



**NSW DEPARTMENT OF
PRIMARY INDUSTRIES**

BOOKHAM GRAZING DEMONSTRATION RESULTS

Conducted at Bruce Hazel's, Kia Ora, Bookham

Beginning November 1993

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Background to Bookham Site

This demonstration began after a request from the local wool producers to look at the question “Does it pay to put super out for fine wool production”?

This demonstration started in December 1993 and is planned to run long term. A 12 hectare paddock was split, to form 2 paddocks. One side was to receive no super and the other to be supered each year. The following treatments have occurred to the supered side:

1993 (June)	250 kg/ha Mo superphosphate
1994 - 1998 (Feb)	125 kg/ha applied each year (1998 Mo Super)
1999 - 2000 (Feb)	62.5 kg/ha superphosphate applied each year
2001 (Feb)	125 kg/ha Mo superphosphate
2002/03 (Mar) 2004/05/06 (Feb)	90 kg/ha superphosphate

The total fertilizer applied to the supered side since 1993 is 1575 kg/ha or an average of 112.5kg/ha/year. This product has been supplied by Kelly Rural and Incitec Pivot

Prior to the paddocks being used for the trial they had not received super since approximately 1975. The pastures are mainly microleana and danthonia, annual grasses with legume. The paddock consists of very good native pastures on a granite soil with pH 4.2 to B horizon consisting of heavy clay at 50 cm.

Stocking rates on the no super side have been set at a farm average for this country. Stocking rate on the supered side is set to try and maintain a similar live weight on wethers on both sides. If body weight is kept the same then wool characteristics will be similar. Wethers have been run, set stocked.

Stocking rate on the supered side has increased from 11 wethers/ha to 15.1 wethers/ha over the life of the trial. A decision was made to lower the stocking rate in December 2002 to 13.1/ha due to paddock feed on offer and the forecasts for early 2003. The no supered side has remained around 6.3 wethers/ha.

The stocking rate was increased again in December 2003. Deaths during the year resulted in a lower full year stocking rate.

Supplementary feeding has occurred in 1998, 2003, 2004 and 2005 in both paddocks. In 2006 only the supered paddock were fed.

Pasture cockchafers caused severe damage to the supered side in the winter of 2003. The impact of this pasture damage resulted in increased supplementary feeding of a similar magnitude to the drought feeding in the autumn of 2003 (\$70/ha). In 2004 spraying occurred at the first sign of grub activity.

Grazing Trial Results - November 2006

INCOME			
		SUPER	NO SUPER
Fleece production			
Area of paddock	ha	5.70	6.20
Number of wethers	per paddock	86	36
Stocking rate	per ha	15.1	5.8
Greasy wool (kg)	per paddock	286.8	125.7
Clean wool (kg)	per paddock	201.9	87.5
Wool production			
Clean Wool (kg)	per ha	35.4	14.1
Wool Price			
Average wool price			
Cents/kg clean		1175	1263
TOTAL WOOL INCOME (\$/HA):		\$415.95	\$178.08

COSTS			
		\$/ha	\$/ha
Variable Costs			
Animal health / shearing/ etc (\$7/ha)		\$ 105.70	\$ 40.60
Fertiliser costs (spread + super) (\$280/T)		\$ 25.20	
Selling costs			
- wool tax	2.00%	\$ 8.32	\$ 3.56
- selling costs	4.50%	\$ 18.34	\$ 7.85
TOTAL VARIABLE COSTS		\$ 157.56	\$ 52.01
FEEDING COSTS (See Notes)		\$ 33.00	\$ 0
TOTAL OVERHEAD COSTS		\$ 110.00	\$ 110.00
- interest on extra capital (stock purchase)		\$ 20.50	
TOTAL COSTS		\$ 321.06	\$ 162.01

PROFIT			
Wool			
\$/ha		\$ 94.89	\$ 16.07
Difference (\$/ha)			\$ 78.82
Cost of production (\$/kg clean)		\$ 9.07	\$ 11.49

Bookham Site - Summary

Notes for the Year Ending November 2006

Wool prices are based on the market applying in November 2006.

The table with the 13 years of results provides robust data for making decisions. There is no point in improving soil fertility and only partly increasing stocking rate. Modelling work using GrassGro for a number of sites across the Yass district indicates that a sustainable long term stocking rate is in the range of 12-15 wethers per hectare once fertility is lifted to optimal levels, except for soil with less than 200mm soil depth.

2006 started with a reasonable carryover of feed from the good spring of 2005. Another late break resulted in low pasture levels in June. Hay and a small amount of grain was fed in June in the supered paddock only.

The pasture mass in spring was the lowest ever recorded in the life of the trial for both paddocks. Stock maintained weight until the middle of November. Wool production per head is the lowest ever, but the wool is also 1.2 micron finer than before. Staple strengths were reasonable. The rally in the wool market during October 2006 has made a difference to wool prices. Putting both wool cut and wool price together has resulted in a 22% and 45% improvement in wool returns/ha for the super and no super paddocks.

Total costs have remained similar due to lower feeding costs cancelling out other increases.

So the overall result is almost equal to the 13 year average, an increased profit of \$78.82/ha to the super side.

There was no difference in ground cover in November 2006 between the 2 paddocks.

Major Points After 13 Years

PASTURES

- At this stage we have not been able to detect any substantial decrease in native perennial species. The figures do vary from year to year, but no trend is evident. 13 years experience has shown that this is a very hard factor to measure. In a good clover year we record lower perennial grasses and vice versa. The perennial species do not come and go but the methods we use for measurement are influenced by dominant species.
- These pastures, which represent a large area of the region, can sustain a high level of production, when soil fertility is raised. This can result in an improved economic outcome across the full range of years and prices.
- Using measured data from other sites within the area and on similar pastures, we are confident that improvement has been made in water runoff quality and water usage within the profile. This is a new factor which is now being measured on site.
- At the beginning of the trial soil P (Colwell) hovered around 7. After applying 750 kg/ha super (over a 5 year period) the soil P (Colwell) level on the supered side was raised to 20. Research work on site has convinced us that a soil P (Colwell) of 20 is the correct soil P (Colwell) target for these pasture and soil types. We have achieved high production and maintained pasture stability. The pasture stability issue is just as important as the production increase. These pasture types have adapted to shallow acidic soils, so maintenance of them across the landscape is important. Sowing introduced species on these soils is expensive with a question mark about their longevity.

ANIMALS

- Internal parasite burdens have never differed between paddocks. Two summer drenches has been the program for the 13 years.
- The super paddock, due to its higher responsiveness to rainfall and temperature and therefore increased pasture growth, does create problems with staple strength compared to the no super paddock. Some spring management (controlling herbage mass on offer) has been applied. This area needs to be fine tuned to ensure repeatable results. What is required is management skills (pasture assessment and budgeting), not extra costs.
- In 2 springs cattle were added to the super paddock to help manage the spring surplus. A dollar value based on the weight gain of the steers was added to the economic result for the supered paddock in 1998/99.
- Although this work has used wethers, these more productive pastures could, and do, run breeding operation of sheep and cattle and fattening operation of lambs and steers.
- The favourable economic results, for the supered paddock are applicable to these other livestock enterprises. Utilisation of the feed on offer determines the level of profitability. This is a pasture management skill, and hence is in your hands.

13 YEAR WOOL DETAILS

Shearing Date	Fic/Pcs Kg	Fibre Diameter	Yield %	Length mm	Strength N/K Tex
Nov 1994					
Super	4.0	19.2	71.3	90	40
No Super	3.9	19.2	70.7	87	35
Nov 1995					
Super	4.7	20.2	72.1	92	27
No Super	4.7	20.3	70.8	92	39
Nov 1996					
Super	4.4	20.0	75.1	94	45
No Super	4.3	19.7	74	94	37
Nov 1997					
Super	3.8	19.4	71.4	86	35
No Super	3.8	19.1	70.5	90	36
Nov 1998					
Super	4.1	19.7	72.4	87	23
No Super	3.9	19.2	72.4	88	27
Nov 1999					
Super	4.5	19.9	71.1	94	41
No Super	4.7	20.1	72.3	91	37
Nov 2000					
Super	4.5	18.7	71.9	91	48
No Super	4.6	18.8	72.7	94	50
Nov 2001					
Super	4.6	18.5	72	91	41
No Super	4.4	18.6	73	90	44
Nov 2002					
Super	3.81	17.7	67.7	81	35
No Super	4.37	17.7	70.1	93	47
Nov 2003					
Super	3.16	17.9	68.6	85	38
No Super	3.17	17.5	69.2	84	42
Nov 2004					
Super	3.15	18.0	69.4	76	26
No Super	3.63	17.6	70.0	85	23

Nov 2005					
Super	3.38	17.5	69.3	86	31
No Super	3.58	17.7	69.8	90	28
Nov 2006					
Super	2.83	16.3	70.4	76	34
No Super	2.99	16.3	69.6	79	39

Pasture Composition for the Bookham site

The following tables are the end point data collected each August for the 2 paddocks.

No Super Paddock

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2007	2008
Danthonia	12	25	17	8	12	19	24	12.5	12.9	12.2	15.7	23.0	25.6
Microlaena	15	26	23	13	20	23	20	27.7	13.9	16.8	11.5	14.0	18.2
Yorkshire Fog		7				9	2					1.0	0.4
Annual Grasses	19	12	15	19	31	18	23	26	9.2	13.6	27.2	16.0	8.3
Legumes	27	5	6	26	15	15	3	5	25.9	11.4	8.4	7.0	10.8
Weeds	19		6	28	13	14	6	9.7	21.2	30.9	24.4	30.0	28.0
Bare	7	4		3	4		1	0	12	10.4	9.1	8.0	5.9
Litter	1	21	33	3	5	2	21	16	4.6		4.6	1.0	2.4

Supered Paddock

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2007	2008
Danthonia	13	25	8	10	16	14	11	16.2	11.8	11.4	16.1	7.0	10.1
Microlaena	17	34	11	15	30	26	11	25	10.9	14.3	14.3	4.0	24.8
Yorkshire Fog		17				12	6					1.0	
Annual Grasses	5	13	30	11	18	25	34	10.8	16.6	21.9	14.7	15.0	6.5
Legumes	53	1	25	54	22	21	23	31.7	48.6	14.7	25.0	52.0	43.0
Weeds	10	2	1	10	10	2	5	5.4	5.2	27.6	21.9	18.0	5.7
Bare	1	1			1		3	2.7	4.3	7	3.4	3.0	7.3
Litter	1	7	25		3		7	2	2.2	2.4	4.3		2.4