

## Biomass vertical distribution in a grazed grassland under monoespecific and mixed grazing

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**Introduction** Mixed grazing is defined as the use of the same forage resource for more than one herbivore species. It has been shown that different herbivore species have specific grazing modalities (Black and Kenney, 1984), which may differentially modify the structure of the pasture. The aim of this study was to evaluate the biomass vertical distribution in a sward with mixed grazing.

**Materials and methods** Two treatments with two random repetitions were applied in a pasture of *Medicago sativa* L., *Trifolium repens* L., *Festuca arundinacea* Schreb., *Dactylis glomerata* L. y *Bromus unioloides* H.B.K. One treatment was grazed by Aberdeen Angus steers of 204±26 kg LW, while the other, was grazed by Aberdeen Angus steers, 204±26 kg LW, and Corriedale ewes of 48±12.7 kg LW. The stocking rate was 715 kg LW T ha<sup>-1</sup> for both treatments. In the mixed treatment, the stocking rate was composed by 60% of steers (429 kg LW) and the 40% of ewes (286 kg LW). A rotational stocking of 7 days of grazing and 35 days of rest was implemented. To determine the vertical distribution of the biomass, it was divided into three strata: lower (a basal part of 7 cm), and the rest were divided into two equal part (medium and upper strata). During two cycle, four plots (0.44 ha each) were sampled before and after of grazing. A factorial experimental design was used in randomly selected blocks. The values obtained were subjected to analysis of variance.

**Results** The biomass availability showed significant differences only in the distribution in strata.

**Table 1** Accumulated biomass (kg DM.ha<sup>-1</sup>) per stratum affected by grazing method. Cycle I (12/02/2003)-Cycle II (26/03/2003)

STRATA	CYCLE I	CYCLE II	TOTAL
Upper	386.1 c	123.3 b	1169.9 c
Medium	1353.9 a	797.2 a	4738.3 a
Lower	865.0 b	714.4 a	2806.7 b
GRAZING METHOD			
Steers	786.3 ns	555.5 ns	2912.9 ns
Mixed	950.4 ns	534.4 ns	2897.3 ns
R <sup>2</sup>	0.67	0.76	0.84
C.V. (%)	37.5	35.2	25.0
Probability			
Stratum	0.0016	0.0004	0.0008
Grazing	0.1647	0.7277	0.9600
Str.x Graz.	0.6973	0.6974	0.7400

**Table 2** Biomass remnant (kg DM.ha<sup>-1</sup>) per stratum affected by grazing method. Cycle I (19/02/2003)-Cycle II (02/04/03)

STRATA	CYCLE I	CYCLE II	TOTAL
Upper	47.3 b	52.2 c	178.9 b
Medium	647.8 a	587.7 b	2716.6 a
Lower	878.9 a	1165.5 a	3349.4 a
GRAZING METHOD			
Steers	523.7 ns	485.5 b	2016.6 ns
Mixed	525.5 ns	718.1 a	2146.6 ns
R <sup>2</sup>	0.74	0.86	0.93
C.V. (%)	45.4	36.9	20.1
Probability			
Stratum	0.0043	0.0002	0.0002
Grazing	0.9834	0.004	0.5800
Str.x Graz.	0.9913	0.0961	0.9500

The data of availability and residue show the greatest decrease in the higher and medium strata. The lower stratum increased, which demonstrates that the animal species used in the experiment preferred to consume the higher plant strata, which concentrate the highest quality. Hodgson (1994) observes that pastures in a reproductive state offer a heterogeneous mixture of leaves and shoots at all levels. According to him, both height as well as leaf and shoot proportions have different effects on the selective pasturing behavior of the animal species used. In this experiment there were no significant differences in the pasturing habits of the animal species used, which may be due to the short duration of the evaluation period.

### Conclusions

The treatments used in the first year of the experiment did not modify the vertical structure of the pasture. This may be due to the short duration of the evaluation period. It may also be due to a difference in the stocking rates observed at the end of the experiment, as the monoespecific treatment was had a higher stocking rate than the mixed treatment.

### References

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