The effect on wool production of adding Super to a native pasture

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A grazing demonstration was commenced in November, 1993, to compare the livestock performance and economics of adding super to a native pasture.

The site is on Bruce Hazell's property, near Bookham, NSW. Elevation is 460m and the average rainfall is 700 mm. The paddock was principally *Danthonia, Microlaena*, Yorkshire fog, vulpia and subclover. The soil is a brown, sandy clay loam with a cation exchange capacity (CEC) of 2.3 meq/100g. Soil pH is 4.2 ($CaCl_2$) with an aluminium saturation of 19%. Phosphorus status was 7 mg/kg (Colwell) and 2 mg/kg (Bray). Sulfate sulphur was 2 mg/kg (KCl-40).

In autumn 1993, the paddock was divided into two. One paddock received 250 kg/ha Incitec Super Mo 0.02% in June, 1993, and 125 kg/ha Incitec Super in February each year after. The other paddock remained unfertilized as was the normal practice.

The same stocking rate was applied to both paddocks in June, 1993. After shearing in Novem-ber, 1993, stock were re-allocated at 11 DSE/ha to the supered paddock and 6.3 DSE/ha to the control paddock. Subsequent stocking rates were determin-ed on the basis of keeping bodyweights the same on both treatments. Stocking rates varied on the supered paddock as follows: 1994 @ 11.05 DSE/ha; 1995 @ 10.7 DSE/ha; 1996 @ 11.2 DSE/ha; 1997 @ 12.8 DSE/ha.

Variable seasonal conditions were experienced during the 4 years of the trial. Rainfall at the site was 483 mm in 1994; 856 mm in 1995; 793 mm in 1996; and 517 mm in 1997.

This demonstration is continuing during 1998.

Results

Results are given in Table 1.

In the calculations, fertiliser cost is made up of the costs of the yearly application of 125 kg/ha and ¼ of the cost of 250 kg/ha Super Mo applied in June 1993 ($46/ha). Conditions at this time were cold and waterlogged and far from ideal.

Interest was calculated on the extra capital required for stock purchases. Interest rates used and the purchase price of wethers varied each year depending on current commercial rates.

Cost of production per kg of clean wool was calculated by dividing total costs by the amount of clean wool cut. Wool tax is included. In 1994 wool tax was 15% of total costs, in 1996 it was 4.0%.

Table 1: Effect of fertiliser on wool production from native pasture.

Parameter	Super (5.7 ha)	No super (6.2 ha)
Pasture composition on 20/8/97		
Microlaena/Danthonia (%)	19	40
Annual Grasses (%)	30	15
Bare ground (%)	0	0
Litter (%)	25	33
Weeds (%)	1	6
Feb. 1998 Soil Test Results		
pH ($CaCl_2$)	4.6	4.4
P (Colwell) (mg/ha)	31	8
S (KCl-40) (mg/ha)	8	4
Al %	13.5	16.7
Production Data(average of 4 years Nov. 1993 to Nov. 1997)		
Stocking Rate (DSE/ha)	11.5	6.3
Total Clean Wool (kg/ha)	39	21
Total Wool Income ($/ha)	336	184
WUE (clean wool/ha/100 mm rainfall)	6.2	3.3
Total Costs -variable & o'head($/ha)	237	134
Profit ($/ha)	98.47	49.50
Profit difference: Super vs No Super ($/ha)	48.97	
Cost of Production($/kg clean wool)	6.12	6.44
Fleece Details (4 year Average)		
Fibre diameter (µm)	19.7	19.6
Yield (%)	73.1	72.1
Length (mm)	91	91
Strength (N/Ktex)	37	37
Clean wool (kg/hd)	3.4	3.3

W.U.E. is Water Use Efficiency.
Wool cut includes pieces, bellies and locks.

No allowance has been made for income from animal sales in the cost of production. For the Yass district, stock sales average about 15% of total income. Therefore the cost of production could be reduced by 15% to more accurately reflect the cost of producing a kilogram of clean wool.

Conclusion

The results show that where there is a responsive pasture species (in this case, native perennial grasses and subterranean clover), that appropriate levels of fertilizer will give significant increases in production and profit. Many pastures are grown on quite hostile, acidic soils, but if they contain acid tolerant but fertilizer responsive species such as *Mi-*

crolaena and subclover they can be significantly more profitable when fertilised than left unfertilised.

In a fine wool production system such as this, stocking rates need to be increased where there is improved nutrition and dry matter production from fertiliser use. Failure to adjust stocking rates will have an adverse effect on micron and therefore wool price. This could significantly affect the economic outcome achieved.

This demonstration shows that moderate and regular applications of superphosphate on semi-improved native pastures have the potential to significantly increase profits per ha provided stock-ing rates are increased accordingly.