

THEME 5 | GRASSLANDS AND FORAGES

Relationship between herbage mass and height in winter pastures

Márcia C. T. Silveira*¹, Teresa C. M. Genro¹, Marco A. P. Silva¹, Flávia L. Solari², André L. F. Souza²

¹Embrapa Pecuária Sul, Bagé/RS, Brasil;

²Universidade da região da Campanha, Bagé/RS, Brasil

*Researcher - Forage plants and pasture management – marcia.c.silveira@embrapa.br

The adoption of a pasture height corresponding to 95% of the maximum light interception or of a range of use is consolidated in the literature and has gained followers in the different production systems. In this scenario, an important change is seen in pasture management, as the accumulation of leaves over dry matter has started to be optimized through the use of height as a strategy. This change is bound to the generation of specific management goals or targets for each forage species. The objective of the present study is thus to contribute with the generation of information based on the validation of the relationship between herbage mass and height in ryegrass pastures and intercropped pastures (ryegrass-white clover and ryegrass-bird's-foot trefoil). The experiment was conducted in an area belonging to Embrapa South Livestock, in Bagé-RS, Brazil. Each experimental area was approximately 3 ha. A completely randomized design with three replicates (exclusion cages) was employed per area throughout the grazing cycles in the winter period and start of spring from 2014 to 2016. The grazing system adopted was continuous grazing with a variable stocking rate, in which yearling animals were used and the load was adjusted based on a weekly monitoring of the height using a centimetergraduated ruler and measuring 100 points per paddock. The management target was adopted as the average height of 20 cm. Cages were allocated to each one of the areas; the herbage within and without them was harvested at every 28 days, using 0.50 × 0.50 m (0.25 m²) metal frames. On this occasion, the pasture height was measured at five points within each frame. After this measurement, all the mass contained in the frames was harvested, weighed fresh, dried in an oven at 65 °C for 72 h, and the (dry) material was weighed again. Data were analyzed using JMP[®] Pro 12.0.1 software and tested by a paired t test and regression analysis. When a similar average height (20 cm) was maintained across the areas, a high correlation was observed between herbage mass and height (84%, P<0.0001) and significant linear regressions were recorded. Slight differences were recorded in the relationship between mass and height in the ryegrass pasture (r²= 79%, P<0.0001) as compared with the intercropped-pasture areas (r²= 71% and r² = 65% for ryegrass-bird's-foot trefoil and ryegrass-white clover, respectively). In the case of the pasture composed of ryegrass and white clover, the coefficient of determination (r²) was a little lower, likely because of the clover, because its growth habit contributes to a certain heterogeneity in distribution of mass across the pasture profile, with greater densification at the base, which might have impacted the observed relationship between mass and height, but not to the point of negatively affecting the recommendation of height as a management tool. Therefore, even for intercropped pastures, height is still a practical and reliable management indicator when keeping a good relationship with the herbage mass, especially the mass of leaves.

Keywords: bird's-foot trefoil, intercropped pastures, perennial ryegrass, white clover