



**Software and
Control System**

Operator Manual

Version 4.6.3

Includes operating, settings, adjustments, and other information regarding PlotPro Software from RCI Engineering.

Please retain this document for future reference. Keep this manual available for reference to the operator at all times.



RCI Engineering
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Safe Operation of Machine

Operator Authorization

The machine owner must provide the operator of the machine this manual and ensure that the operator reads and understands the contents. This must be performed before the machine is put into operation.

Safety Alert Symbol



This safety alert symbol is used to alert the operator to the potential for personal injury. Whenever this symbol is noticed in this manual or on the machine, be alert to the situation and read the message near the symbol. Always be alert for the potential for personal injury.

General Safety Precautions / Accident Prevention

Before operation of the machine each time, check the entire machine for operational and road safety. Refer to the Operator's Manual for the Base Machine for all information regarding the Base Machine. This manual is for the PlotPro Software and only covers items related to the operation of the Software.

1. The warning and safety decals on the attachment provide important information to ensure safe operation of the machine. Read and follow these instructions at all times and remain safe.
2. Familiarize yourself with all controls of the machine and attachment as well as the function of the unit before operation of the machine.
3. Check all guards and shields to make sure they are in place and functional. Replace any defective or missing guards, shields, or components before operation.
4. Avoid loose fitting clothing. The operator should always wear close-fitting clothing and sturdy footwear.
5. When traveling on public roads or transporting the machine, obey all regulations for the area.
6. Before harvesting begins each time the machine is operated, inspect the area around the machine. Ensure that no one is close to the machine for bystander safety.
7. Keep clear of the working and danger area of the machine.
8. Use caution when working on moveable components of the machine. There are many pinch and shear points.
9. Never allow children to ride in the cab or on the machine.

Overview

Before using the software, become familiar with the layout and function of the controls of the unit. The PlotPro Software controls outputs of the machine. It is important to understand the function of the software and controls to avoid unintended operation.

Switches

Some installations of PlotPro are accompanied by the installation of a switch pad for manual operation of the sampling system. These switches can be used independently of the PlotPro Software so basic function of the machine can be achieved even if the PlotPro Software is not available.



The PlotPro Switch provides power for the following:

- PlotPro Controller
- ScaleLink
- NIR Unit

The Sampler Switch provides power for the following:

- Sampler Output (engage sampler)

The Aux Switch provides power for the following:

- Device to empty hopper
 - o Belt
 - o Doors

Note: The Aux Switch is only wired to the appropriate function. In the event of the use of a belt in the bottom of the hopper, press the switch to “A” to engage the belt.

Components

There are three main components used with PlotPro. See Figure 1.

The Controller (A) communicates with the PlotPro software by CAN communication. It controls sampler functions.

The ScaleLink (B) reads the scale weight and communicates the weight to the Controller via CAN messages.

The Wire Harness (C) connects the Controller (A) and ScaleLink (B) to the Switches.

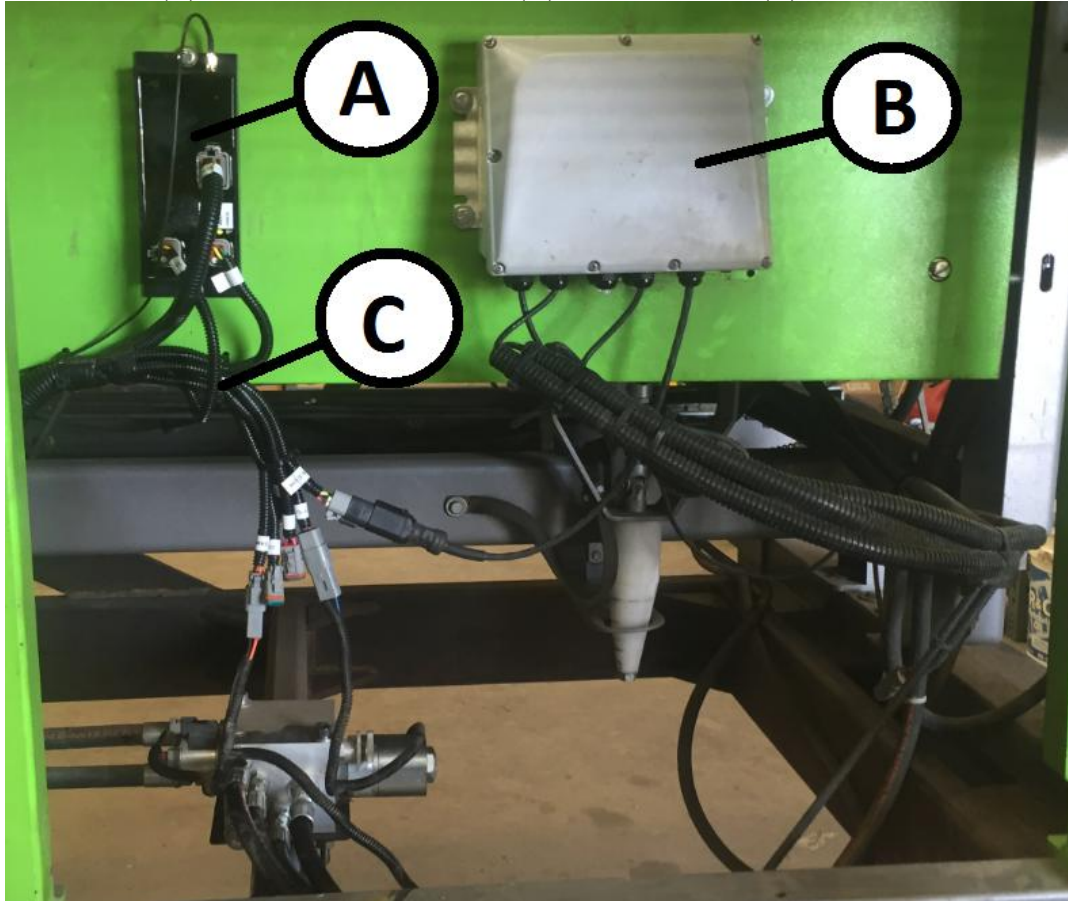


Figure 1. PlotPro Components

Key A – Controller Key B – ScaleLink Key C – Wire Harness

Kvaser Leaf Light USB Device

A USB device known as a Kvaser Leaf Light is used to connect the tablet to the PlotPro controller. See Figure 2. It connects to the main PlotPro wire harness in the cab and should be visible inside the cab.

The USB connection of this device should be connected to the tablet or cradle prior to starting any software.

The Power Light, Key 1, Figure 2, should illuminate when plugged into a port and the tablet is turned on. If it does not, move it to another port that does power the Kvaser.

The CAN light, Key 2, Figure 2, will illuminate whenever PlotPro software is running. If it does not illuminate, check to make sure that the PlotPro power switch is turned on and that there is no damage to the wire harness. Contact RCI for additional assistance.

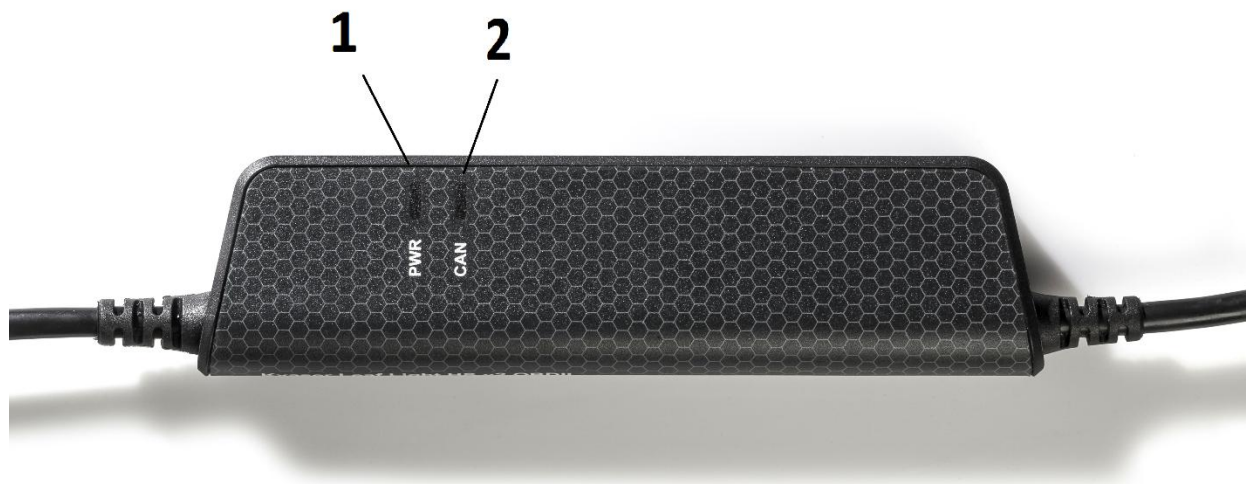


Figure 3. Kvaser Leaf Light USB Device
Key 1 – Green Power Light Key 2 – Amber CAN Light

Ethernet

An Ethernet cable connects the tablet to the NIR. Make sure that the Ethernet cable is connected properly at both ends and is not damaged. To verify the Ethernet is connected properly, open internet explorer and verify that the John Deere HarvestLab Measurement page loads automatically, or look at the internet connections on the task bar of Windows. The connection should be labeled “Unidentified Network” when properly connected. If not connecting, check for power to the NIR by looking to see if the light is illuminated at the lens.

IMPORTANT

Always ensure that the IP address of the computer is set to 192.168.0.100 in order for PlotPro to connect properly to the NIR sensor.

OneDrive and Internet Connectivity (If Used)

Microsoft OneDrive may be used to synchronize data for use in the lab. This software runs automatically in the background of the tablet PC for each machine.

IMPORTANT:

Disconnect the tablet from any wireless internet during harvesting. Failure to do so may cause issues with the ability to write to data files.

Occasionally, RCI may need to connect to the tablet PC during harvesting. When this occurs, OneDrive can be shut down on the tablet. It will automatically restart the next time the tablet is rebooted.

To see the status of OneDrive, hover over the icon in the lower right corner of the Windows Task Bar. See Figure 3.

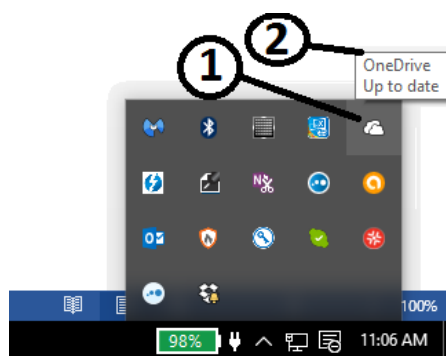


Figure 3. OneDrive Icon and Information

Key 1 – OneDrive Icon

Key 2 – OneDrive Status

To disable OneDrive, right click on the icon and select Exit. See Figure 4.

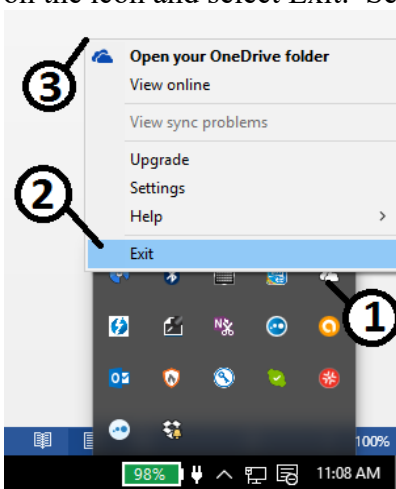


Figure 4. OneDrive Menu

Key 1 – OneDrive Icon (right click)

Key 2 – Exit Selection

Key 3 – OneDrive Menu

IMPORTANT: NEVER enter other settings or attempt to log into the OneDrive account for the machine. Doing so may lock out the account, which will impact all machines connected to the account.

Synchronizing Data

OneDrive will automatically synchronize all maps, data files, and other information automatically when connected to the internet. It is important to connect the tablet to the internet daily, when harvesting is completed.

Simply connect the tablet to an internet connection and open internet explorer. Try to navigate to a website such as www.google.com. If the page loads, OneDrive should function properly. The icon for OneDrive will then change color and indicate with a status bar that it is processing changes. If the cursor hovers over the icon, it will also indicate the status. If the icon is gray, it indicates that it is not connected to the internet. White indicates that it is connected to the internet. A sliding bar indicator will indicate it is working in the background.

IP Address

If the tablet must connect to the internet over Ethernet, the IP address may need to be set to automatic. Before connecting to the machine, verify that the Ethernet IP address is set back to 192.168.0.100. The subnet mask should be 255.255.255.0 and will automatically populate when the cursor is tabbed to the boxes. Do not specify a DNS server address.

IMPORTANT: It is important to note that most wireless connections do not require any IP address changes.

IMPORTANT: If you are not familiar with IP address changes, try to use wireless for connectivity or contact RCI for assistance when ready to make changes. If the IP address is missed, the NIR will not be able to connect to the tablet.

PlotPro Operation (With John Deere HarvestLab NIR)

Program Startup

To start PlotPro, double click the “RCI PlotPro” icon on the desktop. See Figure 5.

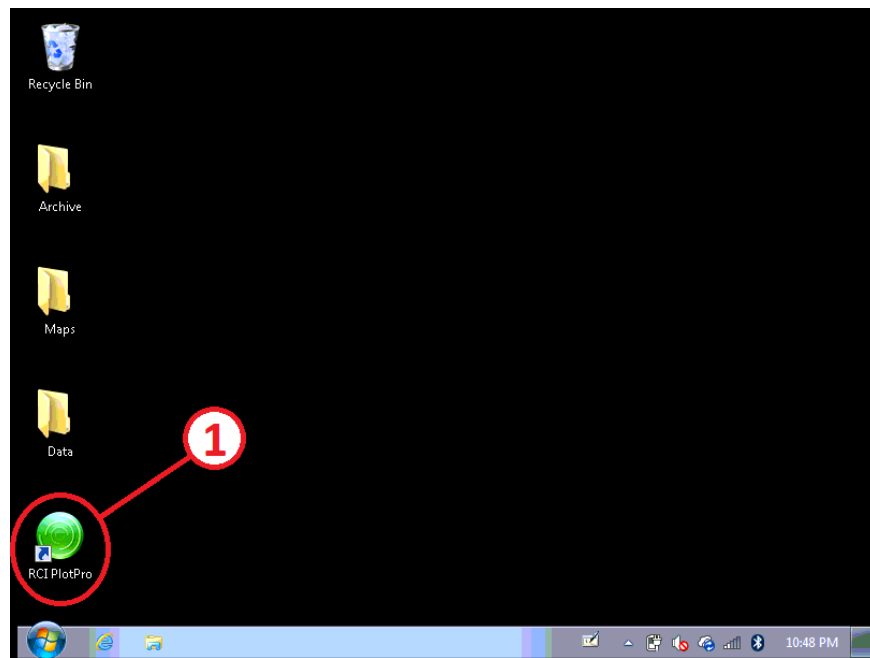


Figure 5. PlotPro Startup
Key 1 – PlotPro Startup Shortcut

When starting PlotPro, maximize the window to fill the entire screen. The screen resolution of Windows can be lowered to 800 x 600 to maximize the area of the screen for PlotPro to display.

Screen Layout

There are three primary screens used in PlotPro. Each screen is accessible at any time by selecting the links at the top of the program with the stylus or cursor.

The HOME screen is used for data gathering and also displays all important information when harvesting.

The MAP screen is used for map preparation and review.

The Settings screen is used for software setup and configuration.

See Figures 6 through 8.

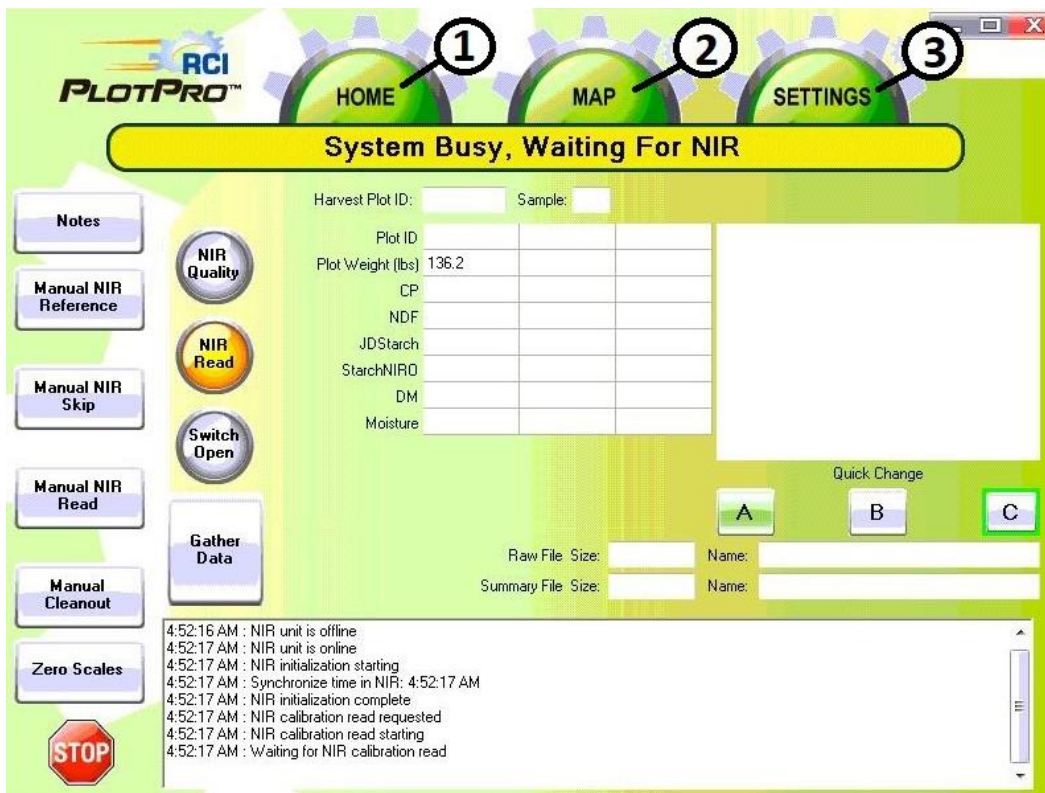


Figure 6. Home Screen, Screen Layout

Key 1 – Home Shortcut

Key 2 – Map Shortcut

Key 3 – Settings Shortcut

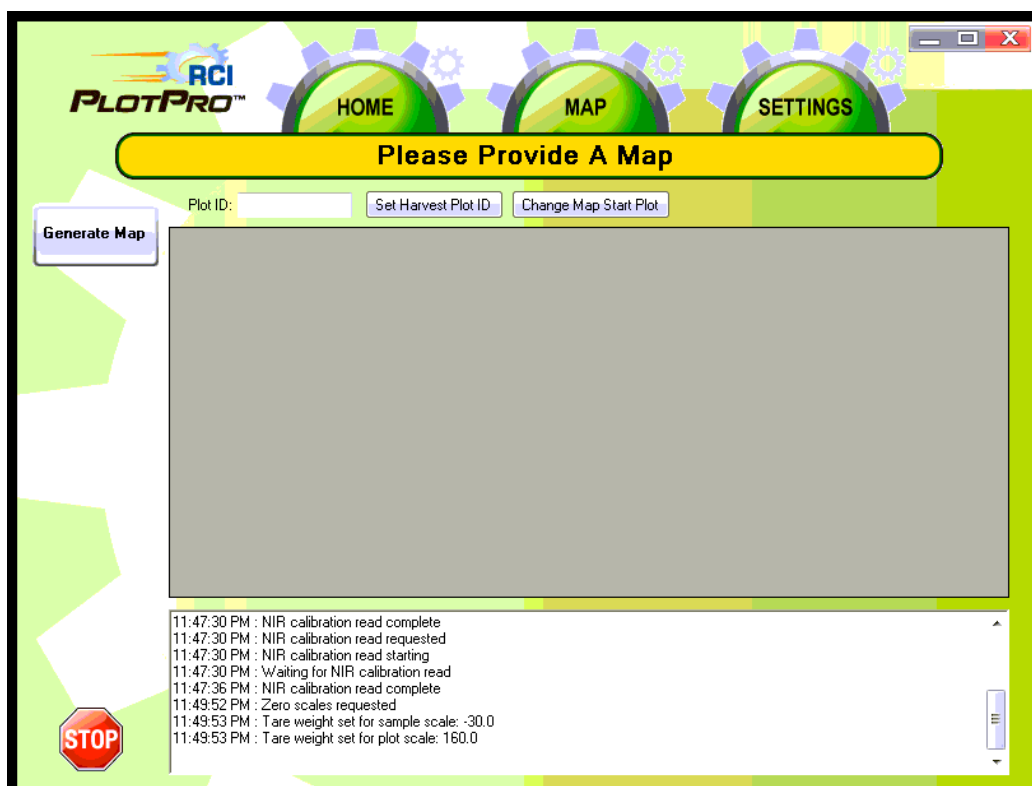


Figure 7. Map Screen

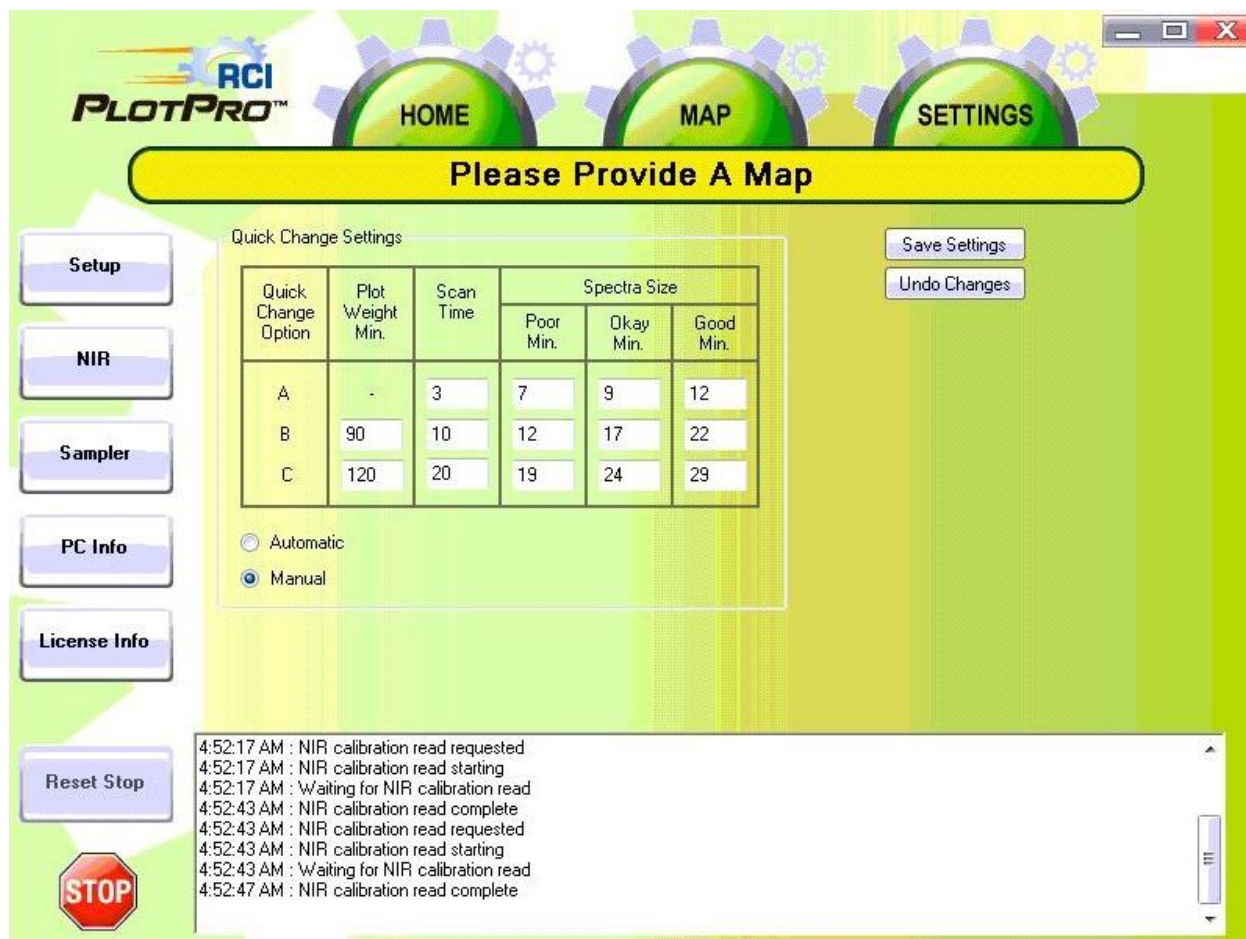


Figure 8. Settings Screen

To return to the HOME screen, select the shortcut at the top.

Home Screen Layout

This is the primary screen used when harvesting and collecting data. The following is what is visible when the John Deere HarvestLab is selected for device. In general, setup information is at the left of the screen. System status indicators are present next to the setup information. Results are displayed at the right. See Figure 9.

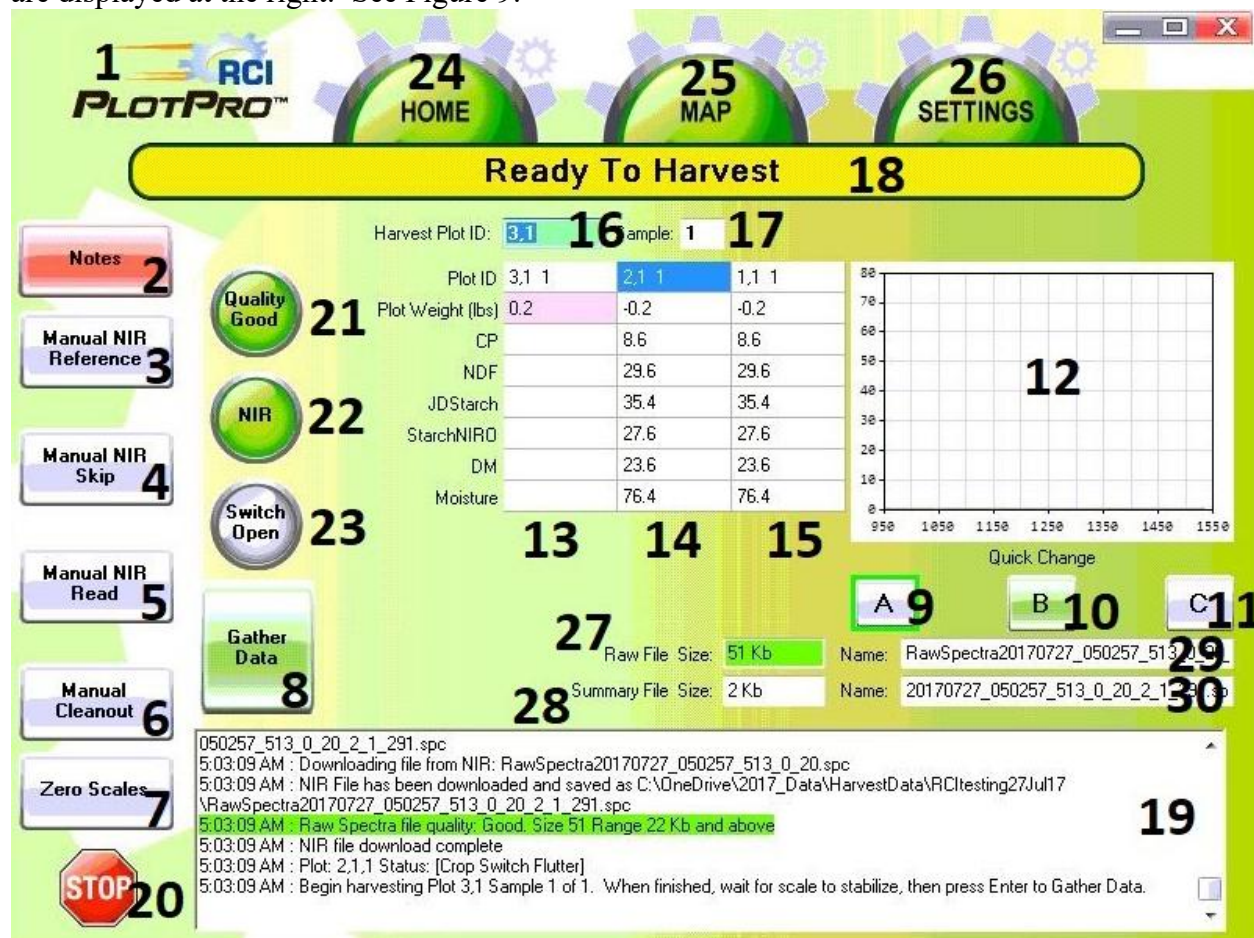


Figure 9. Home Screen Identification

Key 1 – Contact Info	Key 2 – Notes	Key 3 – Manual NIR Reference
Key 4 – Manual NIR Skip	Key 5 – Manual NIR Read	Key 6 – Manual Cleanout
Key 7 – Zero Scales	Key 8 – Gather Data	Key 9 – Quick Change A
Key 10 – Quick Change B	Key 11 – Quick Change C	Key 12 – Spectra Chart
Key 13 – Current Plot Data	Key 14 – Previous Plot Data	Key 15 – 2 nd Previous Plot Data
Key 16 – Current Harvest ID	Key 17 – Sample Number	Key 18 – Status Bar
Key 19 – Message Window	Key 20 – STOP Button	Key 21 – Quality Indicator
Key 22 – NIR Status	Key 23 – Switch Status	Key 24 – Home Shortcut
Key 25 – Map Shortcut	Key 26 – Settings Shortcut	Key 27 – Raw Spectra File Size
Key 28 – Summary File Size	Key 29 – Raw File Name	Key 30 – Summary File Name

System Adjustments and Setup

Settings Screen

In general, the system settings should not need to be adjusted on a regular basis. Once the unit is set up properly, settings should only be changed if an NIR unit is changed.

When the *Settings* page is selected, the following is displayed. See Figure 10.

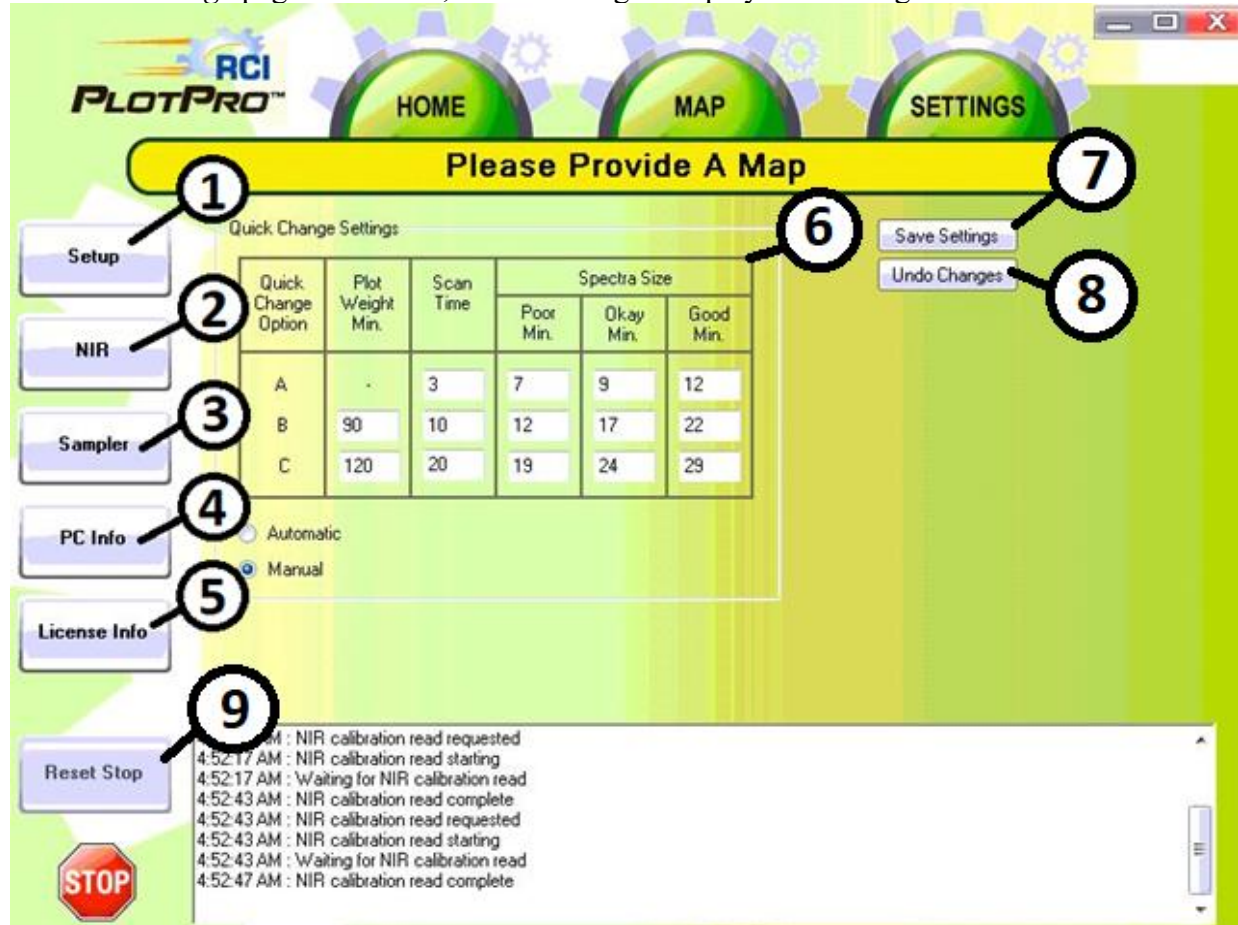


Figure 10. Settings Screen

- | | | |
|--------------------------|-------------------------------|-------------------------------|
| Key 1 – Setup Shortcut | Key 2 – NIR Shortcut | Key 3 – Sampler Shortcut |
| Key 4 – PC Info Shortcut | Key 5 – License Info Shortcut | Key 6 – Quick Change Settings |
| Key 7 – Save Settings | Key 8 – Undo Changes | Key 9 – Reset Stop Button |

Press *Setup* to advance to the Setup page for general system settings.

Press *NIR* to advance to the NIR Settings page.

Press *Sampler* to advance to the Sampler Settings page.

Press *PC Info* and *License Info* to advance to the PC Information Page and License Info page, respectively.

Setup Settings

Press the *Setup* button on the *Settings* page to access the screen shown in Figure 11.

Figure 11. System Settings Page

Key 1 – Settings Shortcut (return) Key 2 – Back Arrow Key 3 – Primary File Directory
 Key 4 – Backup File Directory Key 5 – Save Settings Key 6 – Undo Changes
 Key 7 – Display for Home Tab Key 8 – Sample Scale Installed

IMPORTANT: Do not change any values on this page. Contact RCI for assistance if needed.

Key 3 - File Directory – the last four digits of the NIR s/n or station name should be placed here. This file location is in the OneDrive location (if used). Do not change this location. Always verify this location at initial setup to ensure that the unit and tablet is on the correct machine.

Key 4 - Directory for Files – This is a backup location of all data collected for the operator to use for review or copying. Do not access the primary file directory if using OneDrive. A shortcut is placed on the desktop to this location for ease of access. Do not change this location.

IMPORTANT:

When changing any settings, press Key 5, *Save Settings* to record the value to memory. To undo or discard any changes made prior to saving, press Key 6, *Undo Changes*.

NIR Settings (If NIR is used)

The following are initial recommendations for NIR setup. Press *NIR* button on *Settings* page to access the *NIR* page. See Figure 12.

John Deere NIR

Manual Reference Warning (minutes): 120

Crop Switch Delay (seconds): 0.5

Interval Reference: 600

Valid Spectra Frame Count: 100

Repacks: 1

NIR USB Status: Detected

NIR Turntable Mode: Manual

Measurement Label	Calc	Constituent	Min	Max	Enable
1. CP	☐	CP	0		☒
2. NDF	☐	NDF	0		☒
3. JDStarch	☐	JDStarch			☒
4. StarchNIRO	☐	StarchNIRO			☒
5. DM	☐	DM			☒
6. Moisture	☒	100-DM			☒

☐ Issue warning if measurement not in min/max range

4:52:17 AM : NIR calibration read requested
 4:52:17 AM : NIR calibration read starting
 4:52:17 AM : Waiting for NIR calibration read
 4:52:43 AM : NIR calibration read complete
 4:52:43 AM : NIR calibration read requested
 4:52:43 AM : NIR calibration read starting
 4:52:43 AM : Waiting for NIR calibration read
 4:52:47 AM : NIR calibration read complete

Figure 12. NIR Settings Screen

Key 1 – Back Key 2 – Validate Sensor Button Key 3 – Internal NIR Settings
 Key 4 – NIR Constituent Measurement Labels

The following setting has been determined to work best with PlotPro. These are the only settings that should need to be adjusted in PlotPro for the NIR.

Key 3 – Crop Switch Delay – IMPORTANT (Key 3, Figure 12). This is used the delay between the closing of the crop switch and the start of an NIR scan.

- If using a feed-roll switch – use 1.5 seconds
 - o Take note of time from crop entering feedrolls to when the switch closes. If the feedrolls do not move for a few seconds to close the switch, shorten the time on the feedroll switch to 1 second or 0.8 seconds.
- If using a manual switch, foot switch or in-spout switch, use 0 seconds
- If using an RCI Sampler Spout Switch (130S), use 0.5 seconds

Do not adjust any other settings at Key 3 of Figure 12. Contact RCI for assistance. Press *Save Settings* to retain any changes made.

Sampler Settings

The following are initial recommendations for Sampler setup. Press *Sampler* button on *Settings* page to access the *Sampler* page. See Figure 13.

RCI
PLOTPRO™

HOME MAP SETTINGS

Please Provide A Map

Sampler 1

Sample Scale Cleanout Weight Limit Warning: 5 2

Plot Scale Cleanout Weight Limit Warning: 3 3

Cleanout 1 Activated State
☐ Open ☒ Closed

4 Cleanout Timer1 (seconds): 3.0

Cleanout Timer2 (seconds): 0.0

Cleanout 2 Activated State
☐ Open ☒ Closed

Cleanout Timer3 (seconds): 0.0

Auto Tare Enabled ☒ 6

Tare Timer (seconds): 3.0

Scale Calibration Factor

Sample Scale 1.000 5

Plot Scale 1.000

Save Settings
Undo Changes

4:52:17 AM : NIR calibration read requested
4:52:17 AM : NIR calibration read starting
4:52:17 AM : Waiting for NIR calibration read
4:52:43 AM : NIR calibration read complete
4:52:43 AM : NIR calibration read requested
4:52:43 AM : NIR calibration read starting
4:52:43 AM : Waiting for NIR calibration read
4:52:47 AM : NIR calibration read complete

STOP

Figure 13. Sampler Settings Screen

Key 1 – Back Arrow Key 2 – Sample Scale Cleanout Weight Limit Warning
Key 3 – Plot Scale Cleanout Weight Limit Warning Key 4 – Timer Settings
Key 5 – Scale Calibration Factor Key 6 – Auto Tare

Definitions:

Sample Scale Cleanout Limit Warning

A warning will appear if the weight on the sample scale exceeds this value after the sample data is recorded and the cleanout is complete, to indicate to the operator that the sample must be removed from the scale.

Plot Scale Cleanout Limit Warning

A warning will appear if the weight on the plot (main) scale exceeds this value after the plot data is recorded and the cleanout is complete, to indicate to the operator that the system did not cleanout properly.

Cleanout 1 Activated State

This is an adjustable output for the first output for the valve. On some Plot Samplers, the coils need to be activated to shut off the function. In this case, the activated state would be Closed. Contact RCI for more information.

Cleanout Timer 1

This is the time, in seconds, for the first output to engage during the cleanout process. This is the time that the weigh belt or cylinder dump function will engage. For weigh belt samplers, the default value is 3.0 seconds. For the RCI 130S and 1250P samplers, the default is 1.5 seconds.

Cleanout Timer 2

This is the time, in seconds, of delay between the first function and a second function. For weigh belt samplers, it can be set to 0. For RCI 130S and 1250P samplers, the default is 1 second.

Cleanout 2 Activated State

This is an adjustable output for the second output for the valve. On some Plot Samplers, the coils need to be activated to shut off the function. In this case, the activated state would be Closed. Contact RCI for more information.

Cleanout Timer 3

This is the time, in seconds, for the second output to engage during the cleanout process. This is the time that the hopper close function will engage. For weigh belt samplers, this function is not used and the default value is 0 seconds. For the RCI 130S and 1250P samplers, the default is 1.5 seconds, to close the upper hopper doors.

Auto Tare

This option is to have the system zero the scales after completing the cleanout process. If not selected, the scales will not zero after cleanout.

Tare Timer

This is the delay, in seconds, between completion of cleanout and the scales being reset to zero. If a negative weight exists on the scale display after cleanout consistently, increase the length of the delay in half-second increments. The default value is 3.0 seconds.

Scale Calibration Factor

Scale displays can be fine-tuned for calibration purposes. Use these values as a multiplier of the current read of the scale to change the displayed value. To determine the value, first zero the scales and then weigh a known weight. Make sure the scales are not locked in transport position. Use the following equation to determine the value needed.

SCF = Scale Calibration Factor

MW = Measured Weight

KW = Known Weight

If measured weight value is higher than known weight value:

$$[(MW) - (KW)] / (KW) = SCF$$

If known weight value is higher than measured weight value:

$$[(KW) - (MW)] / (KW) = SCF$$

The same equations apply to both scales.

Sample Scale

This field is for the Sample Scale Calibration Factor.

Plot Scale

This field is for the Plot Scale Calibration Factor.

Press *Save Settings* to retain any changes made.

PC Info

This page displays general information about the computer used to run PlotPro. It is used for licensing and diagnostic purposes only.

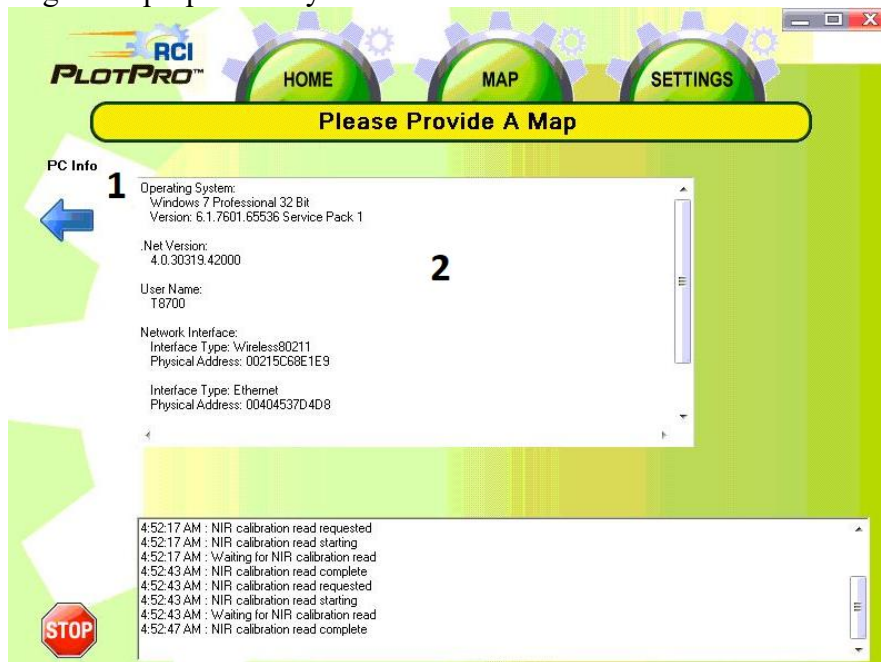


Figure 14. PC Info Page
Key 1 – Back Arrow Key 2 – PC Info

License Info

This page displays general information about the license used for PlotPro. It is used for reference only.



Figure 15. License Info Page
Key 1 – Back Arrow Key 2 – License Info

Changing Scan Time

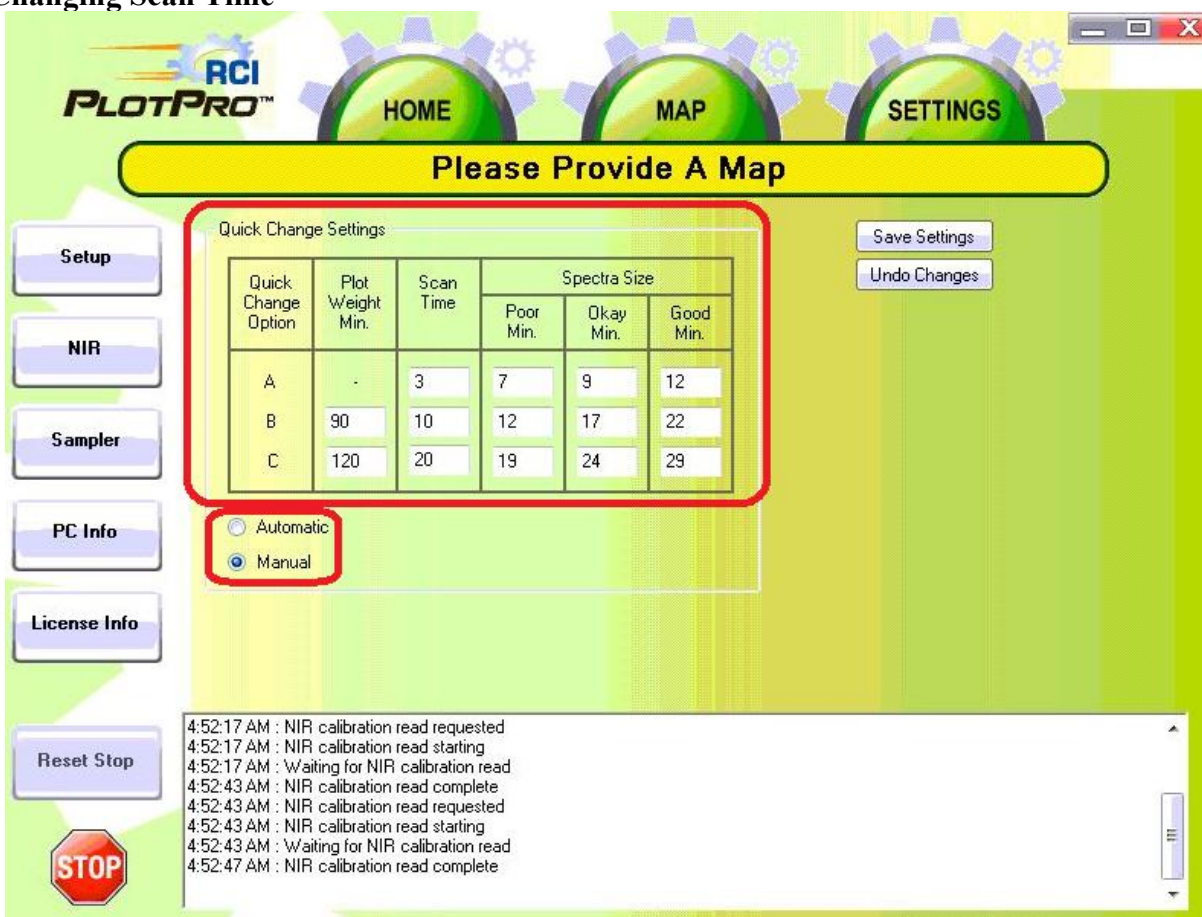


Figure 16. Quick Change Settings

Beginning with release 4.5, PlotPro now has a feature to allow for quick changes of presets for the NIR and an automatic mode for samplers that use an NIR after the weigh belt.

If using a harvester with the NIR in the spout before the sampler, only the manual mode is available.

Each quick change option can be configured along with settings to indicate sample quality. Three settings are provided for. The scan time corresponds to a spectra file size (in kb) for evaluating the raw spectra file size to determine if the quality of scan is acceptable. This functionality only works when an NIR filter is installed to remove blank and poor scans.

Note: Each second of scan time produces approximately 5kb of data. The base of the file adds about 1 kb. So a 3 second scan should produce a maximum file size of approximately 16 kb. This can vary with spectra curves. Smaller file sizes indicate that the lens may not be covered properly during measurement.

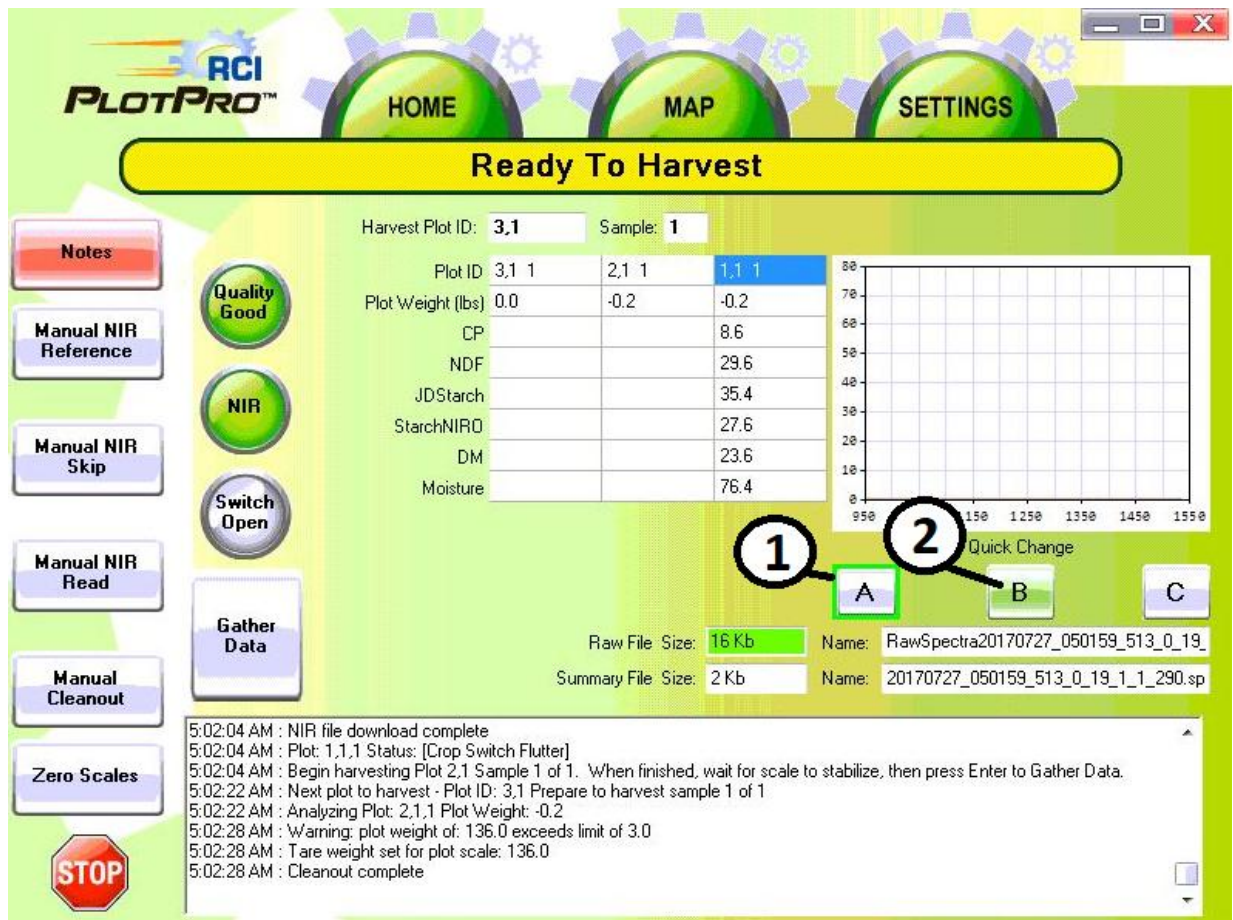


Figure 17. Quick Change Adjustments
Key 1 – Green Outer Box Key 2 – Green Highlighted Box

The green outer box, Figure 17, Key 1, is a display of the system calculated setting based on the weight in the hopper at any given time. In Automatic Mode, the box that has the green box around it will be automatically selected for scan settings when the *Gather Data* button is pressed.

The green highlighted box is the currently selected setting, in either Manual Mode or Automatic Mode. The value is confirmed when the *Gather Data* button is pressed.

In Manual Mode, the value can be changed at any time up until the *Gather Data* button is pressed.

IMPORTANT

General Measure Time Guidelines (Reference Figure 18 on next page)

- For 2 row plots, 20' long, use 3 to 4 seconds
- For 4-row plots, 20' long, use 5 seconds
- For 4-row plots, 30' long or longer, use 5-6 seconds

When changing any settings, press Key 13, "Save Settings" to record the value to memory. To undo or discard any changes made prior to saving, press Key 14, "Undo Changes."

Use the charts on the following page for default values.

NIR After Sampler Settings				
Weight	Scan Time	Poor	Okay	Good
0	5	10	15	20
90	6	12	18	24
120	8	16	24	32

RCI 130S and 1250P Settings				
Weight	Scan Time	Poor	Okay	Good
0	4	9	10	12
90	5	10	15	20
120	6	12	18	24

NIR Before Sampler (In-Spout) Settings				
Weight	Scan Time	Poor	Okay	Good
0	3	9	10	12
90	4	9	12	16
120	5	10	15	20

Figure 18. Default Quick Change Settings

NIR Quality Indicator

On the Home page, the top left round indicator is used for Spectra Quality.

The colors of this indicator are associated with the file size settings for the raw spectra file size being downloaded from the NIR sensor.

The NIR filters bad scans, thus reducing the file size, when equipped.

The color indications are as follows:

Green – Good
Yellow – OK
Orange – Poor
Red – Bad

NIR Errors

On occasion, NIR switches can miss during operation. Should this happen, there are a few options for the operator:

- A. Select the “Manual NIR Read” button on the HOME Screen to manually trigger the NIR read.
 - i. If the plot is missed, select the “Manual NIR Skip” button on the HOME Screen.
 - 1. If this is chosen, the word SKIP will be placed in the results boxes for the scan.
 - 2. A physical sample must be collected for all NIR-skipped plots

If no data is returned from an NIR scan, “NAN” will be displayed in the result.

This is an error indicating that no spectra data was collected or that the NIR could not calculate a result from the scan.

NAN means “Not a Number”.

A physical sample must be collected for all plots producing NAN results

The sample quality indicator will also be red (BAD) for these plots.

NIR Warm Up

Always allow the NIR to warm up each day for 30 minutes before use.

If shutting down mid-day for a few minutes or rebooting, there should be no need to wait again for the NIR to warm up.

To bypass the timer upon restart, press the yellow bar only if you are certain that the NIR has been warmed up.

The Bypass feature is not available until a map has been set up and the unit is ready to begin harvesting.

See Figure 19.

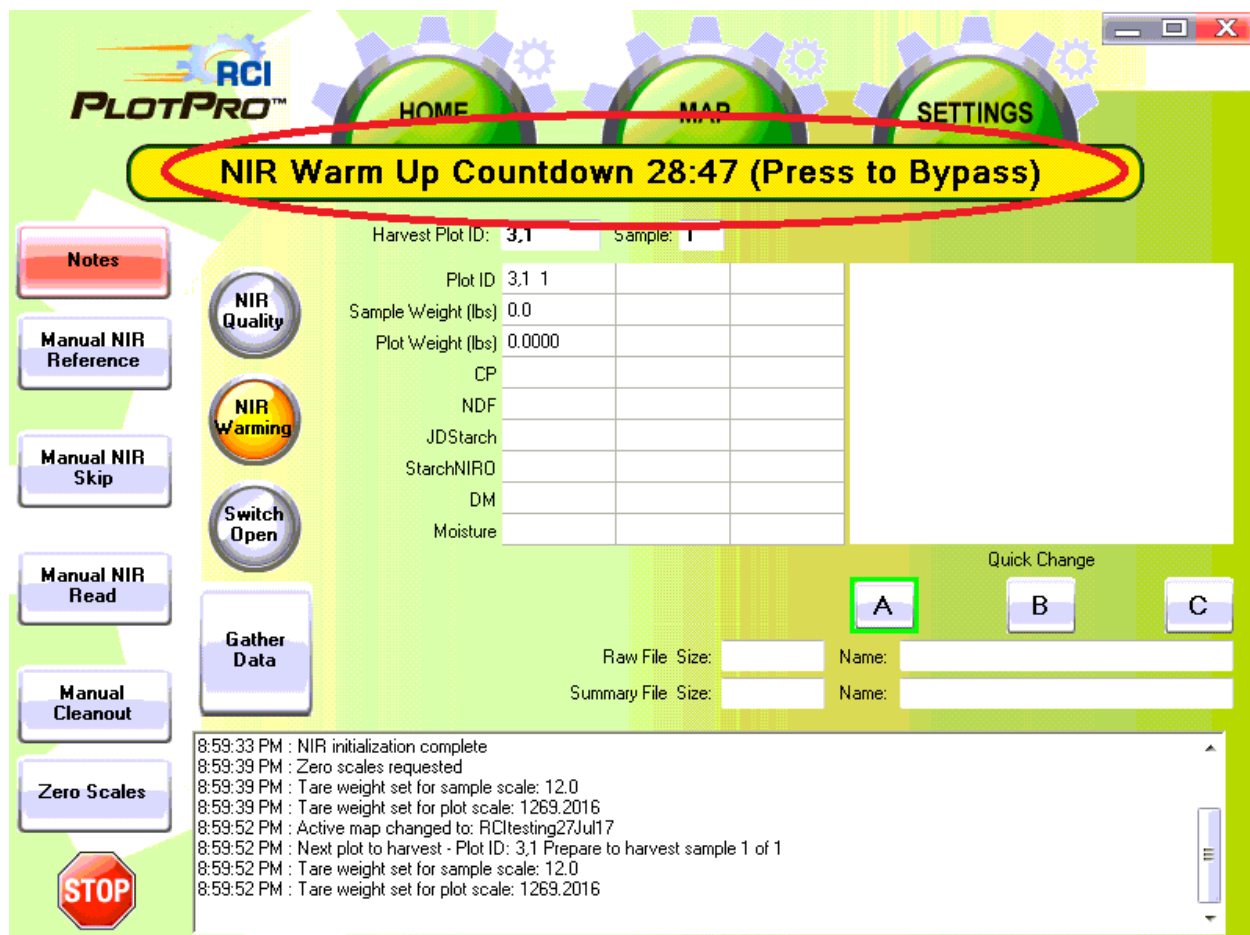


Figure 19. NIR Warm Up Indicator and Bypass

Note Taking

Notes can be recorded for plots during harvest.

On the *Home* page, press Key1, Figure 20, for Notes.

Enter desired notes in the pop-up window, Key 2, Figure 20.

Press OK.

PlotPro will record the notes for each plot going forward when the *Gather Data* button is pressed.

To change the notes from plot to plot, return to the Notes box and change the notes.

Changes will be recorded with the output data the next time the *Gather Data* button is pressed.

The *Notes* button color will change when notes are present. Red indicates no notes are present. Yellow indicates that notes are present.

See Figure 20.

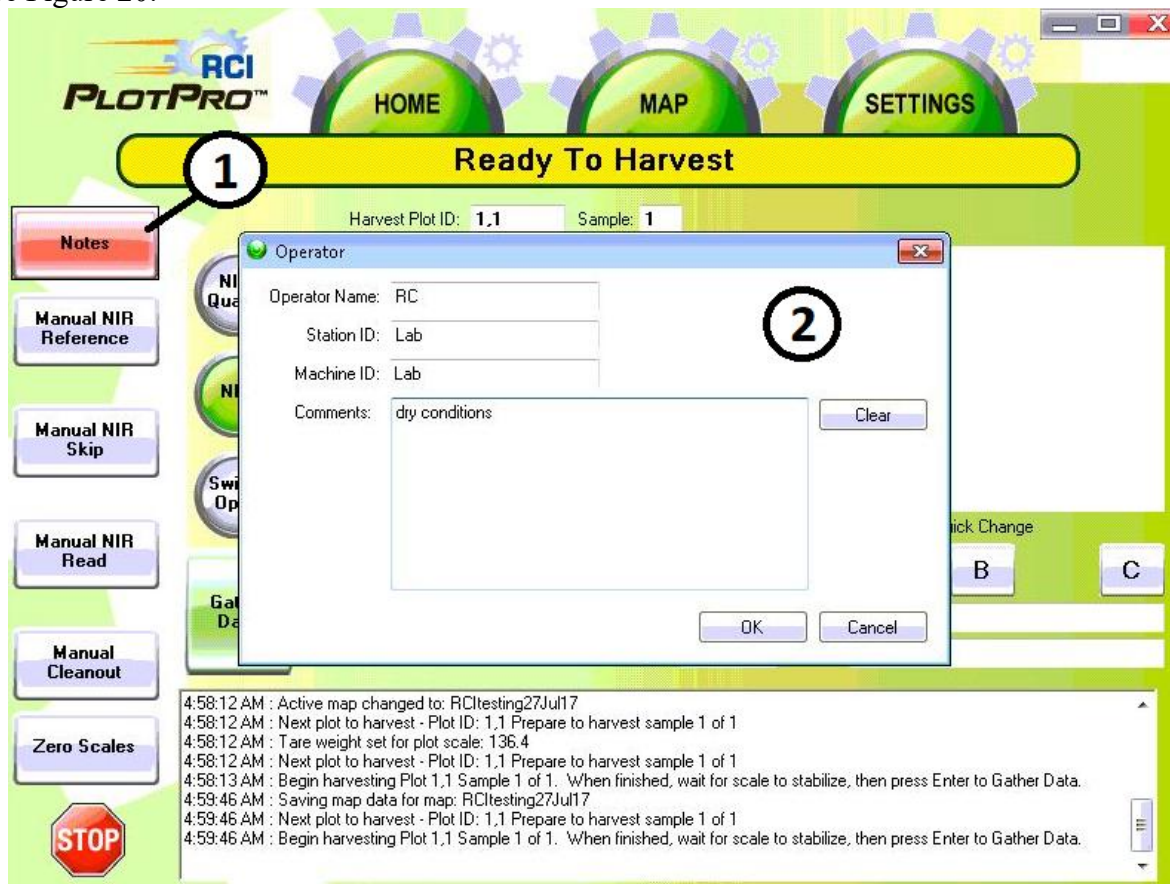


Figure 20. Notes Recording
Key 1 – Notes Button Key 2 – Notes Pop-up Window

Manual NIR Reference

A manual reference of the NIR is needed every two hours, or when the ambient air temperature changes by more than 10 deg F.

To perform an Manual NIR Reference, wait until between plots and then press the *Manual NIR Reference* Button.

If a manual NIR reference is missed or forgotten, PlotPro will remind the operator in the message box with a red message. When this occurs, simply finish the current plot and perform the Manual NIR Reference between plots.

See Figure 21, Key 1.

Wait for the NIR to complete the cycle. The status is indicated in the message box and with the color of the NIR indicator.

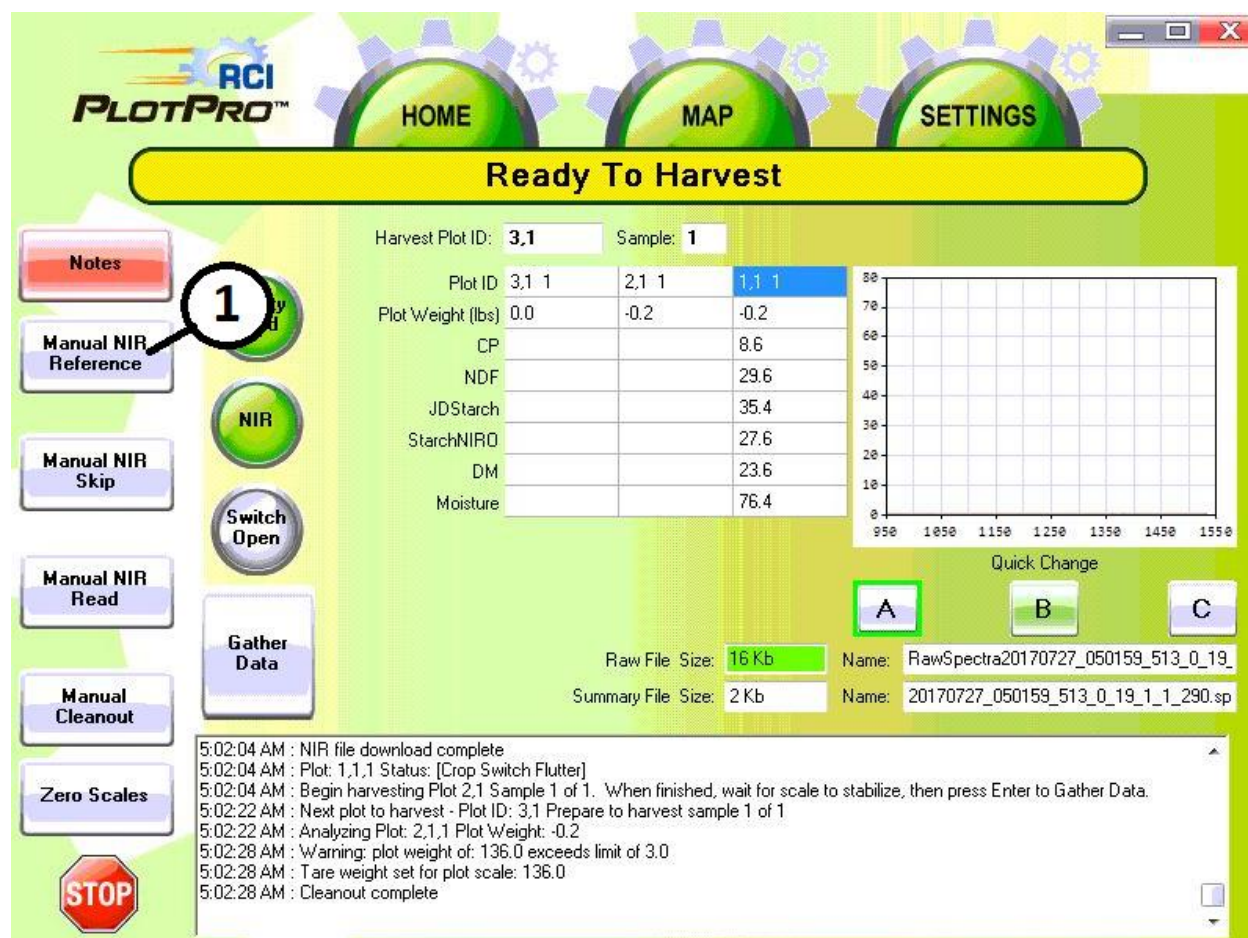


Figure 21. Manual NIR Reference
Key 1 – Manual NIR Reference Button

Validate NIR Sensor

The NIR Sensor should be validated in the following situations:

- At the start of the day (or end of the previous day)
- When there is any doubt of the results of the NIR scan
- Whenever the NIR is removed from the machine and reinstalled

Validation is a process to verify that the NIR is working properly.

A gray reference is used to validate the NIR, along with the PlotPro software. The gray reference is to be kept with the NIR case at all times.

See Figure 22 for identification of the gray reference.

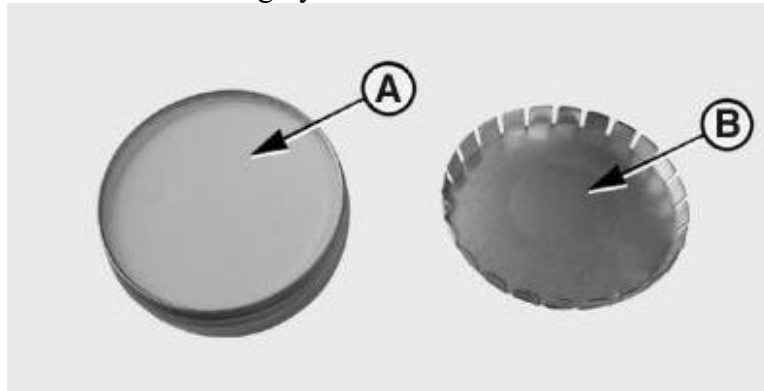


Figure 22. Gray Reference Identification

Key A – Gray Reference (white in color)

Key B – Cover, Snap

The procedure for validation is a two-person operation and is as follows:

1. Clean the lens
 - a. Do not use any solvents or glass cleaner.
 - b. It is advised to use Zeiss Lens Cleaning Wipes, which are typically found in a department store in the electronics area (Amazon or Walmart)
 - c. See Figure 23 for Zeiss wipe box label.



Figure 23. Zeiss Lens Cleaning Wipes Label

2. Place the reference over the lens. See Figures 24 and 25.

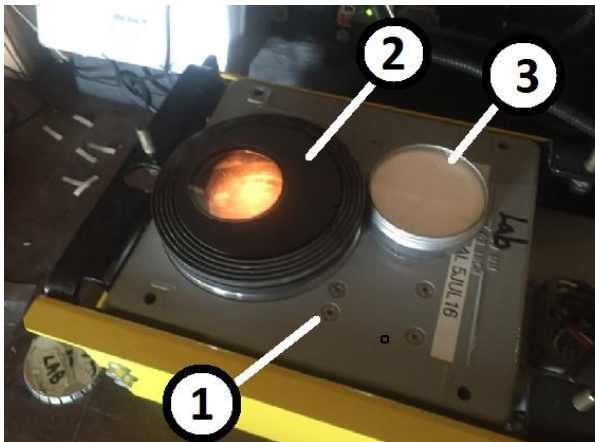


Figure 24. Component Identification

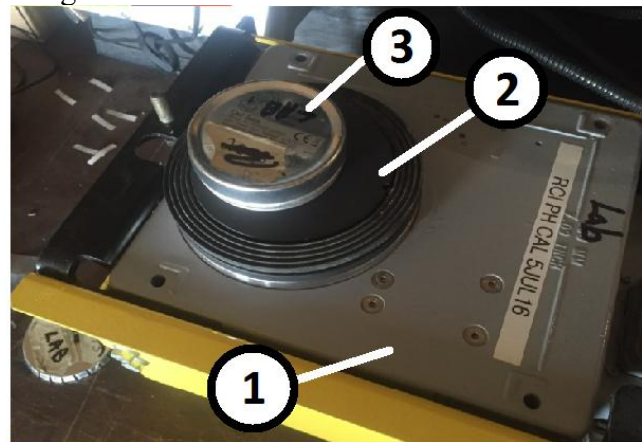


Figure 25. Gray Reference Application

NIR Gray Reference Application

Key 1 – NIR

Key 2 – Lens

Key 3 – Gray Reference

3. Navigate to Settings>NIR in PlotPro.
4. Press *Validate Sensor*. Follow prompts on screen.
5. Press Start. See Figure 26.

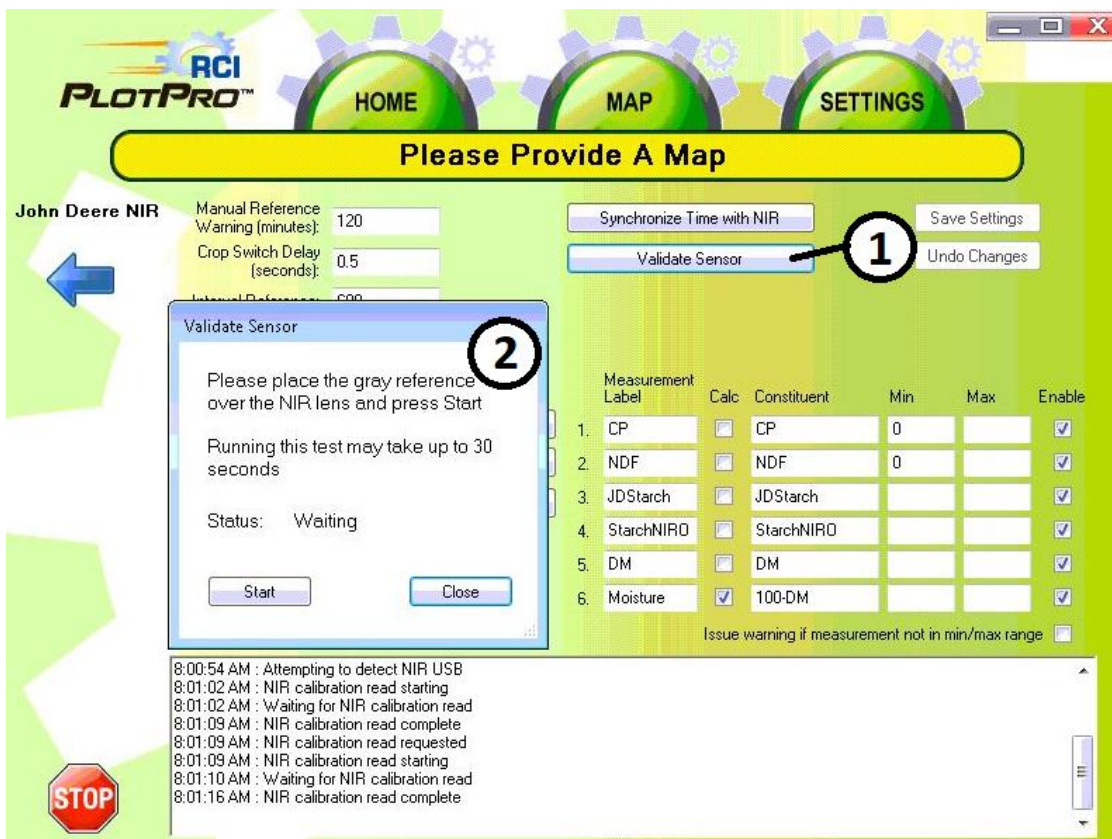


Figure 26. Validate NIR Sensor

Key 1 – Validate Sensor Button

Key 2 – Validate Sensor Window

6. Allow the system up to a minute to complete the validation procedure.
7. When completed, the status is indicated on the pop-up window.
8. If valid, the result is indicated as “VALID!” in green letters.
9. If not valid, the result is indicated as “NOT VALID!” in red letters.
10. If it is not valid, power down the entire system. Wait 1 minute and restart the system. Redo the test.
11. If it is still not valid after two tries, contact RCI for assistance.
12. See Figure 27.

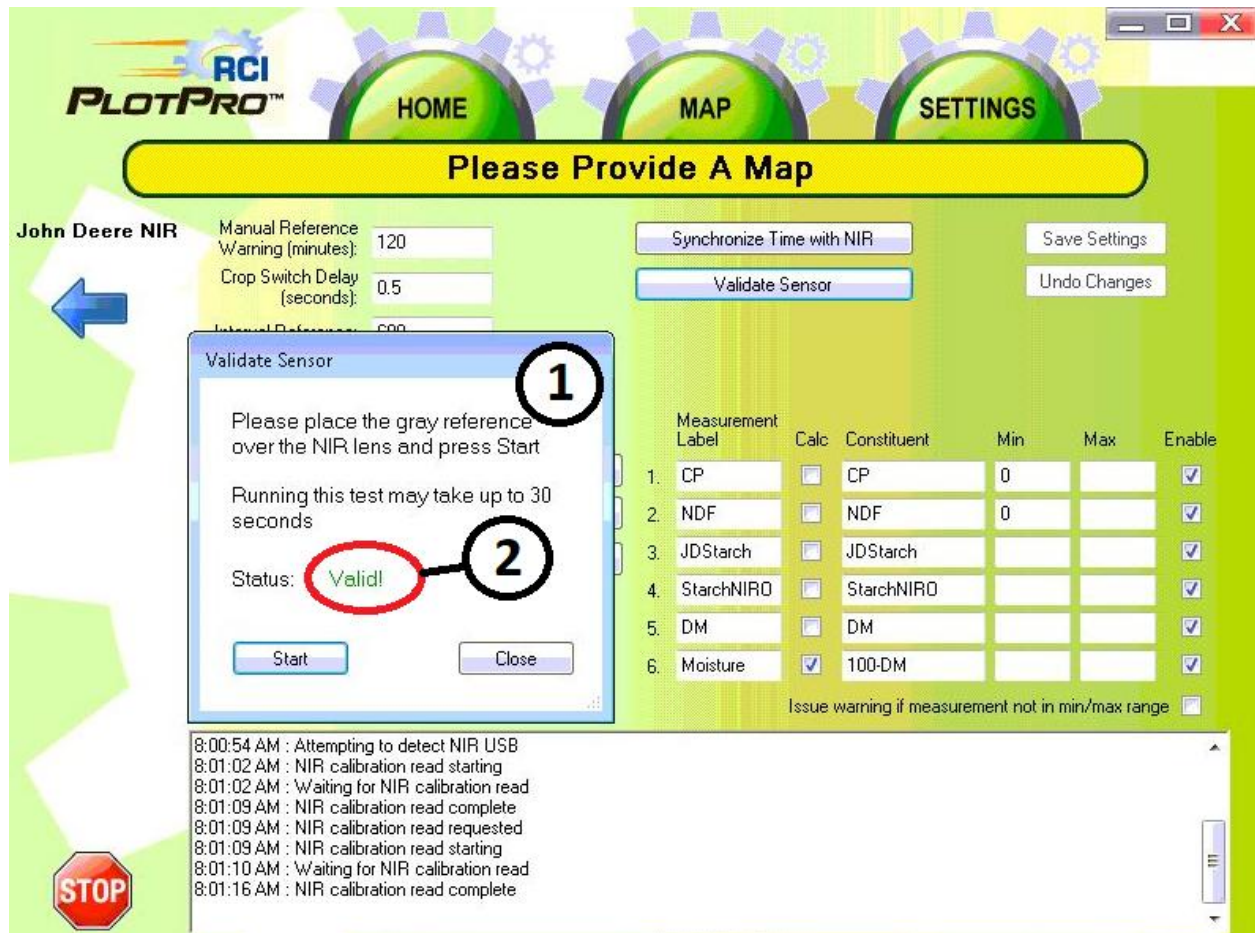


Figure 27. NIR Sensor Validation Result
 Key 1 – Validate Sensor Window Key 2 – Validation Result

Harvesting Operations (with NIR)

The following is a guide to daily operation of PlotPro for collecting data.

2. Start Engine. Follow guidelines in Operator Manual for the Harvesting Unit.
3. Start PlotPro System with rocker switch. Allow power to be on for at least 30 minutes each day before proceeding to harvest. This is to ensure the NIR warms up properly. The software can be started if it is not warmed up. Further details are in the next steps.
4. Start computer and PlotPro program.

Note: It does not matter at this point if the sampler is running or not. The software can be started at any time, with any machine status as long as the PlotPro system has power.

The PlotPro switch panel receives power only when the ignition of the harvester is on.

5. Select MAP shortcut at top of screen.
6. On the MAP Screen, select “Generate Map” as shown in Figure 28.



Figure 28. MAP Screen
Key 1 – Generate Map Button

7. On the “Generate Map Screen”, select one of three options as shown in Figure 22.
 - A. Save Map As
 - B. Load Map
 - C. Import Map

“Save Map As” is used to create a new map from scratch.

“Load Map” is used to reload an existing map.

“Import Map” is used to import a CSV file from another program.

If using “Save Map As”, proceed to Step 7.

If using “Load Map”, skip to Step 9.

If using “Import Map”, skip to Step 11.

See Figure 29.



Figure 29. Generate Map Screen

Key 1 – Save Map Key 2 – Save Map As Key 3 – Save Data File
Key 4 – Undo Changes Key 5 – Clear Harvest Data
Key 6 – Load Map Key 7 – Input Map

8. Create a new map from scratch.
 - A. Select “Save Map As”
 - B. Select Directory to save the map to.
 - C. The default directory is in the OneDrive in the “Maps” folder.
 - i. All maps are kept in one location for all sites.
 - D. Enter a map name that represents the field to be harvested.
 - i. Avoid the use of special characters.
 - ii. Try to avoid spaces. Use “underscore” for spaces if needed.
 - E. Press Save. Reference Figure 30. Skip to Step 10.

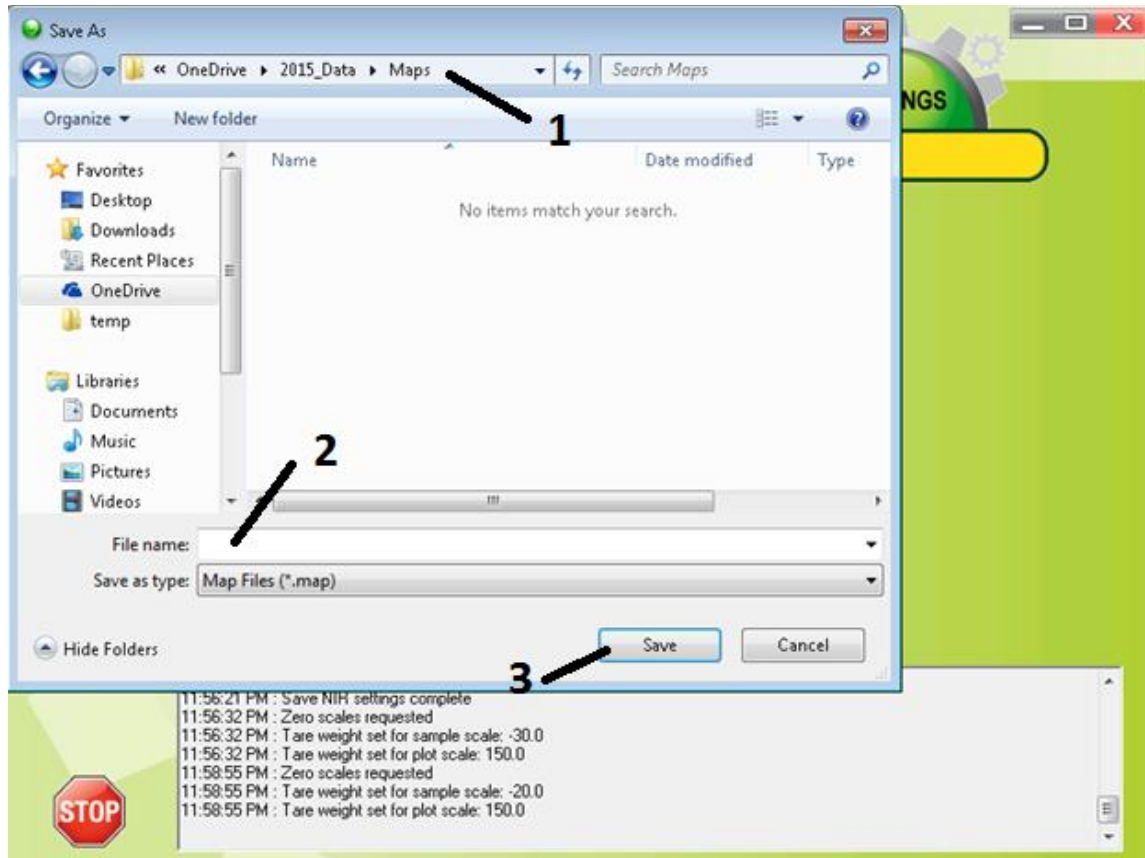


Figure 30. Save Map As

Key 1- Default Directory for all maps

Key 2 – Map Name (Field Name)

Key 3 – Save

9. Load Existing Map.
 - A. If a map exists from a previous setup, select “Load Map.”
 - B. A window will appear to “Open File”
 - C. Select the map desired.
 - D. Select “Open”

Reference Figure 31. Skip to Step 10.

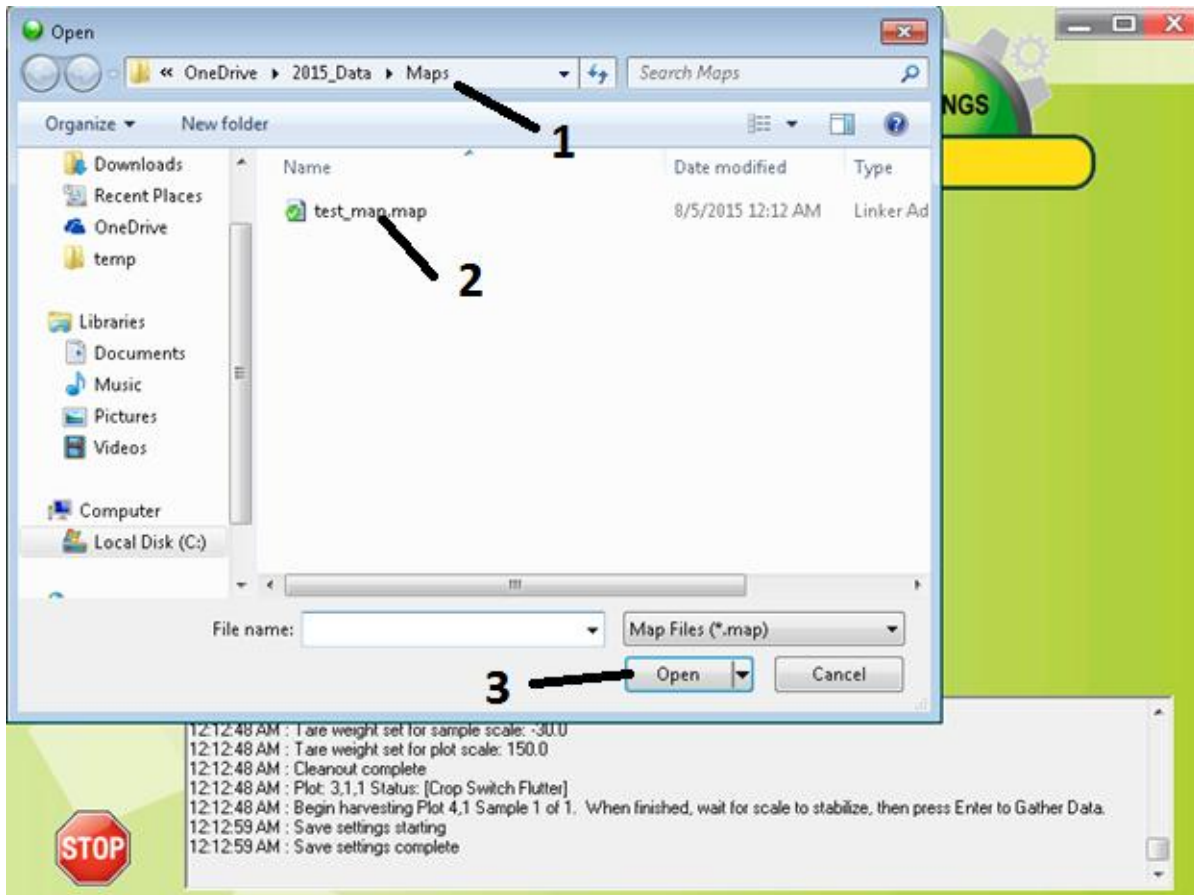


Figure 31. Load Map

Key 1 – Default Map Location Key 2 – Select Map File Key 3 – Open Button

10. Import Map

- A. To import a map, select “Import Map”
- B. A window will appear to “Import Map”
- C. Locate the map file (CSV) to import. See Figure 32.
- D. Select “Open”
- E. A dialog box will appear. Match the fields of the imported map to the fields of PlotPro.
- F. Press OK. See Figure 33.

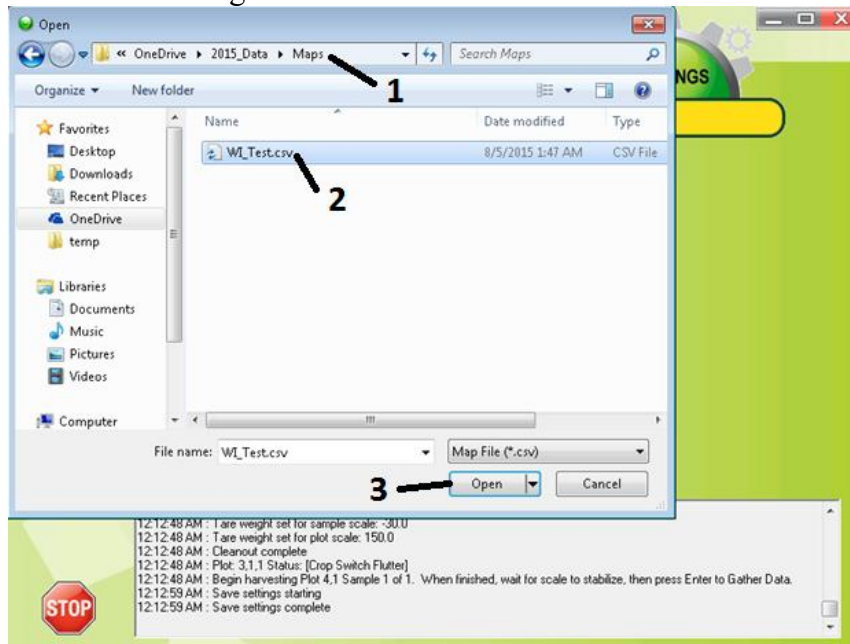


Figure 32. Import Map Function

Key 1 – Default Map Location Key 2 – Map Name Key 3 – Open Button

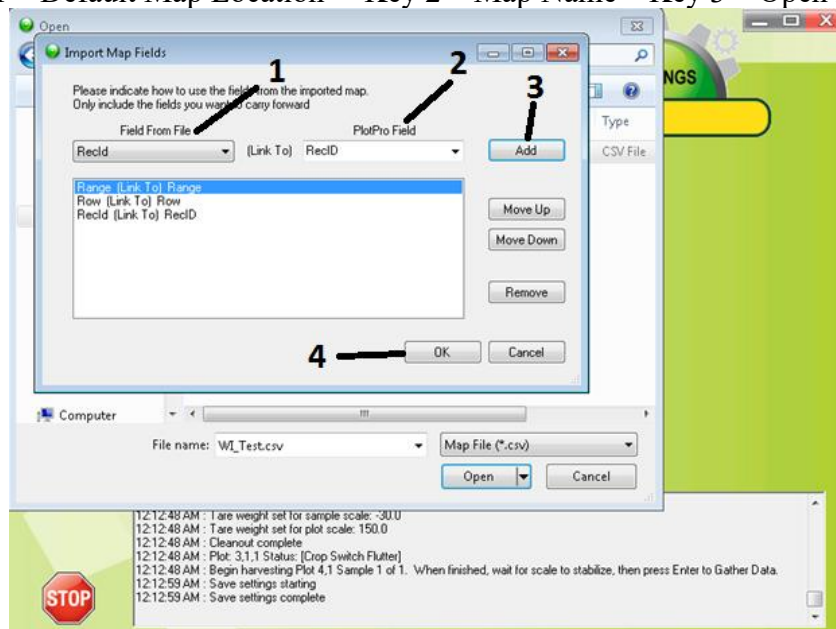


Figure 33. Import Map Function

Key 1 – Field From File Key 2 – PlotPro Field Key 3 – Add Key 4 – OK Button

11. The system will return to the “Generate Map” Screen.
 - A. The “Active Map Name” box will populate.
 - B. The “Plots Harvested” box will indicate 0 for a new map. For maps that were previously used, this box will indicate how many plots have already been harvested. See Key 2 of Figure 34.
 - C. Total Plots are displayed.
 - D. Select a “Start Direction.” See Key 4, Figure 34.
 - E. Select a “First Turn”. See Key 5, Figure 34.
 - F. Select a start Range and Number. See Key 6, Figure 34. For imported maps, these values are pre-filled.
 - G. Select a start Row and Number. See Key 7, Figure 34. For imported maps, these values are pre-filled.
 - H. “Samples Per Plot” will default to 1. Only change this value if using multiple samples in the same plot.
 - I. Select “Pattern”. See Key 9, Figure 34.
 - J. When completed, select “Save Map.” See Key 10, Figure 34.
 - K. Press the blue arrow at the left to return to the MAP Screen.

RCI PLOTPRO™

HOME MAP SETTINGS

Ready To Harvest

Generate Map ←

1 Active Map Name: RCItesting27Jul17

2 Plots Harvested: 0

3 Total Plots: 180

4 Start Direction: (↑) Up Row

5 First Turn: Right

Start	Number	Increment
6 Range: 1	15	1
7 Row: 1	12	1

8 Samples Per Plot: 1

9 Pattern: Serpentine

10 Save Map

Save Map As

Save Data File

Undo Changes

Clear Harvest Data

Load Map

Import Map

4:52:43 AM : NIR calibration read starting
 4:52:43 AM : Waiting for NIR calibration read
 4:52:47 AM : NIR calibration read complete
 4:58:12 AM : Active map changed to: RCItesting27Jul17
 4:58:12 AM : Next plot to harvest - Plot ID: 1,1 Prepare to harvest sample 1 of 1
 4:58:12 AM : Tare weight set for plot scale: 136.4
 4:58:12 AM : Next plot to harvest - Plot ID: 1,1 Prepare to harvest sample 1 of 1
 4:58:13 AM : Begin harvesting Plot 1,1 Sample 1 of 1. When finished, wait for scale to stabilize, then press Enter to Gather Data.

Figure 34. Generate Map Screen

- | | | |
|--------------------------|--------------------------|---------------------|
| Key 1 – Active Map Name | Key 2 – Plots Harvested | Key 3 – Total Plots |
| Key 4 – Start Direction | Key 5 – First Turn | Key 6 – Range Setup |
| Key 7 – Row Setup | Key 8 – Samples Per Plot | Key 9 – Pattern |
| Key 10 – Save Map Button | | |

12. Select Starting Plot

- A. Return to the MAP Screen.
- B. Click on the desired first plot.
- C. At the top of the map, select “Set Harvest Plot ID”
- D. Select “HOME” Shortcut at top of program to return to the HOME Screen.

Notes:

If any settings are not as desired, return to the “Generate Map” Screen and change settings as needed. Remember to save the map if any changes are made.

If the map is off by one row for arrows, either return to the “Generate Map” Screen and adjust settings, or select the desired starting plot and press “Change Map Start Plot” from the MAP Screen.

If plots are already harvested, they will be indicated with an amber color.

If it is desired to refresh the map and eliminate any harvested plots so they can be harvested again in the map, return to the “Generate Map” Screen and select “Clear Harvest Data.” This will have no impact on the output data of the system on OneDrive. This record of harvested plots in the map file is for reference only and is independent of collected data.

See Figure 35.

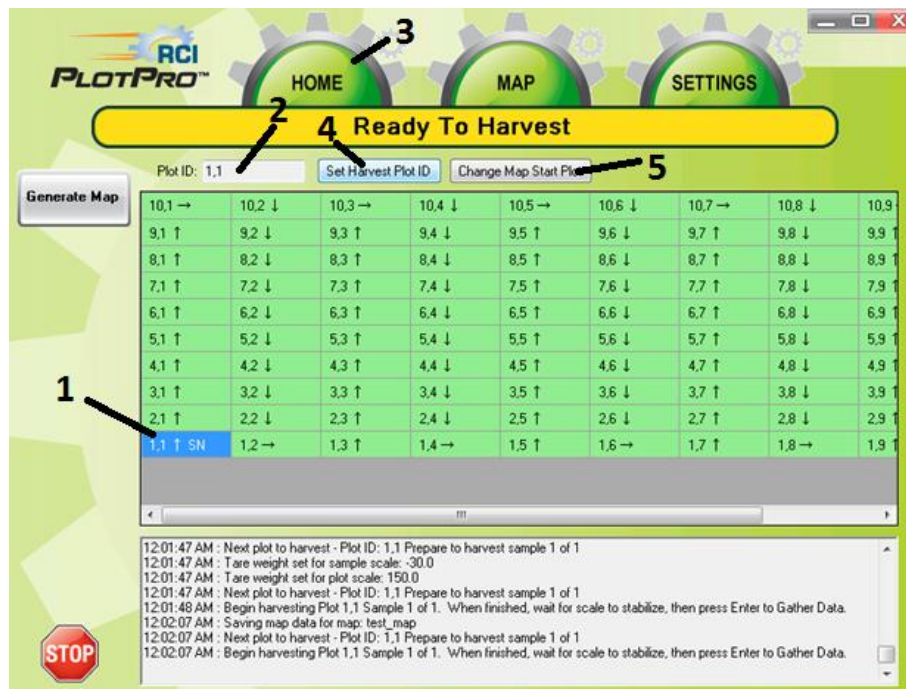


Figure 35. MAP Screen

Key 1 – Starting Plot Selection Key 2 – Plot ID Key 3 – Home Shortcut
Key 4 – Set Harvest Plot ID Key 5 – Change Map Start Plot

13. Return to the HOME Screen.

14. A timer will appear at the top of the home screen. This timer is to ensure that the NIR is powered on for at least 30 minutes before harvesting.

If the system has already been powered up for at least 30 minutes, the timer will not appear.

This warm-up period is critical for the function of the NIR. The NIR must reach an equilibrium temperature prior to harvesting.

If the machine has been operated recently and the NIR has been used in the last half hour and has been on for at least a half hour before that, the timer can be bypassed.

To bypass the timer, click the yellow bar at the top of the home screen as shown in Figure 36.

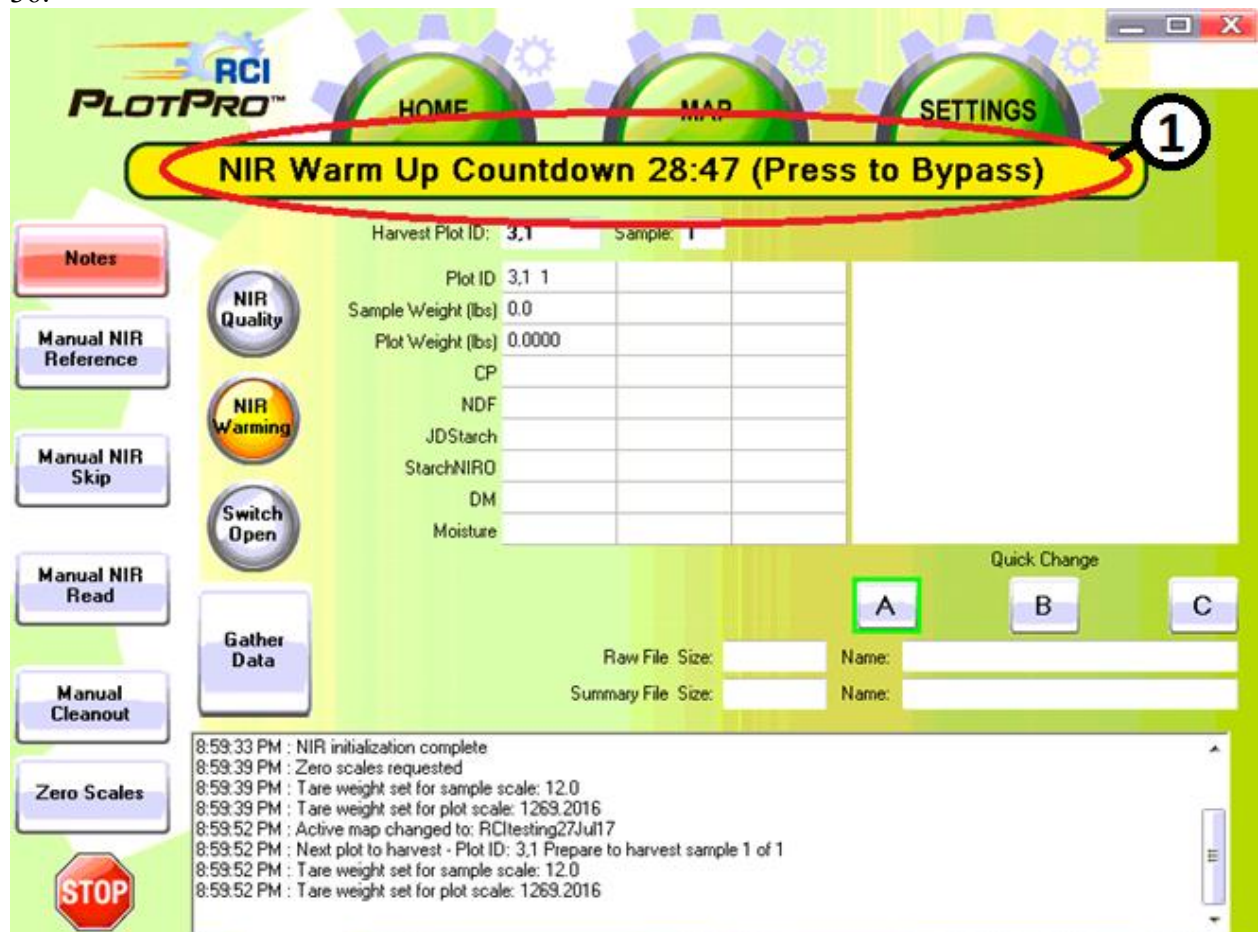


Figure 36. NIR Warming Indicator
Key 1 – Indicator Location

15. Set up HOME Screen for harvest.

- A. Select the “Operator” button.
- B. Add notes for operator as desired. This is not required. However, this information will be placed in the output file of the data for reference.
- C. See Figure 37. Press OK when complete.



Figure 37. Operator Notes (not required)

- D. If the timer for the NIR is complete, the system is ready to harvest and is indicated as such in the yellow bar at the top of the screen.
- E. NIR Notes for Startup
 - i. After the timer is completed, or when the bypass is selected, the NIR will cycle through a series of settings to detect the USB drive
 - ii. Wait for this sequence to complete. An indication of progress is presented in the message box at the bottom.

16. Ensure the scales have been reset to zero.

- A. If there is weight or negative weight on scales, verify if there is anything wrong with the scale or material on the scale.
- B. A manual cleanout can be performed. This will run the cleanout cycle on the system and re-tare the scales.

17. Start harvesting the first plot.

- A. The NIR switch should close and the Status indicator of the NIR will change from Green to Yellow. This indicates the NIR is in process.
 - i. If operating manually, press the “Manual NIR Read” Button
- B. Proceed to complete harvest of the first plot.
- C. The NIR will complete and populate the results in the chart.
- D. Wait for the scale to stabilize with all material on the belt.
- E. Accept the plot by pressing Enter or by pressing the “Gather Data” button on the screen.
- F. The system will cycle through a cleanout process and move the results one column to the right.
- G. Proceed to the next plot.

See Figure 38.

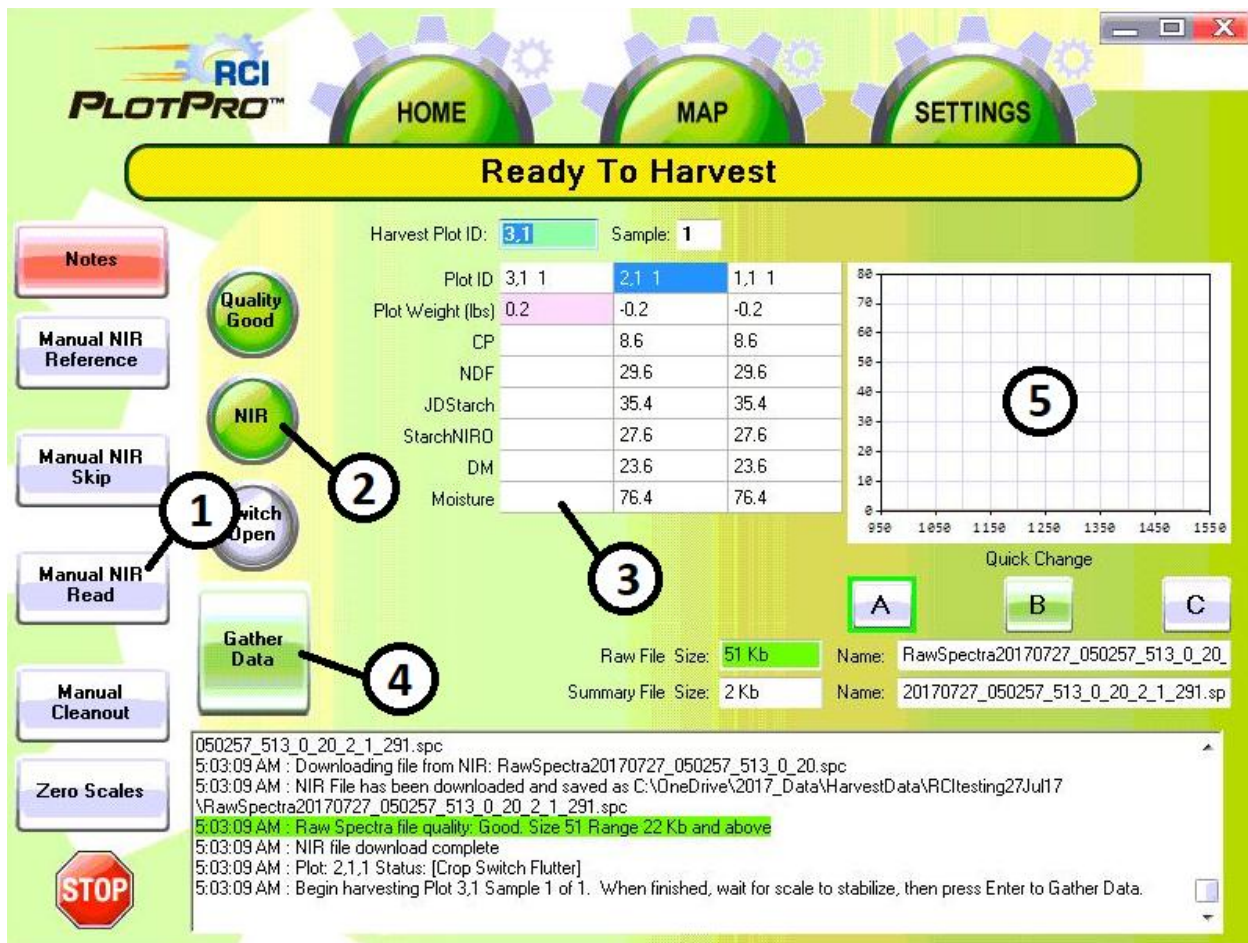


Figure 38. First Plot Harvest

Key 1 – Manual NIR Read

Key 2 – NIR Indicator (Green – standby; Yellow – In Process; Red – Error)

Key 3 – NIR Results and Weights

Key 4 – Gather Data Button

Key 5 – Spectra Graph

18. Harvest Second Plot

- A. Make sure the scales have been set to zero.
- B. Wait for Status Bar at top of screen to change to “Ready to Harvest”
- C. Harvest Second Plot

19. Proceed through Plots

- A. Only one Enter press is needed per plot.

20. Sample Collection

- A. If the Sample Indicator shows a Bad or Poor sample, collect a physical sample of the plot.
- B. Also check the curvature of the graph to make sure there are no issues with scan quality. See “General Notes” at the end of this manual. Address issues as described in this manual.
- C. If repetitive “Bad or Poor” samples are determined, inspect lens for cleanliness. Clean lens daily and after long breaks throughout the day.
- D. The quality of scan is determined by the file size of the spectra file produced by the NIR.
 - i. A filter is installed in the NIR to take out known bad scans
 - ii. When this happens, file size decreases.
 - iii. Default values are set to indicate scan quality based on number of good scans received.
 - iv. Green is Good. Yellow is OK. Orange is POOR. Red is BAD.
- E. See Figure 39.

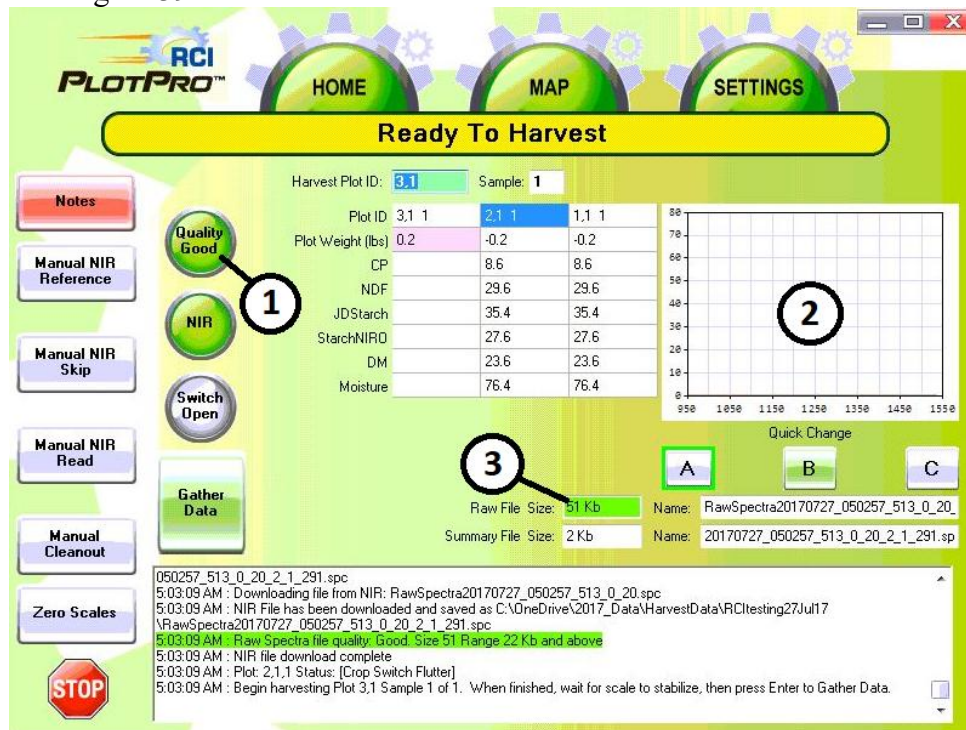


Figure 39. Scan Quality Indicators

Key 1- Button Indicator Key 2 – Graph Indicator
 Key 3 – File Size Indicator Key 4 – Operator Message in Log

21. Manual NIR Reference

- A. A manual reference is required for the NIR under the following circumstances.
 - i. Every 2 hours (a timer is built into PlotPro to remind the operator)
 - ii. Whenever ambient air temperature changes by more than 10 degrees.
- B. To perform a manual NIR reference, wait until a plot is completed and then press the “Manual NIR Reference” Button on the home screen.
- C. Wait for the system to cycle through the reference.
- D. “NIR Reference in Progress” will be displayed in the status bar during the process.
- E. “Ready to Harvest” will be displayed in the status bar when the process is complete.
- F. When complete, return to harvesting plots.
- G. See Figure 40.

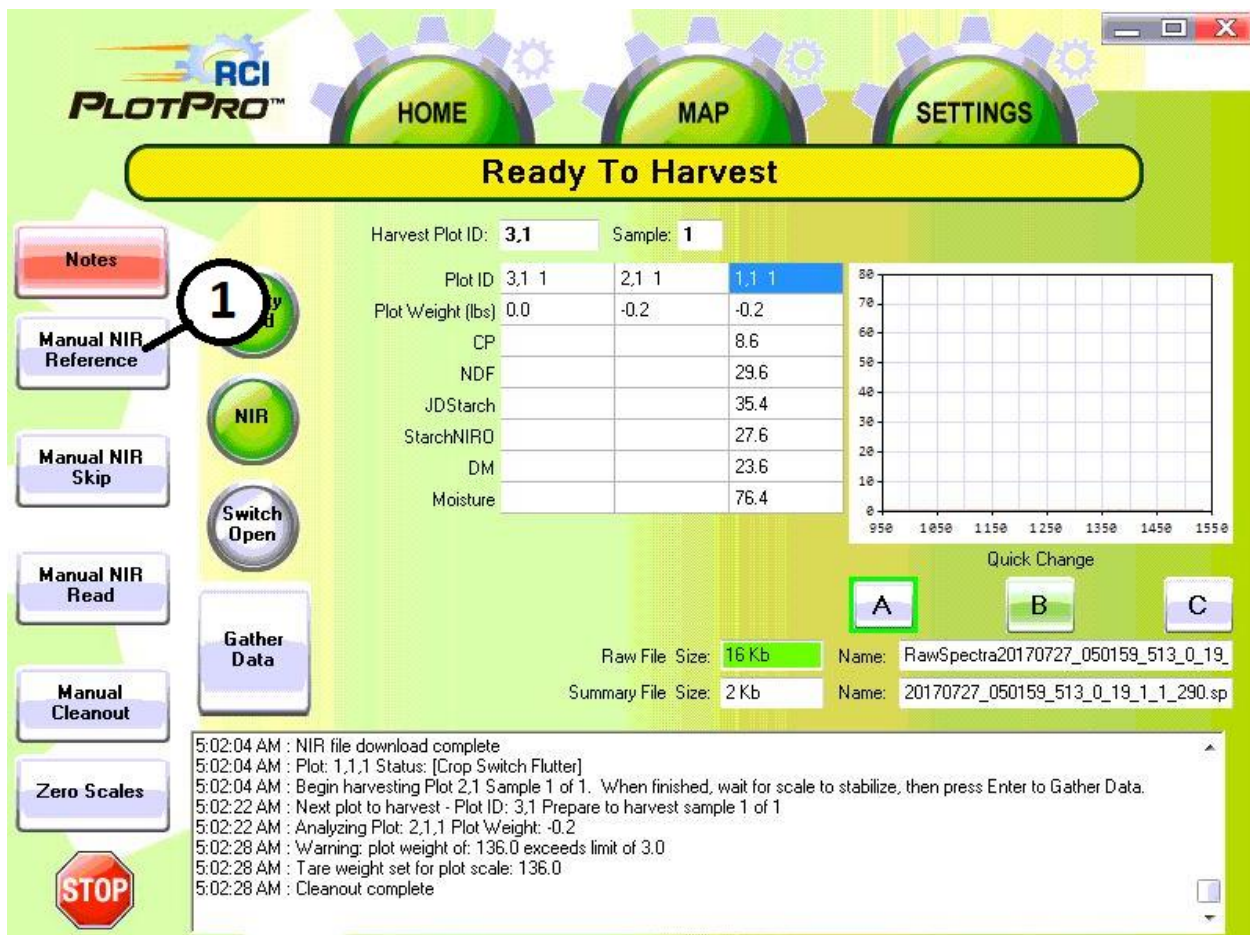


Figure 40. Manual NIR Reference
Key 1 – Manual NIR Reference Button

22. NIR Misses

- A. On occasion, NIR switches can miss during operation. Should this happen, there are a few options for the operator
 - i. Select the “Manual NIR Read” button on the HOME Screen to manually trigger the NIR read.
 - ii. If the plot is missed, select the “Manual NIR Skip” button on the HOME Screen.
 - 1. If this is chosen, the word SKIP will be placed in the results boxes for the scan.
 - 2. A physical sample must be collected for all NIR-skipped plots
- B. NAN
 - i. This is an error indicating that no spectra data was collected or that the NIR could not calculate a result from the scan. NAN means “Not a Number”.
 - 1. A physical sample must be collected for all plots producing NAN results
 - 2. The sample quality indicator will also be red (BAD) for these plots.

23. Closing the program.

- A. To close out the program, complete the last plot and simply close the program by selecting the red “X” at the top right corner of the program.
- B. No other work is needed.

24. Data Handling

- A. If using OneDrive, data is automatically uploaded by OneDrive to a central server when connected to the internet.
- B. To copy the data for other uses, use the shortcut on the desktop to the Data location. This is a backup location of the same data. DO NOT NAVIGATE TO THE ONEDRIVE FOLDER.
- C. Refer to “General Notes” section of this manual for more information.

25. Turning off the system.

- A. The system can be turned off at any time.
- B. Always remember to complete the last plot before closing the program to save the data.
- C. Always turn off the PlotPro Power Switch and wait at least one minute before turning the battery disconnect on the machine. This is to ensure that the NIR powers down properly.

John Deere HarvestLab NIR Sensor Notes

Data Quality

In the event that the results do not appear to be correct, the NIR can be validated to ensure it is working properly.

See the Validate NIR Sensor section in this manual for more information.

USB Thumb Drive

The NIR unit is equipped with a USB thumb drive for data storage.

There should be no need to work with the USB thumb drive, but should the need present itself, always follow these precautions:

1. Before opening the junction box of the NIR to access the USB drive, power down the system and disconnect the battery (after 1 minute of shutdown) or unplug the power connection to the junction box (after 1 minute of shutdown).
2. Take care in removing the thumb drive. Do not pull on the wires.
3. Seal the junction box properly when closing the cover.
4. Only replace the thumb drive with one sourced from RCI. The incorrect thumb drive can cause physical damage to the NIR sensor.

Transporting the Unit

When transporting the harvester, it is recommended that you remove the NIR. If the NIR is left on the machine for transport, inspect all locks on the device and connections prior to moving the machine.

Rain

It is recommended that if the ethernet casing is not installed on the ethernet cable of the machine to the junction box that the NIR be removed whenever moisture is present. Replacement ethernet casings are available from RCI spare parts.

Internal Server

The John Deere HarvestLab NIR unit is equipped with an internal web server that displays the results collected by the device.

From the start menu or taskbar, select INTERNET EXPLORER.

INTERNET EXPLORER is configured to automatically load the web page 192.168.0.1 for the NIR upon startup. By default, this should be the first tab in internet explorer.

Verify the data in the constituent column matches the data recorded by PlotPro.

An “X” represents data that could not be calculated and will be recorded by PlotPro as NaN (Not a Number).

IMPORTANT: If “Manual NIR Skip” is pressed on the PlotPro Home screen, it will NOT populate the “X” or NaN values to the web page. In this event, the data from the last plot scanned is still presented in the top line of data. Do not be alarmed if a skip is not shown on the web page.

See Figure 41.

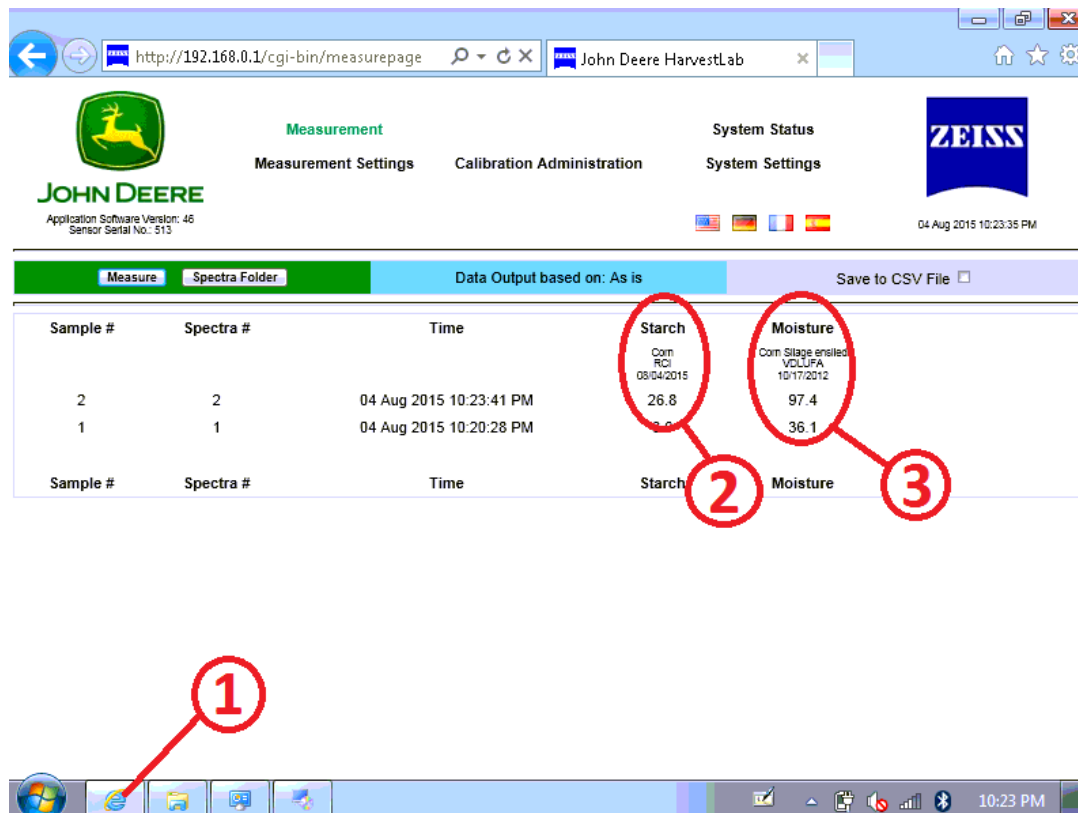


Figure 41. HarvestLab Homepage

Key 1 – Internet Explorer Start

Key 2 – First Constituent

Key 3 – Second Constituent

Spectra Acceptability

1. Spectra Graph Verification.

- a. At the beginning of each day and field, begin chopping a border plot to get a scan with PlotPro. You do not need to harvest the entire plot, just enough to produce a good scan. Cycle PlotPro to collect data. The scan will be displayed in PlotPro at the right side of the screen.
- b. The scan should look like the below picture. The scale on the left is a measurement of scan quality. Should start out higher than 20, be wavy, and drop lower as indicated in Figure 42.

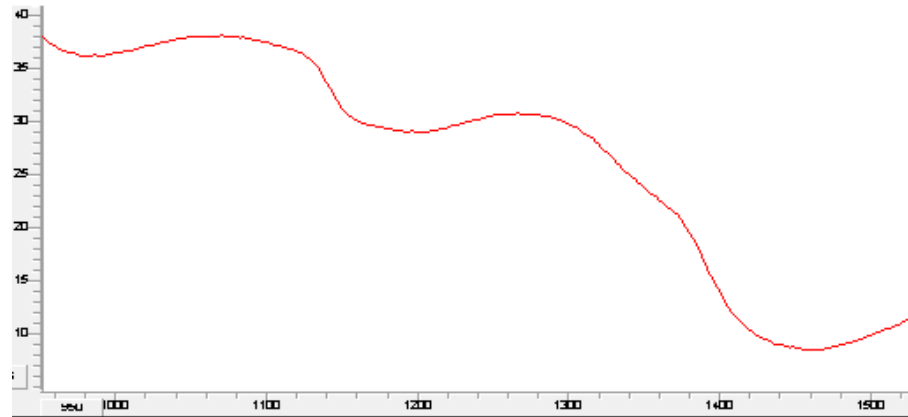


Figure 42. Good Quality Scan (One curve shown for clarity of shape)

- c. If your scan looks like below image in Figure 43, or if no scan is captured, then adjustments need to be made to the NIR and the three set screws that control the NIR's position or the timer for the NIR to start in the plot. See the following pages. Reference the Adjustments section of this manual for the timer adjustment. For NIR position adjustment, start with small adjustments, lower the top of the NIR deeper into the chute to make greater lens contact with the silage. The front of the lens should be flush or indented the width of a dime into the chute. The rear of the lens should be indented approximately .040" (1mm) further into the chute than the leading edge. See next section for more information.

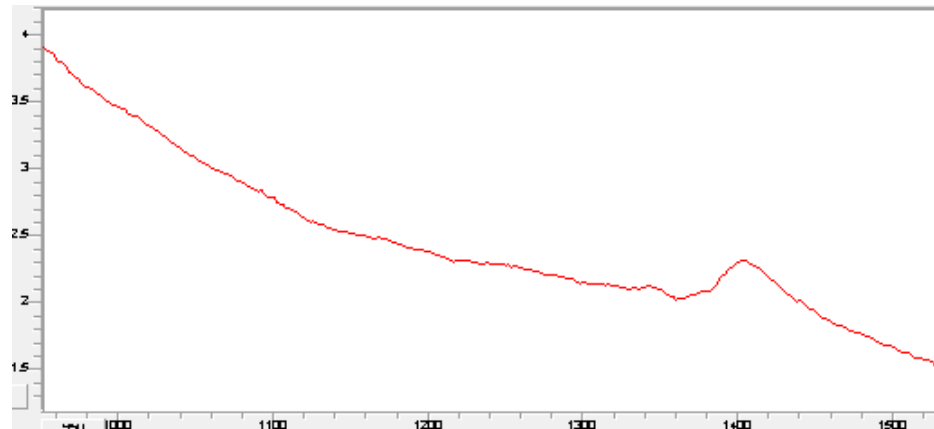


Figure 43. Bad Quality Scan (or no scan at all)

- d. After adjustments are made harvest another plot to get a new scan. Follow the harvest procedure and at the end of the plot review the scan captured. Continue to make adjustments and check the spectra until your spectra has the good curvature and results.
- e. Grams Viewer may also be used to view the spectra. If using Grams, always use the files located in C:/Data. NEVER open files in the OneDrive directory.

Lens Alignment – Critical

The lens of the NIR must be aligned properly for good scans. Use the following steps to ensure proper NIR alignment.

NIR Installation

1. Connect the NIR to the mount plate of the spout using the appropriate hardware provided. Do not tighten the hardware completely. Only tighten the hardware such that the threads pass through the nylon portion of the lock nut. See Figure 44.
2. Use the stop bolts to adjust the position of the NIR. Once the bolts are set for the season, they should not require regular adjustment. However, it is important to check the NIR lens alignment inside the spout before each trial. See Figure 44.

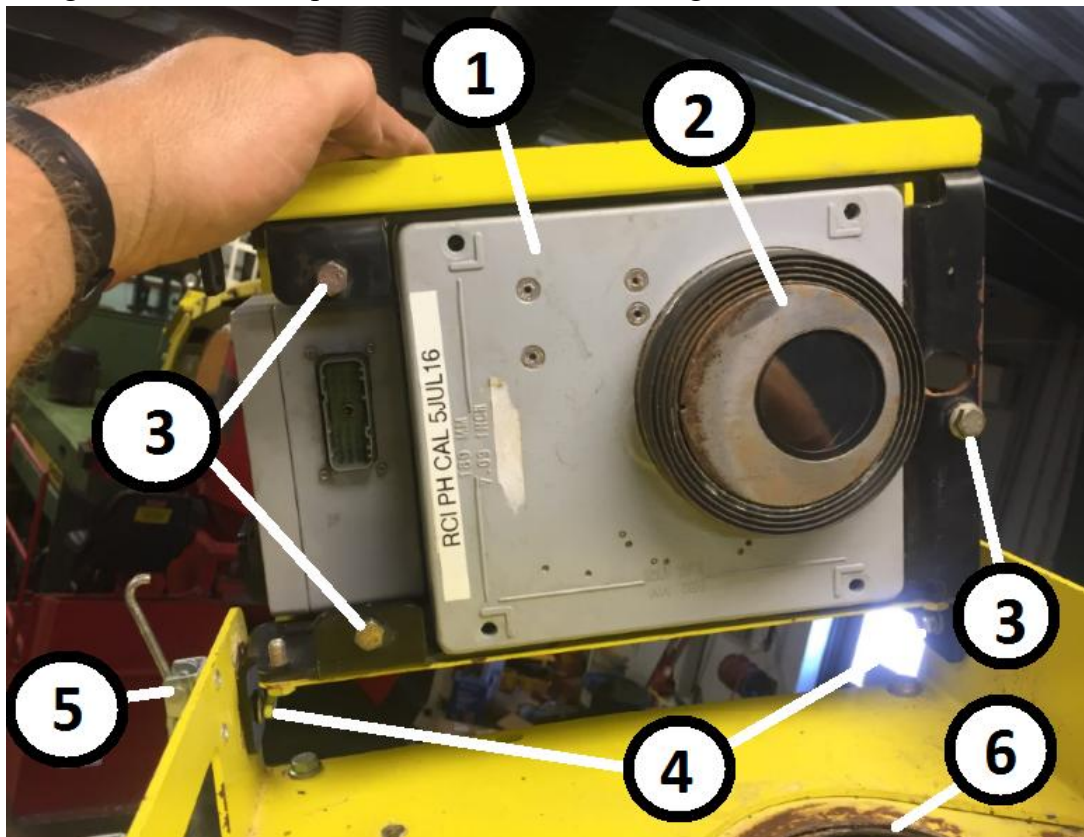


Figure 44. NIR Mounting

Key 1 – NIR Key 2 – Lens Key 3 – Stop Bolts (3)
Key 4 – Pivot Bolts Key 5 – Latches (3) Key 6 – NIR Hole

3. Once installed, the lens must be approximately flush at the leading edge of crop flow and set into the spout about .040" (1mm) at the trailing end of crop flow. See Figure 45. Adjust as necessary. Close any access panels after service. Remember to inspect lens position and cleanliness at the start of any trials and periodically throughout the day. In dry crop conditions, the lens may not stay wet enough to clean itself with crop flow, so lens cleaning is more important.

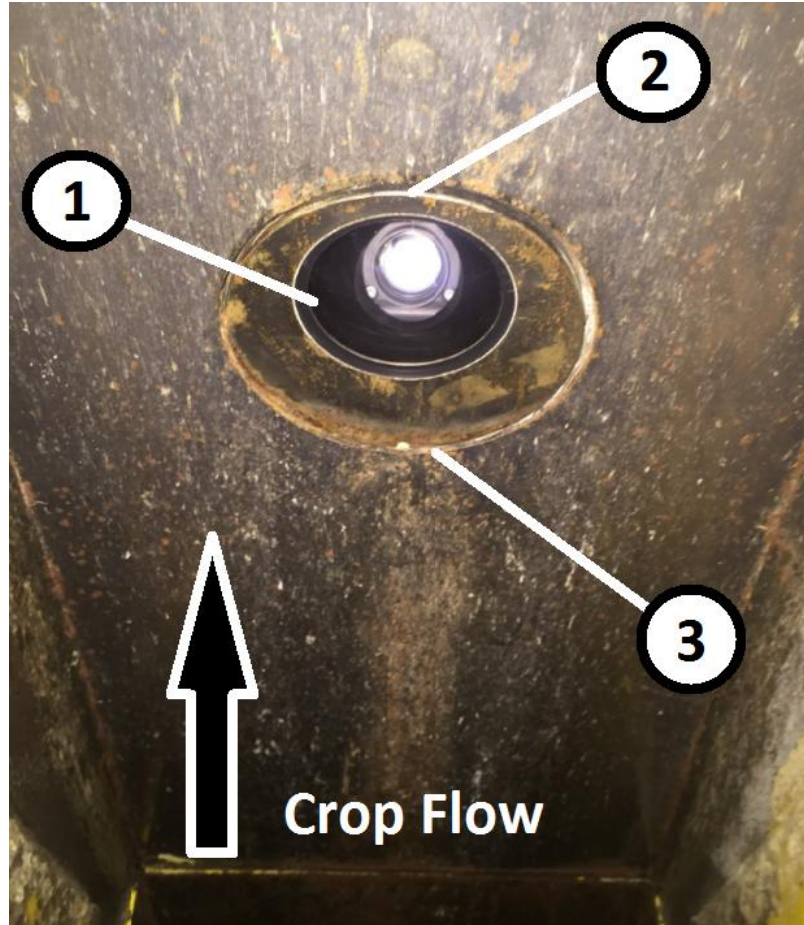


Figure 45. Lens Alignment
Key 1 – Lens (ref) Key 2 – Trailing Edge (flush)
Key 3 – Leading Edge (flush)

PlotPro Operation (Without NIR)

Program Startup

To start PlotPro, double click the “RCI PlotPro” icon on the desktop. See Figure 46.

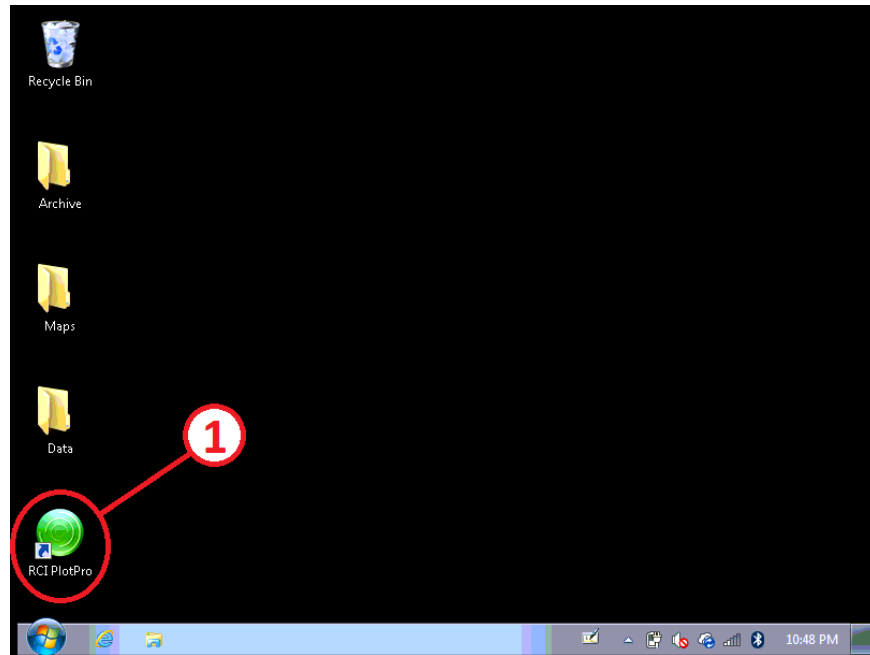


Figure 46. PlotPro Startup
Key 1 – PlotPro Startup Shortcut

When starting PlotPro, maximize the window to fill the entire screen. The screen resolution of Windows can be lowered to 800 x 600 to maximize the area of the screen for PlotPro to display.

Screen Layout

There are three primary screens used in PlotPro. Each screen is accessible at any time by selecting the links at the top of the program with the stylus or cursor.

The HOME screen is used for data gathering and also displays all important information when harvesting.

The MAP screen is used for map preparation and review.

The Settings screen is used for software setup and configuration.

See Figures 47 through 50.

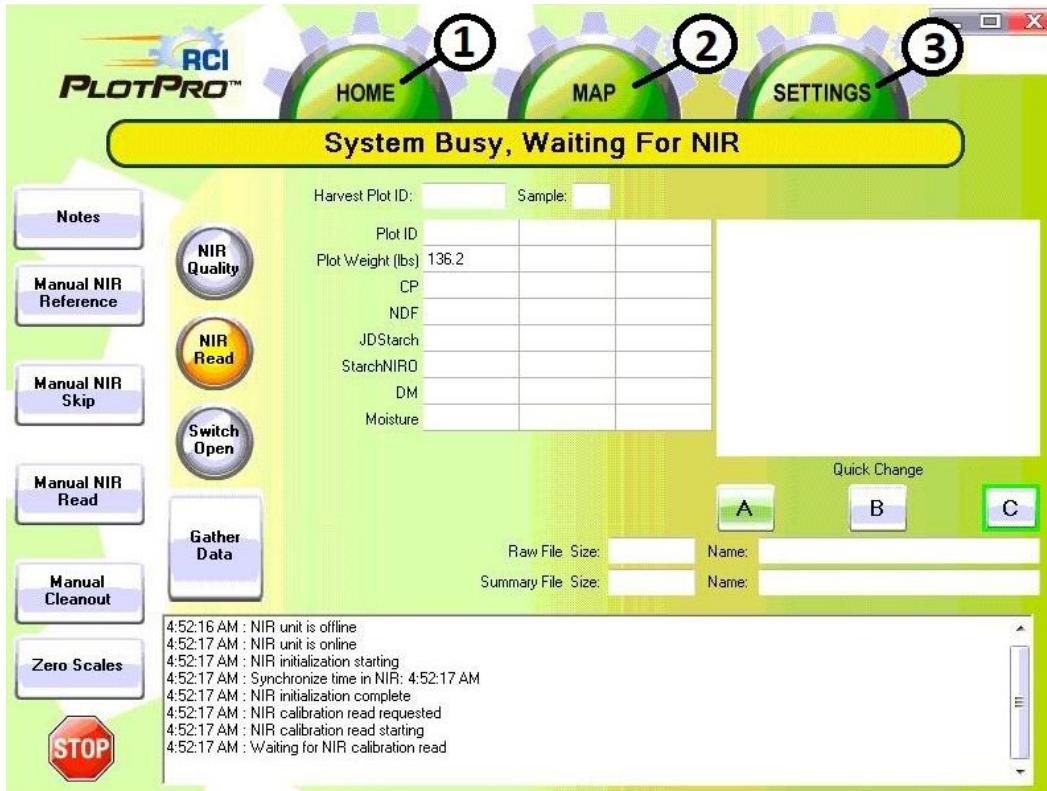


Figure 47. Home Screen, Screen Layout

Key 1 – Home Shortcut

Key 2 – Map Shortcut

Key 3 – Settings Shortcut



Figure 48. Map Screen

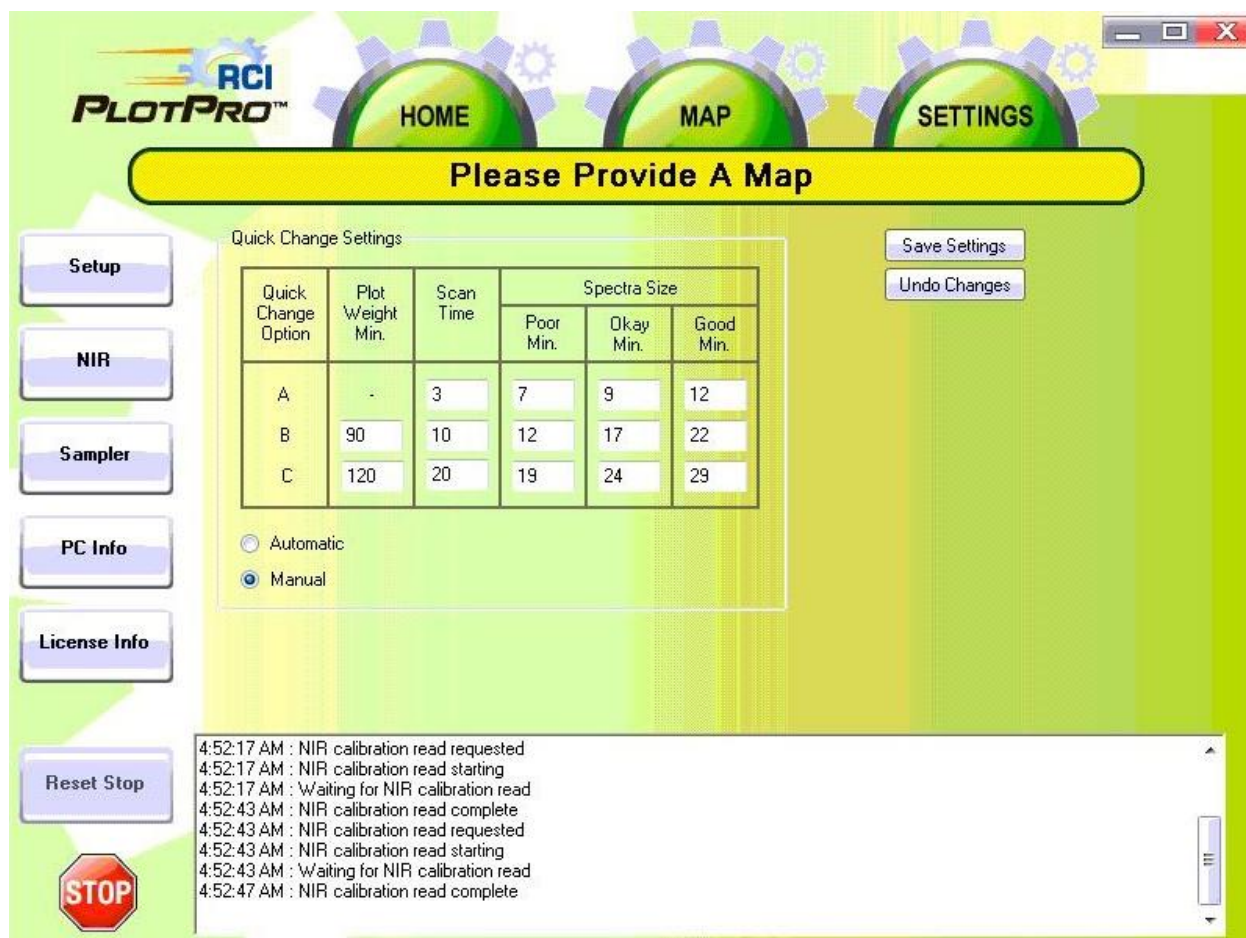


Figure 49. Settings Screen

To return to the HOME screen, select the shortcut at the top.

Home Screen Layout

This is the primary screen used when harvesting and collecting data. In general, controls are on the left of the screen. System status indicators are present next to the setup information. Results are displayed at the right. See Figure 40.

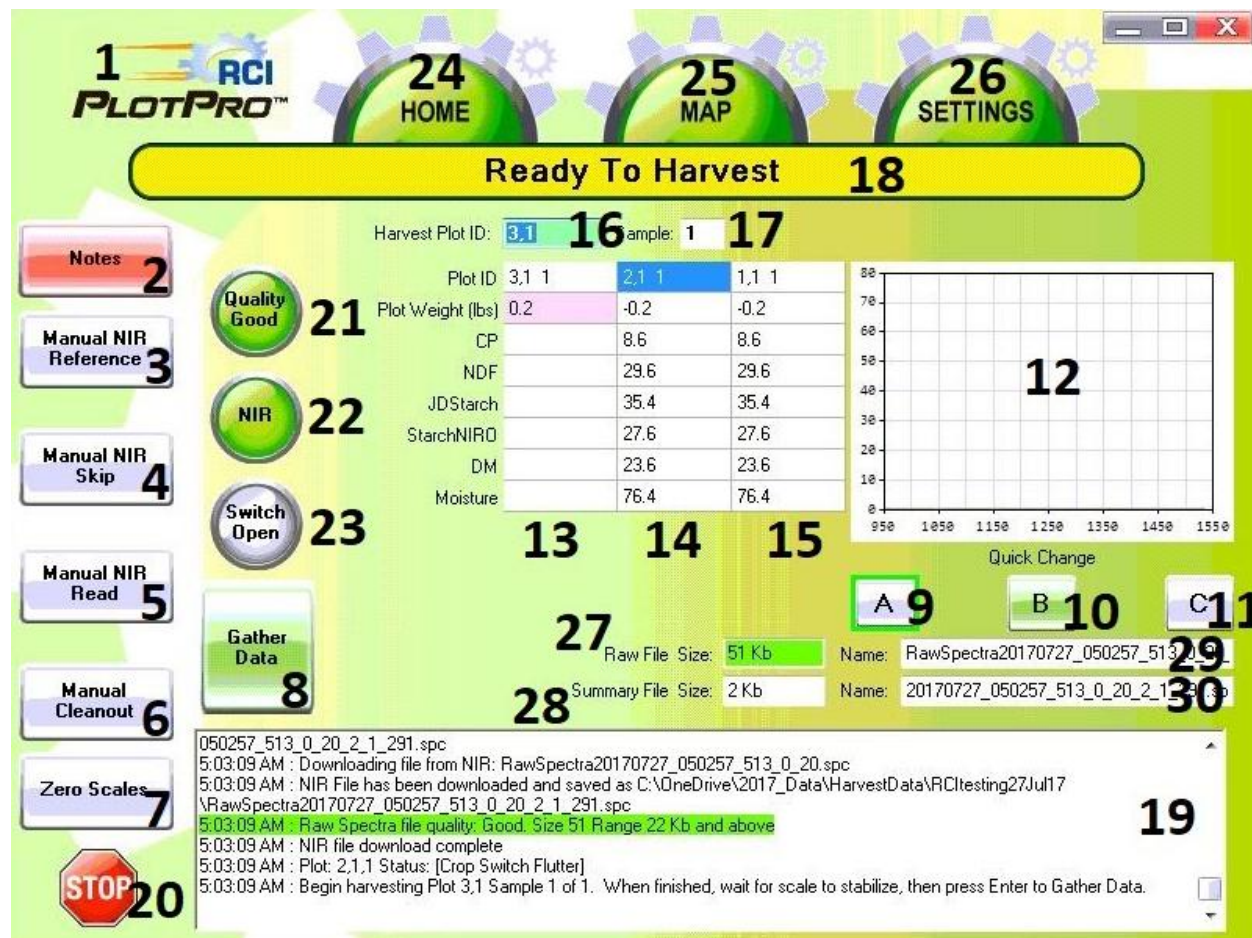


Figure 50. Home Screen Identification

- | | | |
|-----------------------------|-----------------------------|---|
| Key 1 – Contact Info | Key 2 – Notes | Key 3 – Manual NIR Reference |
| Key 4 – Manual NIR Skip | Key 5 – Manual NIR Read | Key 6 – Manual Cleanout |
| Key 7 – Zero Scales | Key 8 – Gather Data | Key 9 – Quick Change A |
| Key 10 – Quick Change B | Key 11 – Quick Change C | Key 12 – Spectra Chart |
| Key 13 – Current Plot Data | Key 14 – Previous Plot Data | Key 15 – 2 nd Previous Plot Data |
| Key 16 – Current Harvest ID | Key 17 – Sample Number | Key 18 – Status Bar |
| Key 19 – Message Window | Key 20 – STOP Button | Key 21 – Quality Indicator |
| Key 22 – NIR Status | Key 23 – Switch Status | Key 24 – Home Shortcut |
| Key 25 – Map Shortcut | Key 26 – Settings Shortcut | Key 27 – Raw Spectra File Size |
| Key 28 – Summary File Size | Key 29 – Raw File Name | Key 30 – Summary File Name |

System Adjustments and Setup (without NIR)

Settings Screen

In general, the system settings should not need to be adjusted on a regular basis. Once the unit is set up properly, settings should only be changed if an NIR unit is changed.

When the *Settings* page is selected, the following is displayed. See Figure 51.

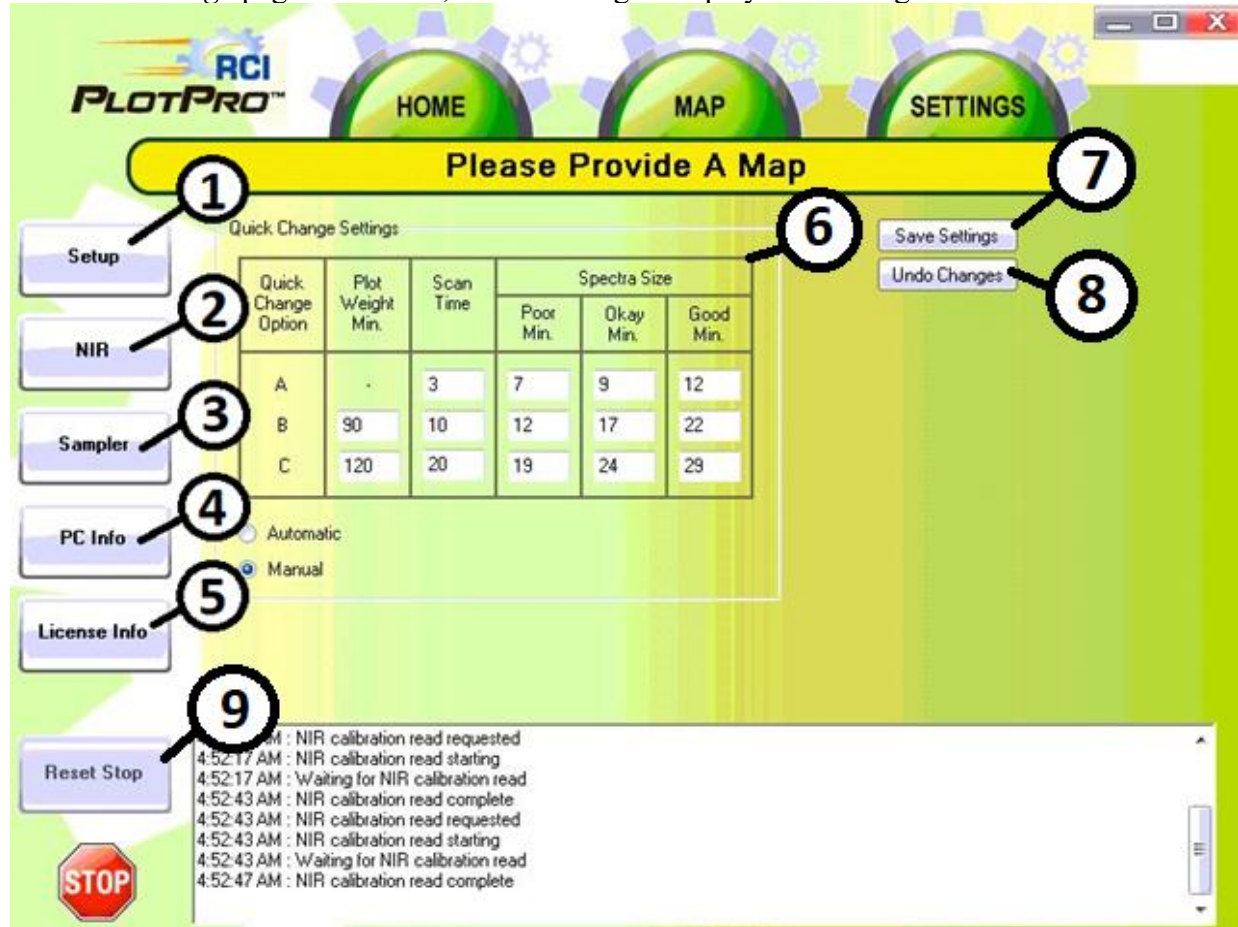


Figure 51. Settings Screen

- | | | |
|--------------------------|-------------------------------|-------------------------------|
| Key 1 – Setup Shortcut | Key 2 – NIR Shortcut | Key 3 – Sampler Shortcut |
| Key 4 – PC Info Shortcut | Key 5 – License Info Shortcut | Key 6 – Quick Change Settings |
| Key 7 – Save Settings | Key 8 – Undo Changes | Key 9 – Reset Stop Button |

Press *Setup* to advance to the Setup page for general system settings.

Press *NIR* to advance to the NIR Settings page.

Press *Sampler* to advance to the Sampler Settings page.

Press *PC Info* and *License Info* to advance to the PC Information Page and License Info page, respectively.

Setup Settings

Press the *Setup* button on the *Settings* page to access the screen shown in Figure 52.

Figure 52. System Settings Page

Key 1 – Settings Shortcut (return) Key 2 – Back Arrow Key 3 – Primary File Directory
 Key 4 – Backup File Directory Key 5 – Save Settings Key 6 – Undo Changes
 Key 7 – Display for Home Tab Key 8 – Sample Scale Installed

IMPORTANT: Do not change any values on this page. Contact RCI for assistance if needed.

Key 3 - File Directory – the last four digits of the station name should be placed here. This file location is in the OneDrive location (if used). Do not change this location. Always verify this location at initial setup to ensure that the unit and tablet is on the correct machine.

Key 4 - Directory for Files – This is a backup location of all data collected for the operator to use for review or copying. Do not access the primary file directory if using OneDrive. A shortcut is placed on the desktop to this location for ease of access. Do not change this location.

IMPORTANT:

When changing any settings, press Key 5, *Save Settings* to record the value to memory. To undo or discard any changes made prior to saving, press Key 6, *Undo Changes*.

Harvesting Operations (without NIR)

The following is a guide to daily operation of PlotPro for collecting data.

1. Start Engine. Follow guidelines in Operator Manual for the Harvesting Unit.
2. Start PlotPro System with rocker switch.
3. Start computer and PlotPro program.

Note: It does not matter at this point if the sampler is running or not. The software can be started at any time, with any machine status as long as the PlotPro system has power.

The PlotPro switch panel receives power only when the ignition of the harvester is on.

4. Select MAP shortcut at top of screen.
5. On the MAP Screen, select “Generate Map” as shown in Figure 53.



Figure 53. MAP Screen
Key 1 – Generate Map Button

6. On the “Generate Map Screen”, select one of three options as shown in Figure 54.
 - a. Save Map As
 - b. Load Map
 - c. Import Map

“Save Map As” is used to create a new map from scratch.

“Load Map” is used to reload an existing map.

“Import Map” is used to import a CSV file from another program.

If using “Save Map As”, proceed to Step 7.

If using “Load Map”, skip to Step 9.

If using “Import Map”, skip to Step 11.

See Figure 44.

IMPORTANT: Do not attempt to type in a map name on the screen. The map must be saved first before any editing can occur. The map name will populate with the file name once the map is saved.

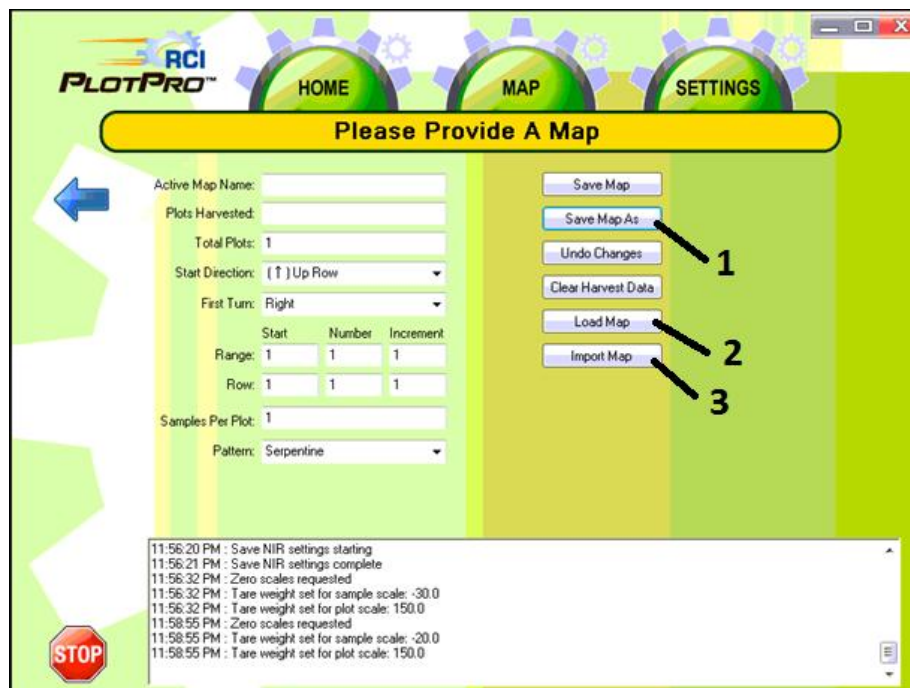


Figure 54. Generate Map Screen
Key 1 – Save Map As
Key 2 – Load Map
Key 3 – Import Map

7. Create a new map from scratch.
 - a. Select “Save Map As”
 - b. Select Directory to save the map to.
 - c. The default directory is in the OneDrive in the “Maps” folder.
 - i. All maps are kept in one location for all sites.
 - d. Enter a map name that represents the field to be harvested.
 - i. Avoid the use of special characters.
 - ii. Try to avoid spaces. Use “underscore” for spaces if needed.
 - e. Press Save. Reference Figure 55. Skip to Step 10.

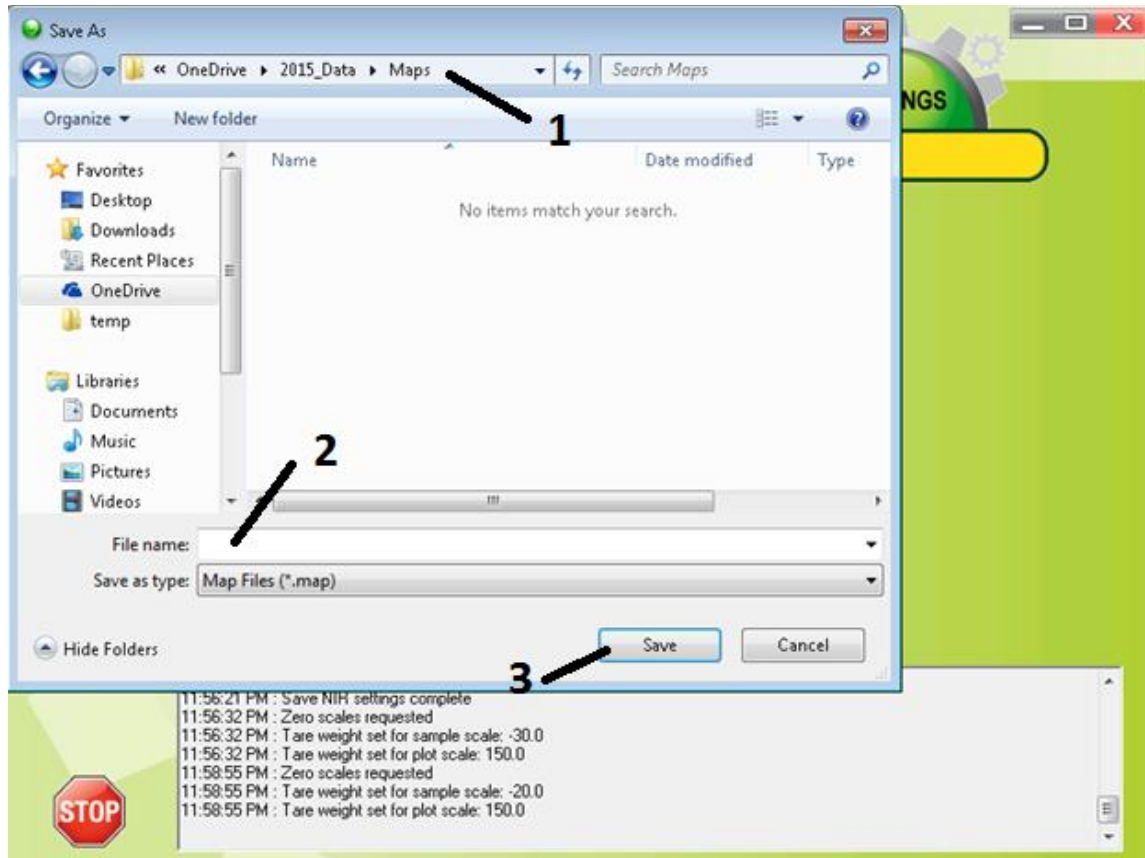


Figure 55. Save Map As

Key 1- Default Directory for all maps

Key 2 – Map Name (Field Name)

Key 3 – Save

8. Load Existing Map.
 - a. If a map exists from a previous setup, select “Load Map.”
 - b. A window will appear to “Open File”
 - c. Select the map desired.
 - d. Select “Open”

Reference Figure 56. Skip to Step 10.

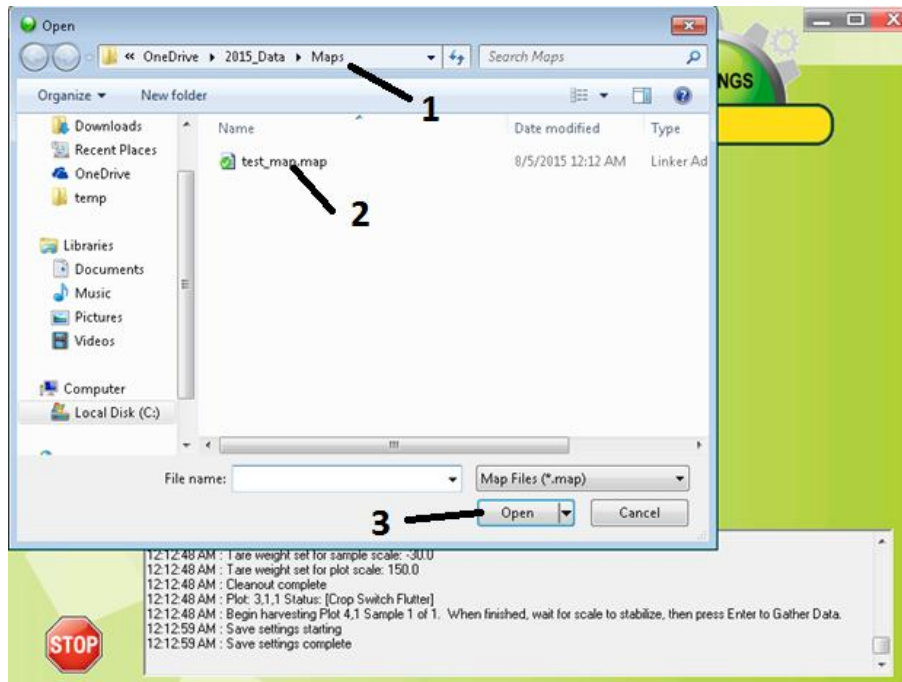


Figure 56. Load Map

Key 1 – Default Map Location Key 2 – Select Map File Key 3 – Open Button

9. Import Map
 - a. To import a map, select “Import Map”
 - b. A window will appear to “Import Map”
 - c. Locate the map file (CSV) to import. See Figure 57.
 - d. Select “Open”
 - e. A dialog box will appear. Match the fields of the imported map to the fields of PlotPro.
 - f. Press OK. See Figure 58.

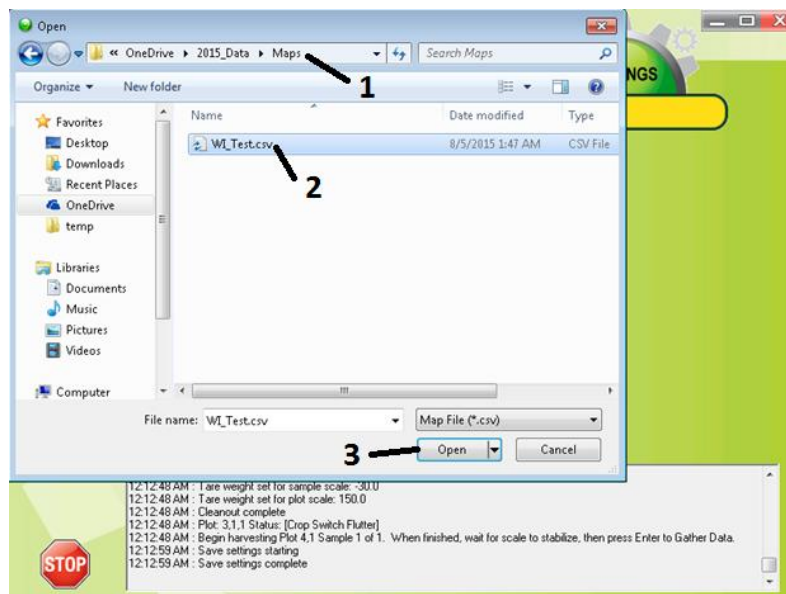


Figure 57. Import Map Function

Key 1 – Default Map Location Key 2 – Map Name Key 3 – Open Button

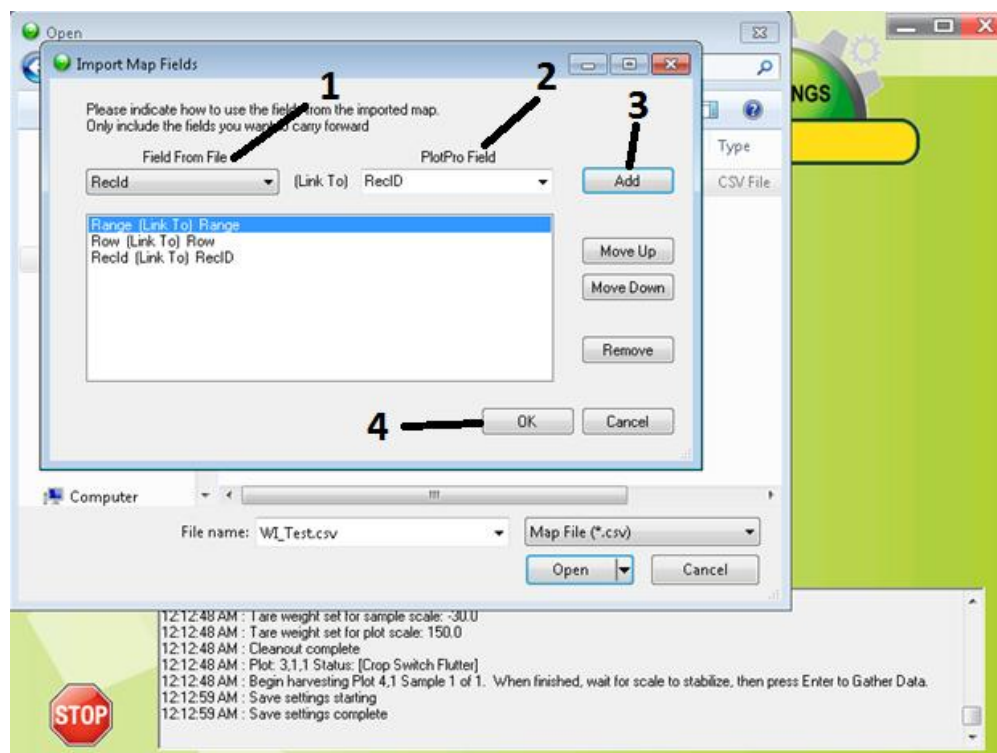


Figure 58. Import Map Function

Key 1 – Field From File Key 2 – PlotPro Field
Key 3 – Add Key 4 – OK Button

10. The system will return to the “Generate Map” Screen.
 - a. The “Active Map Name” box will populate.
 - b. The “Plots Harvested” box will indicate 0 for a new map. For maps that were previously used, this box will indicate how many plots have already been harvested. See Key 2 of Figure 59.
 - c. Total Plots are displayed.
 - d. Select a “Start Direction.” See Key 4, Figure 59.
 - e. Select a “First Turn”. See Key 5, Figure 59.
 - f. Select a start Range and Number. See Key 6, Figure 59. For imported maps, these values are pre-filled.
 - g. Select a start Row and Number. See Key 7, Figure 59. For imported maps, these values are pre-filled.
 - h. “Samples Per Plot” will default to 1. Only change this value if using multiple samples in the same plot.
 - i. Select “Pattern”. See Key 9, Figure 59.
 - j. When completed, select “Save Map.” See Key 10, Figure 59.
 - k. Press the blue arrow at the left to return to the MAP Screen.

ACI PLOTPRO™

HOME MAP SETTINGS

Ready To Harvest

11 ←

Active Map Name: test_map **1**

Plots Harvested: 0 **2**

Total Plots: 100 **3**

Start Direction: (↑) Up Row **4**

First Turn: Right **5**

6 Range: 1 10 1

7 Row: 1 10 1

8 Samples Per Plot: 1

9 Pattern: Serpentine
Deadhead
Serpentine
Circular

Save Map **10**

Save Map As

Undo Changes

Clear Harvest Data

Load Map

Import Map

STOP

11:58:55 PM : Tare weight set for sample scale: -20.0
 11:58:55 PM : Tare weight set for plot scale: 150.0
 12:01:47 AM : Active map changed to: test_map
 12:01:47 AM : Next plot to harvest - Plot ID: 1,1 Prepare to harvest sample 1 of 1
 12:01:47 AM : Tare weight set for sample scale: -30.0
 12:01:47 AM : Tare weight set for plot scale: 150.0
 12:01:47 AM : Next plot to harvest - Plot ID: 1,1 Prepare to harvest sample 1 of 1
 12:01:48 AM : Begin harvesting Plot 1,1 Sample 1 of 1. When finished, wait for scale to stabilize, then press Enter to Gather Data.

Figure 59. Generate Map Screen

- Key 1 – Active Map Name Key 2 – Plots Harvested Key 3 – Total Plots
 Key 4 – Start Direction Key 5 – First Turn Key 6 – Range Setup
 Key 7 – Row Setup Key 8 – Samples Per Plot Key 9 – Pattern
 Key 10 – Save Map Button

11. Select Starting Plot

- Return to the MAP Screen.
- Click on the desired first plot.
- At the top of the map, select “Set Harvest Plot ID”
- Select “HOME” Shortcut at top of program to return to the HOME Screen.

Notes:

If any settings are not as desired, return to the “Generate Map” Screen and change settings as needed. Remember to save the map if any changes are made.

If the map is off by one row for arrows, either return to the “Generate Map” Screen and adjust settings, or select the desired starting plot and press “Change Map Start Plot” from the MAP Screen.

If plots are already harvested, they will be indicated with an amber color.

If it is desired to refresh the map and eliminate any harvested plots so they can be harvested again in the map, return to the “Generate Map” Screen and select “Clear Harvest Data.” This will have no impact on the output data of the system on OneDrive. This record of harvested plots in the map file is for reference only and is independent of collected data.

See Figure 60.

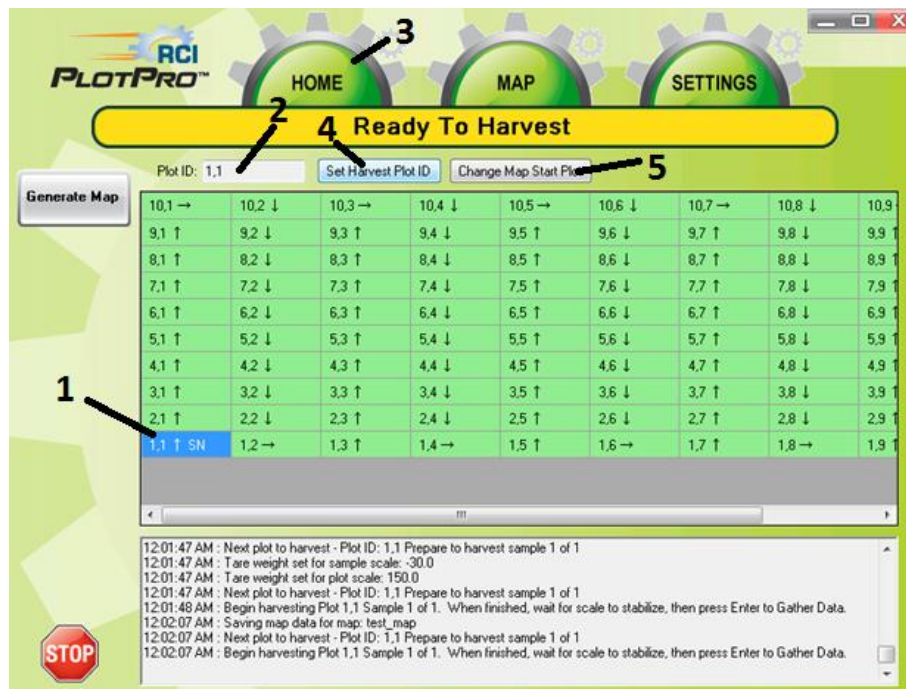


Figure 60. MAP Screen

Key 1 – Starting Plot Selection Key 2 – Plot ID Key 3 – Home Shortcut
Key 4 – Set Harvest Plot ID Key 5 – Change Map Start Plot

12. Return to the HOME Screen.

13. Set up HOME Screen for harvest.

- a. Select the “Operator” button.
- b. Add notes for operator as desired. This is not required. However, this information will be placed in the output file of the data for reference.
- c. See Figure 61. Press OK when complete.

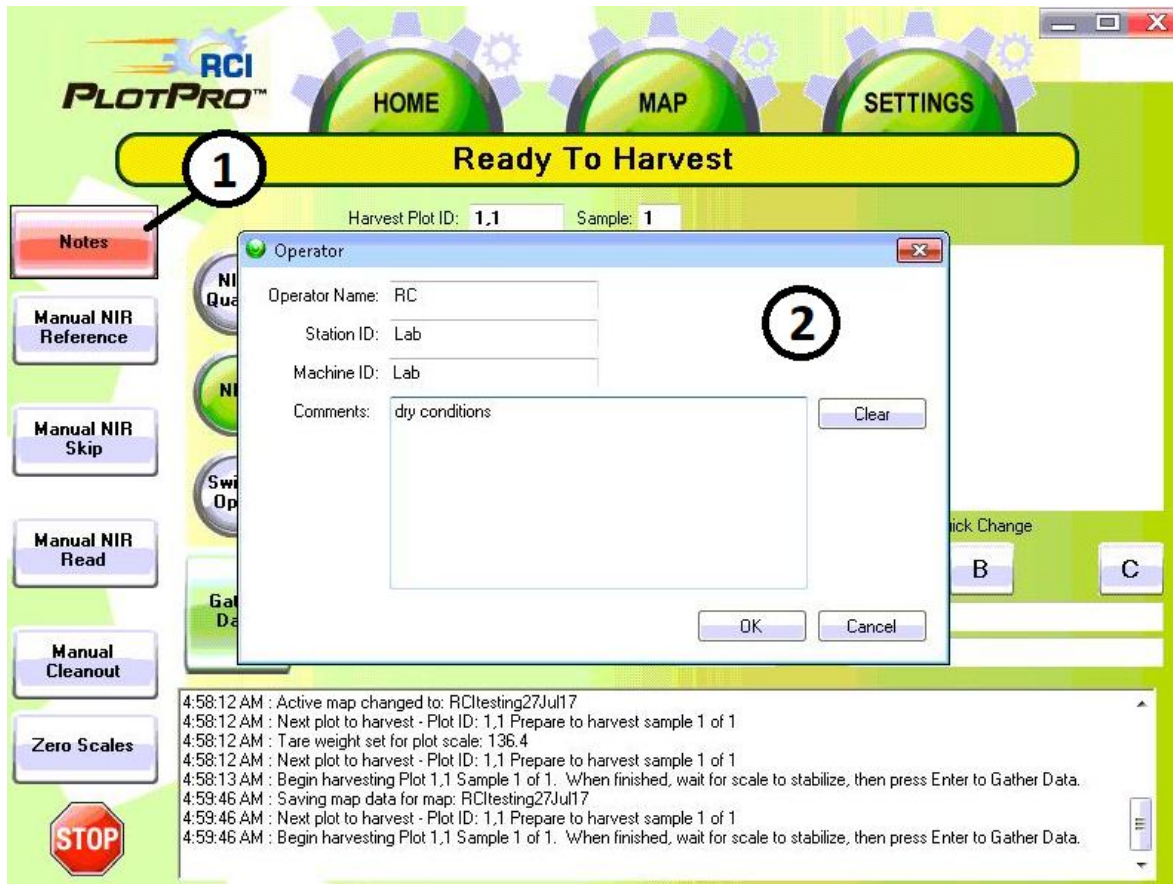


Figure 61. Operator Information Entering (not required)

14. Ensure the scales have been reset to zero.

- a. If there is weight or negative weight on scales, verify if there is anything wrong with the scale or material on the scale.
- b. A manual cleanout can be performed. This will run the cleanout cycle on the system and re-tare the scales.

15. Start harvesting the first plot.
 - a. Harvest the first plot.
 - b. Wait for the scale to stabilize with all material on the belt or in hopper.
 - c. Accept the plot by pressing Enter or by pressing the “Gather Data” button on the screen. (or program a foot switch to press “Enter”)
 - d. The system will cycle through a cleanout process and move the results one column to the right.
 - e. Proceed to the next plot.

See Figure 62.

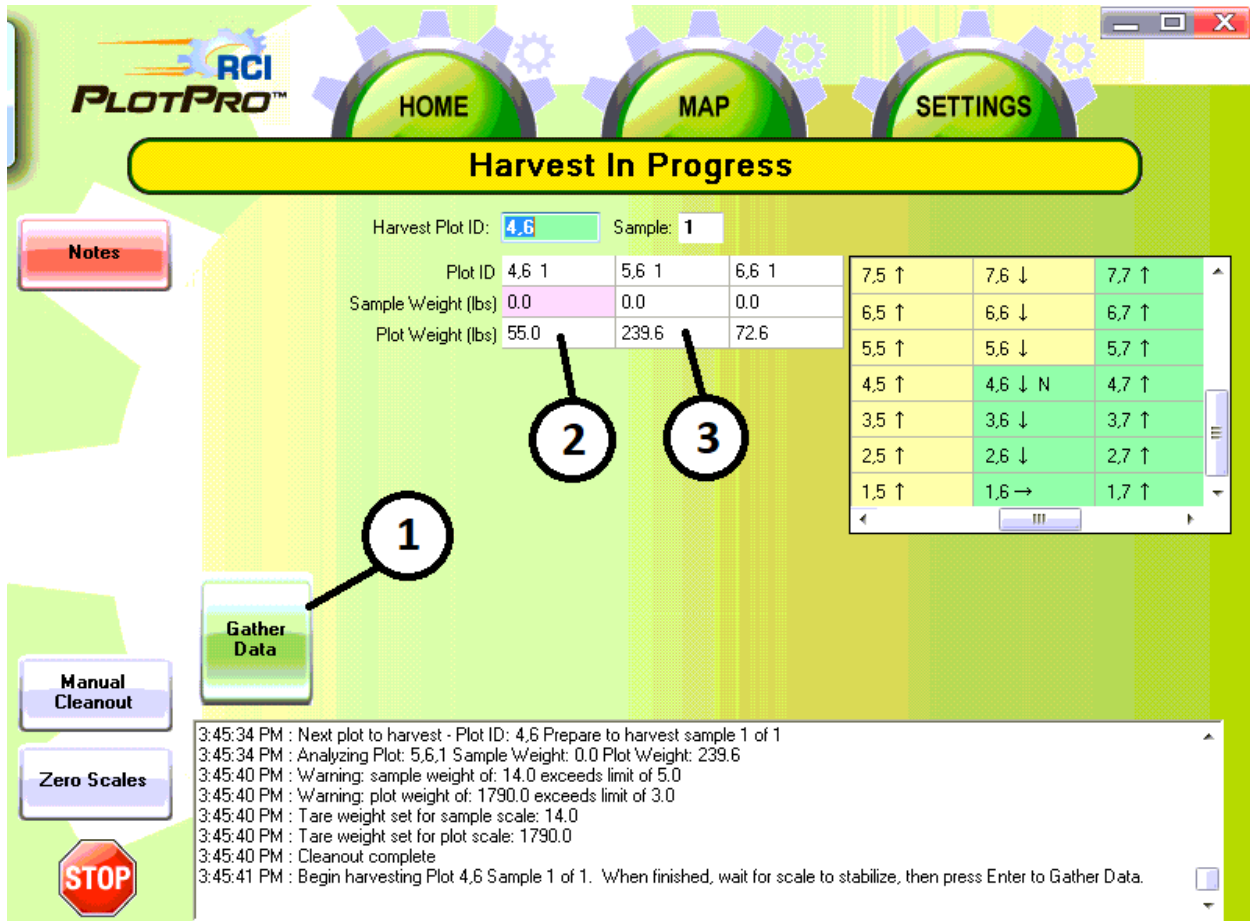


Figure 62. First Plot Harvest

Key 1 – Gather Data

Key 2 – Next Plot Data

Key 3 – Gathered Data for Plot

16. Harvest Second Plot

- a. Make sure the scales have been set to zero.
- b. Wait for Status Bar at top of screen to change to “Ready to Harvest”
- c. Harvest Second Plot
- d. Repeat “Gather Data” Function.

17. Proceed through Plots
 - a. Only one enter press is needed per plot.
18. Sample Weight (if equipped).
 - a. If the setting for Sample Weight is enable, there are two options for weighing
 - i. If measuring at same time as plot weight, the sample operator must have the sample gathered and on the sample scale at the same time as when the plot weight is gathered.
 - ii. If measuring after the plot weight, the sample must be on the sample scale when the next plot weight is gathered (1 plot behind).
 - b. If Sample Weight is gathered after plot weight, the system will automatically change the “Gather Data” button to “Weigh Sample” after 30 seconds of delay.
 - i. In this event, the next enter press will weigh the sample but NOT advance to the next plot.
 - ii. An additional enter press, or “Gather Data” press is required for the next plot.
 - iii. If under 30 seconds, pressing enter will continue to gather data as normal and will weigh the previous sample at the same time as the next plot weight is measured.
 - c. At the end of the map, once the cleanout is complete, the “Gather Data” button will change to “Weigh Sample” to weight the final sample if the Sample Weight is gathered after plot weight.
 - d. If the Sample Weight is set to gather at the same time as Plot Weight, the system will finish the map in the same manner as any other plot.
19. Closing the program.
 - a. Before closing the program, make sure that all data is collected.
 - b. To close out the program, complete the last plot and simply close the program by selecting the red “X” at the top right corner of the program.
 - c. No other work is needed.
20. Data Handling
 - a. If using OneDrive, data is automatically uploaded by OneDrive to a central server when connected to the internet.
 - b. To copy the data for other uses, use the shortcut on the desktop to the Data location. This is a backup location of the same data. DO NOT NAVIGATE TO THE ONEDRIVE FOLDER.
 - c. Refer to “General Notes” section of this manual for more information.
21. Turning off the system.
 - a. The system can be turned off at any time.
 - b. Always turn off the PlotPro Power Switch and wait at least one minute before turning the battery disconnect on the machine. This is to ensure that the NIR powers down properly.

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