Incidence of weeds in areas of extensive pastures located in Roraima

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ABSTRACT
In order to evaluate the incidence of weeds in different pasture areas in Roraima, also seeking to identify whether the type of pasture suppresses the appearance of any species, an experiment was carried out in the period from May to June 2021. The diversity in numbers of weed species was evaluated in three selected areas: 1 – area with brachiaria grass (Brachiaria brizantha), 2 – area with Mombasa grass (Panicum maximum) and 3 – unplanted area. In the area without cultivation, 19 weed species were identified, with the species E. indica, E. colonum, E. plana, M. pudica, B. plantaginea and S. arundinaceum being the most frequent. In the area planted with B. brizantha, ten species were identified, of which R. nervosa was the most predominant. In the area cultivated with Panicum maximum, eight species were collected, and the species: B. Plantaginea, C. prostrata and S. acuta were the most predominant in this evaluated area. There was statistical variation between species in each area, indicating that the type of vegetation and/or cultivation influences weed suppression, which in this study was more evident in areas with pasture.

Keywords: Floristic diversity, Soil management, Infestation.

1 INTRODUCTION

The State of Roraima is located in the extreme north of Brazil and, because it presents climatic characteristics conducive to the cultivation and production of several agroforestry species, it has great agricultural potential (SILVA et al., 2018)). However, as agricultural practices that use proper technology and management are still early in development, there is still much management information that needs to be clarified (TUFFI SANTOS et al., 2004).

Among the necessary information that still has little or no answer, the diversity of weeds and their inhibitory effects through pastures need to be discussed in research conducted in different parts of the state (ALBUQUERQUE et al., 2017). In this case, it is necessary to identify the species that appear in plant areas with different forages, as this is the first step to make better decisions about control (TUFFI SANTOS et al., 2004).

In terms of weed control, there are many methods available for different crops, but before defining suitable management alternatives, it is necessary to determine which species are a priority and which are the most abundant and harmful to crops. Thus, special attention is paid to efficiency, economy and practicality (ALBUQUERQUE et al., 2017).

Sociological surveys of plants on cultivated land are very important for management because they provide information about the frequency, density and abundance of species. These indices allow the understanding of the most important weeds in the weed community, for which management alternatives and even changes in the system must be determined to enable their control (ALBUQUERQUE et al., 2017). Each species has the potential to establish itself in the area, and its aggressiveness can cause different interferences between different cultures (ALBUQUERQUE et al., 2017). Therefore, weed surveys are useful for decision making because they portray the effectiveness of the control methods used, whether they are cultural, mechanical, physical, biological, chemical or integrated management (ARAUJO et al., 2014).

In this context, the objective of this study was to evaluate the incidence of weeds in different pasture areas of Roraima to determine whether the types of pasture inhibit the emergence of any species.

2 MATERIAL AND METHODS

The work was carried out at the headquarters of Fazenda Canaã, located in the municipality of Bonfim, Roraima, in the period of May and June 2021. The diversity in numbers of weed species was evaluated in three selected areas: 1 – area with brachiaria grass (*Brachiaria brizantha*), 2 – area with mombasa grass (*Panicum maximum*) and 3 – unplanted area (without pasture).

The collection of species was performed by means of leaky frames of 0.5 m x 0.5 m (0.25 m2) that were randomly released in the plots of each area. The areas were divided into four plots, where the totals of species collected in the four releases of the cast table were counted. After collecting the weed species in each area, they were classified using taxonomic classification keys and the literature researched. After classification, the frequencies of weed species in each area were statistically compared (TUFFI SANTOS et al., 2004).

The data obtained were submitted to the Shapiro-Wilk normality test and Bartlet's homogeneity of variance test, respectively. As the data did not present normality, the number of species was

submitted to the Kruskal-Wallis test and the Dunn post-test. All analyses were performed using the Prisma 9.1.2 software (GraphPad).

3 RESULTS AND DISCUSSION

Table 1 shows the total number of species and individuals of each species in each area evaluated. In the area without cultivation, 19 weed species were identified, being the species *Eleusine indica,* Echinocholoa colonum*, Eragrotis plana,* Mimosa pudica, Brachiaria plantaginea *and* Sorghum arundinaceum*, respectively* , the ones that most appeared among the species collected. In the area planted with *Brachiaria Brizantha*, ten species were identified, of which *Rhynchospora nervosa* was the most predominant, with 416 individuals found.

One of the problems caused by degradation is the infestation of weeds, which reduce the productivity of pastures due to their interference capacity (NORONHA et al., 2010). By competing for growth factors, weeds can decrease the carrying capacity of pasture, increase pasture formation and recovery time, cause injury and/or poisoning to animals, and impair the beauty of the property (TUFFI SANTOS et al., 2004). However, any changes in agricultural production systems are accompanied by environmental changes, which usually have a large impact on the size of weed populations as they are a non-cyclical ecological factor (KUVA et al., 2007).

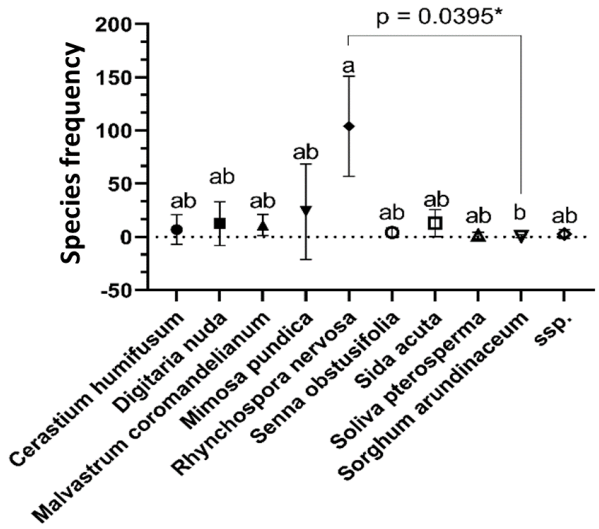
Already in the cultivated area with *Panicum maximum* cv. Mombasa, eight species were collected, being the species: *B. Plantaginea, Chamaesyce prostrata* and *Sida acuta,* respectively, the most predominant in this evaluated area.

Table 1. Diversity and total number of weeds in different areas in a cattle farm in Roraima.

No Pasture		*Brachiaria Brizantha*		*Panicum maximum*	
species	**n**	**species**	**n**	**Species**	**n**
Brachiaria plantaginea	172	*Cerastium humifusum*	28	*Rhynchospora nervosa*	76
Byrsonima crassifólia	5	*Naked digitaria*	50	*B. plantaginea*	539
Coussapoa asperifólia	2	*M. coromandelianum*	45	*Chamaesyce prostrata*	341
Croton glandulosus	88	*Mimosa pundica*	95	*M. coromandelianum*	2
Naked digitaria	15	*Rhynchospora nervosa*	416	*Mimosa pundica*	35
Echinocholoa colonum	645	*Senna obstusifolia*	17	*Acute AIDS*	159
Eleusines indicate	750	*Acute AIDS*	52	spp.1	8
Eragrotis plana	287	*Soliva pterosperma*	6	spp. 2	1
Euphorbia heterophylla	4	*Sorghum arundinaceum*	3	**Total**	**1161**
Facelis retusa	7	*spp.*	11		
Malvastrum coromandelianum	91	**Total**	**723**		
Mimosa pudica	195				
Rhynchospora nervosa	31				
Acute AIDS	7				
Sidastrum micranthum	7				
Soliva pterosperma	36				
Sorghum arundinaceum	171				
Stemodia maritima	14				
spp.	9				
Total	**2536**				

Figure 1 shows the frequency comparisons of the species found in the area cultivated with *Brachiaria Brizantha*. The frequency observed varied only between the species *Rhynchospora nervosa* and *Sorghum arundinaceum*, in which the former was statistically more frequent compared to the latter. The other species presented similar frequency values to each other.

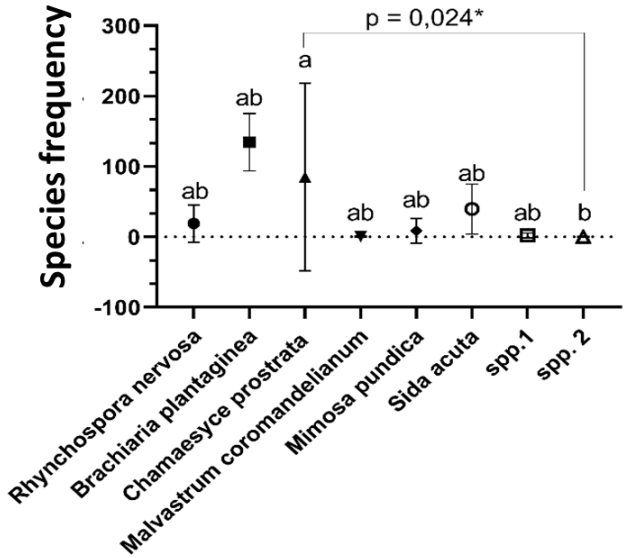
Figure 1. Frequency of weed species found in an area cultivated with *Brachiaria Brizantha* in a cattle farm in Roraima.



Weed species with the same letter do not differ by the Dunn post-test (p>0.05).

For the *Panicum maximum* cv. Mombasa (Figure 2), the frequency observed varied only between the species *Chamaeyce prostrata* and spp.2, in which the former was statistically more frequent compared to the latter. The other species presented similar frequency values to each other.

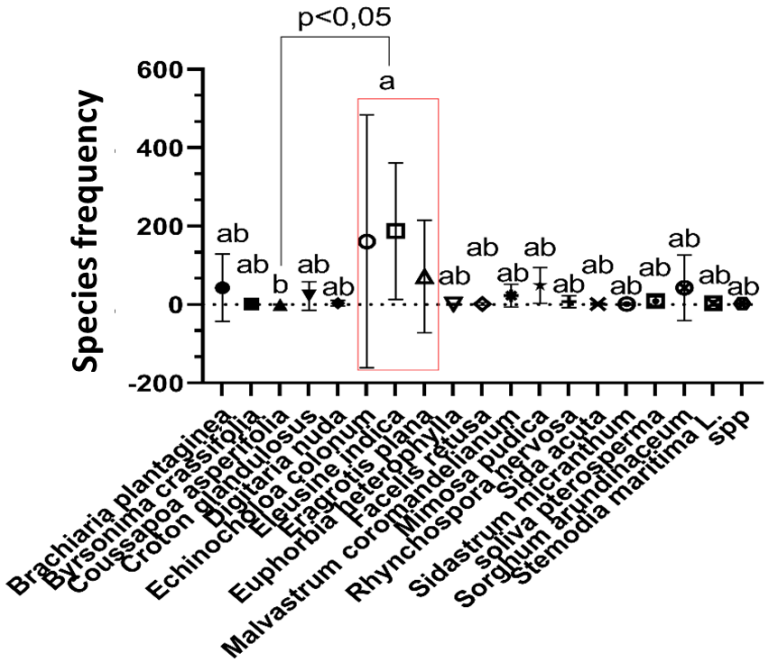
Figure 2. Frequency of weed species found in an area cultivated with *Panicum maximum* in a cattle farm in Roraima.



Weed species with the same letter do not differ by the Dunn post-test (p>0.05).

Figure 3 shows the frequencies of incident species in the area without pasture cultivation. It is observed that the species *Echinocholoa colonum,* Eleusine indica *and* Eragrotis *plana, equal to each other, were statistically superior to the species* Coussopoa asperifolia. The other species did not present frequency variation among themselves.

Figure 3. Frequency of weed species found in an area without pasture cultivation on a cattle farm in Roraima.



Weed species with the same letter do not differ by the Dunn post-test (p>0.05).

The results show that the type of vegetation, specifically the pastures, suppresses the appearance of some weed species. This information is important, since knowledge of the occurrence, biology and abundance of weed species found in agricultural areas is necessary to evaluate the efficiency of management systems on the dynamics of growth and establishment of weed communities in order to enable their control (SILVA et al., 2018). In soybean area in Roraima, for example, Santos et al. (2020) identified the reduction of the ecological and phytosociological composition of weeds when using spacing of 45 cm between plants.

It is worth noting that surveys such as this one indicate the importance of plant populations in a crop and their variations associated with the agricultural practices adopted, which should be used to support the development of weed management programs (SANTOS et. al., 2020). In this context, the present work provides information on the species of some weeds present in Roraima, and how these are affected by the type of pasture cultivated.

4 CONCLUSIONS

The type of vegetation and/or cultivation influences the suppression of weeds, which in this work was more evident in areas with pasture.

In the area without cultivation, among all 19 species identified, *E. indica, E. colonum, E. plana, M. pudica, B. plantaginea and Sorghum arundinaceum* are the most abundant.

In the area planted with *B. brizantha*, of the 10 species identified, *R. nervosa* was the most predominant.

In the area cultivated with *Panicum maximum*, of the 8 species identified, *B. Plantaginea, C. prostrata and S. acuta are the* predominant.

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