FIELD RESEARCH SOFTWARE

MOBILE

HarvestMaster

Field Research Software™

FRS Mobile™ Note Taking

Reference Guide

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CHAPTER 1
INTRODUCTION

Introduction

About Field Research Software (FRS Mobile)™

Designed by seed researchers, this Windows® Mobile-based modular software helps seed researchers and agricultural scientists easily perform data collection tasks on research field plots. FRS Mobile™ can be used on handheld devices including the Allegro Field PC®, Archer Field PC™ (rugged PDA), and other handheld computers.

This manual is about the FRS Mobile™ Note Taking module. FRS Mobile™ Note Taking is the core of the Field Research Software™ suite. It allows you to create a map corresponding to a field or download field information from your own research software.

With FRS Mobile™, you can

- Import map information including range, row, and pedigree from research management software

- Export and merge data collected in CSV format into research management software

- View pedigree or previously collected data on a handheld device

- Collect data in the field on a Windows Mobile® device

- Create maps or traits directly on a handheld

- Adjust navigation patterns on the go

- Review field maps, plot data, and plot locations using multiple views

Features

- Spatial view for identifying current location and reviewing previously collected data

- Form view for quick and easy data entry

- List view layout with sort order based on navigation pattern

- Information about multiple plots available simultaneously

- Auto-date feature for collecting flowering or maturity notes

- Interface to bar code scanners and electronic scales

- Flexible application to fit markets where materials are placed in a grid layout

The FRS Mobile™ database application allows for easy data retrieval, sorting, and viewing. Once data are collected in the field, they are easily transferred to the desktop database for analyzing, reporting, and archiving.

FRS Mobile™ has Windows® functionality with touchscreen and keyboard data entry. It runs on the Allegro Field PC®, the Archer Field PC™, or any handheld device that uses Windows Mobile® 6.1 or later.

Using this Reference Guide

This field reference guide is designed to help you prepare to collect data. The steps below show you what to do before collecting data and where to find instructions in this guide to complete each step. Refer to the index for further reference information.

Step	Task	Reference
1	Install and register FRS Mobile™.	Chapter 2
2	Become familiar with the FRS Mobile™ main screen, keyboard uses, and soft keys.	Chapter 3
3	Learn about the FRS Mobile™ main screen.	Chapter 3
4	Create or import a trait list.	Chapter 4
5	Add trait templates.	Chapter 4
6	Create or import a field map.	Chapter 5
7	Select a field map and trait template on the main FRS Mobile™ screen.	Chapter 5
8	Select a navigation type and direction.	Chapter 6
9	Select a new data collection form or list of data collection screens.	Chapter 6
10	Collect data.	Chapter 6

FRS Mobile™ also has many features for the advanced user. These are discussed in Chapter 7 of this manual.

Contact Us

If you have any questions or comments about FRS™, please feel free to contact our Service Department at (435) 753-1881, or visit our website at www.harvestmaster.com.

Installing FRS Suite Manager™ on a PC

Installing FRS Mobile™ on a handheld

Installing FRS Mobile™ on a secured device

Activating FRS Mobile™

Using FRS Mobile™ in demo mode

Getting Started

Before you can take advantage of the features FRS Mobile™ has to offer, you must first install it to your handheld device. This chapter will show you how to install FRS Suite Manager™ to your desktop or laptop computer. From there, you can then install FRS Mobile™ to your handheld device.

If your handheld device has security protocols enabled, please see **Installing FRS Mobile™ on a secured device** later in this chapter.

Installing FRS Suite Manager™ on a PC

To download the software, please visit www.harvestmaster. com. There you will find a link to the FRS Mobile™ software.

1. Open the link. The software will open and begin to install.

2. Click **Close** at the conclusion of the install.

3. Look at your computer's desktop. You should see a new icon on it for FRS Suite Manager™. See Figure 2-1.

Figure 2-1. FRS Suite Manager icon.

Installing FRS Mobile™ on a handheld

Figure 2-2 FRS Suite Manager™ main screen.

1. Double click on the FRS Suite Manager™ icon. FRS Suite Manager™ will open. See Figure 2-2.

2. Connect your handheld device to the computer using Microsoft Activesync. When the device is properly connected, you will see the word "Connected" at the bottom-left of the window.

3. Place the mouse cursor over the **Applications** tab and click on Application Manager. The Applications window will open and display the current version of FRS Mobile™.

4. Click on **Install**. See Figure 2-3.

Figure 2-3. Click on Install.

4. FRS Suite Manager™will then begin to download and silently install the required software to your handheld device. As it completes each module, you will see a check mark placed next to the file name. See Figure 2-4.
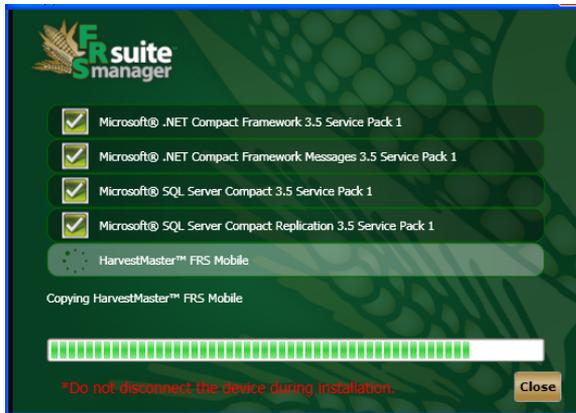
Figure 2-4. FRS Mobile™ download screen.

Note: do not remove the handheld device from the
    computer during the download process. Do not turn
    off the power on the handheld device during the
    download process. Doing so could require you to
    restart the download.

You have completed installation of FRS Mobile™. You
should now skip the next section and go to **Activating FRS
Mobile™** later in this chapter to enable the program.

Installing FRS Mobile™ on a secured device

Installing FRS Mobile™ on a secured hand-held device is a slightly different procedure than on an unsecured device. Instead of FRS Mobile™ installing silently, the system requires more interaction with the user. The following steps will guide you through this process.

As in the unsecured installation, download FRS Suite Manager™ to your desktop and open the Applications Manager screen. Connect the device with Microsoft Activesync.

Note: please read and follow all directions given on the computer monitor or the handheld device screen. Failure to do so will cause the download to be unsuccessful.

1. Click **Install**. A secure device warning will appear on the computer screen. This warning is instructing you to run a program that FRS Suite Manager™ placed on your device. The program is titled JsRapiEx. See Figure 2-5.

Figure 2-5. Perform action on device warning.

2. Open File Explorer/My Documents on the device. See Figure 2-6.

3. Open JsRapiEx. This will install .cab files on your device.

4. On the **From Unknown Publisher** warning, select **Yes**.

5. Select **Device**.

6. Select **Install**

7. Select **OK**
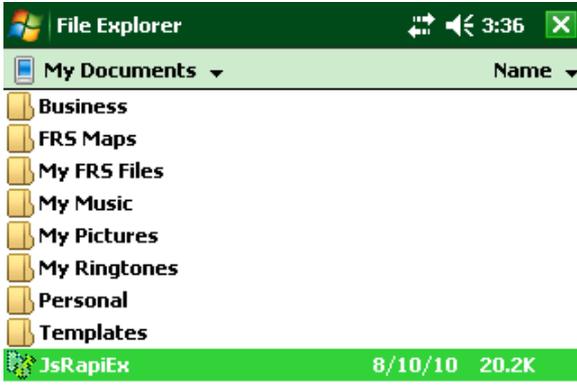
Figure 2-6. My Documents screen on the device
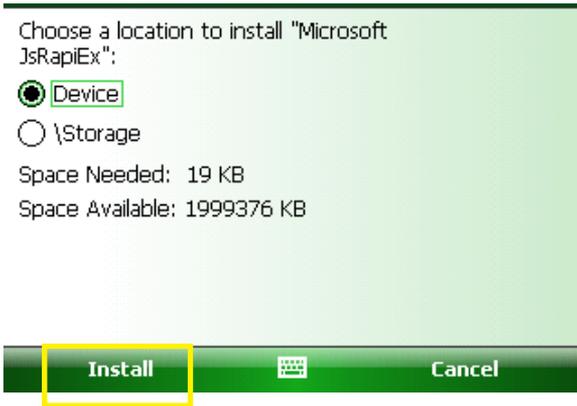
Figure 2-7. Select Install.

FRS Suite Manager™ will then proceed to install the Js RapiEx files on your device.

Click **OK.**

FRS Suite Manager will then proceed to install any prerequisite files to your device.

Once the prerequisite files are installed, FRS Suite Manager™ will begin to install FRS Mobile™ on your device. Three screens will appear, and you will need to take action on all three.

1. Select **Continue** on the screen shown in Figure 2-8. Suite Manager will then install FRS Mobile™ to your device.

Figure 2-8. Continue Installation screen.

2. Select **Install** on the location screen shown in Figure 2-9. The **Device** location is selected by default.

3. The display will return to the Note Taking.cab screen while the installation completes.

4. Select **OK** on the screen shown in Figure 2-10.

.
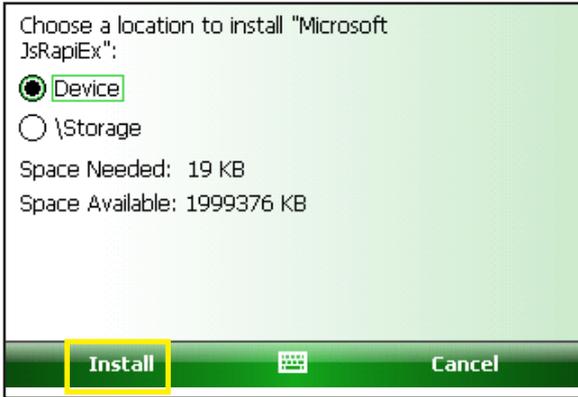
Figure 2-9. Select Install.
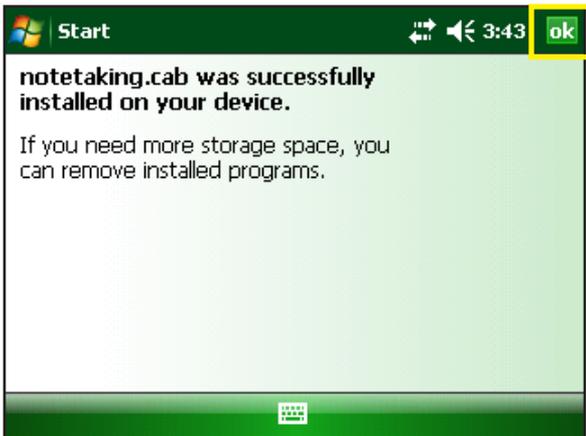
Figure 2-10. Select OK.

5. Close File Explorer.

FRS Mobile™should now be installed in the Programs folder on the device. Refer to Suite Manager on the PC to complete the activation process.

Activating FRS Mobile™

After completing the installation procedure, FRS Suite Manager™will display the Activation screen. See Figure 2-11.
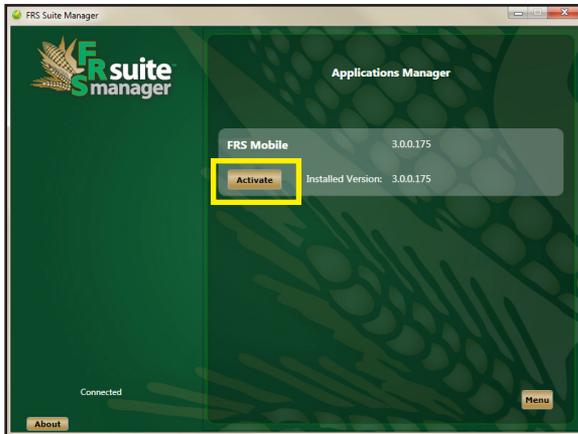
Figure 2-11. Activation screen

Click on **Activate.** Figure 2-10 appears.

Note: if the device prompts you for a restart, follow the on-screen instructions to restart the device. When the device restarts, you will see the Application Activation screen. See Figure 2-12.

Using the Activation screen

Figure 2-12. Application Activation screen.

Note: your device must be connected to the computer via Microsoft Activesync and not running FRS Mobile™ during activation.

1. Enter your five- or six-digit product serial number from the card included with this manual into the box labeled **Step 1**.

2. Click on **Obtain Activation Code**. This will open a browser window.

3. In the browser window that opens, re-enter your product serial number. You may copy and paste this.

4. Fill out the information requested on the form and click on **Submit**.

5. You will receive your activation code via e-mail.

Note: the activation and unlock codes are the same thing.

6. Copy this code into the box labeled **Step 3**.

7. Click on **Activate.**

Your product is installed, activated, and ready for use.

You may also contact Juniper Systems directly at (435) 753-1881 to activate your product.

Using FRS Mobile™ in demo mode

If you choose not to register your copy of FRS Mobile™, you will still be able to create traits, maps, and collect field data. However, your data will not be saved, and you will not be able to export any of your data to a PC. To get the most benefit from FRS Mobile™, be sure to register your product upon installation.
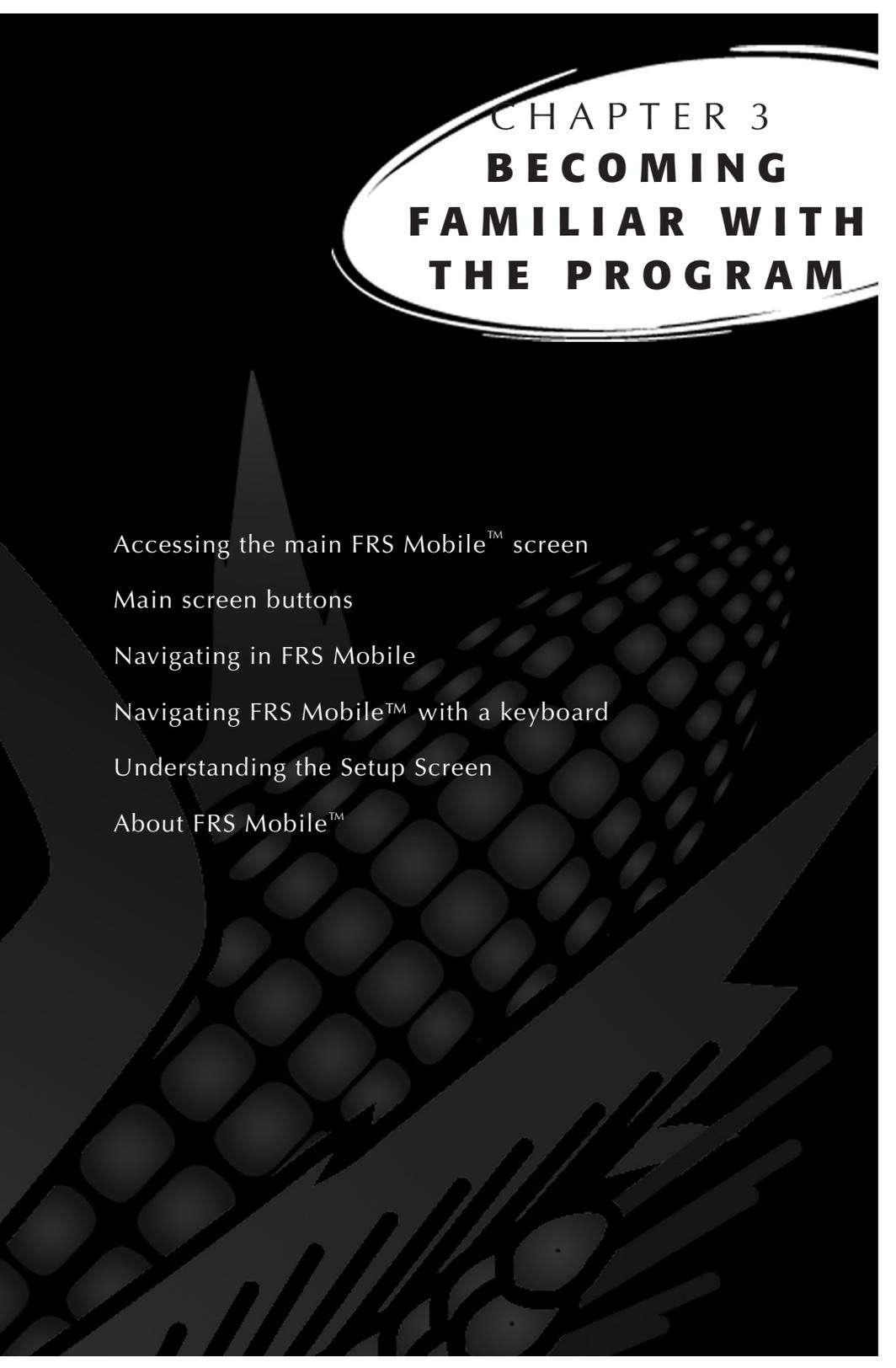
Becoming Familiar with the Program

FRS Mobile™ is designed to be very user-friendly. Navigating in the program is very nearly intuitive. This chapter will help you get a feel for what FRS Mobile™ can do for you.

Accessing the main FRS Mobile™ screen

To enter the FRS Mobile™ application for the first time, follow these steps.

1. Open FRS Mobile™ by selecting **Start>Programs>FRS Mobile**. FRS Mobile will open (Figure 3-1).

Figure 3-1. FRS Mobile start screen.

1. After a moment, the FRS Mobile main menu will appear.

The main screen of FRS Mobile™ acts as the main menu for the application. Choosing options from the top three buttons prepares you to begin collecting data. Pressing one of the buttons on the bottom of the screen lets you modify settings for your system, get useful information, or exit the program.
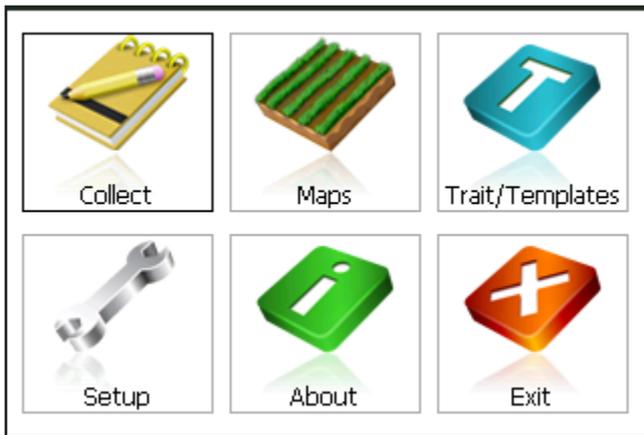
Figure 3-2: FRS Mobile™ main menu screen

Main screen buttons

The activity selection area is located on the top of the main FRS Mobile™ screen (see Figure 3-2). Here you find three buttons. Each button is described below.

- **Collect.** The default activity for this menu is Note Taking.

- **Maps.** The Maps button lets you select the field map you want to use to collect data. If you have not already created a field map, you can create one by pressing the *Maps* button. (See Chapter 5 for more details). You can also import a map using the **Import/Export Utility** (see Chapter 8).

- **Trait Template.** Collect data efficiently by choosing a set of grouped traits (trait templates) from the box. The software comes loaded with a set of pre-defined traits. Modify these traits or add your own traits to suit your research program. (For instructions on how to modify or add your own traits, see Chapter 4.)

Note: the FRS Mobile™ application will run in either landscape or portrait mode. If you are currently viewing FRS Mobile™ in one orientation and wish to switch to the other orientation, you will need to exit and restart FRS Mobile™ after changing orientations so it will display correctly.

Note: information you enter in FRS Mobile™ is saved automatically. You do not need to save it before exiting the program.

Navigating in FRS Mobile

FRS Mobile has several buttons throughout the program to enable you to navigate easily. These buttons and their functions are discussed below.

Navigation keys

Close. Found in the bottom right corner of most FRS Mobile™ screens, the **Close** button allows you to exit out of FRS Mobile™. If you are collecting data, pressing the **Close** button closes the data collection section of the software and returns the program to the **Data Collection Settings** screen.

Add. The **Add** button allows you to add features like maps, traits, and trait templates to FRS Mobile™.

Page Selection. When you are navigating any function that has multiple screens, these buttons allow you to switch between the screens. The arrows are for sequential selection, while the dots allow for random access.

Right Arrow. In the **Data Collection Settings** screen, the right arrow button allows you to select collection levels, maps, and trait templates. In Map Traits, tapping this button allows you to edit the parameters of a specific trait.

Browse. The **Browse** button allows you to determine a location for your saved files, or allows you to access files that you have previously saved on your handheld.

Soft Input Panel.

The **Soft Input Panel (SIP)** functions very much like a normal computer keyboard. In any screen that requires input, the button for the SIP appears in the lower right next to the **Close** button.

For your convenience, the SIP is active whenever you have selected an editable field in FRS Mobile™.

Three different displays are possible when using the SIP:

- Upper case

- Lower case

- Numbers and symbols

For ease of use, the upper- and lower-case keyboards are arranged in a standard QWERTY format. Tap on the **Shift** key to alternate between upper- and lower-case.

The upper-case keyboard is the default selection. See Figure 3-3.

Figure 3-3. Soft Input Panel with Shift key highlighted.

Access the **Numbers and Symbols** keyboard by tapping the
123 key below the Shift key. The keyboard appears as shown
in Figure 3-4.

Figure 3-4. Numbers and symbols keyboard.
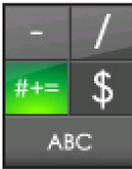
Tapping the #+= key as shown in Figure 3-5 brings up a second set of symbols. You can return to the first symbol set by tapping the **123** key as shown in Figure 3-6.

Figure 3-5.

Figure 3-6. Extended symbol screen.

Figure 3-7.

If you prefer, you can invert the colors on the SIP keyboard to show black characters on a white background. Tap the half-circle key (Figure 3-7) to change the colors. Tap the half-circle again to change back to the default colors. Figure 3-8 shows the inverted display.
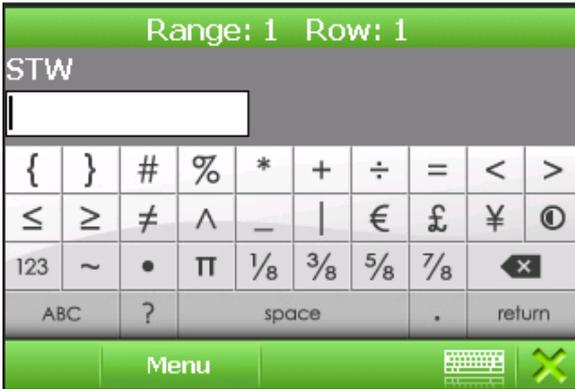
Figure 3-8. Second symbol set shown with colors inverted.

Entering data using the SIP

1. In Collect, you can use the SIP in either the Form, List, Navigation, or Traits screen. The example shown will use the Form view, but the procedures are similar for all screens.

2. Select data to enter by highlighting the trait.

3. When the editing window opens, tap on the SIP button to open it. The screen will appear as Figure 3-9.

4. Enter the data by tapping on the desired soft keys.

5. When you have input the amount of characters required for that trait, the display will automatically advance to the next field.

Figure 3-9. Entering data with the SIP.

Navigating FRS Mobile™ with a keyboard

If you are using a handheld with a keyboard, the following section explains how to use your keyboard to navigate FRS Mobile™.

Letters and numbers keys

Use these as normal to enter data into FRS Mobile™.

Enter key

Press the Enter key to accept data or settings.

Arrow keys

Arrow keys serve different functions in different screens. In the Setup screen, arrows open or close selected folders and files. In Collect Data screens, arrow keys move the cursor around to different cells (see Chapter 6).

Note: for more details about using the arrow keys in the Setup screen, see Chapter 5. For details about the Collect Data screens, see Chapter 6.

Tab key

Use this key to advance to the next field or function. If your tab key has a left tab option, you can back tab.

Understanding the Setup Screen

The Setup screen configures FRS Mobile™ to collect data based on your preferences. These options allow you to

- Define standard units

- Set personal preferences

- Export Maps and Traits to .csv files

Figure 3-10. Setup button on the main FRS Mobile™ screen.

Navigating the Setup screen

To access the Setup screen, press **Setup** on the main FRS Mobile™ screen (Figure 3-10).

Setup menu

The green bar at the top of the Setup screen gives an overview to the following three options. Scrolling up reveals a second green bar at the bottom of the screen. This is an area reserved for future expansion.

Three task options fall under the Setup screen; **Preferences, Export Maps,** and **Export Traits**. The Preferences screen is described below.

For details on exporting traits, see chapter 4, **Traits Management.**

For details on exporting maps, see chapter 5, **Creating a Field Map.**
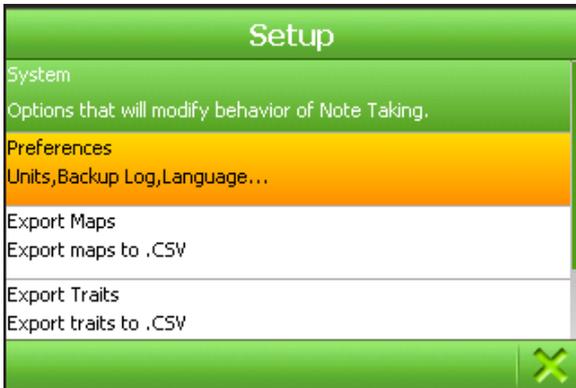
Figure 3-11. Setup menu preferences.
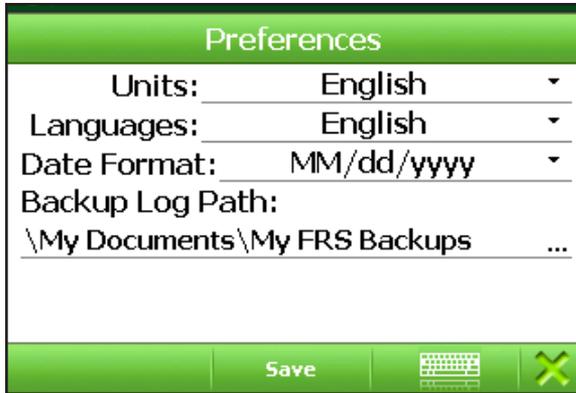
Figure 3-12. Options under the Preferences menu.

The Preferences menu enables the user to choose between English and Metric units and the preferred language. The user can also choose the format of the date—either day/ month/year or month/day/year—and a location for the files that are created.

About FRS Mobile™

Tap the **About** button on the main menu to reveal important information about your version of FRS Mobile™.

Figure 3-13. Main menu with About button highlighted.

The first screen under the **About** button displays copyright information, as well as the version number of your FRS Mobile™ installation. To get the most from FRS Mobile™, make sure that you always have the most current version. Use the **Page Select** button to access the middle **About** screen. See Figure 3-14.

Figure 3-14. Middle About screen.

The middle screen displays the serial number of your FRS Mobile™ installation, as well as your registration number and unlock code.

The last screen displays both business- and after-hours contact information. Our web address and support e-mail address are also displayed.

Chapter 4

TRAITS MANAGEMENT

Traits Management

Collecting trait data is the core of the FRS Mobile™ system. After creating the traits you need, you can then organize them into groups, or Templates. This keeps your data organized for fast and easy retrieval. This chapter will explain how to create a trait, include it in a template, and organize your templates.

Creating a Trait

Creating a new trait is a short process Tap on the **Traits/Templates** button as shown in Figure 4-1.

Figure 4-1. FRS Mobile main screen with Trait/Templates highlighted.
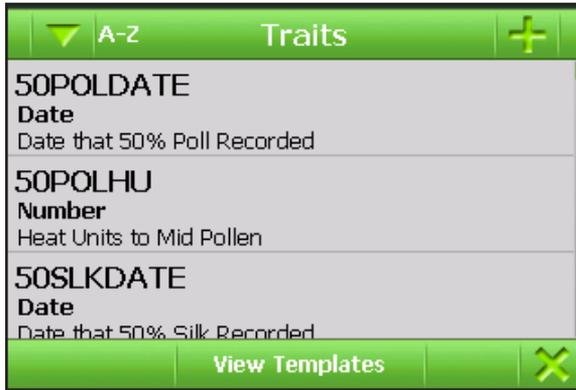
Figure 4-2. Traits screen.

Tap on the **Add** button in the upper-right corner of the Traits screen. Refer to Figure 4-2. This will bring up the **New Traits** screen. See Figure 4-3.

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Navigating the New Traits screen

Figure 4-3. New Traits screen.

- **Name.** Give your trait a name that will help you remember its function. Each name must be unique. Trait names are limited to 50 characters and may include symbols.

- **Type**. Select the type of format for your trait. The options are **Number**, **Number with Decimal, Date,** or **Text**.

- **Repetitive**. Tap on this box if your trait is repetitive. Repetitive traits are covered in more detail in Chapter 7.

- **Length**. For all format types except **Date**, select a maximum length for your new trait. A Date format will default to a length of eight characters.

- **Precision**. If you have selected **Number with Decimal**, select the number of zeros to the right of the decimal point under Precision.

- **Default Value.** If you want your trait to have a default value, you may enter it here. Use a default value if you will typically be entering the same value multiple times. Once your default value is specified, all you need to do to enter that value during data collection is to press the Enter key.

- **Description**. Enter a short description of the trait. This will show in the **All Traits** list, as well as any other listing of traits, but not in Form or List views. Trait descriptions are limited to 200 characters and may include symbols.

- **Data Source.** The current default selection is Keyboard.

After making your selections, tap **Save**. This brings up the Traits screen with your entry highlighted. From here, you may edit or delete your trait. Your trait creation is complete.

Creating a Trait Template

Trait Templates will help keep your data organized. You can group your traits any way you want, but it is generally best to group them by the type of data that you will collect. Examples might be growth data, diseases, or pests.

Begin creating your Trait Template by tapping the **Traits/ Templates** button as shown in Figure 4-1. From the **Traits** screen, tap on **View Templates** at the bottom of the screen. This will bring up the Templates screen, as shown in Figure 4-4.
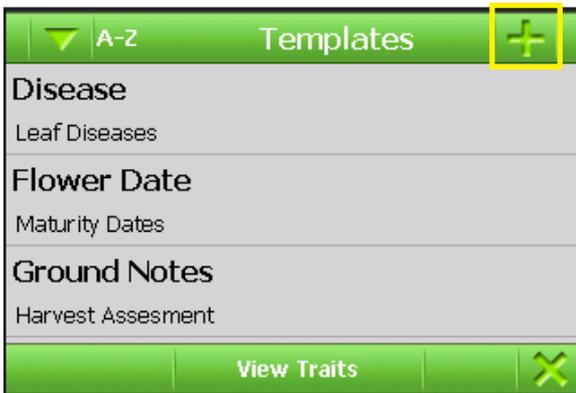
Figure 4-4. Trait Templates screen.

Tap the **Add** button in the upper-right corner of the Templates screen. Refer to Figure 4-4. This will bring up the New Template screen. See Figure 4-5.
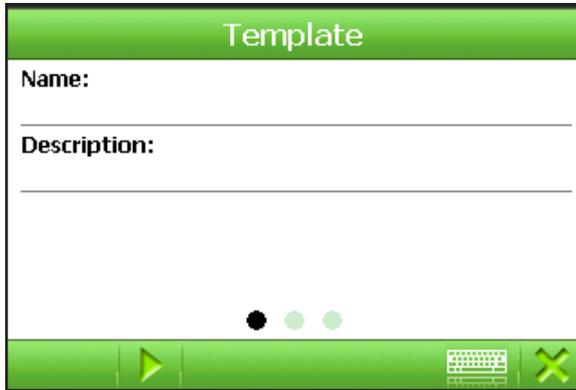
Figure 4-5 New Template screen.

Navigating the New Templates screen

- **Name.** Enter a name for your template. Make it descriptive but brief. Maximum length is 50 characters and may include symbols. *Note:* this is a required field.

- **Description**. Give a brief description of the type of traits contained in this template. Maximum length is 200 characters and may include symbols.

Tap the Page Selection arrow or middle dot to access the Select Traits screen. See Figure 4-6.

Figure 4-6. Select Traits screen.

Tap on the box to the left of the traits that you want included in your template. You may include as many traits as you need.

Tap on the right screen selection arrow to proceed to the last page. See Figure 4-7.

Figure 4-7. Order Traits screen.

On the **Order Traits** screen, you may select the order in which you want the traits to appear during note taking. Select the up or down arrows to move the trait in the desired direction. Tap **Save**.

Your new template is now ready for use in collecting data.

Editing Existing Traits and Templates

FRS Mobile™ comes with several traits and templates already created. These may be easily modified for your use.

1. From either the Trait or Templates main screen, tap on the item you would like to edit.

2. Select **Edit**. See Figure 4-8.
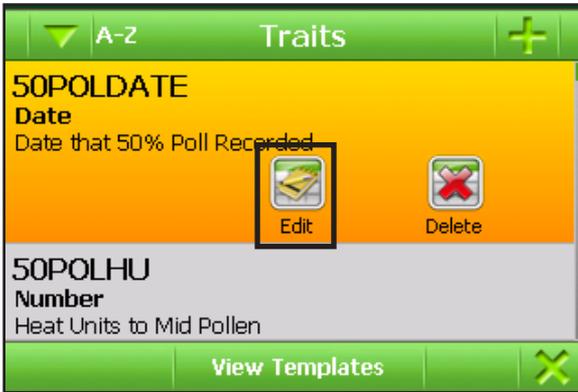
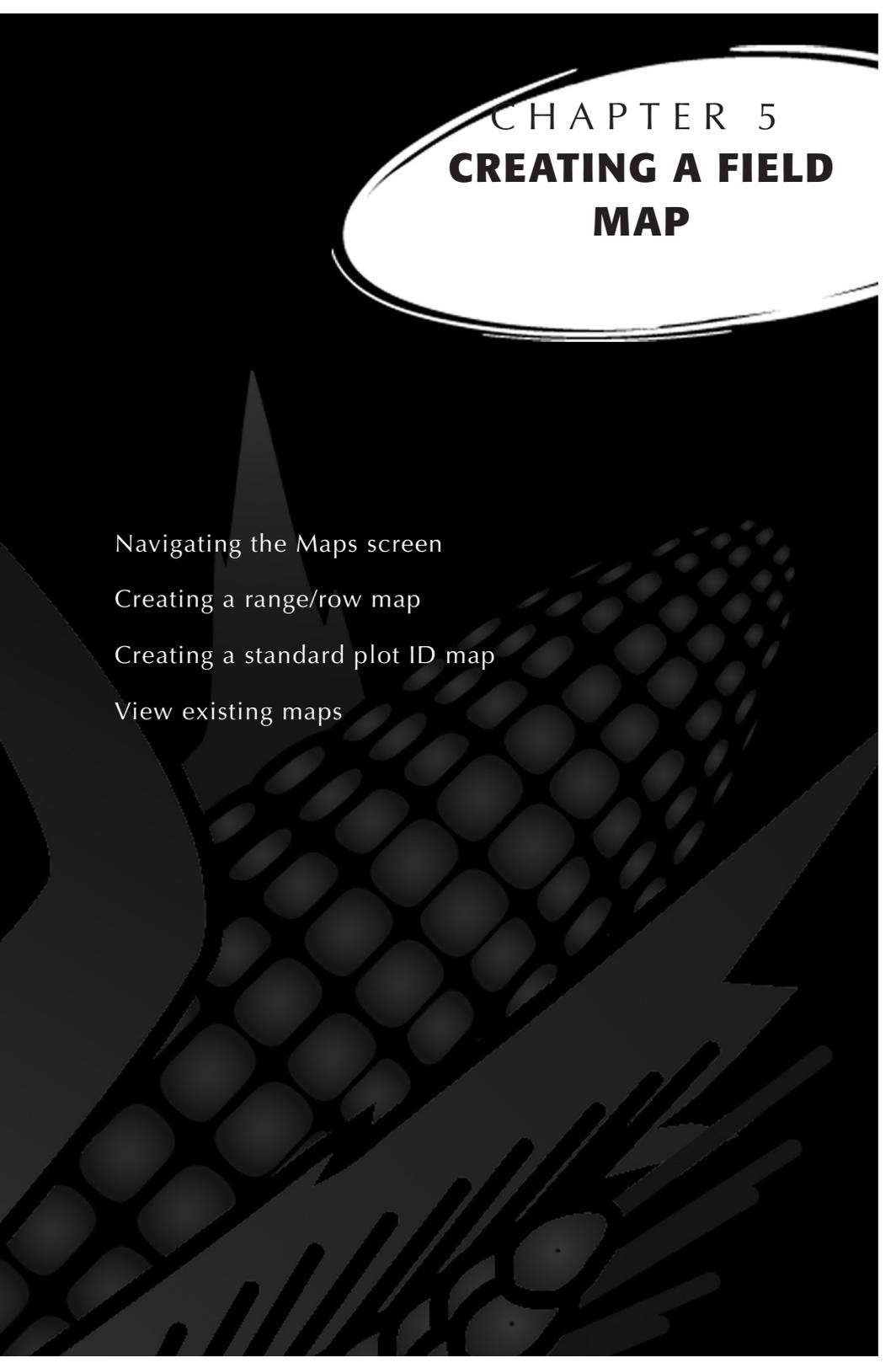*Figure 4-8. Tap on Edit.*

3. Enter the new values for your trait or template.

4. Tap **Save**.

Traits or templates may be deleted by tapping the **Delete** button.

Organizing Trait Templates

You can organize your trait templates either alphabetically or reverse alphabetically, depending on your preference. Simply tap the A-Z or Z-A button on the Trait Templates screen as shown in Figure 4-4.

Creating a Field Map

FRS Mobile™ is designed to help you organize your collected data using field maps. FRS Mobile™ stores all field map information in a database. This means that all trait data collected throughout the year is associated with each individual field map.

To manage field maps, press the **Maps** button on the main FRS Mobile™ screen (Figure 5-1). The Field Maps list screen appears (Figure 5-2). From this screen, you can create, edit, delete, or view maps.

Figure 5-1. Maps button on the main FRS Mobile™ screen
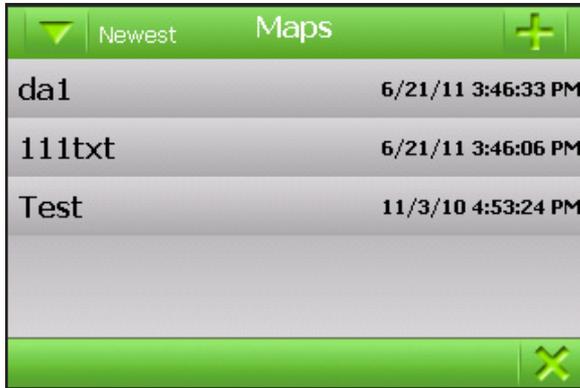
Figure 5-2. Maps screen.

Specifically, you can create or edit range/row field maps or standard plot ID maps. (For a description of each map, see the sections in this chapter called **Creating a Range/Row Map** or **Creating a Standard Plot ID Map.)**

Navigating the Maps screen

From the Maps screen, you can choose to view your maps alphabetically or according to the date created. Click on the down arrow at the top left of the screen to switch between Newest, Oldest, A-Z, or Z-A.

The **Add** button at the top right allows you to create new maps. We will cover this in detail later in this chapter.

Creating a range/row map

In a range/row field map, **Range** indicates the first horizontal group of plots and **Row** indicates a vertical group of plots.

Row or plot

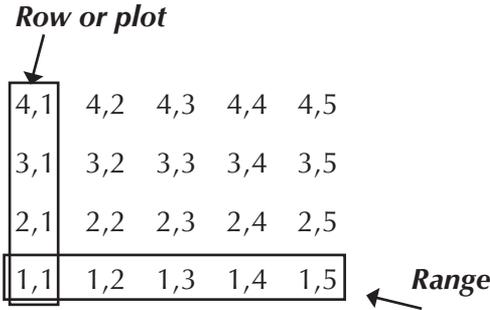|				
4,1	4,2	4,3	4,4	4,5
3,1	3,2	3,3	3,4	3,5
2,1	2,2	2,3	2,4	2,5
1,1	1,2	1,3	1,4	1,5

Range

Figure 5-3. Range/Row Field Map.

To create a range/row map, follow these steps:

1. Press the **Add** button on the Maps list screen (Figure 5-2).

2. The new Map screen appears (Figure 5-4).

Figure 5-4. New Map screen.

- **Name.** Create a name for the map and enter it on the first line. Field map names can be up to 50 characters long, but may not contain special characters.

- **Description.** Enter a description for the field map. Map descriptions can be up to 200 characters long and may contain special characters.

- **Type.** From the drop-down box on the third line, choose *Range/Row Map* as shown in Figure 5-4.

3. Use the **Page Selection** controls to access the second page. See Figure 5-5. From here you may set up your field. These terms are explained on the following two pages.

Figure 5-5. Field Map Definition Type screen.

Use the **Page Selection** controls to access the last page. Here you will specify if your map will contain sub-plots. Chapter 7 has more detail on sub-plots.

4. When you are finished with your map, tap **Save**.

- **Ranges Deep.** The number of ranges deep corresponds to the number of ranges within a given field. Range numbering begins with the bottom left corner of a field and proceeds upward. In the example below, the field map is four ranges deep.

```
↑ 4,1   4,2   4,3   4,4   4,5
|
|  3,1   3,2   3,3   3,4   3,5
|
|  2,1   2,2   2,3   2,4   2,5
|
|  1,1   1,2   1,3   1,4   1,5
```
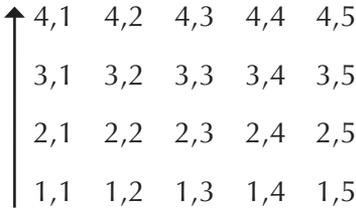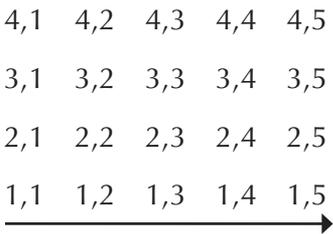
Figure 5-6. Map with depth of four ranges.

- **Rows Wide.** The number of rows wide corresponds to the number of plot columns within a field. Row numbering begins with the bottom or lower left corner of a field. The range/row field map shown in Figure 5-7 is five rows or plots wide.

```
4,1   4,2   4,3   4,4   4,5

3,1   3,2   3,3   3,4   3,5

2,1   2,2   2,3   2,4   2,5

1,1   1,2   1,3   1,4   1,5
→
```
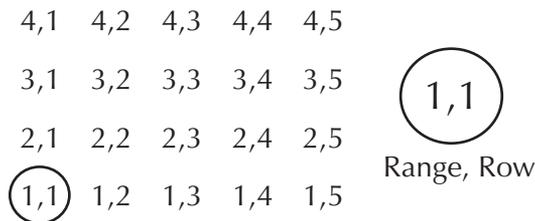
Figure 5-7. Map with width of five rows/plots.

- **Range Increment.** In a typical range/row field, the range increment is 1.

- **Row Increment.** Denotes the number of rows within a plot. The number is usually one. However, you can

denote the actual number of rows within a plot by
inserting the appropriate increment. For example, if you
have two rows within a plot and you want to distinguish
the first row in each plot, set this increment to two. Rows
are then numbered 1, 3, 5, 7, 9 . . .

- **Starting Range.** Denotes the beginning range number
  you plan to use to collect data. This number is set to one
  by default but is not limited to any number. It typically
  begins in the bottom left hand corner of the field.
  Figure 5-8 shows a typical map with a starting range of
  one.

- **Starting Row.** Indicates the beginning row number you
  plan to use to collect data. This number is set to one
  by default but is not limited to any number. It typically
  begins at the bottom left-hand corner of the field. Figure
  5-8 also shows a map with a starting row of one.

```
4,1   4,2   4,3   4,4   4,5

3,1   3,2   3,3   3,4   3,5      ( 1,1 )

2,1   2,2   2,3   2,4   2,5
                               Range, Row
(1,1)  1,2   1,3   1,4   1,5
```

*Figure 5-8. Example of a map with a starting range of
one and starting row of one.*

Creating a standard plot ID map

Standard Plot ID maps give a unique ID number to each individual plot. Increase the number by one to indicate another plot and increase the number by a hundred to indicate the next replication. See Figure 5-9 for an example of a standard plot ID map.

Rep
↓

```
401   402   403   404   405

301   302   303   304   305

201   202   203   204   205

101   102   103   104   105 ←— Row
```

Figure 5-9. Example of a standard plot ID map

To create or edit a standard plot ID map, follow these steps:

1. Choose Standard Plot ID from the Field Maps list screen (Figure 5-10).

Figure 5-10. Field Maps list screen

2. Tap the **Page Selection** button to move to the next screen. From here you may set up the parameters of your field.


Figure 5-11. Field Map Definition Type screen

3. Select **Save.**

4. The Add/Edit Field Map screen appears for a Standard Plot ID map. Fill in the text fields (described below). When you are finished, press **Save**.

Elements of the Standard Plot ID
Add/Edit Field Map screen

- **Field Map Name/Description.** Create a map name and description for easy identification. Map names can be up to 50 characters; map descriptions can be up to 200 characters.

- **Rows Wide.** The number of rows wide corresponds to the number of rows within a field. Numbering of fields begins with the bottom or lower left corner of a field and proceeds to the right. The following standard plot ID map is five rows wide.

401	402	403	404	405
301	302	303	304	305
201	202	203	204	205
101	102	103	104	105

Rows Wide: 5
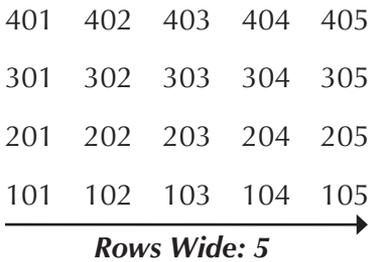
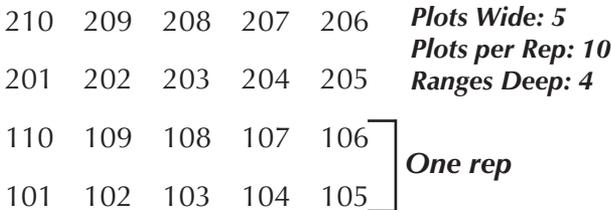***Figure 5-12. Example of a standard plot ID map.***

- **Ranges Deep.** The number of ranges deep corresponds to the number of ranges within a given field. Range numbering begins with the bottom left corner of a field and proceeds upward. In Figure 5-13, the standard plot ID map is four ranges deep.

401	402	403	404	405
301	302	303	304	305
201	202	203	204	205
101	102	103	104	105

Ranges Deep: 4
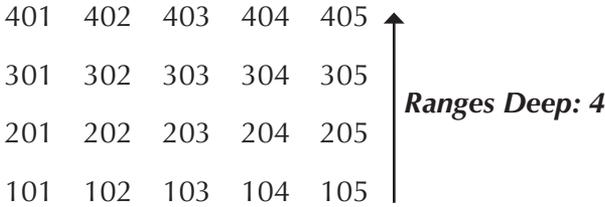
Figure 5-13. Example of a standard plot ID map.

- **Plots per Replication.** A replication (rep) is typically the first range across the field. The number of Plots per Rep is usually set to equal the number of Plots Wide.

  In some cases a rep may extend beyond the first range and into the second range. If a field is five plots wide but the Plots per Rep is 10, both range one and two would include the first rep, as shown in the example here.

210	209	208	207	206
201	202	203	204	205
110	109	108	107	106
101	102	103	104	105

Plots Wide: 5
Plots per Rep: 10
Ranges Deep: 4

One rep

Figure 5-14. Standard plot ID map showing one rep.

- **Starting Plot ID**. Starting plot ID corresponds to the starting number used for the bottom left plot. Examples are 101, 1001, 10001.

- **Plot Increment**. The plot increment refers to the right-most numbers in the Starting Plot ID number. If a plot increment is one, the plots would increment as follows: 101, 102, 103 . . .

- **Replication Increment**. Rep Increment refers to the increment used for each range or rep. This is the left-most number in the Starting Plot ID number. For example, if a rep increment is 100, the plots from rep to rep would go 101, 201, 301 . . .

- **Layout pattern**. The layout pattern refers to the sequence of plot increments. Options include Sequential (Figure 5-15) or Serpentine (Figure 5-16).
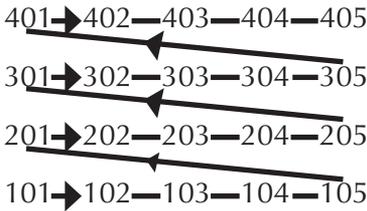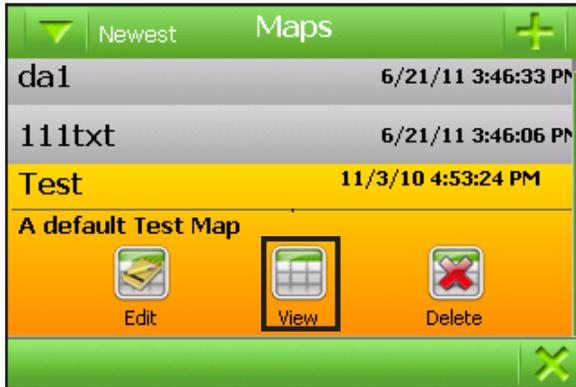

Figure 5-15. Sequential layout pattern
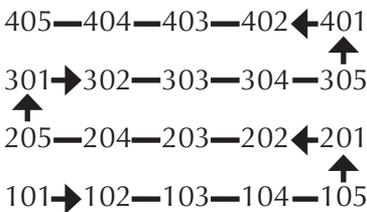
Figure 5-16. Serpentine layout pattern

- **Pattern Direction**. Pattern direction refers to the direction in which plot increments increase.
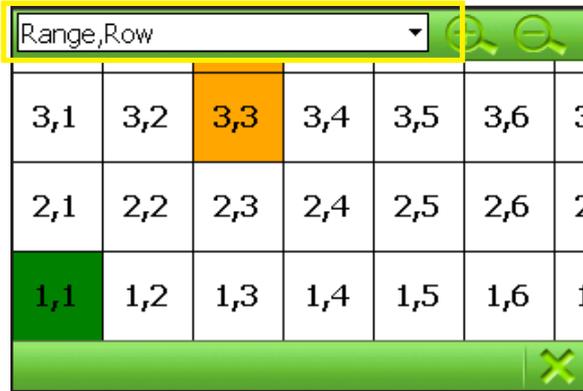
View existing maps

To view maps you have created, select a map from the Maps menu. Tap on **View** on the Maps menu (Figure 5-17).

Figure 5-17. Press the View button to view a map

The **View Range/Row** screen (Figure 5-18) appears. If you have enabled Plot ID, you may also select **Plot** from the Display Data drop-down menu.

Range,Row ▼						🔍 🔍
3,1	3,2	**3,3**	3,4	3,5	3,6	3
2,1	2,2	2,3	2,4	2,5	2,6	2
1,1	1,2	1,3	1,4	1,5	1,6	1

Figure 5-18. Range/Row screen with Display Data drop-down menu highlighted.

The screen provides a two-dimensional representation of a map so you can view previously collected data, identifiers, and dimensions of the map. It also provides a way to visually verify that a newly created field map was created correctly. Tap on any plot to check numbering. You may also access plot data by using the arrow keys on your device keyboard. A zoom feature allows you to expand the number of plots on the display.

Preparing to collect data

Changing data collection settings

Navigating data collection screens

Collecting Data

The ability to collect data from your field is the heart of FRS Mobile™ Note Taking. Using the methods described in this chapter, you can keep accurate notes on the health and vitality of your crops.

Preparing to collect data

To collect data, you need to first specify the field map and trait template you plan to use. FRS Mobile™ comes with a sample map and templates; you can select from these or you can create or import your own map and traits. Refer to previous chapters for instructions to create or import a field map and set up a trait template.

Whether you choose to use a pre-existing, new, or imported map and traits, follow these steps to begin collecting data.

Note: before you can collect data, you need to set up maps and traits. Please see Chapter 4, **Creating Trait Settings**, and Chapter 5, **Creating a Field map**, for further information.

1. Select **Collect** from the FRS Mobile main menu (Figure 6-1).

Figure 6-1. Select Collect.

2.   The **Data Collection Settings** screen appears (Figure 6-2).

To change a data collection setting, tap the arrow button to
the right of the setting you wish to change

Figure 6-2. Data Collection Settings screen

Changing Data Collection Settings

There are three data collection screens:

- Collection Level

- Map

- Trait Template

To access screens, press the appropriate option button to the right of each setting. Each screen is described below.

Collection Level

From the Collection Level screen, you can choose to collect your data at a plot level or at a sub-plot (plant) level. (See Figure 6-3.) Creating a sub plot is described in Chapter 7, **Advanced Options.**

Figure 6-3. Select Collection level screen.
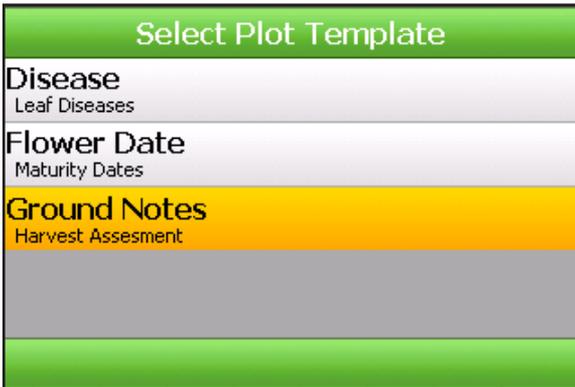
Maps screen

From the **Select Map** screen**,** you can choose the map you wish to use to gather your data. Tap on any of the available maps to activate it. See Figure 6-4.
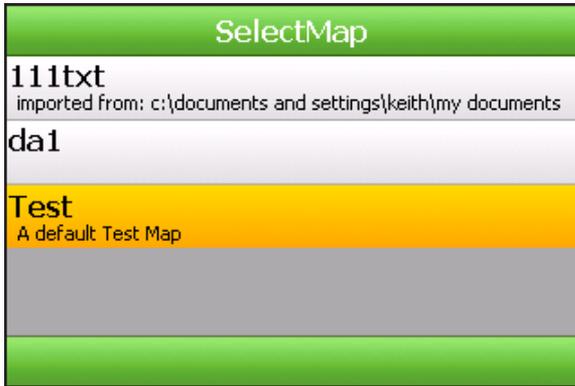
Figure 6-4. **Select Map screen.**

Trait Template screen

From the **Trait Template** screen, you can choose any of your previously saved trait templates. See Figure 6-5.

Figure 6-5. Select Trait Template.

 When you have the settings set correctly, press **Collect** at the bottom center of the **Data Collection Settings** screen (See Figure 6-2).

Navigating the data collection screens

Spatial screen

Tap the **Spatial** button on the Collect menu bar to make the Spatial screen appear (Figure 6-6).

Figure 6-6. Map identifiers on the Spatial screen.

The Spatial screen displays a two dimensional representation of the field map. It highlights the current plot location to help you determine the starting location for collecting data. At the top of the screen, the drop-down box displays the current identifier or trait. Range-row information is always first on the list. Along the bottom of the screen is a menu containing various options. You may toggle this menu display on or off by tapping on the **Menu** button

The Spatial screen is helpful in other ways.

• It indicates which plots already have trait data and which ones do not by using different shading

- You can select different options from the drop-down menu to see specific trait or identifier data for multiple plots

- You can zoom in for detail or out to see a broader picture of the field

Elements on the Spatial screen

Figure 6-7. Spatial screen showing Range/Row data.

- **Display Data.** The Display drop-down menu on the Spatial screen lets you select the type of data displayed in each plot cell. In Figure 6-7, Range/Row data are displayed.

- **Map Identifiers.** You can select up to three identifiers at the top of the data collection screen to show your current location within a field. If you create a field map on your handheld device, map identifiers only include Range and Row (as shown in Figure 6-7). You can

import other map identifiers on the Spatial screen (e.g., pedigree) when you import field maps. The number of identifiers you may use is unlimited.

- **Zoom.** A zoom feature on the **Spatial** screen also lets you expand plots on the display. Tap the zoom buttons to zoom in or out. Slide the display with your finger or stylus to see different views of the field map.

- **Arrow keys.** If you are using a device with a full keyboard that contains arrow keys, you may also use them to navigate around the Spatial screen.

You can also select to review data that you have entered on a particular trait by selecting that trait from the drop-down list as shown in Figure 6-10.

Form Screen

The Form screen (Figure 6-8) or single plot view shows trait names and the associated data collected on an individual plot. This screen is used most often during data collection.

Enter data for each trait on this screen by pressing keys or using the soft input panel. The cursor advances to the next trait when you press the enter key or when the data length is full. The left arrow takes you back one plot while the right arrow advances you to the next plot.

Figure 6-8. Form Screen.

Note: Each time you finish filling out all of the data fields on the Form screen, a sound signals that you have moved to a new plot. When you approach the second-to-last plot, a different sound signals that the study or map is almost finished.

Arranging Map Identifiers

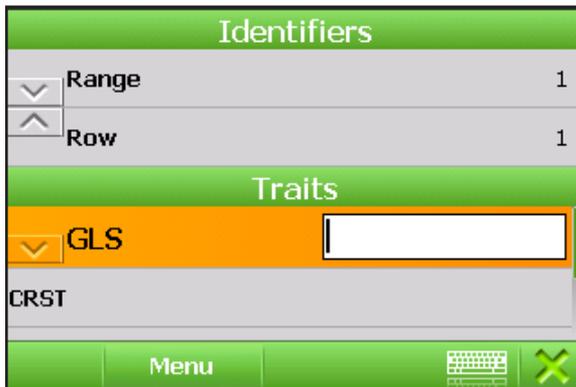You can arrange **Map Identifiers** to suit your preferences.

 Follow the steps below to arrange the identifiers.

1. From **Collect**, tap on **Form** view. The **Traits** screen will appear as shown in Figure 6-9.

Figure 6-9. Traits screen

2. Tap on the **Range/Row** bar to display the identifier information. See Figure 6-9.

Figure 6-10. Arranging the identifiers

3. Tap on the up/down buttons to the left of the identifier name to move that identifier up or down the list. See Figure 6-10.

4. If you have several identifiers, tap on the **Traits** bar to minimize the Traits display and show the remaining identifiers.

List Screen

The **List** screen (Figure 6-11) shows collected data in a manner similar to a spreadsheet. The sort order of the list screen is determined by the navigation pattern selected. Dragging your finger or stylus across the display allows you to move around to different cells within the plot.

Range	Row	GLS	CRST	G
1	1			
2	1			
3	1			
4	1			

Menu

Figure 6-11. List screen

You can enter data into each trait in the List screen using the keyboard on the handheld or the SIP. The cursor advances to the next trait when the data width is full or the user presses the Enter key. FRS Mobile™ will only save your data when either the field length is reached, or you press **Enter.**

If you are collecting a date trait such as a flowering or maturity date, press the **Enter** key on your handheld—it

automatically enters today's date. Pressing the up arrow advances the current date by one day. Pressing the down arrow key decrements the date.

Navigation screen

Before you begin collecting data, you need to define a navigation pattern. To do so, enter the Navigation screen by pressing the **Navigation** button on the menu bar. The following navigation patterns appear as options on the Navigation screen (Figure 6-12).
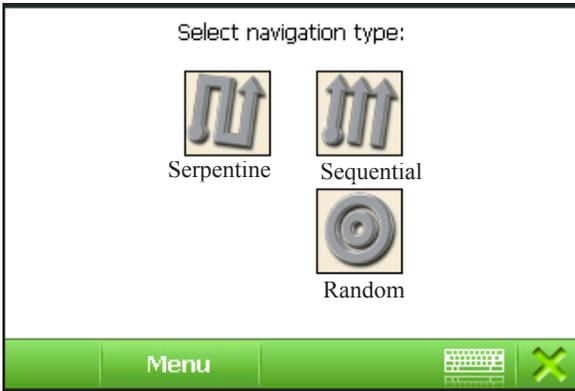

Figure 6-12. Navigation screen

- **Navigation Type.** Select a pattern for data collection by tapping on the symbol in the **Navigation Type** box as shown above.

- Navigation patterns include **Serpentine**, **Sequential**, or **Random**. See Figure 6-13. The navigation types are depicted graphically in Figures 6-14 and 6-15.

Figure 6-13. Navigation types screen showing Serpentine, Sequential, and Random options (names not displayed on screen).
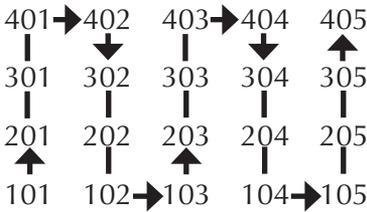
Figure 6-14. Serpentine navigation pattern.
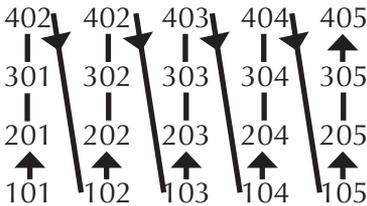
Figure 6-15. Sequential navigation pattern.

- **Range and Row.** Determine the starting location of the data you are collecting by entering the appropriate numbers in the Range and Row fields. These boxes also show the current location you selected on the Spatial screen.

- **Number of Observers.** Specify the number of note takers collecting data. One is the default number. For more details about using multiple observers, see the section called **Collecting data with multiple observers** in Chapter 7.

- **Sub-map.** Sub-maps are navigation blocks within a field. You can select a previously saved sub-map by browsing the Sub-Map folder. Chapter 7 has more information.

- **Primary Direction and Secondary Direction.** The primary direction is the first direction FRS Mobile™ uses to determine the order of plots to record data. The secondary direction tells FRS Mobile™ which direction to turn following the primary direction.

  In Figures 6-14 and 6-15, the primary direction is up. The secondary direction is right.

  You can change the Primary and Secondary Directions (directions the software will use to navigate) by tapping on the arrows.

- **Sub-map key.** Tap this key to create a sub-map. See the section in Chapter 7 called **Using sub-maps to collect data.**

Map Traits screen

The Map Traits screen (Figure 6-16) shows the active (checked) and inactive (unchecked) traits that you are using in the current map. This list is independent of the traits selected in the current trait template. You can modify traits within the active template and specify whether you want them enabled or disabled. Changes you make in this screen are reflected in the **Collect Data** screens.
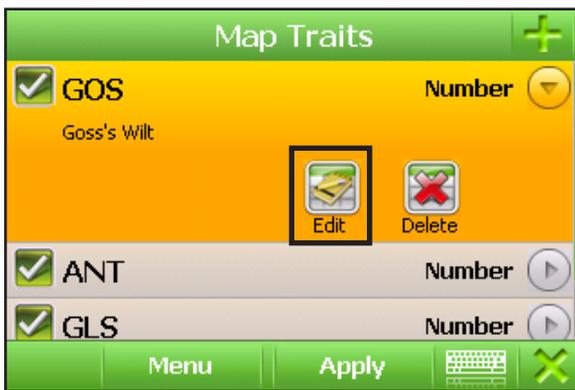
To access the Map Traits screen, tap on the **Traits** button on the menu bar.

Figure 6-16. Map Traits screen.

Note: adding a trait to a map adds it to the **All Traits** list for use with subsequent templates.

- **Enable or disable traits.** Tap on the box next to the trait name to either enable the trait or to disable it. Leaving a trait unchecked means you will not see the trait on the Form or List screens

- **Change trait lengths and default values.** To edit a trait, tap on the right arrow to the right of the trait name. Tap on **Edit**. See Figure 6-17.

Figure 6-17. Tap Edit button to edit trait.

- Key in the new value (see Figure 6-18).
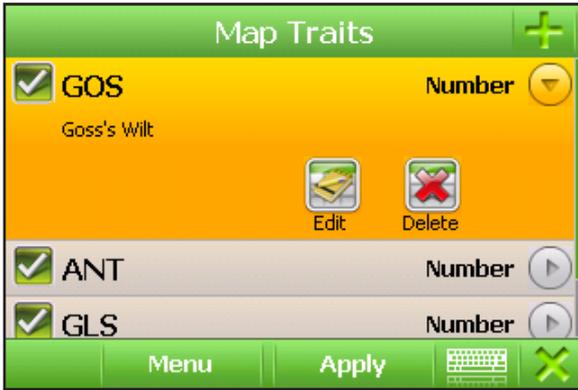
Figure 6-18. Editing Default Value of BARCNT.

- **Add and delete map traits.** Pressing the **Add** button
  on the **Map Traits** screen allows you to customize the
  traits on your map (Figure 6-19), which lets you do the
  following:

  - Add a trait from the **All Traits** list

  - Remove existing traits

  - Add and define a new map trait and add it to the map

- **Add a trait from the All Traits List.** Follow the steps
  below to add a trait.

1. From the Map Traits screen, tap the **Add** button. The **All
   Traits** screen appears (Figure 6-19).

Figure 6-19. All Traits screen

2. Tap on the box next to the trait name.

3. Tap on Save. The selected trait will then be added to your map.

•   **Remove existing traits.** To remove a trait, tap the right arrow to the right of the trait name in the Map Traits screen and tap on **Delete** (Figure 6-20).

Note: you can only remove traits with no data

Figure 6-20. Deleting a trait from a map.

- **Add additional traits to a map.** To add traits, tap the **Add** button on the **Map Traits** screen, and again on the **All Traits** screen. The new traits screen appears (Figure 6-21).

Figure 6-21. New Traits screen.

The new traits screen allows you to enter a name for the trait, as well as format the type of data that you will use. Select from Number, Number with Decimal, Date, or Text. If you choose to enter a date or text, the length will default to eight characters.

For details about each option on the Add/Edit Traits screen, see Chapter 4, **Traits Management**.
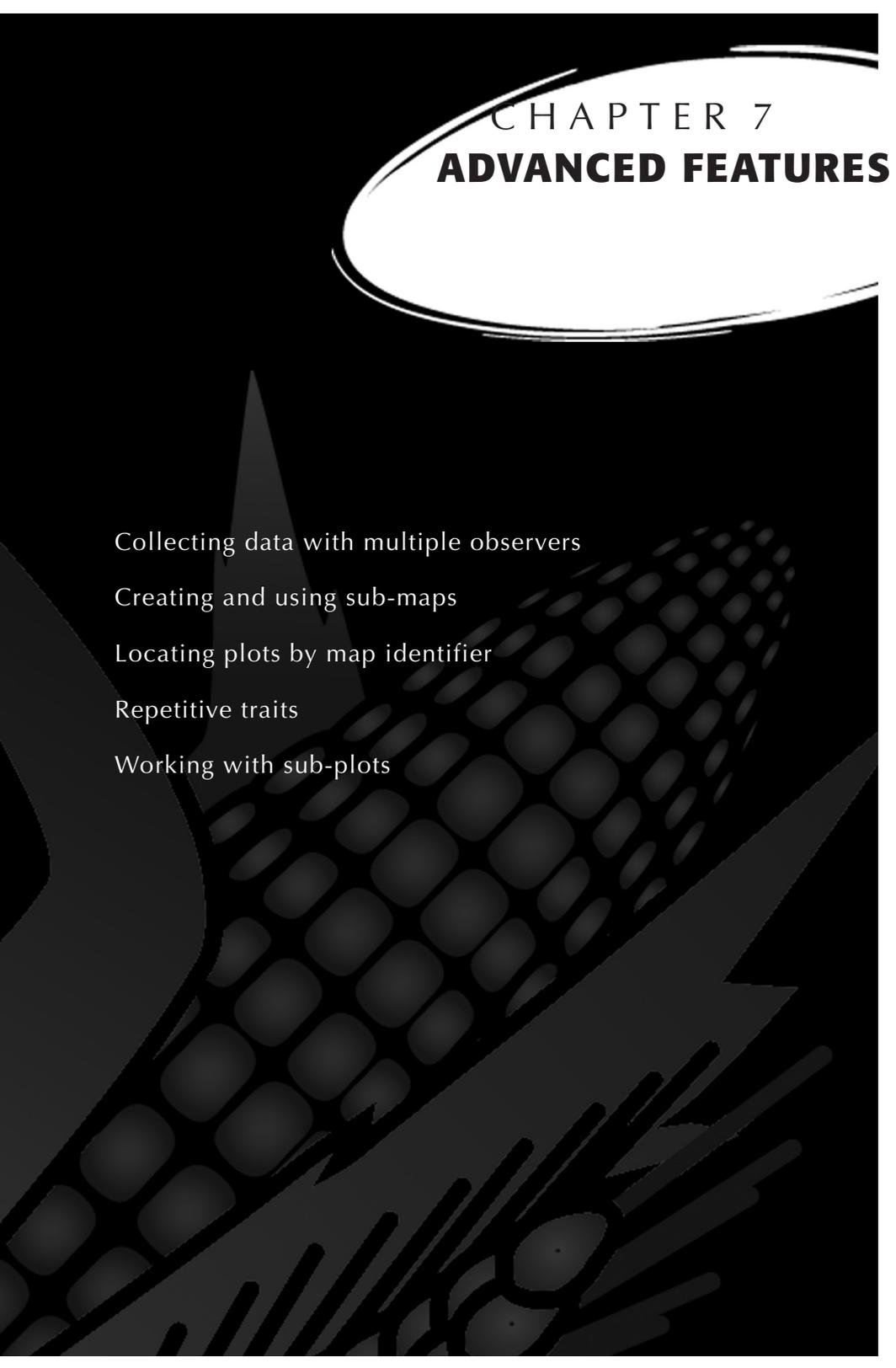
Collecting data with multiple observers

Creating and using sub-maps

Locating plots by map identifier

Repetitive traits

Working with sub-plots

Advanced features

FRS Mobile™ has many features that make data collection more versatile. Among these features are the ability to collect data using multiple observers, using sub-maps and repetitive traits to gather data, and the ability to gather data at the plant, or sub-plot, level.

Collecting data with multiple observers

You can use FRS Mobile™ to collect data with multiple observers while using a single handheld computer. This feature is often used when collecting stand counts.

Figure 7-1. Navigation screen

To collect data with multiple observers, select the **Navigation** button from the **Collect** menu bar. From the Navigation screen that appears (Figure 7-1), select a starting range and row or verify that it matches your starting

location. Select the number of observers you plan to use, the navigation pattern, and the primary and secondary directions.

Collecting data changes when you use one data collector and multiple observers. The first observer is used on one plot. Then the second observer is used on one plot and so forth until all the observers have recorded data. Then FRS Mobile™ moves to the next plot in sequence with the first observer to repeat the process. In each case the lowest range and row is always collected first (see Figure 7-2).

Figure 7-2 depicts the process of collecting data in serpentine navigation with three observers and one data collector. The primary direction is up; the secondary direction is to the right.

Figure 7-2. Collecting data in serpentine mode using three observers.

In Figure 7-2, the collection sequence is as follows:

1,1 – 1,2 – 1,3 – 2,1 – 2,2 – 2,3 – 3,1 – 3,2 – 3,3 – 3,4 – 3,5– 3,6– 2,4 – 2,5 – 2,6 – 1,4 – 1,5 – 1,6 – 1,7 – 1,8 – 1,9 – 2,7– 2,8– 2,9- 3,7 – 3,8 – 3,9.

Creating and using sub-maps

The sub-map feature lets you block out a smaller section of a field for note taking. Add a sub-map by tapping the **Sub-Map** browse button on the Navigation screen (see Figure 7-3). You can also specify a different navigation pattern.

Figure 7-3. Tap on the Sub-Map browse button.

Create a sub-map by tapping the **Add** button on the **Sub-Maps** screen**.** See Figure 7-4.
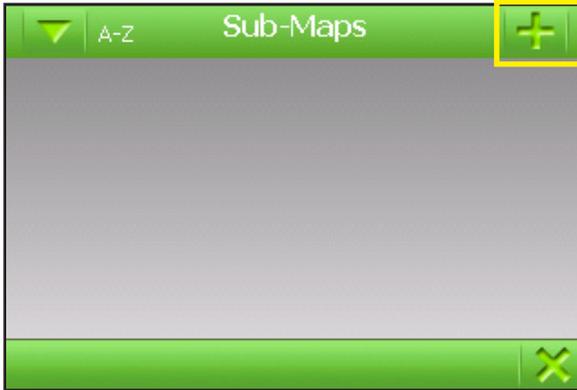
Figure 7-4. New Sub-map screen.

Enter the range-row data to create the size of sub-map you want and your starting point and tap **Save**. See Figure 7-5.

Figure 7-5. Enter sub-map size.

Tapping **Save** will take you back to the **Sub-Map** screen. Tap **Select** to choose your new sub-map. This will take you back to the **Navigation** screen. Tap on **Apply**, and the **Spatial** screen will appear. See Figure 7-6.

Figure 7-6. Spatial screen showing new sub-map.

Using sub-maps to collect data

Using a sub-map to collect your data can be very useful in certain applications. If you need to collect data on an area of interest that is within the confines of your map, you can use a sub-map.

Collecting data with a sub-map is very similar to collecting with a full map. All the traits that you used in the full map are available in the sub-map.

To begin collecting data, simply go into either the form or list views of FRS Mobile™. The form or list will begin at the starting point you specified. Like a full map, when you reach the end of a row, FRS Mobile™ will automatically advance to the next plot in your navigation pattern. Figure 7-7 shows a sub-map with data in the yellow highlighted plots.

Figure 7-7. Sub-map with data.

Locating plots by map identifier

The Search button is the last button in the Collect menu. Search helps you to find plots that have certain identifiers. This is useful if you have particular areas undergoing a study, or anything else you wish to find quickly.

To use the Search function, you must have imported a map through FRS Suite Manager that has more than two identifiers. The search function cannot search on Range/Row information since they are individual identifiers and cannot be combined in the search settings.

In this example, we have a map with three identifiers. Using plot ID as the third identifier, we can put this value into our search function as shown in Figure 7-8.

Figure 7-8: Searching by Identifier.

After entering the search identifier, the screen displays
the **Search** button. Tap this button to start the search. FRS
Mobile™ then finds the requested plot and displays it in **List**
view. See Figure 7-9.

Figure 7-9. Search results in List view.

Repetitive traits

One of the features that makes FRS Mobile ™ so user-friendly is the ability to use repetitive traits. This allows you to use the same trait several times throughout the growing season without having to create a new name for the trait each time you collect it.

As an example, suppose you needed to measure the plant height in a map area three times during the growing season. Each time you collect the data, FRS Mobile ™ uses the same trait, but will append the current date onto the end of the trait name. This allows you to view the data on a spreadsheet with the data in separate columns.

To make a specific trait repetitive, simply tap on the **Repetitive** box as you are creating a trait (see chapter 4).
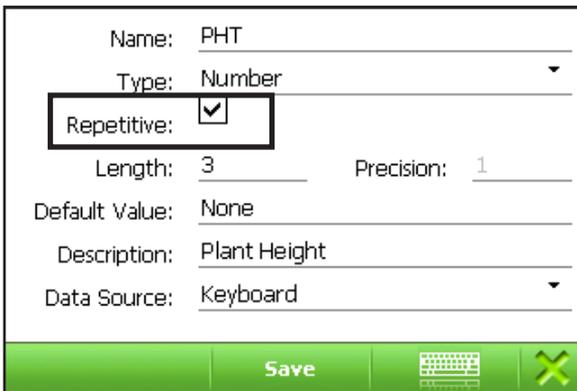
Figure 7-10. Making a trait repetitive.

As before, include your repetitive trait in the template you will use for data collecting. See Figure 7-11.

Figure 7-11. Activate repetitive trait.

Place the trait where in the order you would like it to appear. Tap the arrow buttons to move the trait up or down the list. When you are finished, tap **Save**. See Figure 7-12.

Figure 7-12. Order your traits.

Now you can go into **Collect** to gather data using either the **Form** or **List** views. Using the **Repetitive Traits** feature allows you to see the progress of your crops at a glance. By enabling the various dates in the **Map Traits** screen, and ordering them in **Form** view, you can track the height of your plants and see them all displayed simultaneously on the **List** screen as shown in Figure 7-13.
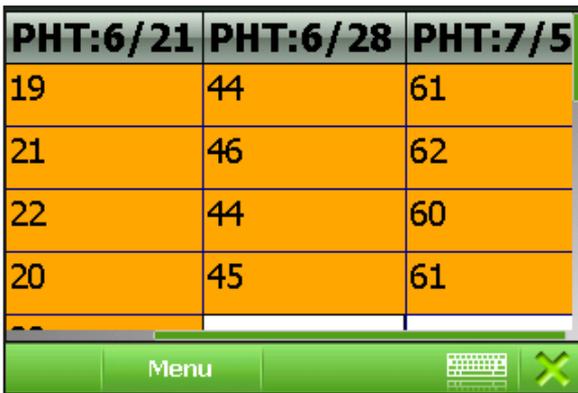
PHT:6/21	PHT:6/28	PHT:7/5
19	44	61
21	46	62
22	44	60
20	45	61

Figure 7-13. Repetitive Trait data on List screen.

In Form view, the data are centered on a single plot. If the length of the trait name exceeds the space available, a black triangle will appear next to the trait name. Tap and hold on the triangle to display the full trait name. Also note the ordering arrow next to the trait name. See Figure 7-14.

To collect data on repetitive traits, the trait template must be selected on the **Data Collection Settings** page. Adding repetitive traits while in Collect mode is not currently supported.
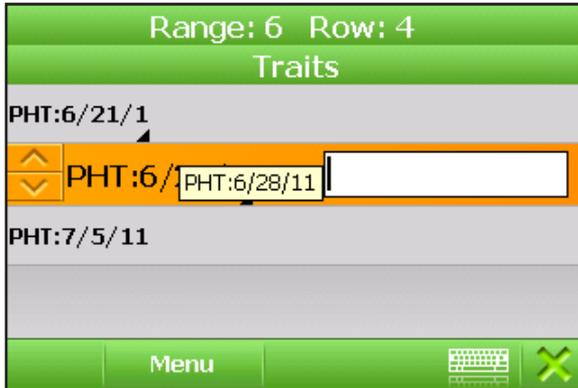
Figure 7-14. Repetitive Trait data on Form screen.

You can also view any one of the dates for which you have collected data on the Spatial screen. Activate the Spatial screen from the **Collect** menu and select the date. See Figure 7-15.

Figure 7-15. Repetitive Trait data on Spatial screen.

Exporting Repetitive Traits to a spreadsheet

Through **FRS Suite Manager** ™, you can export the data you collect in FRS Mobile ™ into a spreadsheet. This allows you to view all your data conveniently. See Figure 7-16.
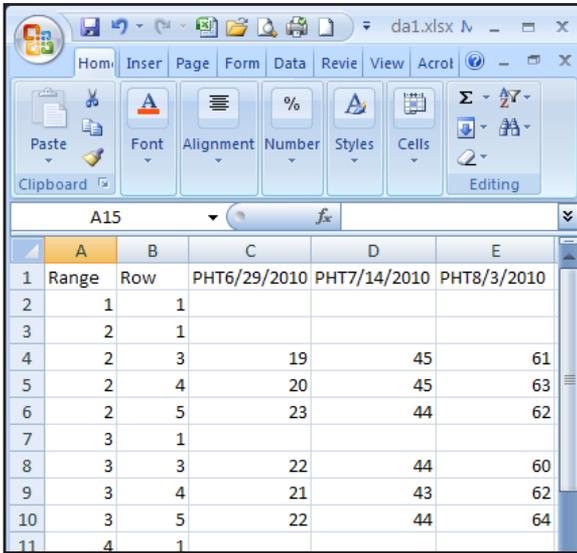
	A	B	C	D	E
1	Range	Row	PHT6/29/2010	PHT7/14/2010	PHT8/3/2010
2	1	1			
3	2	1			
4	2	3	19	45	61
5	2	4	20	45	63
6	2	5	23	44	62
7	3	1			
8	3	3	22	44	60
9	3	4	21	43	62
10	3	5	22	44	64
11	4	1			

Figure 7-16. Map data exported to spreadsheet.

With the data exported to a spreadsheet, you can easily make charts and graphs to track the productivity of your crop. More on exporting data is covered in Chapter 8.

Working with sub-plots

With FRS Mobile ™, it is easy to keep track of individual
plants using the Sub-Plot feature. To create a sub-plot map,
follow the steps in chapter 5, **Creating a range/row map**.
On the last screen, select **Contains Sub-Plots**. Also select
the number of sub-plots you have in each plot as shown in
Figure 7-17.

Tap **Save**.

Figure 7-17. *Tap the* **Contains Sub-Plots** *box.*

1. To begin collecting data, tap **Collect** from the main
   menu.

2. Tap the right arrow under **Collection Level**.

3. Select **Sub-Plot**.

4. Tap **Collect**.

5. Tap **Menu**.

6. Select **Form** or **List** view in which to gather your data.

The data you collect is visible from **Form** or **List** view. FRS Mobile ™ does not currently support viewing sub-plot data from **Spatial** view.

In **Form** view, you can order your identifiers to suit your preferences. Tap on the Range/Row header to expand it. Then tap on the traits header to minimize the traits window. Use the arrows to organize the identifiers. See Figure 7-18.

Figure 7-18. Ordering identifiers.

Exporting sub-plot data

You can export sub-plot data in to a spreadsheet using FRS Suite Manager ™. This allows you to see all the data in one place, and to track your data using charts and graphs. Chapter 8 will discuss Suite Manager in more detail. Figure 7-19 is an example of sub-plot data imported to a spreadsheet.

Figure 7-19. Sub-plot data in a spreadsheet.

USING FRS SUITE MANAGER™

Applications

Maps

Traits

Utilities

Using FRS Suite Manager™

Importing and exporting data to and from a computer is done with **FRS Suite Manager™**. This program is a desktop utility for using FRS Suite applications and managing FRS Mobile™ maps, traits, and backup logs. The four main functions in the software are Applications, Maps, Traits, and Utilities. See Figure 8-1.
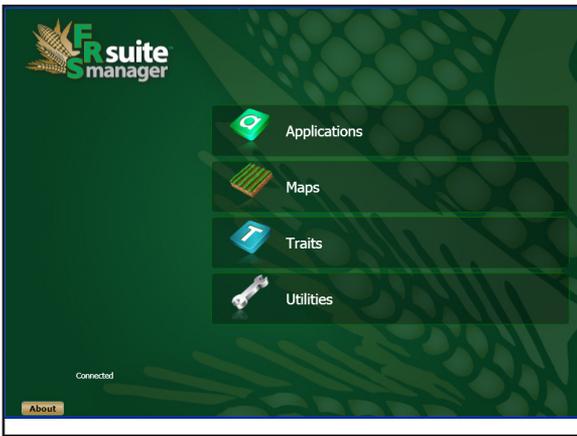
Figure 8-1. FRS Suite Manager main screen.

Applications

This is where applications can be deployed and updated. There are two sub-topics:

- **Application Manager**

- **Copy Cabs to Folder**

See Figure 8-2.
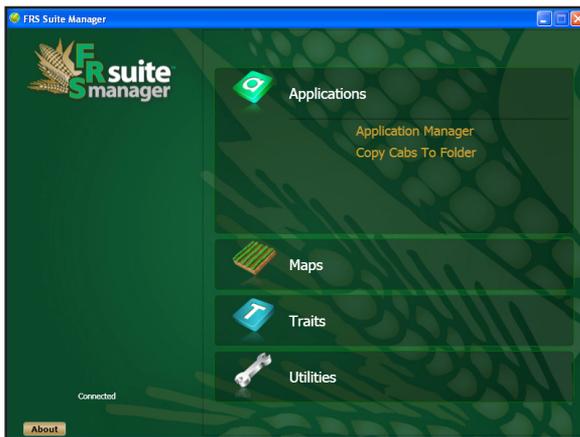
Figure 8-2. Application Manager main screen.

Application Manager
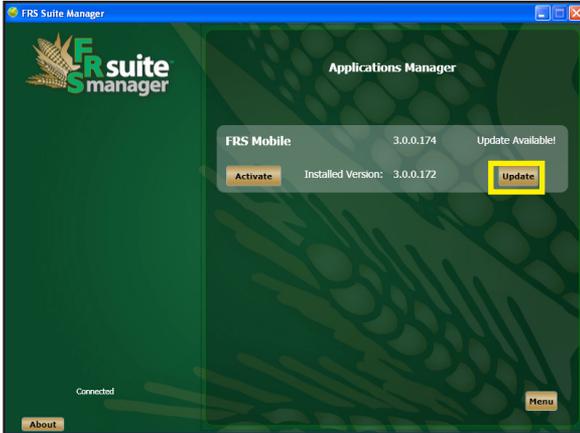
Figure 8-3. Applications Manager update screen.

Application manager allows you to install or update your version of FRS Mobile™. The installation and update procedures are covered in Chapter 2 of this manual. Updating to a newer version is simply a matter of clicking the **Update** button (highlighted) and following the prompts.

Copy Cabs to Folder
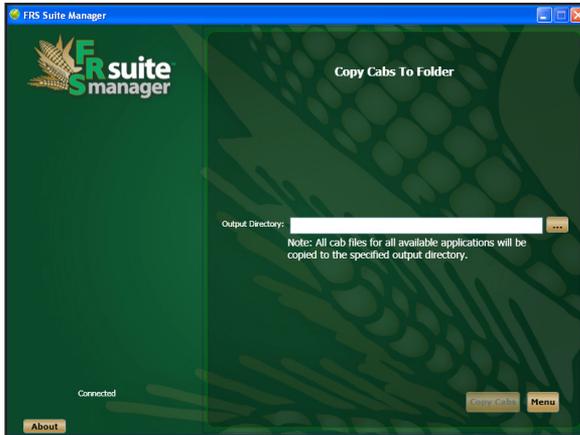
Figure 8-4. Copy Cabs to Folder screen.

Copy Cabs to folder is a utility to copy all the cabinet files used by Suite Manager to a user-specified folder. This is useful if you need to have access to the mobile cabinet files to install the software rather than using the Application Manager to deploy applications.

Maps

This is where you can manage maps that are on the device and PC. You can create new maps from CSV files and save data contained in maps to CSV files. Also, you can backup maps to a specific folder and restore maps from a folder.

There are five sub-topics:

• Map Explorer

• Create Map From File

• Save Map Data To File

• Backup Map To Folder

• Restore Map From Folder
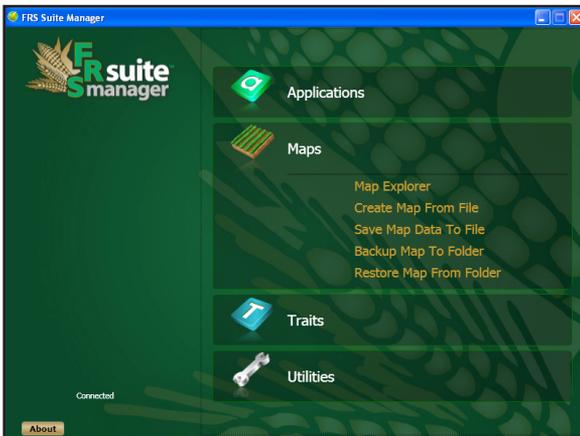
Figure 8-5. Maps main screen.

Map Explorer
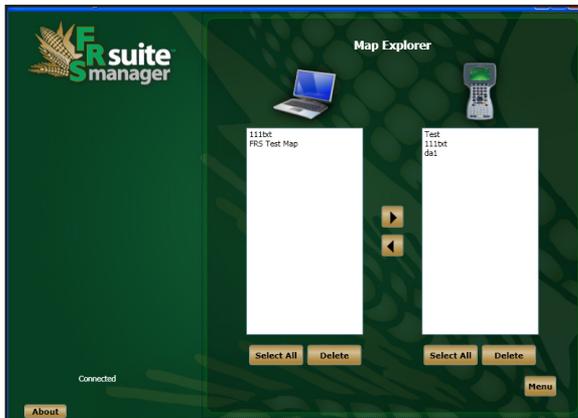
Figure 8-6. Map Explorer screen.

Map Explorer allows you to see what maps are on the device and what maps are on the PC. Using the utility will allow you to easily copy maps to and from the device and delete maps from the PC or the device.

Note: when copying maps of the same name in either direction, either to or from the handheld, the files that are copied will overwrite the existing files without prompting.

To copy maps to the handheld device

1. Select the map(s) from the list on the left.

2. Push the button with the right arrow.

To copy maps from the handheld device to the PC

1. Select the map(s) from the list on the right.

2. Push the button with the left arrow.

Note: deleting a file from the right-hand list only removes the file from the handheld. Deleting a file from the left-hand list only removes the file from the PC.

To delete maps on the PC

1. Select the map(s) from the list on the left.

2. Push the **Delete** button directly under the list on the left.

To delete maps on the handheld

1. Select the map(s) from the list on the right.

2. Push the **Delete** button directly under the list on the right.

Note: map files are located in the public user's documents in the folder named "My FRS Maps."

For Vista/Windows 7 users: C:\Users\Public\ Documents\Suite Manager\My FRS Maps

For XP users: C:\Documents and Settings\All\ Documents\Suite Manager\My FRS Maps.

Map files on the handheld device must be in the folder *My Documents\My FRS Maps* for them to show up in the handheld maps list.

The next two pages cover creating Range-Row maps as well as 2-D maps. Creating them on the handheld is covered in Chapter 5. This information is a guide to those who wish export maps from a desktop or laptop PC.

Creating maps from a spreadsheet program

You can create two different types of maps to use with FRS Mobile™. These types are Range-Row and 2-D maps.

Creating a Range-Row Map

The only requirement for a range-row map is that it have a header row with columns for the range and row ID numbers. These columns may have any name desired.

1. Open a spreadsheet program to begin creating the map. Again, the range and row can have any name you like, but in our example, we will use the standard names.

2. Enter the range and row information in the appropriate cells, along with any desired information in adjacent cells that are correctly labelled.

3. As a new feature, the map can include trait data to be imported into the map. See Figure 8-5.

	A	B	C	D	E	F	G	H
1	Uniqe #	Experimen	Plot ID	RNG	ROW	Material ID	Filler Material ID	
2	1.23E+08	158	1001	1		1	abcdefg123	asdfghj987654321
3	1.23E+08	158	1003	1		3	abcdefg123	asdfghj987654322
4	1.23E+08	158	1005	1		5	abcdefg123	asdfghj987654323
5	1.23E+08	158	1007	1		7	abcdefg123	asdfghj987654324
6	1.23E+08	158	2002	2		2	abcdefg123	asdfghj987654325
7	1.23E+08	158	2004	2		4	abcdefg123	asdfghj987654326
8	1.23E+08	158	2006	2		6	abcdefg123	asdfghj987654327
9	1.23E+08	158	2008	2		8	abcdefg123	asdfghj987654328
10	1.23E+08	158	3001	3		1	abcdefg123	asdfghj987654329

FRS Test Map / Ready NUM

Figure 8-7. Sample Range-Row map.

4. Save the map as a comma delimited (CSV) file in a
   location of your choice.

Creating a 2-D map

Unlike a range-row map, the 2-D map does not require
a header row. You can create it in either a simple word
processing program like Microsoft Notepad, or in MS Excel.
The file must be saved as a tab delimited file with a .txt
extension to be readable by Suite Manager.

The 2-D map is laid out as a representation of the field,
meaning that the numbers of the plots are laid out in the
file in the same orientation that the plots are in the field. If
desired, a border or filler row can be added around the field
(denoted here by the x's). See Figure 8-6.
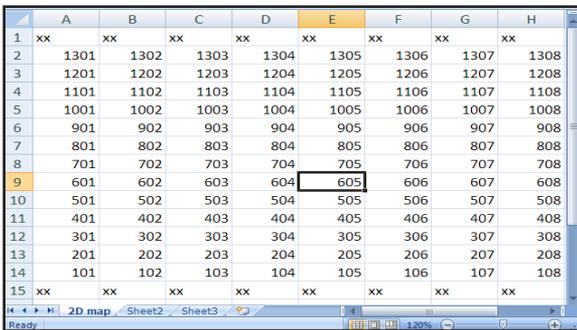
	A	B	C	D	E	F	G	H
1	xx	xx	xx	xx	xx	xx	xx	xx
2	1301	1302	1303	1304	1305	1306	1307	1308
3	1201	1202	1203	1204	1205	1206	1207	1208
4	1101	1102	1103	1104	1105	1106	1107	1108
5	1001	1002	1003	1004	1005	1006	1007	1008
6	901	902	903	904	905	906	907	908
7	801	802	803	804	805	806	807	808
8	701	702	703	704	705	706	707	708
9	601	602	603	604	605	606	607	608
10	501	502	503	504	505	506	507	508
11	401	402	403	404	405	406	407	408
12	301	302	303	304	305	306	307	308
13	201	202	203	204	205	206	207	208
14	101	102	103	104	105	106	107	108
15	xx	xx	xx	xx	xx	xx	xx	xx

2D map / Sheet2 / Sheet3

Ready   120%

Figure 8-8. 2-D map creation in a spreadsheet.

Create Map from file
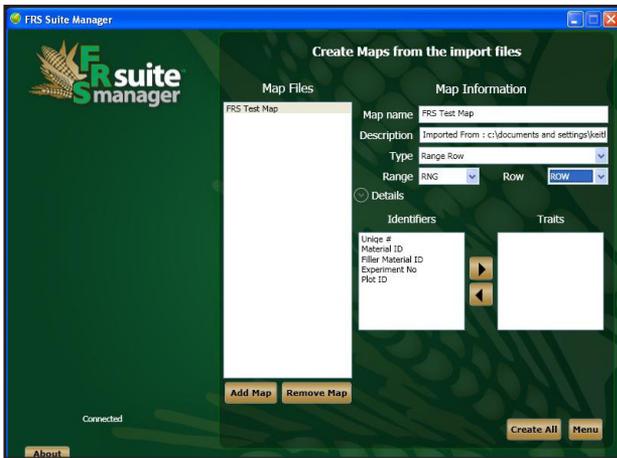
Figure 8-9. Create Map from file screen.

Create map from file is used to import an FRS Mobile™ compatible map file. This is the only way to import existing data into FRS Mobile™.

Both Range-Row and 2-D map files can be imported.

To import a map from a Range-Row (.csv) or 2-D (.txt) file.

1. Click **Add Map**. An open file dialog window will appear.

2. Navigate to the CSV or TXT file.

3. Click on **Open**.

The file will be opened and range-row and column information will be determined. If the range and row columns are not detected, you may manually select them from the pull-down menus.

1. Highlight the newly added map on the list. Information about the selected map will auto-populate the fields on the right.

2. The Type drop-down box will display the kind of map, whether it is a Range-Row or 2-D map.

Note: by default, FRS Suite Manager will use the first two columns as Range and Row. If your Range and Row information is not in the first two columns, you can manually select the correct columns.

3. Verify the columns that should be used as the Range and Row columns from the file by selecting the drop-down box labeled Range and Row.

4. Click on **Details** and verify the dimensions of the map.

Importing Previously Collected data with a Map

You can import a field map that contains previously collected data along with plot identifiers. This feature is useful for comparing data and collecting new data.

Start with a .csv file that contains identifiers and traits. See Figure 8-10.

	A	B	C	D	E	F
1	RNG	ROW	Plot	Study	PH	RL
2	1	1	101	study 1	65	1
3	2	1	201	study 1	66	1
4	3	1	301	study 1	67	1
5	4	1	401	study 1	68	1
6	4	2	402	study 1	69	1
7	3	2	302	study 1	70	1
8	2	2	202	study 1	71	1

Figure 8-10: .csv file with trait data

1. To import a map with trait data, follow the steps outlined on normal map import. From the **Create maps** screen, select the desired name that corresponds to the data and press the button with the right arrow. This moves those columns of data into the traits box. See Figure 8-11.

Figure 8-11: Press right button to import traits.

2. Repeat from first step as necessary for any remaining CSV files.

3. Once all maps, CSV, or TXT files have been added and

verified, click the **Create All** button.

4. When all maps are created, click on **Menu** to return to **Maps**>**Map Explorer** to copy the newly created maps to the handheld device. (See **Map Explorer** earlier in this chapter.)

Note: all newly created map files will be placed in the program's map folder and can be accessed via the Map Explorer. See **Map Explorer** for more details.

Export (Save) Map data to file

Figure 8-12. Export (Save) Map data to file screen.

This is used to create a CSV file containing map data. The file will be created in the PC folder you specified. The maps listed are the maps on the PC. See **Map Explorer** for more details.

To save map data and identifiers to a file

1. Ensure all maps are on the PC using *Map Explorer*.

2. In the maps list on the left, check the box next to the desired maps from which to export data.

In the Identifiers list on the right, ensure that you have checked only the identifiers that will be exported to the CSV file. All other boxes should be unchecked.

Note: the order the identifiers appear in the list will be the order in which the identifiers will appear in the CSV file. Sort the identifiers using the buttons on the right that have the up and down arrows. Selecting an identifier and clicking the up arrow button will move that item up in the list meaning it will appear sooner in the CSV file.

3. Check the **Include Previously exported data** box to include all data in the map. Otherwise, only data that has not been exported will be copied to the CSV file. All other data will be ignored.

4. Click **Export Data** to begin creating CSV files.

Backup Map to folder

Figure 8-13. Backup Map to folder screen.

Use this option to copy or backup existing FRS Mobile™ map files to a specified directory.

Note: select multiple maps at a time by holding the **CTRL** key and clicking on the desired maps.

To copy map files to a specific folder
1. Select the desired map to copy or backup.

2. Input the path to the folder in which to copy or backup.

To delete existing maps from Suite Manager
1. Select the desired map to delete.

2. Click the **Delete** button.

Note: this will delete the map from your PC hard drive.

Restore Map from folder

Figure 8-14. Restore Map from folder screen.

Use this option to copy or restore existing FRS Mobile™ map files into Suite Manager and to a connected device.

To restore existing FRS Mobile™ map files

Any existing FRS Maps found in the folder will appear in the list.

1. Select the desired path from which to restore maps.

2. Select the maps in the list to be restored. Use the CTRL key as you are selecting maps to select multiple maps.

3. Uncheck the box **Copy to connected device after restore** if you do not want the newly restored maps to automatically be downloaded to the connected handheld.

4. Click on **Restore**.

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Traits

There are two options under Traits:

*   **Create traits from file**

*   **Save traits to file**.

Use these utilities to easily manage traits that are in FRS Mobile™.

Create traits from files
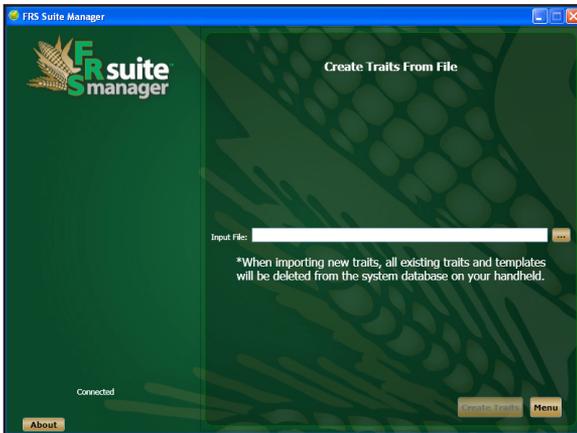
Figure 8-15. Create traits from files screen.

This utility will import traits from a CSV file into FRS Mobile™ that is installed on a device.

Note: when importing new traits into FRS Mobile™, ALL existing traits and templates will be deleted from FRS Mobile™. After importing new traits, you will have to create any templates needed to use those new traits.

Make sure that you customize traits before collecting data

Creating a trait list as a .csv file

Creating a new traits file and importing it through FRS Suite Manager is a simple, step-by-step process.

1. Open a new spreadsheet. This example uses Microsoft Excel 2003.

2. File must start with the single word **FILECREATED: date** with the date in mm/dd/yy format. The header must contain the following **bolded** items:

   • **Name**—the display name of the trait. Can be from 1-50 characters.

   • **Description** — the description of the trait. Can be 0 to 200 characters.

   • **Type**—the type of trait. Accepted types are RATING, NUMBER, DATE, or TEXT.

   • **Length**—the total maximum length of characters accepted. DATE traits will default to eight. For other traits, this can be any number of characters.

   • **Precision**—the total number of zeros to the right of decimal point. Maximum of 10 places.

   • **Repetitive**— whether or not trait is repetitive. If it is, enter TRUE. If not, enter FALSE

   • **DataSource**— the source for the data. Usually Keyboard

- **DefaultValue**— used for Rating Number and Text traits. You may use any character valid for the trait and can be blank.

- **SystemTrait**— reserved. Use FALSE

Once the file has been properly set up, it should look like Figure 8-12. The trait names are examples only.
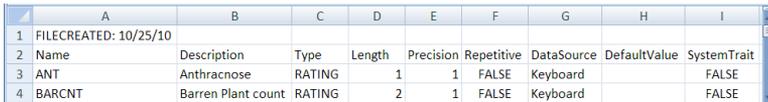
	A	B	C	D	E	F	G	H	I
1	FILECREATED: 10/25/10								
2	Name	Description	Type	Length	Precision	Repetitive	DataSource	DefaultValue	SystemTrait
3	ANT	Anthracnose	RATING	1	1	FALSE	Keyboard		FALSE
4	BARCNT	Barren Plant count	RATING	2	1	FALSE	Keyboard		FALSE

Figure 8-16. Creating a trait list on a spreadsheet.

After you have completed your list, select *File>Save As.* Select a file name and save it as a .csv file.

Importing trait file to handheld (see Figure 8-15)

1. Connect a handheld device with FRS Mobile™ installed but not open, to the PC.

2. Input the path to the CSV file containing the traits for import.

3. Click the **Browse** button to browse to the file.

4. Click **Create Traits**.

Note: when a trait file is imported to the handheld, all existing Traits and Templates are deleted. See Chapter 4 to add an individual trait.

Save traits to file

Figure 8-17. Save traits to file screen.

This utility will save the current traits from FRS Mobile™ to a CSV file.

To save/export traits to a CSV file.

1. Connect a handheld device with FRS Mobile™ installed but not open, to the PC.

2. Input the path and file name of the CSV file to which the traits will be exported.

3. Click **Save Traits**.

Utilities

There are two options under utilities:

- **Retrieve Backup Logs**

- **Delete data from maps**

Retrieve Backup Logs
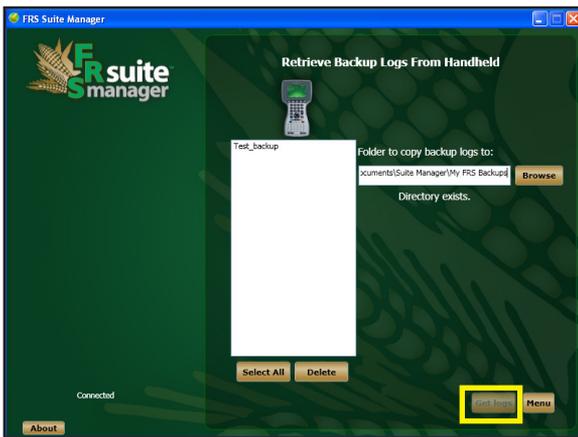
Figure 8-18. Retrieve Backup Logs screen with Get logs button highlighted.

Any data collected with FRS Mobile™ is saved in the FRS Mobile™ map file and to a CSV file called a **Backup Log**. These files can be retrieved from a handheld device and copied to the specified folder.

To copy a backup log to the PC

1. Select the desired log file to copy in the list on the left.

2. Select the path to which to copy the log file.

3. Click the **Get Logs** button.

To delete a backup log on the connected device

1. Select the desired log file to delete in the list.

2. Click the **Delete Data** button.

Delete data from maps
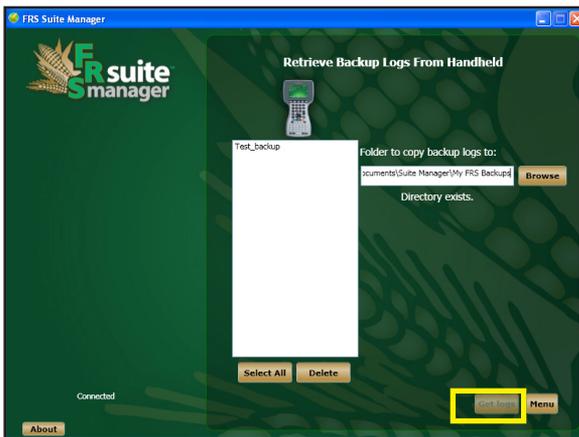
Figure 8-19. Delete data from maps screen.

This utility will remove all templates, traits, and trait data from an FRS Mobile™ map file.

Note: only perform this action if you know for sure that the data in the map file is no longer needed and/or a backup map file has been saved. This utility only uses the maps that are on the PC and in Suite Manager.

To delete collected map data

1. Select the desired map from the list.

2. Use the **CTRL** key as you select to select more than one map at a time.

3. Click the **Delete Data** button.

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list. *See* List screen
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JUNIPER SYSTEMS, INC.

1132 WEST 1700 NORTH

LOGAN, UTAH 84321

TEL 435.753.1881

FAX 435.753.1896

js@junipersys.com

www.harvestmaster.com