal one-gallon of product flow through the controlling system.

- **Control Valve Configuration**

Setting specifies the type of control valve being used for the rate control functions of the controlling system.

- **Response Threshold**

Determines where the control channel switches between using Valve Response 1 and Valve Response 2 speed setting.

- **Valve Response 1**

Determines the speed of the servo valve when product control error exceeds the Response Threshold setting. Valve Response 1 represents the fast speed of the servo valve.

- **Valve Response 2**

Determines the speed of the servo valve when product control error is less than the Response Threshold setting. Valve Response 2 represents the slow speed of the servo valve.

- **Allowable Error**

Determines the percent of error that is allowed prior to the product control system making any flow rate changes.

- **Flow Control Delay**

Setting for period of time from master switch on and the start of product application to the first flow control correction. This setting can be used to eliminate unwanted correction of flow control at the start of each pass. Typical setting values are zero for granular and 1 –2 seconds for liquid application control.

- **Close Flow Control Valve When Rate Off**

When selected the controlling system will shut down when there is either a zero rate in the field or entering an already applied area. When unchecked the controlling system will stay in the last known state when the sections are shut off.

- **PWM Frequency**

The frequency that the PWM control valve is pulsed at. Settings can be found from the manufacturer of the valve. Typical settings range from 100-125 Hz.

- **PWM Gain**

Determines how aggressively the control valve responds when making rate change adjustments. The higher the value the more aggressive the response is.

- **Zero Flow Offset**

Represents the maximum duty cycle that is sent to the control valve without producing any hydraulic flow from the PWM valve. Using too high of a Zero Flow Offset value can cause the product control system to not properly control low rates. See the PWM valve manufacturer information for recommended settings.

- **Shaft Speed Cal**

Calibration number representing the pulses that equal one revolution of the rate control metering system.

- **Max Conveyor Speed**

Setting determines the maximum RPM of the conveyor that controls product distribution to the application point. This setting is used when controlling a spinner spreader applicator.

- **Fan Speed Cal**

Number of pulses that are generated by the sensor during one revolution of the blower fan shaft.

Setting determines the maximum RPM of the metering shaft that controls product distribution to the application point. This setting is used when controlling a granular strip-till toolbar.

- **Min Speed**

Setting represents the desired minimum speed of the blower fan. An alarm will sound if the blower fan speed falls below this value.

- **Max Speed**

Setting represents the desired maximum speed of the blower fan. An alarm will sound if the blower fan speed exceeds this value.

- **Low Fan Speed Shutoff**

When selected, granular product application of a strip-till toolbar will be shut off if fan speed drops below the Min Speed setting.

- **Rate Threshold**

Percentage difference between the Actual Rate and the Target Rate when the Rate Not Responding Message is displayed on the Run Screen.

Controller Settings: Direct Injection Pump Calibration

- **Factory Calibration**

The Factory Calibration Number is found on the tag of the Digital Pump Speed Sensor. This tag number represents pulses per 10 fluid ounces. Divide the tag number by 10 and enter this number. Once entered, this number should not be changed.

- **Perform Calibration**

Press the Perform Calibration button to begin the calibration procedure for the Direct Injection pump. The pump will not run until this calibration has been performed

- **Error Threshold**

The user-defined percentage of actual rate error allowed before an alarm sounds.

- **Error Delay**

The number of seconds that an actual rate falls out of the error threshold before an alarm sounds.

- **Error Threshold**

The percentage of perceived application error based on the discharge flow sensor.

- **Enable Warning**

The Enable Warning check box allows you the option of displaying the Flow Monitor Warning.

Field Notes



Note: For more information, see *"Report Settings"* on page 244.

- **Auto Generate Report**

When checked, this option will automatically generate the SmartReport each time product application is completed and the Field button is selected.

- **Prompt for Report Details**

When checked, this option will automatically launch the region summary data collection dialog each time a new region is created at the Run screen during application rate control.

- **Report Map Appearance — Multi-Color Rate**

Select this option to have the SmartReport display the application maps using the rate legend as displayed on the run screen. Single Color Coverage – Select this option to have the SmartReport display single color product coverage maps.

Run Screen

- **AutoSwath**

Use to enable/disable automatic control of boom section on/off state based upon field boundaries, prescription files, and previously applied areas.

FERTILIZER DEFAULT PRODUCT SETTINGS

Material	Type	Abbreviated name for display and predefined name for SMS	Percentage (in terms of lbs./100 lbs.)			Density
			N	P (P ₂ O ₅)	K (K ₂ O)	
Anhydrous Ammonia	Liquid under pressure	NH ₃	82	0	0	5.14 lbs./gal. (at 60° F)
28% UAN	Liquid	28% UAN	28	0	0	10.67 lbs./gal.
30% UAN	Liquid	30% UAN	30	0	0	10.86 lbs./gal.
32% UAN	Liquid	32% UAN	32	0	0	11.06 lbs./gal.
Ammonium polyphosphate (starter)	Liquid	Ammonium polyphosphate	10	34	0	11.73 lbs./gal.
Ammonium nitrate	Dry	Ammonium nitrate	34	0	0	N/A
Ammonium phosphate	Dry	Ammonium phosphate	10	34	0	N/A
DAP	Dry	DAP	18	46	0	N/A
MAP	Dry	MAP	11	52	0	N/A
Ammonium sulfate	Dry	Ammonium sulfate	21	0	0	N/A
Urea	Dry	Urea	46	0	0	N/A
Potash	Dry	Potash	0	0	60	N/A
Triple superphosphate	Dry	Triple superphosphate	0	46	0	N/A

FERTILIZER DEFAULT PRODUCT SETTINGS (CONTINUED)

Material	Type	Abbreviated name for display and predefined name for SMS	Percentage (in terms of lbs./100 lbs.)			Density
			N	P (P ₂ O ₅)	K (K ₂ O)	
Ordinary superphosphate	Dry	Superphosphate	0	20	0	N/A
Potassium nitrate	Dry	Potassium nitrate	13	0	44	N/A

JOHN DEERE SPECIFIC INSTRUCTIONS

Here are some tips to remember when operating the display in conjunction with a Spray Star control system. Refer to the quick reference sheet PN: 2002831-38 and other sections of the user guide for specific setup and operation instructions.

MASTER SWITCH INPUT

After setting up a configuration in the display make sure to change the master switch input setting from standard to optional. This will tell the display to read the foot pedal for the master switch input status.

MASTER SWITCH USAGE

When manually shutting off all boom sections in the field, use the foot pedal switch. Leave the OEM master switch on the hydro handle ON during field use. Using the hydro handle switch may lead to improper field coverage, poor AutoSwath performance, and inaccurate spray records. Only use the John Deere master switch when completely shutting down the sprayer to transport or service the machine.

DISPLAY TARGET RATE

The display must have a non-zero target rate entered in the display before the boom valves will open for product application. Ensure that the target rate entered into the display and Spray Star match to avoid any unwarranted alarms or warnings on the display.

DISPLAY DATA COLLECTION

The display will create a coverage map of all product application while logging actual application rate from the product control system flow meter.

DISPLAY AUTOSWATH BOOM SECTION CONTROL

The display will automatically control the boom section on/off status based upon previously applied area, field boundary, and any mapped internal field boundaries.

SPRAY STAR APPLICATION RATE

The display will not control the rate based upon the target rate value entered into the display. Application rate is controlled exclusively by the Spray Star display.

SPRAY STAR RINSE CYCLE

When using the rinse cycle feature on the Spray Star, the display must have the boom sections on to allow the Spray Star to properly run the rinse routine. To ensure that boom sections are on:

1. Enter a target rate into the display
2. Turn the foot pedal master switch on
3. Turn all boom switches on
4. Boom indicators on the display Run Screen must be blue showing that boom valves are on

CONTROL VALVE SETTINGS

Liquid Product Control Valve Configuration Options

There are six different common ways of controlling liquid product application, which can be accessed under the Control Valve Configuration list on the Controller Settings window, which is shown on *"Liquid DirectCommand Controller Settings" on page 184.*

- **Inline Servo**

Rate control is achieved through actuating a butterfly or ball valve found in the solution hose that goes to the booms. When the valve opens, the flow increases and when the valve closes, the flow decreases.

- **Bypass Servo**

Rate control is achieved through actuating a butterfly or ball valve found in the return line to the solution tank. When the valve opens, the flow decreases and when the valve closes the flow increases.

- **PWM 12 volt**

Rate control is achieved through speed changes to the solution pump. The PWM 12 Volt setting is programmed to pulse the power to an electric solenoid valve used to adjust the hydraulic flow to the solution pump.

- **Pump Servo**

Rate control is achieved through speed changes to the solution pump. The pump servo setting is programmed to control an electric motor used to actuate a hydraulic valve to adjust the hydraulic flow to the solution pump.

- **PWM Ground**

Rate control is achieved through speed changes to the solution pump. The PWM Ground setting is programmed to pulse the ground to an electric solenoid valve used to adjust the hydraulic flow to the solution pump.

- **Calibrated Reflow**

Three-way boom valves are used to return product back to the tank in the off state. The returned flow is calibrated with adjustment at each valve. Calibration is required any time the nozzles are changed.

SERVO CONTROL VALVE SETTINGS (BY MANUFACTURER)

Flow Control Valve	Control Valve Configuration	Valve Response 1	Valve Response 2	Response Threshold
Raven Accu-Flow, 20 GPM Single Valve System (Fast Close Valve)	In-line Servo	40%	10%	5
Raven Accu-Flow, 10 GPM Dual Valve System (Standard Valve)	In-line Servo	100%	24%	5
Raven Accu-Flow, 30 GPM Single Valve System (Fast Close Valve)	In-line Servo	40%	10%	5
Raven Accu-Flow, 30 GPM Dual Valve System (Standard Valve)	In-line Servo	100%	24%	5
Raven Flow Control Valve, 3/4" (Standard Valve)	In-Line or Bypass Servo	100%	24%	1
Raven Flow Control Valve, 3/4" (Fast)	In-Line or Bypass Servo	40%	10%	5
Raven Flow Control Valve, 1" (Standard)	In-Line or Bypass Servo	100%	24%	2
Raven Flow Control Valve, 1" (Fast)	In-line or Bypass Servo	40%	10%	5
Raven Flow Control Valve, 1 1/2" (Standard)	In-line or Bypass Servo	100%	24%	3
Raven Flow Control Valve, 2" (Standard)	In-line or Bypass Servo	100%	24%	8
Raven Flow Control Valve, 2" (Fast)	In-line or Bypass Servo	40%	10%	15
Raven Flow Control Valve, 3" (Standard)	In-line or Bypass Servo	100%	24%	15
Mid-Tech, 3/4"	In-line or Bypass Servo	40%	10%	5
Mid-Tech, 1"	In-line or Bypass Servo	40%	10%	8
Mid-Tech, 1 1/2"	In-line or Bypass Servo	40%	10%	11
Mid-Tech, 2"	In-line or Bypass Servo	40%	10%	15
Dickey-John Nh3 Heat Exchanger	In-line Servo	40%	10%	8

CONTROL VALVE SETTINGS FOR SELF-PROPELLED SPRAYERS

Flow Control Valve or Sprayer Model (and year if applicable)	Control System	PWM Frequency	Typical Gain Range	Zero Offset	Allowable Error	Valve Response 1	Valve Response 2	Response Threshold
Apache 510/710/1010/1210 (2006 and up)	In-line Servo				2%	100%	24%	Use a starting value of 5. * See note below.
All Case IH sprayers when using AIM Command	AIM Command Inline Servo				2%	100%	24%	3
Case IH Surveyor with A-post	Non-AIM Command Mode PWM 12-volt	122	**700-900	35	2%			
Case IH 3320	Non-AIM Command Mode PWM 12-volt	122	**700-900	35	2%			
Case IH 4420 with A-post	Non-AIM Command Mode PWM 12-volt	122	**700-900	35	2%			
Case IH 3200 (KZCO Valve)	Non-AIM Command Mode By-Pass Servo				2%	40%	10%	5
Case IH 4260 with Raven valve	Non-AIM Command Mode By-Pass Servo				2%	100%	24%	3
Case IH 4260 with KZCO valve	Non-AIM Command Mode By-Pass Servo				2%	40%	10%	5
Case IH 3150 with Raven valve	Non-AIM Command Mode In-Line Servo				2%	100%	24%	3

Case IH 3185 with Raven valve	Non-AIM Command Mode In-Line Servo				2%	100%	24%	3
Case IH 3310	Non-AIM Command Mode PWM 12-Volt	122	**700-900	30	2%			
Case IH 4410	Non-AIM Command Mode PWM 12-Volt	122	**700-900	30	2%			
GVM Prowler (2007)	Pump Servo				2%	100	24	10
GVM Predator (2007)	Servo				2%	100%	24%	*See note below
Hagie 284, 284XP, DTS-8	Pump Servo				2%	100%	24%	3
Hagie 2100, 2101, DTS-10	Pump Servo				2%	100%	24%	3
Hagie STS 10, 12 (2000-2005)	Pump Servo				2%	100%	24%	20
Hagie STS 10, 12, 14, 16 (2006 and up)	PWM 12-volt	122	**350-600	20	2%			
Hardi 39-pin Spray II switch box (2006 and 2007)	Calibrated Reflow				2%	100%	40%	2
John Deere 4700, 47X0, 49X0	No rate control provided							
Miller Nitro N1 and N2	Pump Servo				2%	100%	24%	20
Miller Nitro N4	Pump Servo				2%	100%	24%	12
Montana Paruda (2007)	Calibrated Reflow				2%	100%	40%	2 (Imperial) or 11.4 (Metric)
RoGator 864, 874, 1064, 1074	PWM Ground	122	**500-700	30	2%			
RoGator 1054	Pump Servo				2%	100%	24%	3
RoGator 1254	Pump Servo				2%	100%	24%	3

RoGator 1264, 1274 (up to 2006)	PWM Ground	122	**500- 700	30	2%			
RoGator 1274, 1286 and SS Series (2007 and up)	PWM Ground	122	**500- 700	30	2%			
Spra-Coupe 3X40, 3X50, 4X40, 4X50	In-Line Servo				2%	100%	24%	3
Spra-Coupe 7000 with factory pump switch	PWM Ground	122	**500- 700	30	2%			
Spra-Coupe 7000 without factory pump switch	PWM Ground	122	**500- 700	30	2%			
TerraGator XX03, XX04, XX44	In-Line Servo				2%	40%	10%	15
Tyler Patriot, Patriot II, XL, 150, 150XL and WT	Check for In-Line Servo or By-Pass Servo Control				2%	100%	24%	3
Walker	Pump Servo				2%	100%	24%	3

*Adjust this number to fit your particular configuration. Refer to the Application section in the display User Manual for more information on adjusting this response threshold.

**If you are using a PWM control valve, some adjustment may need to be made to achieve optimal pump response to the PWM gain value. Increase the Gain value to make the display more responsive; decrease the Gain value to smooth the response.

LIQUID SERVO SETTINGS DESCRIPTION

• Valve Response 1

- Default Value: 100%
- Determines the speed of the servo valve when product control error exceeds the Response Threshold setting.
- Decreasing the value will cause the servo valve to run slower.

• Valve Response 2

- Default Value: 24%
- Determines the speed of the servo valve when product control error is less than the Response Threshold setting.
- Decreasing the value will cause the servo valve to run slower.

• Allowable Error

- Default Value: 2%

- Determines the percent of error that is allowed prior to the product control system making any flow rate corrections.
- 2% - 3% is the normal dead band setting range.
Too low of a setting value can cause the product control system to continually hunt for the target application rate.
Too high of a setting will cause excessive product application error.

- **Response Threshold**

- Default Value: 3
- Determines where the control system switches between using Valve Response 1 or Valve Response 2 speed setting.
- Leaving all other valve control settings at the default value and making a small adjustment to this setting is usually all that is required to fine tune system performance.
Decreasing this value will have the overall effect of speeding up servo valve response.
Increasing this value will have the overall effect of slowing servo valve response.

LIQUID PWM CONTROL VALVE SETTINGS DESCRIPTION

- **PWM Frequency**

- Default Value: 100
- The frequency that the PWM control valve is pulsed at. Typical settings range from 100 - 125. See PWM valve manufacturer information for recommended settings.

- **Gain**

- Default Value: 800
- This setting determines how aggressively the control valve responds when making rate change adjustments. The higher the value the more aggressive the response is.

- **Zero Offset**

- Default Value: 30
- This setting represents the maximum duty cycle that is sent to the control valve without producing any hydraulic flow from the PWM valve. Using too high of a Zero Offset value can cause the product control system to not properly shut off. See PWM valve manufacturer information for recommended settings.

- **Allowable Error**

- Default Value: 2%
- 2% - 3% is the normal dead band setting range.
- Too low of a setting value can cause the product control system to continually hunt for the target application rate.
- Too high of a setting will cause excessive product application error.

SPINNER SPREADER SERVO SETTINGS DESCRIPTION

- **Valve Response 1**

- Default Value: 40%
- Determines the speed of the servo valve when product control error exceeds the Response Threshold setting.
- Decreasing the value will cause the servo valve to run slower.

- **Valve Response 2**

- Default Value: 8%
- Determines the speed of the servo valve when product control error is less than the Response Threshold setting.
- Decreasing the value will cause the servo valve to run slower.

- **Allowable Error**

- Default Value: 2%
- Determines the percent of error that is allowed prior to the product control system making any conveyor RPM corrections.
- 2% - 3% is the normal dead band setting range.
- Too low of a setting value can cause the product control system to continually hunt for the target application rate.
- Too high of a setting will cause excessive product application error.

- **Response Threshold**

- Default Value: 15
- Determines where the control system switches between using Valve Response 1 or Valve Response 2 speed setting.
- Leaving all other valve control settings at the default value and making a small adjustment to this setting is usually all that is required to fine tune system performance.

Decreasing this value will have the overall effect of speeding up servo valve response.

Increasing this value will have the overall effect of slowing servo valve response.

SPINNER SPREADER PWM CONTROL VALVE SETTINGS DESCRIPTION

- **PWM Frequency**

- Default Value: 100
- The frequency that the PWM control valve is pulsed at. Typical settings range from 100 - 125. See PWM valve manufacturer information for recommended settings.

- **PWM Gain**

- Default Value: 100
- This setting determines how aggressively the control valve responds when making spinner speed adjustments. The higher the value the more aggressive the response is.

- **Zero Flow Offset**

- Default Value: 30
- This setting represents the maximum duty cycle that is sent to the control valve without producing any hydraulic flow from the PWM valve. Using too high of a Zero RPM Offset value can cause the conveyor to not properly shut off. See PWM valve manufacturer information for recommended settings.

- **Allowable Error**

- Default Value: 2%
- 2% - 3% is the normal dead band setting range.
- Too low of a setting value can cause the product control system to continually hunt for the target application rate.
- Too high of a setting will cause excessive product application error.

SPINNER SPEED PWM VALVE SETTINGS DESCRIPTION

- **Fan Speed Cal**

- Default Value: 4
- The Fan Speed Cal number is the number of pulses that are generated by the sensor during one revolution of the spinner dish.

- **PWM Frequency**

- Default Value: 100
- The frequency that the PWM control valve is pulsed at. Typical settings range from 100 - 125. See PWM valve manufacturer information for recommended settings.

- **PWM Gain**

- Default Value: 20
- This setting determines how aggressively the control valve responds when making rate change adjustments. The higher the value the more aggressive the response is.

- **Zero RPM Offset**

- Default Value: 30
- This setting represents the maximum duty cycle that is sent to the control valve without producing any hydraulic flow from the PWM valve. Using too high of a Zero RPM Offset value can cause the product control system to not properly shut off. See PWM valve manufacturer information for recommended settings.

- **Allowable Error**

- Default Value: 2%
- 2% - 3% is the normal dead band setting range.
- Too low of a setting value can cause the product control system to continually hunt for the target application rate.
- Too high of a setting will cause excessive product application error.

- **Auto Control Check Box**

- Default is unchecked
- Checking the Auto Control check box allows you to control the spinner speed.

DICKEY JOHN NH3 CONVERSIONS

CONVERSION FORMULAS

The following formulas can be used to convert the Dickey John flow sensor constant to a value that represents pulses/gallon of anhydrous ammonia for use by the display.

Conversion Formula
<p>Formula for flow meter calibration for Dickey John reading pounds of anhydrous</p> $\frac{\text{Flow sensor constant (pulses/in}^3\text{)} \times 1728 \text{ (in}^3\text{/ft}^3\text{)} \times 5.11 \text{ (lbs of anhydrous/gal)}}{\text{Density (lbs. of anhydrous/ft}^3\text{)}}$
<p>Formula for flow meter calibration for Dickey John reading pounds of Nitrogen</p> $\frac{\text{Flow sensor constant (pulses/in}^3\text{)} \times 1728 \text{ (in}^3\text{/ft}^3\text{)} \times 4.22 \text{ (lbs of N/gal)}}{\text{Density (lbs. of N/ft}^3\text{)}}$

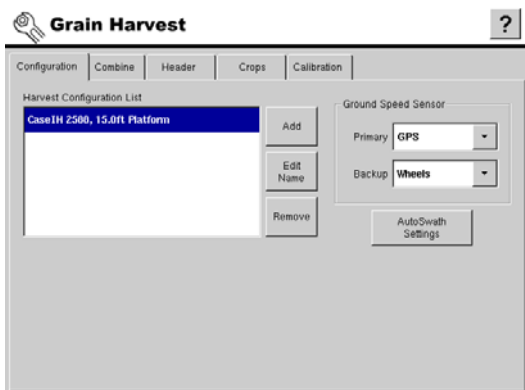


Note: The flow sensor constant is tagged on the Dickey-John flow meter. The density setting comes from a chart in the Dickey-John documentation and is not provided in this manual.

HARVEST

GRAIN HARVEST SETUP TABS

CONFIGURATION



The Grain Harvest setup pages contain all the necessary settings to configure the display for logging, mapping, and rate control for planting operations. The combination of Configuration, Combine, Header, Crop and Calibration are referred to as a **Configuration** within the display.

- **Configuration tab**

Add and edit operating configurations. For more information, see [“Configuration Tab Buttons” on page 281](#).

- **Combine tab**

Set up and configure additional combines. For more information, see [“Combine Tab Buttons” on page 284](#).

- **Header tab**

Set up and configure additional headers. For more information, see [“Header Tab Buttons” on page 287](#).

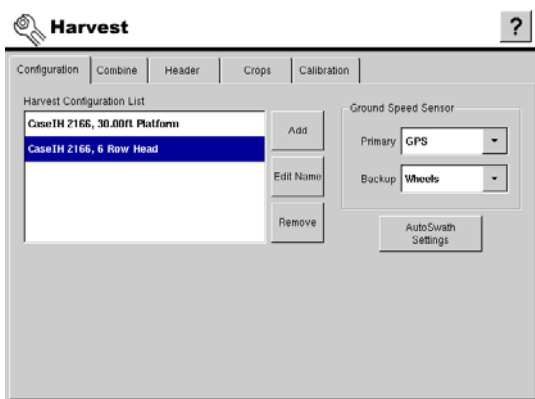
- **Crops tab**

Add and edit crops. For more information, see [“Crops Tab Buttons” on page 291](#).

- **Calibration tab**

Perform calibrations. For more information, see [“Calibration Tab Buttons” on page 294](#).

CONFIGURATION TAB BUTTONS



The Configuration Tab is where harvest configurations are made and displayed. Press the **Setup** button and then the **Harvest** button to reach this screen.

- To see a Grain Harvest Configuration Menu, see [“Grain Harvest Menu Tree” on page 171](#).

- **Add button**

Press to add a new harvest configuration. An on-screen wizard will walk you through the setup process in a step-by-step manner. New combines and headers can be created during the setup process. For more detailed information, see [“Adding A New Configuration” on page 282](#).

- **Edit Name button**

Press to edit the name of a selected configuration. The on-screen keyboard will be displayed to complete the desired text edits.

- **Remove button**

Press to remove a configuration. The combine and header will not be deleted.



WARNING: When deleting a configuration all regions and harvest data logged with that configuration will be deleted!

The ground speed source can be changed in this box.

- If any source other than GPS is selected, the primary speed source is the only setting that you will need to set.
- If you select GPS as the primary speed source, then you will also need to select a secondary (backup) source.

- **AutoSwath Settings button**

The AutoSwath feature automatically increases or decreases the swath width of the combine head according to your field's boundaries and already-harvested areas. The AutoSwath feature includes sensitivity levels, which compensate for varying degrees of GPS performance. To change these sensitivity levels, press the AutoSwath Settings button.

You must have an unlock code to activate the AutoSwath feature. If you have been using AutoSwath with the DirectCommand™ system, the feature is already activated and ready to use. If you have not unlocked the AutoSwath feature yet, the code can be purchased through your local Ag Leader dealer.

For more detailed information on AutoSwath, see the following pages:

- [“AutoSwath Sensitivity Settings” on page 283](#)
- [“Automatic Swath Control, Run Screen Operation” on page 304](#)

ADDING A NEW CONFIGURATION

To add a new configuration press the **Add** button. The Operating Configuration Wizard appears.

1. Select Combine

Press **New** to add a new combine or select an existing one from the list. For detailed information, see [“Adding A New Combine” on page 285](#).

Press **Next** to continue.

2. Select Header

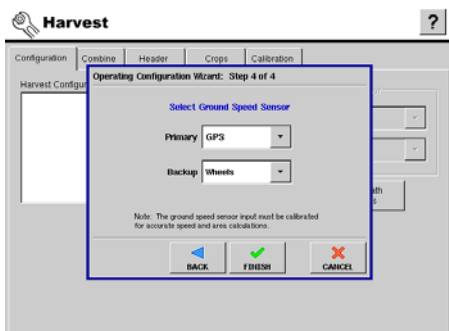
Press **New** to add a new header or select an existing one from the list. For detailed information see [“Adding a New Header” on page 288](#).

Press **Next** to continue.

3. Edit New Configuration Name

Use the keyboard button to edit the name of the configuration.

Press **Next** to continue.

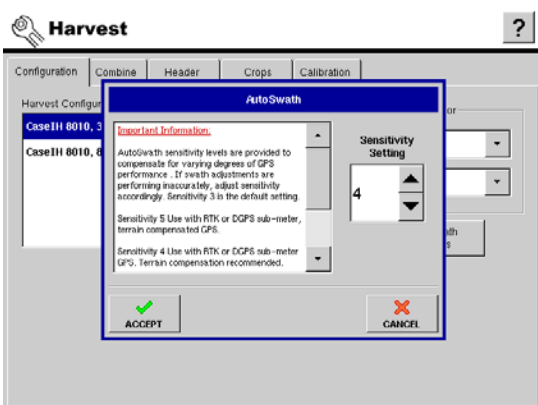


4. Select Ground Speed Source

Select your ground speed source. If you will be using GPS as the primary you will need to select a secondary source.

Press **Finish** to complete the configuration process.

AUTOSWATH SENSITIVITY SETTINGS



The AutoSwath feature automatically increases or decreases the swath width of the combine head according to your field's boundaries and already-harvested areas. For a more detailed explanation of the AutoSwath feature, see *"Automatic Swath Control, Run Screen Operation"* on page 304.

The AutoSwath feature includes sensitivity levels, which compensate for varying levels of GPS accuracy. To change sensitivity levels, select the Configuration Tab, and press the **AutoSwath Settings** button.

If swath adjustments are performing inaccurately, adjust the sensitivity accordingly. Sensitivity 3 is the default setting.

Other settings include:

- **Sensitivity 5**

Use with RTK or DGPS sub-meter, terrain-compensated GPS.

- **Sensitivity 4**

Use with RTK or DGPS sub-meter GPS. Terrain compensation recommended.

- **Sensitivity 3**

Use with sub-meter accurate GPS.

- **Sensitivity 2**

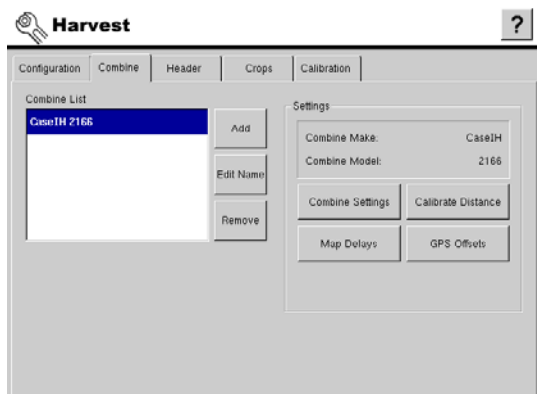
Use with 1+ meter accurate GPS.

- **Sensitivity 1**

Swath segments are all on or all off. Use with 1+ meter accurate GPS.

COMBINE TAB

COMBINE TAB BUTTONS



The Combine Tab provides functionality for setting up and configuring additional combines. The combine list will show any combines that have already been created.

To see a Harvest Configuration menu that includes information on the Combine Tab, see [“Grain Harvest Menu Tree” on page 171.](#)

- **Add button**

Add a new combine. A wizard will walk you through setting up the combine. For detailed information, see [“Adding A New Combine” on page 285.](#)

- **Edit button**

Edit the name of a combine in the list. To edit highlight the name of a combine in the list and then press this button. Use the on screen keyboard to edit the name.

- **Remove button**

Remove a combine. The configuration and any regions and harvest data logged with it will be deleted.



WARNING: When deleting a combine any configurations using it will be deleted. All regions and harvest data logged with the configuration will be deleted!

- **Combine Settings button**

Change the advanced settings for the selected combine. The values should not be changed unless instructed to do so by Ag Leader Technical Support.



WARNING: Do not change any of the advanced combine settings without specific instruction from Ag Leader Technical Support!

- **Map Delays button**

Press to change the Map Delay settings.



WARNING: Do not change settings from the default value of 4 without specific instruction from Ag Leader Technical Support!

- **Calibrate Distance button**

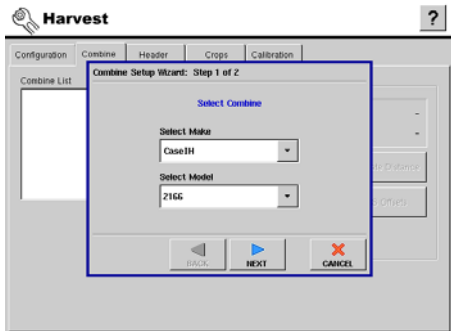
Press to launch speed sensor calibration wizard. For detailed information see [“Calibrate Distance” on page 285.](#)

- **GPS Offsets button**

Specify the location of the GPS antenna in relation to the vehicle. A wizard will walk you through these edits. For detailed information see [“GPS Offsets” on page 286.](#)

ADDING A NEW COMBINE

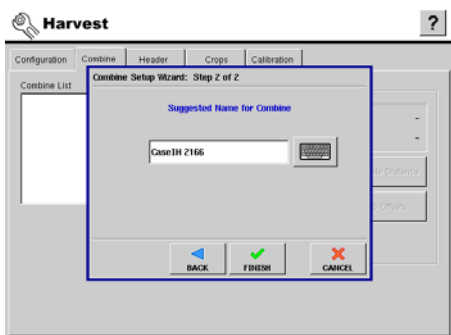
To start the process of adding a new combine press the **Add** button.



1. Select Make and Model

Select the correct combine make and model from the list boxes.

Press **Next** to continue.



2. Edit Name

Use the keyboard button to edit the name of the combine.

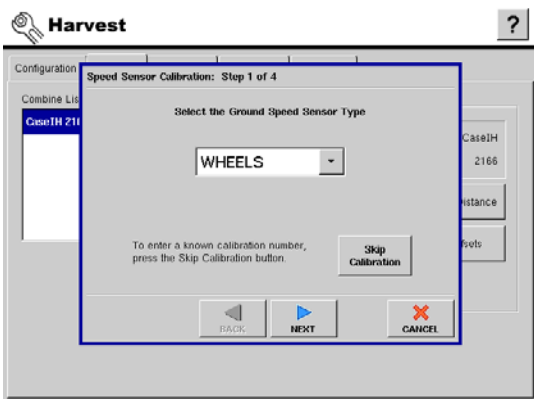
Press **FINISH** to complete the setup process.

CALIBRATE DISTANCE

The following procedure describes a speed sensor calibration. Before beginning, keep in mind these two tips:

- Before beginning the speed sensor calibration, you should mark a measured distance to drive. The default distance currently in the display (and the recommended distance) is 100 feet, or 50 meters if using metric measurements.
- For the most accurate results, this calibration should be performed in field conditions (not on gravel or paved roads)

To begin, go to the **Combine** Tab, select a **Combine** from the list and press the **Calibrate Distance** button to begin the Speed Sensor Calibration wizard.



1. Select Speed Input

Select the sensor type to calibrate.

Press **Next** to continue.

2. Calibration Distance

The display defaults to 100 feet (50 meters) distance for calibration.

Press **Edit Distance** to change this number, if needed. This value must match the actual distance of the course driven for calibration.

Press **Next** to continue.

3. Start Driving Course

Follow the on-screen directions.

Press **Start** to begin the calibration process.



Note: When the vehicle is at the starting point, the display should read 0.0. If it displays another number, press the **Reset** button.

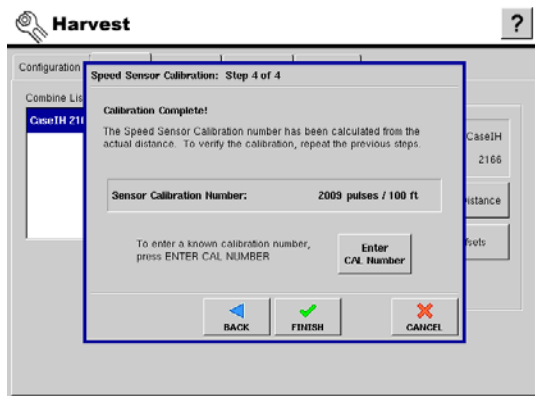
4. Course Completed

Drive vehicle over the measured course and press **Stop**.

Press **Next** to continue to final step.



Note: It is recommended that you run the distance calibration twice to confirm an accurate calibration.



5. Calibration Completed

Press **Finish** to complete calibration and store the calculated value.

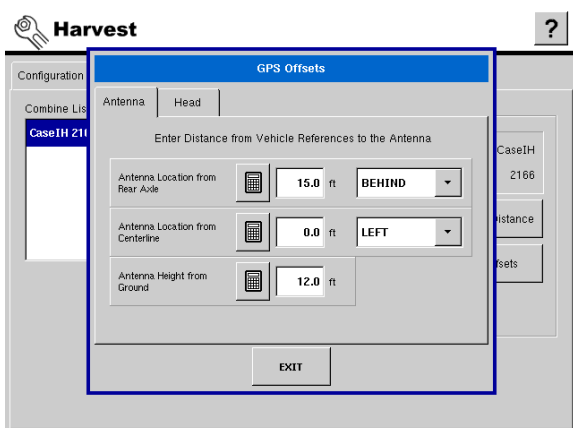


Note: Calibration settings can be manually adjusted if desired by pressing **Enter CAL Number** and making small changes to the setting.

GPS OFFSETS

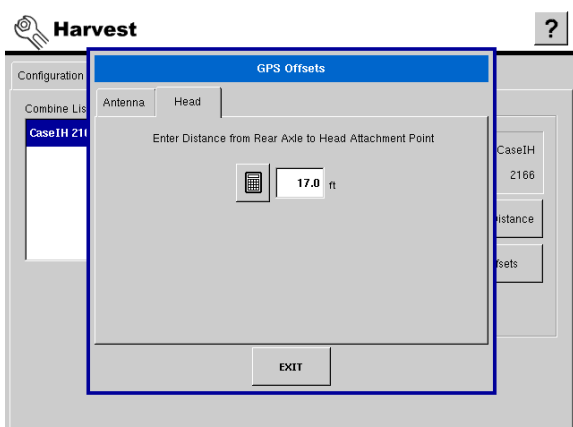
After completing the process of setting up a **Combine**, you must also configure GPS Offsets. The GPS Offsets define where machine's rear axle is in relation to the GPS antenna. These settings are used by mapping and AutoSwath. To configure these, go to the Combine Tab and press the GPS Offsets button. The GPS Offsets window appears, as shown.

Antenna Offsets



The Antenna Tab contains three different settings. Accuracy when measuring for a specific setting is essential to ensure proper machine performance.

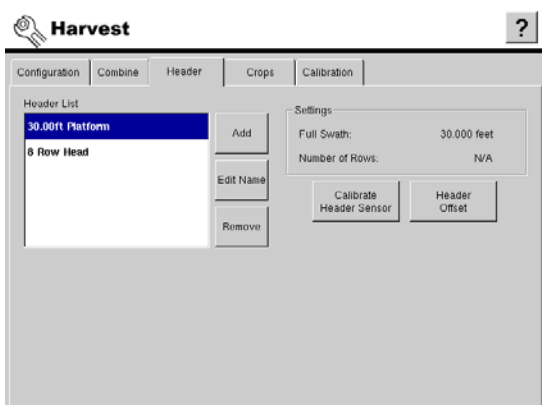
- Measure and enter the horizontal distance from the rear axle to the position of the GPS antenna. Select **In Front** or **Behind** from the list box to indicate the position of the antenna in relation to the rear axle.
- Measure and enter the horizontal distance from the centerline of the vehicle to the position of the GPS antenna. Select **Left** or **Right** to indicate the position from the vehicle centerline.
- Measure and enter the vertical height of the antenna above the ground.



The Head Tab allows you to enter in the distance from the head attachment point to the rear axle. Use the numeric keypad to enter in the distance to the axle.

HEADER TAB

HEADER TAB BUTTONS



The header tab provides functionality for setting up and configuring additional headers. The header list will show any headers that have already been created.

To see a Harvest Configuration Menu that includes detailed information on the Header Tab, see *“Grain Harvest Menu Tree” on page 171.*

• Add button

Add a new header. A wizard will walk you through setting up the header. For detailed information see *“Adding a New Header” on page 288.*

• Edit Name button

Edit the name of a header in the list. To edit highlight the name of a header in the list, and then press this button.

• Remove button

Remove a header. The header and any regions or configurations using it will be deleted.



WARNING: When a header is removed all regions and configurations using the header are deleted!

- **Ca lb rate Header Sensor button**

Launches the Header Sensor Calibration wizard, which will walk you through calibrating the header sensor that turns area logging on and off. See [“Calibrating The Header Sensor” on page 289](#) later in this chapter for wizard guidance.

- **Header Offset button**

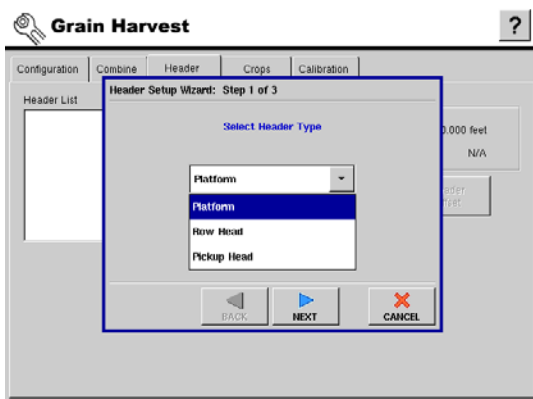
Allows you to compensate for the distance between the GPS antenna (located in the center of the vehicle), and the center of the header's swath. For detailed information, see [“Header Offset” on page 290](#).

- **Settings Box — Full Swath and Number of Rows**

The Settings box displays the full swath width and the number of rows. To see these values, select the appropriate header in the header list.

ADDING A NEW HEADER

Press the **Add** button to set up a new header. The Header Setup Wizard appears, as shown.



1. Choose Header Type

Choose the header type from the drop down list. Choose either **Platform**, **Row Head** or **Pickup Head**.

- If you chose **Platform**, proceed to **Step 2a** below.
- If you chose **Row Head**, proceed to **Step 2b** below.
- If you chose **Pickup Head**, proceed to [“\(Pickup Head\): Enter the Cut Width for the Swath” on page 288](#).

Press **Next** to continue.

2. (Platform Head): Enter the Full Swath Width

Use the numeric keypad to enter the full swath width of the Platform Head.

Press **Next** to continue.



Note: If you are setting up a platform type header, it is recommended that you enter a full swath width that is one foot narrower than the actual header width. This is done to promote more accurate area calculations, the header will rarely harvest the crop at 100% of the actual platform width.

(Row Head): Enter the Number of Rows and Row Spacing

Use the up and down arrows to enter in the full swath width of the Row Head.

Press **Next** to continue.

(Pickup Head): Enter the Cut Width for the Swath

Use the numeric keypad to enter the Cut Width for the Pickup Header's swath.

Press **Next** to continue.



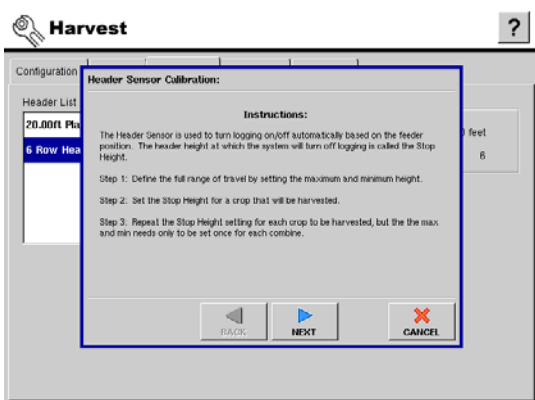
3. Edit Header Name

Use the keyboard button to edit the name of the header, if desired.

Press **Finish** to complete the Header setup process.

CALIBRATING THE HEADER SENSOR

Prior to logging harvest data, you must calibrate the header sensor. Crops must be set up within the display to proceed with the calibration routine. Go to the **Header** Tab, select the correct header from the list and press the **Calibrate Header Sensor** button. The Header Sensor Calibration wizard appears.



1. Read Instructions

Read the header sensor calibration instructions fully before proceeding.

Press **Next** to start the calibration process.

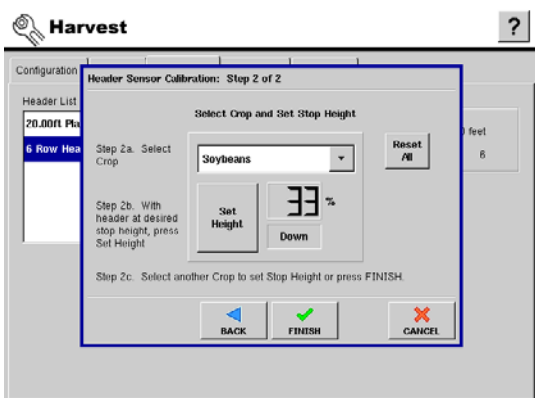
2. Set Max and Min Header Height

Set the maximum and minimum header height.

- a. Raise the header all of the way up and press **Set Max**.
- b. Lower the header all of the way down and press

Set Min.

Press **Next** to continue.



3. Select Crop and set Stop Height

Select the correct crop type from the list box. Raise or lower the header to the height where you would like to have the area logging turn on and off. Press **Set Height**.



Note: The position relating to the Stop Height will be represented as a percentage. (33% in the example to the left).

Move the header above and below the Stop Height. When below the Stop Height the display reads **Down**; when above the Stop Height the display reads **Up**.

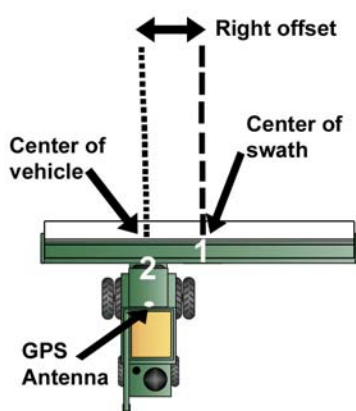
To clear Min, Max, and Stop Height values for all headers, press **Reset All**.



WARNING: If Reset All is pressed the sensor will have to be calibrated for all headers!

HEADER OFFSET

If the header of your vehicle is mounted asymmetrically to the vehicle's center, this can affect the accuracy of the GPS data you are receiving. By pressing the **Header Offset** button, located on the Header Tab, you can compensate for the distance between the center of the vehicle, and the center of the header's swath.



1. Measure distance

First, measure the distance between the GPS antenna and the center of the header's swath.

2. Pull up the Header Offset window

Select the Header tab and then select a header from the Header list. Press the **Header Offset** button on the Header tab. The Header Offset window appears, as shown at left.

3. Enter the distance amount

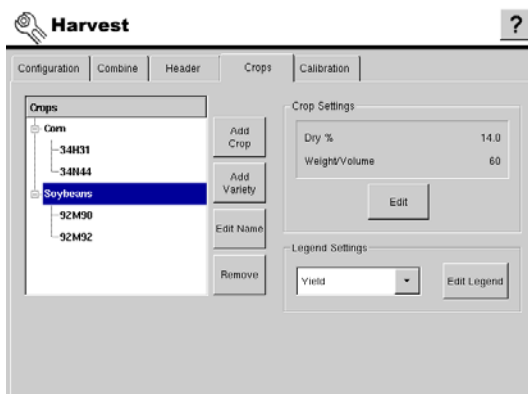
Enter the distance amount by using the **Calculator** button.

The **Offset** window appears, as shown at left.

When finished, press the **Accept** button twice.

CROPS TAB

CROPS TAB BUTTONS



Crops and crop varieties are added and edited on the Crops Tab. The crops list shows all the crops and varieties that have been created and are available for use.

To see a Harvest Configuration Menu that includes detailed information on the Crops Tab, see [“Grain Harvest Menu Tree” on page 171](#).

- **Add Crop button**

Add a new crop. A wizard will walk you through setting up the crop. For detailed information see [“Adding A New Crop” on page 292](#).

- **Add Variety button**

Add a new variety and associate that variety with a crop type. For detailed information see [“Adding Additional New Varieties” on page 293](#).

- **Edit Name button**

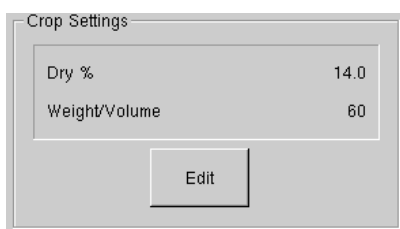
Edit the name of a crop or variety in the list. To edit, highlight the name of a crop or variety in the list and then press this button. Use the on screen keyboard to edit the name.

- **Remove button**

Remove a crop or variety.



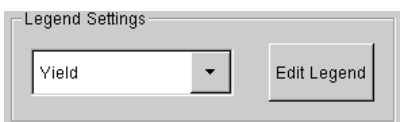
WARNING: When a crop or variety is removed, all regions and the logged harvest data relating to that crop or variety will be deleted!



The Crop Settings box displays the Dry % and the Weight/ Volume for the selected crop.

- **Edit button**

Change the values from the default. To edit, highlight a crop in the crops list and press Edit.



- **Edit Legend button**

Press button to change the default legend for the selected crop type. The Legend Settings that are made here will affect new fields of that crop type. For additional information see [“Edit Legend” on page 293](#).

ADDING A NEW CROP

To add a new crop press the **Add Crop** button. The Harvest Crop Wizard appears, as shown.

The image shows a software window titled "Harvest Crop Wizard: Step 1 of 3". Inside the window, the text "Select Crop Type From List" is displayed above a dropdown menu. The dropdown menu currently shows "Soybeans". At the bottom of the window, there are three buttons: "BACK" with a left arrow, "NEXT" with a right arrow, and "CANCEL" with a red X.

1. Select Crop Type From List

Select one of the available crops from the crop type list box. Press **Next** to continue.

2. Enter Suggested Name for Crop

Use the keyboard button to edit the name of the crop, if desired.

Press **Next** to continue.

3. Variety Tracking (Optional)

To enter additional varieties.

Press the **Add** button and the Variety Setup Wizard appears and proceed to next step.

Or

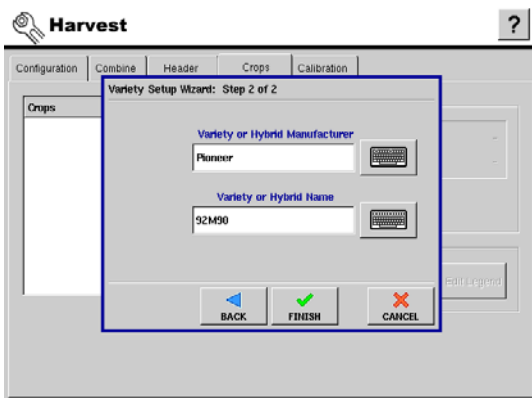
Press **Finish** and the new crop appears in the Crops list.



Note: Any seed varieties set up under a planting configuration will already be present in the list.

4. Use the drop-down list to select the units for the crop.

Press **Next** to continue.

The image shows a software window titled "Harvest" with a "Variety Setup Wizard: Step 2 of 2" dialog box open. The dialog box has two text input fields: "Variety or Hybrid Manufacturer" with "Pioneer" entered, and "Variety or Hybrid Name" with "92M90" entered. Below these fields are three buttons: "BACK" with a left arrow, "FINISH" with a green checkmark, and "CANCEL" with a red X. The background window shows a "Crops" list on the left and a "Calibration" tab on the right.

5. Enter Variety Manufacturer and Name

Use the keyboard buttons to enter the manufacturer and the variety or hybrid name.

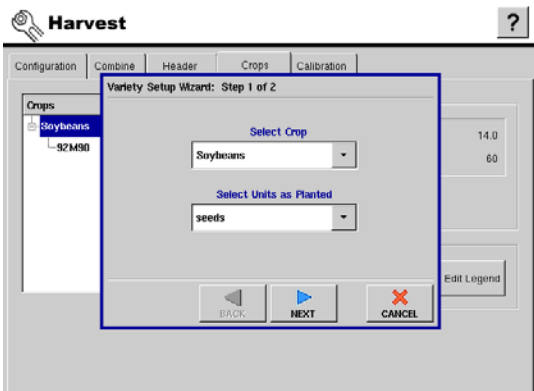


Note: The manufacturer name is optional.

Press **Finish** and the variety appears in the Variety Tracking window. Add another variety or press **Finish** again.

ADDING ADDITIONAL NEW VARIETIES

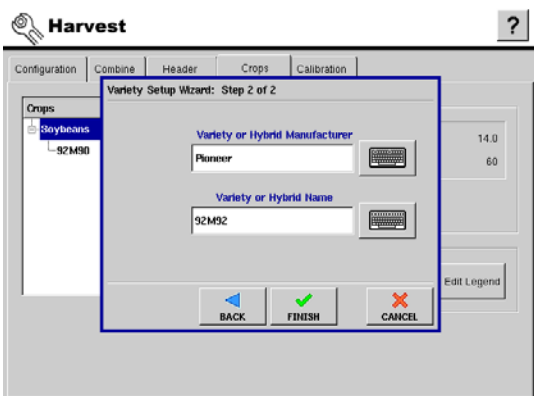
To enter additional varieties, press the **Add Variety** button. The Variety Setup Wizard appears, as shown.



1. Select A Crop

Select a crop and the planted units.

Press **Next** to continue.



2. Enter Variety Details

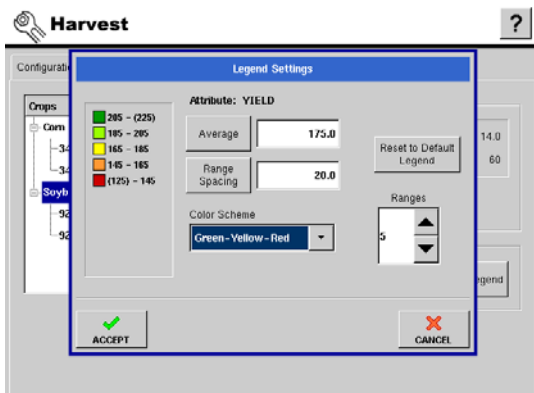
Use the keyboard buttons to enter the manufacturer and the variety name.

Press **Finish** to complete setting up the seed variety.



Note: The manufacturer name is optional.

EDIT LEGEND



To access the Legend Settings window press the **Edit Legend** button.

- **Average button**

Press to edit average crop yield value.

- **Range Spacing button**

Press to edit the legend range spacing value.

- **Color Scheme button**

Selects the color scheme to use for the yield legend.

- **Reset to Default Legend button**

Press to reset legend to the display default.

- **Ranges button**

Select the number of ranges to display in the legend.

GRAIN HARVEST CALIBRATION TAB

CALIBRATION TAB BUTTONS

1	Field Name	Region Name	Estimated	Actual	Error
<input checked="" type="checkbox"/>	6	C1	4511	4610	-2.1%
<input checked="" type="checkbox"/>	8	C2	4190	4240	-1.4%
<input checked="" type="checkbox"/>	6	C3	4260	4330	-1.6%
<input checked="" type="checkbox"/>	6	C4	4235	4350	-2.6%

The Calibration Tab is where the following combine calibrations are done. Some of the calibrations must be done before harvest begins and some after. Distance, temperature, and vibration must be completed before harvest begins. Weight and moisture must be completed after harvest has started.

For a Harvest Configuration Menu that includes detailed information on the Calibration Tab, see [“Grain Harvest Menu Tree” on page 171](#).

The Crop Type box allows you to select the crop to calibrate.

- **Moisture**

The Moisture button allows you to calibrate the moisture for the selected crop type. This only needs to be done once per crop per season. Changing this calibration will affect previously-harvested data. To calibrate, first harvest one load of grain. Randomly sample grain from several locations in the grain tank to collect an average moisture for this load, then measure the actual moisture using an accurate moisture tester. On the display, choose the correct field and region the moisture sample was taken from. Use the arrow keys to adjust the moisture so that it matches the known moisture of the sample. To use one constant moisture, select the Use Manual Moisture check box and use the arrow keys to adjust to the desired percentage.

- **Temperature**

The Temperature button allows you to calibrate the temperature. This only needs to be done once per season. Changing this calibration will affect previously harvested data. To calibrate leave the combine in a shaded area or a shed for a few hours. Take an air temperature reading using a thermometer in the same shaded area. Then use the arrow keys to enter that temperature into the calibration wizard. Then press Exit.

- **Vibration**

The vibration calibration helps eliminate any false grain flow readings while the combine is running empty. To perform the vibration calibration, press the Vibration button. Start the separator and feeder house with proper header attached and run at full speed. Press the Start button and it will count down from 60. When it is done press Exit.

- **Area**

The area calibration will adjust the total area for a field. To perform press the Area button. Select the field that you wish to calibrate and then press the calculator button. Enter in the correct area and press Accept

- **Enter Weight**

The Enter Weight button allows you to enter the measured weight for a region. To enter a weight press the Enter Weight button. Select the correct field and load from the drop down lists. Use the number pad to enter in the measured weight. Press Accept.

- **Show Cal Numbers**

The Show Cal Numbers button allows you to view or manually change the calibration numbers. Press the Show Cal Numbers button after you have performed weight and vibration calibrations to view the updated calibration numbers. For more information, see [“Adding a New Calibration” on page 297](#).

- **Perform Calibration**

After calibration regions have been checked and actual weights entered the weight calibration can be performed. Check the loads you wish to use in the calibration and then press the Perform Calibration button. This will perform a fast calibration. If four or more loads are selected, press Yes and a full calibration will be performed.

WEIGHT CALIBRATION

Before the display can accurately measure harvested bushels, you must calibrate the display by entering in actual load weights into the display for each grain type. You must obtain these actual load weights by weighing the grain from a load on accurate scales (either in an elevator or calibrated weigh wagon).



Note: To obtain accurate calibration results, you must obtain between four and six calibration loads with actual weights).

You can complete a weight calibration at any time during the season; however it is recommended you calibrate grain weight at the beginning of the season.

Pre-Calibration Checklist

- You must perform both a temperature calibration and moisture calibration before calibrating grain weight. For more information on temperature and moisture calibrations, see the descriptions for each underneath [“Calibration Tab Buttons” on page 294](#).
- Check the elevator deflector and impact plate for wear. Verify you have the proper clearance at the top of the clean grain elevator. Consult the Installation Guide for proper clearance.
- Start the calibration procedure with the combine stopped, the combine grain tank empty, and a hauling vehicle empty.

Calibration Procedure

1. On the **Run** screen, underneath the Region Selection window, create a new region and put a check mark next to the **Flag Region as Calibration Load** check box.
2. Decide the speed at which you will drive or the swath width you will use for this load. Try to keep your speed or swath width as constant as possible for the entire load.
3. Harvest a load weighing between 3,000 and 6,000 pounds (1,361 to 2,721 kilograms).
4. Empty the grain tank completely onto a truck or wagon, and weigh it with an accurate scale. Record each individual load weight to be entered into the display.



Note: No grain from any other combine should be unloaded into this hauling vehicle.

5. In the display, immediately change to another load that does not have any data.
6. Weigh the grain on the hauling vehicle and record the actual load weight.

- If you are using a weigh wagon to weigh the grain, make sure the wagon has been calibrated properly. Also, only use one scale during this calibration process.
- Use the same vehicle for all calibration loads.
- Do not use a semi truck, as this vehicle's capacity is too large for a calibration load.

7. Repeat steps 1-6 for a minimum of four calibration loads. (These calibration loads should be uniform in size).



Note: Harvest each of these loads at a different grain flow rate. Grain flow can be altered by changing the ground speed for each load (the recommended method), or using different swath widths for each load.

As an example, these calibration regions are shown with varying speed: .

	Region 1	Region 2	Region 3	Region 4	Region 5	Region 6
Speed (mph)	5.0	4.5	4.0	3.5	3.0	2.5



Note: As you enter these calibration loads, name them by using the appropriate region names, (for example, name Region 1 = 5 mph, Region 2 = 4.5 mph, etc.). This will eliminate confusion when identifying calibration loads.

8. In the Grain Harvest screen, underneath the Calibration Tab, select the crop type you wish to calibrate from the drop-down list located in the top, left corner of the tab. Each load that has been flagged as a calibration load for that crop type will appear under the Grain Weight Calibration part of the tab. (See picture below).

9. Select one of the loads and press the Enter Weight button. Enter the Actual Weight and press Accept. Repeat this step for each calibration load.

1	Field Name	Region Name	Estimated	Actual	Error
<input checked="" type="checkbox"/>	6	C1	4511	4610	-2.1%
<input checked="" type="checkbox"/>	6	C2	4180	4240	-1.4%
<input checked="" type="checkbox"/>	6	C3	4260	4330	-1.6%
<input checked="" type="checkbox"/>	6	C4	4235	4350	-2.6%

The grain weight calibration box shows all the regions that have been selected as a calibration region for the selected crop type. This allows you to check or uncheck regions for use in the weight calibration.

It also displays the field and region name in which it was harvested, the estimated weight for the region, the

actual weight after it is entered, and the percent difference between the two weights.

10. After you have entered all of the actual weights, check the loads to be used and press the green-colored **Perform Calibration** button. Determine whether you wish to perform a fast calibration or a full calibration.

- A fast calibration can be performed with three loads or less.
- A full calibration requires four or more loads. However, a full calibration is more accurate than a fast calibration.



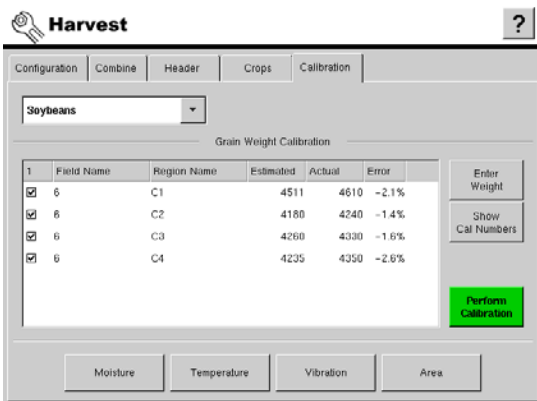
Note: To perform the most accurate calibration, only check loads that have similar error percentages.

11. When the calibration is complete, examine the error percentage and press **OK**.

12. You should be able to calibrate the display for grain weight to an average error of 1% to 3%. If the average error is more than 3%, uncheck the load with the maximum error and re-perform the calibration. You still must have at least four loads checked to perform a full calibration.

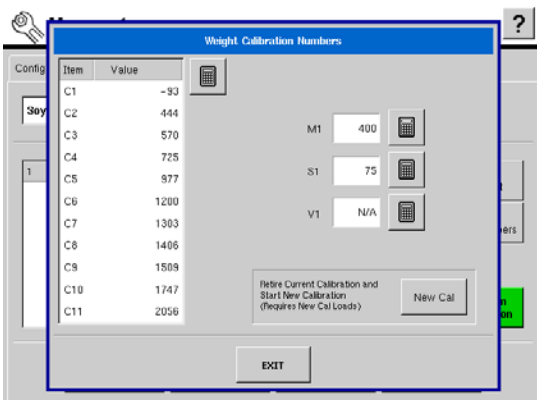
ADDING A NEW CALIBRATION

If you notice a decreased yield accuracy, you may need to perform a new calibration. To do this, use the following procedure.

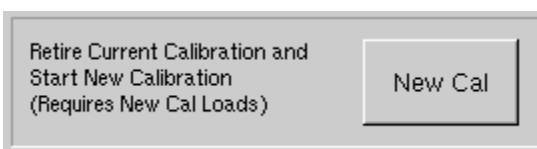


1. Show Calibration Numbers

On the Harvest window, under the **Calibration** tab, press the **Show Cal Numbers** button.



2. Start New Calibration

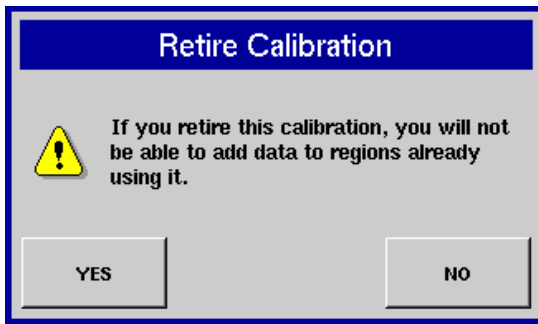


When you press the **Show Cal Numbers** button, the Weight Calibration Numbers window appears, as shown at upper left. On the left-hand side of the Weight Calibration Numbers window is a list of grain calibration values that range from **C1** through **C11**. These 11 C numbers determine the weight that

the display calculates from the data that it records into your regions as you harvest. These numbers have been pre-set by Ag Leader Technology, and you should not change them unless instructed to by Ag Leader Technical Support.

On the right-hand side of the Weight Calibration Numbers window, three more numeric values appear: **M1**, **S1**, and **V1**. The **M1** and **S1** numbers are set specific to the combine model and are used for calibration. Do not change these unless instructed to by Ag Leader Technical Support. The **V1** number is the Vibration Calibration number. As with the first two numbers, do not change the **V1** (Vibration Calibration) number unless instructed to by Ag Leader Technical Support.

To start a new calibration press the **New Cal** button, located on the lower right-hand side of the **Weight Calibration Numbers** window. After the **New Cal** button is pressed, the display will apply the new moisture and grain weight calibration from this point forward.

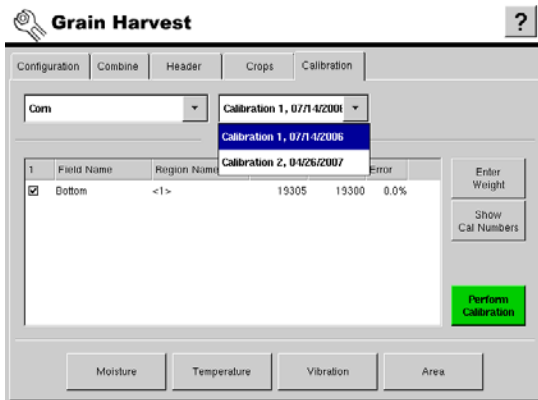


3. Retire Old Calibration

The Retire Calibration warning window appears, as shown at left. Press the **Yes** button to retire your old calibration.



Note: By retiring your old calibration, you will not be able to return to your old calibration, or add data to it.



4. New Calibration Appears

The new calibration now appears on the Calibration drop-down menu. Your calibrations, past and present, are numbered in the order in which they were created. The calibration's date of creation appears to the right of the name.

5. Perform new Weight Calibration

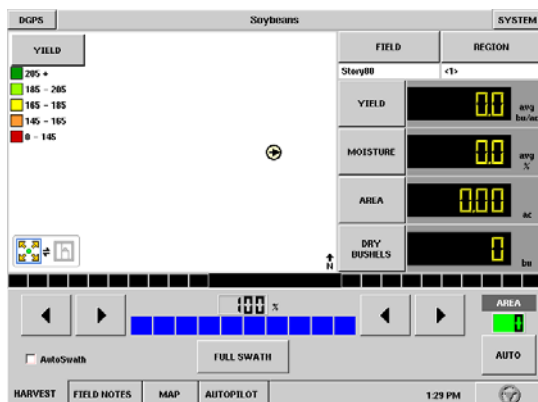
After you have created a new calibration, it is recommended that you perform another Weight Calibration. Refer to the procedure described on [“Weight Calibration” on page 295](#).

RUN SCREEN OPERATION

RUN SCREEN BUTTONS



Note: Before beginning Run Screen operations, you must first go to the Field button and accept a field, configuration, crop, and region. See the Field Button description for more information.



• FIELD button

Functionality changes, based upon the status of the separator. If the separator is off, it allows you to change Grower, Farm, Field, and Configuration. If the separator is on, it allows you to view field totals. For detailed information, see [“Field Button \(While Not Logging\)” on page 300](#) and [“Field Button \(While Logging\)” on page 303](#).

• REGION button

Change and name regions of the field, and track and change varieties. For more information, see [“Region Selection” on page 300](#).

• SYSTEM button

Press to access diagnostic information about the internal memory, display information, CAN module information., and diagnostic information for harvest. For more information see [“System Diagnostic Button” on page 307](#).

- DGPS button
- AutoSwath button

The AutoSwath feature automatically increases or decreases the swath width of the combine head according to your field's boundaries and already-harvested areas. Check the AutoSwath check box to enable the AutoSwath feature. For more information, see *"Automatic Swath Control, Run Screen Operation"* on page 304.



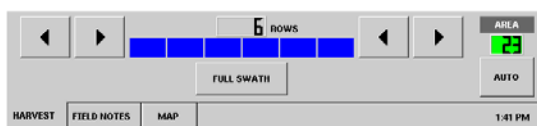
The master button controls area logging. The number displayed is the position of the head in the full range of motion that was set during calibration. When the header is below the set stop height and the switch is set to auto the box will be colored green and the area will be recorded. When the header is above the set stop height and the button is set to auto the box will display the color red and the area will not be logged.



When the master button is set to off, it overrides the header sensor and the area will not be logged. The box will remain colored red until the button is pushed again to set it to auto.

RUN SCREEN MAIN TABS

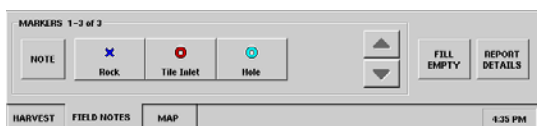
Harvest Tab



The Harvest Tab is where the harvest area is controlled. The master button allows you to turn area logging on and off. For more details, see *"Run screen buttons"* on page 298. The swath display allows you to change the amount of swath that is

being used for area calculation. For a platform or pickup type of header the full swath is displayed as 100% and can be changed in 10% increments. For a row head, the full swath is displayed as rows and can be adjusted by the row. To adjust the swath width, use the arrow keys on either side of the swath display. The full swath button allows you to go from any partial swath back to the full swath position. With the header sensor calibrated, if the header is raised above the set stop height, the swath is automatically set back to full from any partial swath position.

Field Notes Tab

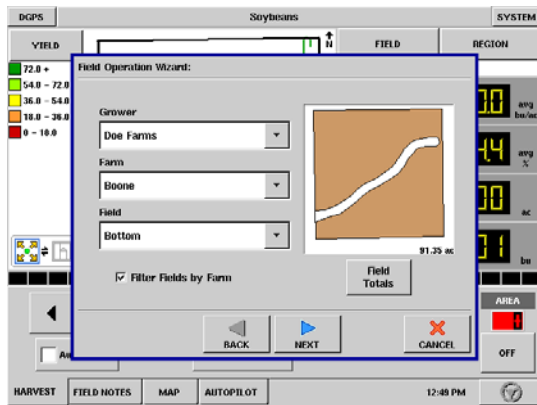


Map Tab



FIELD BUTTON (WHILE NOT LOGGING)

The start of harvest in a field is accomplished by setting up a Field Operation at the Run Screen. This process is similar regardless of the type of field operation currently taking place. To begin, press the **Field** button on the Run screen, and the Field Operation Wizard appears, as shown.



1. Select Grower, Farm, Field

At the Field Operation Wizard, choose the field for harvest by making the proper selections from the **Grower**, **Farm**, and **Field** list boxes.

If the **Filter Fields by Farm** check is cleared, the display will show all fields in the **Field** list box regardless of what farm the fields are associated with.

Press **NEXT** to continue.

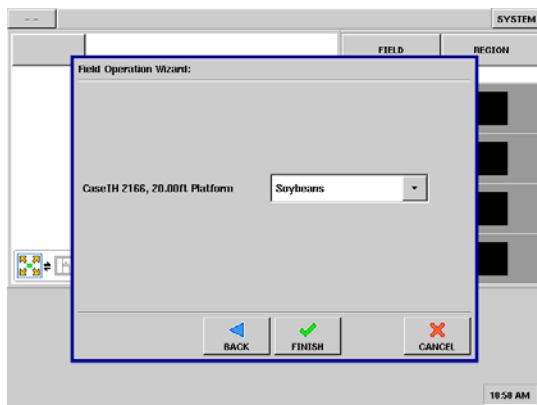


Note: You may view **Field Totals** by pressing the **Field Totals** button on the Field Operation Wizard. For more information on field totals, see [“Field Button \(While Logging\)” on page 303](#).

2. Choose Configuration

Select the Operating Configuration that relates to the equipment in use.

Press **NEXT** to continue.



3. Choose Crop Type

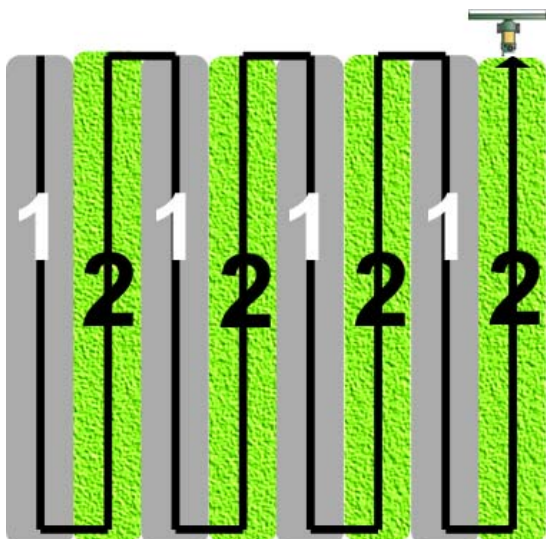
Select the correct crop from the list box.

Press **Finish** to complete the Field Operation portion of the Field Operation Wizard.

REGION SELECTION

You can use the Region Selection window to enable the display to track varieties that you planted earlier and are now harvesting. You can also use two types of variety tracking: Automatic Variety Tracking and Automatic Region Changing. Automatic Variety Tracking tracks only varieties; hence the operator must manually change to a new region. By contrast, the Automatic Region Changing feature tracks both varieties and regions, so the display changes the region automatically.

Tracking varieties and changing regions

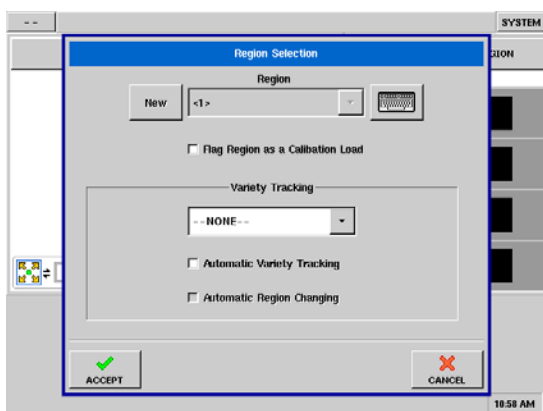


The illustration at left shows how the display could track two different varieties. In this example, when the harvester reaches the end of Variety 1, and the operator maneuvers the vehicle to Variety 2, a message appears that either a new variety has been detected and the user is notified to change regions (Automatic Variety Tracking,) or that a variety has been detected and the display is automatically changing regions. (Automatic Region Changing).

To enable either Automatic Variety Tracking or Automatic Region Changing, first access the Region Selection window, by completing the Field Operation Wizard under the **Field** button, or press the **Region** button. The Region Selection window appears, as shown in the following picture.

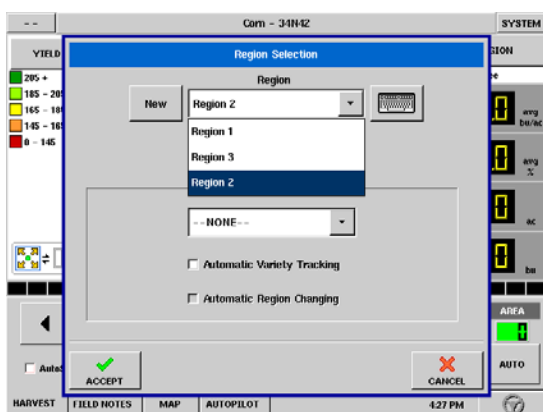


Note: These varieties must have been logged in the display during planting in order for the display to reference them during harvest.



Selecting or creating New Region

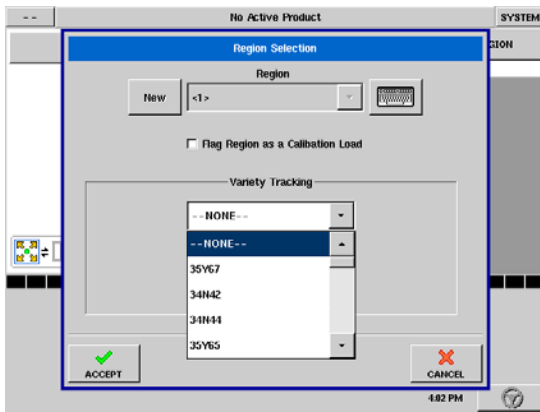
To edit the name of a region, select it out of the **Region** list and use the keyboard button.



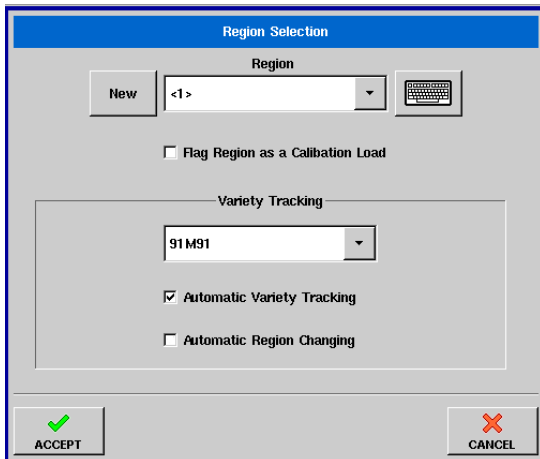
Creating a New Region

To create a new region press the **New** button. You will see a new region appear in the Region list, with a numeric name shown in brackets, such as <4>. You may use the keyboard button to enter your own name for this new region.

If you would like to use this region in the weight calibration, select the **Flag Region as Calibration Load** check box.



Variety Tracking menu and Automatic Variety Tracking Variety Tracking List



Automatic Variety Tracking enabled

If no variety map is present, then you can select a variety from the Variety Tracking List, as shown above left.

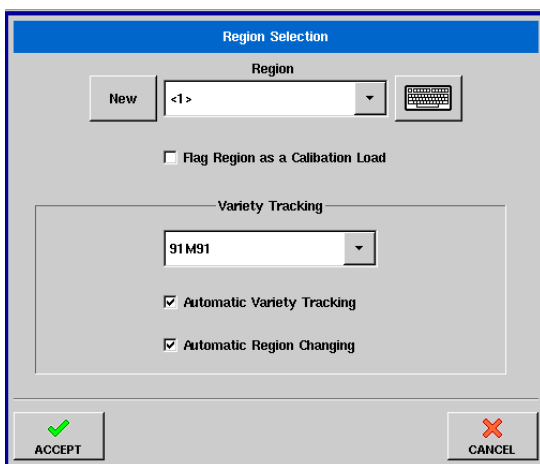
If you do not want the Automatic Variety Tracking feature, press the **Accept** button now.

If you want to enable the Automatic Variety Tracking feature, select only the **Automatic Variety Tracking** check box, as shown left. (Do not select the **Automatic Region Changing** check box).



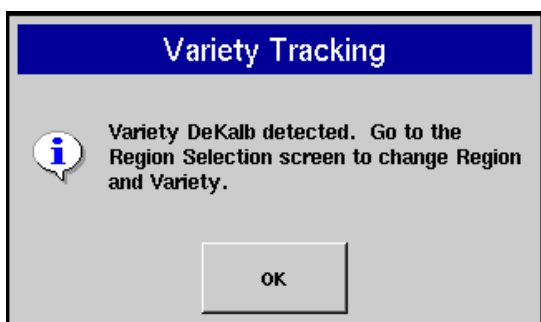
Note: A variety map must be present to enable Automatic Variety Tracking.

Automatic Region Changing

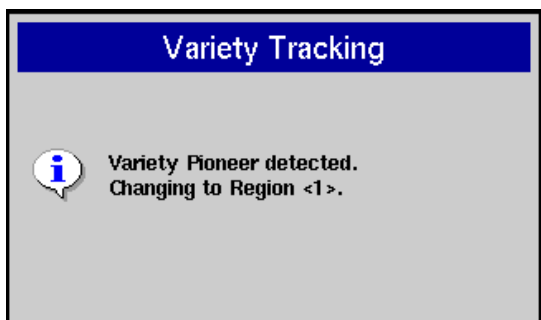


If you wish to enable the Automatic Region Changing feature, select both the **Automatic Variety Tracking** check box, and the **Automatic Region Changing** check box, as shown at left.

Variety Tracking messages



Automatic Variety Tracking message

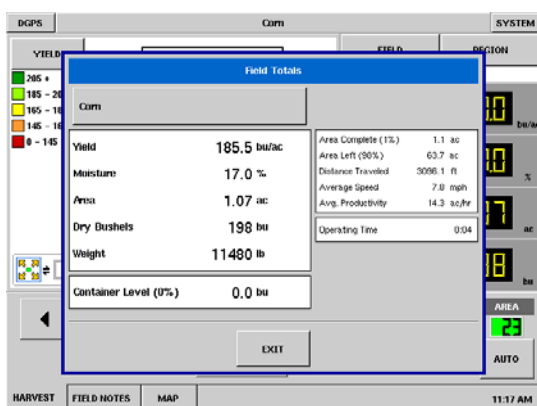


Automatic Region Changing message

If you have selected either the Automatic Variety Tracking or Automatic Region Changing features, you will see one of the messages at left as you harvest your field.

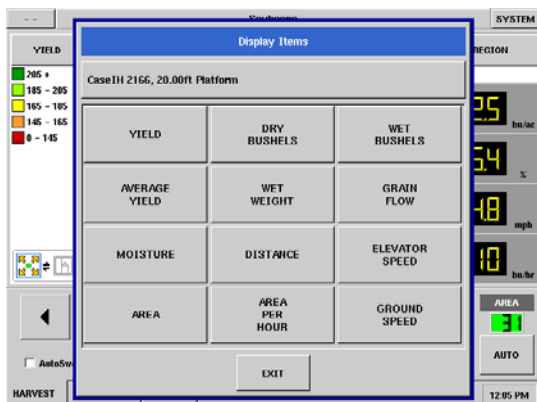
- If you have selected Automatic Variety Tracking, the message above left tells you that the display has detected a different variety, and that you should manually change the region.
- If you have selected Automatic Region Changing, the message below left tells you that the display has detected a different variety, and that the display is automatically changing to a different region.

FIELD BUTTON (WHILE LOGGING)



If the field button is pressed while logging data a dialog shows field totals.

DISPLAY ITEMS



The Display Items window can be accessed by pressing any one of the four display items that are active on the Run screen - Yield, Moisture, Area, or Dry Bushels.

Once the Display Items window is visible, press the display item you would like to activate. It will then be available on the Run screen.

• YIELD button

Displays the instantaneous yield while there is grain flow and the average yield when grain flow is not present.

- **DRY BUSHEL button**

Displays the number of bushels at the specified dry moisture percentage.

- If the actual moisture is below the set dry moisture percentage and "Expand Bushels for All Grains Below Dry %" *is not* checked, it will show actual bushels.
- If "Expand Bushels for All Grains Below Dry %" *is* checked, it will add water weight back in until it is at the specified dry percentage.



Note: The Dry Bushels and Wet Bushels buttons do not appear if you are using metric system measurements.

- **WET BUSHEL button**

Shows the actual bushels that have been harvested for the current region.

- **AVERAGE YIELD button**

Shows the average yield for the region.

- **WET WEIGHT button**

Shows the actual weight that has been harvested in the region.

- **GRAIN FLOW button**

Shows the instantaneous grain flow in the combine.

- **MOISTURE button**

Displays the instantaneous moisture while there is grain flow and the average when there is no grain flow.

- **DISTANCE button**

Shows the total distance driven in the current region.

- **ELEVATOR SPEED button**

Shows the instantaneous speed of the clean grain elevator.

- **AREA button**

Shows the area harvested for the current region.

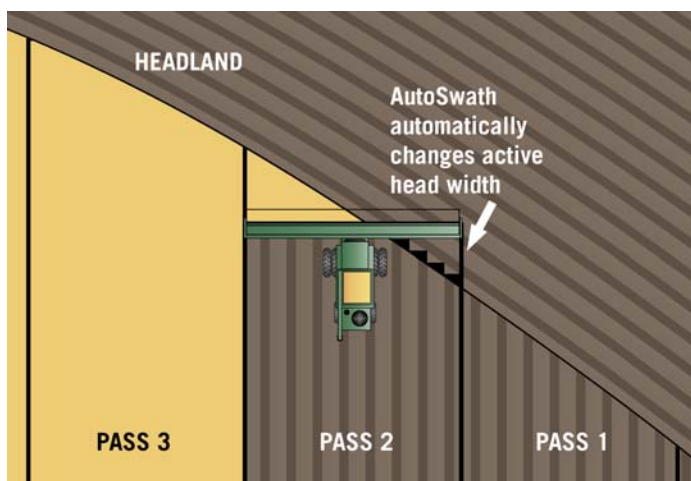
- **AREA PER HOUR button**

Shows the instantaneous productivity.

- **GROUND SPEED button**

Shows the instantaneous ground speed.

AUTOMATIC SWATH CONTROL, RUN SCREEN OPERATION

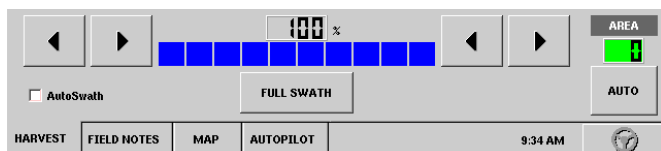


AutoSwath automatically increases or decreases the active (logged) swath width of the combine head, according to field boundaries and already harvested areas. By doing so, the display records a change in logging data, even though no mechanical change has actually taken place. By automatically adjusting the active swath width of the combine head, AutoSwath ensures the display's correct area calculation, which also improves the accuracy of your field summaries and reports.

AutoSwath explained

AutoSwath is particularly useful when harvesting point rows and other areas where harvesting a full head width is not possible. As the combine travels beyond a harvested area, the AutoSwath feature automatically changes the active head width by the use of a "stair-step" method, in which the width is reduced by successive amounts.

Select the AutoSwath Checkbox



Bottom of Run screen

To enable the AutoSwath feature, select the **AutoSwath** checkbox, located at the bottom left-hand side of the Run screen, above the tabs.



Note: The master button must be set on **AUTO** (not **OFF**) for the AutoSwath feature to function.

AutoSwath on Run Screen



AutoSwath in operation

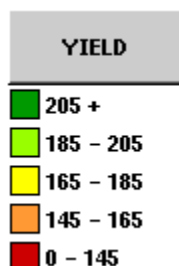
Now that you have selected the AutoSwath checkbox, the blue indicator bar and the percentage amount above the bar both show what percentage of your original swath width is now being logged into the display.

Each box on the blue indicator bar corresponds to a specific section width on your combine head. In the example shown at left, the first three sections on the right have stopped logging data to the display. The section width represented by the blue indicator bar was automatically configured for you when you created the configuration on your combine.

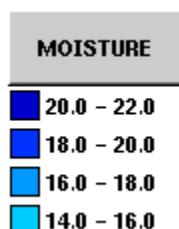
At times, however, this section width may change if you make adjustments to the AutoSwath's sensitivity settings, which are set specific to your combination of Vehicle and Head. These sensitivity levels compensate for varying degrees of GPS performance. For more information, see the AutoSwath Sensitivity Settings page in this section.

VIEWABLE MAPS

There are three different types of viewable maps in harvest. The maps are accessed by pressing the button in the legend that is either labeled yield, moisture, or variety.



The yield map displays an on the go color yield map. To edit the legend, see ["Map Legend" on page 306](#).



The moisture map displays an on the go color moisture map. To edit the legend, see ["Map Legend" on page 306](#).

REFERENCE VARIETIES

92M90

The variety map displays a background map of varieties that were logged with the during planting. This map can be used by the display to track varieties during harvest. This map is also known as the reference map. This legend is not editable.

MAP LEGEND

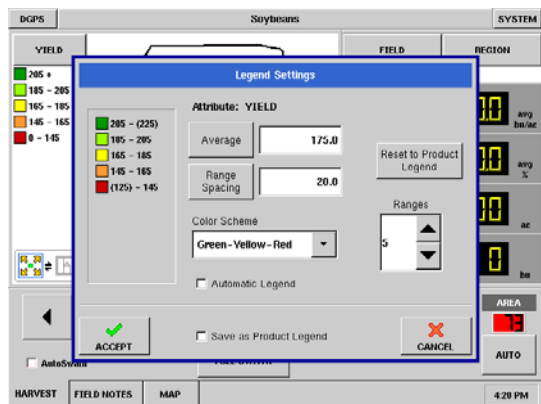
The legend for yield and moisture can be edited, but the variety (reference) legend cannot. To edit these legends press on the range portion of the legend.

The average, spacing, colors, and ranges can be edited for yield and moisture maps. Use the drop down boxes and arrows to adjust these values.

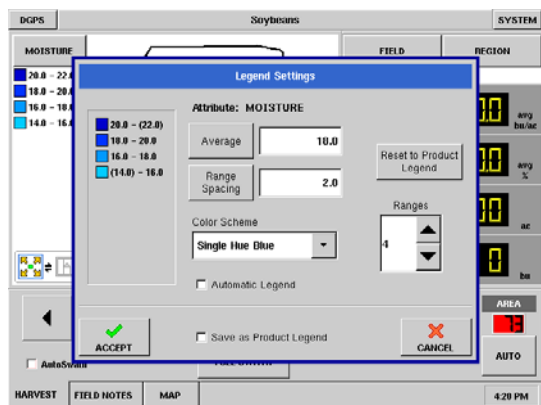
If the automatic legend option is selected the average will automatically set itself to the field average and update as the field average changes.

If you choose to set the current legend as the default legend for all regions of the same product select the save as product legend option. This will also reset the legend settings under the Crops Tab. To reset to the default values go to **Setup, Harvest, Crops** and press the **Edit Legend** button

To reset this legend to the values saved under the Product tab press the **Reset to Product Legend** button.

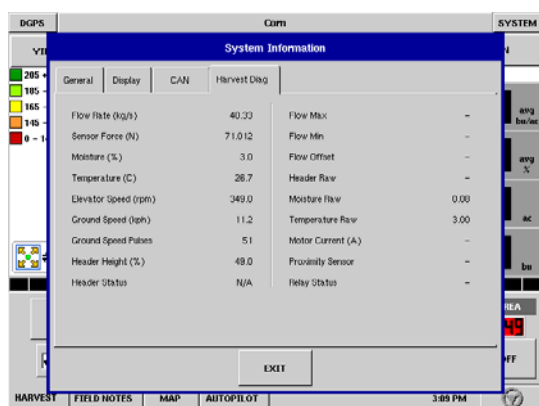


Yield legend settings



Moisture legend settings

SYSTEM DIAGNOSTIC BUTTON



The **System** button contains information about the flow rate, moisture, temperature, elevator speed, and ground speed of the combine. Technical support may request that you look at this screen to help in diagnosing a problem.

For generalized Diagnostic information, such as memory, display, CAN device and firmware version information, see the General section. For more information on LED diagnostic states, see *“Module LED Diagnostic States” on page 174* in the Appendix.

The Harvest Diagnostic Tab includes the following information:

- **Flow Rate**

Grain flow rate, shown in kilograms per second.

- **Sensor Force**

Force of grain flow, shown in Newtons.

- **Moisture**

Grain moisture.

- **Temperature**

Air temperature, shown in Celsius.

- **Elevator Speed**

Shown in revolutions per minute.

- **Ground Speed**

Shown in kilometers per hour.

- **Ground Speed Pulses**

Shows the number of pulses from the combine.

- **Header Height**

Percentage of header height.

- **Header Status**

Up or Down.

- **Flow Max**

Raw flow value used for diagnostic purposes.

- **Flow Min**

Raw flow value used for diagnostic purposes.

- **Flow Offset**

Raw flow value used for diagnostic purposes.

- **Header Raw**

Raw value of header sensor.

- **Moisture Raw**

Raw value of moisture sensor.

- **Temperature Raw**

Raw value of temperature sensor.

- **Motor Current**

Measure of Elevator Mount Unit (EMU) current, shown in amps.

- **Proximity Sensor**

Shows if sensor is covered with grain.

- **Relay Status**

Shows on or off.

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