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A comparison of two types of sheep grazing management in a forest - grass steppe ecotone in southern Patagonia

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Introduction

A sustainable silvopastoral production in southern Patagonia ranch is the key for conservation of *Nothofagus antarctica* native forest under grazing management. The goal of this work was to compare the Traditional Grazing Management (TGM) with an Integral Silvopastoral Management (ISM) that included strategic separation in homogenous areas (grass steppe, forest and riparian meadows) and stocking rate adjustment to grassland net primary production in order to increase the production levels of the extensive sheep farms in the forest-grass steppe region with a sustainable practice.

Materials and Methods

The experiment (2008-2009) was conducted under real production conditions in Cancha Carrera ranch (51° 13' 21" LS - 72° 15' 34" LO), southwest of Santa Cruz province. Grassland assessment in all paddocks (300 to 5000 has) was carried out in both management treatments before animals entrance. The ISM group grazed a paddock with only forest between June and September and a riparian meadow paddock (without animals during the spring) during January. Each management treatment had a group of 1000 ewes where 300 animals were selected randomly to measure live weight gain and corporal condition (Russel, 1969) in four moments of the year. During the pre-lamb shearing, we weighed 300 fleeces of each group and at the end of the annual season the lambing rate and the weight of 300 lambs was measured.

Results and Discussion

The ISM paddocks were grazed with a stocking rate below its carrying capacity, whereas the TGM registered an overgrazed situation during winter (Figure 1). Lambing rate and fleece weight for ISM sheep had slightly higher values compared with TGM, probably because the reasonable stocking rate used and the effective use of the forest and the riparian meadow grasses in moments of high quality compared with the rest of areas. In addition, the forest provided protection from cold winds and snowstorms (Anchorena, 1985). This advantage was probably the reason for winter weight loss reduction for the ISM group (Table 1). The highest values of corporal condition and sheep liveweight gain in TGM during spring (Table 1) can be due the lower number of pregnant females which had lower nutritional requirements during the period between october and january (Crampton & Harris 1969).

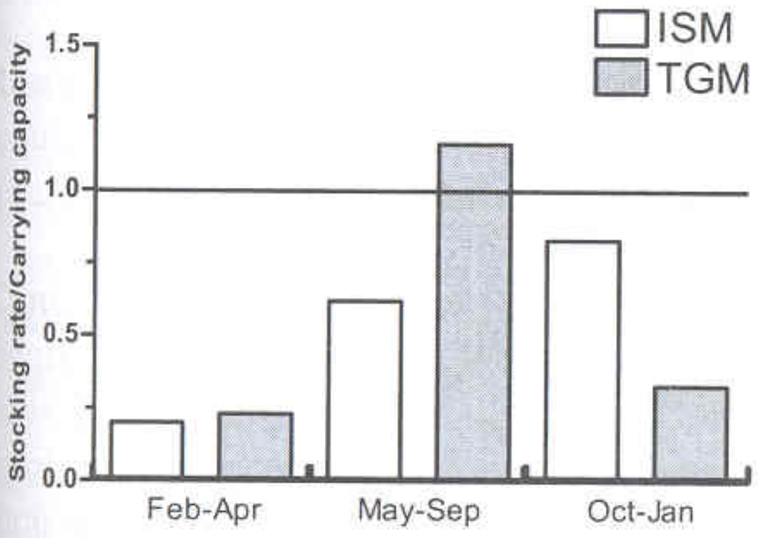

Figure 2. Ratio between stocking rate and carrying capacity of paddocks for ISM and TGM managements treatments. Values over 1 indicate overgraze.

	ISM	TGM
Lambing rate (%)	93.3	90.4
Lamb weight (kg)	31.2 ± 5.20	32.1 ± 5.14
Winter weight loss (kg)	10.1	12.4
Spring weight gain (kg)	11.5	21.3
Final corporal condition (rank 1-5)	2.9 ± 0.55	3.2 ± 0.46
Fleece weight (kg)	4.64 ± 0.83	3.88 ± 0.65

Table 1. Production average values for Traditional Grazing Management (TGM) and Integral Silvopastoral Management (ISM) on a landholding in the southwest of Santa Cruz (average ± standard deviation).

Conclusions

The separation in homogenous areas for a sustainable use in ranch with *Nothofagus antarctica* forest seems to have promising results. This study provided important information about extensive sheep grazing production throughout a year and at ranch level.

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