

Tony Bugeja
with Bruce and
a crop of his
sugarcane
ready to
harvest



Tony, John and Mark Bugeja

Project 1: Automatic base cutter height controller on cane harvester

Brothers Tony and John Bugeja, along with Tony's son Mark are second and third generation farmers in the Mackay Whitsunday region.

John controls the harvesting operation and assists with farming and irrigation when he is free from harvesting duties. Tony and Mark control all farming activities and assist John if help is needed with harvesting.

The Bugejas moved to a 1.8 metre controlled traffic system in 2006 after looking at the benefits of the new farming system and realising change was necessary to remain farming large areas with a minimal workforce. They have now converted 100% of their farms with a substantial reduction in machinery applications on their blocks.

Nutrient rates are changed from paddock to paddock and are calculated using a soil testing strategy based on an Electro Magnetic (EM) soil mapping which has been ongoing since 2002 .

The Bugeja's herbicide application is adjusted from annually is based on weed type and pressure typically using some type of residual chemical



A picturesque creek near the Bugeja's farm. All water ways have grassed and vegetated setbacks to reduce the risk of contaminants from the cane paddocks reaching the water during heavy rain.

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PROJECT CATALYST

banded on the stool with knock downs applied to the inter-row using a shielded sprayer.

“If we have a good crop we get a big trash blanket and we don’t need to use much chemical at all. If we have a poor crop, like when we had a lot of flooding, then we have less trash and so need to use more,” explained Tony who has been able to reduce residual herbicide use by 45% in his paddocks with good trash cover.

“The most important thing to remember is that we cannot be regimental, we need to be flexible and respond to the situation with the right chemicals applied in the best way,” explained Tony.

The Bugeja’s are confident that these new farming practices will make their farm more environmentally and economically sustainable. “My son (Mark) is keen to stay on the farm and I want to leave it to him in better condition than it was when I took it over from my father. I think my Dad would be proud of what we are doing now,” said Tony.

Issue being addressed:

Traditionally a harvester operator makes adjustments on his harvester by his own calculations for setting the base cutter height. Problems associated with this practice include, soil loss, driver fatigue, ratoon damage and higher fuel consumption as the machine works harder to cut into the earth.

Solution being tested:

The Bugeja’s trialed an automatic base cutter height adjuster on the harvester. This was a first in the Mackay Whitsunday sugar growing region and one of only a few in the Australian sugar growing industry. It was installed on their harvester in late August 2009.

By using ultra sonic sound waves the automatic base cutter height adjuster, changes height on the run without the controller having to make a judgement. The concept is ideal because of the savings from stool damage and excess exporting of soil from the farming system.

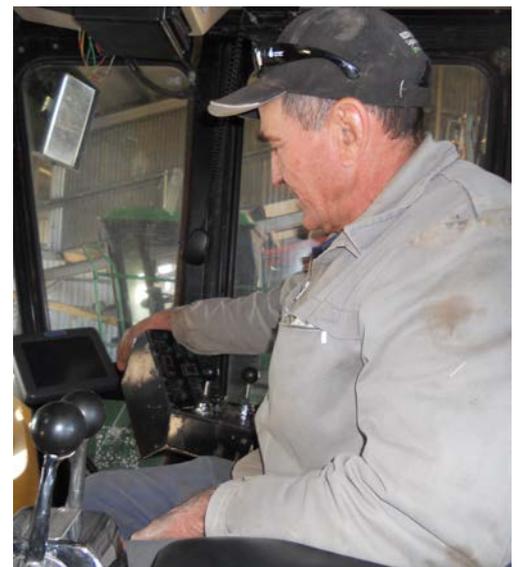
Results:

The base height adjuster was used over two harvests but was too slow to react as cane harvesters travel faster than the software can respond to the change in height required.

The automatic base cutter height adjuster was tested by an experienced operator who found it very convenient to use, aside from the reaction issues. “We believe the idea works and this problem can be resolved with a software upgrade, but NORAC (the makers) are not interested at this time,” said Tony.



Mark Bugeja repairs some farm machinery during the 2012 cane harvest



Tony Bugeja in his cane harvester with GPS guidance equipment

What is Project Catalyst?

Project Catalyst is a pioneering partnership which reduces the environmental impact that sugar cane production has on the Great Barrier Reef (GBR). The project is ‘grower led’ – and involves a group of innovative farmers (termed A-Class growers) that are developing and testing management practices that improve the water quality of the water leaving sugar cane crops.

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