

Site specific plant growth regulators at Bute, 2011

Key Findings:

- Significant reduction in height of both wheat and barley to an application of Moddus and Cycocel.
- No yield responses observed to plant growth regulator application in either wheat or barley.

Why do the trial?

To assess the effect of plant growth regulators on wheat and barley yield at Bute in different paddock production zones.

How was it done?

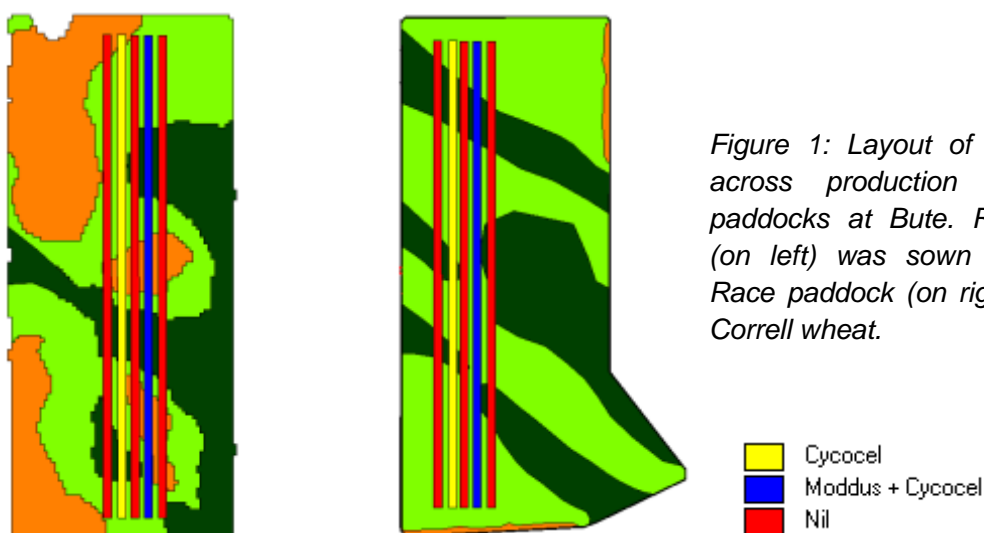
Plot size 36m boom width and length of paddock **Fertiliser** DAP @ 100kg/ha

In 2011 two plant growth regulant treatments were applied to wheat (Correll) and barley (Fleet) and compared with nil. The treatments were applied with the growers boom spray with strips the full length of the paddock applied on August 11th 2011 when the crops were at GS31.

The two paddocks had three treatments applied. These were

1. Cycocel @ 1L/ha + Moddus @ 200mL/ha @ GS31
2. Cycocel @ 1L/ha @ GS31
3. Nil

Measurements of crop growth (NDVI) were made from an aeroplane in late August and measurements of crop height were made at harvest time. Yield differences were measured using the harvester yield monitor.



Results

The treatment of Moddus + Cycocel had the greatest growth regulant effect, reducing the height of wheat by 5-10cm and barley by 10-14cm (Table 1) and was visually obvious at ground level and also in the aerial imagery (Figure 2a & d). Cycocel applied alone provided only a small growth regulant effect and was not visually obvious.

Table 1. Crop height measurements (cm) at maturity for wheat and barley on two soil types.

Crop	Zone	Nil	Cycocel	Moddus + Cycocel
Wheat	Loam flat	73.6	72.3	68.7
Wheat	Sand hill	86.3	82.0	76.6
Barley	Loam flat	76.5	73.1	62.1
Barley	Sand hill	71.7	74.9	60.4

Yield differences between treatments were not significant for most of the zones along the trial strips, with little difference observed between the growth regulant treatments and nil, any yield gains were inconsistent and small. In Ronnies paddock (barley) there were some yield reductions observed with the growth regulant treatments on the southern end of the trial. These were significant and more pronounced in the Moddus + Cycocel treatment, with a yield reduction of 0.2-0.3t/ha. Given the high cost of these treatments (approx \$45/ha for Moddus + Cycocel) and the negative yield effect in some areas the application of growth regulants in the Bute region appears limited, and would have made a loss in season 2011. Had the crop not endured a 6 week dry spell shortly after the growth regulant application the results may have been different, however the final paddock yields were still average for the district, so the crops were not under drought conditions. Potentially in a higher yielding season (> decile 7) there may still be a benefit from the use of growth regulants in this region.

It was expected that the benefits of the growth regulants would be related to the amount of crop growth. It was expected they would have a greater beneficial impact where the crop was identified as being thick and bulky, according to the aerial imagery and that the effects would be less or negative where crop growth was less and possibly already constrained by other factors such as nutrition. If this were correct, crop imagery could be used to target growth regulants to areas where a positive response is most likely. There was lower NDVI at the southern end of Ronnies paddock, and this is where a negative yield response was observed, indicating the hypothesis may be correct, however the link is not strong.

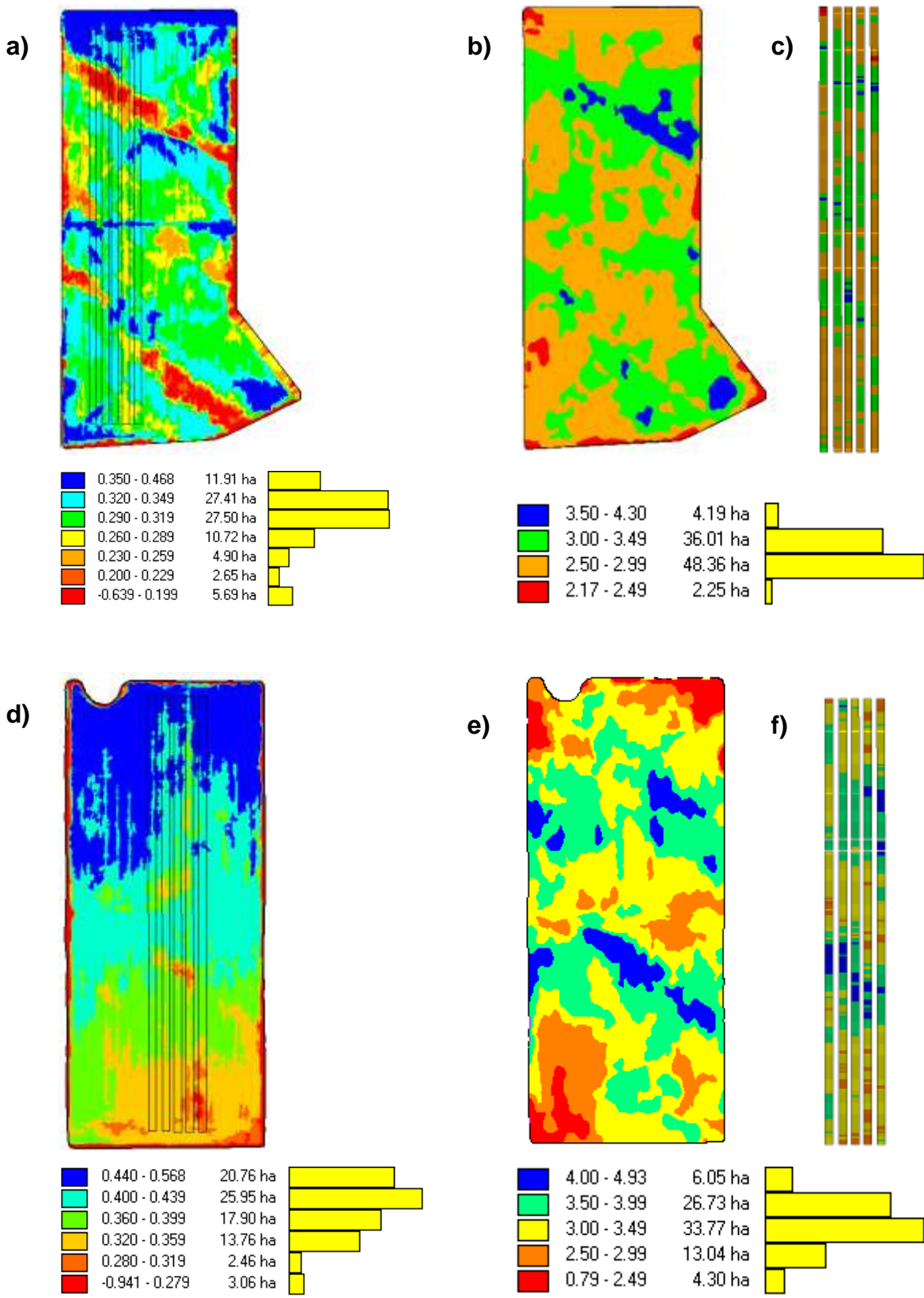


Figure 2 a) Aerial image (NDVI) of Race paddock collected on 29/8/2011, b) wheat yield (t/ha) map for Race paddock, c) yield of individual trial strips in Race paddock, d) Aerial image (NDVI) of Ronnies paddock collected on 29/8/2011, e) barley yield (t/ha) map for Ronnies paddock, f) yield of individual trial strips in Ronnies paddock.