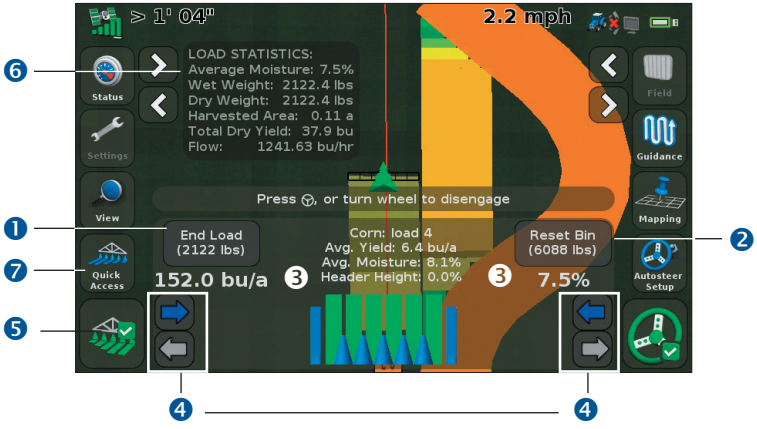
Trimble® CFX-750™ Display with the Yield Monitoring System
Quick Reference Card

This *Quick Reference Card* is intened to help you with the basic operation and calibration of the Trimble® CFX-750™ display with the Yield Monitoring system. For more information, refer to the *Yield Monitoring System Getting Started Guide*, the *CFX-750 Display User Guide*, or the platform installation instructions.

RUN SCREEN

When the Yield Monitoring plugin has been activated on the CFX-750 display, the Run screen appears as shown.

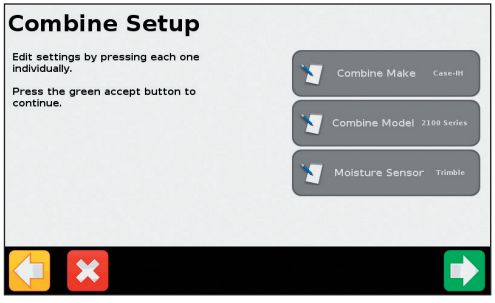


	Item	Description
1	New Load/End Load button	Tap to start a new load or end a current load.
2	Bin Level Counter	Displays the current bin level in weight or % of full as defined in setup. Tapping the button unloads the grain bin.
3	Current Field statistics	Displays average and instant values for moisture and yield in the current field
4	Enable and disable rows	Tap the left arrow on the right-hand side to disable logging on the rows from right to left. Tap the right arrow on the left-hand side to disable logging on the rows from left to right.
5	Manual Logging	Green: Logging enabled. Red: Logging not enabled. Logging on/off is determined by the header height sensor position, but can be controlled manually with this button.
6	Scrollable status items for Yield Monitoring	Multiple status screens can be scrolled through for the display. Yield monitoring specific items are: - Field Specific Statistics - Load specific statistics - Legend for the current layer being shown on the map
7	Quick Access Menu	Use this button to access: - Edit load details - Adjust the moisture override - Enter/Adjust the current crop test weight - Perform yield sensor calibrations - Perform moisture sensor calibrations - Adjust the header height logging on/off position - Change the range for the map legend - Select the coverage theme on the map

Configuring the Yield Monitoring system

To set up the Yield Monitoring system, click , click the Implement icon and then select *Yield Monitor / Yield Monitor Wizard*. Follow through the wizard until you reach the *Crop Setup* screen and then complete the following screens:

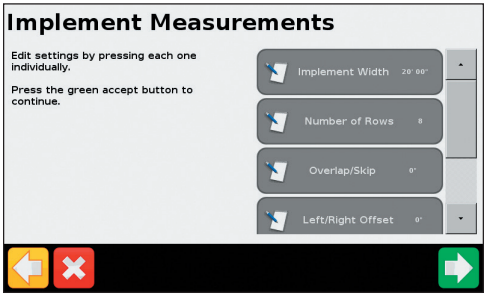
Combine Setup



Enter information about the combine you are using.

Setting	Description
Combine Make	Select the brand of combine you are using.
Combine Model	Select the model of combine you are using.
Moisture Sensor	Select the moisture sensor you are using: • Trimble • Ag Leader • New Holland • AGCO • Case-IH

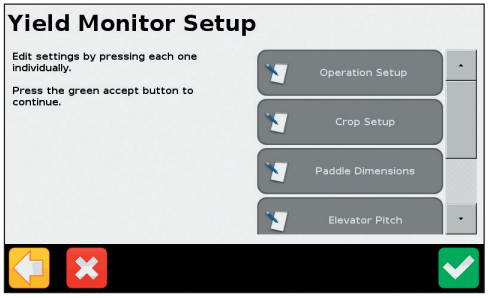
Implement measurements



Enter the measurements of the implement. The measurements that are required vary depending on the make/model of the combine you selected.

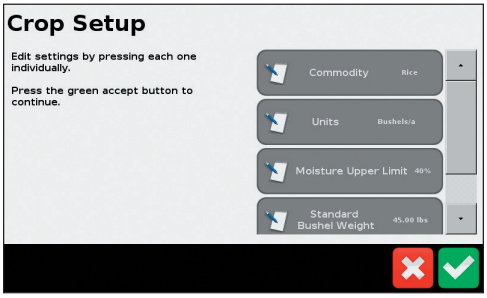
Setting	Description
Implement Width	The width of the implement's application coverage area. Used for coverage logging.
Number of Rows	Number of rows covered by the implement. For broad acre platform heads, this is the number of sections you want to use for swath control.
Forward / Back offset	Define the offset of the header from the fixed axle on the combine.
Overlap/Skip	The amount of overlap or skip between swaths. • Overlap is a intentional overlap between swaths to avoid any skips. • Skip is a intentional skip between swaths. ***Note** – This setting is used with the Implement Width to set the spacing of the swaths in the field.*
Left/Right Offset	Measured from the center of the vehicle to the center of the implement or header. This measurement adjusts the tractor path so that an offset implement is centered on the guidance line.
Allowable Side-to-Side Coverage	This setting determines the amount of a section that the previous covered area must occupy before the section turns off. For example, a setting of 75% means that 75% of the section or row width of a header would have to be covering an area that has been previously harvested before automatic section control will turn off.

Yield Monitor Setup



Button	Description
Crop Setup	Select and specify properties for the crop you are going to harvest.
Paddle Dimensions	Verify the clean grain elevator paddle dimensions. These must be accurate for optimal performance.
Elevator Pitch	Verify the pitch of the clean grain elevator. Erroneous values for pitch can lead to a degraded performance.
Option Setup	Turns new load confirmation on or off.
Map Legend Setup	Set the high and low values for moisture and yeild scales on the Run screen.

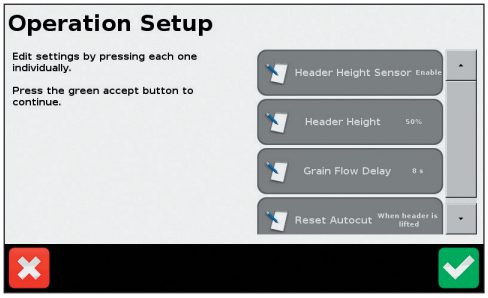
Crop setup tab



Enter information about the crop you are monitoring.

Setting	Description
Commodity	Select the crop that is currently being harvested.
Units	Select the unit of measure for the crop type: • Bushels/acre • Lbs/acre • Tons/acre • Hundred Weight/acre • Bushels/hectare • Kgs/hectare • Tonnes/hectare ***Note:*** *When you select Hundred Weight/acre, the Bushel Weight field is automatically set to 100 lbs.*
Moisture Upper Limit	Set the upper limit for the moisture sensor.
Standard Bushel Weight	The weight of a single bushel.
Storage Moisture	Set the cutoff point between a wet crop and a dry crop. Set these values depending on what you want the moisture map to look like.
Test Weight	Enter the test weight or crop density of the crop you are harvesting. This should be checked periodically and corrected fror optimal confimation.

Operation Setup

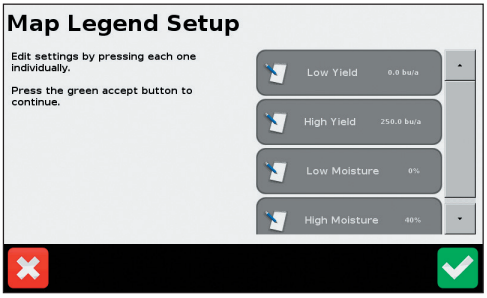


Enter the following information:

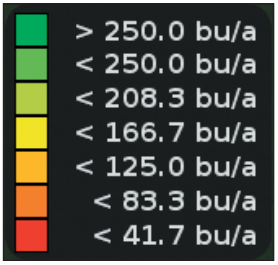
Setting	Description
Header Height Sensor	Enable if you want logging to be controlled by the header height.
Header Height	Enter the on/off point for the header height. This is the percentage of the full height at which logging is on. Above this percentage, logging is off.
Grain Flow Delay	The amount of time it takes for grain to move from the header to the grain tank.
Reset Autocut	Turn the autocut reset on or off.

Map Legend tab

In the *Map Legend* tab, set the lower and upper limits to appear on the legend in the Run screen:



The system automatically divides the setup parameters into graduations between these two settings:



Calibration

To calibrate the Yield Sensor and Moisture Sensor, use the calibration wizard. Before starting either procedure, keep the following in mind:

- Use the same load type for both Yield and Moisture calibration.
- To achieve the highest accuracy, perform calibrations for the various parts of the yield range that will be encountered while harvesting.

Calibration procedure

This procedure must be carried out before you go out into the field.

1. Verify that all Yield Monitoring setup parameters are correct.
2. Calibrate *Header Height*.

Note: *For accurate operation, the highest and lowest points of the header operation msut fall within the 0 - 5 V range of the sensor.*

3. Calibrate the *Moisture Sensor*.
4. Calibrate the *Temperature*.
5. Calibrate the *Yield Sensor Tare*.

   If the *Average Tare Deviation* is equivalent to or greater than the thickness of the elevator chain paddle, the system may encounter a large amount of noise. "Noise" can be introduced into the system by any of the following factors:
   - Paddles contacting the Yield Sensor optical lens.
   - Yield Sensor optical lens obstructed.
   - Yield Sensor(s) loose.
   - Elevator chain with excessive slack; paddles flopping up/down.
   - Tensioning rod contacting yield sensors.
   - Excessive paddle wear causing large quantities of grain to fall back down the elevator between the elevator wall and the outside of the paddles.

   To check the Noise % of the system, turn the combine separator on at full engine RPM and then select *Yield Monitoring / Diagnostics / Status* to see the Noise %. If this is very high, check the aspects listed.

Note: *If the Frequency Deviation is high, you may have an inconsistent Elevator RPM and may need to inspect the performance of your clean grain elevator pulleys, bearings, chain, and so on.*

6. Calibrate *Roll*.

In-field yield and moisture calibration

Select one of the following calibration methods:

- *Speed method.* Use a consistent speed variable to calibrate for Low, Medium and High flows:
  a. Conduct a calibration load of 3,000-6,000 lbs. at your normal constant speed.
  b. Repeat this procedure for one load at 1 mph less than the normal operating speed; one load at 2 mph less than then normal operating speed; and one load at 1 mph higher than then normal operating speed.

  This provides a calibration curve for Low, Medium, and High Flow variations throughout the course of Harvest. An example of calibration loads using this method is as follows:

  Load 1 = 4,547 lbs. @ 4 mph
  Load 2 = 3,834 lbs. @ 3 mph
  Load 3 = 2,764 lbs. @ 2mph
  Load 4 = 5,768 lbs. @ 5 mph

- *Cut Width method.* Use a consistent cut width variable to calibrate for Low, Medium, and High flows.
  a. Conduct a calibration load of 3,000-6,000 lbs. at your normal constant speed with a 100% cut width (12 rows at 30 ft).
  b. Repeat this procedure for one load at 75% of the normal cut width (8 rows at 20 ft); one load at 50% of normal cut width (6 rows at 15 ft); and one load at 25% of normal cut width (3 rows at 7.5 ft) at the same constant speed.

  This provides a calibration curve for Low, Medium, and High Flow variations throughout the course of Harvest. An example of calibration loads using this method is as follows:
  Load 1 = 5,768 lbs. @ 4 mph @ 100%
  Load 2 = 4,547 lbs. @ 4 mph @ 75%
  Load 3 = 3,834 lbs. @ 4 mph @ 50%
  Load 4 = 2,764 lbs. @ 4 mph @ 25%

Note: *It is highly recommended that you conduct a minimum of three calibration loads to ensure that the system provides accurate readings for all low, medium, and high flows throughout harvest. If you conduct a Single Load calibration, this may result in poor accuracy performance when Harvesting outside the Flow range at which the system was initially calibrated.*

Yield calibration

1. In the *Load Details* menu for each load:
   - Enter the Actual Scale Weight
   - Enter the Actual Test Weight (average of a minimum of three test weight measurements)
   - Select each load for which the Actual Weight and Test Weight will be calibrated
2. Go to the *Yield Sensor Calibration* menu and select the loads that you want to use in the calibration.
3. Complete the calibration wizard to confirm the changes and if you want to apply the calibration of the previous loads in the field.

Moisture calibration

1. Enter or select the following in the *Load Details* screen for each load:
   - Actual Moisture
   - Select each load for which the Actual Moisture will be calibrated.
2. In the quick access menu, select *Moisture Calibration*.
3. Select the loads that you want to use in the calibration and then follow in the instructions in the wizard to confirm the calibration changes. If required, apply the calibration to the previous loads in the field.

Note: *It is highly recommended that you conduct a new Yield and Moisture Calibration for each crop before beginning harvest to ensure the most accurate results for each crop.*

Auto width detection

Auto width detection aids accurate area calculations by automatically reducing the cut width when entering or exiting point rows and other previously harvested areas.

If you are harvesting a row crop with pre-configured rows then the width reduces on an overlap by one row at a time. When using a platform header, the number of rows indicated defines the number of sections the platform header will have for auto-width detection.

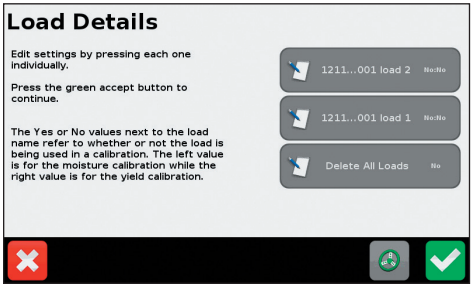
Tap ⬅ or ➡ at the bottom of the map screen to manually reduce the cut width; each time you tap the button, the cut width is reduced by one sixteenth of the head width. Tap ⬅ on the right-hand side to disable the rows from the right, or tap ➡ on the left-hand side to disable rows from the left.

Load tracking

The software allows you to track loads of grain harvested throughout the season for a field that has a planting variety map associated.

Note: *The CFX-750 display can track up to 250 loads.*

After the harvest is complete, use the Farm Works™ Mapping software to track loads in the office.



Getting the most out of the Trimble Yield Monitoring System

This section is an overview of the key elements that are required to use the Yield Monitoring system to best advantage. Read this before you start the installation and setup procedures.

Installation

The Trimble Yield Monitoring System relies on a good installation of the optical sensors. To ensure the best results:

- Install the optical sensors in the location described in the Installation Guide.

- If the desired location is not achievable, install the optical sensors as high as possible, but no more than 6 inches (15 cm) below the top spindle of the elevator.
- Installing the sensors lower than 36 inches (90 cm) above the bottom spindle will give unacceptable results.
- Ensure that there is no opportunity for interference between the optical sensors or the retaining brackets and any moving parts on the combine. Be especially aware of chains, belts, pulleys, and tensioning rods, and keep in mind that their range of motion may be much greater during operation than when standing still.
- Ensure that the optical sensors will not move out of alignment during operation.
- Ensure that the optical sensors will not sense the paddle support bracket. Refer to the Installation Guide for more information.

Tare calibration

The quality of the Tare Calibration is critical to getting good accuracy, particularly at low flow rates. To ensure the best results:

- Check the tare daily.
- When performing the tare calibration, run the system at the same speed as you would normally use during operation.
- Running the system empty, look at the elevator speed. This number must be correct, typically between 12–20 Hz.
- Run the tare calibration. The tare value represents the measured thickness of the paddles, and should be approximately correct—it is more important that the number is consistent than that is exactly right.
- If the measured value is considerably higher than expected, check the entered values for paddle spacing, and check that the optical sensors are not being obscured by the support brackets on the paddles.
- If the measured value is considerably lower than expected, recheck the entered paddle spacing and the elevator speed. If both are correct, low tare should not be a problem.
- *Tare Deviation* indicates how much variation there is in the measurement of the paddle size. Normally, this number should be less than ¼ the size of the paddle itself. If this number is excessively large, check the installation for interference or opportunities for excessive vibration, like a poorly-tensioned elevator chain.

Flow calibration

Calibrating the Trimble Yield Monitor system across the full range of flows will improve the accuracy of the system. To get a good calibration, do the following:

- Select calibration loads where the conditions are consistent; where the crop quality is even, the ground is as level as possible, and the passes are as long as possible. Keep the combine speed constant during the entire run.
- Collect loads that are as large as is practical without sacrificing consistency.
- Collect as many different calibration loads as possible, with each load at a different flow rate. To accomplish this, you can run the system at different speeds, or harvest partial header widths.
- If you still have significant errors in the calibrations, check the noise level during harvesting. If this figure is above 30%, check for interference with the optical sensors, or opportunities for excessive vibration. If the paddles are very worn, they may need to be replaced.

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Pitch/Roll calibration

The Trimble Yield Monitor system corrects for the pitch and roll of the combine. To benefit from this feature:

- Perform the pitch/roll calibration as described in the owner's manual.
- The system has correction parameters for each tilt direction that you can adjust to improve performance. Use the following table when you decide how to adjust these parameters.

Note: *The pitch sensitivity adjustment depends on whether your sensor is mounted in front of or behind the center of the paddle:*

Tilt angle	Sensor position	Yield reading too high	Yield reading too low
Left roll		Increase left roll sensitivity	Decrease left roll sensitivity
Right roll		Increase right roll sensitivity	Decrease right roll sensitivity
Backward pitch	Forward of center	Decrease backward pitch sensitivity	Increase backward pitch sensitivity
	Aft of center	Increase backward pitch sensitivity	Decrease backward pitch sensitivity
Forward pitch	Forward of center	Increase forward pitch sensitivity	Decrease forward pitch sensitivity
	Aft of center	Decrease forward pitch sensitivity	Increase forward pitch sensitivity

To start, adjust the sensitivity numbers in increments of 0.2.

Test weight

The Trimble Yield Monitor system measures the volume of grain passing through the combine, and estimates the weight by multiplying the measured volume by the test weight. Therefore, an accurate measurement of test weight is required in order to achieve an accurate total weight measurement. To ensure the best results:

- Recheck the test weight whenever the field conditions change significantly, either when harvesting different varieties, or when the moisture level of the crop changes.
- Take several samples of test weight on calibration loads, and use the average of these samples when calibrating.

Operation

How you operate your combine can also affect your accuracy. Consider the following:

- Calibration will be most effective if you operate your combine at the same conditions as you used during calibration.
- Frequent starts and stops during a load could degrade the overall accuracy of the load.

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