

COMBINE CALIBRATION FOR ACCURATE YIELD DATA

Combine and yield monitor calibration prior to harvest is critical to obtain accurate yield data. Recalibration is necessary for each type of grain harvested or if substantial moisture content changes occur throughout the season. Always refer to the manufacturer's manual for specifics on proper combine and yield monitor calibration procedures.

Mass Flow Sensor Calibration

The mass flow sensor or impact sensor is the most important part of the combine to be calibrated for accurate yield data.¹ Most yield monitors operate by measuring the force that moving grain imparts on an impact sensor as the grain moves through the combine and into the holding bin.² Proper calibration requires harvesting three to five separate loads of grain at different flow rates. Calibration loads should be between 3,000 to 6,000 pounds, or 50 to 100 bushels, and each load weighed with a weigh wagon or other accurate scale.³

Different flow rates can be achieved using one of the following two methods when harvesting calibration loads:

1. Harvest at the same speed with different amounts of the header engaged in the crop.
Example: If you have a 12-row corn head, run four calibration loads by harvesting 2, 4, 8, and 12 rows all at the same harvest speed.
2. Harvest at different speeds using the full header width.
Example: If you generally combine at 3.5 MPH, run four calibration loads by harvesting at 1, 2, 3, and 4 MPH with the full header width engaged in the crop.

Running multiple calibration loads generally provides greater accuracy when calibrating yield monitors. Some manufacturers may only suggest that one grain load is necessary for calibration. If a yield monitor only accepts a single calibration point, then the only option is to calibrate using the full header width at harvest speed.² Multi-load calibration procedures take more time but provide greater accuracy by capturing more of the full range of grain flow rates encountered during harvest.

Moisture Sensor Calibration

While harvesting calibration loads, collect a grain sample and determine the grain moisture content of each sample using a high-quality meter that has been recently calibrated. Check the moisture sensor accuracy by using this data when entering the calibration data for the mass flow sensor. Refer to the manufacturer's manual for details on how to set the offset or calibrate the machine's moisture sensor.

Distance Traveled and Ground Speed

Accurate ground speed and distance traveled are necessary to accurately record yield per acre. Most yield monitors accurately determine these measurements using GPS signals. However, older systems may rely on measurements of wheel revolutions and calculated distance and speed based on wheel size. Always refer to the operator's manual for calibration procedures.

Header Height Setting

The header height settings determine the beginning and ending of data logging. Raise and lower the header to make sure the stop height switch operates correctly. Failure to disengage the header height switch at the ends of rows can result in inaccurate acreage estimates and yield data.

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Check for Calibration Accuracy Throughout the Season

Calibration accuracy of yield monitors can be influenced by the following:³

- Yield levels outside of the range of grain flow rates used for calibration,
- Seasonal changes in temperature and grain moisture content, and
- Differences in grain test weight, grain shape, and field topography.

Spot-check your yield monitor multiple times during the harvest season to ensure accuracy. Recalibrate as you move from one crop to another or when you encounter significant changes in grain moisture content or test weight. Always refer to the machine's operating manual for specific details on completing the calibration process.

Sources

- ¹ Pennington, D. 2016. Yield monitor calibration procedure. Michigan State University Extension. <https://www.canr.msu.edu>.
- ² Luck, B. 2017. Calibrate your yield monitor for greater accuracy during harvest. University of Wisconsin extension bulletin A4146. www.learningstore.extension.wisc.edu.
- ³ Nielsen, R. 2018. Yield monitor calibration: garbage in, garbage out. Purdue University Extension Corny News Network. <https://www.agry.purdue.edu>.

Legal Statements

Performance may vary, from location to location and from year to year, as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible and should consider the impacts of these conditions on the grower's fields.

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