



Better data to help inform harvest best practice

A new research project is looking at real-time harvesting sensors, in a bid to drive improvements in harvest best practice across the industry. By Eloise Keeffe, Senior Researcher, SRA

Key Focus Area

Farming systems and production management

Project name

Sensors for improved harvesting feedback: a feasibility study

Project number

2015/080

Investigators

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Project end date

2017

Lack of incentives for key parties in the sugarcane supply chain has resulted in low adoption of harvesting best practice (HBP) strategies.

Poor harvest quality is estimated to cost the industry over \$50m annually. A revision of the payment structure is critical to driving practice change; however, there is currently no measurement mechanism available to facilitate a quality-based payment system.

Real-time or rapid sensors in the harvesting environment will improve harvest quality across the board by allowing contractors to adjust harvester settings based on loss and quality indicators in real-time.

It would also allow growers to monitor contractors' performance and adherence to HBP, allow mills to receive feed-forward information on the quality of incoming feedstock, and provide the data for a quality-based payment system.

Sensing technology must provide meaningful information about actionable issues on-the-go, be easy to implement and use, and have potential to improve productivity by recovering existing losses.

Resource and time constraints prevent real-world evaluation of all sensing options for suitability.

Instead, our feasibility study will identify those sensors and arrangements with the greatest likelihood of delivering and identify strategies for further research in field-based efficacy testing.

This feasibility study will be broken down into six parts:

1. **The Project Scope**, which will define the problem and opportunity to be addressed;
2. **The Current Analysis**, which will be used to define and understand the current harvesting systems and environment;
3. **The Requirements**, which will specify the needs of the end users, who include, contractors, growers, millers, harvester manufacturers and sensor manufacturers;
4. **The Approach**, which evaluates each of the sensors available in the market at the moment, as well as technologies capable of being used as a sensor, against the Requirements;
5. **The Evaluation**, which will identify a subset of systems presented in the Approach with the greatest likelihood of being efficacious in proof-of-concept; and
6. **The Review**, which will be a rigorous assessment of the feasibility study and its recommendations by an independent panel.

Much of the required information will be collected through consultation with industry, harvesting manufacturers, sensor manufacturers and method specialists. This consultation will occur via workshops, face-to-face meetings, and teleconferences.

This project will undertake a feasibility study to identify the sensing opportunities most effective in the harvesting environment. Specific objectives to achieve this include:

- (a) Investigate the current practices and processes of the harvesting community, including the present use of sensors.
- (b) Isolate the cause and effect of harvest quality and loss and the drivers currently preventing change.
- (c) Identify what contractors, growers and millers need and/or wish to achieve from the addition of sensors on harvesters.
- (d) Identify and evaluate commercially available sensors and other measurement systems for their suitability to measure certain parameters in the harvesting environment.
- (e) Identify a small sub-set of systems (4 or less) most likely to succeed in future efficacy testing and develop a research strategy to support this development.