

An aerial photograph of a sugarcane field. The field is divided into long, straight rows of young sugarcane plants. A central path or track runs through the middle of the field. The soil is dark brown, and there is a significant amount of dry, brown cane trash (mulch) covering the ground between the rows. The perspective is from a high angle, looking down the length of the field.

# Reduced tillage establishment of sugarcane at SRA Mackay

A LONG-TERM GREEN CANE TRASH BLANKET (GCTB)  
VS BURNT TRASH TRIAL IS CONTINUING AT THE  
SRA MACKAY STATION AS PART OF A NEW  
SRA-FUNDED PROJECT. BY DR BARRY SALTER



Through a new project called *Establishing sugarcane farming systems to improve soil health*, SRA is using a trial site that has had either a trash blanket or trash burnt after harvest since the early 1990s. As part of the new project, the site is being used to assess whether tillage between crop cycles, in order to establish plant cane, affects accumulation of soil carbon and therefore soil health.

To do this, a number of treatments have been established. These are:

1. Long-term trash burning, sugarcane planted after one pass of a wavy disc
2. Long-term trash burning, sugarcane planted after one pass of a bed renovator, and one pass of a wavy disc
3. Long term GCTB, sugarcane planted after one pass of a wavy disc
4. Long term GCTB, sugarcane planted after one pass of a bed renovator, and one pass of a wavy disc.

In all treatments, a coulter was also run down the centre of each bed to loosen soil in the planting zone while also applying phosphorus before planting.

Even though treatments that were worked with the bed renovator would also be considered reduced tillage, this treatment imposed significantly more tillage and soil disturbance than the wavy disc on its own.

A single-row double-disc opener was used to plant SRA9<sup>db</sup> on 8 August 2018. Some observations were:

- Prior to any tillage, the bed profile in plots with a history of trash being burnt was almost flat. This was most likely due to beds slumping over time due to a lack of soil cover. Planting these plots, with only one pass of a wavy disc, was possible, but the soil was hard and compacted and it was difficult to achieve reasonable planting depth. It should be noted that a combination of trash burning and near zero tillage is not a recommended practice and is only being used in the experiment to compare against other treatments.
- Planting into GCTB plots with only one pass of a wavy disc was easier than where trash was burnt. The soil was less compact and allowed greater planting depth. Significant organic matter remained on the soil surface using this method.
- Planting plots following one pass of a bed renovator and a wavy disc was more practicable and there was no issue achieving good planting depth. Despite the increased tillage, trash and organic matter from the previous crop cycle was still evident and some soil structure remained.
- While this trial was planted in August, one of the benefits of reduced tillage planting systems is the increased chance of planting in Autumn as less land preparation is required following the wet season. Doing this would also capture soil moisture that is almost always present in Autumn.

The trial site was irrigated (50mm) a week after planting, using a lateral irrigator that has been installed at the station, to ensure good crop establishment. Crop growth will be monitored and soil samples will be collected to determine whether there are differences in soil condition between treatments. ■

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*(Over page - top) Renovated beds following planting. (Over page - bottom) Long-term burnt trash plots tilled with one pass of a wavy disc and planted with a double disc opener planter. Note the flat, hard beds and limited organic matter. (Above left) Cane billet planted into long-term trash blanketed plots following one pass of a wavy disc. Note the presence of organic matter and soil cover. (Top right) Bed renovator. (Middle right) Condition of beds following one pass of a bed renovator and one pass of a wavy disc. (Bottom right) Planting into long-term trash blanket plots following one pass of a wavy disc. These beds were more pronounced than where trash was burnt.*