IMPROVING PASTURE COMPOSITION INCREASES WOOL RETURNS IN EUCALYPT WOODLANDS

T.J. Hall[1], R.G. Silcock[2], J.J. Sevil[1] and J.R. Van der Meulen[1]
Department of Primary Industries, [1]PO Box 308, Roma 4455 and [2]PO Box 102, Toowoomba 4350, Queensland, Australia

ABSTRACT
A sheep grazing experiment in red earth Eucalypt country on semi-arid pastures dominated by either Gayndah buffel grass (*Cenchrus ciliaris*) or wiregrass (*Aristida jerichoensis*) quantified liveweight, wool production and quality, and financial returns. Wethers were grazed at 0.32 and 0.6 ha/sheep. In year 1 there was no significant effect of either stocking rate or pasture type on liveweight or wool growth rate. Vegetable fault was greater in the fleeces from the wiregrass. The sheep grazing buffel grew better than those on wiregrass when stocking rates were doubled in year 2, while pasture yields remained high. The value of wool produced by flock 2 on the buffel was also higher than that from the wiregrass, due to smaller price discounts, although the base price was higher initially due to lower fibre diameter from the wiregrass. Over two years, there was a 6.7% price advantage of $3.51/ha from the wool produced on the buffel pastures.

KEYWORDS
sheep, wool production, wool quality, liveweight, pasture composition, pasture condition, *Aristida, Cenchrus*

INTRODUCTION
Wiregrasses (*Aristida* spp.) are increaser weed species of poor grazing value on the light textured soils of semi-arid wool growing areas of southern Queensland. They are stemmy, of low palatability and their sharp seeds can cause high levels of vegetable fault which reduce the value of fleeces. In the 1994-95 season, local fleece wool was devalued to 85% for 1-3% grass seed and shive, to 74% for 3-7% contamination and to 67% for >7% grass vegetable fault (Australian Wool Corporation). This severe devaluation can be reduced by changing the native pasture condition via a removal of the wiregrass or by replacing the native pasture with sown buffel grass. Our grazing experiment compared the performance of wethers on both buffel (*Cenchrus ciliaris*) and wiregrass (*Aristida jerichoensis*) pastures over two years on a red earth soil near Roma, Queensland (Silcock and Hall, 1996). The aim was to quantify seasonal liveweight fluctuations plus wool production, quality and value from sheep grazing on a good buffel grass and wiregrass dominant pastures.

METHODS
The experiment was established on adjacent pastures dominated by either Gayndah buffel grass or wiregrass growing on red earth soil in cleared poplar box, silver-leaved ironbark and wilga country near Roma. There were two stocking rates, 1 sheep to 0.32 ha and 0.6 ha, and 2 replications imposed on both pasture types. Two flocks, of four 2-tooth wethers, were run in the 1.3 and 2.4 ha paddocks. Flock 1 grazed from January 1994 to August 1995 and was shorn in December 1994 and August 1995. Flock 2 was run from December 1994 to December 1995, and was shorn at the end of the trial. The double stocking rate for eight months was to place a higher grazing pressure on the pastures following abnormally high grass growth in the 1994-95 summer.

Sheep were maintained worm and lice free and were treated to prevent fly strike during the trial. Liveweights were recorded every two months. At shearing, fleeces were weighed before and after skirting. Mid-side samples were analysed for yield, fibre diameter, length, strength, style and vegetable fault. Skirted fleece values were calculated from the mean price received for merino fleece of the same fibre diameter in the 1995 December quarter. This value was then adjusted for the quality components of yield, style, length, strength and vegetable fault. Skirting values were added to fleece values and adjusted to net returns per head and per hectare by deducting selling charges.

RESULTS
Good rainfall summers of 516 mm and 401 mm in 1993-94 and 1994-95 respectively, contrasted with no significant winter rain and consequently negligible winter herbage. There was 95% buffel and 1% wiregrass in the 'buffel' paddocks and 47% buffel and 37% wiregrass in the 'wiregrass' paddocks at the start of the experiment (Hall *et al.*, 1996). Pasture dry matter yields were high during the trial (to 3160 kg/ha) and the sheep liveweights reflected the seasonal quality change in the grass dominant pastures. There were no significant differences in liveweights between treatments in the first year, however during the second year, both flocks were consistently heavier on the buffel pasture (Figure 1). The differences were greatest in winter when the buffel had more leaf than the wiregrass pasture. Liveweights were not very different between the stocking rates although sheep at the lower stocking rate lost less weight in winter of the second year.

Clean skirted fleece yields of flock 2 were 0.5 kg heavier from the buffel pasture (2.5 kg) than the wiregrass pastures in the second year, with a higher fibre diameter (19.8 compared with 19.1 microns). The base fleece price, directly related to fire diameter, was higher from the wiregrass pasture, but there were also greater price discounts from the poorer length, strength and vegetable fault qualities (Figure 2). Wool style was similar from both pastures. The monetary return per sheep was higher in the buffel pastures ($15.00 compared with $14.27) and there was no difference between stocking rates. Over the 3 shearings of the 2 flocks, there was an average net advantage of $3.51/ha from the buffel grass over the wiregrass pasture.

DISCUSSION
The two good summer rainfall years during the trial, following a drought when the pasture was spelled, produced high grass yields. This allowed us to carry double the stocking rate recommended by local producers. There was no winter rain to damage the dry feed or produce annual herbage. In both years there was an early and abrupt end to the growing season. This caused all the grass seed in the wiregrass areas to mature and shed rapidly, so the sheep were not exposed to seed for an extended period in either year. This is shown by the low fleece vegetable fault recorded in most sheep. It was not until the second winter that the poor composition in the wiregrass pasture showed large (6.6 kg) differences in liveweights. Wool growth rates did not reflect this pasture difference, however the reduced fibre diameter was a direct reflection of the more restricted diet in the wiregrass pastures. The difference in returns from wool from these pastures is sensitive to the price differential paid for lower micron fleece. In years with a longer growing season and rain from December to May there would be an opportunity to have a much higher vegetable fault contamination from wiregrass. This would increase the price discount for these fleeces. Over 9% of the fleece sold from the Roma region in 1994-95 had >3% grass seed and shive (IWS data). Wool strength, the second largest influence on returns after fibre diameter, could remain greater from the buffel, than from long-term grazing of the wiregrass pasture, especially as the feed

supply becomes limiting. This would further increasing the financial returns from the improved pasture. Sowing buffel is a viable option for improving the wool production potential in wiregrass dominant pastures on these light textured soils. The increased return from the buffel could be used to improve poor composition pastures by oversowing wiregrass dominant areas.

ACKNOWLEDGMENTS
We thank Mr L. Pearson for use of his land and the Australian Wool Research and Promotion Organisation for financial support.

REFERENCES

Hall, T.J., R.G. Silcock, L.D. Punter, D.J. Jordan, C.H. Finlay and J.R. Van der Meulen. 1996. Does a high proportion of wiregrass reduce a pasture's value? Proc. 9th Biennial Conf., Australian Rangelands Society, Port Augusta, Australia, pp 91-92.

Silcock, R.G. and T.J. Hall. 1996. Tactical Pasture Management: Enhancing Profits from Poplar Box Country. Project Report QO96007, Queensland Department of Primary Industries, Brisbane.

Figure 1 Liveweight of flocks 1 and 2 (F1, F2) in buffel (B) and wiregrass (W) pastures in year 2

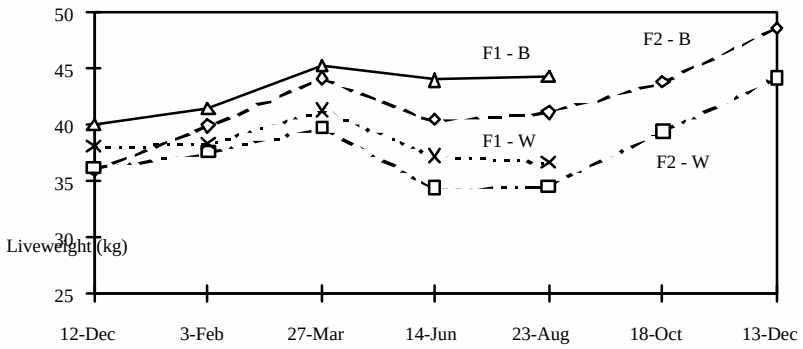

Figure 2 Fleece price discounts for flock 2 on buffel (B) and wiregrass (W) pastures at low (L) and high (H) stocking rates