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## MORPHOLOGICAL COMPOSITION OF PIATÃ GRASS IN SYSTEMS IN INTEGRATION

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### ABSTRACT

This study aimed to evaluate the morphological components of Piatã grass (*Urochloa brizantha* Piatã) in a crop-livestock-forest integration system. The experiment was carried out in the area of Embrapa Beef Cattle, in Campo Grande – MS, Brazil, in the 2018/2019 agricultural year. The experimental design was in randomized blocks with the treatments arranged in subdivided plots, with 3 treatments in the plots (ICLF28; ICLF22; ICL) and 4 repetitions. The harvest months were January, February, March, April and May 2019, the following distances from the eucalyptus rows: ICLF28 (7m, 10m, 11m, 9m, 4m); ICLF22 (3 m, 7 m, 10 m, 7 m, 3 m). The sampling locations were identified by letters A, B, C, D, E (North-South direction). The Piatã grass was harvested at ground level, the material obtained was separated into leaf blade, stem with sheath and senescent material. No differences were found for leaf blades, stem + sheath and senescent material percentages between the production systems. The highest leaf blades percentages were obtained in the months of January, February, March and April. The highest senescent material and stems + sheaths percentage were obtained in the months April and May, respectively.

**Key words:** leaf; stem; senescence

### INTRODUCTION

The growing demand for food, combined with the search for sustainability in the productive sector, has promoted advances in agricultural systems, prioritizing conservation and diversified systems (FERREIRA et al., 2014). Crop intercropping can increase the sustainability of agricultural systems as a result of the production diversity (CALONEGO et al., 2011), however, it is necessary to understand the biotic factors involved in these arrangements, such as the light competition, which may affect the growth dynamics of the components of this system.

Shading increases the leaves and stems elongation rates, as well as the final leaf blades length. The reduction in the population density of tillers is compensated by the increase in leaves and stems elongation rates, under the conditions of more intense shading (PACIULLO et al., 2008), directly affecting the pasture morphological composition. Given the above, research evaluating the morphological composition of forages in integration systems is important to understand the dynamics of the forage component subjected to shading, allowing for the best positioning of this technology and thus guaranteeing the sustainability of this productive model. The aim was to evaluate the morphological composition of Piatã grass in crop-livestock-forest integration systems.

### MATERIAL AND METHODS

The experiment was carried out at the Technological Reference Unit in Agrosilvipastoral systems of Embrapa Beef Cattle in Campo Grande – MS, Brazil. The soil in the area has a flat relief, being classified as a Dystrophic Red Latosol with a clay texture. The experiment area has been used with

succession cycles since 2008. The experimental design was a randomized block with 4 repetitions, with the treatments arranged in subdivided plots, with 3 treatments in the plots (ILPF28; ILPF22; ILP). In the subplots, the harvest months of the cuts (January, February, March, April and May 2019) and the sample points (A, B, C, D and E) were allocated. In perpendicular transect to the tree rows of trees in each plot, five equidistant points were defined (A, B, C, D, E), where A and E were 1 m from the tree trunks; and C corresponded to the intermediate position; totaling 5 sample points per plot. The 28 m Crop-Livestock-Forest Integration System and the 22 m Crop-Livestock-Forest Integration System have distances between the different sample points, due to the distance of the eucalyptus rows of each system. To evaluate the morphological composition, the Piatã grass was harvested at ground level by means of a gasoline side harvester. The material obtained was taken to the laboratory and separated into the following fractions: leaf blade, stem with sheath and senescent material. The data were subjected to analysis of variance and the means were compared using the Tukey test at 5% probability. The analyzes were performed using the SISVAR statistical software (FERREIRA, 2008).

## RESULTS AND DISCUSSIONS

As for the percentages of leaf blades, stem + sheath and senescent material percentages (Table 1), no differences were found between the production systems, nor between the sampling points, but differences between the sampling months were verified.

Table 1. Leaf blade (LF), stem + sheath (CB) and senescent material (SE) percentages of Piatã grass in the months of sampling.

Characteristic	January	February	March	April	May	CV (%)	P value
LF (%)	77.85 a	74.88 a	75.60 a	72.10 a	69.20 b	14.41	<0.01
CB (%)	17.21 c	17.61 c	16.30 c	19.47 b	22.30 a	6.80	<0.01
SE (%)	5.00 d	7.50 c	8.10 b	12.44 a	8.60 b	11.70	<0.01

Means followed by the same lowercase letter on the row, do not differ by the Tukey test ( $P > 0.05$ ).

The highest leaf blades percentage was obtained in the months of January, February, March and April. The highest thatch + sheath percentage was obtained in the month of May, the last month of the experiment evaluations. The highest senescent material percentage was found in the month of April. This trend is related to the fact that in the months of January, February and March the luminosity and rainfall are greater, allowing a greater use of these conditions by the forage component, which results in greater of leave proportions. The reverse occurred in May, where the conditions are not so favorable for the forage component, resulting in a greater stem fraction proportion in the canopy (EUCLIDES et al., 2008). In May, the drought begins in the region where the experiment was carried out, a season in which the precipitation falls drastically, limiting the amount of forage available to the animals, causing them to graze more intensively, leaving a higher stalks concentration in the canopy after grazing, increasing these component proportion in the next evaluations. It can be inferred that the months with the highest rainfall indexes associated with the highest light intensity, promote a higher leaf blades percentage in the canopy, which is a desirable feature, considering that in addition to representing the surface responsible for photosynthetic efficiency, it is the component higher quality in the animals' diet, which favorably influence the animal intake and performance.

## CONCLUSIONS

No differences were found for leaf blades, stem + sheath and senescent material percentages between the systems being integrated. The highest leaf blades percentages, components of better quality in the animals' diet, were obtained in the months of January, February, March and April.

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