



Tropentag, September 14-16, 2022, hybrid conference

“Can agroecological farming feed the world?
Farmers’ and academia’s views”

Effect of defoliation frequency in spring on the productivity and nutritive value of orchardgrass

JOSÉ MARÍA ARROYO¹, FERNANDA BERNARDI SCHEEREN², MARIANA FISCHER², MERCEDES NAUAR², FERNANDO ALFREDO LATTANZI²

¹University of Bonn, Inst. of Animal Science, Germany

²Inst. Nacional de Investigación Agropecuaria, Programa de Pasturas y Forrajes, Uruguay

Abstract

Efficient pasture-based animal production systems require optimisation of forage production with the highest nutritive value. Increasing the defoliation regimen of pastures allows to improve the nutritive value of forage for ruminants but it can be detrimental for total biomass production. An experiment was carried out to study the effect of the defoliation regimen around flowering time on productivity, chemical composition and nutritional value of tall fescue. The experiment was carried out on 4-year old orchardgrass (*Dactylis glomerata* cv ‘INIA Perseo’) pasture, at the experimental station “La Estanzuela” (INIA, Uruguay).

Three defoliation regimens: Severe (S), harvest at 2 leaf-stage, Lenient (L) at 4 leaf-stage, or Moderate (M) at 2 leaf-stage before flowering and at 4 leaf-stage afterward, were arranged in a completely randomised block design with 5 repetitions (blocks) in one paddock. There were three harvest events for treatment S and M and two for L treatment. Dry matter (DM), crude protein (CP), neutral detergent fibre (NDF) and *in vitro* digestible NDF (NDFD; Ankom Technology Corp., Macedon, NY) production ($\text{kg ha}^{-1} \text{d}^{-1}$) were determined for each treatment for the spring season (28/08/2019 to 25/11/2019).

The data were analysed using the MIXED procedure of SAS (version 9.1, SAS Institute Inc.) with treatment as a fixed and block as random effect. Means were compared with the Tukey–Kramer test. A higher DM production ($76.5 \text{ kg ha}^{-1} \text{d}^{-1}$) as a tendency ($p = 0.098$; $\text{SEM}=1.81$) was observed for the M than for the S and L treatments (69.5 and $73.2 \text{ kg ha}^{-1} \text{d}^{-1}$, respectively).

The S treatment showed the highest CP production (14.9 vs 12.6 kg/ha/d on average for the M and L treatments; $p = 0.038$; $\text{SEM}=0.601$) and a lower ($p = 0.033$; $\text{SEM}=1.37$) NDF production ($39.0 \text{ kg ha}^{-1} \text{d}^{-1}$) than for the M treatment ($45.9 \text{ kg ha}^{-1} \text{d}^{-1}$). There was no effect of defoliation regimen on the DNDF ($26.7 \text{ kg ha}^{-1} \text{d}^{-1}$ average of the three treatments). The higher production of NDF and lower of CP for M than for S treatment could have been due because the harvest after flowering of this treatment was the latest in spring. The nutritional value measured from the digestibility of the NDF was not affected by the frequency of defoliation.

Keywords: Nutritive value, orchardgrass, ruminants