



Sampling sufficiency for the assessment of the vertical profile of the forage sward of a native field in two contrasting seasons

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The sward structure is defined as being a spatial distribution and the distribution and the disposition of the morphological components of the aerial part of the plants. It can be considered the link between the obtained responses in terms of forage production and animal performance. Because of that, characterizing it is fundamental for the advancement in the knowledge of the processes that rules the interface plant-animal. However, for the native field, where the number of forage species is high, it is not known the minimum number of points that properly represents the variability in the vertical structure. Based on that, the objective of this study was characterizing the sward structure of native fields by the vertical distribution of the components and species when they were subjected to continuous grazing with a variable stocking rate in two contrasting seasons, and also, based on that characterization, performing an analysis of sampling sufficiency in order to determine the size of the representative sample for this type of assessment. The study was carried out in 63 ha area of the Embrapa Pecuária Sul composed by 9 paddocks of 7 ha each in Bagé, RS from November in 2012 to May in 2013. The experimental units (paddocks) were distributed in a complete randomized block design with three replications so that the treatments were the intensification levels: native field; native field improved by the fertilization; native field improved by fertilization plus the insertion of exotic hibernal species (ryegrass + red clover). The fertilizations were performed according to the recommendation of the soil analysis in two strategic applications of 100 kg ha⁻¹ of urea in all paddocks whose treatments included fertilization. These pastures were managed by continuous stocking with a variable rate according to the forage offer of 12 Kg of dry matter for each 100 Kg of live weight. The vertical distribution of the morphological components of the pasture was assessed in two seasons of the year using a device named “inclined point”. This device enabled identifying and registering by touch means the components: leaf, stem, and dead material, the forage species along with the height of occurrence as the needle was pushed towards the ground. The assessments were always performed in places in the paddocks that represented the average condition where the forage sward. It was performed a minimum of 400 touches per paddocks in each assessment. Based on the gathered data, the analysis of sampling sufficiency was done using the program Multiv (V 2.3.20), with 1,000 bootstrap interactions. In this analysis, the variability of the sampled species was worked in more than 3,600 points per season. For spring, this procedure revealed that from 2,500 points the increase in new species in the vertical sward structure of native fields was constant and equal to nearly 1 species, number which was not so significant in relation to the information already registered and the involved sampling effort. For the autumn, from 3,000 points the increase was not significant and became constant too. Despite being partial, this study leads to the belief that from 280 and 335 points per paddocks, it is possible to properly characterize the vertical structure of the native field, i.e., the floristic composition will be adequately sampled by the inclined point independent of the assessment season.

Keywords: Forage offer, Inclined point, *Lolium multiflorum*, *Trifolium pretense*, Vertical structure