MANAGEMENT TO IMPROVE FIBRE DIAMETER AND STAPLE STRENGTH IN SOUTH AUSTRALIA

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Implementation of techniques derived from the Premium Quality Wool CRC (CRC PQW) to manage fibre diameter (FD) profiles to increase wool quality allow producers to fine-tune their product to specific markets. We present a case study in Avenue Range, South Australia where these techniques where successfully applied to increase staple strength (SS) and returns per hectare.

Merino wethers (restricted group, n= 425, 18 months) were managed between May 22 and August 23, 2001 to manipulate FD profile, increase SS and increase $/hectare. During this period the sheep were allowed to graze improved pastures kept below 800 kg DM/ha by maintaining stocking rates (SR) at 26 DSE/ha. A control mob of wethers (n= 25) originally from the above group was managed under normal farm practice at 8 DSE/ha on similar pasture but with a herbage mass between 1200 and 3500 kg DM/ha. On August 24 the restricted group was moved to a paddock with 2500 kg DM/ha to allow compensatory weight gain prior to shearing on September 10 and were then sold to the live-export trade on October 4. At six-week intervals the animals were weighed and FD profiles were monitored by clipping one staple from 20 animals at random from each group and determining profiles using an OFDA 2000. Greasy fleece weights and midside samples were collected at shearing from 50 animals in the restricted group and 25 in the control group to determine mean FD, SS and staple length (SL). Estimates of greasy fleece value were derived from www.e-wool.com.au for a southern region sale in October 2001 with an AWEX code MWF4E. Values for the sale of stock were averaged over a three-week period from rural media in October and estimated at $55 for the control and $53 for the restricted group.

Table 1. Fleece quality outcomes for the control and restricted groups

	Control	Restricted	P-value
Fibre diameter (μm)	21.5	20.9	0.138
Staple length (mm)	83.4	78.6	0.05
Staple strength (N/ktex)	27.6	35.1	0.002
Greasy fleece wt. (kg)	4.2	3.7	0.001
Final liveweight (kg)	61	54	0.001
Greasy wool value ($/kg)	475	484	%Change
Annual stocking rate	8	14.5[1](26[2])	81
Wool per hectare (kg)	33.6	53.7	32
Wool $ /ha	159	259	62
Stock sale $ /ha	440	768	74
Total income $/ha	599	1027	71

[1]Effective stocking rate over the year, [2]SR during restriction

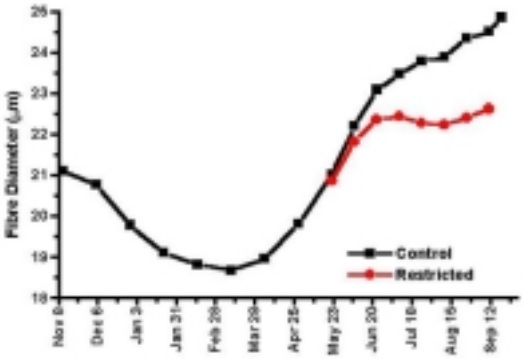

Figure 1. FD profile for the control and restricted groups

FD profiles show that the level of restriction was adequate to control the blow-out in micron for a 3 month period while the control group increased FD by a further 4 microns during that time. Mean FD was 0.6 microns less but was not statistically significant while SL declined by 6% ($P<0.05$) and SS increased by 27% ($P<0.002$, Table 1). While restricting intake reduced greasy fleece weight ($P<0.001$), total wool cut /ha increased 32% due to the higher stocking rate. Returns from wool increased 62% and from stock sales 74% due to the better pastures use between May and August.

Improvements in premiums for finer and sounder wool together with an earlier start to the restriction period would further improve financial returns to producers. These results confirm preliminary results from the same property in 2000 and further demonstrate the potential for these techniques to deliver significant gains through better management of pastures and animals in seasonally variable environments.

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