

The influence of spring grazing management on yield and water use of rainfed lucerne

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Journal of New Zealand Grasslands 81, 187-194.**

Overview | Spring grazing management

- Flexible spring grazing management can increase the use of lucerne on farm
- Continuous grazing (set stocking) of lucerne has not been recommended
- Greater understanding of the crop canopy may offer new insights



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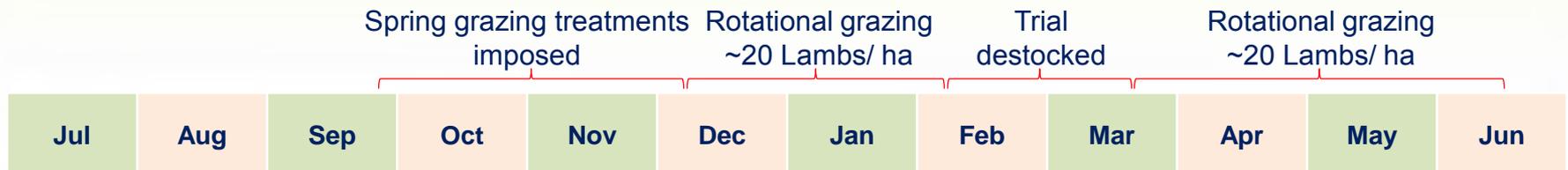
Experimental details | Grazing management

- Three spring grazing managements stocked at 14 ewes with twin lambs/ ha:

1. Rotational - 6 paddocks on ~42 day rotation
2. Set stocked
3. Semi-set stocked - 2 paddocks, 10 days on/off



- Weaned lambs rotationally grazed in summer



Results | Yield

- Accumulated spring DM yield to December was 6.3 t DM/ ha
- Total annual yield was greatest under rotational grazing

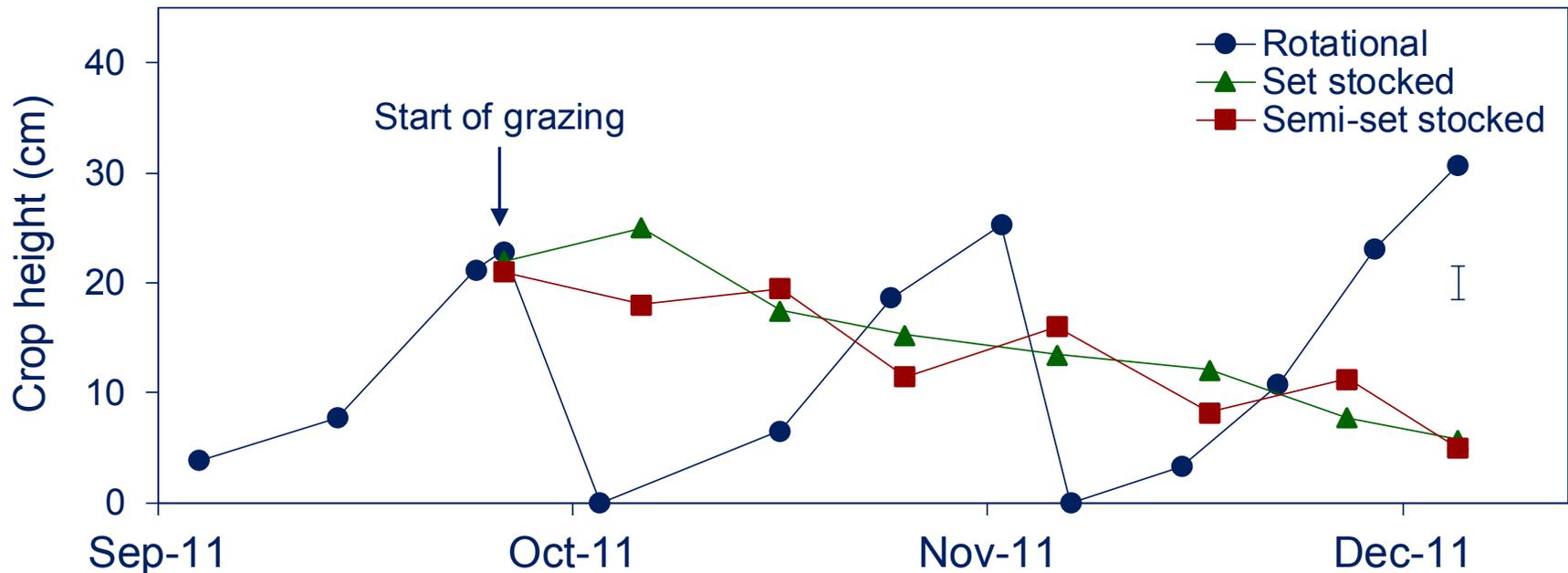
Grazing Treatment	Spring Yield ¹ (t DM/ ha)	Total Yield ² (t DM/ ha)
Set stocked	6.1	10.6 _b
Semi-set stocked	5.9	10.5 _b
Rotational	6.8	12.1 _a
Mean	6.3	11.1
P	0.067	0.010
SEM	ns	0.33

¹ Spring yield from 1st July to 5th December 2011.

² Total yield from 1st July 2011 to 13th June 2012. Means followed by the same letter are not different at the $\alpha=0.05$ level

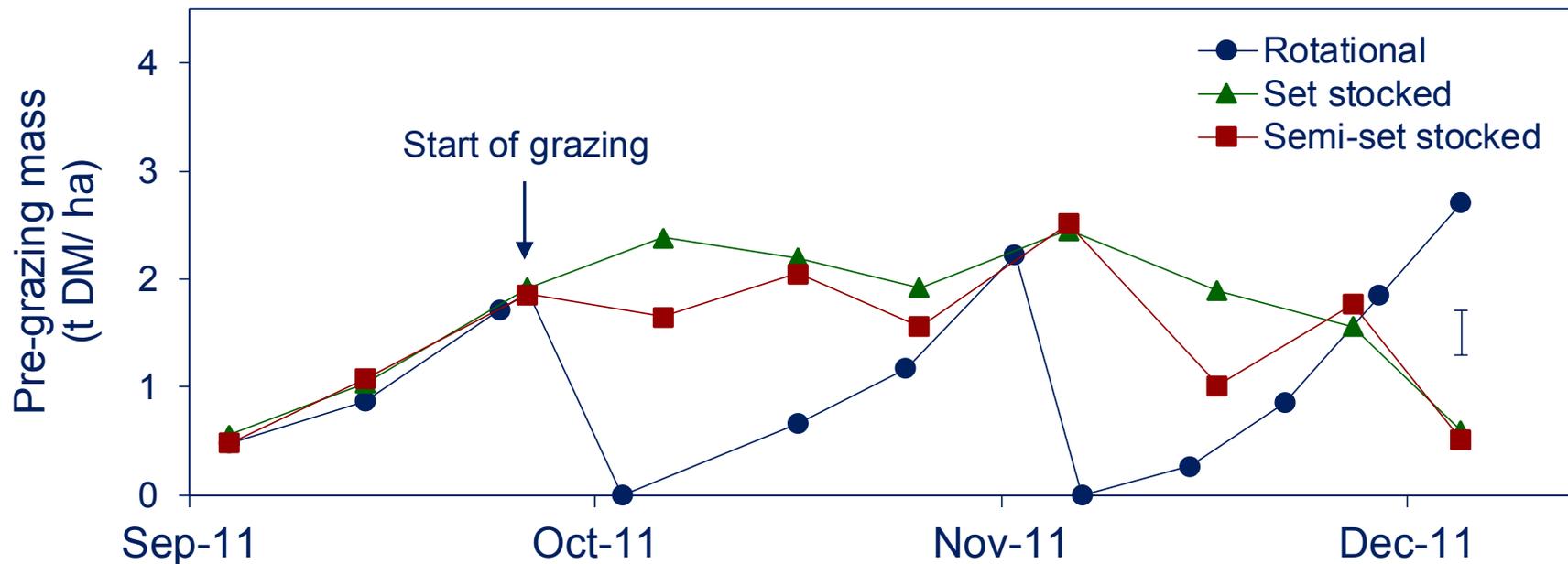
Results | Pre-grazing pasture height

- Grazing started when lucerne was 22 cm, ended when crops were reduced to ~5 cm
- Under set stocking crop height was maintained at 20 to 25 cm



Results | Pre-grazing pasture mass

- Grazing started when lucerne was 2 t DM/ ha, ended when all new shoots removed
- Under set stocking crop mass was maintained at 2 to 2.5 t DM/ ha until mid November



Results | Spring radiation interception

- Rotationally grazed crops intercepted 30% less radiation in spring
- RUE was 50% lower for continuously grazed crops
- Under set stocking crops remobilised greater amounts of perennial DM

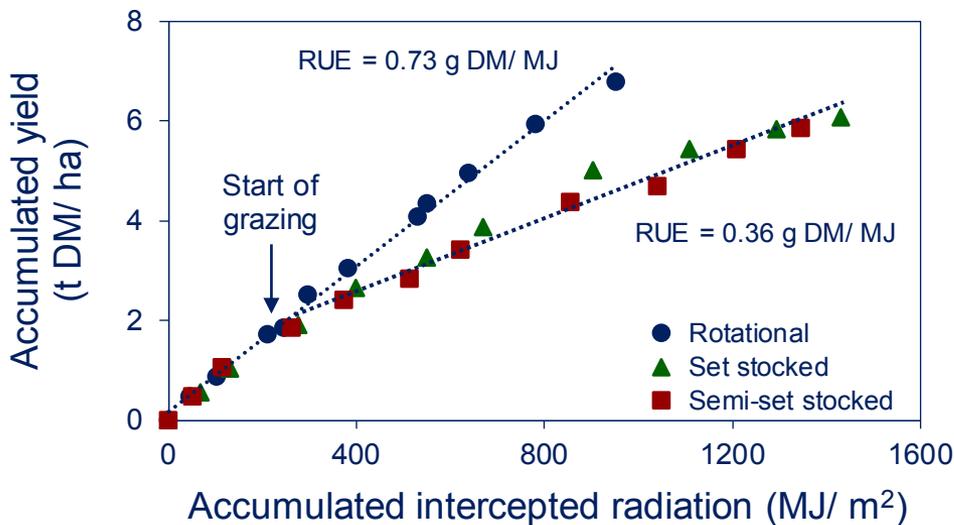


Photo: 10th November 2011. From Speedy, 2012

Results | Spring crop water use

- Crop water use and soil evaporation were inversely related
- WUE was greatest in the rotationally grazed crop at 30 kg DM/ ha/ mm

Grazing Treatment	Crop water use (mm)	WUE (kg DM/ ha/ mm)	Soil evaporation (mm)	Total water use (mm)
Set stocked	297 _a	21.6 _b	77 _b	374
Semi-set stocked	282 _a	20.9 _b	76 _b	358
Rotational	231 _b	30.5 _a	128 _a	359
Mean	270	24.3	94	364
P	0.047	0.033	0.032	0.896
SEM	10.6	1.43	7.96	ns

Spring measurements from 1st July to 5th December 2011. Means followed by the same letter are not different at the $\alpha=0.05$ level

Conclusions | Take home messages

Continuously grazing lucerne offers spring grazing flexibility provided:

1. Stock enter when the crop herbage mass is >10 cm
2. Crop canopy can expand to a height of 20-25 cm
3. Crops are only continuously grazed for a short period



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