ActiveYield

Operation and Adjustment

2018

JOHN DEERE

System Requirements

S-Series Combines

- Not compatible with S550 – S650 - S660 and S760 combines with Manual Grain Tank Extensions
- Aftermarket Grain Tank Extensions with bubble up loading auger attachment is NOT recommended

Combine Yield Mass Flow Sensor and Moisture Sensor

StarFire3000 or newer position receiver and must have TCM calibrated for ActiveYield to calculate combine pitch correctly.

Supported Crops

Barley

Canola/Rape Seed

Soybeans

Wheat

Corn

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Field Installed Bundles

Additional Information

NOTE: Control unit software AYM and PDU updates are required to complete the ActiveYield™ installation. See Dealer Technical Assistance Center (DTAC) solution 109573 for further information.

GreenStar™ 2 2600 Display is not compatible with the ActiveYield™ system.

ActiveYield is a trademark of Deere & Company
GreenStar is a trademark of Deere & Company
StellarSupport is a trademark of Deere & Company
StarFire is a trademark of Deere & Company

Installation of the system also requires the following:

- GreenStar™ 3 2630 Display software version 3.28.1186 or later through StellarSupport™ if applicable. To obtain latest software refer to www.StellarSupport.Deere.com
- StarFire™ Receiver SF3000 or newer to be installed and Terrain Compensation Module (TCM) calibrated
- Vehicle Control Unit Software

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Modify CAB Controller Address 119

CAB	119	X X X X X n X X	INPUT: Moisture sensor type	0 = Not installed 1 = Grain tank mounted John Deere sensor 2 = Elevator mounted Ag Leader 3 = Ag Leader with mass flow auto calibration 4 = Ag Leader with JD gen 3 moisture sensor without mass flow auto calibration 5 = Ag Leader with JD gen 3 moisture sensor with mass flow auto calibration

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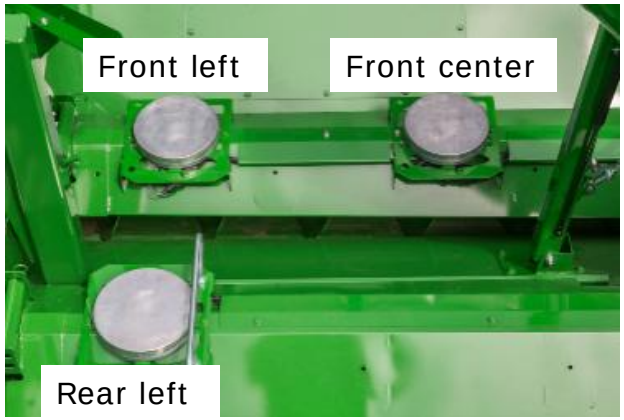
How it Works

ActiveYield = Active Calibration

ActiveYield provides continuous calibration of the mass flow sensor through load cells installed in the grain tank.

Load Cells in the grain tank estimate the change in weight of grain, as the grain tank fills.

The AYM controller software in the moisture sensor compares the grain tank load cell data to the Clean Grain Elevator mass flow sensor data, and adjusts the Mass Flow sensor calibration curve to minimize error.



What is an ActiveYield Load?

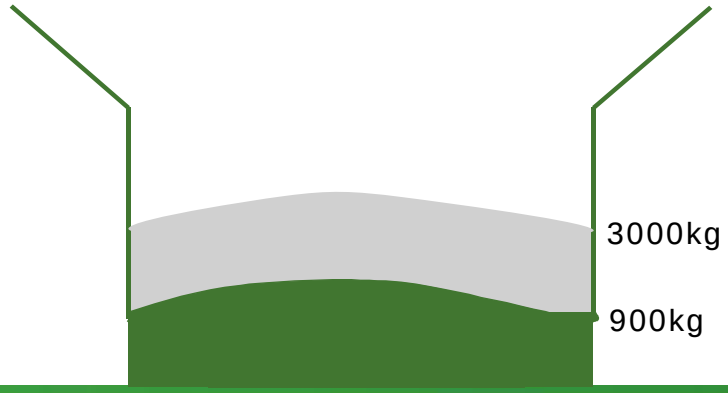
It is not a full grain tank and it is not a full truck/grain cart load.

The system starts taking data when the load cells indicate that grain is accumulating in the grain tank @900kg.(2000lb.)

ActiveYield stops accepting measurements when the load cells indicate the grain weight @ 3000kg.(6600lb.)

Load will be saved as long as:

- Harvested crop is uniform to support constant flow during load collection
- Field terrain (roll and pitch) are within +/-4°
- No interruptions with grain flow during load collection (stopping-starting, unloading, grain pile shift, disengaging separator).



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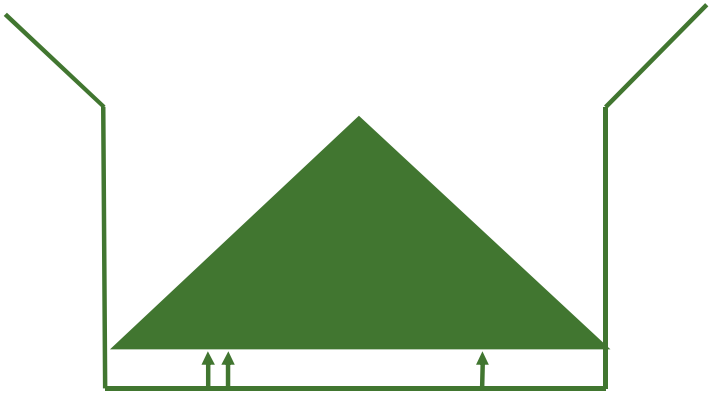
Calculating the weight of the load

Rate of change of the weight in the grain tank can be estimated with 3 load cells rather than weighing the entire vehicle or grain tank.

The software will calculate the change in weight of the grain over time, with the following data:

- Total force on 3 load cells, at specific assigned locations in the grain tank, as the grain level increases.
- Consistent loading of the distance and height of the grain pile in the grain tank. (No hills)
- Calibration curves generated from loads taken during engineering development testing at different moisture levels.



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Load Cell Auto Zero

Load cells will automatically zero out when the grain tank is empty, or when a new load cell serial number is installed.

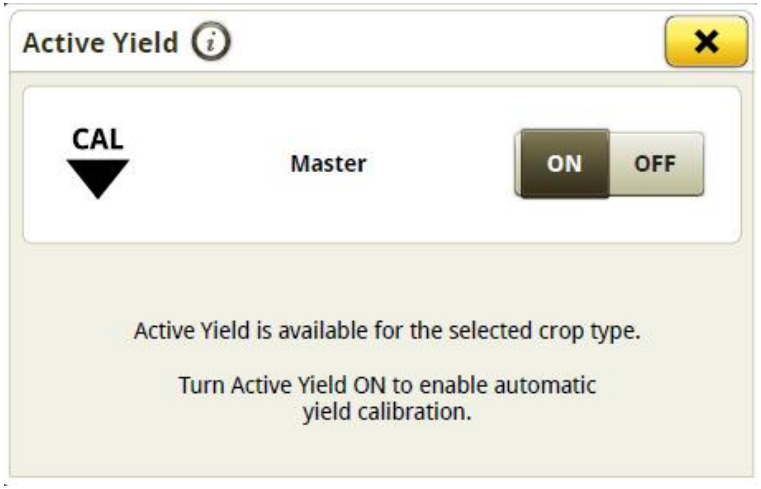
Grain Tank is assumed empty, once all 3 load cells fall below the minimum output voltage, and is maintained for 10 second time limit.

The software will use that load cell minimum output value as the new zero value for that load.

Unsupported Crops- S700 - 4600 Display

If crop is changed to an unsupported crop the system is automatically turned off.

When selecting a supported crop type, an ActiveYield screen will appear that the system is available.



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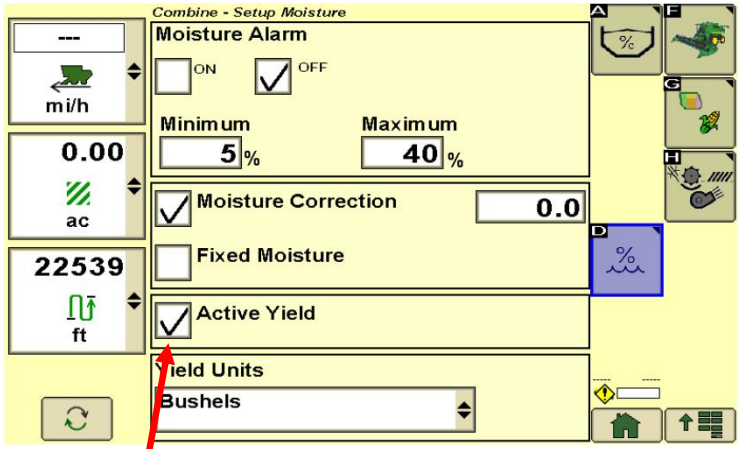
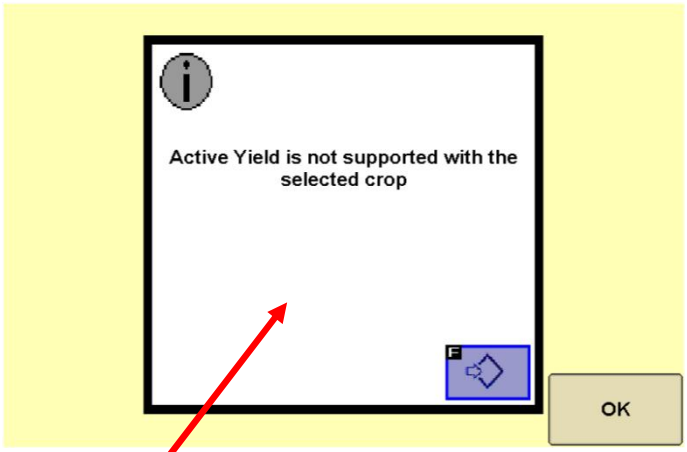
Unsupported Crops – S600 - 2630 Display

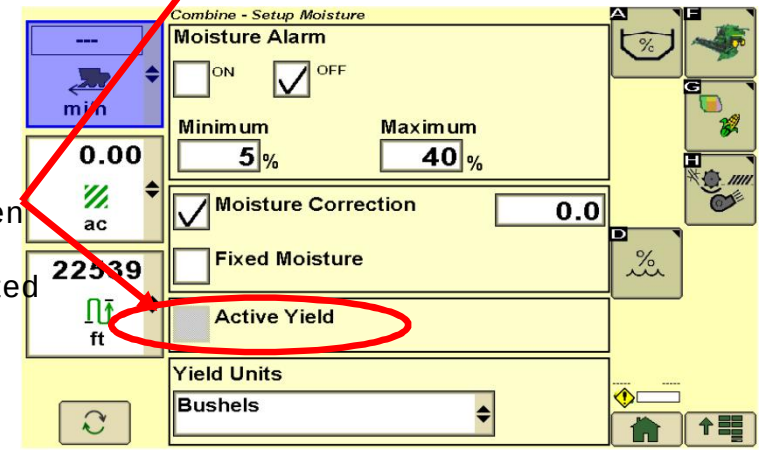


Enabled when a supported crop is selected

Barley
Canola/Rape Seed
Soybeans
Wheat
Corn



Disabled when unsupported crop is selected



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ActiveYield Operation

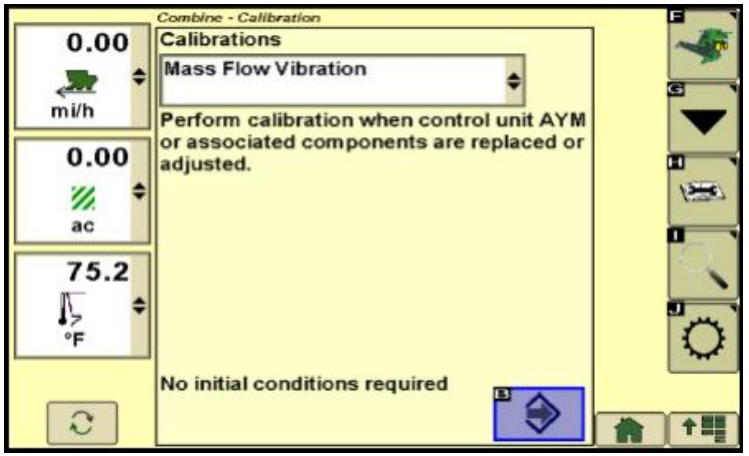
1. Perform Mass Flow Sensor Vibration Calibration with header attached, and the combine grain tank empty.

This vibration calibration should be performed when:

- AYM Controller Software is updated
- Recommended each time the header is removed/installed. Especially after road transporting.

S700 - 4600

S600 - 2630



2. Calibrate the Moisture Sensor Temperature

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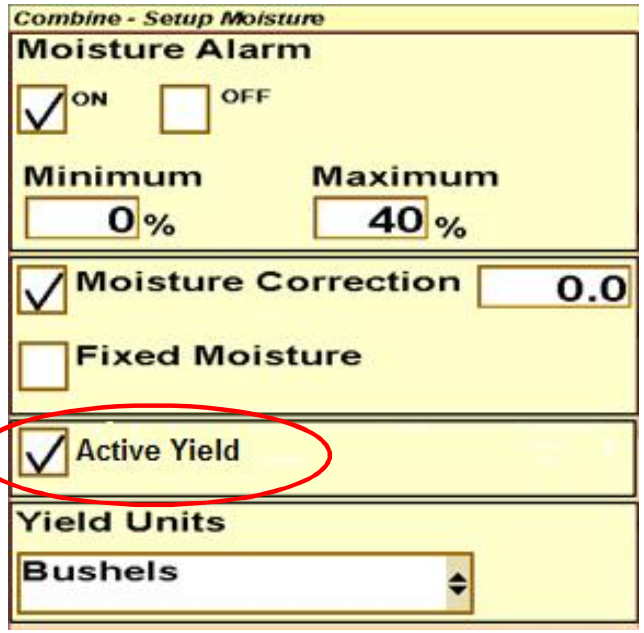
Enable ActiveYield S600 - 2600/2630 Display

If box is checked - system is enabled



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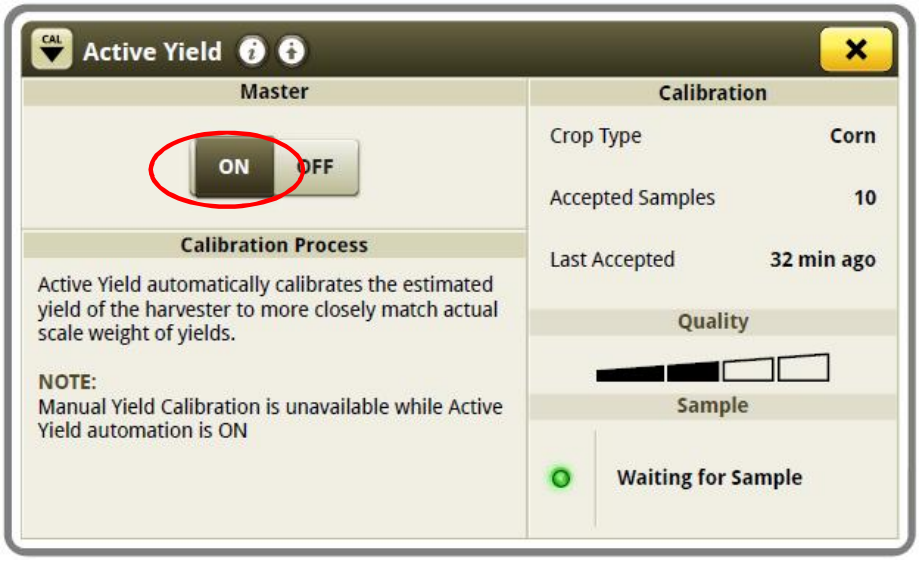
Enable ActiveYield S700 - 4600 Display

Go to calibrations and choose ActiveYield.

Press the Master switch on.

Following crop types:

- Wheat
- Barley
- Rapeseed
- Corn
- Soybeans



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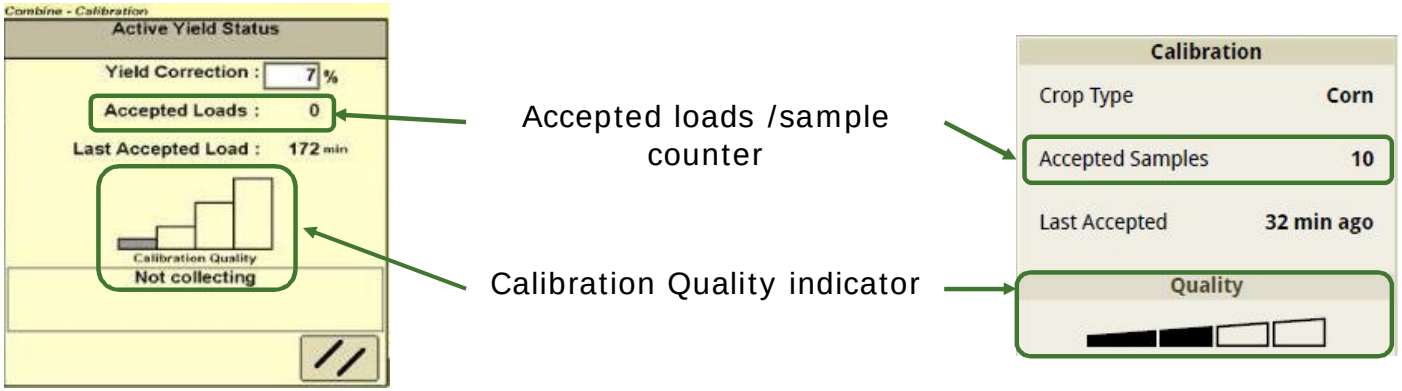
Accepted Loads

The calibration quality indicator is independent of the accepted loads / samples counter.

The Accepted loads/sample counter counts every sample ever accepted. It helps the operator understand if in the current conditions active yield is still accepting loads.

The Quality number is the number of loads the system is actually using (5-6 loads) accepted for data points.



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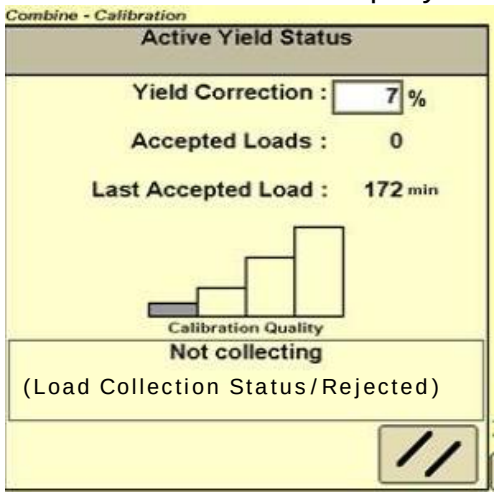
S700 - 4600 Display

S600 - 2630 Display



The calibration quality is indicated with 1 to 4 bars on the active yield screen.

No Bars = System off

1 Bar = 0 load accepted

2 Bar = 1 load accepted

3 Bar= 3 or 4 loads accepted

4 Bar = 5 + loads accepted

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Rejected Loads

Individual loads may be rejected by the system and will not be used because:

Inconsistent Flow

Grain tank fill that takes more than 400 sec. harvesting time to reach the 3000kg.(6600lb) grain tank sample limit.

Example: Harvesting interrupted (stop-start, low yield crop)

Uneven loading / Grain Tank sample shift detected

Quick stop or start or rough terrain causing excessive grain pile shift in the grain tank.

Pitch or roll too large of slope

If Uphill/Downhill/Sidehill slope is more than +/- 4 degrees (+ /- 7%) during data collection, the load will be rejected. The pile of grain does not load evenly over the 3 load cells.

Example: Grain tank loaded heavy to one side.

Collection interrupted

Combine stopped / slows down or unloading auger was engaged while weight collection was in progress.

Example: Unloading on the go.

Yield Offset Correction

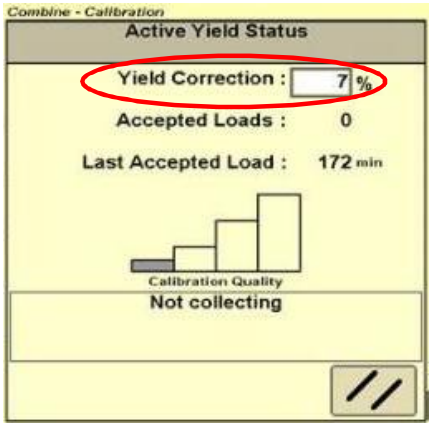
Differences between the combine measured yield and the actual yield, can be adjusted by the operator. Similar to how the Moisture Sensor Offset works. Adjust the Offset Correction if there is more than 4% error in the yield values.

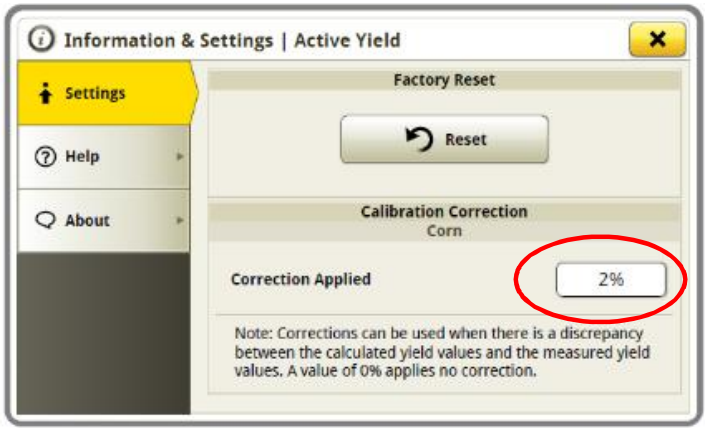
How to find Correction once per crop:

1. Harvest at least 15 accepted Active Yield loads, at a consistent moisture and ground speed to establish a good average before checking accuracy. Do not adjust the offset with less than 15 loads completed. The system improves accuracy with more loads. Adjusting the offset with less than 15 loads will be constantly chasing offset values and inconsistent field values.

2. Harvest and scale check 5 full grain tank loads and compare the Combine Yield totals to scale weight for the 5 load total.

3. Calculate the difference between actual combine weights and measured weights as a percentage. Repeat 3 times and enter the average value of the 3 previous calculated percentages.





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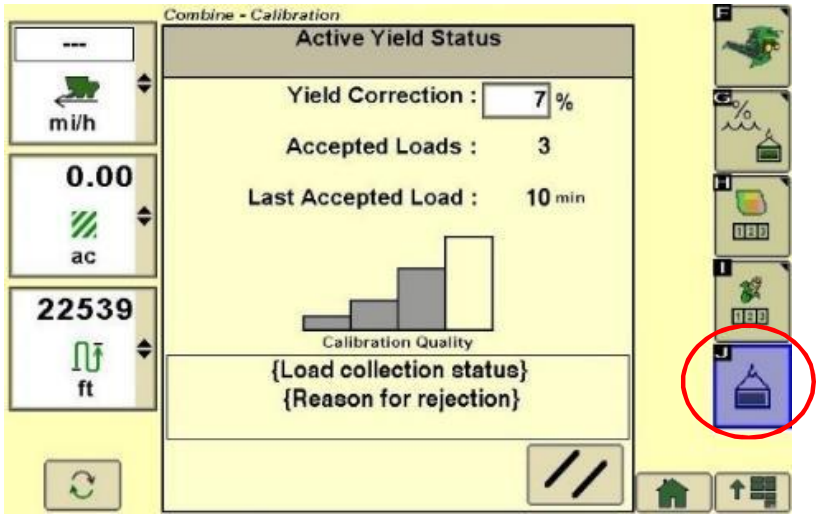
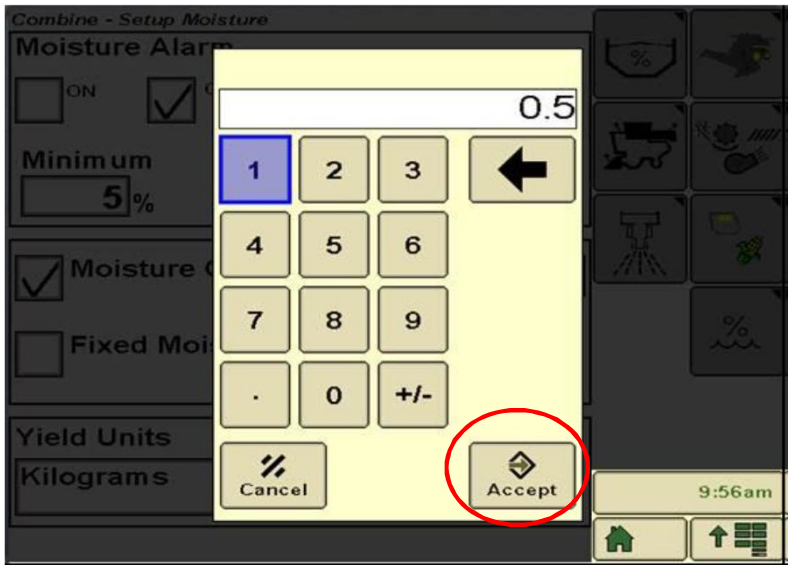
Adjust ActiveYield Offset – S600 - 2630

- To enter the correction value, press the “J” button and then enter the offset between the actual measured value and the displayed value on the keyboard.

Example: If the system yield is low, enter a positive offset.
If the system yield is high, enter a negative offset.

- Select ‘Accept’





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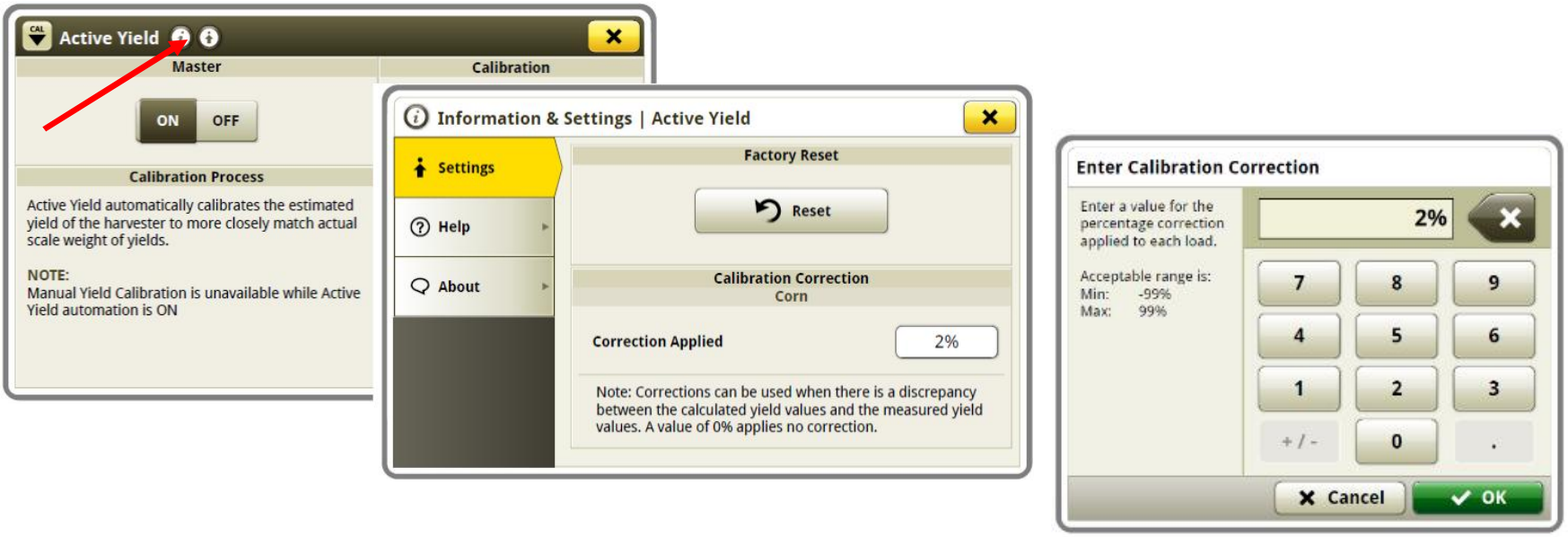
Adjust ActiveYield Offset – S700 - 4600

- On the Active Yield Screen press the “Information” Button
- On Information and settings screen press the “calibration correction” button
- Enter the correct offset between the actual measured value and the displayed value and press “OK”.

Example: If the system yield is low add a positive offset.
If the system yield is high, add a negative offset.

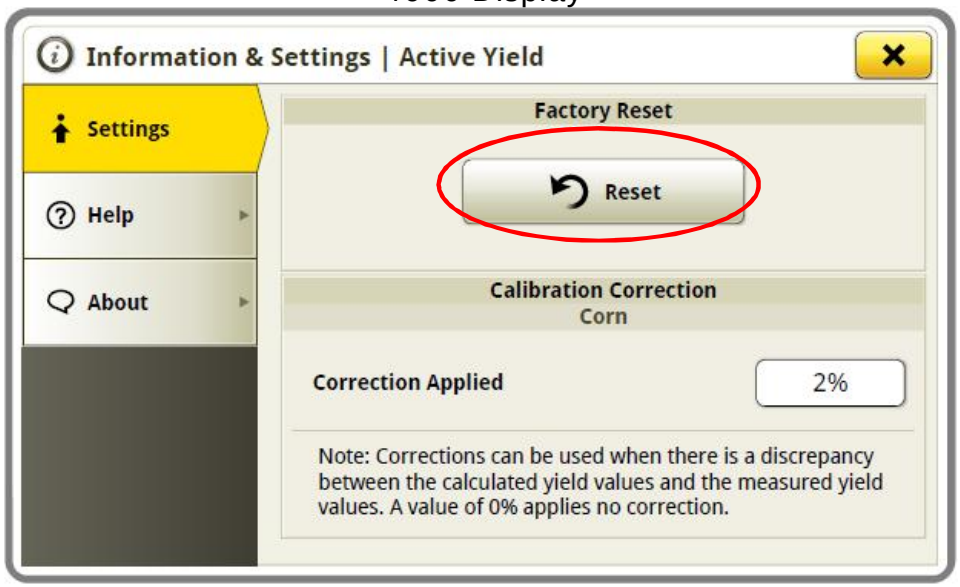


Clearing Calibration Weights – S700- 4600 Display

The calibrations can be reset to factory default. This means that all previous calibration loads can be deleted.

Factory reset only when ActiveYield is enabled.

4600 Display



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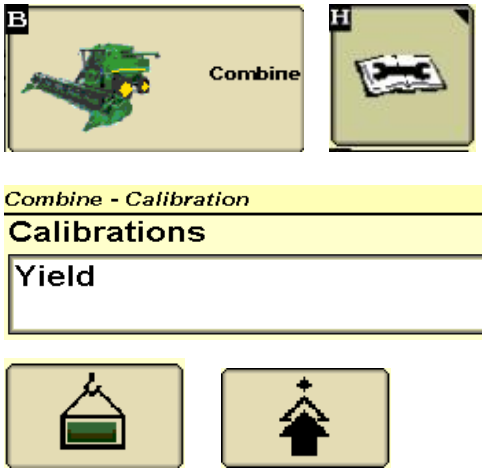
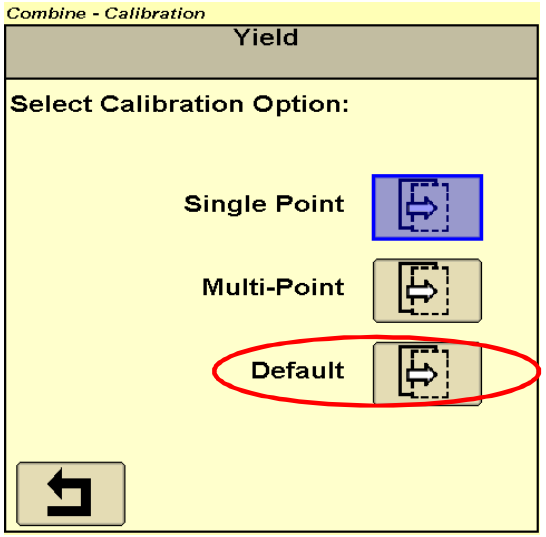
Clearing Calibration Weights – S600 - 2630 Display

When ActiveYield ™ is enabled

Pressing default in Yield Calibration will clear all loads. This will not reset the Counter for accepted loads.





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Yield Accuracy

ActiveYield software is located in the Moisture Sensor controller (AYM - AXE66411A).

This software version also contains the Mass Flow Sensor yield accuracy 2 point calibration feature. The 2 point calibration process replaces the older 4 point calibration requirement.

If an operator is not satisfied with the yield accuracy, disable ActiveYield, and manually calibrate the Combine Yield Mass Flow Sensor.

- Using the 2 point calibration process, harvest the first calibration point at a normal ground speed.
- For the second mass flow sensor calibration point, adjust the combine ground speed to be half the ground speed of the first calibration load.
  Example:
  First grain tank full cal load at 5.0mph(8 kph)
  Second grain tank full cal load at 2.5mph(4 kph)
- You can add more additional mass flow sensor calibration loads in between the 50% and 100% ground speed, if better accuracy performance is required. Usually improves accuracy in extreme variable crop conditions in the same field.

If the yield accuracy still does not improve with ActiveYield Disabled, see your John Deere dealer and reference the S-Series Combine “Ready To Harvest Guide for Yield Accuracy” on your GoHarvest App or at deere.com.

https://www.deere.com/en/parts-and-service/manuals-and-training/quick-reference-guides/

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Yield Accuracy Troubleshooting

✓Grain moisture higher than > 20% moisture.

Example: The grain pile of wet corn accumulating in the grain tank does not flow very well.

✓ Field variability - Large changes in yield across the field.

Example: Changing soil conditions, washed out areas, where yield drops significantly and comes back up.

✓ Different Seed Varieties and Test Weights - Active Yield Offset value may need to be changed in different varieties because of test weight and moisture changes.

Example: Change from 60#/bu. down to 55#/bu. test weight or from 22% moisture down to 18% will effect the average calibrated accepted load.

✓ Multiple Loads Rejected by Low Yielding Crop

Example: The grain tank load sample collection from 900kg.(2000lb.) to 3000kg.(6600lb.) is more than 400 seconds.

✓ Perform Mass Flow Sensor Vibration Calibration

✓ Separate the two Yield Systems – Mass Flow Sensor and Active Yield Load Cells

Example: Disable Active Yield and check the accuracy of the clean grain elevator Mass Flow Sensor first.

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