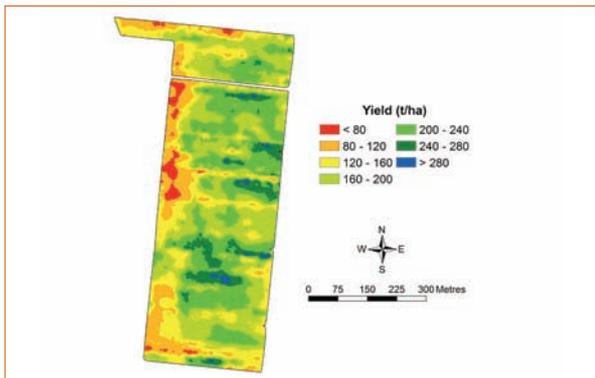


# Sugarcane yield monitor update

## Why do we want to monitor and map crop yields?

Yield maps from multiple crop harvests help inform many precision farming decisions. Knowledge of where productivity varies and the extent of variability on a farm can be combined with information about soils, elevation and farm inputs to understand why yield varies. This information can be used to increase productivity in areas with higher yield potential or to increase efficiency and maximise profitability in areas where productivity is unlikely to increase.



**Image 1:** An example of a yield map.

## What types of sugarcane yield monitors are there?

Recent research has evaluated four different types of sensors that can be installed on a sugarcane harvester to provide yield data:

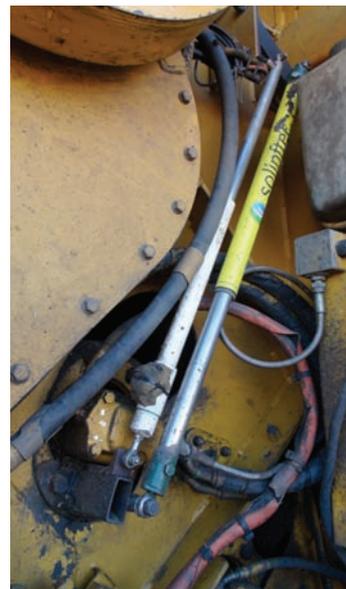
- Roller opening to measure volume through the rollers.
- Chopper pressure, which assumes that the power required to chop cane into billets is proportional to the cane mass.
- Elevator pressure, which assumes that the power required to move the elevator is proportional to the cane mass.
- Load Cell in the elevator floor to measure mass.

## What type(s) of yield monitors are commercially available?

Currently, the only type of commercially available yield monitor in Australia measures the harvester's roller

opening and is produced by Solinftec. Used correctly, this type of monitor can produce accurate results. High and/or varying pour rates can reduce confidence in the monitor's accuracy and the yield maps generated.

Additional types of yield monitors are scheduled to become available in the near future. A weigh pad system is commercially available in Brazil to retrofit to the harvester. The new Case IH harvester will have yield monitoring equipment as standard.



**Image 2:** Two yield monitors that measure the harvester roller openings, a Solinftec commercial monitor (yellow) and a generic model for research purposes (white).

## Which types of yield monitors are the most accurate?

All of the yield monitors that have been studied provide comparable yield data when they are calibrated correctly and the harvester is operated according to best management practices. It is important to remember, that yield monitors do not actually 'know' how much sugarcane has been harvested. They measure volume, mass and pressure, which can be affected by factors such as:

- Variable pour rates
- Variation in harvester ground speed
- Uneven feeding of crops, especially ratoons
- Care and maintenance of devices

Additionally, inaccurate consignment at the mill affects the accuracy of processed data.

For best results, the yield monitor data should be processed on a per-harvest-event basis or when the harvester moves to a new block.

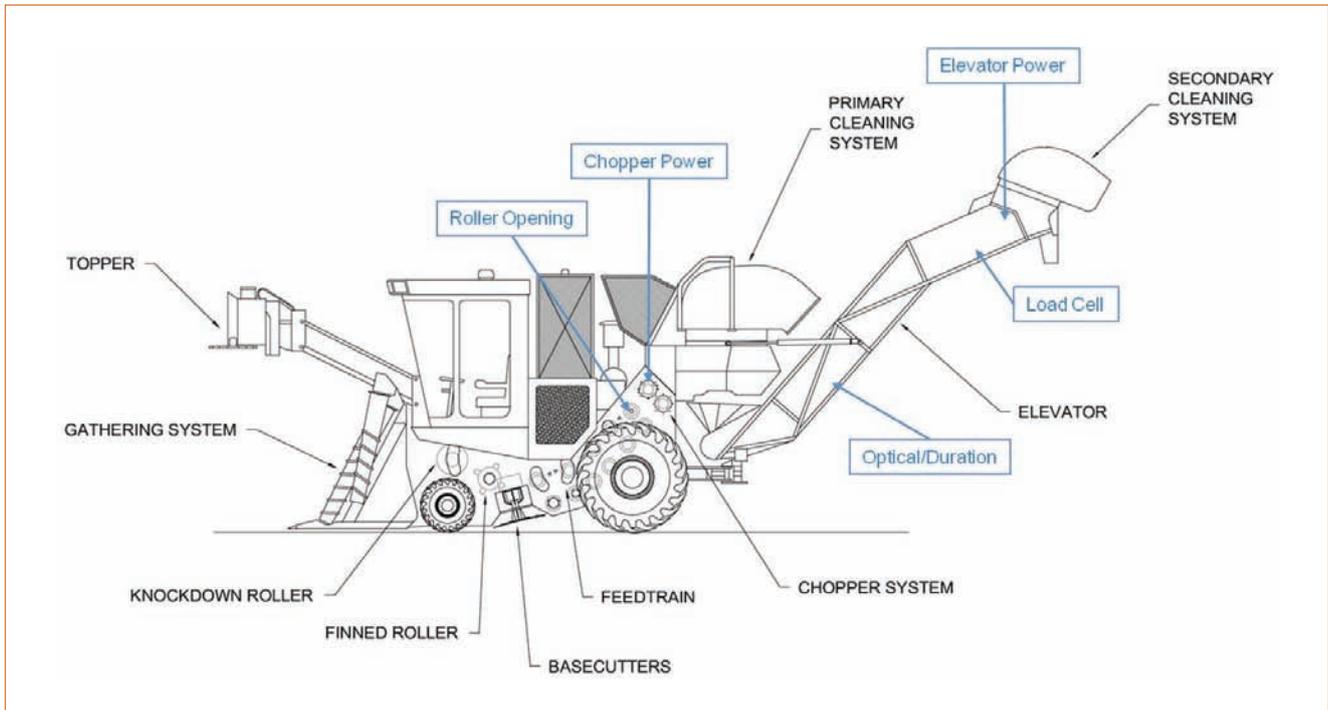
### What next?

Current yield monitor research is scheduled to conclude mid to late 2014, and the outcomes will provide manufacturers with improved information for development of commercial devices.

### References

Jensen TA, Baillie C, Bramley R, DiBella L, Whiteing C, Davis R. 2010. Assessment of sugarcane yield monitoring technology for precision agriculture. *Proceedings of the Australian Society of Sugar Cane Technologists* 32: 410-423.

Jensen TA, Baillie C, Bramley RGV, Panitz JH, Schroeder BL. 2012. An assessment of sugarcane yield monitoring concepts and techniques from commercial yield monitoring systems. *Proceedings of the Australian Society of Sugar Cane Technologists* 34, 7pp.



**Image 3:** Diagram of a harvester showing locations of different types of yield monitors.