



CASE STUDY



BACKGROUND

Brian Stevens has been farming 54 years, and started adopting sustainable agriculture practices in 1988, when the farm began using green cane trash blankets. Brian has continued adopting sustainable practices, including more recently planting all blocks at 1.85m using GPS.

Brian decided that he needed to do this current trial on his Illbilbie farm after he noticed that even in mature plant cane (90t/ha), there was still considerable sediment in the runoff water after some heavy rain.

The trial was set up on Brian’s farm to investigate if reducing the amount of tillage his soil underwent would equate to a reduction in sediment runoff. A 31ha paddock was planted on the 7th May, 2017 and has yet to be harvested. The soil in this paddock is classed as sandy–clay loam. Three treatments were chosen.

- Treatment 1 – Full tillage – offset disc twice, rip, hill up and then wavy disc
- Treatment 2 – Minimum tillage – slash soybean residue, rip and roll beds, wavy disc twice
- Treatment 3 – Zero tillage – slash soybean residue

	Rep 3		Rep 2		Rep 1		
	T3R3	T2R3	T3R2	T2R2	T3 R1	T2 R1	T1 R1
2 rows	8 rows	8 rows	8 rows	8 rows	8 rows	8 rows	9 rows
Minimum Till buffer	Zero Till	Minimum Till	Zero Till	Minimum Till	Zero Till	Minimum Till	Full Till
		Sampler 3 Row 2/3	Sampler 2 Row 2/3				Sampler 1 Row 4/5

trial layout

FOCUS ON



- ▶ Identifying any correlation between sediment loss and the amount of tillage the treatments underwent.
- ▶ The end goal of evaluating if growers can reduce tillage levels while maintaining current yields.

KEY POINTS



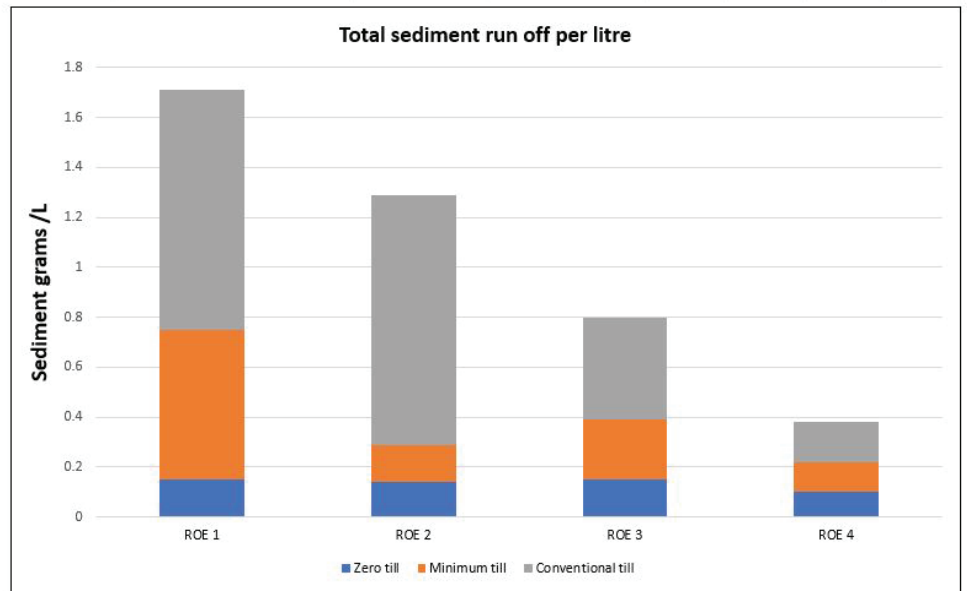
- ▶ Zero till treatments consistently produced the lowest sediment load, which is expected, as undisturbed soils retain their structural integrity and are less susceptible to dispersion from water.
- ▶ The zero tillage and minimum tillage treatments also had some level of trash blanket from the preceding sugarcane crop remaining on the inter-row surface which likely contributed to the reduced loss of sediment.
- ▶ As tillage levels on soil increase so does the potential sediment losses.

OUTCOMES TO DATE



The water found in the conventional tillages inter-row appeared to have the highest amount of sediment loss, with water observed as cloudy, while the zero till treatments inter-row water was considerably cleaner.

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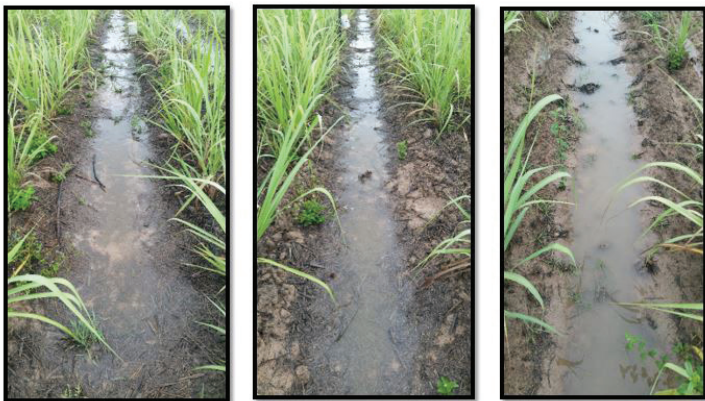


In each treatment, a KP water event sampler was placed to take readings at pre-determined intervals and to detect when a “runoff water” event had occurred. During a runoff event, a sample of water is collected by the KP Sampler every 15 minutes. The water sample is collected in a large bottle which is then filtered in the laboratory to measure the amount of sediment collected in the sample. The sediment is then dried and weighed and results compared between treatments.

“We have always been trying to reduce our costs by reducing the amount of tillage and trying to improve our stewardship of the farm. The sustainable agriculture way of farming has helped on both counts, but is considered to be a work in progress. We had done some zonal tillage on the same beds before and this is an extension of that. I have believed that the major sediment and therefore fertiliser runoff has been occurring in our plant crops and this may be a way to reduce those problems and allow us to increase our organic carbon levels,” Brian said.

“We did have some problems with grass and weeds in the zero and zonal tillage trials so some changes need to be made to our normal chemical application practices. Some heavy rain fell before shoot emergence and it was soon evident that with the zero and zonal tillage it was much easier to get a good strike. I’m looking forward to the harvest results, but I think the zonal tillage may be the best crop.

“We will do another block, about 12ha this year. Mostly zonal tillage, but with some zero as well. This block had soy beans planted so not sure exactly how we’ll go about the soy stubble, but may slash it before planting. We’ll probably try a few rows straight through the stubble just to see if it’s possible.”



Zero till

Minimum till

Conventional till

Increase in suspended sediment



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