



GameChanger



# CASE

# STUDY



THE GAMECHANGER PROGRAM IS MANAGED BY **REEF CATCHMENTS (MACKAY WHITSUNDAY ISAAC) LIMITED NRM GROUP** IN THE MACKAY-WHITSUNDAY REGION.

**TRIAL:** Adjustment of nitrogen application rates  
*Based on yield potential of older ratoons*

**LANDHOLDER:** Malcolm Langdon

**LOCATION:** Dawlish, 8 km west of Sarina

**CATCHMENT:** Alligator Creek

**RAINFALL:** 1700 mm

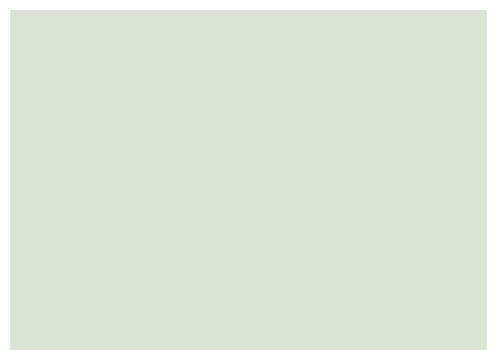
**PROPERTY SIZE:** 196 ha

**LANDUSE:** Sugarcane

## GameChanger... Innovation in SugarCane



The fast-tracking adoption of ‘game changing’ sugarcane nutrient and pesticide management practices (GameChanger) project is funded by the Australian Government Reef Programme. GameChanger management practices focus on the use of precision agriculture technologies and advanced planning to provide opportunities for cane farming to be more economically and environmentally sustainable.



## GOAL

This project aims to determine the nutrient rates to be applied to match the reduced cane yield potential in older ratoons.

## OVERVIEW

Despite the best management efforts of growers, yield loss associated with aging ratoons occurs within all sugar cane blocks and across all cane varieties. Some cane varieties have faster rate of decline than others but the Moses project reported that on average, production yields for plant and 1st ratoon are almost identical with yield loss beginning in the 2nd ratoon crop. Yield losses then continue at a constant rate of decline at approximately 4% to 5% per year. Predominantly yield decline in older ratoons is caused by the effects of harvester damage and the impacts of pest and disease on cane root systems.

## CURRENT ACTION

Mal is aiming to reduce N on fourth or older ratooning canes. Malcolm usually uses a liquid fertiliser contractor to apply his nutrients to his ratooning sugarcane. This trial looked at two different fertiliser rates, compared to Malcolm's usual application rates of 170kg/ha N.

The fertiliser treatments were based on DYP of 120 tonnes of cane per hectare and a BYP of 81 tonnes per hectare, based on historical yield data, as well as spatial and apparent Electrical Conductivity (ECa) mapping (Figure 1).

Mal had hoped to see no significant difference in yield and sugar content due to reducing the nitrogen component of the fertiliser and by applying a combination of liquid and granulated fertiliser.

**BY BETTER MATCHING FERTILISER TO THE CROP POTENTIAL, MALCOLM HOPES TO SEE ECONOMIC BENEFITS DUE TO SAVINGS IN THE FERTILISER COST.**

## OUTCOMES TO DATE



Results for the trial are shown in Table 2. This table shows that the yields remained unchanged for the lower N rate as compared to the control.

Ron and Peter Sutherland from SSP had observed that the 2015 season was unseasonably dry and there was high yellow canopy syndrome (YCS) pressure, so different results may be achieved for the trial in more typical year. However, despite these observations the results achieved were very encouraging.

Treatment	Description
T1 – Based on block yield potential = 81 t/ha	Lo N Planter @ 3.8m <sup>3</sup> /ha Urea @ 160 kg/ha Total Nitrogen = 114 units Total Cost/ha = \$468.36
T2 – 6ES based on DYP = 120t/ha	Lo N Planter @ 3.8m <sup>3</sup> /ha Urea @ 240 kg/ha Total Nitrogen = 150 units Total Cost/ha = \$522.04
Control	Lo N Planter @ 3.8m <sup>3</sup> /ha Urea @ 285 kg/ha Total Nitrogen = 170 units Total Cost/ha = \$552.24

**QUITE CLEARLY, THERE IS SCOPE TO IMPROVE THE NITROGEN USE EFFICIENCY OF OLDER RATOONS BY DECREASING NITROGEN APPLICATION RATES IN LINE WITH YIELD DECLINE.**

Treatment	t/ha	CCS	ts/ha	% Change Grow Cost
T1	56	17.0	9.57	-6%
T2	56	17.05	9.62	-2%
Control	57	17.0	9.70	