

Setting management zones in a crop-livestock system from the soybean yield map

Marcelo PILON^{1*}, Naylor B. PEREZ¹, Antônio L. SANTI², Osmar H.C. PIAS²

¹ Embrapa South Livestock, Rod Br 153, Km 633, CP 242, 96401-970, Bagé, RS, Brazil. ² Federal University of Santa Maria Federal, Line September 7, s/n Rod Br 386 Km 40, 98400-000, Frederico Westphalen, RS, Brazil

E-mail address of presenting author*: marcelo.pilon@embrapa.br

Introduction A tool with great potential to use in Crop-Livestock System (CLS) is the Precision Agriculture (PA), which, when applied to livestock systems, is called Precision livestock Farming (PLF). The PLF allows managing the forage resources and animals efficiently. Thus, this study aimed to evaluate the relationship between the soybean crop productivity and the annual ryegrass biomass production within management zones (MZ) defined through the soybean crop map.

Material and Methods

The study was conducted in a consolidated CLS area at Bage – Rio Grande do Sul, in the agricultural year 2012/13, located between the geographic coordinates (WGS 84), 31 ° 19'09 "S and 53 ° 59'36" O, with an average altitude of 200 m. The experimental design was in randomized blocks, distributed as a factorial 3x2 with four replications. From the soybean yield data, in the next stage, the area of pasture was divided into three MZ: High (12.2% of the area); Low (17.2% of the area) and Medium productivity (70.6% area). To estimate the dry matter (DM) production of the forage over the cycle (130 days), four exclusion cages (EC) per MZ were installed to measure the differences on pasture yield within the different zones. The sum of the differences of cuts made inside and outside the EC in each MZ, resulted in the total pasture DM yield over the production cycle.

Results and Conclusions

There were no differences between the MZ, showing an amplitude of only 337 kg DM/ha. The total forage DM yields within the low, medium and high productivity areas were: 4310, 4123 and 4460 kg/ha respectively. Thus, it can be inferred that the MZ delimited from a single yield map of the previous crop (soybean) was not efficient to estimate the following forage production zones. These results agreed to those described by Guedes Filho et al. (2010), who studied the productivity of five grain crops in a rotational system for a period of eight years and proved that there was a high temporal variability between crop yields. In addition, these authors showed that crops resulted in different productivity distributions.

References cited

Guedes Filho et al. (2010) Soil Till. Res.

Acknowledgements

To Embrapa, Stara and UFSM.