

# Pasture cropping boosts kikuyu pasture productivity

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With very little research to go on, Esperance Angus stud breeder Andrew Kuss, took the 'bull by the horns' and embarked upon a mission to increase the productivity of his stagnant kikuyu pastures.

He backed himself to crop into 160 hectares of kikuyu, unaware if it would achieve his aims of: 1) silvergrass control; 2) reinvigoration of the kikuyu and 3); provide a profitable cash crop.

## Pasture composition changing

Andrew had been growing kikuyu pastures for the last seven years to protect his non-wetting and poor nutrient holding capacity sandy soils from the ravages of the strong winds, common year round in Esperance.

Whist it was doing a great job of

stabilising his paddocks, the kikuyu was starting to stagnate. It no longer provided a summer flush of feed and was actually inhibiting winter feed production.

Silvergrass was also on the march. It was changing his pasture composition to one dominated by weeds, instead of the serradella that Andrew had originally sown. Looking for a solution to these challenges and with a projection of strong canola prices, he decided that canola would be the best cropping option.

## Farm info.

Grower: Andrew and Fiona Kuss

Location: 'Isola Vista', Esperance

Soil type: Non-wetting deep sand to shallow gravel

Property size: 520 ha

Ave annual rainfall: 550 mm

Enterprise mix for 2012: 70% pasture, 30% crop.

## Pasture cropping with canola seen as the solution

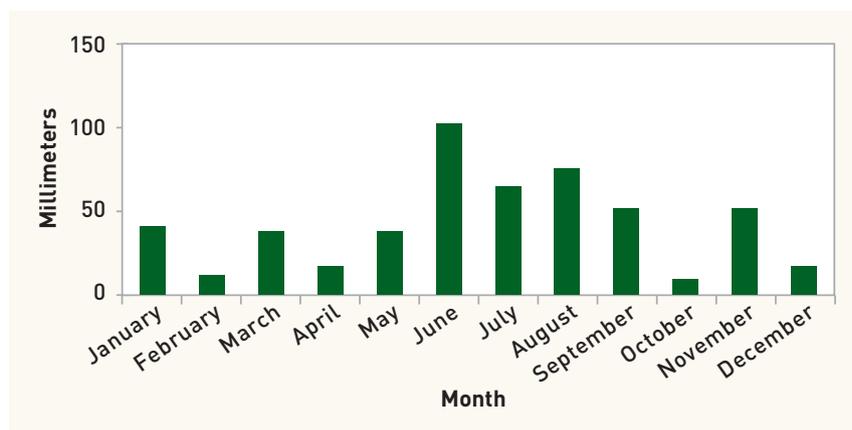
Andrew believed Triazine Tolerant canola would work best and enable herbicide choices that would control silvergrass. He decided on a short to medium season variety (Stingray) on the basis that it was likely that the kikuyu would be regrowing in spring and be competing for soil moisture during pod fill. He was also chosing a variety suitable for direct harvesting, to avoid the kikuyu inhibiting swathed canola being picked up efficiently.

On the 1st May, Andrew aimed to chemically induce dormancy in his kikuyu and used Gramoxone (1.5L/ha) to knock down the kikuyu and silvergrass. Seeding occurred from the 10th to the 16th of May — the canola was seeded at 5kg/ha with 100kg/ha of MacroPro Extra fertiliser (N:P:K:S 10:11:11:10).

Further spraying took place on the 5th July with the herbicides Atrazine (1.1kg/ha), Simazine (550g/ha) and Select (250ml/ha) applied for kikuyu and silvergrass control. At this point, the kikuyu was still growing and competing with the canola seedlings.

Later in July, Atrazine (550g/ha), Simazine (550g/ha) and Select (350ml/ha) were applied again for further silvergrass control and to help maintain the kikuyu at a level of dormancy where it was not competing greatly with the

FIGURE 1. 'Isola Vista's' monthly rainfall figures for 2012





The pasture composition Andrew was hoping to achieve by cropping canola into his kikuyu. Lush kikuyu growth after harvest (left), kikuyu and serradella, and no silvergrass after autumn rain (right).

canola. Nutritionally, the crop was managed in the same way as a regular canola crop with nitrogen and sulphur.

### Late rains, hot dry conditions, hail... at least he had the kikuyu

Although the canola crop was seeded in mid-May, it didn't germinate until good rain was received in mid-June. This meant that even though a shorter season variety was used, it was set up to have to compete against the regenerating kikuyu for moisture and nutrients during flowering and pod fill. As a result, Andrew suspected this would result in a yield penalty.

Climatic conditions had a further impact on yield with the hot and dry conditions that prevailed from the second half of September through until mid-November, right when the pods were filling (see Figure 1). To make matters worse, Esperance experienced a three day period of 70-80 km/hr winds in mid-November, just prior to harvest, which resulted in significant pod shatter to Andrew's crop.

When harvest commenced, the canola yield was poor, averaging 800kg/ha. In the end only 25% of the canola crop was able to be harvested before a significant hail storm resulted in 80% grain loss onto the ground, as calculated by the insurance assessor.

Not surprisingly, Andrew's expectations on income from the canola crop were not met and when the gross margin for the crop was calculated, which took into account all growing costs, a loss of approximately \$60/ha was realised.

### Grazing returns encouraging

Fortunately, Andrew was not growing the canola for grain yield alone. The level of silvergrass control and kikuyu reinvigoration he was hoping for was far in excess of his original expectations. The value of the enormous amount of feed available after harvest was twice that of the loss incurred from the canola crop.

Immediately following harvest, Andrew introduced 55 breeding cows and 130 calves onto the reinvigorated kikuyu. They ended up grazing the area from early December through until mid-April, a period of 140 days, before they were put onto an annual pasture paddock.

Autumn rain in March 2013 resulted in another burst of growth in the kikuyu coupled with a significant serradella germination which was the best Andrew had ever seen on his property.

The carrying capacity was 13.3 DSE/ha for this summer/autumn grazing period, which equated to 1862 DSE grazing days/ha. As a result, the grazing return was approximately \$128/ha and there was barely a silvergrass plant to be seen.

In addition to the direct grazing return provided by the reinvigorated pastures, Andrew was also able to significantly reduce supplementary feed costs.

His summer and autumn hay costs were significantly reduced from \$16,500 (ie 150 rolls @ \$110/roll) to zero and his pellet requirement was halved. Andrew continued to provide some supplementary feed for his cattle to maintain the growth rate of the stud calves to ensure they were ready for his annual bull sale.

In reflecting on the outcomes of cropping canola in to kikuyu, Andrew said from a cash crop point of view it wasn't successful. However, from a total enterprise point of view it was advantageous in terms of reduced feed costs and improved pasture productivity.

On the back of this experience and armed with the confidence that he can maintain maximum Kkikuyu productivity, Andrew is planning to increase stock numbers by cropping into it at least every three years.

In the future Andrew is adamant that if he seeds a cash crop like canola or a forage crop into kikuyu again he will use Glyphosate, rather than Gramoxone as a knock down, and he will do it 2-3 months earlier to help conserve soil moisture from the summer and autumn rains that commonly occur in the Esperance region.

As far as Andrew is concerned perennial pastures are a 'no brainer' for his sandy soils and wind exposure, and pasture cropping has a role to play in their management and productivity. ✓

### Acknowledgements



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