USER GUIDE

Farm Works Software® Solutions

Farm Works™ Mobile Software

FARM WORKS SOFTWARE®

A DIVISION OF TRIMBLE

USER GUIDE

Farm Works Software® Solutions

FarmWorks™ Mobile Software

Version 2011 and Later
Revision D
October 2011

FARM WORKS SOFTWARE
A DIVISION OF TRIMBLE

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Release Notice

This is the October 2011 release (Revision D) of the *Farm Works Mobile Software User Guide*.

Product Limited Warranty Information

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CHAPTER

1

Introduction

In this chapter:

- Features

The Farm Works Software® solution Farm Works™ Mobile software works with handheld computers running the Windows Mobile®, Windows CE, or Pocket PC operating systems, and laptops running the Windows® 2000 and higher operating system, including Windows XP, Windows Vista®, or Windows 7.

The software is a portable data entry solution for field records and works with a GPS receiver for mapping and for controlling commonly used variable-rate applicators and is a low-cost, single-device solution.

This User Guide describes the software running on a desktop or laptop computers, unless otherwise specified. If you use the software on a mobile device, the screens may look different from those shown in this manual. Please read "Click" as "Tap".

Features

The Mobile software has the following features:

Simple user interface

- Easy to use Client, Farm, Field, and Job data management dialogs.
- Customizable text display.
- Synchronize data with Farm Works Mapping software automatically.
- Export data in Shapefile format to use with third-party applications.

Field records

- Enter field records on the go.
- Independent data entry for field records or entry in conjunction with a GPS receiver.
- Tracks planting dates, chemical usage, scale tickets, hybrid/variety location, and more.
- View histories of past hybrids, chemical applications, tillage practices, yield and more.

Mapping and scouting

- Map field boundaries, drainage lines, pivots, ditches, and more.
- View background maps such as field boundaries, aerial photos, soil types, and yield maps.
- Record scouting attributes such as weed and insect types, notes, tile diameter, and more.
- Capture digital images of pests using mobile devices with built in cameras and GPS, such as a Nomad® handheld.

Soil sampling

- Use grids or management zones for soil sampling.
- Use the navigation line to automatically connect the target points in the order that they are numbered.
- Navigate to any point of interest using the compass or a 3D view of the map.

Variable rate application

- Control one or more products for variable rate application using prescription maps.
- Creates "as-applied" data that can be downloaded to Farm Works Mapping software or other third party desktop software.
- Supports external sensors for logging data and variable rate application.

CHAPTER

2

Getting Started

In this chapter:

- Using a mobile device
- Installing the software

This chapter describes how to set up and run the Mobile module on a mobile device. A mobile device is any handheld that is powered by a Windows Mobile® operating system, or a Pocket PC. For example, a Juno® or Nomad handheld computer.

Note – *In this User Guide, any mobile device or handheld computer is called "**the device**". Any desktop computer or laptop computer is called "**the computer**".*

Using a mobile device

Note – *There are frequent changes to mobile devices. While every attempt has been made to provide the most comprehensive instructions here, you may need to refer to the documentation for your device for some information.*

When you use the software with a mobile device, you must configure the device and the desktop computer to work together. Install the appropriate software and then establish a partnership between the device and the computer. If you are installing the software onto a computer, go straight to Installing the software, page 9.

Establishing a device / computer partnership

Establishing a partnership allows the device and the computer to communicate with each other. In addition, this enables you to install the software onto the device.

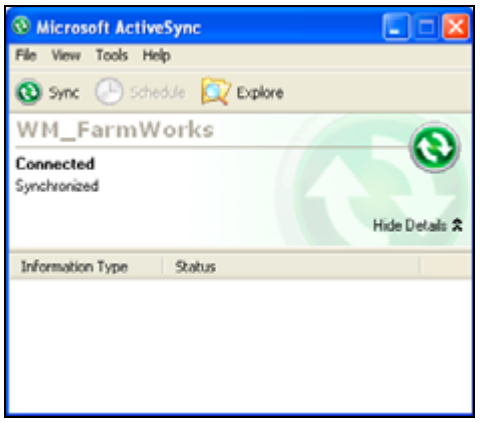
1. Connect the cradle (also known as a *docking station*) or cable of the device to a serial port or USB port on the computer.
2. Install Microsoft Windows CE Services (ActiveSync technology or Windows Mobile Device Center for Windows Vista) from the Microsoft Windows CE CD that should accompany your device. Follow the setup wizard to install the necessary applications. You may also need the original Windows installation CD.

Note – *A link to these applications is available at* www.FarmWorks.com. *Select News / Links / Field Software Links and then select either Microsoft ActiveSync® technology or the Windows Mobile Device Center.*

3. If prompted, restart the computer.
4. Place the device into the cradle or plug it into the cable that is connected to the computer and then follow any instructions in the New Partnership wizard, including entering a name for the device. This name is how the device will be identified in the computer.

   The system establishes the partnership.

Each time you put the device into the cradle or connect the cable, a message shows that the computer is connecting to the device. This critical process is what allows communication between the computer and the device.



Installing the software

Install the software from the computer CD regardless of whether you will run it from a computer or from a device. If you will run the software from a device, you must synchronize the computer and the device throughout the installation process.

Before you install the software, consider the following.

- The files on the installation CDs are compressed; you cannot install the software by copying the files.
- If you click **Cancel** during installation, the process is halted and the software will not be correctly installed on the computer.

To install the software:

1. Insert the installation disk into the CD/DVD drive of your desktop computer.

   The installation usually starts automatically. If not, please select *Run* from the Start menu and enter **D:\fsplash.exe** (where **D:** is your CD-ROM drive) in the command line to start the installation.

2. Select the software module(s) or manual that you want to install and then follow the instructions on the screen.

3. If you are downloading a software module, you may need to enter a software product code. These codes appear in your account on the Farm Works Store or are included with your software purchase.

Installing to a mobile device

If you are using a mobile device that has not had the software pre-installed, connect the device to your desktop computer using one of the following:

If you desktop computer is powered by ...	Use ...
Windows XP operating system or earlier versions	Microsoft ActiveSync technology
Windows Vista operating system	Windows Mobile Device Center
Windows 7 operating system	Windows Sync Center

Once the device is synchronized with your desktop computer, you can use the CD/DVD drive on your desktop computer to install the mobile software.

For more information, refer to the *Using Windows Mobile Center with Windows Vista FAQ*, that is available from http://www.farmworks.com/files/faqs/General/Using_Windows_Mobile_Center_for_Vista.pdf.

Registering the software

You must register the software to get full use of it. To do this automatically using the Internet, select the appropriate option when you first run the program.

Alternatively, you can register the software by calling the number listed for support at the front of the manual—if you do this, make sure you are at your computer with the software installed and running.

CHAPTER

3

Synchronizing Data

In this chapter:

- Synchronizing records
- Linking new information
- Synchronizing GPS mapped data

The Mobile software can synchronize data (maps, crop records, and any planned jobs created in the office software) to and from the Farm Works Mapping software. Once the software is installed and registered, you can enter information such as client/farm/field names, equipment, and supplies from the office software to the Mobile software. In addition, any data collected with the Mobile software can be synchronized with the office software.

To synchronize more than one project, you must complete the process while in each individual project in the office software.

You can synchronize more than one client's information (or all clients) during the process.

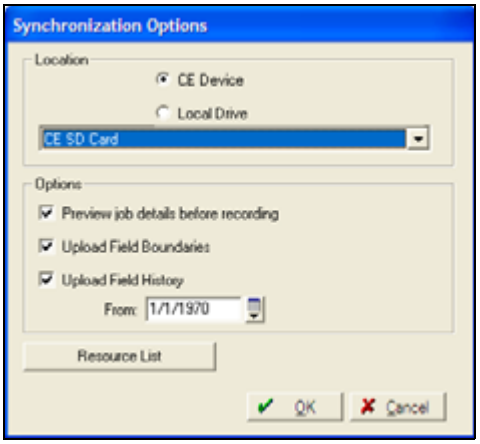
During synchronizing, differences between the lists kept in the field software and the office software are updated. So you can add equipment, supplies, fields, and so on in the device and in the computer without worrying that the items will be duplicated when the two machines are synchronized. When the process begins, you are prompted to match, or ***link***, new items from the field software with those already on the computer—or you could create a new item on the computer. This enables you to add new items on the device while someone else is setting up and working with the same items on the computer.

Before records can be synchronized, each job should be marked as *Finished* in the Mobile software. Unfinished jobs will not be synchronized.

Synchronizing records

To synchronize records:

1. Close the Mobile software on the mobile device.
2. Do one of the following:
   - For a CE device, make sure it is connected and synchronized with the computer using ActiveSync technology or the Windows Mobile Device Center.
   - For a Yuma or other field device that does not communicate through Active Sync technology, remove the USB drive from the mobile device and then insert it into your computer's USB slot.
3. On the computer, select *File* /*Synchronize Mobile* and then select options as required from the dialog that appears.

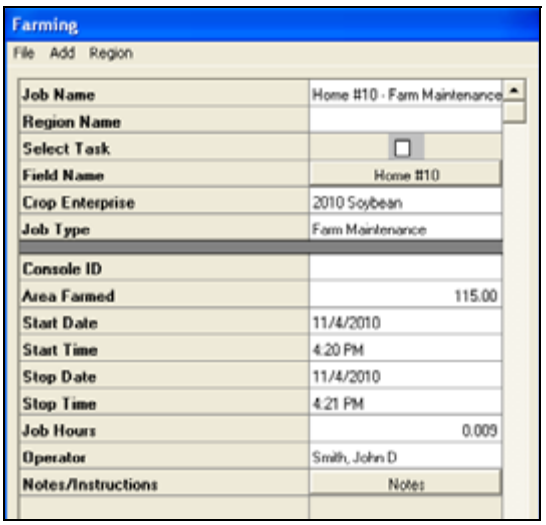


   - Location:

     All available locations appear in the drop-down list. If you do not see the location, for instance, CE SD Card or CE Main Memory, the device is not accessible.

– Options:

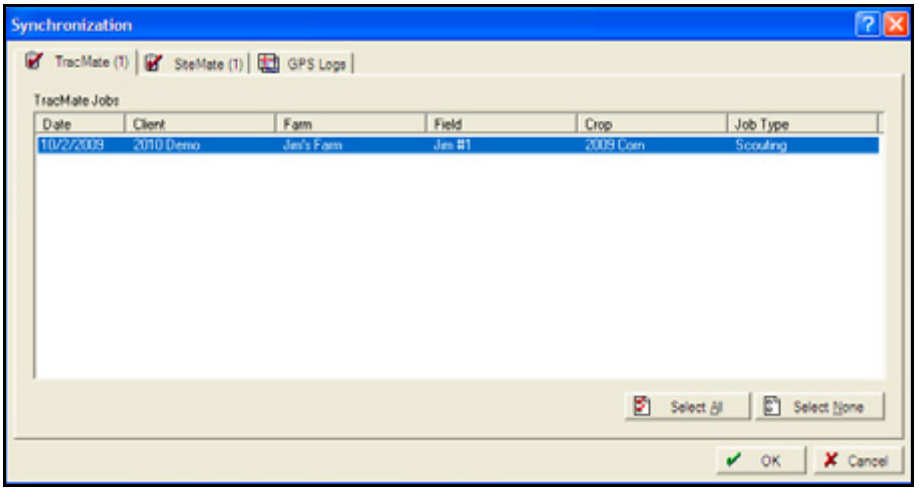
Preview job details before recording: View or edit the operation before synchronization is complete. If you select this option, the *Farming* dialog appears. Edit operations as required.



Upload Field Boundaries: View field boundaries as a background map in the field software.

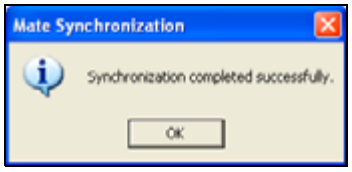
Upload Field History: Select this option to upload field history from the selected date forward. Contains a short summary of each job including supplies used, rate, date, cost, and notes.

Resource List: Limit the clients, farms, fields, and inputs exported for use with the field software.



4. The *Field Record* tab in the *Synchronization* dialog shows any jobs that were entered using the Field Record feature. Select the jobs to synchronize. You can use the **Select All** or **Select None** buttons as required.

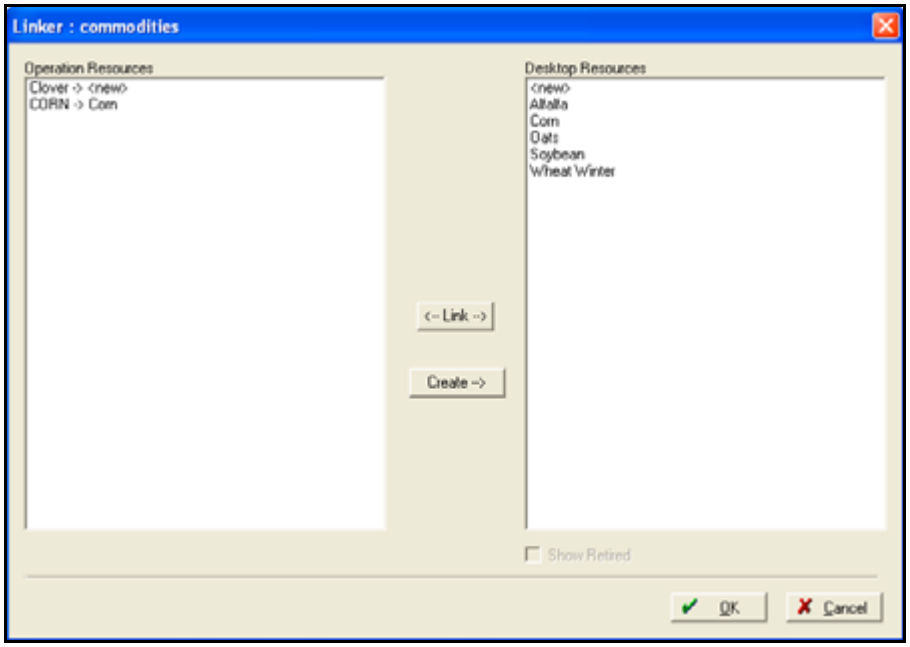
A message appears once synchronization is successfully completed.



Linking new information

Synchronizing allows information added in the field software, while in the field, to be linked to existing items or to be added as new items in the office software.

The *Linker* dialog may appears during synchronization.



1. Highlight the new item in the list on the left. This is the item that was added in the field software.
2. Do one of the following:
   - If the item is a new resource, currently not on the desktop software, click **Create** and then enter details for the item.
   - If the item matches one already on the desktop, highlight the item in the list on the right and then click **Link**.
3. Click **OK**.
4. Repeat Step 2 and Step 3 for each item that was added to the Mobile software.
5. If prompted, enter the properties for any new people or equipment created.

6. The properties of new supplies are entered during synchronization. If you use the Funds module, you must assign an account to new supplies.

Once synchronization is complete, the new items are available for use in the desktop software.

The following applies to synchronized data:

- All field records (jobs and regions) that were marked as *Finished* in the Mobile software are loaded into the desktop software. Notations, crop histories, chemical records, and enterprise statements are updated. The field colors and patterns on your map in the desktop software reflect the farming actions that were recorded with the field software.
- All items added to the desktop software since synchronization are added to the field software. So both always have up-to-date lists of farm items.
- All field records marked as *Finished* in the Mobile software are removed from the field software. Jobs marked as *Incomplete* remain on the device to be finished later.
- If *Upload Field Boundaries* is selected, an updated map that includes all field boundaries is uploaded to the field software.
- GPS maps that were created in the field software are imported into the desktop software and placed on new layers.

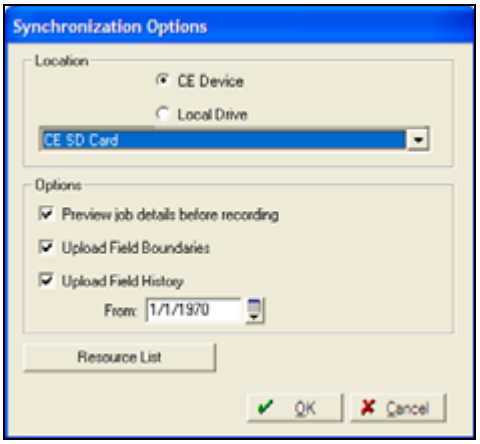
CAUTION – There are limits to the amount of data that can be stored in the device main memory, and there are risks to storing too much data on the CE device. Data on the main memory may be lost if the device is damaged or destroyed. Farm Works strongly recommends that you synchronize your data at the end of each working day.

Synchronizing GPS mapped data

Once you create mapping data, you can import it to your desktop project through the synchronization process.

1. Close the field software on the mobile device.
2. Do one of the following:
   - For a CE device, make sure it is connected and synchronized with the computer using ActiveSync technology or the Windows Mobile software.
   - For a Yuma or other field device that does not communicate through Active Sync technology, remove the USB drive from the mobile device and then insert it into your computer's USB slot.

3. On the computer, select *File* /*Synchronize* and then select options as required from the dialog that appears.

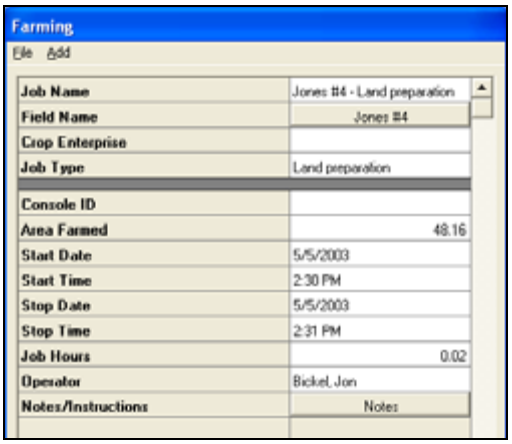


– Location:

  All available locations appear in the drop-down list. If you do not see the location, for instance, CE SD Card or CE Main Memory, the device is not accessible.

– Options:

  Preview job details before recording: View or edit the operation before synchronization is complete. If you select this option, the *Farming* dialog appears. Edit operations as required.



  Upload Field Boundaries: View field boundaries as a background map in the field software.

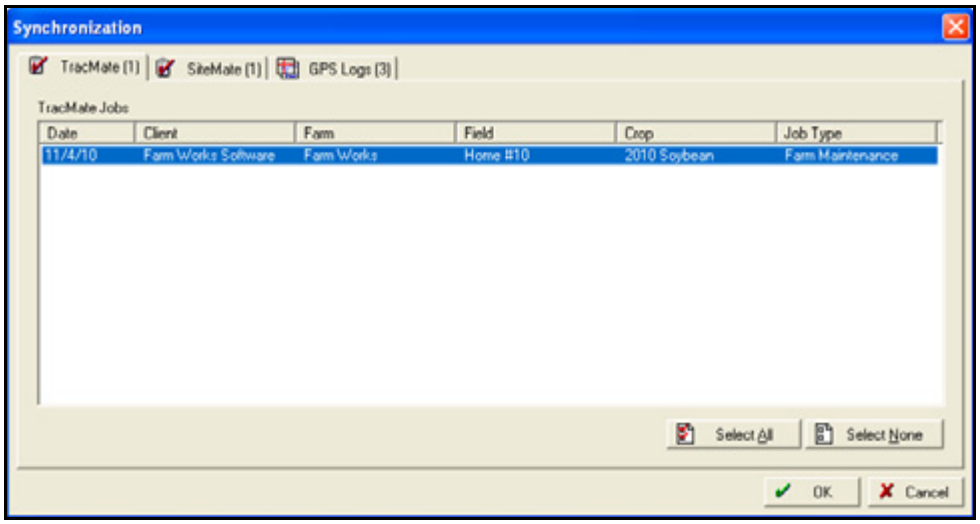
  Upload Field History: If you use the Field Record feature, select this option to upload field history from the selected date forward. Contains a short summary of each job including supplies used, rate, date, cost, and notes.

  Resource List: Limit the clients, farms, fields, and inputs exported for use with the field software.

Data logged in the field software using the Automatic File Naming option

See Logging jobs using automatic file naming, page 102.

The *Synchronization* dialog shows any ***mapping jobs*** that were created with the field software.



a. Select the jobs to synchronize. Click **Select All** or **Select None** as required.

b. From the Options group, select the following as required:

– *Import as Jobs*: the map data is imported as a job. Select this option if the map represents a farming action on a field (such as a planting or spraying coverage map). You can mobs jobs in the desktop software so that they include inputs such as supplies, equipment, and personnel.

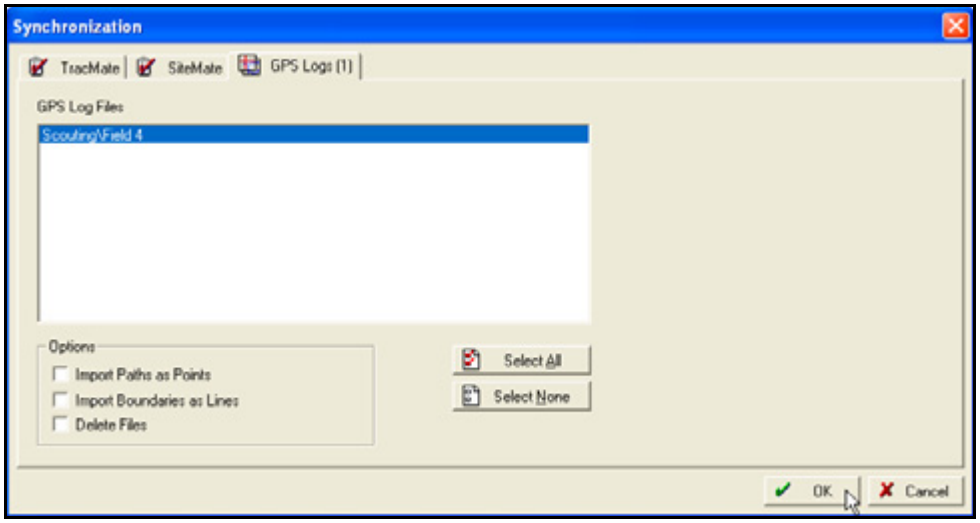
  If you do not select *Import as Jobs*, the data is imported as a background map that will appear under the Client, Farm, or Field in the desktop software. This is useful for maps that represent features such as tiling and feature maps.

– Select *Import Paths as Points* and *Import Boundaries as Lines* to convert data that was logged with the field software using the wrong option

Data logged in the field software without the Automatic File Naming option

See Logging jobs without automatic file naming, page 104.

The *Synchronization* dialog shows any ***files*** that were created with the field software.



1. Select the GPS Log Files to synchronize. You can use the **Select All** or **Select None** buttons as required.
2. Select *Import Paths as Points* and *Import Boundaries as Lines* to convert data that was logged with the field software using the wrong option.
3. Select *Delete Files* to delete files from the selected synchronization location after importing.
4. Click **OK**. The selected files are imported to the desktop as a Job or as a Background Layer, as appropriate.

CHAPTER

4

Configuring the Software

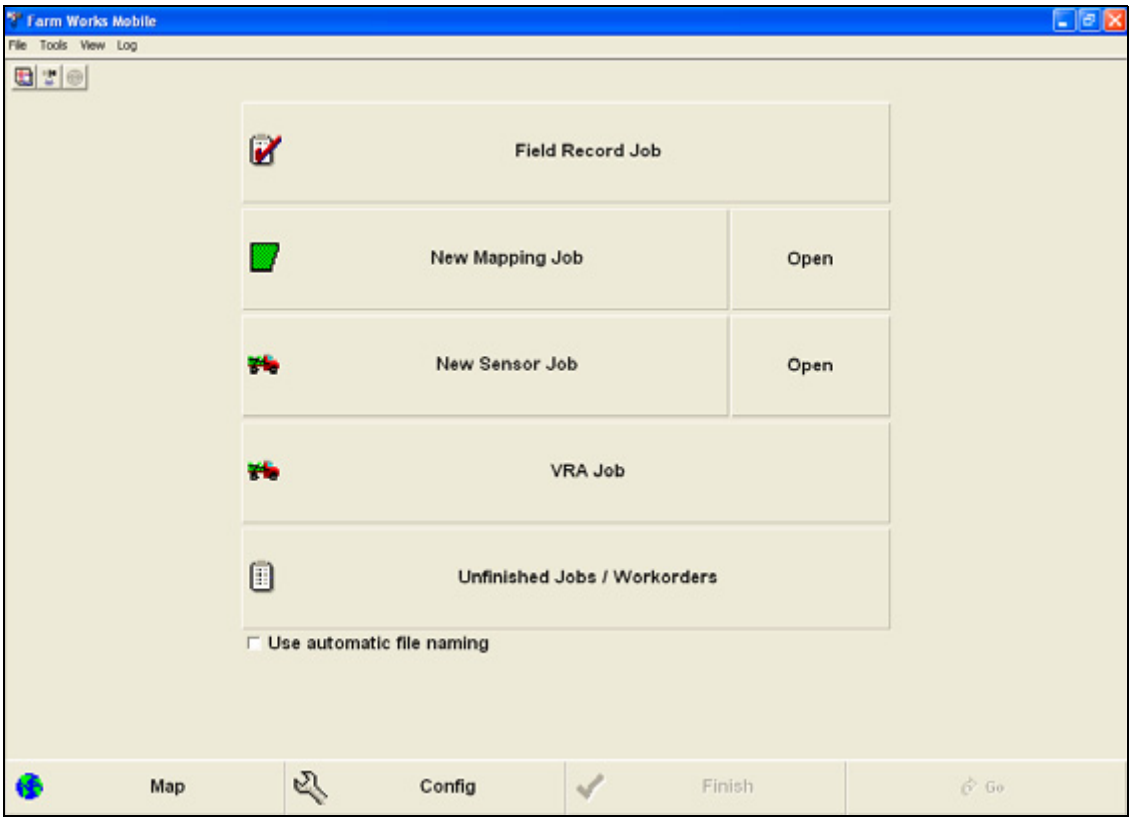
In this chapter:

- Preferences
- Connected Farm configuration
- Configuration sections
- Settings
- Logging
- Display
- Advanced
- Resources

Before you use the software in the field, configure it to function as you require.

Preferences

The new preferences interface allows you to deactivate unwanted features to customize your layout.



Features

Enabled features

The Field Record, Mapping, and VRA Features are already enabled.

Field Record

- Enables you to enter *Field Records* while working.
- View histories of past hybrids, chemical applications, tillage practices, yield, and more.

Mapping

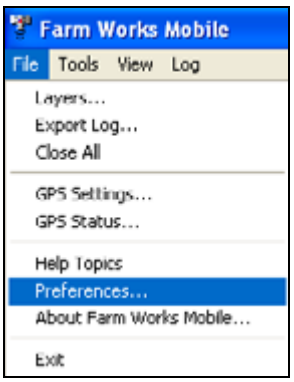
- Use in conjunction with the Field Record Keeping feature and a GPS receiver to track planting dates, chemical usage, scale tickets, hybrid/variety location, and more.
- Map field boundaries, drainage lines, pivots, ditches, and other points of interest.
- View background maps.
- Use grids or management zones for soil sampling.

VRA (variable rate application)

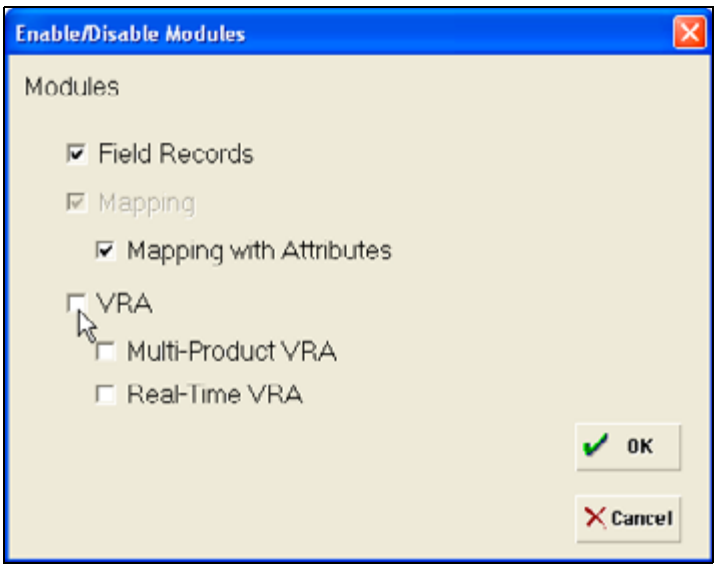
- Control one or more products for variable rate application using prescription maps.
- Support external sensors for logging data and variable rate application.

Deactivating features

1. Select *File / Preferences*.

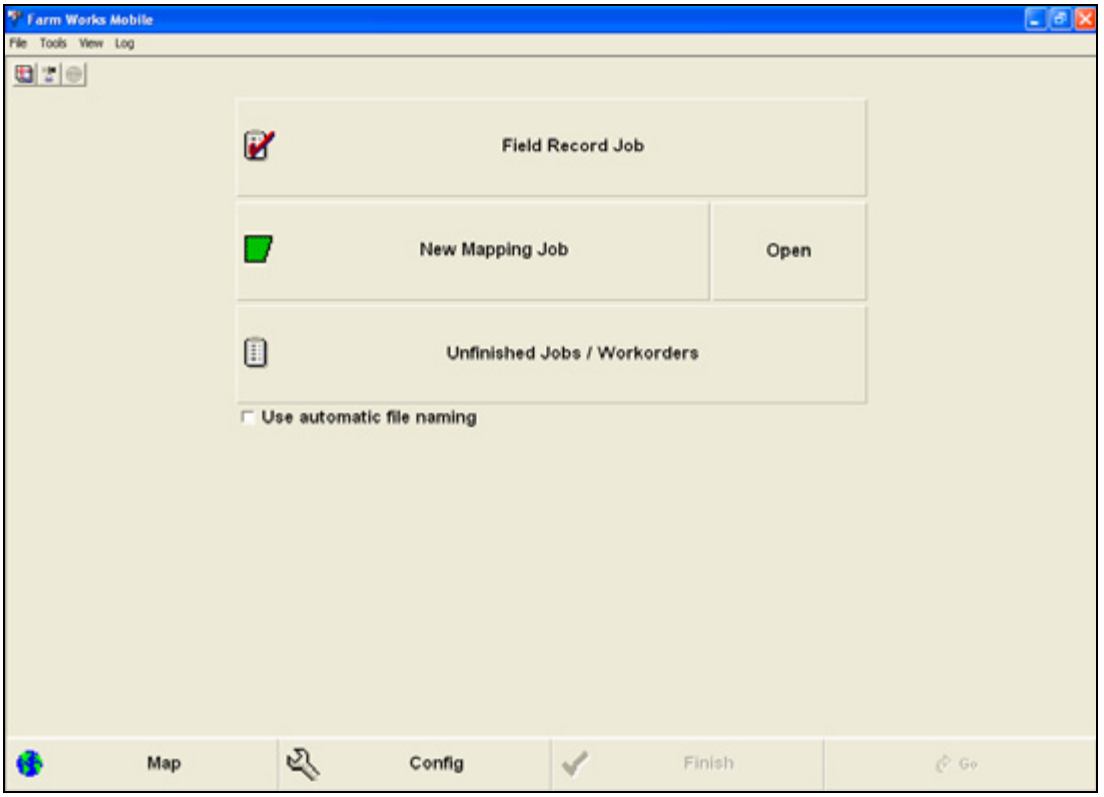


2. In the *Preferences* dialog, clear the checkbox of every feature that you want to deactivate:



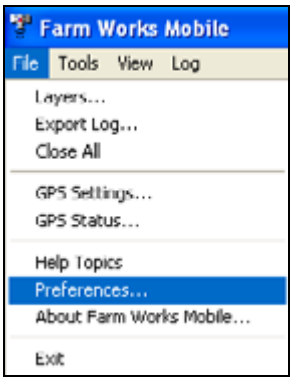
   – If you disable an option, it is removed from the *Jobs* tab.

– If you clear the *VRA* option, the *Jobs* screen displays only the options for *Field Record job*, *New Mapping Job*, and *Unfinished Jobs/Works Orders*.

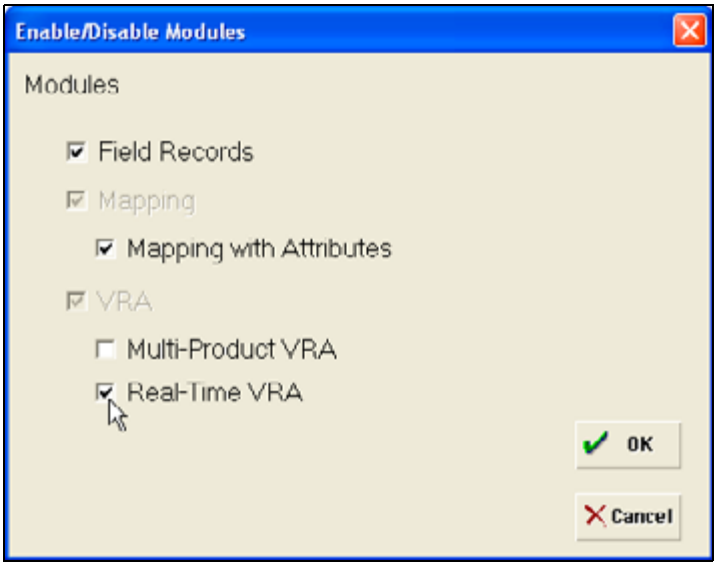


Activating features

1. Select *File / Preferences*.



2. In the *Preferences* dialog, select the checkbox of every feature that you want to activate:



   – If you select an option, it is added to the *Jobs* tab.

– If you select the *Real-Time VRA* option, the *Jobs* screen displays the options for *Field Record Job*, *New Mapping Job*, *New Sensor Job, VRA Job, Real-Time Job*, and *Unfinished Jobs/Works Orders*.

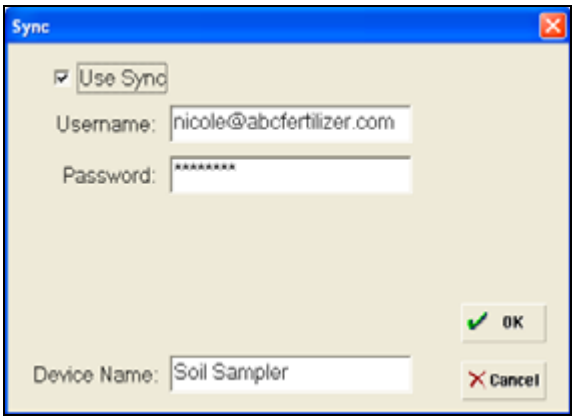
– The Multi-VRA option does not appear on the *Jobs* tab, but when you set up a VRA job you are given the option to select *Multi-Product Channels*.

Connected Farm configuration

The Mobile software can communicate with the Connected Farm server to send completed jobs wirelessly to the office software. It can also receive updated resources (such as clients, farms, fields, and inputs) and work orders.

To configure the Mobile software to work with the Connected Farm and Sync module:

1. Click **Config**.
2. Click **Advanced**.
3. Click **AVL/Sync**.

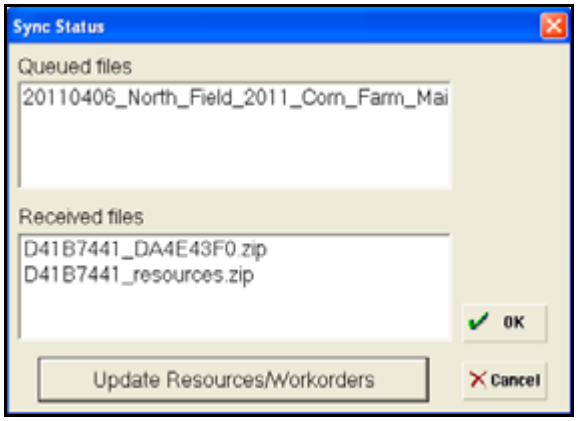


4. Select the *Use Sync* checkbox.
5. Enter your *Username* and *Password*. This information was provided to you when you ordered your *Connected Farm Update Service Plan and Mobile Connection* (using the online order form or through your reseller) and must be the same Username and Password you entered into the Sync software on the desktop (using the **Options** button). Doing this links the data from the mobile device to the desktop computer.
6. Enter a *Device Name* for your mobile device. This is how the device will appear in the *Connected Farm* tab.
7. Click **OK**. The system verifies your Username and Password; if the values are correct, the software starts.

Note – *You need to enter this information only once, unless you have to reinstall the software from scratch, for example, after a computer failure or on a new machine.*

The Sync icon

Click the Sync icon to check the status of any outgoing files or to process any files that are being received from the Connected Farm server.



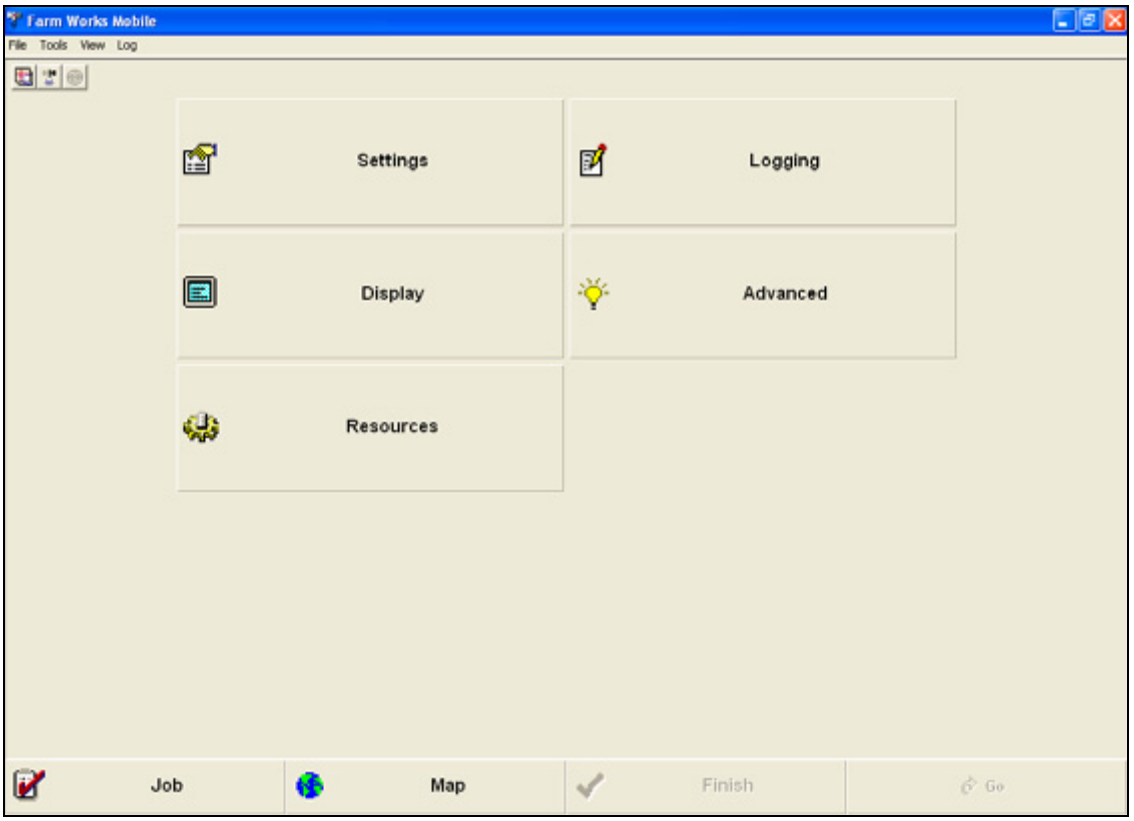
The *Queued files* section shows files completed with the Mobile software and waiting to be sent to the Connected Farm server. These files are automatically sent; they appear here only when you do not have an active wireless connection. If the wireless connection is lost, the files are automatically sent on reconnection.

The *Received files* section shows files received from the Connected Farm server. To process them, click **Update Resources/Workorders**. You can then use the files in the Mobile software.

Configuration sections

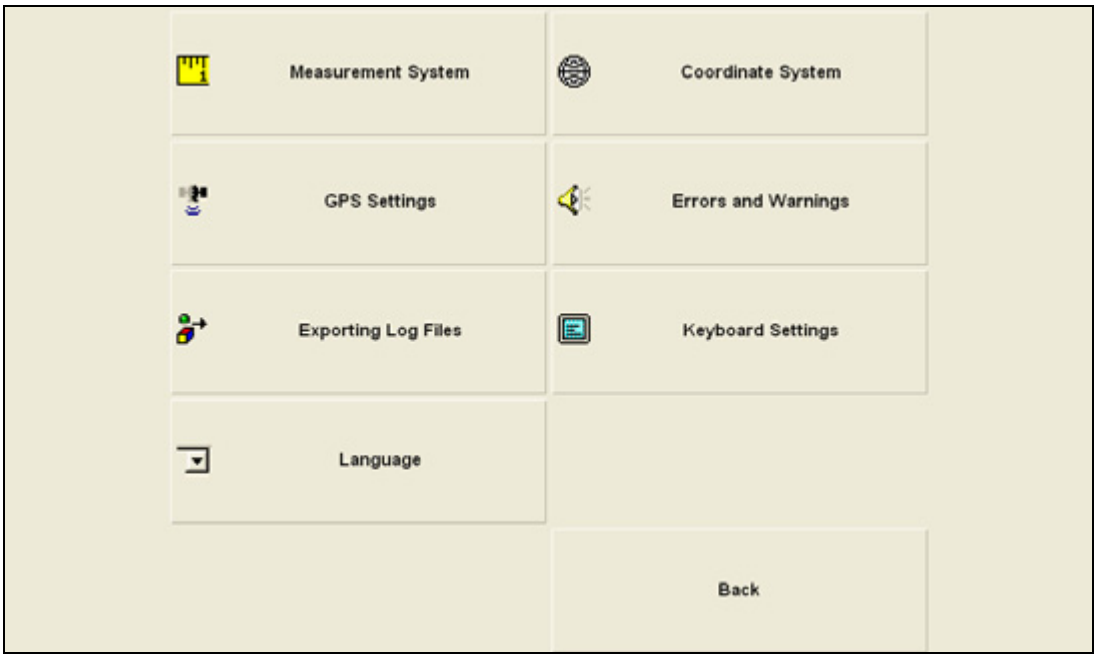
At the bottom of the screen, click **Config**.

There are five main configuration sections: Settings, Logging, Display, Advanced, and Resources.



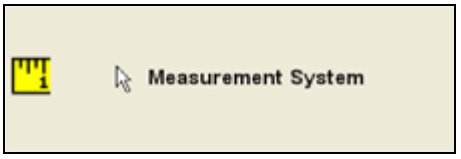
Settings

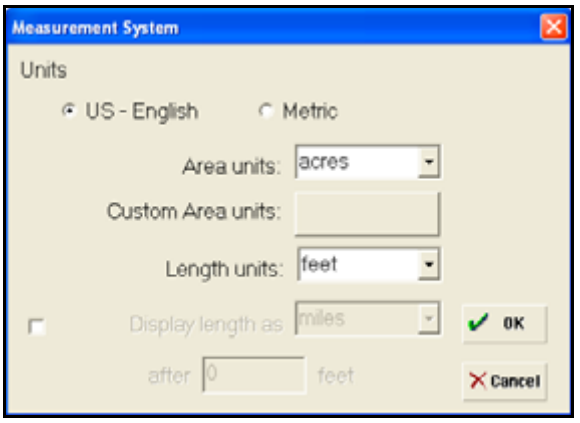
Click **Settings** and then configure the following basic settings.



Measurement

Click **Measurement System**, make the required settings and then click **OK**.



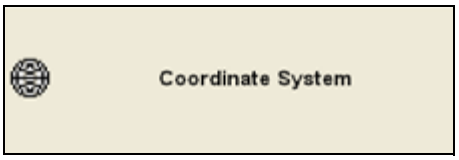


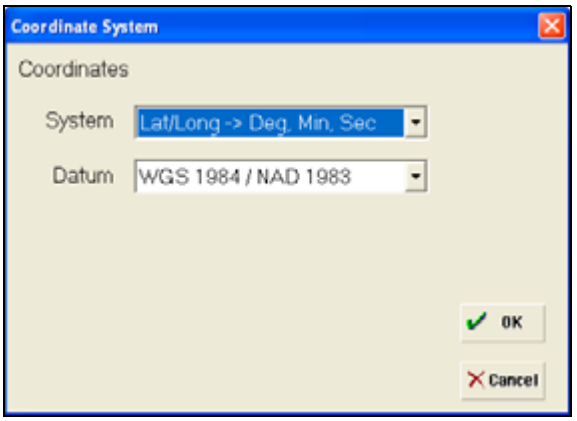
Setting	Options
Units	US - English Metric
The following options depend on the Units you selected.	
Area units	Acres (Agricultural) Sq feet (Turf-related)
Custom Area units	Use this option to set your own measurement units. Once you configure custom units, the name appears on the button.
Length units	Feet, inches, or miles Centimeters, kilometers, or meters
Display length as After	View distances above a certain length (After) as miles or kilometers rather than feet or meters.

Coordinate System

The coordinate system you select here is for display purposes only: It does not have to match the coordinate system of the GPS receiver. The software always logs data in the Lat/Long system.

Click **Coordinate System**, make the required settings and then click **OK**.

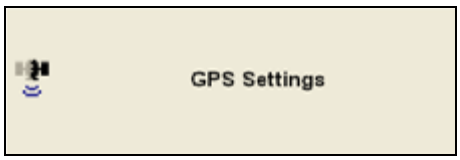




Setting	Options
System	Select from the drop-down list.
Datum	WGS 1984 / NAD 1983 NAD 1927

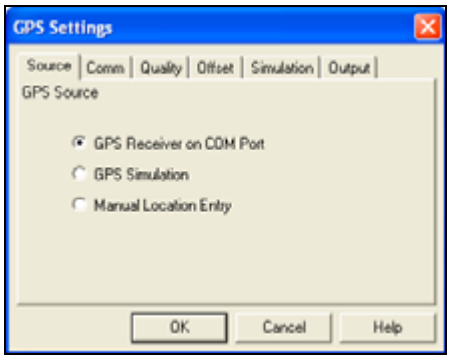
GPS Settings

Click **GPS Settings** and then make the required settings in the six tabs.



Source tab

Set the following and then click **OK**.



Setting	Options
GPS Receiver on COM Port	Select this when creating a map (or maps) based on data received from the GPS receiver. Use the *Comm* tab to enter further settings.
GPS Simulation	Enables you to simulate mapping a boundary or swathing without having a GPS receiver attached. You can experiment and familiarize yourself with the software without having a GPS receiver connected. Use the *Simulation* tab to enter further settings.
Manual Location Entry	Manually record positions on your map without a GPS receiver. If the Manual Coords Tool is selected on the *Map* tab, tap or click anywhere on the map for the software to perform as though you were receiving GPS at that location. This option is frequently used to hand-draw areas that you cannot reach with your GPS receiver.

Comm tab

Configure the software to communicate with your GPS receiver. Port, Baud Rate, Data Bits, Parity, and Stop Bits must match the settings in the receiver.

The software needs, at least, the NMEA strings GGA and VTG.

Set the following and then click **OK**.

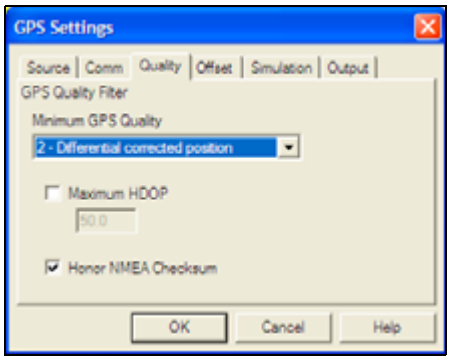
Setting	Options
Port	The port that the GPS receiver is plugged in to the handheld device.
Baud Rate	This is the baud rate set on the connected receiver.
Data Bits	For the Mobile software, set this to 8.
Parity	For the Mobile software, set this to None.
Stop Bits	For the Mobile software, set this to 1.
Auto Baud	If you do not know your port settings, click this button. The software searches for a GPS receiver that is connected and outputting.

The following settings are commonly used:

Device	Port	Baud rate	Data bits	Parity	Stop bits
Juno	Com 4	4800	8	None	1
Nomad	Com 2	9600	8	None	1
Yuma	Com 2	9600	8	None	1

Quality tab

Set the following and then click **OK**.

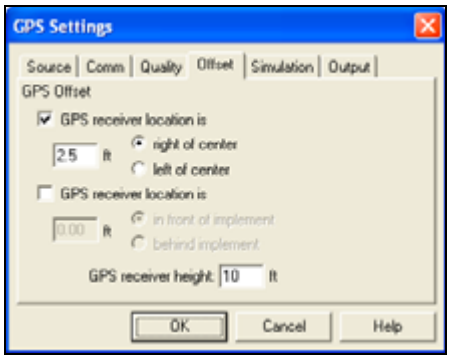


Setting	Options
Minimum GPS Quality Filter	Control whether data is logged or not based on the reported quality. Select from the drop-down list. If set to *2 - Differential corrected position*, the software logs GPS data only if it receives the differentially corrected positions.
Maximum HDOP	GPS positions are not logged if the reported HDOP is higher than the entered value.
Honor NMEA Checksum	Validates the messages coming to the GPS receiver.

Offset tab

The settings in this tab enable you to compensate for an antenna position that is not centered with the vehicle. When you use offset values, the software adjusts the actual GPS positions accordingly.

Set the following and then click **OK**.



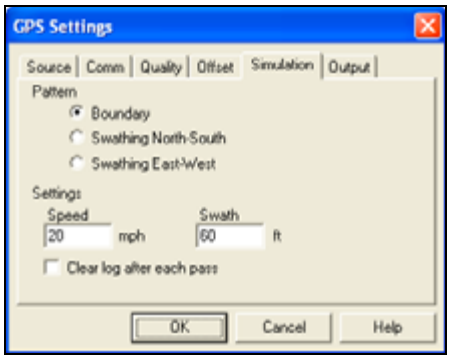
Setting	Options
GPS receiver is	right of center left of center
GPS receiver location is	in front of implement behind implement

Setting	Options
ft (or m)	Enter the distance according to the measurement units that you set previously.
GPS receiver height	Enter the height according to the measurement units that you set previously.

Simulation tab

Use this tab only when the GPS source is selected as GPS Simulation.

Set the following and then click **OK**.

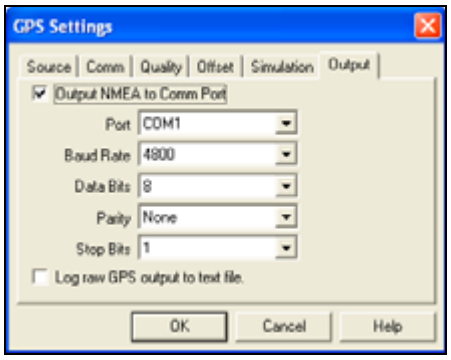


Setting	Options
Pattern	Boundary Swathing North-South Swathing East-West
Settings Enter values according to the measurement units that you set previously.	Speed (at which the simulated position will move across the screen) Swath (width of the path to simulate)
Clear log after each pass	Clear the simulated log after each pass so the paths do not overlap

Output tab

Send the NMEA data strings out to a communications port. Check the box next to Output NMEA to Comm Port and select the correct Port, Baud Rate, Data Bits, Parity, and Stop Bits.

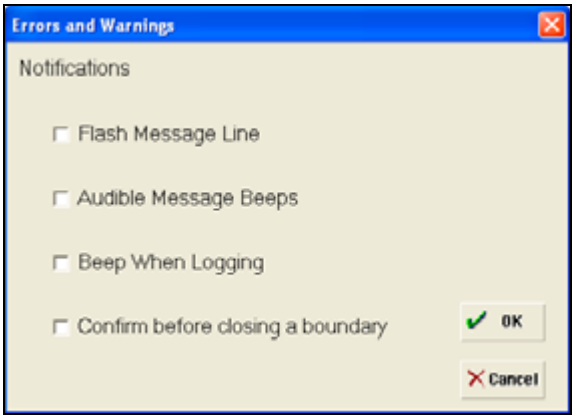
Set the following and then click **OK**.



Setting	Options
Output NMEA to Comm Port	Send the NMEA data strings to a communications port. Set the following: Port Baud Rate Data Bits Parity Stop Bits
Log raw GPS output to text file	Select if required.

Errors and Warnings

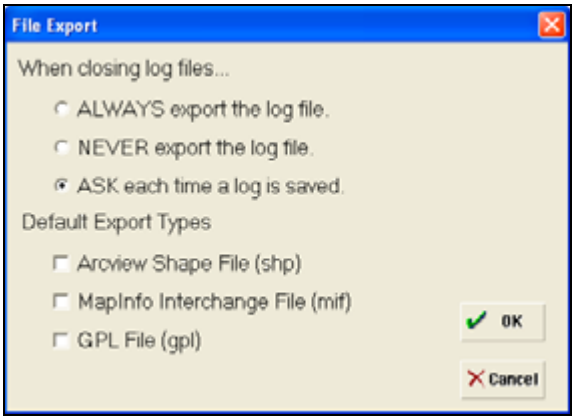
Click **Errors and Warnings**, make the required selection and then click **OK**.



Setting	Options
Flash Message Line	A message line appears at the bottom of the screen when GPS data is not received.
Audible Message Beeps	Software beeps when GPS data is not received.
Beep When Logging	Software beeps as information is being logged.
Confirm before closing a boundary	If you selected automatic closing of boundaries, you are prompted to confirm closing the boundary.

Exporting Log Files

Click **Exporting Log Files**, make the required selections and then click **OK**.

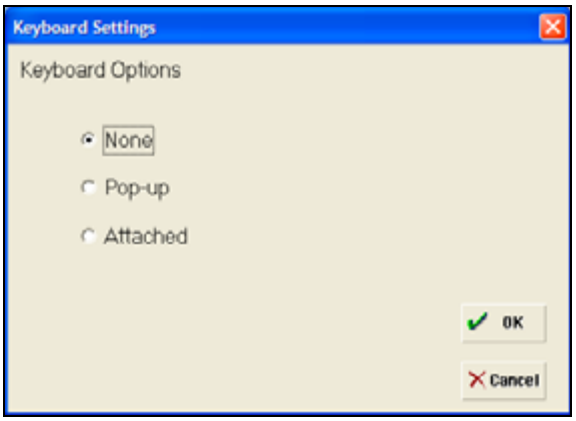


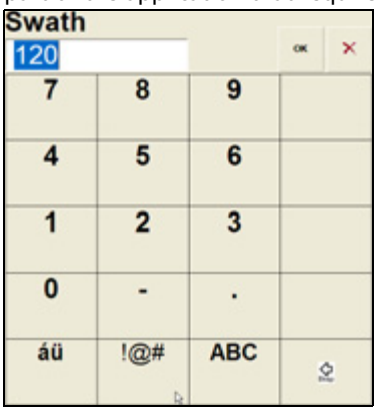
Setting	Options
When closing log files	ALWAYS export the log file. You must also select a Default Export Type: See below. NEVER export the log file. Select this option if the data you log will be used with the Farm Works Mapping software. ASK each time a log is saved. You are prompted to export or not each time you save or close a log file.
Default Export Type	ArcView shapefile (shp) Mapinfo Interchange File (mif) GPL File (gpl)

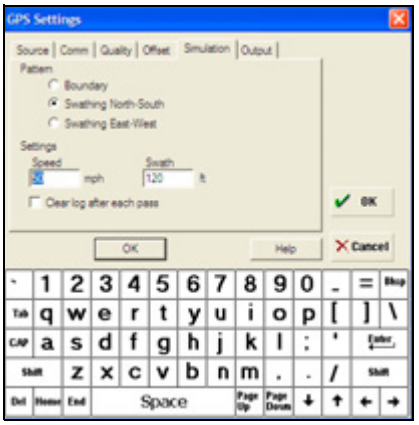
Keyboard Settings

The software can work with external keyboards as well as with keyboards that are part of the operating system you are using. The software can also be configured to use special keyboards that are part of the application—these keyboards work well with touch-screen devices such as the Trimble Juno, Nomad, or Yuma handhelds.

Click **Keyboard Settings**, make the required selections and then click **OK**.



Setting	Options
None	You are using an external keyboard or the standard on-screen keyboard that is included with the computer or device operating system.
Pop-up	Use the pop-up keyboard. This is a full-screen keyboard that is ideal for touch-screen devices that have a small display area. The keyboard is activated whenever that you tap or click on a part of the application that requires data entry. 

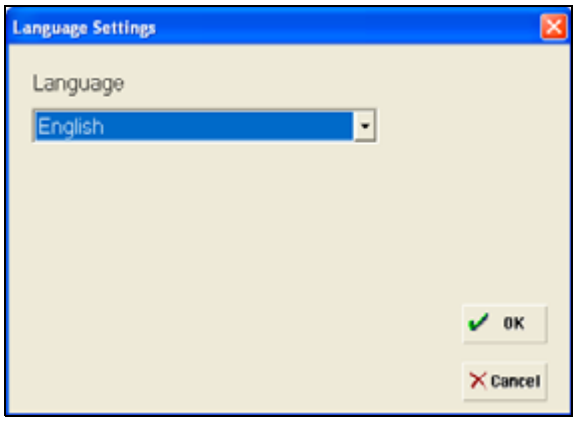
Setting	Options
Attached	Use a keyboard that is built into the various dialogs in the software. This keyboard is ideal for touch-screen devices that have a large display area. 

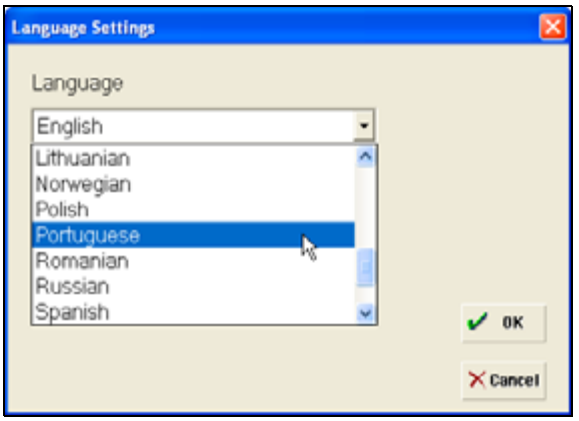
To return to the main configuration dialog, click **Back**.

Language

The language feature allows you to change the language that you selected during the original installation, without requiring you to reinstall the software.

Click **Language**, make the required selection from the drop-down list and then click **OK**.

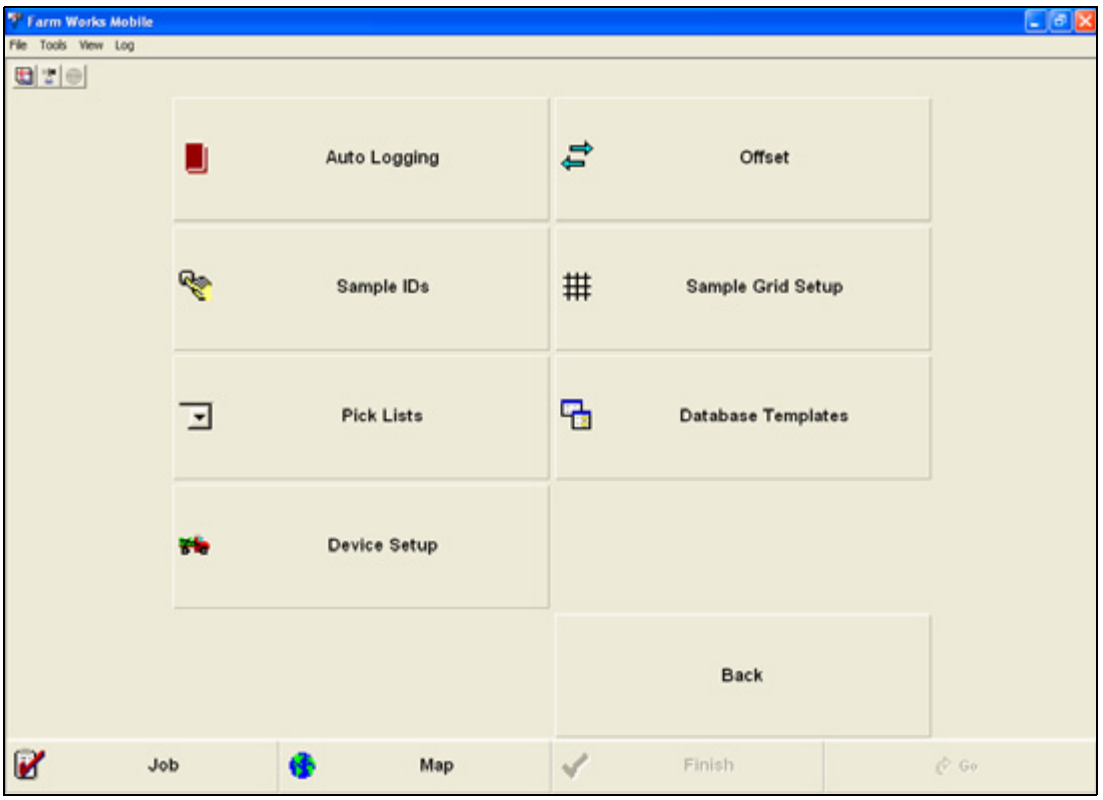




You are prompted to restart the software—the language change will appear when you do so.

Logging

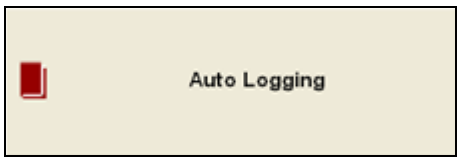
When you select Logging from the *Configure* dialog, the following features are available.

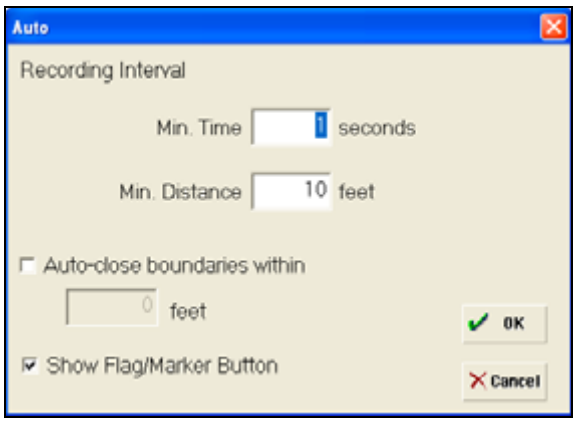


Auto logging

Enter settings related to automatic logging of GPS data. Typically, auto logging is done to record a map at a set interval as you drive. This is useful when logging boundaries of irregular shaped fields and when logging a coverage map.

Click **Auto Logging**, make the required entries and then click **OK**.





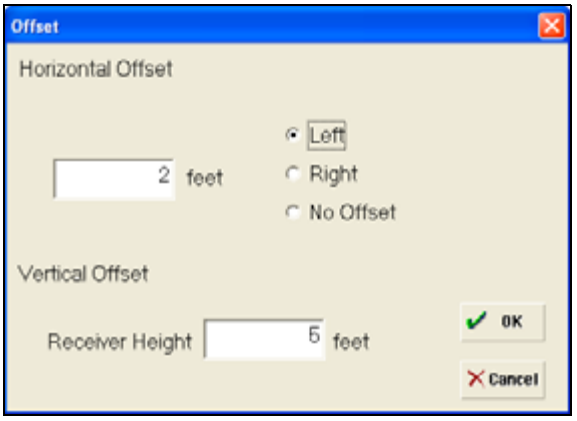
Setting	Options
Recording Interval	The interval at which data is logged. Enter a distance and/or a time interval. Whatever criteria is set must be met before the software will log a position. If you use a combination of time and distance, ***both*** criteria must be met before the software will log a position. Typically, you want shorter intervals when you will be moving fast or when the map is very detailed.
Auto-close boundaries within	The software closes the boundary and stops logging once you are within the specified distance (ft) of your starting point of the boundary. This option can occasionally cause a boundary to close immediately after starting when used with a lower accuracy GPS receiver. To avoid this, turn off this option.
Ft (or m)	Enter a value for auto-closing the boundary, according to the measurement units that you set earlier.
Show Flag/Marker Button	A flag icon appears on the map window to easily identify objects in a field during a job. The flag is available only when you are logging data.

Offset

CAUTION – Do not use this option to set up a permanent offset, such as when a GPS receiver is not mounted in the center of the implement. To set up a permanent offset, see GPS Settings, page 31.

Click **Offset** to apply a ***temporary*** offset to any position being logged, such as when mapping a fence line boundary and you cannot drive directly on top of it.

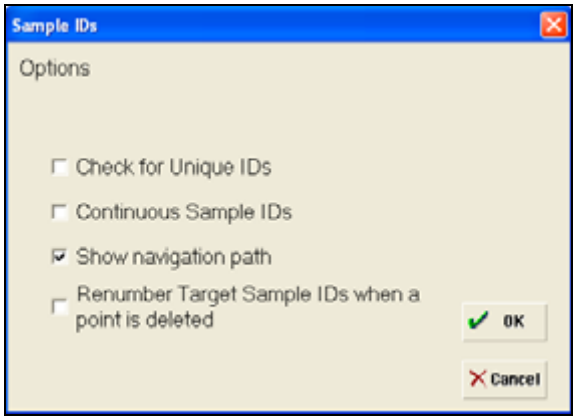
Click **Offset**, make the required selections and then click **OK**.



Setting	Options
Horizontal Offset	• Left • Right • No Offset The direction the object to map is from the receiver (based on the direction of travel).
feet (or meters)	The distance to offset. Enter a value according to the measurement units that you set earlier.
Vertical Offset	Receiver height, according to the measurement units that you set earlier.
Note – *To set the Offset "on the fly", click the left or right arrows on the Offset button in the Map tab to change the value shown.*	

Sample IDs

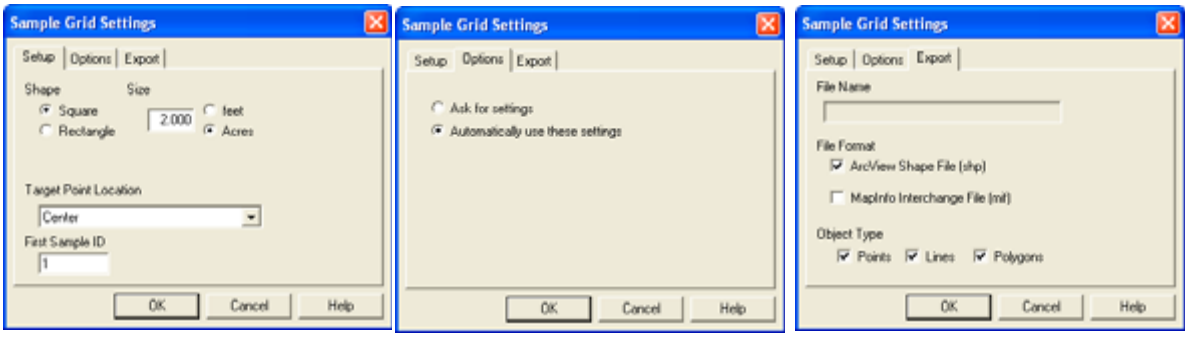
Click **Sample IDs**, make the required selections and then click **OK**.



Setting	Options
Check for Unique IDs	The software verifies that an ID is not used twice in the same log file.
Continuous Sample IDs	Allows for continuous ID numbers to be transferred from job to job. That is, Sample IDs do not restart when a new job starts; the program continues with the next number.
Show Navigation	Displays a navigation path that automatically connects the target points in the order they are numbered in.
Renumber Target Sample IDs when a point is deleted	When you create a sampling grid, the software enables you to move and delete target sampling points. When this option is selected, if you delete a target point, the software automatically renumbers the remaining points.

Setting up a Sample Grid

Click **Sample Grid Setup**, make the required selections in the different tabs in turn and then click **OK**.



Setting	Options
In the Setup tab:	
Shape	Shape of the grids. Select *Rectangle* or *Square*.
Size	Size of the grids: Enter in a size and then select feet or acres.
Target Point Location	Location of the target point within the Grid. Select *Center*, *Stagger Parallel*, or *Stagger Perpendicular.*
In the Options tab:	
Ask for Settings	You are prompted for the Target Grid Shape, Size and Target Point Location when a sample grid is created.
Automatically use these settings	You can enter a default sampling Target Grid Shape, Size and Target Point Location. These settings will be used automatically every time that you create a sampling grid. ***Note –*** *It you select this option, the software does not give you the option to confirm or change the settings before the grid is set up.*
In the Export tab:	
File Name	If you selected *Automatic File Naming*, the default file name uses the date, field name, and enterprise. If you did not select *Automatic File Naming*, the program defaults to the file name used when setting up the job.
File Format	When you create a sampling grid, the software creates background layers that show the target sampling grid. This option enables you to select a format for the layers: • ArcView shapefiles (.shp) • Mapinfo Interchange Files (.mif)
Object Type	Select one or more of the following target sampling types: • Points • Lines • Polygons A separate background layer is created (.shp or .mif format) for each selected type. If you select all three types, you will have three sets of files.

Pick lists

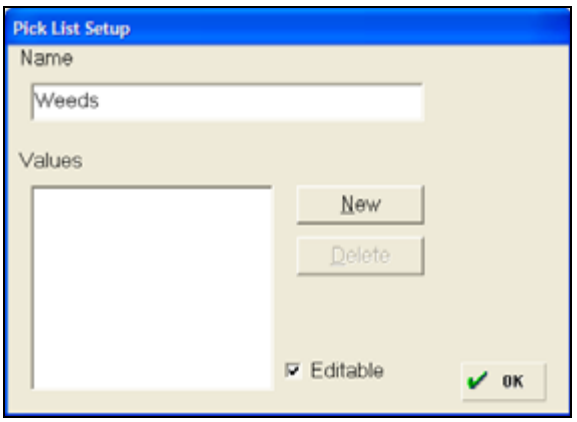
This option is available only with the Mapping feature enabled. For more information on enabling features, see Preferences, page 20.

Create a pick list to simplify data entry. Pick lists contain items that you can select for mapped areas, paths, and points. For example, for a weed problem area, your pick list can include each type of weed that you will be scouting. Then, when you map that area, you can select the appropriate weed from the list.

1. From the *Config* dialog, select *Logging* / *Pick Lists*.

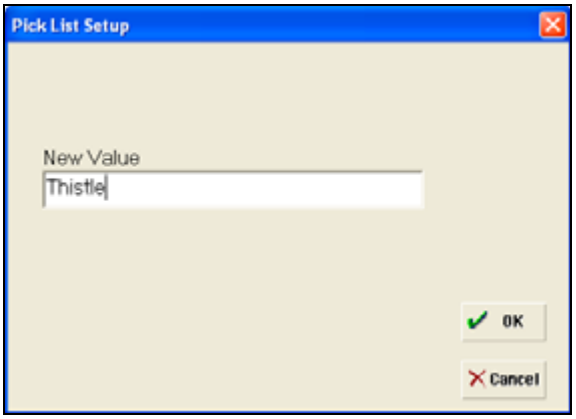
   A list of previously created pick lists appears. Edit or delete them as required.

2. Click **New** to create a new list.



3. Enter a meaningful name, for example **Weeds**.
4. Select *Editable* to enter new values in the field and have them added to the list. If *Editable* is not selected, you must use the existing items on the list.
5. Click **New** to add a new value to the list.

6. Enter the new value, for example, **Thistle** and then click **OK**.



7. Repeat Step 5 and Step 6 to enter more items. These are the names you will select from later. For a Weeds pick list, add all the weeds that you will scout for.
8. When finished, click **OK**.

Database template

This option is available only with the Mapping feature enabled. For more information on enabling features, see Preferences, page 20.

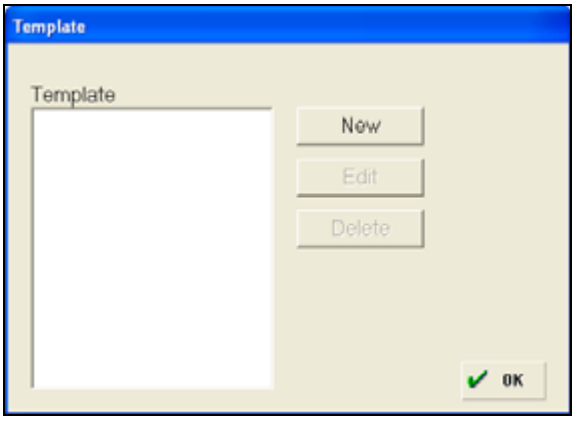
Each time that you log data, you can select from a list of database templates that determine the attributes to logged. This means that in addition to mapping paths, points, and boundaries, you can add attribute data. You can create a templates before opening a new log file.

Note – *To use a pick list in a template, you must first set up the pick-up list.*

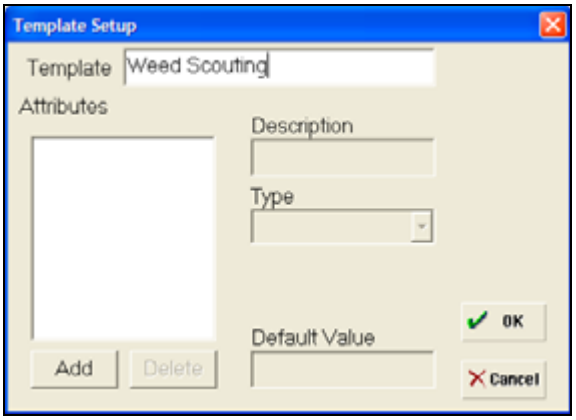
To create a new template:

1. From the *Config* dialog, click *Logging* / *Database Template*.

If templates were created previously, they will appear in the list. Edit or delete them as required.



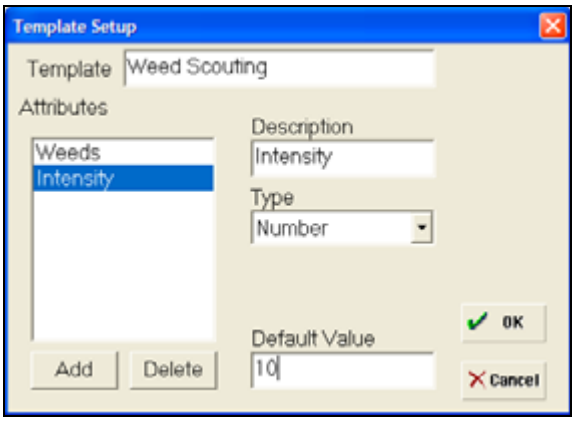
2. Click **New** to create a new template.



3. Enter a meaningful template name. For example, **Weed Scouting** for mapping weed areas.

   The *Attributes* area shows a list of the items that will be recorded in the database.

4. Click **Add** to add a new item to the list and then enter a description that relates to individual attributes included in the database. For example, enter **Type**, **Intensity**, and **Notes** for a weed layer.



5. From the *Type* drop-down list, select a data type for each item being recorded.

   Data types include Number, Text, Date (automatically enters the date), Image (enables you to tie an image such as a digital photo to the map), and Sample ID (automatically assigned an ID to each sample logged). Any previously created pick lists appear as options for Type.

   In the weed example: Type of weed (**Weeds**) has a data type selected as the name of the pick list created for the different types of weeds, Intensity could be Number, and Notes would be Text.

   If you select a Text data type, also specify the number of characters. The default value is 40, but you can change it.

Note – *If you select Pick List as the data type, the attribute name changes to the name of the pick list.*

6. If most of the data being logged will have the same value, enter a Default Value for the software to use each time that a point or boundary is logged. You can change the value when necessary.
7. Click **Add** to create additional attributes to the template. The template can include as many different items as you like. You must create an attribute for each piece of information that you want to record.
8. When finished, click **OK**.

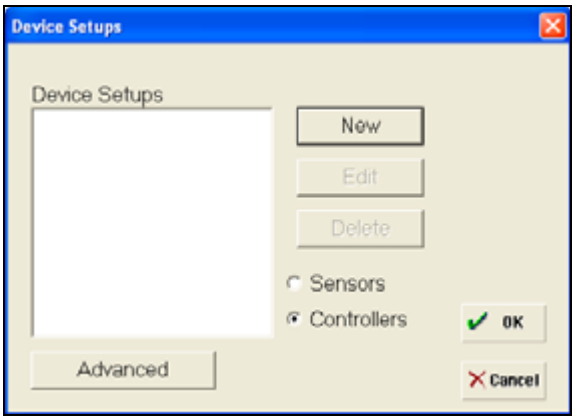
Device Setup

This option is available only with the VRA (Variable Rate Application) feature enabled. For more information on enabling features, see Preferences, page 20.

Set up controllers for a VRA job. You can add a new controller or sensor, or edit or delete an existing one.

To create a new device setup:

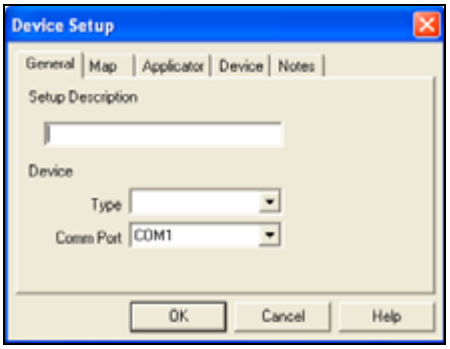
1. From the *Config* dialog, select *Logging* / *Device Setup*.



2. Select *Sensors* or *Controllers*.

Note – *A controller is a device the Mobile software will send data to; a sensor is a device the Mobile software will receive data from.*

3. Click **New**. The *Device Setup* dialog appears.



4. Enter setup information for the controller in the following tabs.

Tab	Information
General	• Description: Enter a name for the controller setup. • Type: Select from the drop-down list. • Comm Port: Select from the drop-down list. Create a separate VRA setup for each controller that you will use. If one controller will be used with different products or machines, and they require different settings, you may want to create a separate setup for each one.
Map	• Default Rate: This is the rate that will be sent to the controller if you go outside the defined area on a variable rate prescription map. Set this to zero if you do not want it to turn on outside the map. • Conversion: Enter the conversion of map-to-controller units. If unit of measure for the prescription map does not match that of the controller, for example, if the map is in tons and the controller needs pounds, enter a conversion of 1 Map Unit = 2000 Controller Units. To decrease all of the rates on your map by a set percentage (for instance, 10%), enter a conversion of 100 Map Units = 90 Controller Units. If both units are the same, enter 1 map unit = 1 controller unit. The software applies these settings to the rates on the prescription map and sends the adjusted rates to the controller.
Applicator	Enter the settings for the rate controller and the GPS receiver. • Feed Delay: The time (in seconds) that it takes for the controller to respond to a change in rate. • Following Distance: The distance from the GPS receiver to the distribution point of the implement.For example, if the receiver is behind the boom section, enter a negative number. • Swath width: The width of the path that appears on the screen as you work the field. If you enter this as the actual implement width for your equipment, you see a coverage map on the screen as you drive.
Controller	Enter the information specific to your controller. For more information, see Appendix A, Setting Up a VRA Controller.
Notes	Enter any general notes related to this setup. You may want to include notes of settings that you need to make in the controller itself, or specific cables you need

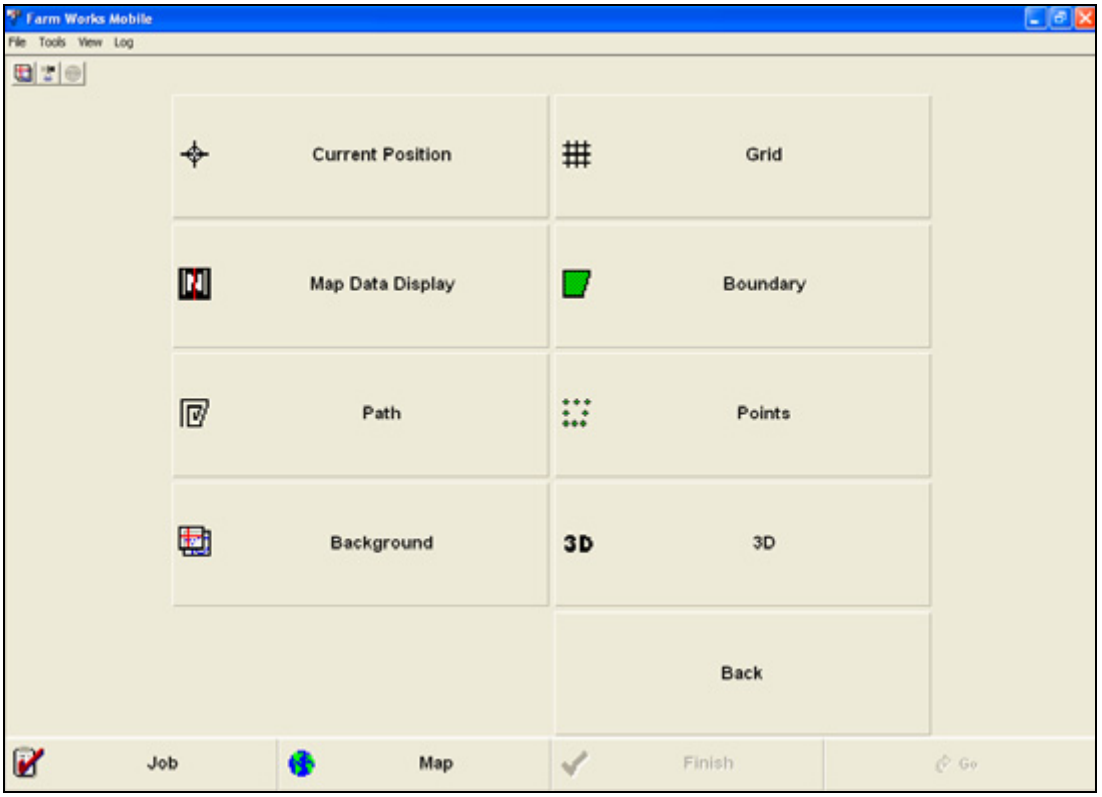
5. Click **OK** to save the setup.

Note – *Once a VRA job is started, you can click* ***Setup*** *on the map window to access these settings.*

To return to the main configuration dialog, click **Back.**

Display

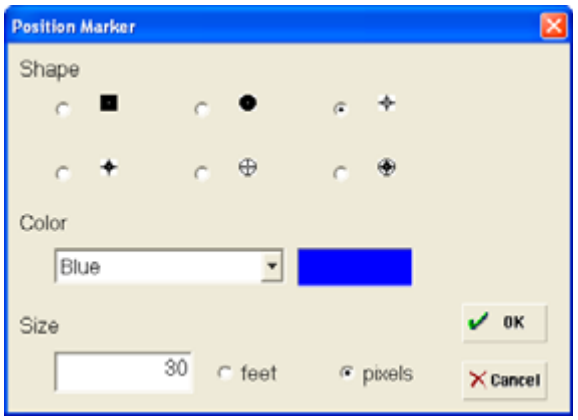
In the main configuration tab, click **Display Settings** to set up Current Position, Grid, Map Data Display, Boundary, Path, Points, Background, and 3D.



Current Position

Configure how the current position appears.

Click **Current Position**, make the required settings and then click **OK**.

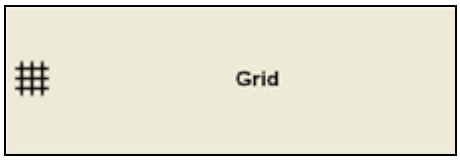


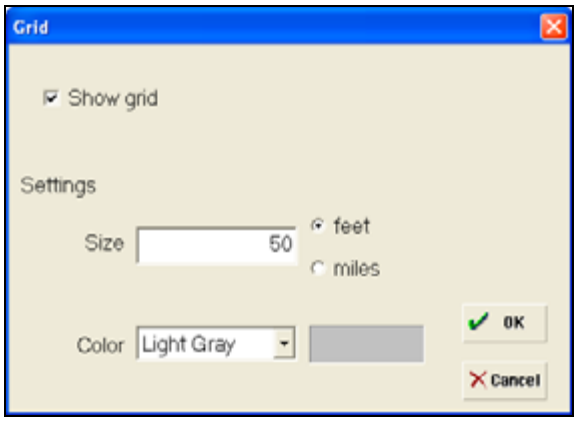
Setting	Options
Shape	Select from the options given.
Color	Select from the drop-down list.
Size	Enter a value and then select feet or pixels. • Feet: The Position Marker is sized in relation to the map. The disadvantage is that a small Position Marker size may result in making the cursor very hard to see when viewed on a large map. • Pixel: The Position Marker is sized in relation to the screen. The advantage is that the cursor will always be the same size and will always be visible no matter how large the map is.

Grid

Show grid lines on the map window as a distance reference.

Click **Grid**, make the required settings and then click **OK**.





Setting	Options
Show grid	Select to show the grid; clear to hide the grid.
Settings	• Size: Enter a size for the grid and then select feet or miles (or the metric equivalent according to the Units selected previously). • Color: Select a color for the grid from the drop-down list.

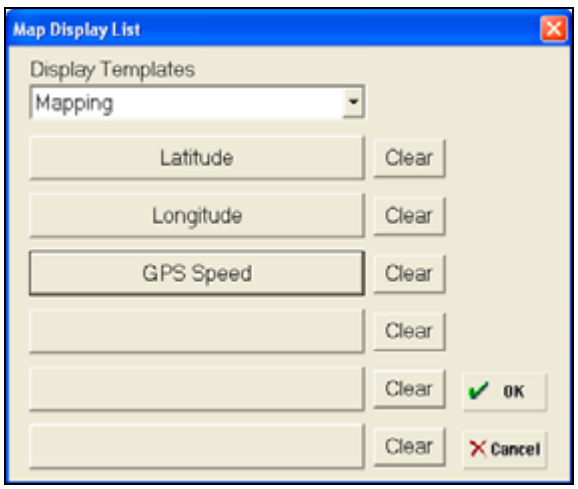
Map Data Display

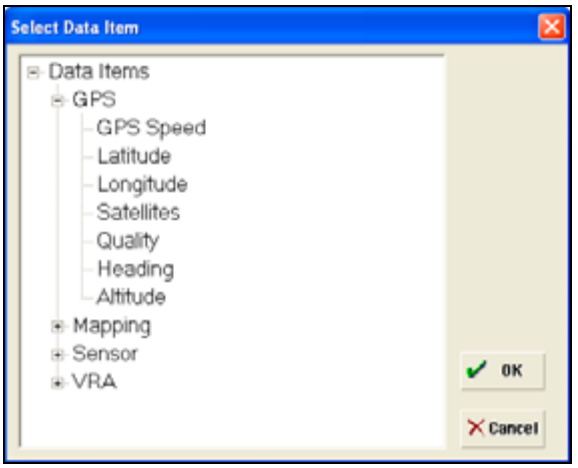
Select up to six items to appear on the right side of the *Map* tab.

To populate the items, click the large (attribute) button and then select the attribute to be shown. Once selected, the attribute name appears on the button.

To change the information shown, click **Clear** next to an attribute and then select another attribute, if required.

Click **Map Data Display**, make the required settings and then click **OK**.



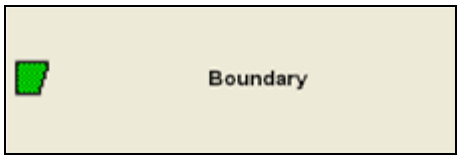


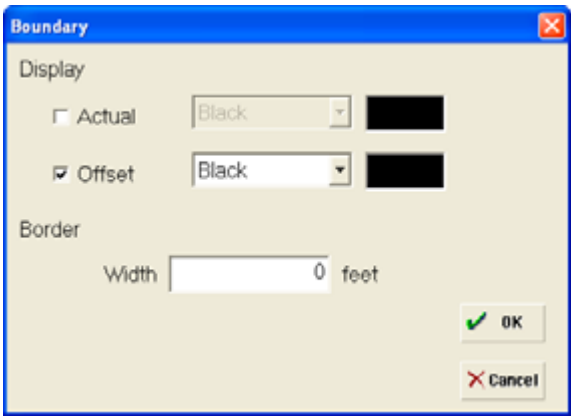
Setting	Options
Display Template	You can set up and then use one of the following Display Templates based on the type of job you are creating: • Default: When you have not started a job. • Mapping: When you record a Mapping job using the Mobile software with the Mapping feature enabled. • Sensor: When you are logging data from a sensor using the Mobile software with the VRA feature enabled. • Field Records: When you record a Field Record Job using the Mobile software with the Field Records feature enabled. • VRA: When you are performing a Variable Rate Application job.
Attribute buttons	For example: • GPS Speed • Next Sample ID: To see the upcoming soil sample ID • GPS accuracy: To view the number or quality of Satellites being viewed The information appears on the Map tab in the selected order. Values are updated as the data being received is updated.

Boundary

Select to show the actual and/or the offset boundary line in the *Map* tab.

Click **Boundary**, make the required settings and then click **OK**. ,



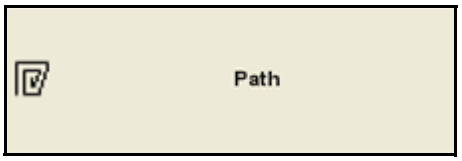


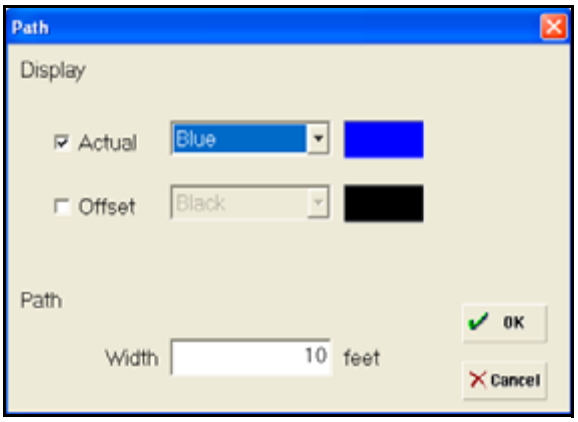
Setting	Options
Display	• Select Actual and/or Offset. • Select a color for each boundary from the drop-down list. ***Note –*** *If you select Offset and there is no offset entered, the actual boundary is used.*
Border	Enter a width according to the Units that you selected previously. If you enter 0 (zero), the boundary lines always appear the same.

Path

Select to show the actual and/or the offset path in the *Map* tab.

Click **Path**, make the required settings and then click **OK**. ,

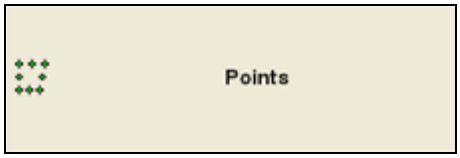


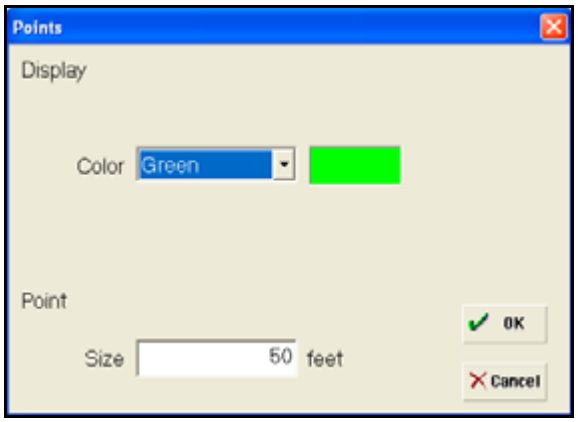


Setting	Options
Display	• Select Actual and/or Offset. • Select a color for each path from the drop-down list. ***Note –*** *If you select Offset and there is no offset entered, the actual path is used.*
Path	Enter a line width according to the Units that you selected previously. If you enter 0 (zero), the path lines always appear the same.

Points

Click **Points**, make the required settings and then click **OK**. ,

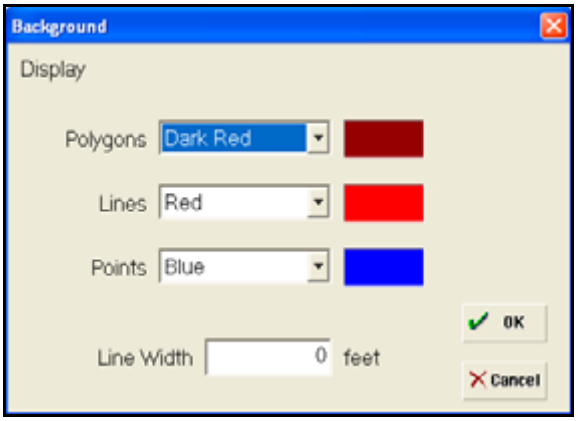




Setting	Options
Display	Select a color from the drop-down list.
Point	Enter a point size according to the Units that you selected previously.

Background

Click **Background**, make the required settings and then click **OK**. ,

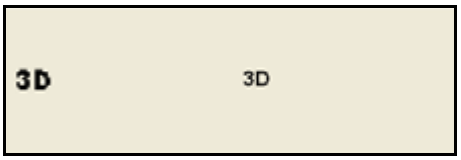


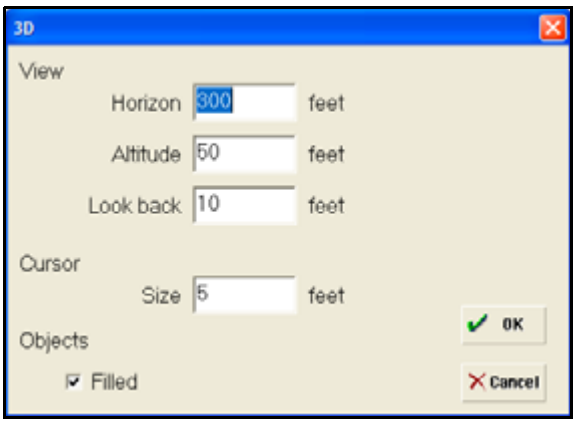
Setting	Options
Display	Select a color for each polygon, line, and point from the drop-down list.
Line Width	Enter a line width according to the Units that you selected previously. The width will apply to polygons and lines. If you enter 0 (zero), the path lines always appear the same.

3D

Determine how the *Map* tab will appear in 3D mode.

Click **3D**, make the required settings and then click **OK**. ,





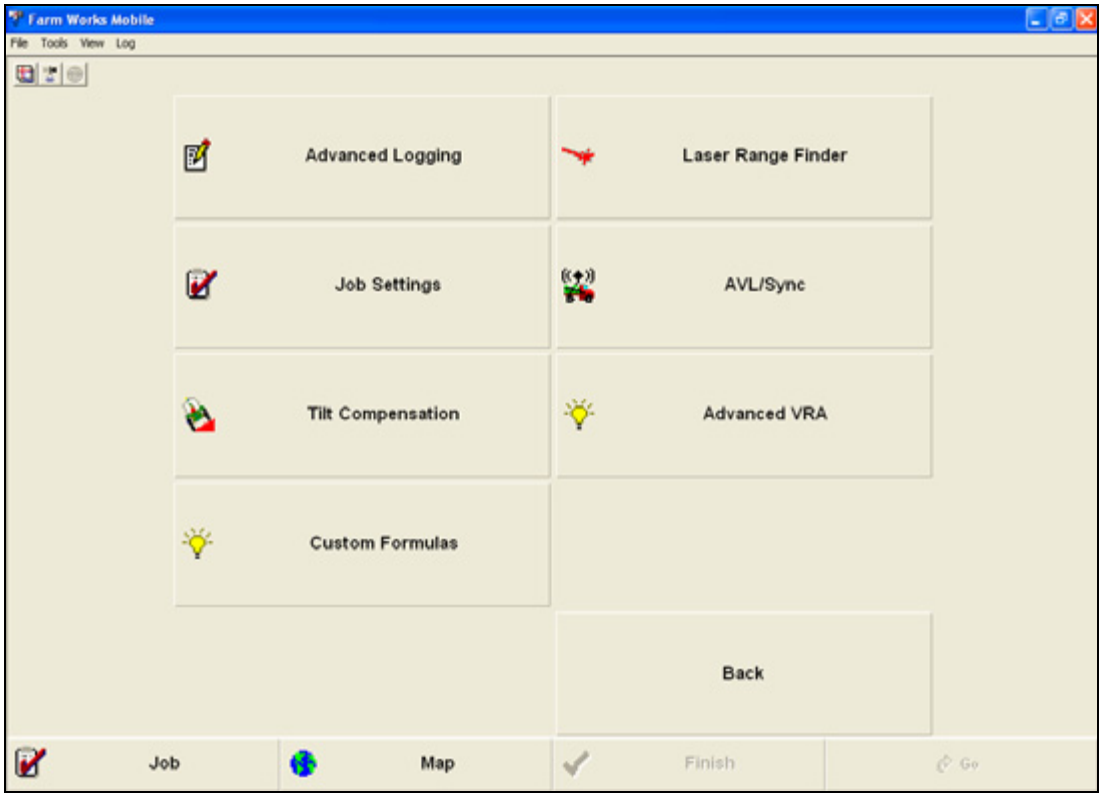
Setting	Options
View	• Horizon: How far into the distance the software will show for the look ahead. • Altitude: The distance top to bottom that is used for the look ahead. • Look back: The distance that appears behind the cursor. This area shows any map that has already been logged or created.
Cursor	Size: The size of the cursor on the screen. Enter a value according to the Units that you selected previously.
Objects	Filled: In 3D mode, the software shows logged paths as polygon/area segments. If you do not select Filled, the inside of each segment will be transparent and you can easily see overlapping areas.

To return to the main configuration dialog, click **Back**

Advanced

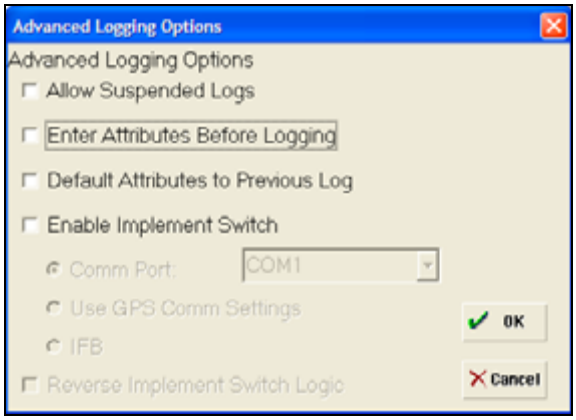
In the main configuration dialog, click **Advanced**.

The following advanced features are available:



Advanced Logging

Click **Advanced Logging**, make the required settings and then click **OK**. ,

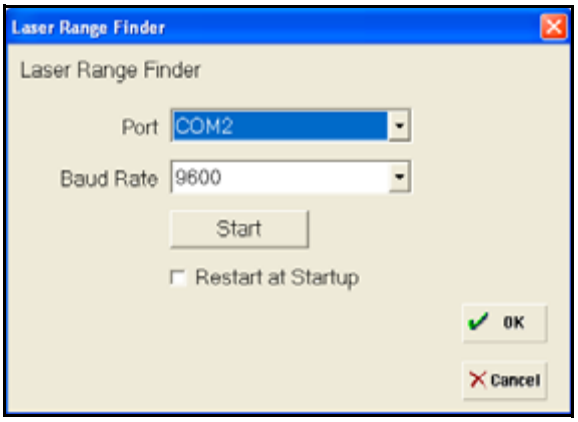


Setting	Details
Allow Suspended Logs	Suspend a log that is "in progress" and start a new log by selecting the appropriate option from the Log menu. This can be helpful when logging more than one type of information at the same time. For example, if you are logging a path and want to log a point, you can suspend the path and then map the point without completely stopping the path log.
Default Attributes to Previous Log	Attributes of a new log file will default to the same attributes that were used on the previous log. This is helpful much of the information being logged will stay the same. This option is available with the Mapping feature enabled.
Enter Attributes Before Logging	You are prompted to add attributes to a log file as soon as the log is created.This option is available with the Mapping feature enabled.
Enable Implement Switch	If you are using an implement switch, you must enable it here. ***Do not*** select this option if the implement switch is not connected. You can use an implement switch to automatically turn on or turn off logging. Set the implement switch connection options as required.
Reverse Implement Switch Logic	If logging is backward to what it should be—off when it should be on, and vice versa—select this option to reverse the logic.

Laser Range Finder

Enables you to connect a laser range finder to your computer or mobile device. Use the laser range finder to log points in the field without having to place the GPS receiver at the point.

Click **Laser Range Finder**, make the required settings and then click **OK**. ,

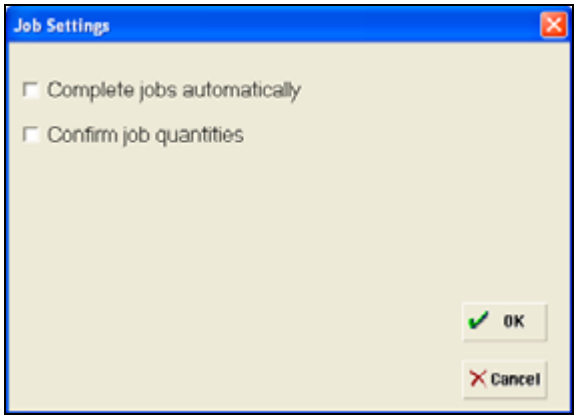


Setting	Options
Port	Select a Com port from the drop-down list.
Baud Rate	Select the baud rate from the drop-down list.
Restart at Startup	Select this to connect the laser range finder whenever you start your computer or mobile device.

Job Settings

The Field Record feature must be enabled. For more information, see Preferences, page 20.

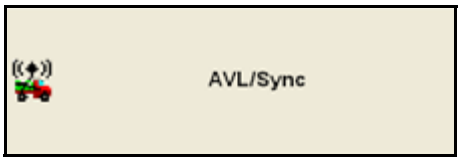
Click **Job Settings**, make the required changes and then click **OK**.

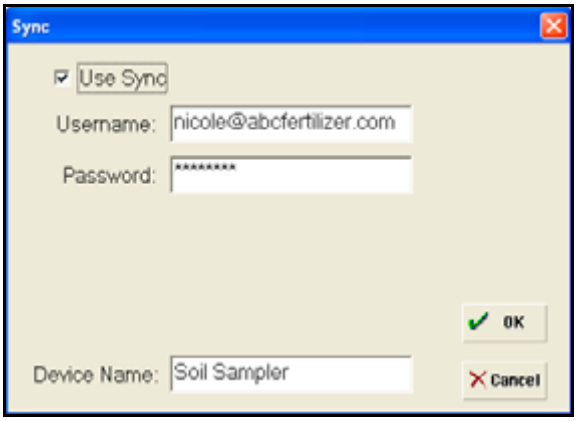


Setting	Options
Complete Jobs Automatically	If you select this option, when you click **Finish** in a job, you are not prompted to mark the job as Complete or Unfinished so that you can re-open and complete at a later date.
Confirm Job Quantities	If you select this option, and you click **Finish** in a Field Record job, the software prompts you to verify input quantities.

AVL/Sync

Click **AVL/Sync**, make the required changes and then click **OK**.



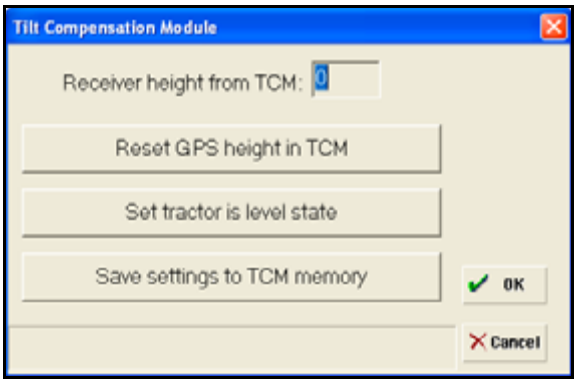


Setting	Options
Sync	Click **Sync** to enable the Mobile software to communicate using Connected Farm. ***Note –*** *When Connected Farm opens, enter the User Name and Password you used when you set up Connected Farm on the desktop program.*
Device name	Enter a device name for this particular device. This is the name that appears in the *Connected Farm* tab in the Farm Works Mapping program. For more information, see Connected Farm configuration, page 25.

Tilt Compensation

Configure the software to work with a Mid Tech/Tee Jet tilt compensation device. Configuration must be through the software, and the Terrain Compensation Module (TCM) must be connected to the computer.

Click **Tilt Compensation**, make the required changes and then click **OK**.



Setting	Options
Receiver height from TCM	Enter a value.
Reset GPS height in TCM	Click this button to match the antenna height entered in the GPS Settings previously.
Set tractor is level state	To tell the TCM where its level state is, park the vehicle so that it is level and then click this button.
Save settings to TCM memory	Click this button to save the settings.

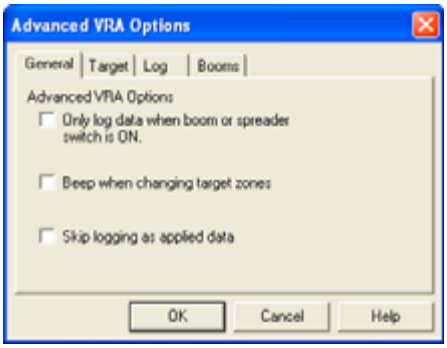
Advanced VRA

Configure how the software will respond to the variable rate controller.

The VRA, Multi-Product VRA, or Real-Time VRA features must be enabled. For more information on enabling features, see Preferences, page 20.

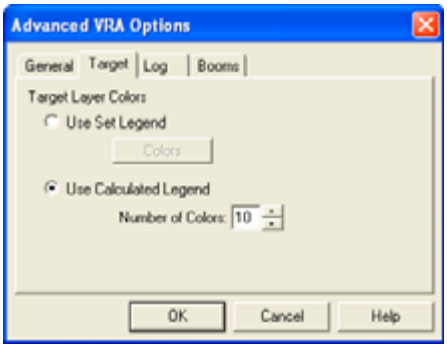
Click **Advanced VRA** and then make the required changes in each tab.

In the *General* tab, set the following and then click **OK**.



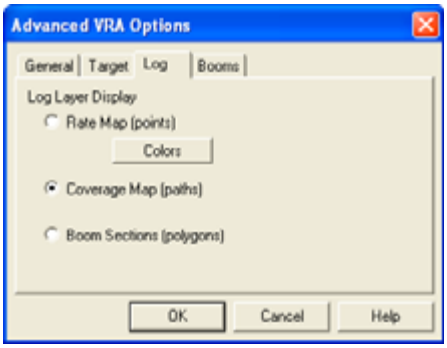
Setting	Options
Only log data when boom or spreader switch is on	Logging stops when the booms are off.
Beep when changing target zones	Select if required.
Skip Logging as Applied Data	Will not log the As applied data.

In the *Target* tab, set the following and then click **OK**.



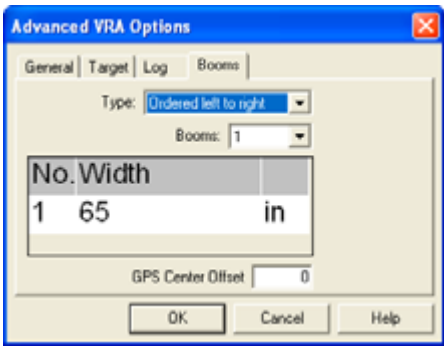
Setting	Options
Set Legend	Use a set legend that you create. Click **Colors**.
Use a Calculated Legend	Let the software use a calculated legend. To specify how many colors to use, select a value from the *Number of Colors* drop-down list.

In the *Log* tab, set the following and then click **OK**.



Setting	Options
Rate Map (points)	To set the legend yourself. Click **Colors**.
Coverage Map (paths)	Shows all one color.
Boom Sections (polygons)	Shows when individual boom sections are turned on or turned off.

In the *Booms* tab, set the following and then click **OK**.



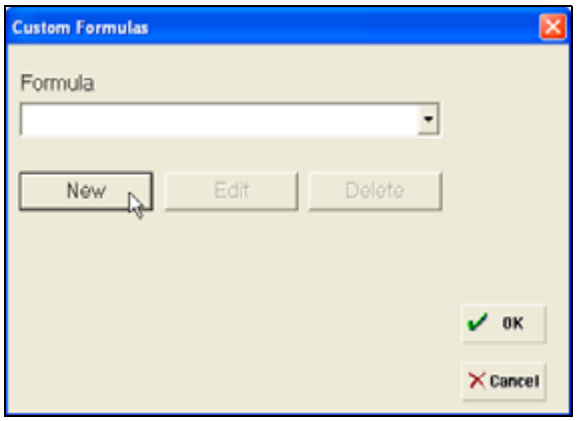
Setting	Options
Type	Select from the drop-down list.
Booms	Select the number of booms from the drop-down list. In the window underneath, enter the width of each boom in the appropriate units.
GPS Center Offset	If there is an offset, enter the distance from the center of the booms to the GPS receiver.

Once you enter all the required settings, click **OK** in the *Advanced VRA Options* dialog.

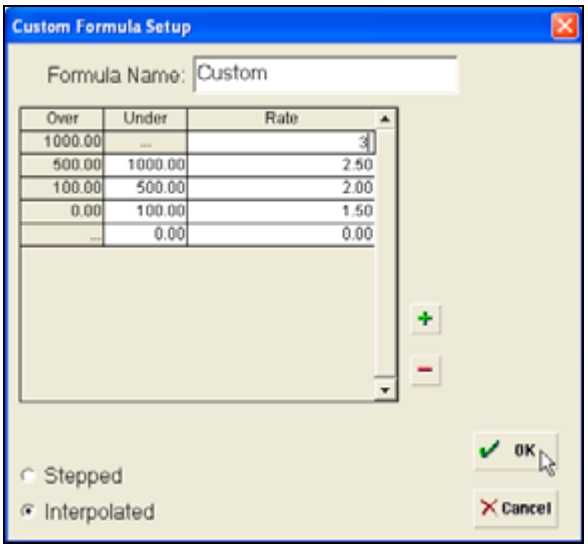
Custom Formulas

A Custom Formula is a designed to work with any type of sensor.

1. Click **Custom Formulas**.



2. Click **New**.



3. Enter a *Formula Name*.
4. Use the **+** and **-** buttons to set up the number of ranges that you want to use.
5. Use the *Over* and *Under* columns to set up the ranges of values that you want to assign rates to. These values represent the values that are received from the sensor that you are working with.

6. In the *Rate* column, enter the rate that you want to send to the rate controller when a sensor reading is received in that range.
7. Select the *Stepped* radio button to have the software send the rates exactly as they are listed.
8. Select the *Interpolated* radio button to have the program gradually change rates between the different values. For example, if the first level has a rate of 5 and the second level has a rate of 10, the program will gradually increase the rate from 5 until it reaches 10.
9. Click **OK**.

Devices with high-resolution screen displays

If you are using a device with a high-resolution screen display, such as a Nomad handheld, some text on the menus will be small. You can change the settings to adapt to these devices.

Menu showing small text

Menu showing larger text after changes

To change the display settings:

1. At the bottom of the screen, click **Config**.
2. Click **Advanced.**

3. Click **Display Options**.

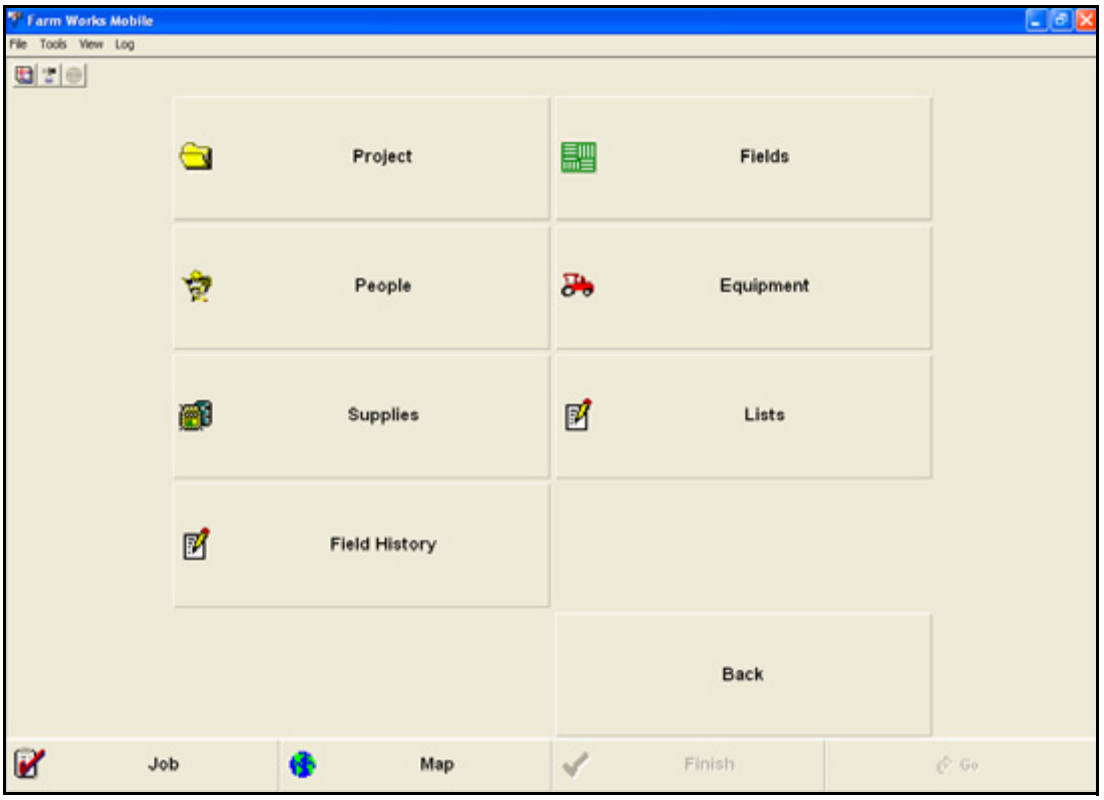
4. Select the *High Resolution Display* check box and then click **OK**.

To return to the main configuration dialog, click **Back.**

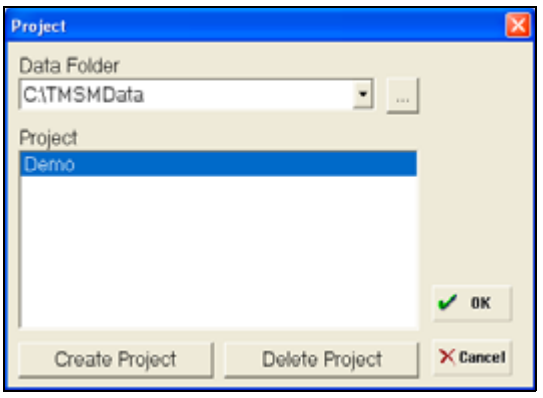
Resources

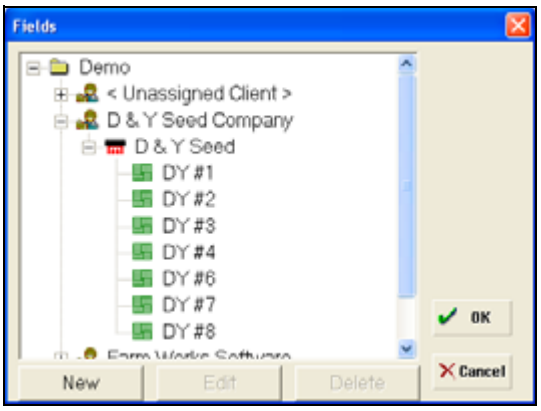
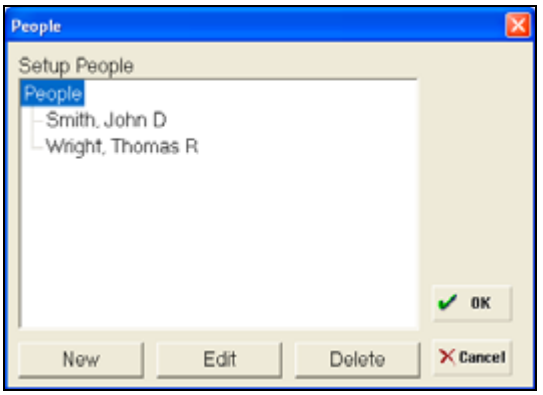
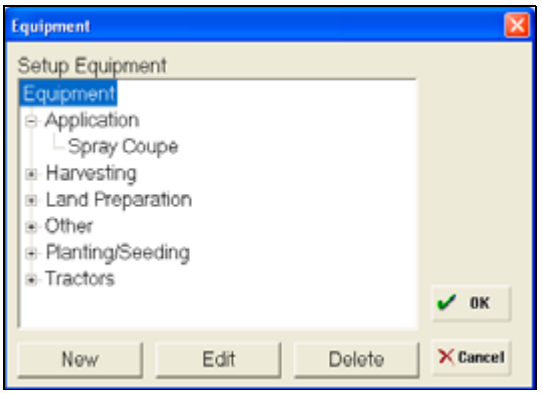
Note – *You need the Farm Works Mapping software and the Field Record feature enabled.*

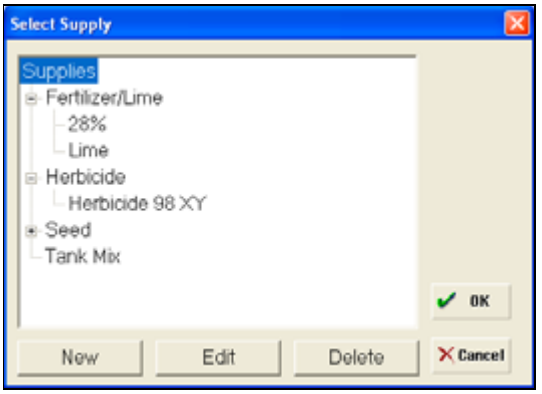
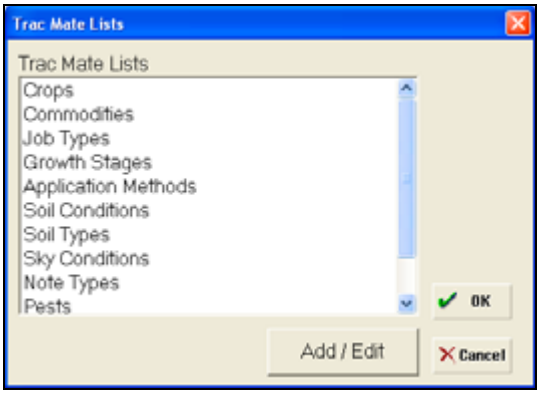
The following resource features are available.

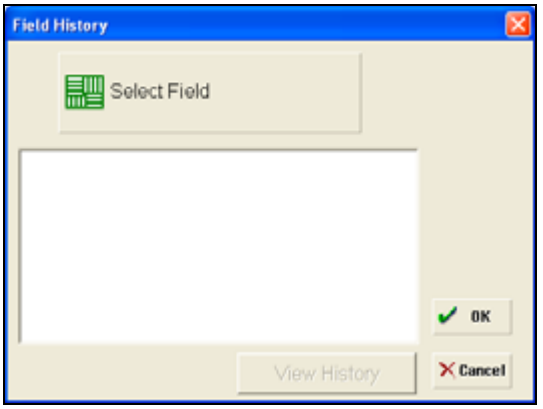
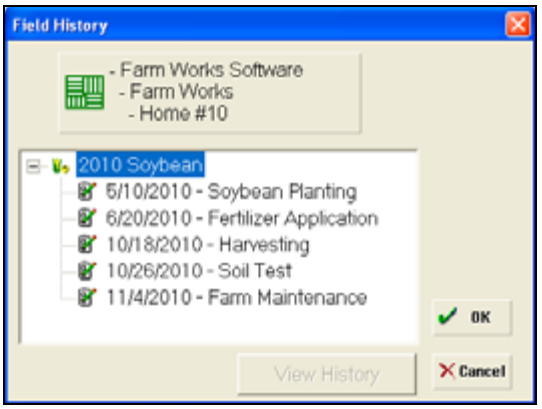
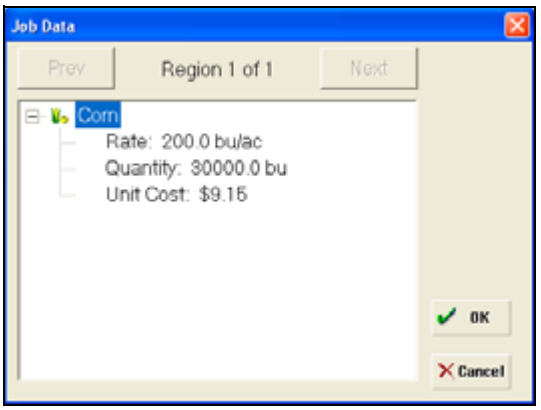


For each resource, the initial list is created based on the selected project and is a result of any synchronization that was done with the desktop software. If you make any changes in these areas, they are uploaded to the desktop software the next time that you synchronize data.

Resource	Details	
Project	Created and updated whenever you synchronize data with the Farm Works Mapping software. When you select a project, it becomes the default project for any jobs that you log. If you delete a project, it is deleted from the mobile device that you are using. It is not deleted from the desktop software.	

Resource	Details	
Fields	Add, edit, or delete the fields that will be used in jobs.	
People	Add, edit, or delete the people that will be used in Field Record jobs.	
Equipment	Add, edit, or delete the equipment that will be used in Field Record jobs.	

Resource	Details	
Supplies	Add, edit, or delete the supplies that will be used in Field Record jobs.	
Lists	Add, edit, or delete the lists, such as Crops, Job Types, or Weather Conditions, that will be used in Field Record jobs.	

Resource	Details	
Field History	You must have selected the option to *Synchronize Field history* during the synchronization process from the desktop. Click **Select Field** and then select the correct Client, Farm, and Field.	
	The operations performed in this field appear on screen.	
	Select an operation and then click **View History**.	

To return to the main configuration dialog, click **Back.**

CHAPTER

5

Field Record Keeping Feature

In this chapter:

- Opening and changing projects
- Starting a Field Record job
- The Job Setup dialog
- The Job window
- Entering harvest data with scale tickets
- Entering yield data without scale tickets
- Finishing a job
- Unfinished jobs or workorders
- Using the Field Record feature with the Mapping or VRA feature enabled

Once the software is installed and registered, you can start entering field records. This chapter describes how to use the software for entering field records.

You can use the Field Record feature with or without the Mapping or VRA feature enabled. The main part of this chapter describes how to use the Field Record feature ***without*** the Mapping or VRA feature enabled.

For a description on how to use the Field Record feature ***with*** the Mapping or VRA features enabled, see page 95.

Opening and changing projects

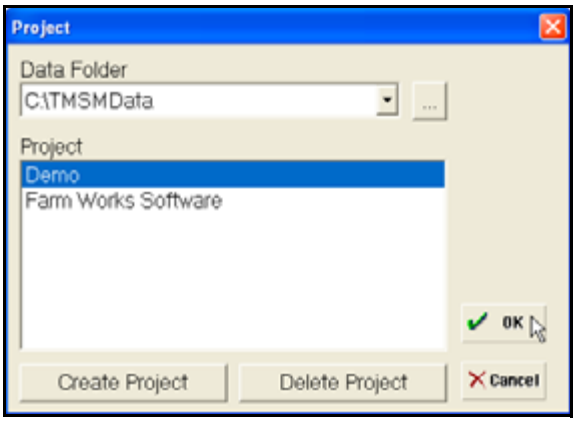
If you are using the *Automatic File Naming* option or if several projects have been synchronized with the Mobile software, make sure that you select the correct project before you start recording farming operations.

For more information, see Chapter 3, Synchronizing Data.

Selecting or changing a project

1. Click **Configure**.

2. Click **Resources** and then click **Project**.



3. In the *Data Folder* field, select the correct location.

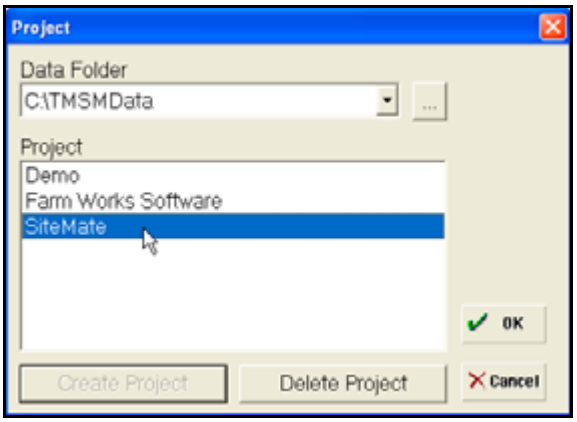
   All projects and/or clients that were synchronized from the desktop software appear in the *Project* list.

4. Highlight the required project and then click **OK**.

Creating a project

1. In the *Project* dialog, click **Create Project**.

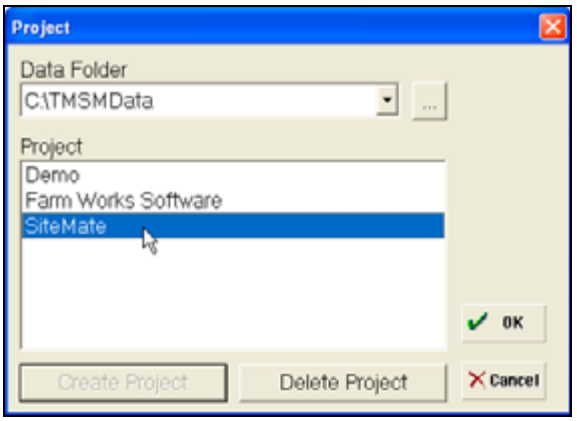
   A project called *Site Mate* appears in the *Project* list. This project will not synchronize to any existing project with the Farm Works Mapping software.



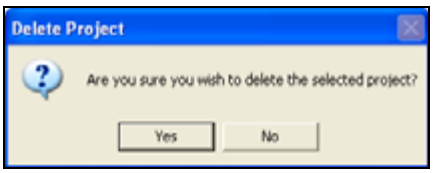
2. Click **OK**.

Deleting a project

1. In the *Project* dialog, highlight the project that you want to delete and then click **Delete Project**.



2. Click **OK** when prompted to accept the warning message.

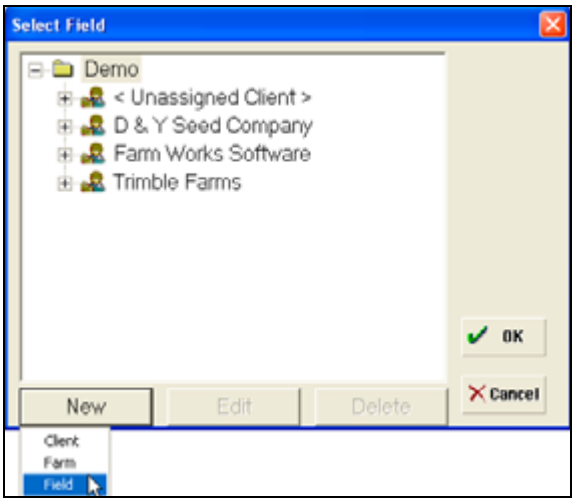


3. Click **OK** to close the dialog.

Starting a Field Record job

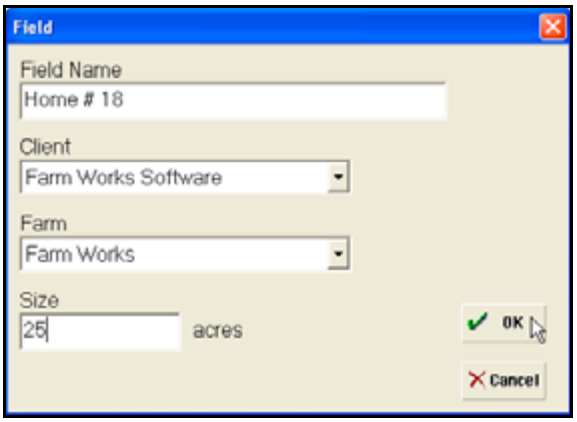
Creating a new field

1. In the *Jobs* tab, click **Field Record Job**.
2. In the *Select Field* dialog, click the **New** button and then select *Field*.



Note – *You can also use this procedure to add as new client or farm. To do this, select Client or Farm from the drop-down list.*

3. Enter the required information. For example, when adding a new field, enter a *Field Name*, select the *Client* and *Farm* from the drop-down lists, and then enter the acres in the *Size* field.

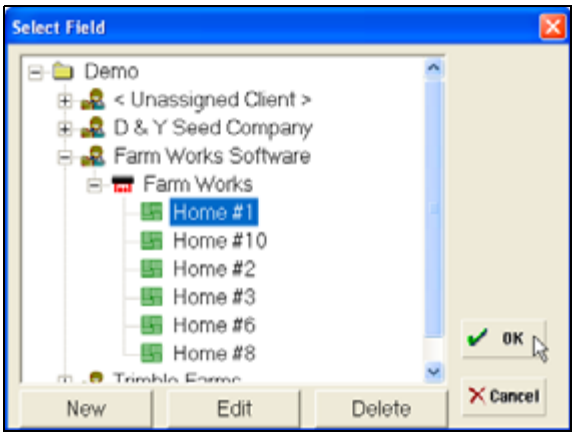


4. Click **OK** to return the *Select Field* dialog.
5. Click **Cancel** to return to the *Jobs* tab.

Starting a job

Note – *When using GPS and the Mobile program, the field is automatically selected, based on the GPS position.*

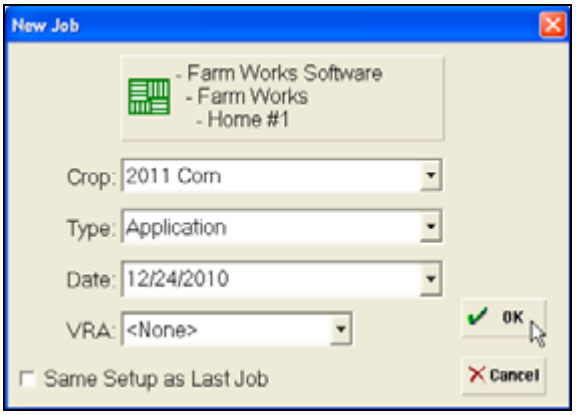
1. In the *Jobs* tab, click **Field Record Job**.
2. Tap the **+** button beside the required client to display the farms.
3. Tap the **+** button beside the required farm to display the fields.
4. Highlight the required field name and then click **OK**.



Set the following and then click **OK**.

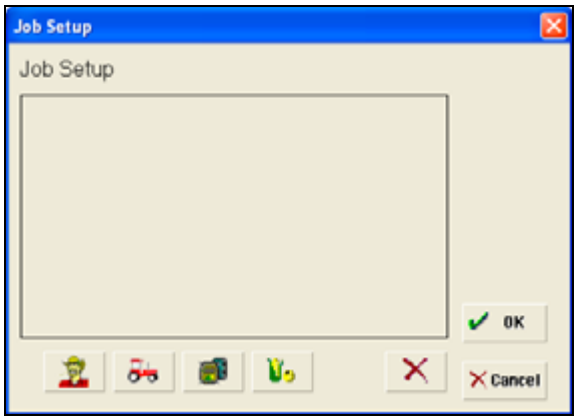
Setting	Details
Field	Farming operation(s) will be performed on the selected field. All fields entered in the desktop software are available to select from the drop-down lists.
Crop	The current crop enterprise that is active in the field. Once the field is selected, the corresponding crop appears based on what you entered in the desktop software. You can change this value as required.
Type	Describes the farming operation that will be recorded.
Note – *Each of the above items has an Add/Edit option available for new or extra information, which is updated to the desktop software when it is synchronized.*	
Date	The date that the farming operation took place. This defaults to the current date, but you can change it.
Same Setup as Last Job	Select this check box to perform the same operation as the last job. This saves time if you are using the same people, equipment, supplies, and so on as before.
VRA	If the Field Record feature is enabled along with any of the VRA features, and you want to apply a variable rate to a product or create an as applied map, select either Sensor, VRA, or Real-Time VRA.

The *New Job* dialog appears:



The Job Setup dialog

Use this dialog to add job inputs: People, Equipment, Supplies, and Harvested Crop.

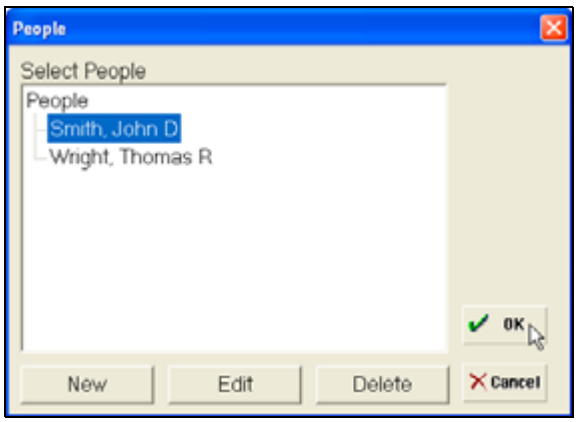


- To remove an item, highlight it and then click the Delete icon .
- To save the Job Setup information, click **OK**.

  You are prompted for the application width. If you do not have the Mapping or VRA features enabled, you may leave this value blank.

People

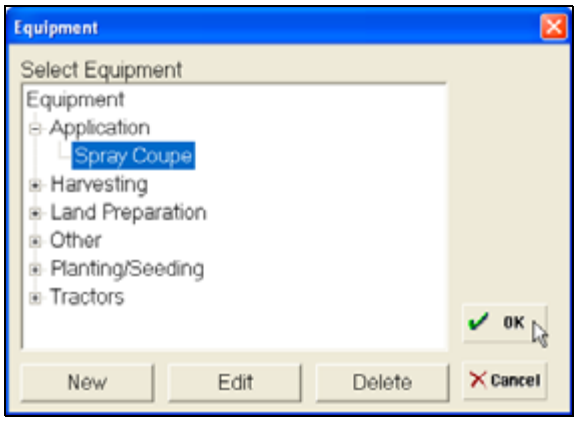
Click the People icon to select one or more people who will be used in this job. People who are already entered in the desktop software before synchronization appear in the list. Highlight the person and then click OK.



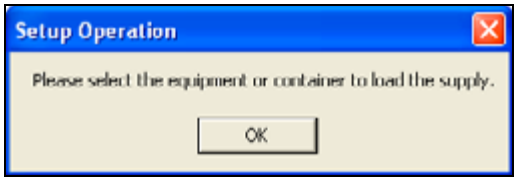
To add, edit, and delete people, click the appropriate button. These changes will take effect in the desktop software after the data is synchronized.

Equipment

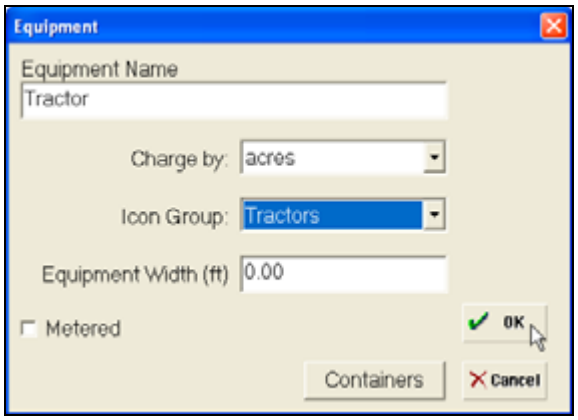
Click the Equipment icon to select equipment to use in the job. Previously entered equipment is available from the list. Tap Plus **+** beside the appropriate equipment type, highlight the equipment and then click **OK**.



You must add equipment to a job before you can add supplies. If you try to add a supply first, an error message appears.



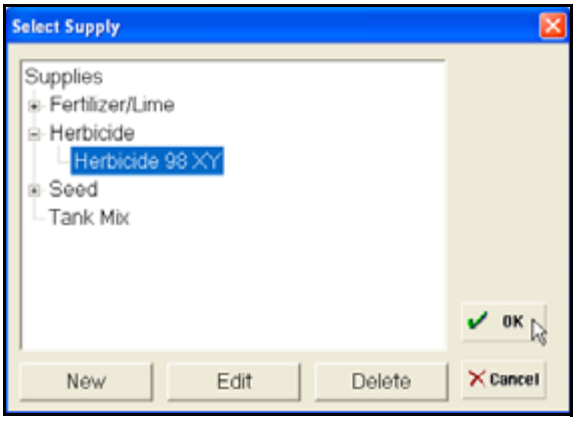
You can add equipment that has not already been added to the software, edit equipment properties, or delete equipment. When adding the equipment, you must enter its properties. You must enter the Charge By Units, the Category or Icon Group, and/or the Equipment Width.



Supplies

Before you can add supplies, you must add at least one piece of equipment.

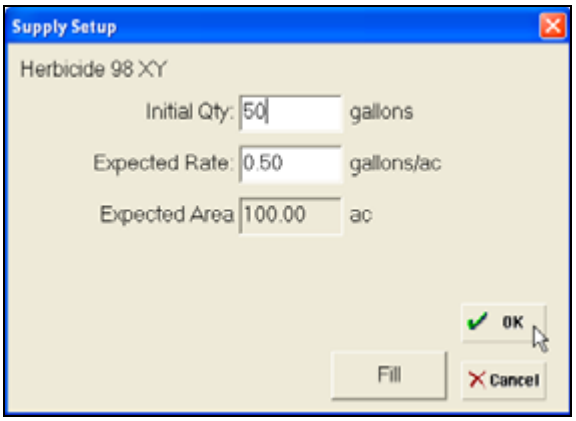
1. Highlight the equipment that will be applying the product and then click the Supplies icon .



2. Open the supply type and then highlight the name of the supply to use. All supplies that were entered into the desktop software before synchronization are available.
3. Click **OK** to add the supply to the job.

   You can also add, edit, or delete a supply from this dialog.

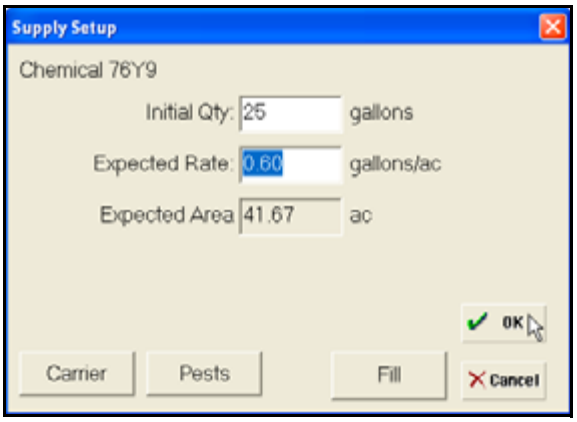
4. In the *Supply Setup* dialog, enter the *Initial Quantity*. The *Expected Rate* is entered automatically if you set up a Default Application Rate in the desktop software before synchronization. The *Expected Area of coverage* is automatically calculated.



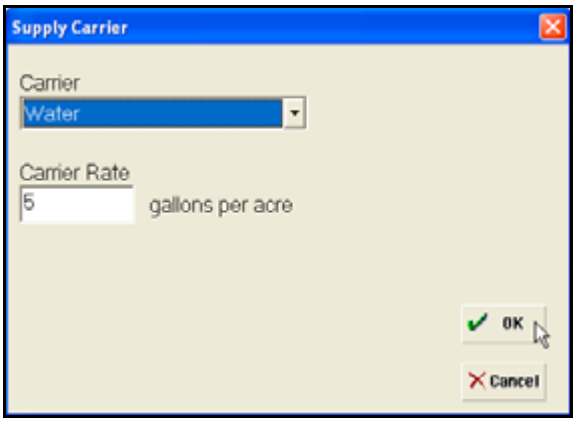
The **Fill** button enables you to later create additional batches using the same rate for the next tank mix.

Note – *Initial Quantity and Fill options are not required items. Use them only if you want to track the remaining quantities of each supply during an operation.*

If you selected a chemical supply, **Carrier** and **Pests** buttons are available.



5. Click **Carrier** and then select the carrier and the carrier rate.



6. To edit the pests that the chemical controls, click **Pests** and then add new pests to the list.
7. Once a supply is added to the *Job Setup* dialog, you can change its properties: Double-click the supply name and then make the appropriate changes.

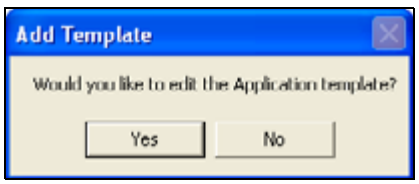
Harvested Crop

If you are harvesting, click the Harvested Crop icon to select the crop enterprise being harvested. If the enterprise does not exist, you can add it and set it up at this time.

Add the harvested crop icon to any operation that involves harvesting a crop. This option enables you to enter scale tickets or the total yield for an operation.

Template option

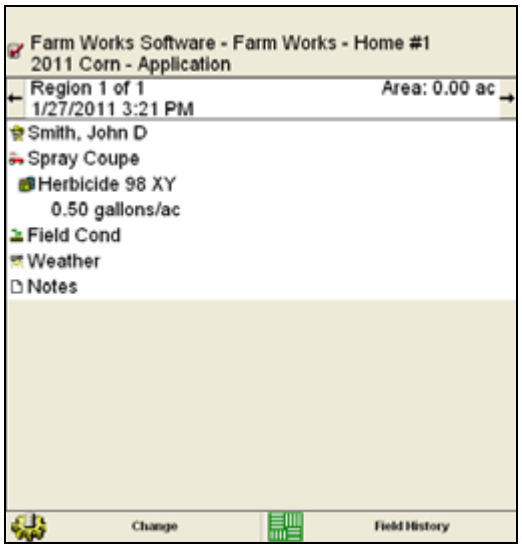
Once you have added all required inputs, and clicked OK, you are prompted to edit the Job Type Templates.



- Click **Yes** to edit the template.
- Click **No** to start the job without editing the template.

The Job window

Once you select all the items you want for a job, they appear in the *Job* window.

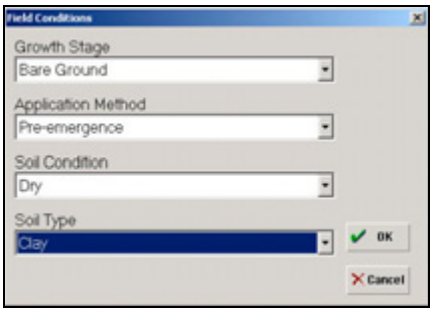
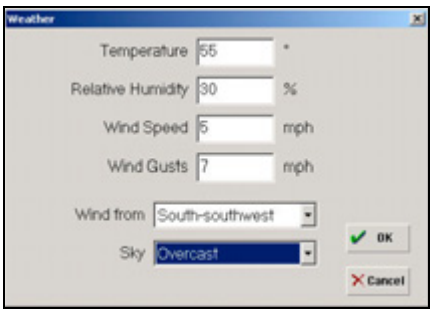
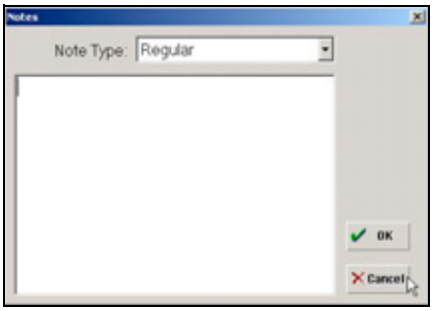


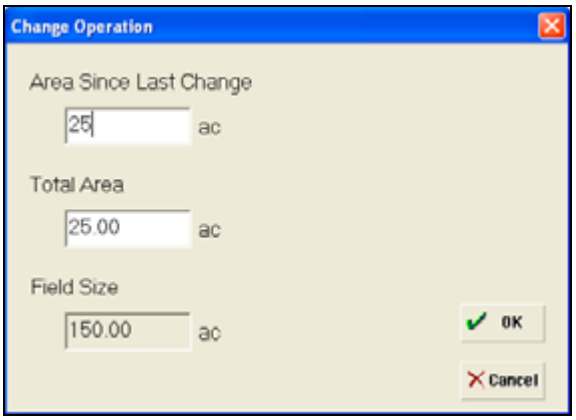
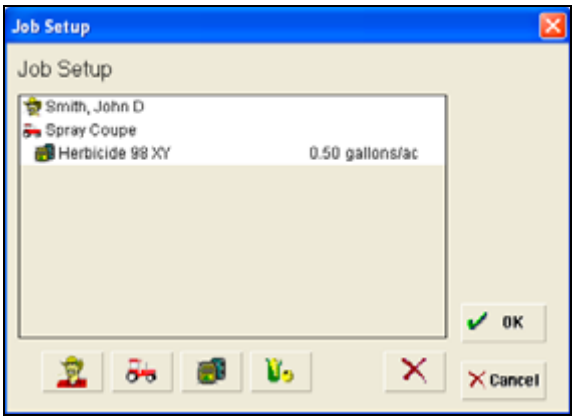
Line	Shows
1	The name of the Client/Farm/Field.
2	The crop enterprise and operation type.
3	The region and area. Area appears as 0.00 until you click **Finish**.
4	The date (m/d/yyyy) and time.

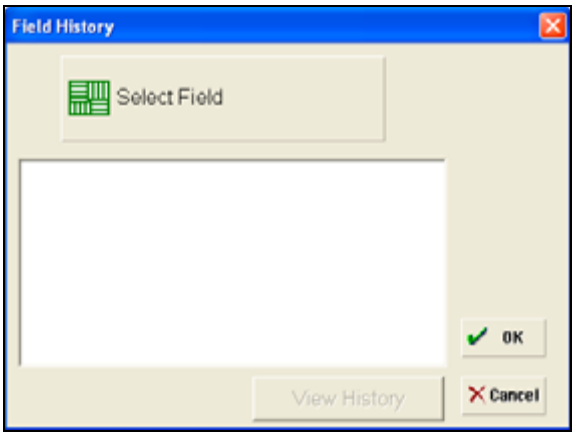
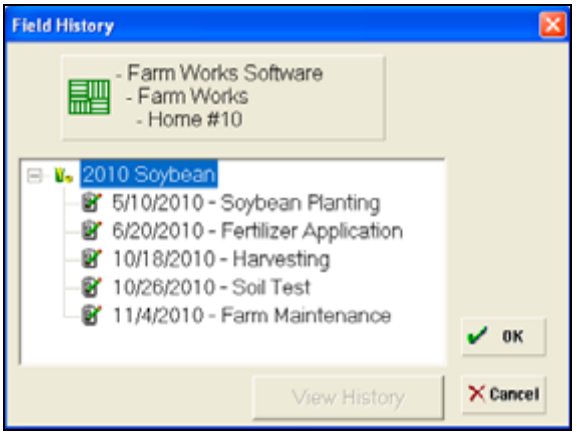
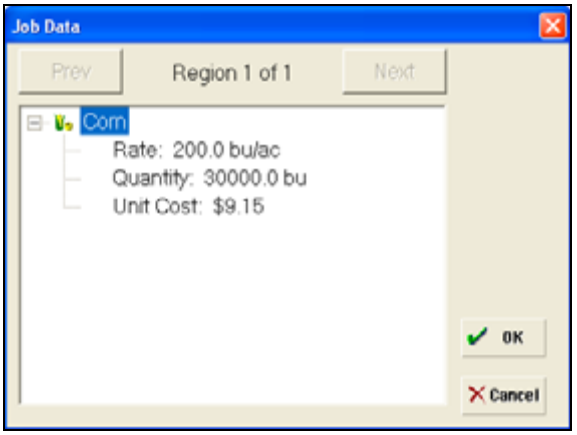
The area in the center of the window shows the items (people, equipment, and supplies) that you selected for the operations.

Tap the items (Field Conditions, Weather, and Notes) at the bottom of this central area to enter the applicable information.

For each item, you can select from the drop-down list; you can add to or edit each list to suit you own requirements,

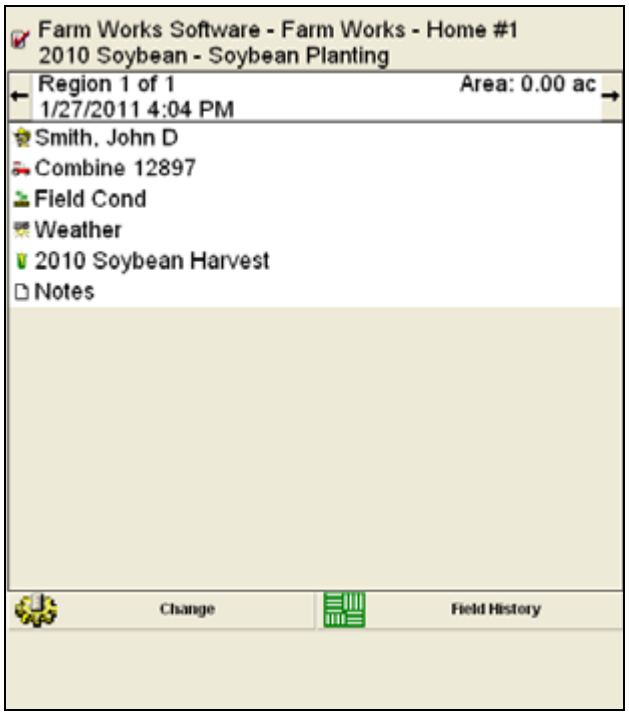
Item	Details
Field Conditions	• Growth stage • Application method • Soil condition • Soil type 
Weather Information	• Temperature • Relative humidity • Sky conditions • Wind speed, gusts, and direction 
Notes	Add additional notations to the operation—the standard farming operation notation is still automatically generated. These notes can be helpful for noting any broken tile, or weed or insect problems. When data is synchronized with the desktop, these notes are added to the Notations Report. 

Item	Details
Change	Add or remove people, equipment, or supplies from a job. Click **Change** to create a new region for the job. The *Change Operation* dialog contains the following information. ***Note –*** *Select the Job tab at any time to enter changes. When you have made any changes, the Region Number also changes.*  • Area Since Last Change: The area covered since you started the operation or since you made the last change. This becomes the area of the region being completed. • Total Area: The sum of all areas including the area entered in the Area Since Last Change. This includes all regions. • Field Size: The total acreage of the field. This is the same acreage that is used from Tillable Area in the filed properties of the field. 1. Tap **OK**.  2. In the *Job Setup* dialog, make changes to current job inputs. 3. Select the People, Equipment, Supplies, or Harvest icon to add, edit, or delete the current inputs. 4. Tap indented items, such as supplies, to make changes and then click **OK** after you change each one.

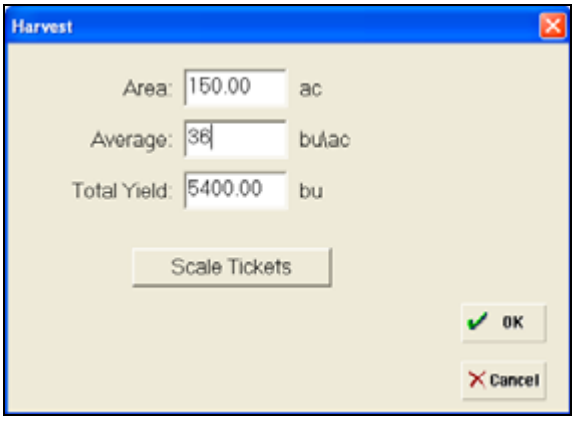
Item	Details
Field History	Click the **Select Field** button and then select the correct Client, Farm, and Field.  The program shows the operations performed in that particular field.  Select any operation and then click **View History.** 

Entering harvest data with scale tickets

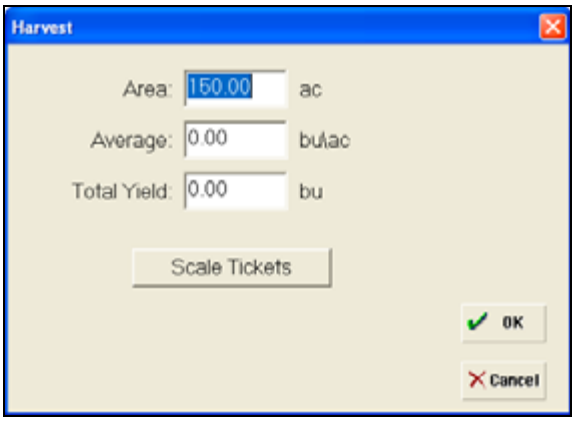
After you create a harvest job, you can enter scale tickets.



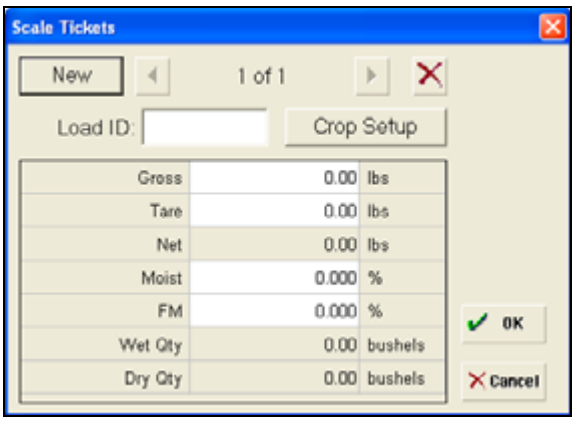
1. Tap the harvest in the *Job* screen and then enter an *Average* (bushels per acre) or a *Total Yield*. Whichever value you enter automatically populates the other.



2. Click **Scale Tickets**.

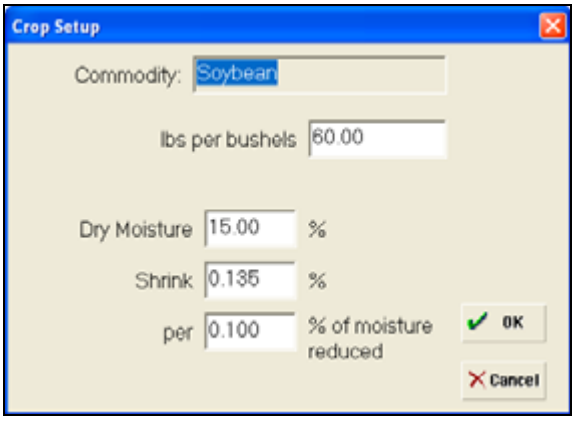


3. To add a new scale ticket, click **New**.



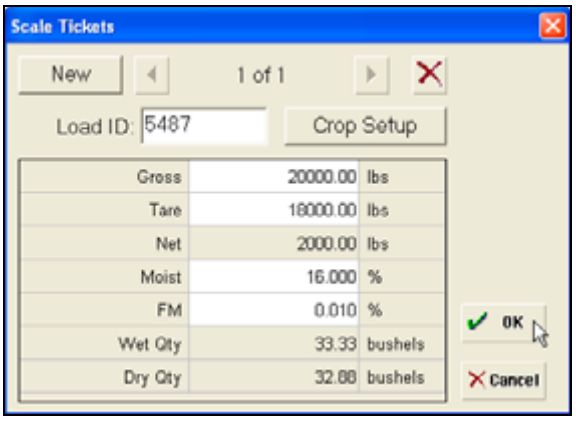
4. Enter the Load ID, the Gross and Tare weights, Moisture, and FM percentages.

5. Click **Crop Setup** to view and/or edit the density of the harvested crop and the shrink schedule and then click **OK**.

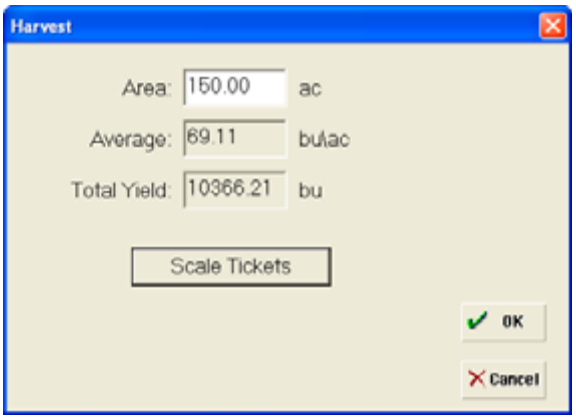


6. In the *Scale Tickets* dialog, do one of the following:

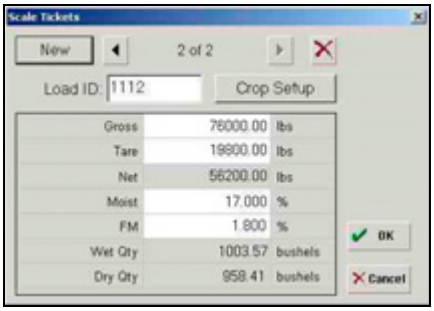
   – Click **New** to add another ticket. The Load ID automatically updates and the number of scale tickets appears at the top of the dialog.



   – Click **OK** to accept this ticket. The harvest Area, Average, and Total Yield appear. To add another ticket, click **Scale Tickets**.



7. To view or edit scale tickets, click **Scale Tickets** and then use the arrows to move to the required ticket.

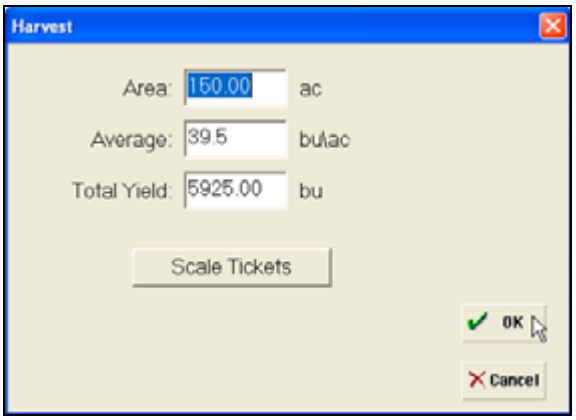


8. To delete a scale ticket, click the Delete (red cross) icon while viewing the unwanted ticket. When prompted, click **Yes** to delete or click **No** to cancel.

Entering yield data without scale tickets

You can enter yield data using the average yield or total yield for the current operation.

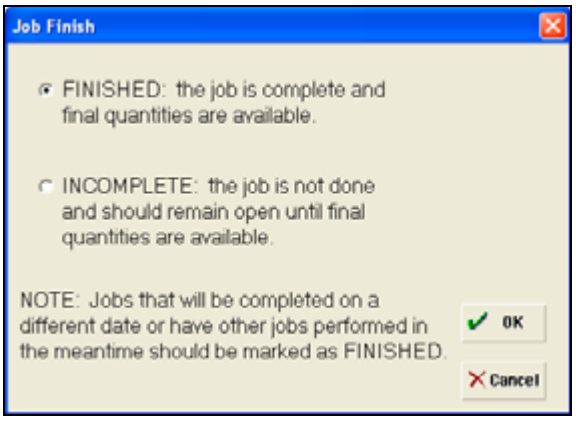
1. Tap the harvest in the *Job* screen and then enter an *Average* (bushels per acre) or a *Total Yield*. Whichever value you enter automatically populates the other.



2. Click **OK**.

Finishing a job

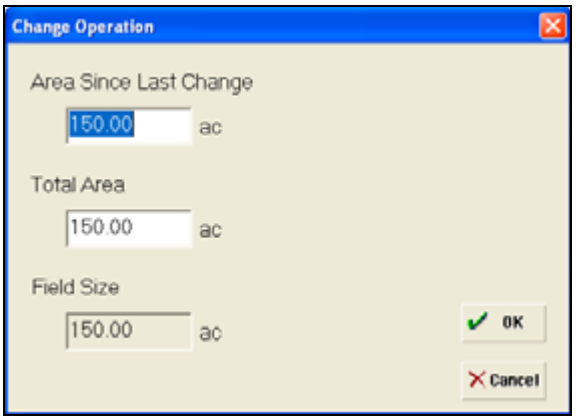
1. Click **Finish** and then select *Finished* or *Incomplete* from the dialog that appears.



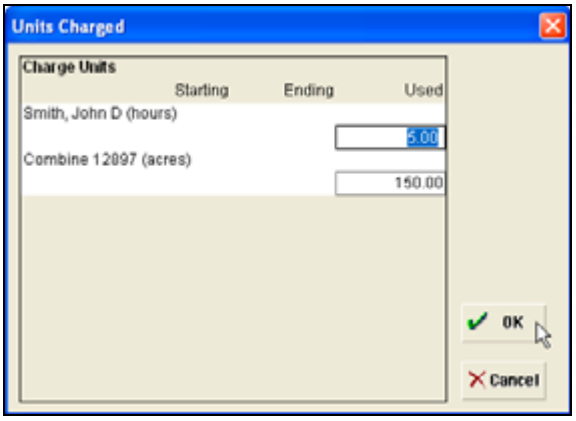
   - Finished: The operation is complete and ready to synchronize with the desktop software. You cannot view this operation until it is synchronized.
   - Incomplete: The operation is not complete. This operation is available as an Unfinished Job/Work Order. An incomplete job will not synchronize to the main project.

Note – *Farm Works recommends that any jobs that will be completed on a different date, or have other jobs performed in the meantime, be marked as finished.*

2. If you select *Finished*, you are prompted to enter the area since last change and/or total field area. Click **OK**.



3. Enter the charge units for the people, equipment, and supplies for the job and then click **OK**.



The information in the *Units Charged* dialog (the units charged for the people, equipment and supplies, and the quantities for each of these items) will be linked to the information entered previously, but you can also edited it here

- People: Typically charged by the hour, this is the total time spent on the job. The software computes the total hours worked starting when you click **Go** in the *Job* window, and ending when you click **Finish**. If you select an unfinished job, the software adds to the number of hours previously logged.
- Equipment: If you set up equipment as metered, the starting quantity appears on this dialog. You can also view the starting and ending meter entries. If you are not using the metered option for this equipment, you must enter the total units.
- Supplies: The starting, ending, and total quantities used for each supply, and any amount added throughout the job. These values are already populated if operations are based on area covered and quantities entered during fills, but you can edit them.

Unfinished jobs or workorders

Operations appear in *Unfinished Jobs/Workorders* as one of the following:

- Planned Jobs: Planned jobs that are created in the Trac software can be exported and made available as a workorder.

  In the *Jobs* tab of the desktop software, right-click the planned job. Once synchronization is completed, the planned jobs appear as workorders in the Mobile software. This operation can then be completed in the field software. For more information on creating plans and workorders, refer to the *Farm Works Mapping Software User Guide*.
- Incomplete Job: When a job is started and then marked as incomplete, the operation is saved to be reopened later for completion.

Opening an unfinished job / workorder

1. In the *Job* window, click **Unfinished Job/Workorder**.
2. Highlight the required item and then click **OK**.

   If you do not see the job or workorder that you want, make sure that the correct project is selected; click **Change Project**. For more information on changing projects, see page 76.

Once the job is open, the *Job* window shows the operation. You can edit the selected job. For more information, see The Job window, page 85.

Using the Field Record feature with the Mapping or VRA feature enabled

Using the Mapping and Field Record features in conjunction enables you to map coverage. If you also have the VRA features enabled, you can send rates to a variable rate application controller through a map. To use the mapping features, you must also use a GPS receiver for positions.

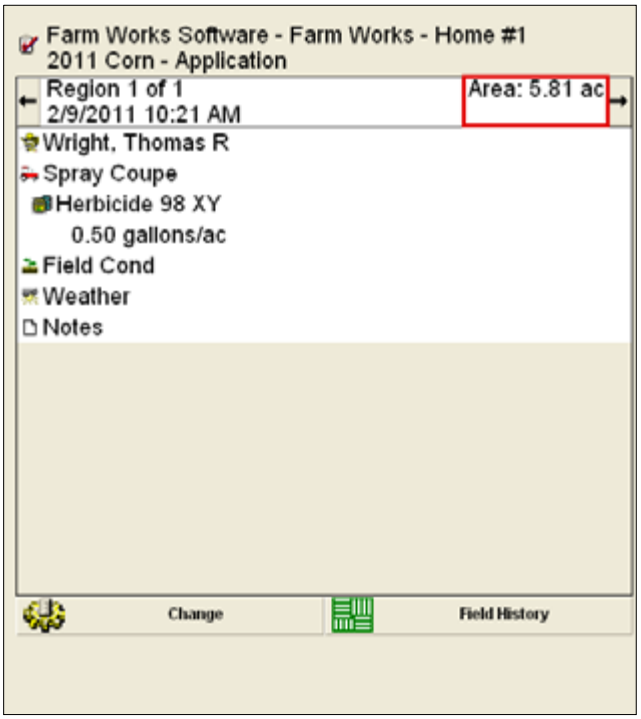
Creating a coverage map while performing a Field Record job

1. Follow the steps in The Job Setup dialog, page 80.
2. When prompted, enter the ***actual*** Application Width of your implement.
3. Once the job is started, you can view the field boundary for the selected field in the Map window. If you are in the field, have a GPS signal, and the GPS unit is connected correctly, the position indicator shows your position inside the field boundary.
4. To start logging. click **Go**.

   The software logs coverage wherever you go in the field until you click **Stop**.

   If an implement switch is connected, coverage stops when the implement is up or off. For more information, see Advanced Logging, page 61.

The software uses the area calculated by the coverage map while recording the job. This area appears under *Region Area* on the *Job* window.



You also display the Coverage Area Map Window, by selecting it from the *Map Data Display* options. For more information, see Chapter 4, Configuring the Software.

When you change regions and complete fields, the area is entered into the correct locations. You can modify the area value. All inputs that are based on area (charge units and supply rates) are computed from this value.

5. To end the job, (finished or incomplete), follow the Finishing a job, page 93.

CHAPTER

6

Mapping Feature

In this chapter:

- Tools and indicators
- The Job dialog
- The Map dialog
- The GPS Data dialog
- Mapping jobs
- Loading background layers
- Manual logging
- Automatic logging
- Manual Location
- Other Mapping features
- Performing a new sensor job
- Working with the GreenSeeker RT100 system
- Performing a VRA job
- Configuring the GreenSeeker RT200 system for a Real-time VRA Job
- Performing a Real-Time VRA Job

This chapter describes how to use the Mapping, Sampling, and VRA applications.

Tools and indicators

The following tools are available for easier data entry and data monitoring.

Tool	Description
Pointer	Select lines or objects. Tap (or right-click) a point, line, or object to view its menu.
Manual Coordinates	Use this when the GPS source is set to *Manual Location Entry*. Tap on the screen for the software to function as if you are receiving GPS at this position.
Navigation	This option is available only with the Mapping and VRA features enabled. Use it to navigate to a selected point. For more information, see Navigate to point, page 117.
Measure	Measure the length of a line. Select the tool and then click-and-drag the line to be measured. The length appears on the left. To measure more than one line segment, select *Sum* and then click at every line segment. To reset the distance to zero (so that you can start measuring a different segment), click **Reset**.
Zoom	Zoom (in or out) on a map. Select the tool and then tap or click to zoom in on the selected area; tap (or right-click) to zoom out. You can also tap and then drag around an area to zoom in to it.
The following zoom options are also available as buttons in the Map window.	
• Zoom In	Zooms in on the current map by 2x each time that you click it.
• Zoom Out	Zooms out from the current map by 2x each time that you click it.
• Zoom All	Zooms in or out from the map so that all information currently displayed appears on the screen.
Align GPS	Shift a map that does not line up with your current GPS position. If a background map does not match up to your current GPS position, you can go to a known point (such as a corner of a field that is on the background map) and make sure that your GPS receiver is positioned at the correct location. Select the *Align GPS* option and then click on that part of the map (in this case, the corner of the field), as it is mapped. The software then shifts the entire background map so that it is aligned with the GPS position. ***Note –*** *When you do this, the software actually changes the GPS positions in the shapefile of the background map and you cannot return to the original map.*
Boundary logging	Identify the type of information that will be logged.
Path logging	
Points logging	

The software also provides several indicators to make data collection easier while you are in the field. These indicators appear according to the selections that you make in the *Config* dialog (*Display* / *Map Data Display*). For more information, see Chapter 4, Configuring the Software.

The Job dialog

From the *Job* dialog, select the type of operation.

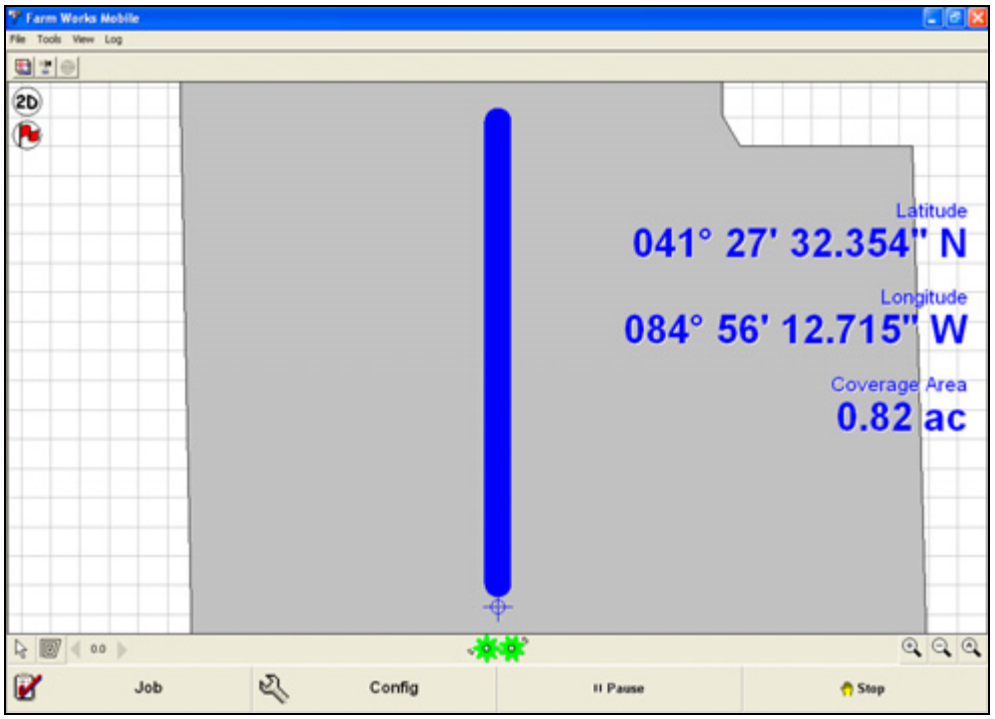
Type	Description
Field Record job	Available only if the Field Record feature is enabled. For more on enabling features, see Preferences, page 20. Begin a Field Record job that enables you to select the people, equipment, and/or supplies to use in a farming operation. For more information, Chapter 5, Field Record Keeping Feature.
New Mapping Job	Available only if the Mapping feature is enabled. For more on enabling features, see Preferences, page 20. Use for any basic mapping functions, GPS mapping of boundaries, paths, or points, and GPS Mapping, Grid Sampling, and Management Zone Sampling. Create a new file or load an existing .fgp or .gpl file. Load background maps.
New Sensor Job	Available only if the VRA feature is enabled. For more on enabling features, see Preferences, page 20. Use a variable rate controller or another sensor such as a GreenSeeker device and its software, to create a coverage map that includes the attributes logged from the controller or sensor. This option does not allow you to load a variable rate prescription map.
VRA Job	Available only if the VRA feature is enabled. For more on enabling features, see Preferences, page 20. Use the software to load a variable rate prescription map and send the rates to a controller. Read the actual "as-applied" rates from the controller and log both the rate sent to the controller from the prescription map and the actual rate applied.

Type	Description
Real-Time VRA Job	Available only if the Real-Time VRA feature is enabled. For more on enabling features, see Preferences, page 20.
Unfinished Jobs / Workorders	Complete any unfinished jobs that were made with the Mobile software. Load planned jobs/workorders that were made with the Farm Works Mapping software.

The Map dialog

The *Map* dialog enables you to view the map as it is being created.

You can set up the *Map* dialog to display specific information on what is being logged. To specify what type of information you want to see on the Mapping screen, make changes to the Map Data Display, see page 53.



Once you start a job, the *Map* dialog shows information that is helpful while logging data.

The dialog also contains the following tools: Pointer, Manual Coordinates, Navigation, Zoom, Measurement, and Align GPS. Tools and indicators, page 98.

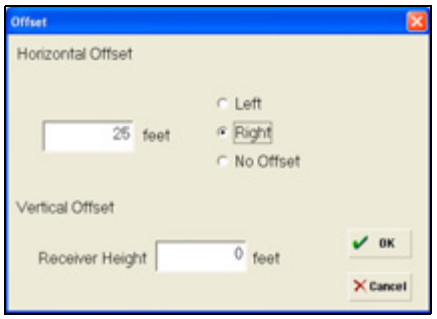
The Log Type icon, to the right of Tool icons, refers to the type of data that will be logged. Select Path, Points, or Boundary ***before*** you start the job.

Offsets

The Offset indicator 0.0 to the right of the Log Type icon shows any current offset and its direction, based on the direction of travel.

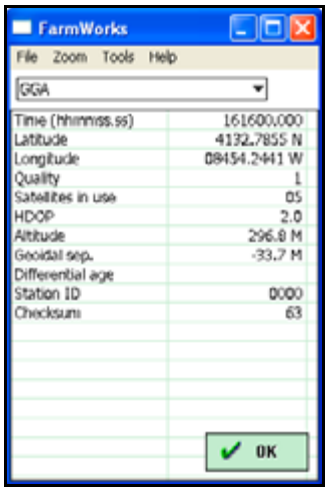
To change the current offset, click the icon. Use *Offset* to map positions to the left or right of the current GPS location. For example, to map a fence row where you cannot position the GPS receiver, enter the distance from the receiver to the fence row and the direction (left or right).

You can also enter a vertical offset that represents the distance from the receiver to the ground. Use this value is used to adjust GPS elevation/altitude readings so that they represent the ground elevation/altitude.



The GPS Data dialog

Click the GPS Data icon to view the GPS data strings that are being received from the GPS receiver. Select the required NMEA strings.



Note – *The GPS receiver must be outputting the selected string for that data to be viewed.*

Mapping jobs

The Mapping Job icon on the Job window is available if the Mapping or VRA features are enabled.

Typically, use this for GPS mapping of boundaries, paths, or points, and GPS Mapping, Grid Sampling, and Management Zone Sampling.

You can start a new log file and/or load a background map. To open an existing log file, click **Open** next to the New Mapping Job icon and then browse for the log file.

Note – *The Open button is only active when you are not using the Automatic file naming feature.*

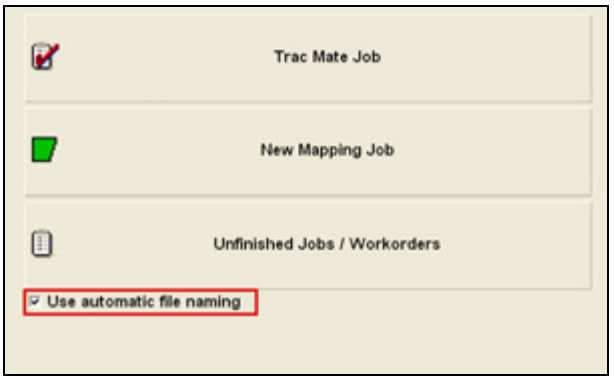
When you create a new Mapping job, you can select *Use automatic file naming*. This is useful if you are using the field software in conjunction with at he Farm Works Mapping software.

Note – *GPS is required for all Mapping jobs, including VRA and Sensor jobs. See* *GPS Settings, page 31*.

Logging jobs using automatic file naming

To use this function, you must synchronize data between the desktop and field software. Automatic file naming makes it easier to create a job in the field software as you do not need to manage the files you create. Instead of creating files, you enter the Client/Farm/Field, Crop, and Job Type for each job. In addition, the software automatically uploads data to the desktop software. Since the jobs you record will include the Client/Farm/Field and other information, when you synchronize the data, the completed jobs can automatically be assigned to the appropriate field, crop, and job type in the desktop software.

1. In the *Jobs* dialog, make sure that the *Use automatic file naming* checkbox is selected.

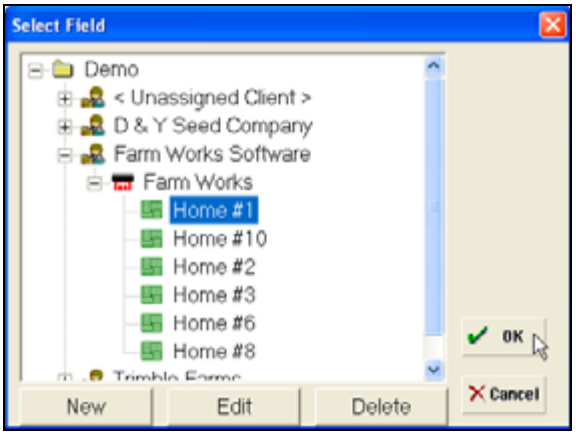


2. Click **New Mapping Job**.

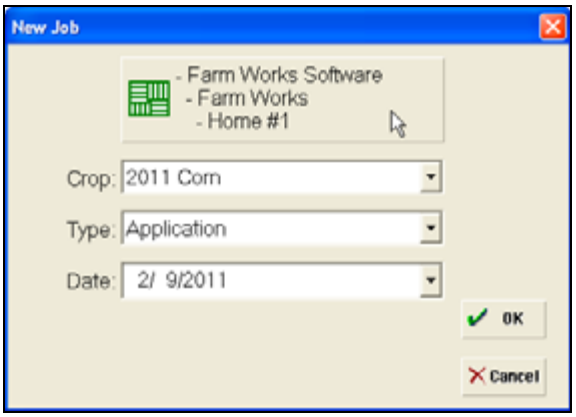
Note – *If you selected Upload Field Boundaries when you synchronized with the desktop software and your current GPS position is within a mapped boundary, the software skips the Select Field dialog and automatically selects the field based on your GPS position*

3. Tap the **+** button beside the required client to display the farms.
4. Tap the **+** button beside the required farm to display the fields.

5. Highlight the required field and then click **OK**.



The *New Job* dialog shows the *Client/Farm/Field* you selected:



6. If the field is not the correct field, tap or click the Client, Farm, Field listing. This opens the *Select Field* dialog where you can then select the correct field.

   The software defaults to the last crop enterprise used.

7. If this crop is incorrect, select a different one from the drop-down list. This includes an *Add/Edit* option that allows you to set up new crops, or edit or delete existing crops.

8. Click **OK** to continue.

9. You are prompted to edit the Application (Job Type) templates. For more information on editing templates, see Database template, page 46.

   – Click **Yes** to edit the template.

   – Click **No** to start the job without editing the template.

   The Map window appears, and you can begin logging.

10. Click **Go** to begin logging data.

Note – *The button label changes to* ***Stop****—once logging is complete, click* ***Stop****.*

11. Once you click **Go**, one of the following buttons appears:

- **Pause (Resume)**: The **Pause** button appears if you are logging data automatically. If you click it to temporarily stop logging data the button label changes to **Resume:** Click **Resume** to start logging again.

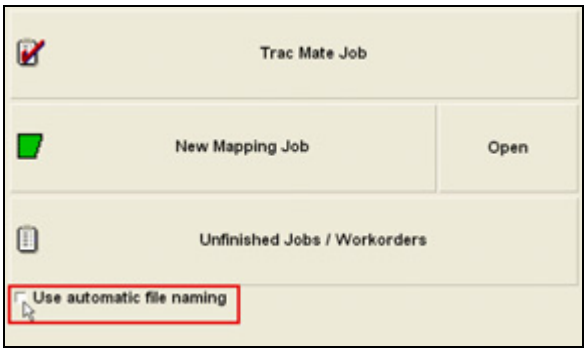
  Your current position connects to the position where you clicked **Pause.** You can use this, for example, when there is an obstruction in your direct path that you need to travel around, but you do not want to leave a gap in the line or boundary.

- **Log**: This button appears if you are manually logging data. Click it to log a GPS position.

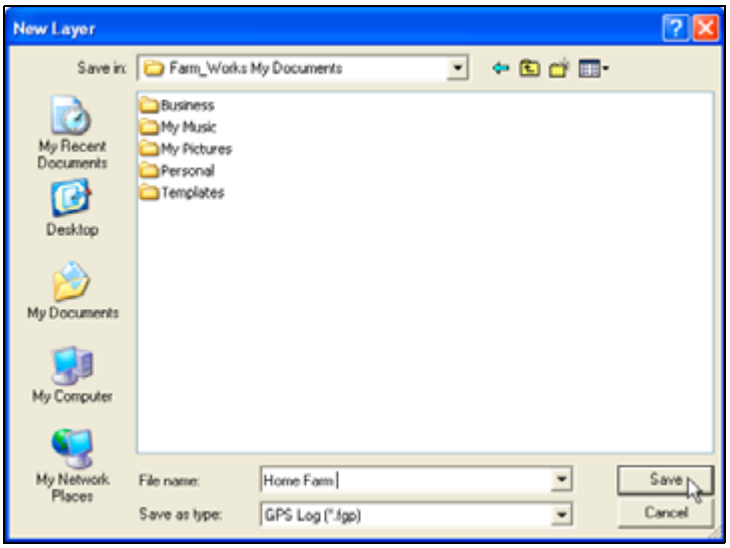
12. Click **Finish** when you are finished with the job. You are prompted to select *Finished* or *Incomplete*. See Finishing a job, page 93.

Logging jobs without automatic file naming

1. In the *Jobs* dialog, make sure that the *Use automatic file naming* checkbox is cleared.

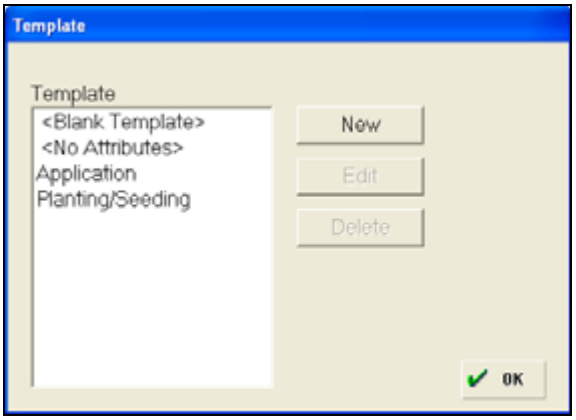


2. Click **New Mapping Job**.



3. In the *New Layer* dialog, enter a *File name* and then navigate to the location where you want to save the file. Typically, save the file to the TMSMData / Mapping folder, to My Documents, or to a sub-folder under My Documents.
4. Click **Save**.

   The *Template* dialog appears. This enables you to use a template with the log file so that you can link attributes.



5. Do one of the following:
   - Select the required template.
   - Select *Blank Template* to log attributes (if you do not yet have a template).
   - Select *No Attributes* to create a map without attributes.
6. To create a new template, or edit or delete an existing one, click the appropriate button. For more information on creating templates, see Database template, page 46.
7. Click **OK**. The Map window opens and you can begin logging information.
8. Click **Go** to begin logging data.

Note – *The button label changes to* ***Stop****—once logging is complete, click* ***Stop****.*

9. Once you click **Go**, one of the following buttons appears:
   - **Pause (Resume)**: The **Pause** button appears if you are logging data automatically. If you click it to temporarily stop logging data the button label changes to **Resume:** Click **Resume** to start logging again.

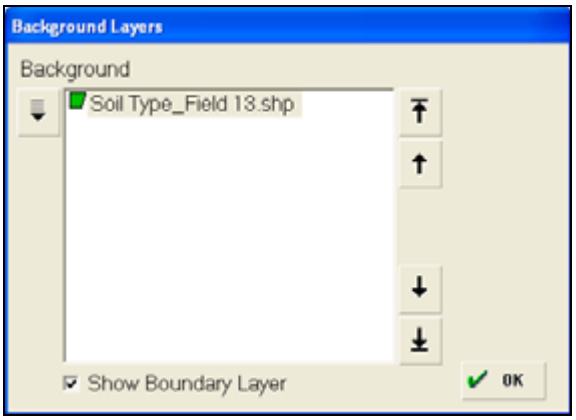
     Your current position connects to the position where you clicked **Pause.** You can use this, for example, when there is an obstruction in your direct path that you need to travel around, but you do not want to leave a gap in the line or boundary.
   - **Log**: This button appears if you are manually logging data. Click it to log a GPS position.
10. Click **Finish** when you are finished with the job. You are prompted to select *Finished* or *Incomplete*. See Finishing a job, page 93.

Loading background layers

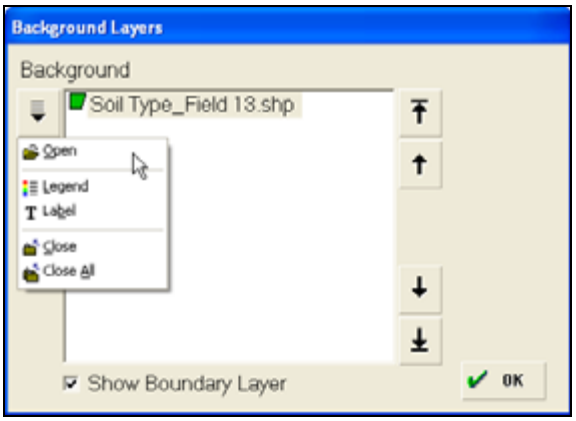
You can load any number of previously created maps behind the current log file. This is called a ***background layer***.

A background layer can be any type of path, point, or area/polygon map that was saved as an ArcView shapefile. If you are using the Farm Works Mapping software, you can export any map as a shapefile by right-clicking on the map or job and then selecting *Export*. You can also load geo-referenced images (BMP, JPG, or TIF files) as background maps. However, these images must be saved from the Calibrate desktop software.

1. Set up a Mapping job, see Mapping jobs, page 102.
2. In the *Map* window, click the Background Layers icon .
3. Find and highlight the required file. Backgrounds can be SHP (shape) or BMP/JPG/TIF (image) files. The file must have the associated GPS data file: For example, a shapefile requires .shp, .shx, .dbf files.
4. Click **OK**. The selected layers appears in the *Background* dialog.



5. To open more background layers, select Open from the drop-down list and then repeat Step 3 and Step 4.



6. Once a background layer is loaded, there are more options in the drop-down list. Highlight the background layer that you want to change the options for.

- Legend: View a legend for the selected background. You can select the data item to create the legend for, and the color for each range.
- Label: Show labels for the selected background. You can select which attribute(s) to show in the label, and whether the label will be transparent or opaque.
- Close: Remove the selected background.
- Close All: Remove all backgrounds.

7. Select *Show Boundary Layer* to show any boundaries that were synchronized from the desktop software, if you use *Upload Field Boundaries* when synchronizing.
8. Click **OK**. The *Map* window appears.

Once the log file and backgrounds are loaded, select manual or automatic logging.

Manual logging

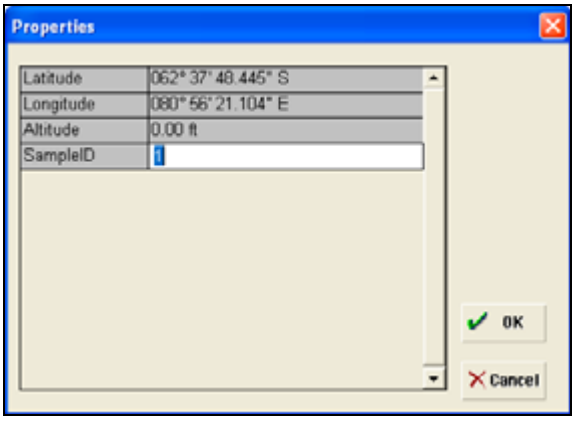
Typically, use this for logging sample points. It enables you to tell the software when and where to log a point.

To manually log points once a Mapping job is open:

1. Select *Log* / *Manual*.

2. Select a log type: Click the Boundary, Path, or Point icon.
3. Click **Go**. The **Log** button appears.

4. Travel to your first point and then click **Log**. If you selected a template when starting the job, the *Properties* dialog appears.



5. Enter the attributes, if applicable and then click **OK** to accept the logged point.
6. Log all additional points.
7. When the Mapping job is complete, click **Stop**.
8. Once the log file is complete, click **Finish** and then synchronize the job with the computer.
9. Depending on your settings in the *Config* dialog, you may be prompted to export the log file and specify the type of export to create.

To manually log boundaries and paths:

1. Click **Log** at the starting point of the line or boundary.
2. Click **Log** at each direction change (corner) of the field. Each time that you click **Log,** after the first time, a straight line is drawn between the previously logged point and new logged point.

Automatic logging

Typically, use automatic logging for boundaries and paths. It creates the map as you travel through the field.

To automatically log data once a Mapping job is open:

1. Select *Log* / *Automatic*.

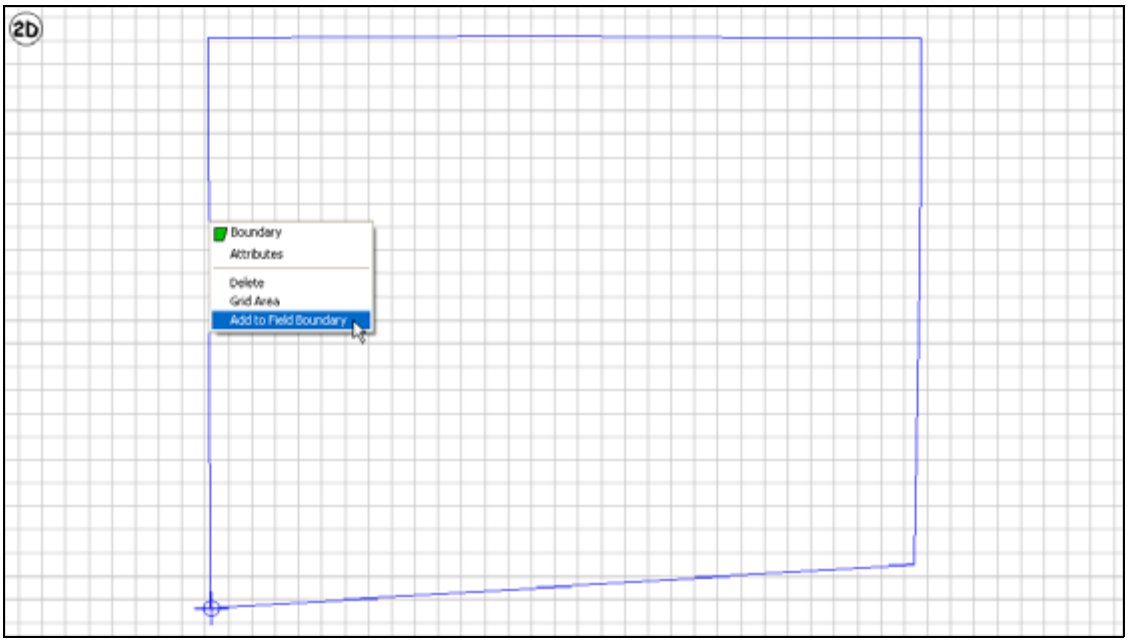
2. Select a log type: Click the Boundary, Path, or Point icon.
3. Click **Go**. The **Stop** and **Pause** buttons appears.

   The software logs data according to the recording intervals set in the *Config* dialog.
4. To stop logging temporarily, click **Pause**.
5. When the Mapping job is complete, click **Stop**.
6. Once the log file is complete, clicking **Finish** and then synchronize the job with the computer.
7. Depending on your settings in the *Config* dialog, you may be prompted to export the log file and specify the type of export to create.

Updating boundaries

If you are synchronizing data with the Farm Works Office software, you can automatically have the boundaries that are mapped with the field software assigned to the correct fields in the desktop software.

1. Make sure that you use automatic file naming. See Logging jobs using automatic file naming, page 102.
2. Create a Mapping Job and map a boundary. Make sure that the mapped boundary is visible in the Map area.
3. Select the Pointer tool and then click (or right-click) on the field boundary
4. Select the option to add to field boundary
5. The field is added as part of the boundary layer. When you synchronize with the desktop software, it is added to your project.

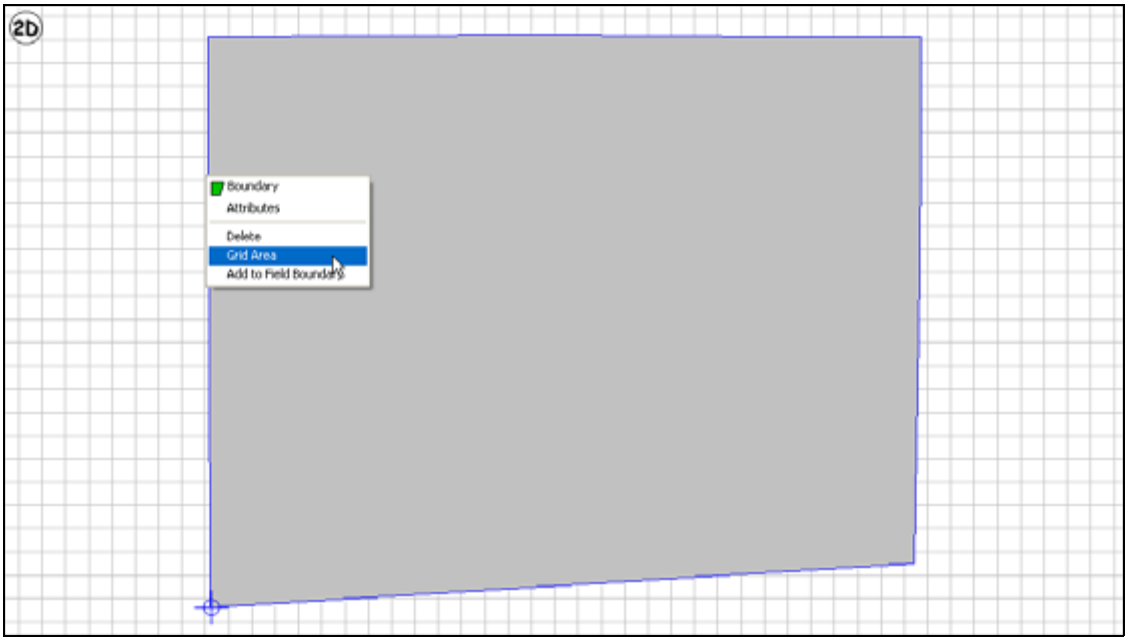


Grid sampling

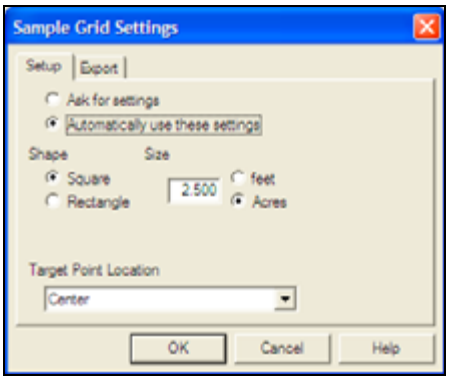
If the Mapping or VRA features are enabled, the field software makes grid sampling easier by enabling you to create the grids in the field.

1. Do one of the following:
   - Load the boundary of the field to be gridded as a background map
   - Log the boundary to create the boundary map.
   - Use an already visible boundary that came from the desktop software through synchronization.

2. Select the Pointer tool and then click (or right-click) on the boundary.



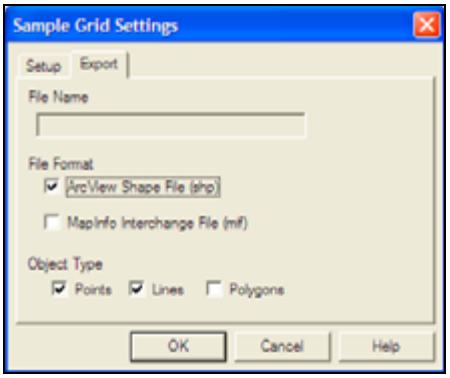
3. From the pop-up menu, select *Grid Area*.



4. In the *Create Sampling Grid* dialog, enter the size, shape, and pattern for the grid. If you will be generating grid points, you can select *Target Point Location* for each grid point that will be created.

   If you select *Automatically use these settings*, they are automatically used the next time that you use the Grid Area feature, and this dialog does not appear again when you select the Grid Area option. To change the settings later, select *Config* / *Logging* / *Sample Grid Setup*.

5. In the *Export* tab, set the export File Format.



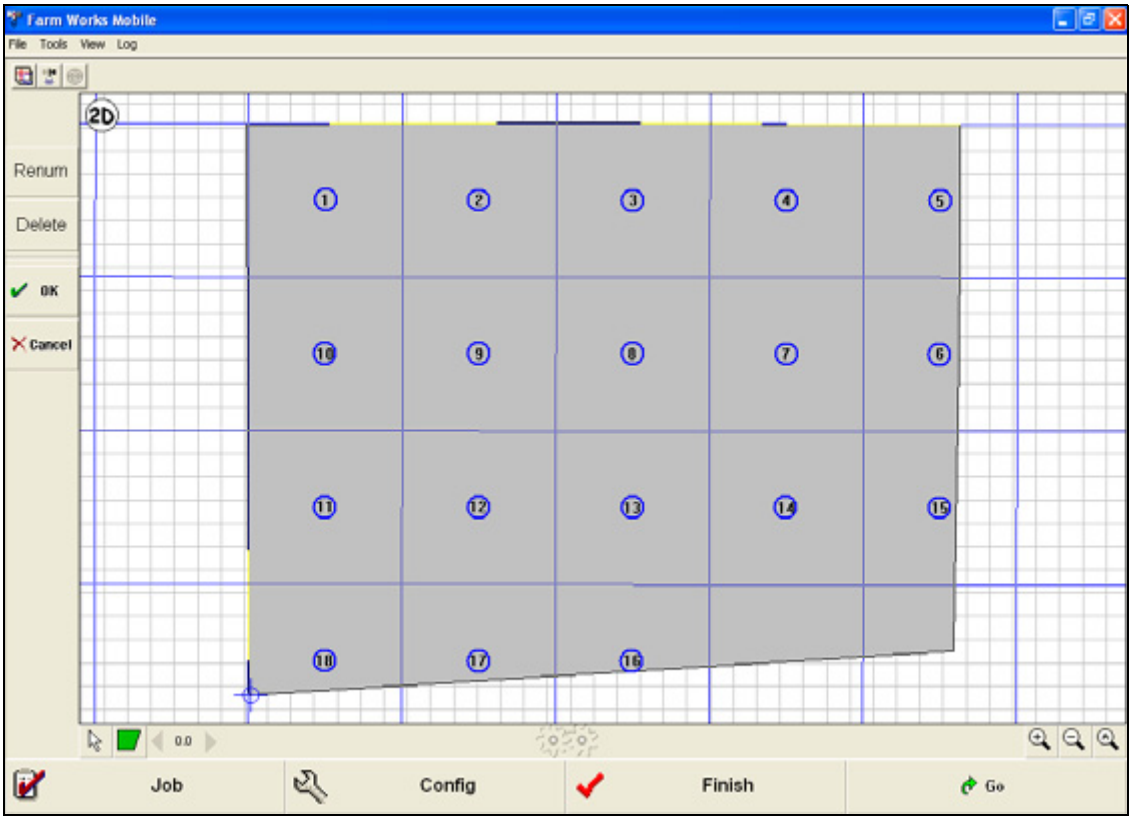
When you create a sampling grid, the software creates a background (layer) that shows the target-sampling grid. Select whether the background will be ArcView shapefiles (.shp) or Mapinfo Interchange Files (.mif). If the maps will be used with desktop software, select *ArcView Shape File*.

6. Select the Object Type. When creating a sampling grid, the target grid is created using these settings. Select whether you want target sampling points and/or lines and/or polygons. A separate background layer will be created (either .shp or .mif file) for each selected type. Selecting Points and Lines and Polygons results in three sets of files.
7. Click **OK**.
8. When prompted, click **OK** at the prompt and then position the stylus or cursor at the corner of the field where you will start sampling.
9. Tap or click and then drag in the direction that you travel as you take your soil samples. The line that is created here is used to create the alignment of the sampling grid.

   When you release the mouse (or lift the stylus), the field will be gridded.
10. Click the icons on the left of the map to modify the grid.

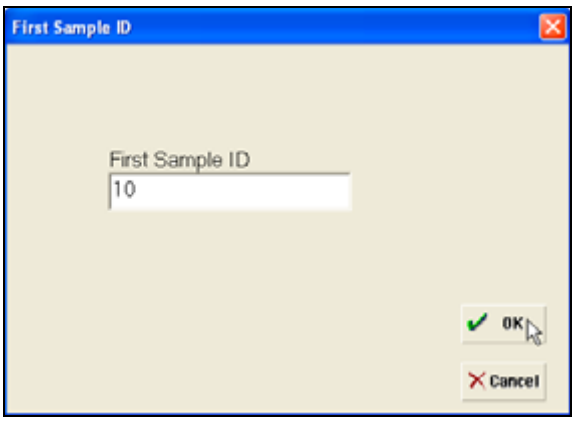
Icon		Description
Setup		Modify the size and pattern options previously set.
Rotate		Click-and-drag again for a different angle of grid squares.
Move		Drag the entire grid around on the map to obtain the best alignment.

11. Click **OK**. The screen that appears shows the target sampling grids and the grid points. Grid point labels show the Sample ID.

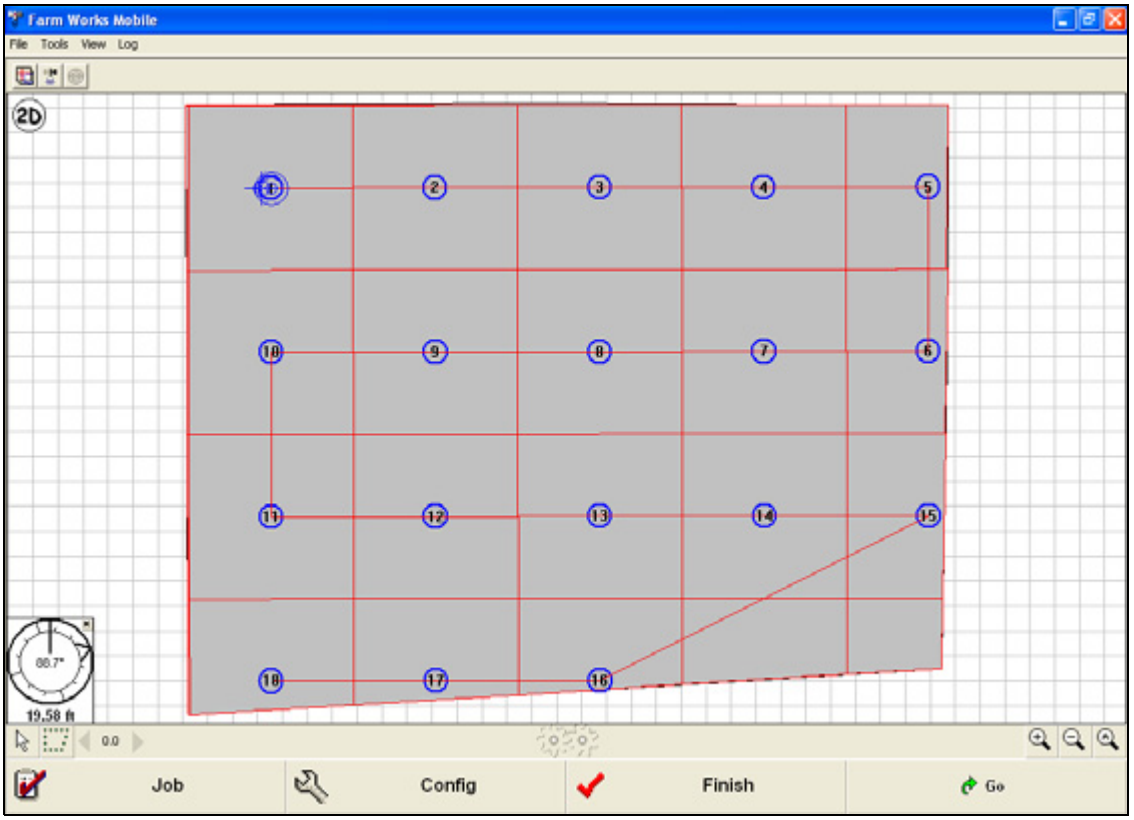


- To delete a point, click it and then click **Delete**. If you selected *Renumber Target Sample Ids when a point is deleted* in the Config / Logging / Sample IDs area, the remaining Sample IDs are automatically renumbered.
- To move a target point, click the point and then drag it to the new position.
- To renumber the points, click **Renum**.

  This allows you to enter the starting sample ID number. The program will then automatically renumber the points based on the number entered.

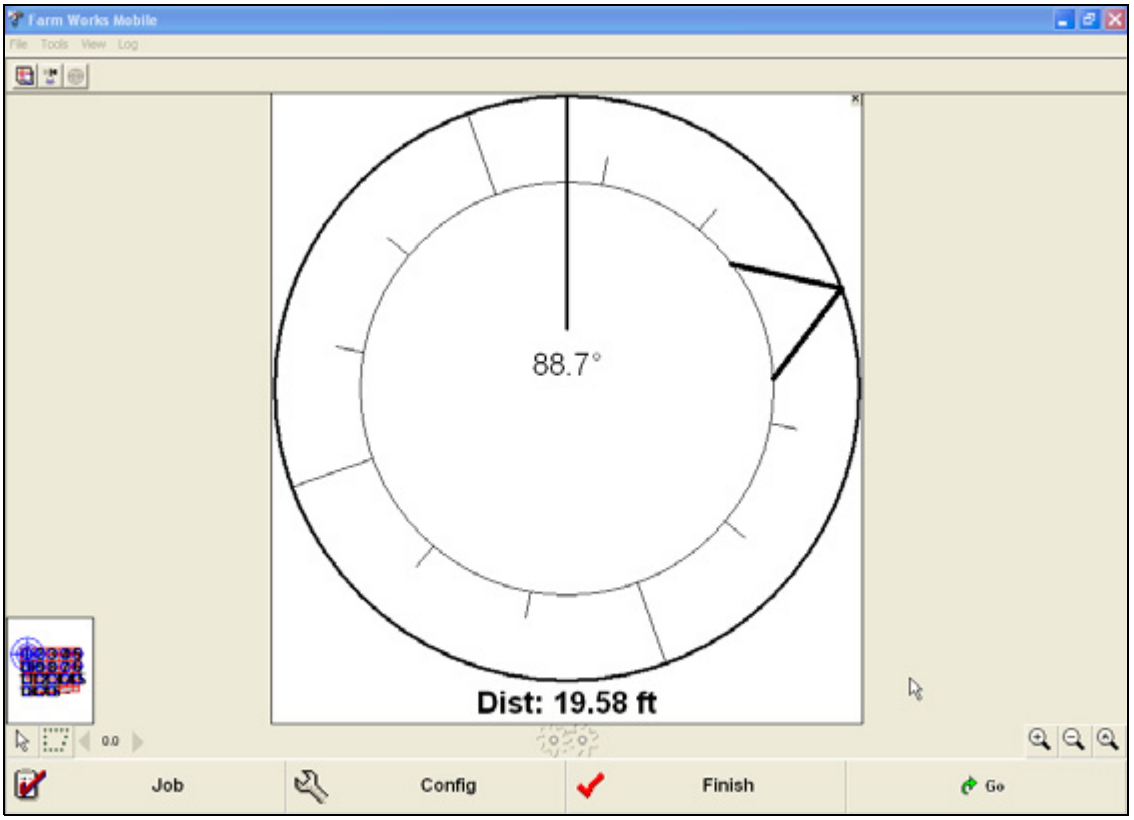


12. Once all of the targeted grid points are correct, click **OK**. The target sampling grid appears.



Target Grid Points have a blue circle around them. A red line shows the Target Sampling Points in the order of their Sample ID. This enables you to easily navigate from point to point, with the aid of the compass in the lower left corner of the screen.

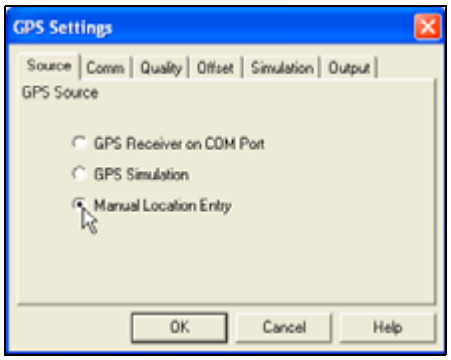
13. To enlarge the compass to fill the screen, click the compass and then select *Swap Navigation and Map*.



14. Once you are ready to pull soil samples, click the Points icon and then click **Go**.
15. Each time that you take a soil sample, click **Log** to log the position where the sample was pulled. The software shows the Sample ID, which defaults to the next ID in sequence. You can change this if required.
16. Click **OK**. The compass guides you to the next Target Sample Point in sequence.
17. Once you finish pulling samples for this field, click **Finish**.

Manual Location

You can use this feature to create maps when you cannot physically map the location with a GPS receiver.



1. Once you are ready to map a location manually, select *File* / *GPS settings*.

   Alternatively, select *GPS settings* in the Settings area of the *Config* dialog.
2. Select *Manual Location Entry* and then click **OK**.
3. Select the type of data to log manually: boundary, path, or point.
4. Click the Manual Coordinates icon .
5. Click **Go** to start logging.
6. Tap or click where you want to log.

   If you are logging a point, it appears on the screen.

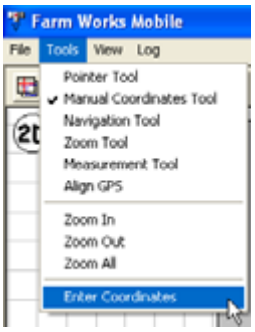
   If you are logging a boundary or a path, they are drawn as you click each corner.

Note – *Manual Location Entry uses the same logging intervals as if using a GPS receiver.*

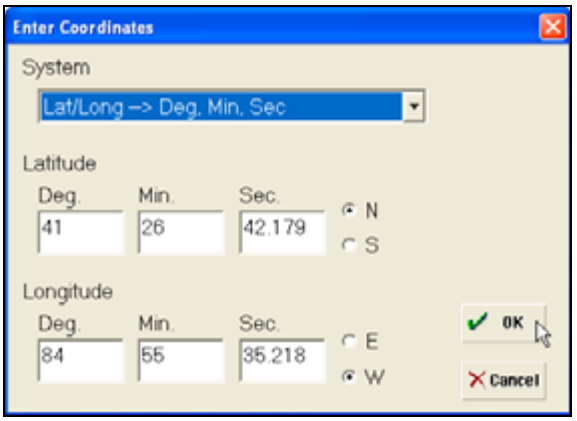
7. Click **Stop** to finish mapping.
8. Close and/or export the log file as normal.

Entering known coordinates

1. Select *Tools* / *Enter Coordinates*.



2. Enter the coordinates and then click **OK**.



The cursor moves to that position.

Other Mapping features

Navigate to point

With the Mapping and VRA features enabled, you can navigate to a known point.

1. Use the Zoom tools to view the area to navigate to.
2. Click the Navigation icon .
3. Do one of the following:
   - Tap on the map at that required location. A bulls-eye appears at the selected location.
   - Tap on a point on the map and then select *Navigate To Point*.

A navigation dial appears on the screen.

The vertical line at the top of the dial represents your direction of travel. The moving arrow represents the direction to the target. The distance to the target appears below the dial.

4. For a larger view of the navigation dial, click on it and then select *Swap Navigation and Map*. To return to the map, click on the larger navigation dial and then select *Swap Navigation and Map* again.
5. To close navigation, click the close icon at the top right of the navigation dial.

Scrolling

The *Log* menu contains the following options:

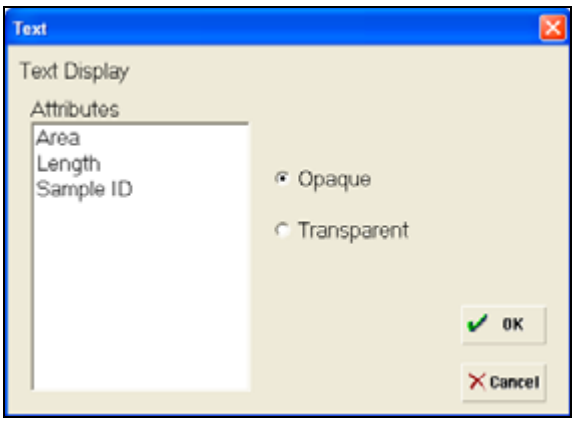
- Auto-Scroll: Zoom in on an area of the map; the software maintains that zoom level. Use this when you create a job such as a coverage map where you want to stay focused on the current position. As you drive, the screen scrolls so that your current position is always in the center of the screen at the selected zoom level.
- Auto-Scroll and Zoom: Zoom out as you create a map so that the entire map fills the screen. Use this for boundary mapping where you want to always see the entire boundary as you mapped it.

Labels on mapped data

This option is available only with the Mapping and VRA features enabled.

To show labels on mapped (logged) data:

1. Select *Log* / *Label*. A dialog lists all the attributes being used.



2. Select the attribute(s) to show on the labels.
3. Select *Opaque* or *Transparent* and then click **OK**.

Suspended logs

Use this when logging more than one type of information at the same time. For example, if you are logging a path and want to log a point, you can suspend the path and then map the point without completely stopping the path log.

To configure the software to work with Suspended Logs:

1. Select *Config* / *Advanced* / *Advanced Logging* and then selecting *Allow Suspended Logs*.
2. To suspend a log that is in progress and then start a new log, select the appropriate option from the *Log* menu:
   - *Suspend*
   - *Unsuspend:* Then select the log to resume.

Digital images

This option is available when the Mapping and VRA features are enabled.

Use this feature to link an image to a map. For example, take a picture of a problem such as a weed or insect and link it to a GPS map. This can work directly with many of the cameras that are built into mobile devices (such as those that can be included with the Juno, Nomad, or Yuma handhelds).

1. Follow the steps in Mapping jobs, page 102.

   When you create the job, select a job type or template that includes an attribute for the image.

   To set up the job type or templates, select *Configure* / *Logging* / *Database Templates*. The template includes all the attributes that you want to log. If you want to log a digital image, the template must include an attribute that has *Image* for the type.

2. Once you start the job, the *Map* screen appears and you can log a GPS boundary, path, or point.
3. Whenever you click **Log** or **Stop**, the *Properties* dialog appears, where you can enter the attributes for the map.
4. For the *Image* attribute, select *Set Image*.
5. In the dialog that appears, select one of the following options:
   - **Change**: From the *Open File* dialog, select an image that is stored on the device.
   - **Camera**: If the device has a built-in camera that the software recognizes (such as on a Juno, Nomad, or Yuma handheld), this activates the camera. The camera view appears on the screen. Once you see the image to capture, click the camera button ***on the device*** to capture the image.

   - **Remove**: Remove the captured image.
6. Do one of the following:
   - Click **OK** to save the image and link it to the map.
   - Click **Cancel** to cancel the captured image and return to the *Properties* dialog.

If your device has a built-in camera that the software recognizes (such as on a Juno, Nomad, or Yuma handheld), and the log file includes an image attribute, the *Map* screen includes a Camera icon .

1. To activate the camera at any time, click the icon.
2. Capture an image.
3. Click **OK** to log a point that will have this image linked to it.

Performing a new sensor job

With the VRA feature enabled, you can log variable rate controller operations, and create an as-applied map. If you do not have a variable rate map that you want to control by, but you do want to log the applied rates, use the *New Sensor Job* option.

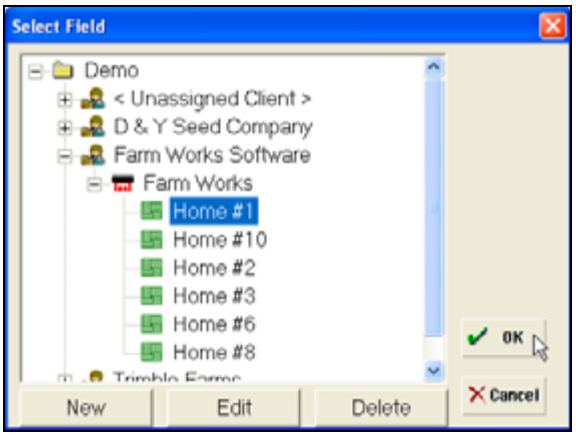
Make sure that the Device information and the Advanced VRA options are correct for the sensor or controller you are using. For more information on the Variable Rate Setup, see Configuration sections, page 27.

Note – *GPS is required for all Mapping jobs, including VRA and Sensor jobs. See GPS Settings, page 31.*

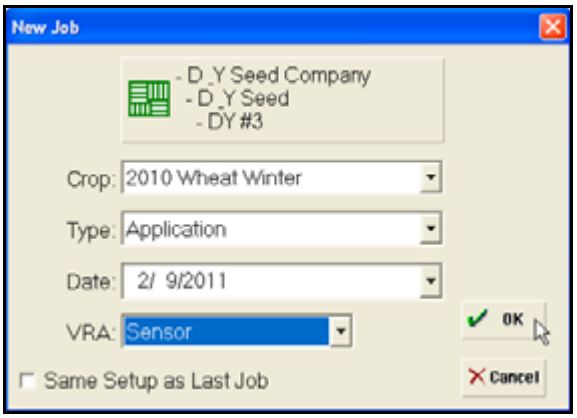
Using the Field Record option

Note – *When using GPS and Mobile program, the Field is automatically selected according to the GPS position.*

1. In the *Jobs* tab, click **Field Record Job**.
2. Tap the **+** button beside the required client to display the farms.
3. Tap the **+** button beside the required farm to display the fields.
4. Highlight the required field name and then click **OK**.



5. In the *New Job* dialog, select the *Crop, Job Type,* and *Date* if required.



6. From the *VRA* drop-down list, select *Sensor* and then click **OK**.
7. Select the required supplies, equipment, and people. For more information, see Chapter 5, Field Record Keeping Feature.

   Once the job starts:

   – The booms icon is highlighted.

   – Map Data Display items are listed. For more information, see Map Data Display, page 53.
8. Click **Finish**. You are prompted to select *Finished* or *Incomplete*. See Finishing a job, page 93.

Using the New Sensor Job option

1. In the *Jobs* tab, click **New Sensor Job**.
2. When prompted enter either a file name (if automatic file naming is not being used) or select the correct Client, Farm, and Field.
3. Click **OK**.

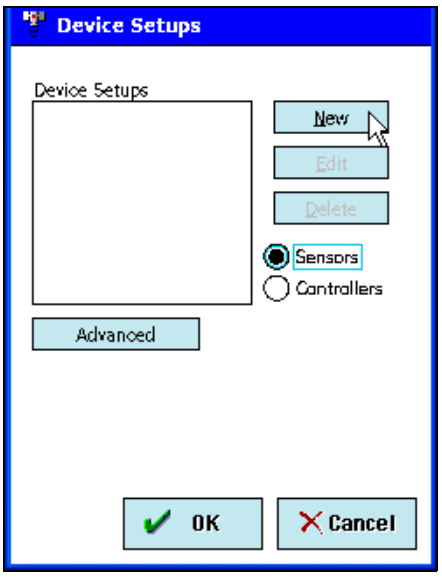
   Once the job starts:

   – The booms icon is highlighted.

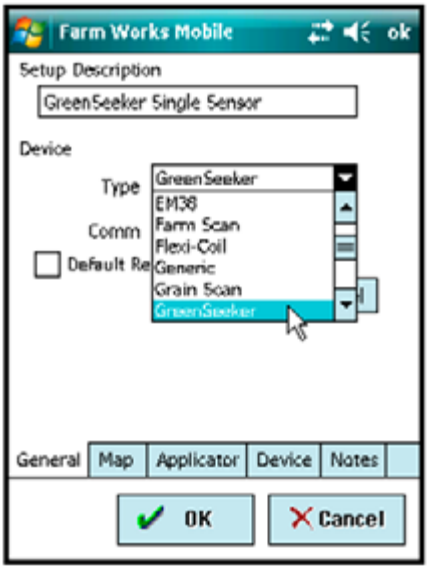
   – Map Data Display items are listed. For more information, see Map Data Display, page 53.
4. Click **Finish**. You are prompted to select *Finished* or *Incomplete*. See Finishing a job, page 93.

Working with the GreenSeeker RT100 system

1. Click **Configure** and then select *Logging.*
2. Select *Device Setup.*
3. Select the *Sensor Option* and then tap **New** to set up the connection to the GreenSeeker RT100 system.

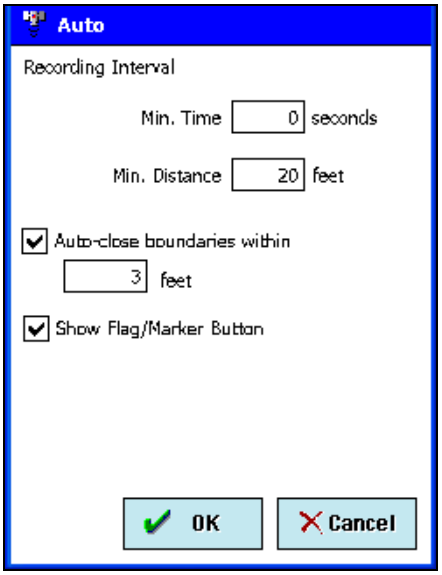


4. Enter a name in *Setup Description* (for example, **GreenSeeker Single Sensor**).



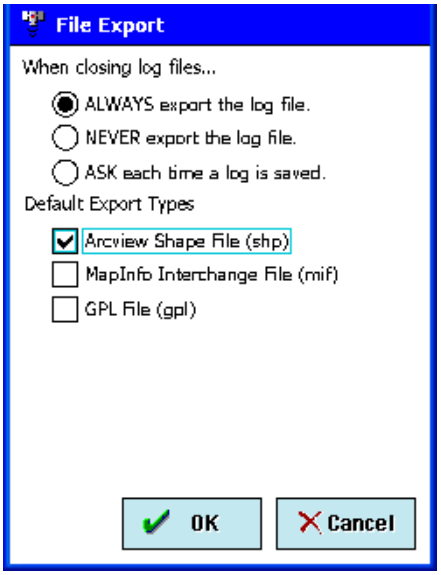
5. In the *Type* field, select *GreenSeeker.*
6. In the *Comm* field, typically select *COM1.*
7. Select the *Default Real-Time Sensor* check box.

8. Select the *Device* tab.
9. In the *Device Type* field, select *Single Sensor* and then tap **OK**.
10. In the *Device Setup* screen, tap **OK** to return to the *Logging* tab.
11. Select *Auto Logging.*



12. In the *Min. Time* field, enter 0.
13. In the *Min. Distance,* enter 20.
14. Select the *Auto-close boundaries within* check box, and then enter 3 feet.
15. Select the *Show Flag/Marker Button* check box and then tap **OK**.
16. In the *Logging* screen, tap **Back** to return to the main Configuration screen.

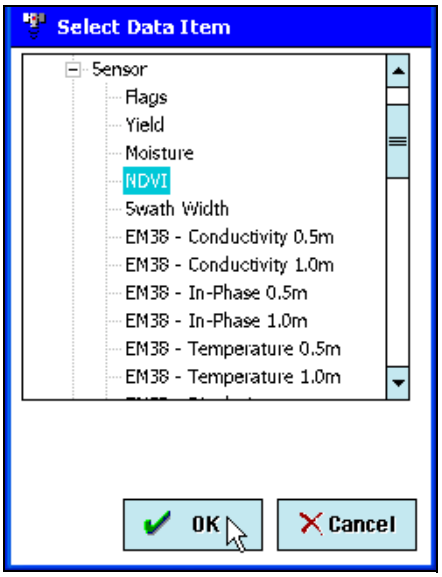
17. Select *Settings* and then select *Exporting Log Files*.



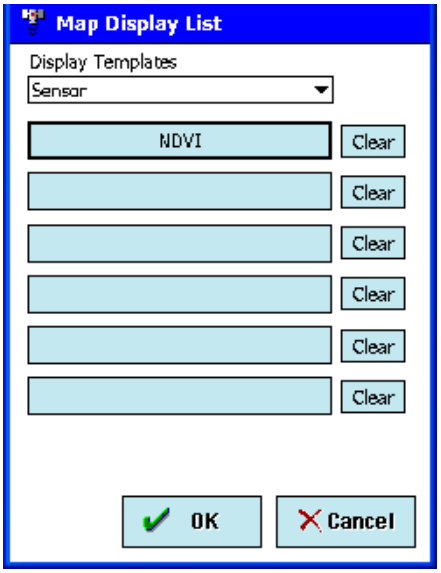
18. In the *When Closing log files* section, select the *ALWAYS export the log file* check box.
19. In the *Default Export Types* section, select the *Arcview Shape File* check box and then tap **OK**.
20. Tap **Back** to return to the main Configuration screen.

Displaying the NDVI values on the Mapping screen

1. Click **Configure**, select *Display* and then select *Map Data Display*.
2. From the *Display Template* dialog, select *Sensor* and then tap the plus sign to open the list of sensor job attributes.



3. Select *NDVI* and then tap **OK** to add NDVI to the sensor display template:



4. Repeat these steps to add other attributes, such as Latitude, Longitude, and GPS Speed. Make sure that you select the correct data item (for example, GPS or Mapping).

Performing a VRA job

To use a prescription (Rx) map to send a rate to a variable rate controller:

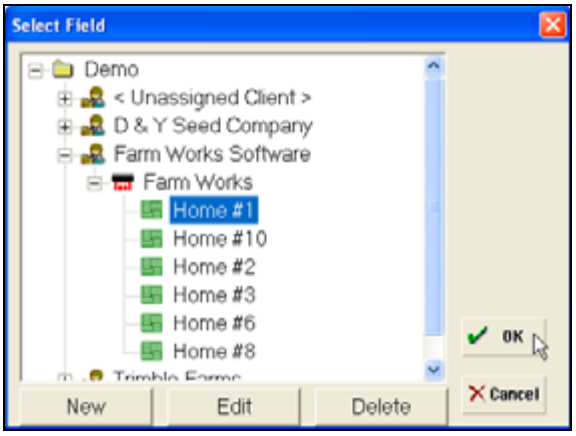
Make sure that the Variable Rate Setup information and the Advanced VRA options are correct for the controller you are using. See the Advanced VRA, page 65.

Note – *When using GPS and the Mobile program, the Field is automatically selected according to the GPS position.*

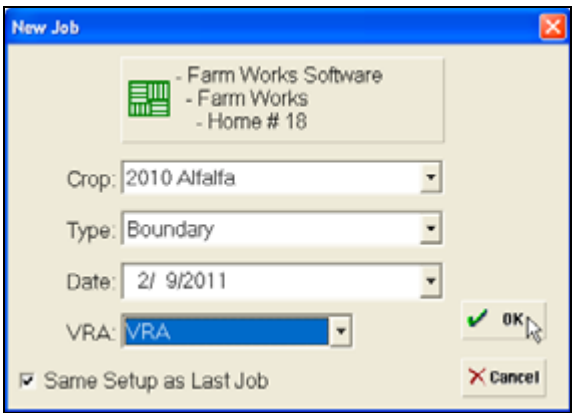
Note – *GPS is required for all Mapping jobs, including VRA and Sensor jobs. See GPS Settings, page 31.*

1. In the *Jobs* tab, click **Field Record Job**.
2. Tap the **+** button beside the required client to display the farms.
3. Tap the **+** button beside the required farm to display the fields.

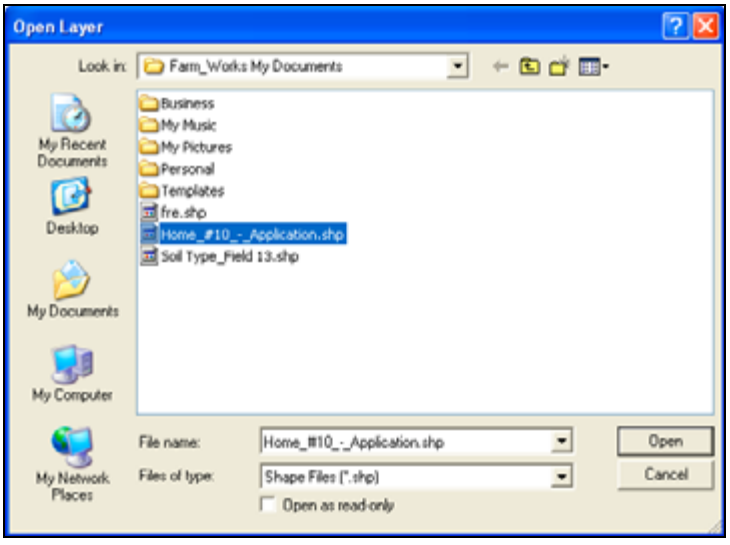
4. Highlight the required field name and then click **OK**.



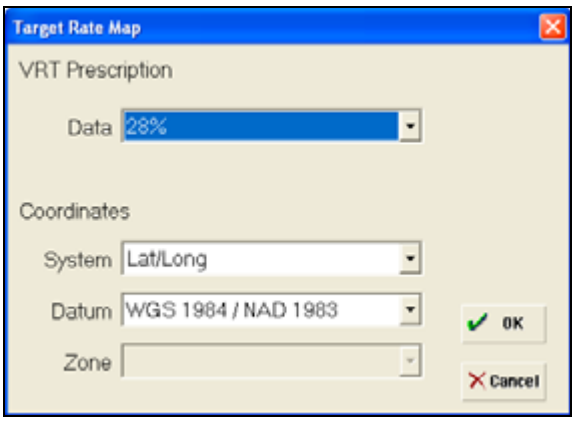
5. In the *New Job* dialog, select the *Crop*, *Job Type*, and *Date* if required.



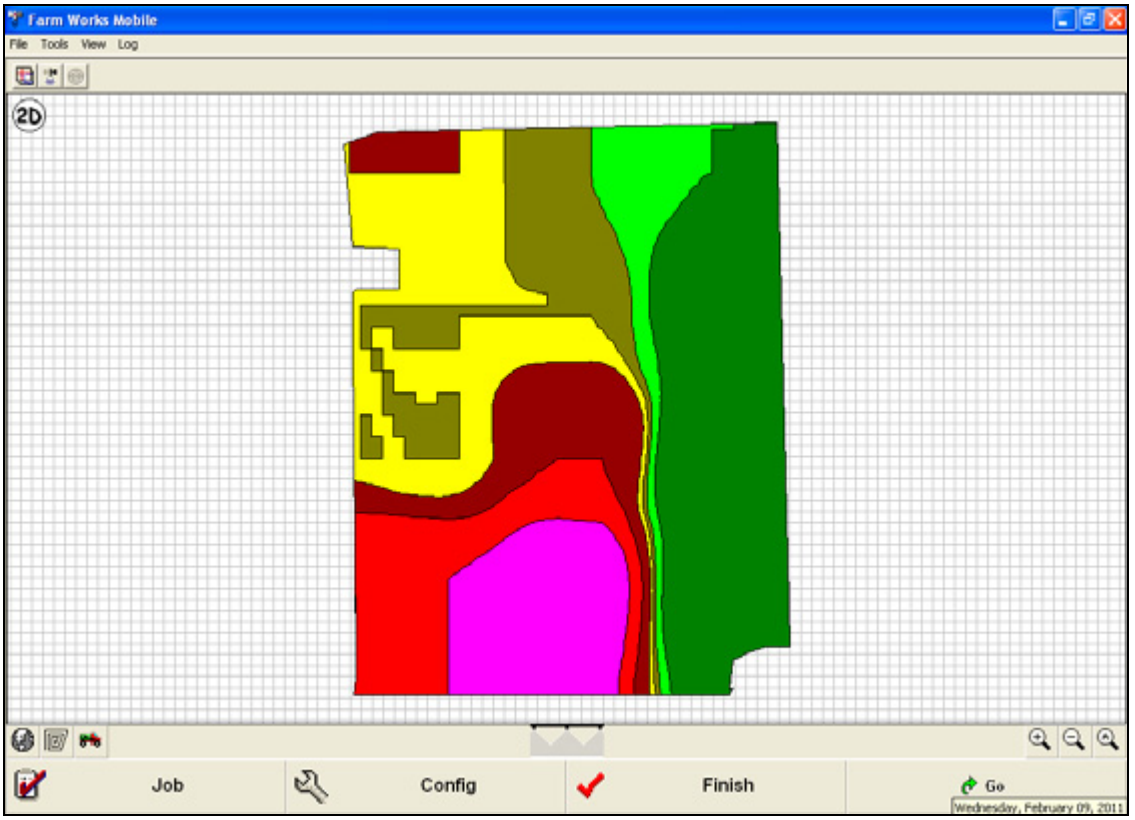
6. From the *VRA* drop-down list, select *VRA* and then click **OK**.
7. When prompted, select the variable rate map.



8. Select the Data Item contained in the shape file you will be controlling.
9. If the coordinate system used to create the Variable Rate map is different from the one shown, select the appropriate coordinate system and then enter the *Datum* and *Zone*, if applicable. Most software uses Lat/Long, WGS 1984.



10. Click **OK** to load the Rx map, application map, and any other background files that you selected.
11. Open the Map window to view the Rx map. You can now begin the variable rate application.



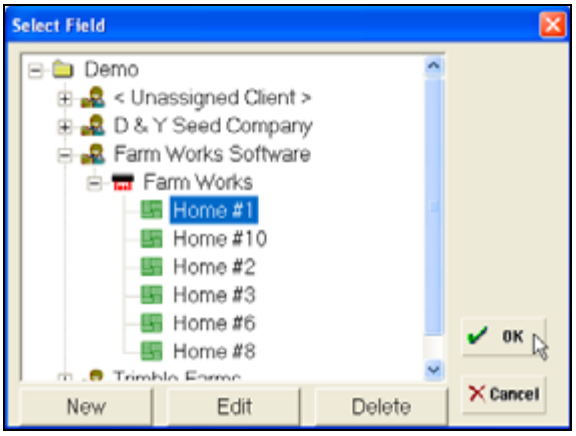
12. Click the Device Setup icon (bottom of screen) and make sure that the correct controller is selected. You can also enter a new controller setup or edit an existing one at this time.
13. Click **OK**.

    Once the job starts:

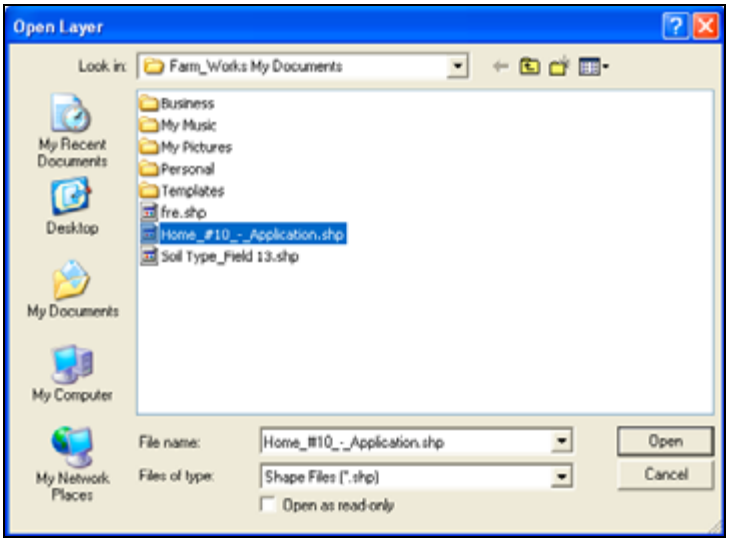
    - The booms icon is highlighted.
    - Map Data Display items are listed. For more information, see Map Data Display, page 53.
14. Click **Finish**. You are prompted to select *Finished* or *Incomplete*. See Finishing a job, page 93.

Using the VRA Job option

1. In the *Jobs* tab, click **VRA Job**.
2. When prompted enter either a file name (if automatic file naming is not being used) or select the correct Client, Farm, and Field.
3. Click **OK**.

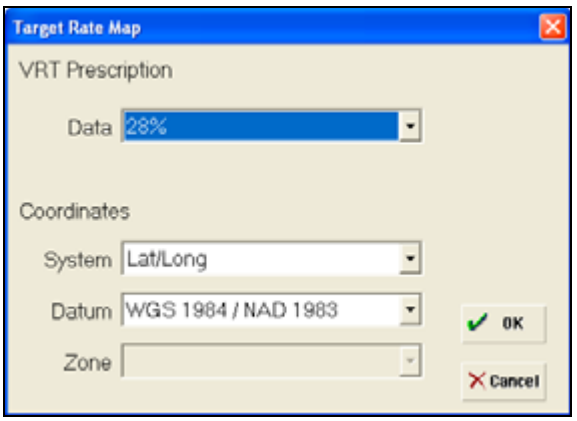


4. When prompted, select the variable rate map.



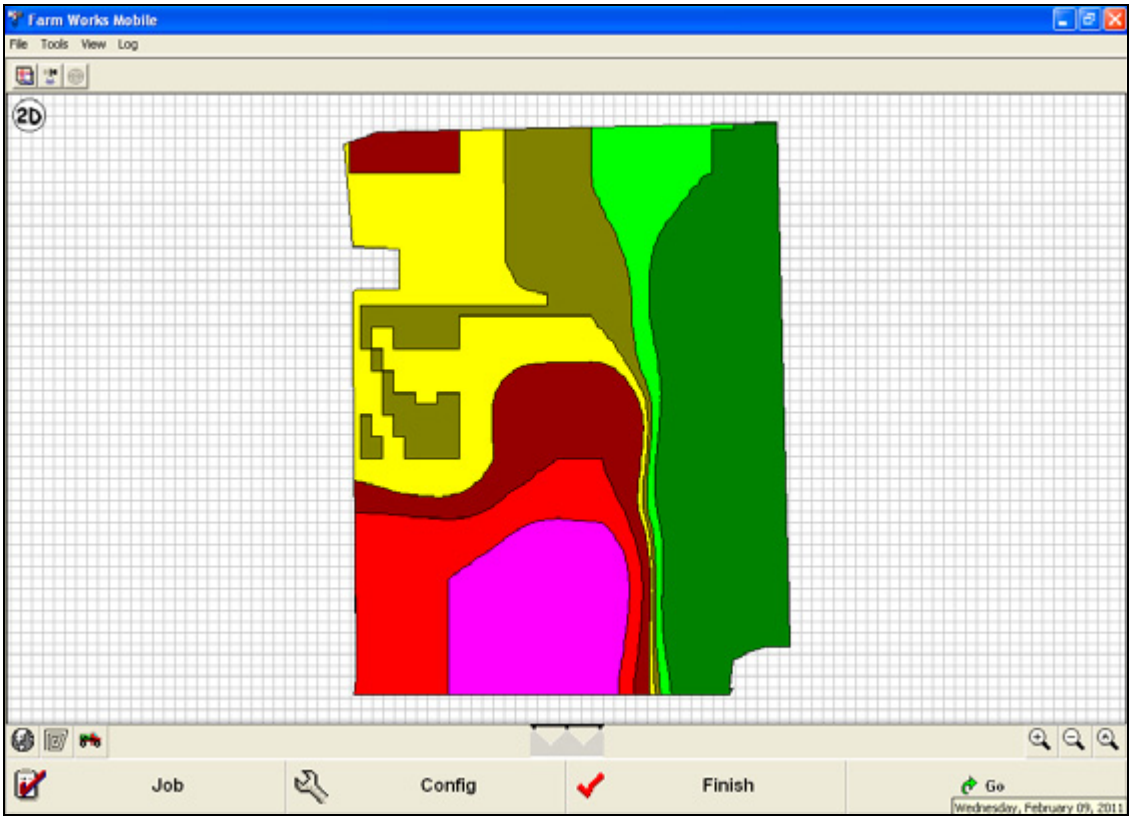
5. Select the Data Item contained in the shape file you will be controlling.

6. If the coordinate system used to create the Variable Rate map is different from the one shown, select the appropriate coordinate system and then enter the *Datum* and *Zone*, if applicable. Most software uses Lat/Long, WGS 1984.



7. Click **OK** to load the Rx map, application map, and any other background files that you selected.

8. Open the Map window to view the Rx map. You can now begin the variable rate application.



9. Click the Device Setup icon (bottom of screen) and make sure that the correct controller is selected. You can also enter a new controller setup or edit an existing one at this time.

10. Click **OK**.

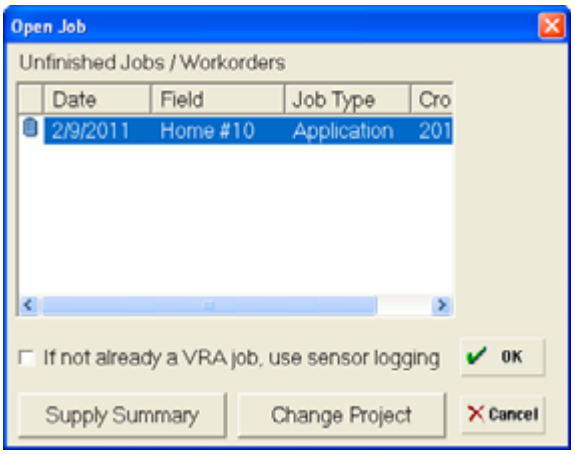
    Once the job is started the following appears on screen:

    - *RX* shows the application rate assigned to the current area of the Rx map.
    - *As Applied* shows the actual rate being applied.
    - The booms icon is highlighted.

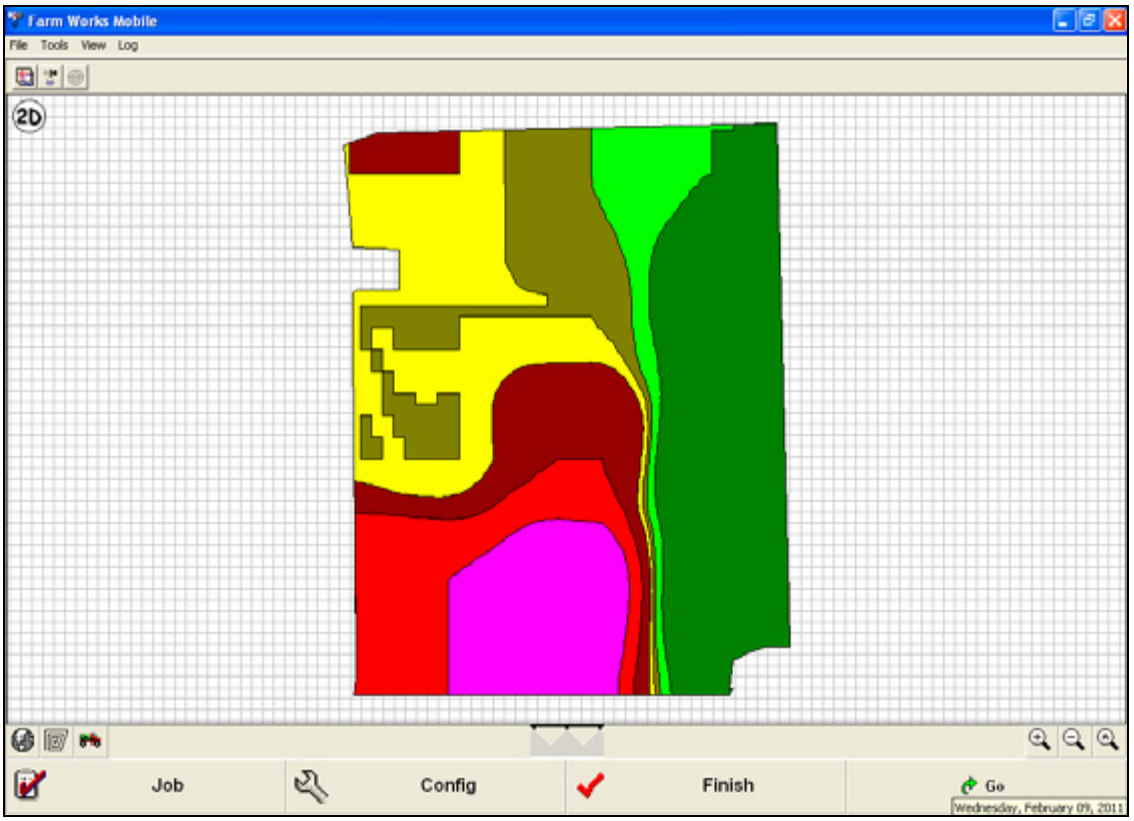
11. Click **Finish**. You are prompted to select *Finished* or *Incomplete*. See Finishing a job, page 93.

Using the Workorders option

1. In the *Jobs* tab, click **Unfinished Jobs/Workorders**.
2. In the *Open Job* dialog, select the required VRA job and then click **OK**.



3. Open the Map window to view the Rx map. You can now begin the variable rate application.



4. Click the Device Setup icon (bottom of screen) and make sure that the correct controller is selected. You can also enter a new controller setup or edit an existing one at this time.
5. Click **OK**.

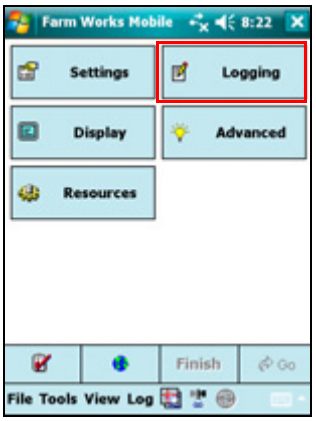
   Once the job is started the following appears on screen:

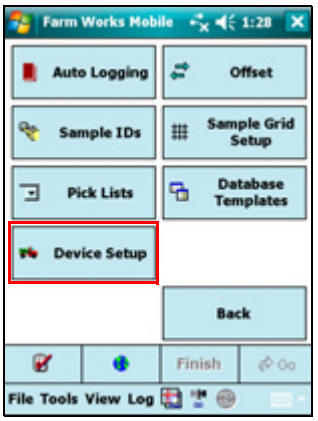
   - *RX* shows the application rate assigned to the current area of the Rx map.
   - *As Applied* shows the actual rate being applied.
   - The booms icon is highlighted.
6. Click **Finish**. You are prompted to select *Finished* or *Incomplete*. See Finishing a job, page 93.

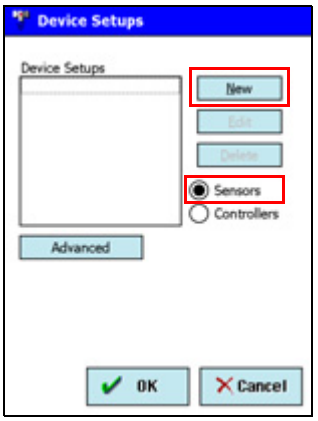
Configuring the GreenSeeker RT200 system for a Real-time VRA Job

To set up and connect to the GreenSeeker RT200 system, do the following:

1. Tap **Back** to return to the main *Configuration* screen and then select *Logging / Device Setup / New:*







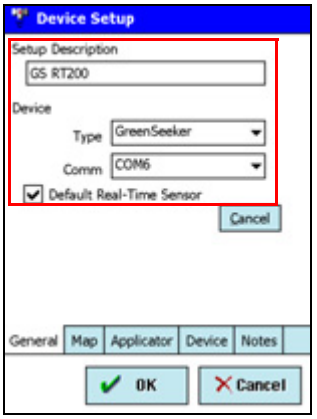
2. In the *General* tab:

   a. Enter a name (for example, **GS RT200**) in the *Setup Description* field.

   b. Select *GreenSeeker* in the *Type* field.

   c. Select the *Comm port* (typically, *COM6*).

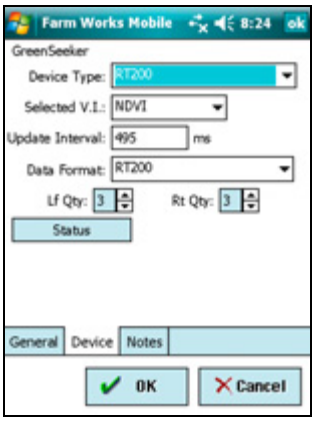
   d. Select the *Default Real-Time Sensor* checkbox and then tap the *Device* tab.



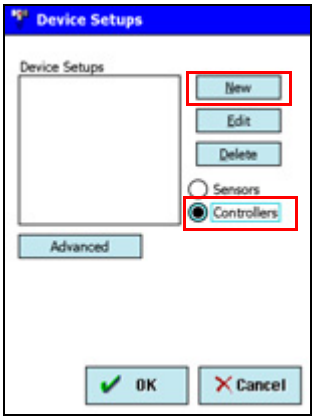
3. In the *Device* tab:

   a. In the *Device Type* field, make sure that *RT200* is selected.

   b. Set left and right Sensor quantities to match your system and then tap **OK**.



4. To set up the rate controller to use with the GreenSeeker RT200 system, in the *Device Setups* screen, ***first***, select the *Controllers* radio button and then click **New**.

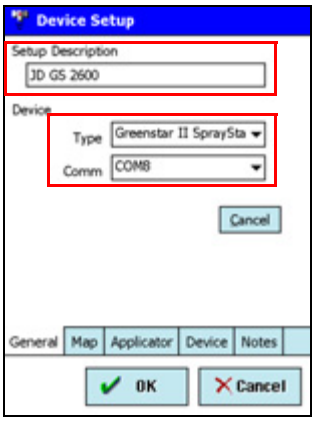


In the *General* tab:

a. Enter a *Setup Description* (for example, **JD GS 2600** or **Raven 4600**).

b. From the *Type* drop-down list select the type to match your rate controller.

c. Select a suitable *Comm* port (COM8 is typical when used with with an Easy Sync USB-to-Serial Box) and then tap the *Applicator* tab.



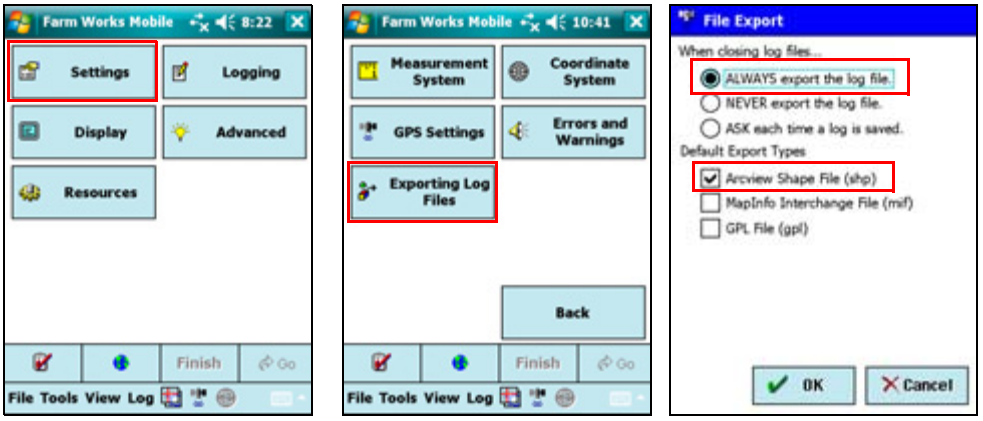
In the *Applicator* tab:

a. Enter the *Swath Width* to match the Applicator / Boom.

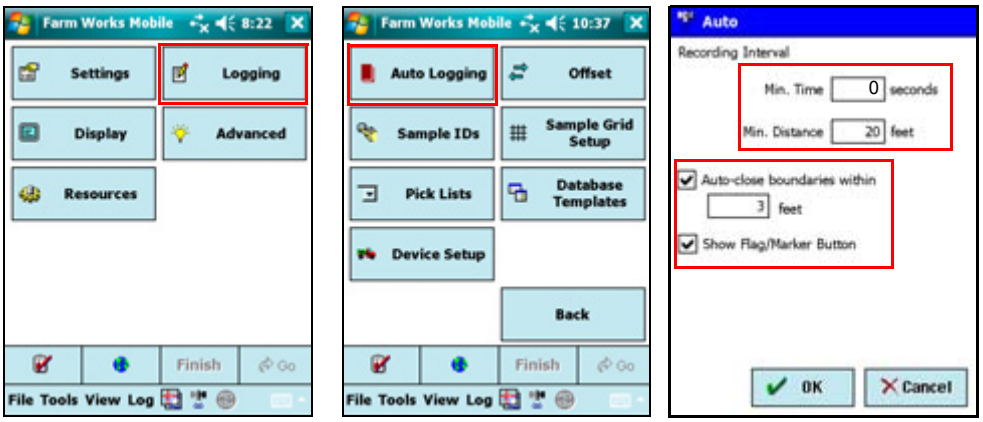
b. If required, you can also enter the necessary settings for your rate controller in the *Device* tab.

c. Tap **OK** twice.

5. Tap **Back**, **Settings**, **Exporting Log Files**, select the *ALWAYS export the log file* radio button and the *Arcview Shape File (shp)* checkbox and then tap **OK**:



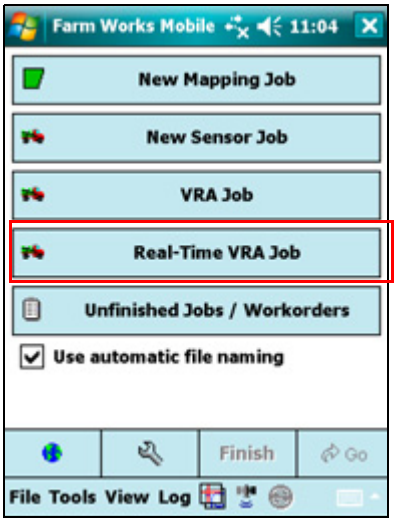
6. Tap **Back**, **Logging**, **Auto Logging** and then set the *Recording interval* as required. Enter a *Min Time* of 0 seconds and a *Min Distance* of 20 feet. Make sure that both the *Auto close* and *Show Flag/Marker Button* checkboxes are selected and then tap **OK**.



Performing a Real-Time VRA Job

***Note** – This procedure is demonstrated on a mobile device.*

1. In the *Jobs* tab, tap **Real-Time VRA job**.

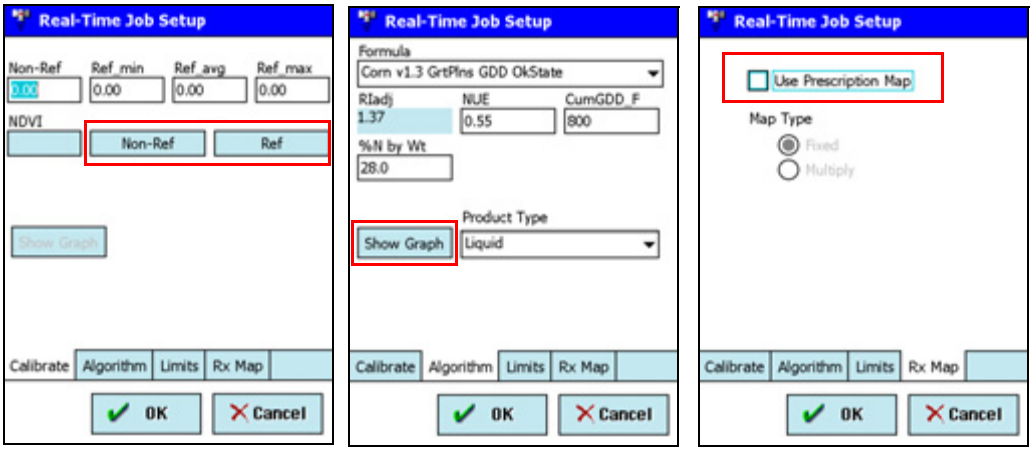


2. When prompted, either enter either a file name (if not using automatic file naming) or select the correct *Client*, *Farm*, and *Field*.
3. Tap **OK**.

Real-Time Job elements for the GreenSeeker RT200 system

Note – *The Real-Time Job Setup screen displays automatically when you select the Real-Time Job option and set the Client / Farm / Field information.*

1. Set up the real-time job elements in the *Real-Time Job Setup* screen:



   a. In the *Calibrate* tab:

      To collect data from calibration passes with an applicator vehicle, tap **Non-Ref**, tap **Stop**; and then tap **Ref**, tap **Stop** and then tap the *Algorithm* tab.

   b. In the *Algorithm* tab:

      Enter or edit the required fields—the fields that appear depend on the *Formula* that is used—and then tap **Show Graph**.

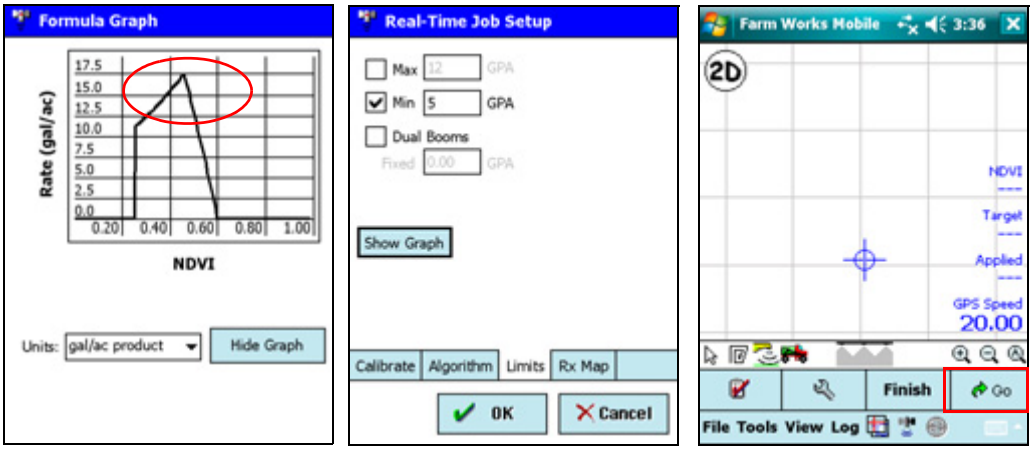
      There are two custom table Formulas where you can use a spreadsheet type table to enter user-defined rates. The Auto Cal Formula obtains sensor values from the *Ref* calibration operation.

   c. *Optional* In the *Rx Map* tab:

      You can select to use a *Prescription Map*. Use a prescription map to either overwrite the sensor based rate to a ***fixed*** rate value or to modify by the rate in ***Multiply*** mode. A prescription map is created in GIS software, for example, the Farm Works Site software, and then downloaded to the Nomad handheld computer before running the job. For more information on this feature, refer to the *Farm Works Mobile Software User Guide*.

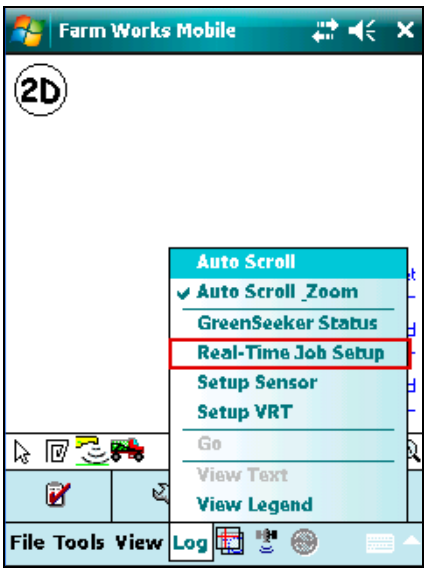
Note – *For more details on using Crop Algorithms and Formulas, refer to the support documents available from www.GreenSeeker.com.*

d. Review the *Formula Graph*:



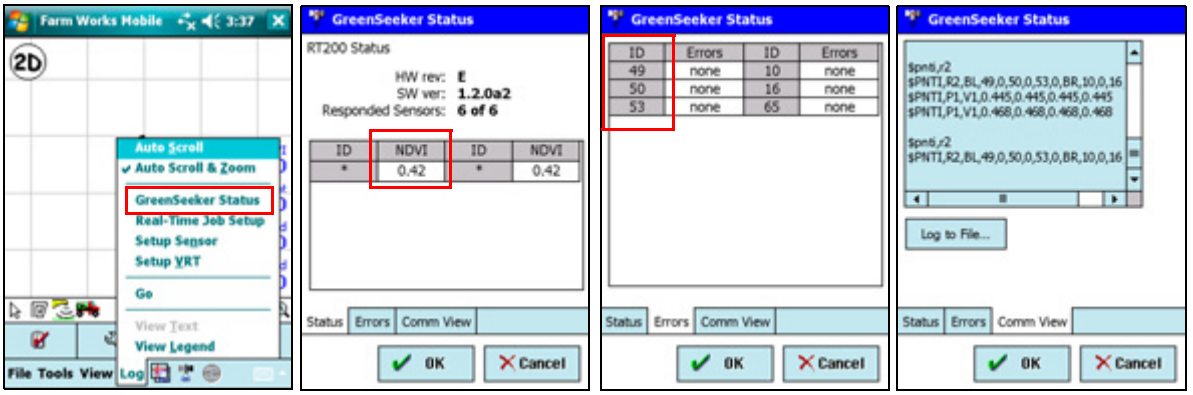
- Make sure that applicator settings and nozzles are correct so that you will reach the maximum value on the graph.
- Use *Max* and *Min* features to limit upper and lower rate values as necessary and then tap **OK**.
- In the screen that appears, tap **Go**.

2. To access the Real-Time Job Setup screen, tap **Log** and then select *Real-Time Job Setup*.



Diagnostics screen for the GreenSeeker RT200 system

Diagnostic screens are only available while a Real-time VRA job is open.



To access the *GreenSeeker Status* screens, tap **Log** and then tap *GreenSeeker Status*.

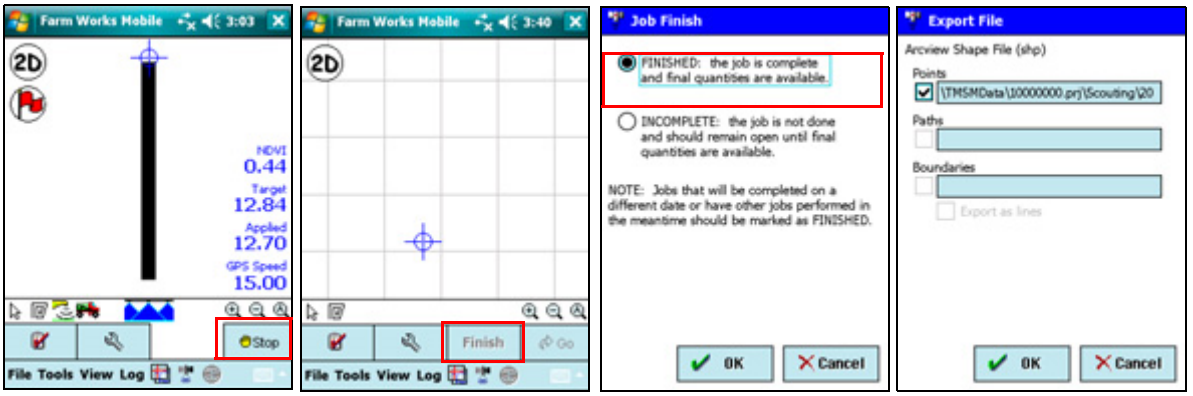
- The *Status* tab shows the hardware and software revisions of the interface module and the number of sensors responding on the GreenSeeker CAN bus.
- The *NDVI* value (the same value appears in both columns) is the average of all sensors.
- The *Errors* tab shows the status of individual sensors. The *ID* column shows the last two digits of the sensors' serial numbers.
- The *Comm View* tab shows the serial data stream scrolling from the interface module.

GreenSeeker RT200 error conditions

Error conditions include sensors disconnected from the CAN bus, or a sensor transmitting invalid data. Invalid data could occur if the sensor malfunctions, or more commonly, if it is seeing a target other than plants and soil. For example, when setting up, the sensors may be pointed in the air, or against wet asphalt; either of these will likely generate an error code from a sensor. The following errors are identified:

Error	Code	Description
-1	RED > NIR	Red reflectance higher than NIR
-2	BOTH < .01	Both reflectances below 0.01
-3	RED < .01	Red reflectance below 0.01
-4	NIR < .01	NIR reflectance below 0.01
-5	BOTH > .98	Either reflectance above 0.98
-.9	NIR < .015	NIR net reflectance below .015
-9.x	-9.x	All sensors responded with invalid data
-10.x	-10.x	No sensors responded at all

Completing the job



1. When the software is collecting data, values appear on screen. To stop collecting data, tap **Stop**.
2. Tap **Finish** when the procedure is complete. The *Job Finish* dialog now allows you to decide whether the Job is finished (this means that final quantities are available) or incomplete (this job remains open). Select the appropriate radio button and then tap **OK**.
3. You can now export shapefiles. Tap **OK**. GreenSeeker data is only available in point format. The blue box shown next to the check mark shows the file location on the Nomad handheld computer. Typically, this is a top level folder that appears under "My Device" in the Nomad memory. Look for the TMSM Data folder.

Note – *If you want to collect NDVI sensor data only for mapping in GIS software, create a New Sensor Job and complete the procedure described above.*

CHAPTER

7

Troubleshooting

In this chapter:

- FAQs

This chapter contains some FAQs (Frequently Asked Questions) and their answers, which may help you if you encounter any difficulties.

FAQs

What do these messages mean that appear in the GPS Settings - Quality window?

Minimum GPS Quality

This refers to the quality of signal that will be used to log data. Anything below the selected quality is ignored:

- 0 = No GPS Position
- 1 = GPS position only
- 2 = GPS position with differential (WAAS for example)
- 4 = RTK fixed position
- 5 = RTK float position

Maximum HDOP

This option allows you to filter positions, and minimizes logging distant points if the GPS signal is lost. The recommended setting for maximum HDOP is 25.

Honor NMEA Checksum

Select this check box to discard any points that have an incorrect Checksum.

What do these message at the bottom of the screen mean?

Unable to Open Comm Port for GPS data

Something is accessing the current port selected within the GPS Settings. Do one or both of the following:

- In the *Configuration* dialog, select *Settings* / *GPS Settings*. Make sure that the correct port is selected.
- If the correct port is selected, check if something else is connected through it. For example, an external keyboard, other GPS programs, Active Sync technology, or other external hardware devices may be accessing the port even though it is no longer connected.

Possible solutions:

- Soft reset the controller and go directly to the software.
- Change the GPS Settings in the software or hardware drivers.
- Remove any drivers or applications used for other devices: On the controller, select *Start* / *Settings* / *System* / *Remove Programs*.

No GPS Data Received

- GPS receiver is not receiving power.

Note – *If you are using an IFB box with a non-Raven receiver, you need a special power adaptor to power the IFB and to send GPS signals to the controller.*

- The GPS receiver is not configured to output NMEA 0183 strings.

  At least, the receiver must output the GGA and VTG strings.

- An incorrect baud rate is selected in the GPS Settings.

  Double-check the GPS settings in the software. You can also use the Auto-Baud feature. If there is a GPS signal present, the software searches all of the comm ports and baud rates until it finds it.

- Cabling Issue

  You are using incorrect cabling.

- No Message

  If the area at the bottom of the screen is blank, go to the Config dialog and then select *Advanced Logging Options*. If you are not using an IFB box or implement switch, make sure that the *Enable Implement Switch* check box is ***not*** selected.

Why is there no data being logged?

- Poor GPS signal

  To check the GPS signal, open the *Data* window to see how many satellites are being used, and the signal quality.

- Manual logging

  Make sure Manual logging is not enabled. If you can see a Log button in the window, manual logging is turned on.

- Zoom status

  If you are zoomed out too far or scrolled off the screen, you may not be able to see your data. Use the zoom tools to zoom in on your current position.

  – As required, select or clear the auto scroll and zoom options in the *Log* menu.

  – Tap the zoom in / zoom all buttons at the bottom of the map window.

- Incorrect settings in the Config window

  – Select *Settings* / *GPS Settings - Comm* to check the Minimum GPS Quality. If set at 1, it enables the software to log data as long as you are receiving GPS signals. If set at 2, data is not logged unless you are receiving differential (WAAS) signals.

- Incorrectly set Enable Implement switch

  Select *Advanced* / *Advanced Logging Options* in the *Config* window to check this setting.

  – If you are ***not*** using an implement switch, this option should ***not*** be enabled.

  - If you ***are*** using an implement switch, make sure that the appropriate option is selected, and that the logic is correct. If it logs while the implement is up or off, check the option to reverse the implement switch logic.

- Incorrect recording interval

  Select *Logging* / *Auto Logging* in the *Config* window and then enter the minimum time and distance required for logging data. If both requirements are not met, data is not logged. A typical setting is 1 second and 10 feet.

- Incorrect Display setting

  Select the appropriate mapping option (path, points, or boundary) below Display on the Config window to check the following:

  - Boundary or Points: If you want to log only the actual path or boundary, select *Actual*. If you are using an offset, and you want only the offset path or boundary, select *Offset*. If you want to log both, select both options. Also verify the line width and color.
  - Points: Enlarge the point size to see if previously-logged points become visible.

Why can I see only a line or a blank screen in the Map window?

You may have an incorrect Maximum HDOP. To reduce the chances of this happening, change this setting to **25**.

Occasionally, GPS receivers may lose the GPS signal, causing the software to lose position. If this happens, even for a moment, your position will bounce to the coordinates 0,0. Once the GPS receiver acquires the GPS signal again, the software locates your position and then bounces back to the current location. When this happens, the software draws a line to or logs a point at this 0, 0 coordinate, creating a stray line or an unwanted point far away from your map.

APPENDIX

A

Setting Up a VRA Controller

In this appendix:

- Supported controllers

The software supports a wide range of variable rate controllers. The list of supported controllers is always growing—if your controller is not listed here, contact Farm Works Support.

Supported controllers

Use the *Controller* field in the *Variable Rate Setup* dialog to enter the following additional information for those controller that require it. Controllers that do not required extra information include Amazone, Axiomatic, EM38, Farm Scan, Hardi International, Hardi Mustang, John Blue, Kverneland, Micro-Trak, RTS On/Off, Squibb-Taylor, and Veris EC.

Controller	Description	Required information
AGCO Falcon		
AGCO Fieldstar		
AL 2000 Yield		• Enter the Combine Flow Delay, Start Delay, and Stop Delay. Consult the documentation for your combine for this information. • If required, select *Log raw monitor data (.dbg)*.
Amazone Amaspray+ ASD		
Amazone Amados+ ASD		
Amazone Amatron II		
Amazone Amatron IIA		
Amazone Amatron+		
Axiomatic	For manure application	
Bogballe		Select version BC2002 or BC2003.
DGH Counter		• Select Event Counter or Current Meter. • Enter the pulses/gallon and the number of positions to use in smoothing (1-10).
Dickey John	Dry, Liquid, or NH3	Select the Channel Type: Dry, Liquid, or NH3
EM38		
Farm Scan		
Flexi-Coil		Enter the number of channels and then select the channel to control. A red check mark appears beside the selected channel.
Grain Scan		• Enter the Baud Rate for the controller. • If required, select *Create raw text output file (.dbg)*.
Green Seeker		If required, select *Raw text file output (.txt)*.
Hardi International		
Hardi Mustang		
Hiniker		For versions 2.03 and later, select *Use Snap Shot Reply*.
John Blue		
Kverneland		
LH-Agro	Sprayer, Fertilizer, Drill, or Slurry Spreader	
Micro-Trak		
Micro-Trak Yield		• Enter the weight of the crop per bushel, and the Dry Moisture %. • If required, select *Raw GeoMarker Output (.dbg file)*.

Controller	Description	Required information
Mid-Tech	Granular or Liquid	• Select whether the application is granular or liquid. • Select the correct Datalink for your controller. If you use version 5, make sure to select the correct baud rate. • Make sure that the channel you want to control has a red check mark next to it.
New Leader	Including Mark III & IV	Enter the Nominal Rate. This is an average of the rates that are included on the Rx map.
Raven	Versions A-H or J, Granular or Liquid	• Enter the number of channels. • To select a channel to control, click in the *Var.* column next to the required channel. A red check mark appears next to that channel. • Select whether this application will be liquid or granular. • Select the correct Revision.
Rawson		• Enter the Nominal Rate. This is the median of the rates that are to be applied. • Select the Step percentage. • The Nominal Rate and Step Percentage value must match what was set up on the controller.
RTS On/Off		
Squibb-Taylor		
TeeJet		• Select model 844 or 854. • Select the required Units.
Veris 3-Speed		• Enter the Nominal Rate. This is the average of the rates that are to be applied. • Enter the Step percentage. This value must match the controller.
Veris EC		

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