Kikuyu pastures: the quality and quantity

Background

Kikuyu is proving it has an important role to play in some of the farming systems on Kangaroo Island. It is a tough, hardy perennial that can, unlike many other perennials, withstand heavy grazing and set stocking. It is a summer active grass, meaning it can provide green forage for livestock at a time when other pastures are of low quality and, being winter dormant, it allows annual companion species such as sub clover to grow well in the winter months. Its dense turf-like growth provides excellent soil cover during summer reducing erosion risk and, due to its high water usage, it can reduce salinity impacts too.

It also tolerates waterlogging and is relatively drought tolerant. Freshly grazed kikuyu leaves can exceed 70% digestibility, metabolisable energy of around 10 Mg/ha dry matter (DM) and crude protein of between 10 to 20%. Additionally, it is one of the few perennial species suited to acidic infertile sands.

What was done

Over the last few years there has been a significant increase in the area sown to kikuyu. We now know that it will grow and persist on our soils, but we are yet to get an objective measurement on their actual performance compared to an annual pasture. Three sites on Kangaroo Island were selected (John and Jo Symons, Hundred of Duncan, Ian and Virginia Green, Hundred of Menzies, and Terry and Ros Howard, Hundred of Dudley) to compare an existing kikuyu stand to an adjacent paddock of annual pasture. All paddocks were run according to the farmers' normal farming practices. Although the paddocks selected on Symon's property are also the paddocks being used for the cost benefit analysis, refer to the paper 'Kikuyu pastures: do they pay?'

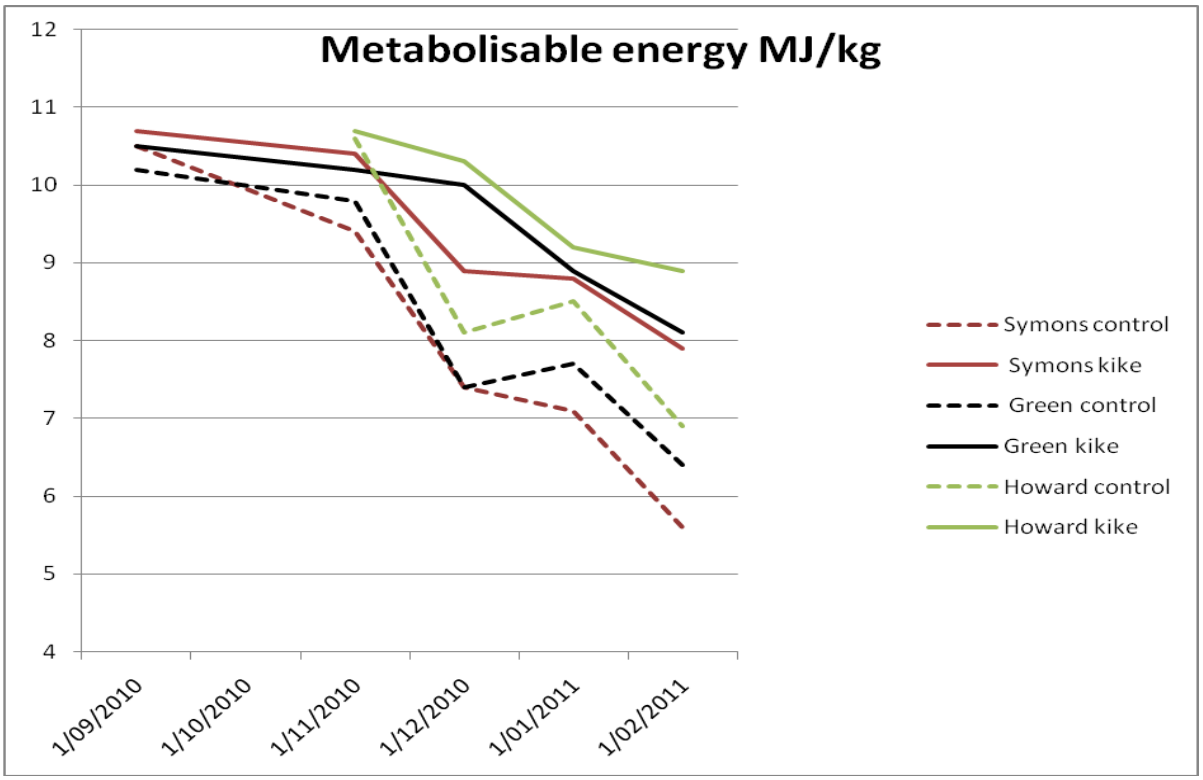
At each site both paddocks have been measured for dry matter production (using a falling plate meter) and feed quality (feed test) on a monthly basis since September 2010. In addition, grazing pressures (DSE/ha) were recorded.

Results

Feed Quality

For nearly all the feed values for the four key determinants (crude protein, metabolisable energy, neutral detergent fibre and relative feed value) the kikuyu paddock out-performed the adjacent annual pasture paddock. It must be remembered however, that the monitoring started in late Spring as the annual feed was drying off and the kikuyu was starting to grow and it has been an ideal summer for kikuyu with plenty of rain. The monitoring will continue for a full twelve month cycle to see how the pastures compare through autumn and winter.

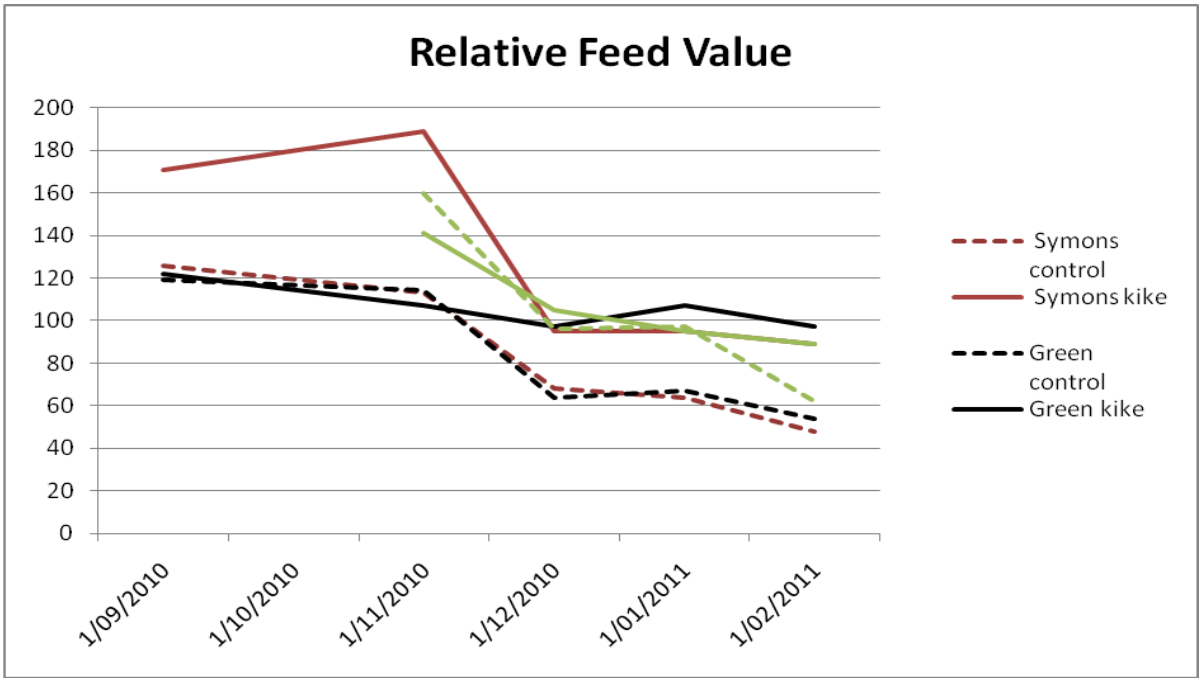
FIGURE 1 **Changes in metabolisable energy over time**



The ideal range for lactating livestock is greater than 12 and greater than 8 for dry stock. All pastures decreased in value over time and by December all the annual pastures were less than ideal for all stock types whilst the kikuyu remained suitable for dry stock.

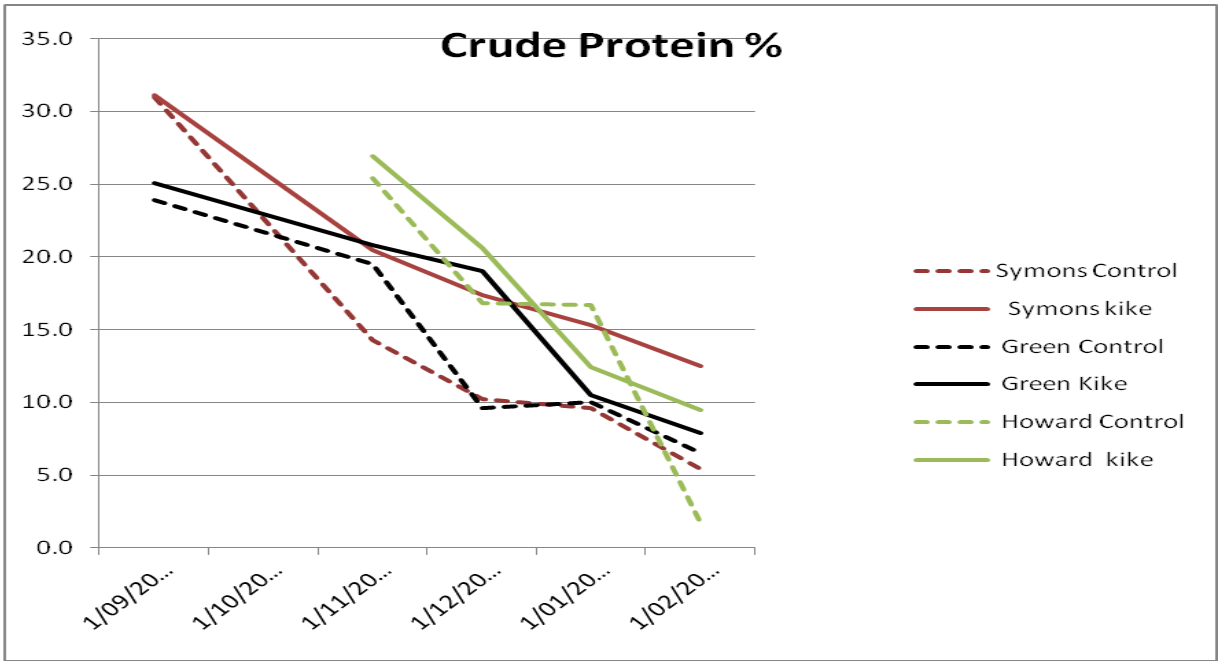
The fibre % for the annual pastures increased over time, as would be expected as the feed dried off, peaking at 80% by February. The kikuyu also increased but at a lesser rate, peaking at approximately 60% by February.

FIGURE 2 **Changes in relative feed value**



100 is considered average for all stock types for relative feed value. Again all pastures decreased in value over time, with two kikuyu pastures (Symon's and Howard's) only just dipping below the average line in late summer. All the annual pastures were below average from December with Howard's holding its feed value until January.

FIGURE 3 **Changes in crude protein value**



Again, similar trend lines with all pastures decreasing in quality over time. Ideal figures are 16-18 for lactating cattle, 16 for lactating sheep and 8 for dry stock.

In all cases, except for Howard's in late summer, the kikuyu pastures had higher protein levels than the adjacent annual pastures.

The suggested "ideal" levels are extracted from "Nutrient Requirements of Domesticated Ruminants" published by CSIRO 2007, a Dairy SA factsheet on mineral supplements prepared by Dr Geoff Judson September 2003, and information from the Feed Test Laboratory at Hamilton.

Grazing Pressure

The sheep on both Symons paddocks are being ran at the same stocking rate (10 weaners/ha). The stock at Greens and Howard's are being managed by the owners under their normal grazing regime. Stock numbers are recorded and used to estimate an average stocking rate (Table 1).

TABLE 1 **Stocking rates comparisons between the annual and kikuyu paddocks between October 2010 and March 2011-03-29**

Property	**Stocking rate (DSE/ha)**
Howard kikuyu	17.5
Howard annual pasture	10.7
Green kikuyu	17.3
Green annual pasture	10.5

Both kikuyu paddocks ran more stock than the adjacent annual pasture paddocks. This is to be expected as the kikuyu paddocks are in a period of active growth over the summer/autumn period whilst the annual pastures senesce over the summer months. All paddocks will be monitored for a full twelve months to

enable a comparison between winter, spring, summer and autumn growth patterns.

Take home messages

- In terms of feed value, kikuyu out performed the annual pastures for nearly all criteria during the spring/summer period.
- Kikuyu paddocks were able to sustain a higher stocking rate than the annual paddocks over the spring/summer period

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- GRDC Grain and Graze 2
- John and Jo Symons
- Ian and Virginia green
- Terry and Ros Howard

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