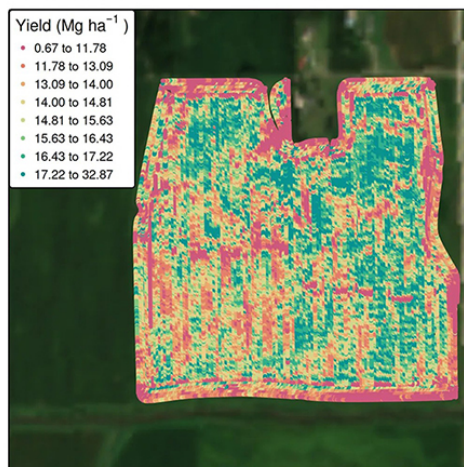




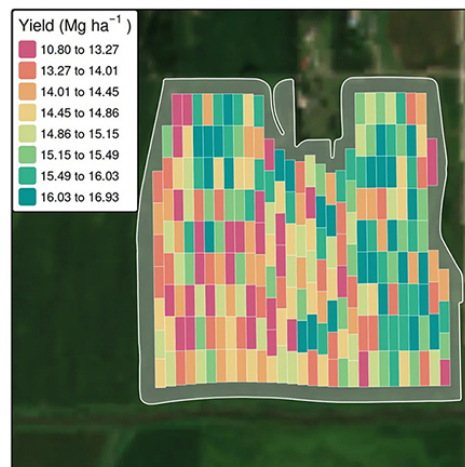
How we process yield monitor data in on-farm experiments matters

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Raw yield monitor data from a combine



Processed yield data from on-farm trial



Comparison between raw yield data collected by a combine (left) and cleaned yield estimates for an on-farm trial (right). The white-shaded area in the cleaned map represents the experimental border. Image courtesy of Caio dos Santos and Data-Intensive Farm Management.

The inherent variability of data collected with yield monitors creates errors that require careful processing to ensure that estimates are accurate. Researchers from Iowa State University compared the accuracy of two algorithms that automate yield monitor processing.

Yield monitors, devices that directly measure crop yields during harvest, allow farmers and scientists to quantify yield variability within agricultural fields at different conditions. By using these monitors, it is possible to test relationships between inputs, such as fertilizer and seeding rates, and yield. However, the inherent variability of these data (such as differences in grain moisture across plots) creates errors that require careful processing to ensure that estimates are accurate.

Researchers from Iowa State University compared the accuracy of two algorithms that automate yield monitor processing. The first reproduces common methods found in the literature (aka the “simple” algorithm). The second, more complex algorithm (Rectangle creation, Intersection assignment, Tessellation, Apportioning, and Smoothing; RITAS), recreates the destructive nature of the harvest process.

Using both simulated and real-world experiments, the researchers found that RITAS consistently resulted in smaller errors and more stable estimates than the “simple” method. The differences between the algorithms were large enough to affect

management recommendations. These results demonstrate that processing yield monitor data is not a trivial step and needs to be done properly to accurately assess the relationship between inputs and yield.

Dig deeper

Santos, Caio L. dos., & Miguez, F. E. (2025). A comparative study of yield monitor data processing methods for on-farm agronomic trials. *Agronomy Journal*, 117, e70168. <https://doi.org/10.1002/agj2.70168>

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