

Case Study 8

Ian Haigh, Ayr

Managing Nutrition within field and Across Crop Classes.

Overview

Ian Haigh has 240 hectares of land under sugarcane production at Brandon, near Ayr. Now that Ian Haigh has upgraded to a GPS controlled traffic farming system he can now move towards using different fertiliser rate within farm block. Ian uses a Variable Rate Nutrient Management (Granular) system, based on yield maps, EM Mapping soil maps, elevation, block history and precision planning. He uses variable rate application equipment including a fertiliser box, which has had Reef Rescue funding support.

This trial is being done with support from Farmacist through Project Catalyst.

The issues being addressed

Ian is always interested in looking at new technology that is practicable and affordable. These blocks have distinctive yield zones and supplying the same amount of nutrient to each zone could be a risk both economically and environmentally.

The two questions being answered in this trial are:

1. Is there a difference in yield based on spatial location within a paddock?
2. If there is difference in yield based on spatial location, will different rates of fertiliser have an effect on yield?

Treatment	Position	Yield (t/ha)
1	Top	102.31 ^b
2	Middle	118.14 ^a
3	Bottom	125.00 ^a



Ian Haigh is on 1.8 m super singles under GPS guidance.

Solution

The solution being trialled has two components to answer the two questions.

Q1: Is there a difference in yield based on spatial location within a paddock?

The block has been EM mapped and yield maps have been created using spatial imaging. The findings are shown in the yield table below.

Q2 If there is differences in yield based on spatial location, will different rates of fertiliser have an effect on yield?

Different fertiliser mixes were applied to the zones as per the tables below, with high, medium and low rates on each yield zone. This way we could measure the difference in yield response to the varied rates across the three measured zones.

Treatment	t/ha
Top @ 200N	110.37 a
Top @ 180N	100.00 a
Top @ 160N	101.47 a
Top @ 140N	97.40 a

Treatment	t/ha
Bottom @ 200N	118.13 a
Bottom @ 180N	122.60 a
Bottom @ 160N	138.87 a
Bottom @ 140N	120.40 a

Treatment	t/ha
Middle @ 180N	121.48 a
Middle @ 160 N	110.73 a
Middle @ 140 N	118.86 a

What were the results?

Mapping and soil tests showed that the yield differences were due to changes in soil type within the block. Applying various rates to the three zones showed that there were other factors other than nutrition limiting the cane yield. These results show

us that we could have easily reduced N rates in this last ratoon as there is more important yield limiting factors at play here besides nitrogen. Since adopting this technology Ian has been able to expand it to variable rate gypsum.

Treatment	N Rate	t/ha
1	200 kg/ha	115.67 a
2	180 kg/ha	125.20 a
3	160 kg/ha	118.90 a
4	140 kg/ha	114.25 a



Ian's fertiliser application machinery.