

## A strategic utilization of *Lotus uliginosus* improves sheep superfine wool production of native grasslands based systems

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**Take home message** The productivity and quality of superfine wool production of native grasslands based systems can be increased by the utilization of small areas of oversown legumes.

**Introduction** Superfine wool production in Uruguay takes place predominantly on Basaltic shallow soils with native grasslands as the main nutritional basis. The possibilities of increasing forage production through oversown pastures are limited to small areas of medium to deep soils. This study sought to evaluate the opportunity of increasing superfine wool production based on native grasslands by the strategic use of oversown *Lotus uliginosus*.

**Materials & methods** During a two-year period, two feeding strategies were evaluated: i) wethers continuously grazing native grasslands (NG, 4 ha) or ii) wethers continuously grazing native grasslands (3 ha) altering with 50 days of winter access to a native oversown pasture (NOP) with *Lotus uliginosus* (1 ha, 25-50% of legume cover and an average forage on offer of 2840 kg DM/ha). A rotational stocking method (7/14, days stocking period/rest period) was applied when animals grazed the improved pasture. Thirty-two mature Merino wethers were allocated to one of the two replications of either treatment (16 wethers/treatment) based on their live weight (56.7 ±6.2 kg), body condition score (3.2 ±0.4 units), age and breeding values for clean fleece weight and fibre diameter. Stocking rate was adjusted by the put-and-take technique (Mott and Lucas, 1952) at the beginning of each grazing season considering herbage mass, weather forecast and available soil water, with the objective to maintain the herbage height between 5 and 15 cm. Herbage height was assessed fortnightly, while herbage mass was estimated each season (Hayden and Show, 1975). The live weight and condition score of the animals were assessed once a month, while annual fleece weight was recorded at shearing (September) when a mid-side wool sample was taken to evaluate wool quality. Animal and forage data were analysed using a general linear model in a completely randomised experimental design by analysis of variance (SAS, P<0.05). The model included year, treatment, and their interaction (the latter was removed when it was not significant).

**Results & discussion** Native grasslands herbage mass (1410 vs 1553 kgDM/ha for NOP and NG respectively) and height were not affected by treatments, except for average herbage height in winter which was taller for NG than for NOP (Table 1). NG animals were heavier at the beginning of the spring, possibly as the result of a lower grazing pressure in previous seasons. However, that effect was not large enough to alter body condition score, wool production and quality. The inclusion of *Lotus* allowed an annually stocking rate increase of 0.6 wethers/ha (5.9 versus 5.3 wethers/ha for NOP and NG, respectively), explained for the larger carrying capacity of the improved pasture (NOP) during winter than native grasslands (NG), which in turn improved the wool production per hectare by 15%.

**Table 1** Effect of two feeding strategies on live weight and body condition score of wethers at the beginning of each season, annual wool production and quality, and season native grasslands sward height (means, sem).

Feeding strategy	NOP	NG	sem	Feeding strategy	NOP	NG	sem
Live weight (kg)				Wool traits			
Summer	54.7	57.4	1.05	Fleece weight (kg)	4.24	4.14	0.12
Autumn	53.8	55.3	1.21	Fibre diameter (µ)	17.0	16.7	0.19
Winter	54.9	58.1	1.20	Staple length (cm)	8.5	8.3	0.17
Spring	53.9 <sup>b</sup>	57.9 <sup>a</sup>	1.10	Staple strength (N/ktex)	36.2	36.6	0.99
Body condition score				Native grasslands sward height (cm)			
Summer	3.4	3.4	0.07	Summer	10.2	10.0	0.63
Autumn	3.1	3.0	0.06	Autumn	10.7	10.9	0.40
Winter	3.3	3.4	0.05	Winter	7.2 <sup>b</sup>	8.6 <sup>a</sup>	0.37
Spring	3.0	3.0	0.08	Spring	9.0	8.7	0.48

<sup>ab</sup>Means within rows and traits with differing letter are significantly different (P<0.05)

**Conclusion** The addition of small areas of oversown pastures to be used strategically during winter allows an increase of wool production per hectare without negative effects on wool quality, in extensive production systems. This intensification implies using slightly larger stocking rates on native grasslands areas of the production system from spring to autumn.

### References

- Haydock KP and Shaw NH 1975. Australian Journal of Experimental Agricultural 15, 663–670.  
MottGO and Lucas HL 1952. VI<sup>th</sup> International Grassland Congress, 1380–1385.