

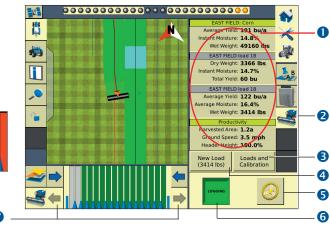
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with the Yield Monitoring System

Quick Reference Card

RUN SCREEN

When the Yield Monitoring plugin has been activated on the FmX[®] integrated display, the Run screen appears.



	Item	Description	
0	Current event information	Tap on any item to make changes.	
2	Yield Monitoring plugin icon		
6	Loads and Calibration button	Tap to view load names or calibrate yield and moisture.	
4	New Load / End Load button	Tap to start new load or end current load.	
6	Engage button	Green: Auto guidance engaged. Yellow: Auto guidance can be engaged. Red: Auto guidance cannot be engaged.	
6	Logging button	Green: Logging enabled. Red: Logging not enabled.	
0	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-hands side to disable logging on the rows from left to right.	
8	Row Status Indicator tab	Or tab Shows the logging status of each section of the combine harvester. Green: Harvesting and logging are working as normal. Red: Logging has been manually disabled. The swath area has been reduced by up to one sixteenth per red line. Grey: Active rows have overlapped a previously harvested area.	

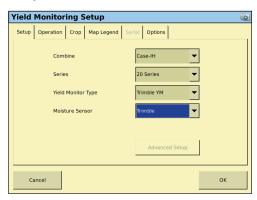
Help - The FmX integrated display has built-in, context-sensitive Help that lets you quickly find information you need about the current screen. To access the Help from any configuration screen, tap ?. When you are finished with the screen, tap **OK**.





CONFIGURING THE YIELD MONITORING SYSTEM

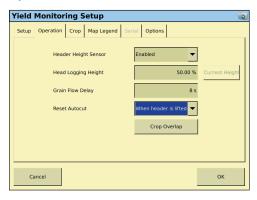
Setup tab



In the Setup tab, enter information about the combine you are using.

Setting	Description	
Combine	Select the brand of combine you are using.	
Model	Select the model of combine you are using.	
Yield Monitor Type	 Select the type of yield monitor you are using: Trimble YM John Deere Serial Data Input Claas 	
Port Connection	Select the port on the back of the FmX integrated display that the yield monitor is connected to. Note: When Trimble YM is selected as the Yield Monitor Type, the FmX integrated display automatically detects the correct Port Connection.	
Moisture Sensor	Select the moisture sensor you are using: Trimble AGCO Ag Leader Case-IH New Holland	
Advanced Setup	Enter paddle dimensions and roll and pitch parameters. Note: Advanced Setup settings should be adjusted with the guidance of Technical Support only. Note: The values in Advanced Setup will already be entered for your model; you may need to make small adjustments due to wear or other factors.	

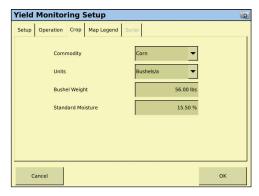
Operation tab



In the Operation tab, enter settings to configure the combine.

Setting	Description
Head Logging Height	The height at which yield data logging starts and stops. The Head Logging Height is read from the Header Height Sensor. Alternatively, manually set the head to the height at which yield data starts and stops, then tap Current Height to set the value at that location.
	Theight to set the value at that location.
Grain Flow Delay	The amount of time in seconds that it takes for the grain to reach the yield sensor after it enters the head.
Reset Autocut	Controls when the rows are automatically reset:
	When head is lifted automatically resets the rows at the end of the row when the head is lofted past the logging height.
	Never disables Autocut. Rows must be controlled manually.
Crop Overlap	When more than one crop variety is detected in the head, the system will stop accumulating variety statistics. Use this setting to adjust the percentage of crop overlap that is allowed before the system stops accumulating variety statistics.
	Select a value between 1% and 25%. For best results, the recommended setting is 10%

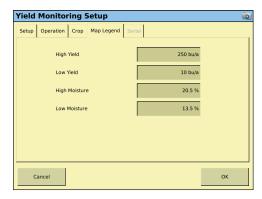
Crop tab



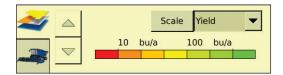
In the Crop tab, enter information about the crop you are monitoring.

Setting	Description	
Commodity	Select the crop that is currently being harvested.	
Units	Select the unit of measure for the crop type: Bushels/acre 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.	
Bushel Weight	The weight of a single bushel.	
Standard 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.	

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 legend into five graduations between these two settings:



CALIBRATION

To calibrate the Yield Sensor and Moisture Sensor, use either the Single-Load Calibration or the Multi-Load Calibration. 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 the Multi-Load Calibration procedure.

Calibration procedure

- 1. Verify that all YM Setup Parameters are correct.
- 2. Calibrate Header Height.
- 3. Calibrate *Temperature*.
- 4. Calibrate the Roll Offset.
- 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. 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.

- 7. In the Yield Sensor Calibration screen 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
- 8. Tap Update Calibration.
- 9. Tap Apply Calibration.
- 10. Enter or select the following in the Moisture Sensor Calibration screen for each load:
 - Actual Moisture
 - Select each load for which the Actual Moisture will be calibrated.
- 11. Tap Update Calibration.
- 12. Tap Apply Calibration.

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

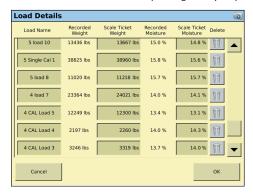
Auto width detection aids accurate area calculations by automatically reducing the cut width when entering or exiting point rows and other previously harvested areas.

If you are harvesting a row crop with pre-configured rows then the width reduces on an overlap by one row at a time.

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

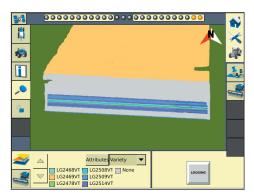
The software allows you to track loads of grain harvested throughout the season for a field that has a planting variety map associated.



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

Variety tracking

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



After the harvest is complete, use the Farm Works™ Mapping software to create and view a yield variety report.

When conducting a Planting or Seeder operation using version 6.0 or later of the FmX integrated display, any varieties that are mapped using the Field-IQ™ crop input control system or Serial Rate Control plugins will automatically have a variety map layer created within the Field folder of the FmX display. At harvest, when you reopen the Client, Farm, and Field on the display and then create a new event (such as Harvest), the display automatically loads the Variety Map layer into the background of the FmX display.

Note: The implement must be set up as a Harvest operation if you want the Variety Map layer to appear on the FmX display.

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 your paddles are very worn, they may need to be
 replaced.



with the Yield Monitoring System

Quick Reference Card

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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