Agronomic performance and chemical composition of genotypes and cultivars of *Megathyrsus maximus* in Roraima's savannas

Produtividade de forragem e composição química de genótipos e cultivares de *Megathyrsus maximus* nos cerrados de Roraima

Productividad de forraje y composición química de genótipos y cultivares de *Megathyrsus maximus* en las sabanas de Roraima

Newton de Lucena Costa
ORCID: https://orcid.org/0000-0002-6853-3271
Embrapa Roraima, Boa Vista, Brasil
E-mail: newton.lucena-costa@embrapa.br
Liana Jank
ORCID: https://orcid.org/0000-0001-9436-3678
Embrapa Gado de Corte, Campo Grande, Brasil
E-mail: liana.jank@embrapa.br
João Avelar Magalhães
ORCID: https://orcid.org/0000-0002-0270-0524
Embrapa Meio Norte, Parnaíba, Brasil
E-mail: joao.magalhaes@embrapa.br
Amaury Burlamaqui Bendahan
ORCID: https://orcid.org/0000-0002-4856-8530
Embrapa Roraima, Boa Vista, Brasil
E-mail: amaury.bendahan@embrapa.br
Braz Henrique Nunes Rodrigues
ORCID: https://orcid.org/0000-0003-0094-6333
Embrapa Meio Norte, Parnaíba, Brasil
E-mail: braz.rodrigues@embrapa.br
Francisco José de Seixas Santos
ORCID: https://orcid.org/0000-0002-8112-9003
Embrapa Meio Norte, Parnaíba, Brasil
E-mail: francisco.seixas@embrapa.br

Abstract
The agronomic performance of 23 genotypes and six commercial cultivars of *Megathyrsus maximus* was evaluated under natural field conditions at the Roraima´s savannas, during the period of June 2015 to September 2019. The evaluated parameters were green dry matter (GDM) yield, leaf, stem and dead DM yields, crude protein (CP) contents, concentrations of neutral detergent fiber and acid detergent fiber. The genotypes and cultivars evaluated affected the yields and the chemical composition of the forage. The most promising genotypes showed superior agronomic performance than the commercial cultivars evaluated. The genotypes B16; PM10; PM40 and PM14 showed the highest green dry matter yields and forage with better nutritional quality, higher CP and lower fiber contents. These showed average yields of 5,103 and 3,925 kg ha^{-1}, for green DM and leaf DM, respectively, which represented increments of 20.7 and 12.8%, compared with those registered for the commercial cultivars. The genotype PM15 evidenced the highest productive performance during the dry season, constituting an option for regions with climatic restrictions, notably reduced rainfall. All genotypes and cultivars showed seasonal growth. The genotypes that showed the best seasonal distribution of forage production were PM11, PM36, PM30 and PM33, which provided 47.9; 46.8; 41.0 and 40.7% of GDM production during the dry season. In general, higher crude protein and lower fiber contents were directly correlated with the percentage of leaves in the available forage. The evaluated genotypes presented great genetic variability for the accumulation of forage and its chemical composition that can subsidize the generation of new commercial cultivars.
Keywords: Fiber; Leaves; Green dry matter; Crude protein.

Resumo
O desempenho agronômico de 23 genótipos e seis cultivares comerciais de *Megathyrsus maximus* foi avaliado em condições de campo nos cerrados de Roraima, durante o período de Junho de 2015 a Setembro de 2019. Os parâmetros quantificados foram rendimentos de matéria seca verde total, de folhas, de colmos e material morto, teores

de proteína bruta e de fibra em detergente neutro e ácido. Os genótipos e cultivares avaliadas afetaram os rendimentos e a composição química da forragem. Os genótipos mais promissores e que apresentaram desempenho agronômico superior - acúmulo e composição química da forragem - em relação às cultivares comerciais foram B16; PM10; PM40 e PM14, os quais apresentaram produtividades médias de 5.103 e 3.925 kg ha^{-1}, respectivamente para matéria seca verde e matéria seca de folhas, o que representou incrementos de 20,7 e 12,8% comparativamente aos registrados com as cultivares comerciais. Todos os genótipos e cultivares apresentaram crescimento estacional. Os genótipos que apresentaram a melhor distribuição estacional da produção de forragem foram PM11, PM36, PM30 e PM33, que proporcionaram 47,9; 46,8; 41,0 e 40,7% da produção de matéria seca verde durante o período seco. O genótipo PM15 destacou-se como o mais produtivo durante o período seco, constituindo-se em opção para regiões com restrições climáticas, notadamente reduzida precipitação. Em geral, maiores teores de proteína bruta e menores de fibra foram diretamente correlacionados com o percentual de folhas na forragem disponível. Os genótipos avaliados apresentam grande variabilidade genética para o acúmulo de forragem e sua composição química que podem subsidiar a geração de novas cultivares comerciais.

Palavras-chave: Fibra; Folhas; Matéria seca verde; Proteína bruta.

Resumen

Se evaluó el comportamiento agronómico de 23 genotipos y seis cultivares comerciales de *Megathyrsus maximus* en condiciones de campo en las sabanas de Roraima, durante el período de junio de 2015 a septiembre de 2019. Los parámetros cuantificados fueron rendimientos de materia seca verde total, hojas, de tallos y material muerto, proteína cruda y contenido de fibra en detergentes neutro y ácido. Los genotipos y cultivares evaluados afectaron los rendimientos y la composición química del forraje. Los genotipos más promisorios que presentaron comportamiento agronómico superior - acumulación y composición química del forraje - en relación a los cultivares comerciales fueron B16; PM10; PM40 y PM14, que mostraron rendimientos promedios de 5.103 y 3.925 kg ha^{-1}, respectivamente, para materia seca verde y materia seca foliar, lo que representó incrementos de 20,7 y 12,8 % con respecto a los registrados con los cultivares comerciales. Todos los genotipos y cultivares mostraron crecimiento estacional. Los genotipos que presentaron mejor distribución estacional de la producción de forraje fueron PM11, PM36, PM30 y PM33, que aportaron 47,9; 46,8; 41,0 y 40,7% de producción de materia seca verde durante el período poco lluvioso. El genotipo PM15 se destacó como el más productivo durante la época poco lluviosa, constituyendo una opción para regiones con restricciones climáticas, notablemente reducidas las precipitaciones. En general, los contenidos más altos de proteína cruda y los menores de fibra se correlacionaron directamente con el porcentaje de hojas en el forraje disponible. Los genotipos evaluados presentan gran variabilidad genética para la acumulación de forraje y su composición química que puede subsidiar la generación de nuevos cultivares comerciales.

Palabras clave: Fibra; Hojas; Materia seca; Proteína cruda.

1. Introduction

In Roraima, livestock is one of the activities that have the greatest economic, environmental and social relevance. Cultivated pastures represent the main forage resource for feeding herds. In less intensive production systems, forage grasses of the genus *Brachiaria* predominate, as they are more adaptable to soils with low and medium natural fertility and better tolerance to the dry season (Braga, 1998; Gianluppi et al., 2001; Costa et al., 2017). However, with the gradual intensification of production systems, mainly through the implementation of crop-livestock-forest integration systems, which have greater economic and environmental sustainability, species of the genus *Megathyrsus* are gradually replacing those of the genus *Brachiaria*, considering their greater forage productivity with high nutritional value (Silva, 2019; Costa et al., 2020).

The introduction of new forage grass genotypes allow identification and selection of the most promising accessions to be evaluated in the more advanced stages of evaluation programs, in order to overcome the biotic pressures and constitute more efficient animal production systems by releasing new cultivars (Costa et al., 2019; Cruz et al., 2021). In tropical regions, the economic and environmental sustainability of livestock has been a direct consequence of the programs of evaluation and selection of forage germplasm, mainly grasses, with positive effects on livestock resilience, productivity and economy, in addition to considerably reducing their pressure on the environment. Basically, there are two ways to increase the productivity of forage plants: a) through the improvement of the environment where the plant develops and, b) by replacing forage grasses those selected as promising and resulting from selection, adaptation or generation processes of new genotypes (Silva & Nascimento Júnior, 2007; Lemaire et al., 2011; Barbero et al, 2015). Thus, the pre-selected forage grass genotypes must be

submitted to different ecological conditions in order to obtain greater reliability in future recommendations (Costa et al., 2017; Souza, 2018; Tesk et al., 2020).

In this work, the effects of genotypes and cultivars on forage accumulation and chemical composition of *Megathyrsus maximus* were evaluated in the Roraima´s savannas.

2. Methodology

The research was performed under field conditions using quantitative method. As there are still gaps about evaluation and selection of *M. maximus* cultivars and genotypes on the productivity of cultivated pastures, the hypothetical-deductive method was chosen to be used (Pereira et al., 2018).

The trial was conduct at the Embrapa Roraima Experimental Field, located in Boa Vista, from June 2015 to September 2019, which corresponded to an accumulate precipitation of 1,361 mm; 1,416 mm; 1,198 mm; 1,353 mm and 1,719 mm and an average monthly temperature of 24.31ºC; 23.89ºC; 24.79ºC; 25.12ºC and 24.03ºC, respectively in 2015, 2016, 2017, 2018 and 2019. The soil of the experimental area was a Yellow Latosol, medium texture, savanna phase, with the following chemical characteristics, at a depth of 0-20 cm: pH_{H2O} = 5.1; P = 6.5 mg kg^{-1}; Ca + Mg = 1.06 $cmol_c.dm^{-3}$; K = 0.011 $cmol_cdm^{-3}$ and Al = 0.09 $cmol_cdm^{-3}$.

The experimental design was a randomized blocks design with three replications. The treatments consisted of 23 genotypes of *M. maximus* (PM5, PM10, PM11, PM14, PM15,a PM19, PM20, PM21, PM22, PM23, PM30, PM33, PM34, PM36, PM37, PM38, PM39, PM40, PM41, B16, B46, B126 and C12) and six commercial cultivars (BRS Tamani, BRS Quênia, BRS Zuri, Massai, Mombaça and Tanzânia). The establishment fertilization consisted of the application of 90 kg of N ha^{-1} (urea) 80 kg of P_2O5 ha^{-1} (triple superphosphate) and 80 kg of K_2O ha^{-1} (potassium chloride). The nitrogen fertilization was divided in two, being 1/3 when planting, and 2/3 at 35 days. The plots measured 3.0 x 4.0 m, with a useful area of 6.0 m^2. During the experimental period, 11 and 9 cuts were executed, respectively in the rainy and dry season. The maintenance fertilization consisted of the annual application, at the beginning of the rainy season, of 80 kg of N ha^{-1}, 60 kg of P_2O_5 ha^{-1} and 60 kg of K_2O ha^{-1}, in the form of urea, triple superphosphate and potassium chloride, respectively.

Forage yields were estimate through mechanical cuts, performed at average intervals of 42 to 49 days during the rainy season and 56 to 63 days during the dry season, at a height of 20 cm above the ground. In each evaluation, after separating the components (leaves, stems and dead material), these were placed in paper bags and weighed to estimate the production of green biomass of each part, and later, dried in an air-forced drier at 65ºC for 72 hours to determine the production of dry matter (DM) of the plant parts. They were later ground in a sieve with a mesh of 5.0 mm for chemical composition determination. Nitrogen (N) contents were analyzed according to procedures described by Silva & Queiroz (2002) and Silva (2009). Crude protein contents were obtained by multiplying the N content by the factor 6.25. The neutral detergent fiber (NDF) and acid detergent fiber (ADF) contents were determined by the methodology proposed by Van Soest et al. (1991).

The data were subjected to analysis of variance considering the significance level of 5% probability. In order to estimate the response of the parameters evaluated of the grass genotypes and cultivars, means were compared by using the Scott-Knott test, at the level of 5% probability.

3. Results and Discussion

The forage yields were affected (P<0.05) by genotypes and cultivars in both growing seasons (Table 1). During the rainy season, highest GDM yields were recorded for the PM14 (5,218 ha^{-1}), PM40 (5,165 kg ha^{-1}), B16 (5,053 kg ha^{-1}) and PM10 (4,979 kg ha^{-1}) genotypes and Mombaça (4,821 kg ha^{-1}), while during the dry season the genotypes PM15 (2,748 kg ha^-

^{1}), PM33 (2,194 kg ha^{-1}), B16 (2,061 kg ha^{-1}) and PM11 (1,956 kg ha^{-1}) and Massai (2,089 kg ha^{-1}) were the most productive. For leaf DM, during the rainy season, highest yields were found in the genotypes PM14 (4,122 kg ha^{-1}), PM40 (3,982 kg ha^{-1}) and B16 (3,851 kg ha^{-1}), while during the dry season, genotypes PM15 (1,807 kg ha^{-1}), PM33 (1,538 kg ha^{-1}) and Massai (1,585 kg ha^{-1}), showed higher productivity. The higher stem DM was recorded by the genotype PM15 during the rainy season (1,521 kg ha^{-1}) and the dry season (941 kg ha^{-1}) and by genotype PM11 during the dry season (901 kg ha^{-1}).

Table 1. Green dry matter (GDM), leaf dry matter (leaf DM), stem dry matter (stem DM) and dead dry matter (dead DM) of genotypes and cultivars of *Megathyrsus maximus*, in the rainy and dry seasons. Boa Vista, Roraima.

Genotypes/ Cultivars	Rainy season[1]				Dry season[2]			
	GDM	Leaf DM	Stem DM	Dead DM	GDM	Leaf DM	Stem DM	Dead DM
	--- kg ha^{-1} ---							
PM5	3,154 c	2,244 d	910 a	444 c	1,778 c	1,432 b	346 d	409 b
PM10	4,979 a	3,745 b	1,234 a	652 b	1,556 d	1,087 b	469 c	324 b
PM11	2,130 f	1,652 e	478 c	304 d	1,956 b	1,055 b	901 a	359 b
PM14	5,218 a	4,122 a	1,096 a	429 d	1,819 c	1,124 b	695 b	311 b
PM15	4,764 b	3,243 b	1,521 a	602 b	2,748 a	1,807 a	941 a	598 a
PM19	2,440 c	1,211 e	1,229 a	374 d	1,536 d	1,007 b	529 b	635 a
PM20	3,273 c	2,763 d	510 c	399 c	1,717 c	1,244 b	473 b	342 b
PM21	3,600 c	2,705 c	895 a	311 d	1,637 d	1,187 b	450 c	322 b
PM22	2,648 e	2,098 d	550 c	547 b	1,184 e	866 b	318 d	347 b
PM23	4,235 b	3,057 c	1,178 a	328 d	1,350 e	987 b	363 d	489 a
PM30	2,223 d	1,354 e	869 a	659 b	1,543 d	1,087 b	456 c	517 a
PM33	3,192 d	2,419 d	773 b	476 c	2,194 b	1,538 a	656 b	288 b
PM34	2,980 f	1,689 e	1,291 a	472 c	1,702 c	1,008 b	694 b	245 b
PM36	1,633 f	1,241 e	392 c	455 c	1,439 d	1,204 b	235 d	401 b
PM37	2,041 e	1,508 e	533 c	313 d	1,145 e	758 b	387 d	288 b
PM38	4,117 b	2,987 c	1,130 a	418 c	1,780 c	1,097 b	683 b	535 a
PM39	3,179 b	2,769 c	410 c	364 d	1,219 e	958 b	261 d	255 b
PM40	5,165 a	3,982 a	1,183 a	854 a	1,365 e	989 b	376 d	428 b
PM41	2,812 c	2,111 d	701 c	246 d	1,593 d	965 b	628 b	401 b
B16	5,053 a	3,851 a	1,202 a	298 d	2,061 b	1,457 b	604 b	301 b
B46	3,844 b	2,741 c	1,103 a	719 a	1,688 c	1,049 b	639 b	314 b
B126	3,194 c	2,466 d	728 b	325 d	1,521 d	1,122 b	399 c	278 b
C12	2,857 f	2,091 d	766 c	377 d	1,235 e	971 b	264 d	388 b
Massai	3,450 b	3,084 c	366 c	459 c	2,089 b	1,585 a	504 b	311 b
Tanzânia	4,544 b	3,542 b	1,002 a	571 b	1,752 c	1,198 b	554 b	387 b
Mombaça	4,821 a	3,785 b	1,036 a	499 c	1,804 c	1,352 b	452 c	418 b
BRS Zuri	4,460 b	3,655 b	805 b	501 c	1,852 c	1,410 b	442 c	477 a
BRS Tamani	3,988 b	3,418 a	570 c	399 c	1,655 d	1,387 b	268 d	401 b
BRS Quênia	4,102 b	3,398 b	704 b	444 c	1,720 c	1,321 b	399 c	318 b

- Means followed by the same letter, in the column, are not significantly different by the Scott-Knott test at 5% probability. [1] Averages of eleven evaluations. [2] Averages of nine evaluations. Source: Research data

The productive performance of the genotypes and commercial cultivars of the grass were satisfactory and allowed the selection of promising germplasm for the establishment or recovery of pastures in the environmental conditions of Roraima. The GDM yields recorded were higher than those reported by Beber (2018), evaluating 21 genotypes and two cultivars of *M. maximus* (Mombaça and Tanzânia) in an forest environment in the State of Acre, Brazil, which reported GDM average yields

of 1,928 kg ha^{-1} during the rainy season and 1,417 kg ha^{-1} during the dry season. The average production of leaf DM was 2,078 kg ha^{-1} and 1,874 kg ha^{-1}, respectively, for the rainy and dry seasons. In the Tocantins´s Amazon Biome, Santos (2021), evaluating nine cultivars and one genotype of *Panicum maximum* (PM31), estimated 10,760 kg ha^{-1}; 9,910 kg ha^{-1} and 610 kg ha^{-1} the average annual productivity of GDM, leaf DM and stem DM, respectively. The genotype PM31 performance (11,380 kg ha^{-1} of GDM) was superior to that observed in the Paredão (9,350 kg ha^{-1}), Tanzânia (9,130 kg ha^{-1}) and Tamani (8,060 kg ha^{-1}) cultivars. In the State of Rondônia, Costa et al. (2016) reported average annual yields of 5.171 kg ha^{-1} of GDM and 4,186 kg ha^{-1} of leaf DM for a collection of 18 *P. maximum* genotypes, values similar to those observed in the present study. Considering the agronomic aspects (plant height, density and regrowth speed), productivity, distribution and percentage of leaves in the forage, the most promising genotypes were PM41, PM46, PM38, PM42, PM32 and PM30, which showed an average increase of 18% in forage production, compared to commercial cultivars evaluated (Aruana, Massai, Mombaça and Tanzânia).

The highest values for dead DM were observed with PM40 (854 kg ha^{-1}) and B46 (719 kg ha^{-1}) genotypes, during the rainy season and, by genotypes PM19 (635 kg ha^{-1}), PM15 (598 kg ha^{-1}), PM38 (535 kg ha^{-1}), PM30 (517 kg ha^{-1}) and PM23 (489 kg ha^{-1}) genotypes and the cultivar Zuri (477 kg ha^{-1}) during the dry season. However, the genotypes B16 (298 kg ha^{-1}) and PM41 (246 kg ha^{-1}), during the rainy season, and genotypes PM39 (255 kg ha^{-1}) and PM34 (245 kg ha^{-1}), during the dry season, showed the lowest dead DM yields (Table 1).

In general, dead DM yields were relatively low, since most evaluations to determine forage availability were performed when plants intercepted 95% of the photosynthetically active radiation, which contributes to a significant reduction in leaf senescence rates. Santos (2021), evaluating several cultivars of *P. maximum*, submitted to defoliation frequencies of 41 days, estimated dead DM yields lower than those obtained in this work. The cultivars Mombaça (180 kg ha^{-1}) and Zuri (100 kg ha^{-1}) showed lowest yields, while the highest values were obtained with BRS Quênia (330 kg ha^{-1}) and Tanzania (320 kg ha^{-1}) cultivars. Likewise, Almeida (2015) found lower dead DM for genotypes PM39 (110 kg ha^{-1}), PM14 (100 kg ha^{-1}) and PM30 (70 kg ha^{-1}), compared to genotypes PM34 (160 kg ha^{-1}) and PM40 (270 kg ha^{-1}), subjected to defoliation frequencies of 21 days.

Senescence reflects the natural physiological process that characterizes the last stage of leaf development. This starts after its complete expansion and progressively accentuates with increase in leaf area due to the shading of the leaves inserted in the lower portion and the low supply of photosynthetically active radiation, characterized by intense competition for light, nutrients and water between the different strata of the plant (Lemaire et al., 2011; Pereira, 2018; Martuscello et al., 2019). The leaf senescence reduces the quality of the forage. However it represents an important physiological process in the dynamics of the grass tissue flow, since about 35; 68; 86 and 42% of N, P, K and Mg, respectively, can be recycled from senescent leaves and used for the production of new leaf tissues (Sarmiento et al., 2016; Andrade, 2019; Costa et al., 2020).

The genotypes PM40, PM14, B16 and PM10 showed average yields of 5,103 and 3,925 kg ha^{-1}, respectively for GDM and leaf DM, which represented increments of 20.7 and 12.8%, respectively, compared with the average yields provided by commercial cultivars (4,228 and 3,480 kg ha^{-1}, respectively) (Table 1). This behavior demonstrates the positive genetic gain obtained from the selection of the most promising grass genotypes that can be recommended for pastures establishment in the Roraima´s savannas.

All genotypes and cultivars showed seasonal growth. This behavior was more pronounced in cultivars that provided 30.0% of GDM during the dry season, while for the genotypes the availability of GDM was 33.4%. The genotypes that showed the best seasonal distribution of forage production were PM11, PM36, PM30 and PM33, which provided 47.9; 46.8; 41.0 and 40.7% of GDM production during the dry season (Table 1). In the Amazon region, photoperiod and temperature are the factors that less interfere with forage productivity, as they are available throughout the year in a range that satisfactorily meets the

need required by forage grasses for their good development. However, precipitation is the factor that most affects forage availability, making it necessary to select more efficient grass genotypes in the uptake and use of water. Similarly, in the Rondônia´s savannas, Costa et al. (2016), evaluating a collection of 18 *Megathyrsus* genotypes, reported that the average forage productivity recorded during the dry season corresponded to about 35.8% of that obtained in the rainy season.

The CP levels and the concentrations of NDF and ADF were affected ($P<0.05$) by the genotypes and cultivars (Table 2). The highest levels of CP were recorded by genotypes PM21 (13.85%), B126 (13.71%), PM39 (13.56 %al), PM20 (13.52%), PM14 (13.48), and the cultivars BRS Quênia (13.83%) and BRS Tamani (13.21%).

Table 2. Crude protein (CP), neutral detergent fiber (NDF) and acid detergent fiber (ADF) concentrations of genotypes and cultivars of *Megathyrsus maximus*. Boa Vista, Roraima.

Genotypes/ Cultivars	CP	NDF	ADF
	-- % --		
PM5	12.36 b	72.33 a	36.26 a
PM10	12.34 c	71.83 a	36.82 a
PM11	11.07 c	72.66 b	37.26 a
PM14	13.48 a	69.21 b	34.56 b
PM15	10.69 c	72.77 a	35.46 b
PM19	9.51 d	70.05 b	37.59 a
PM20	13.52 a	71.23 a	36.05 a
PM21	13.85 a	72.22 a	35.97 a
PM22	13.02 b	72.21 a	36.36 a
PM23	10.22 d	72.02 a	35.99 a
PM30	9.86 d	73.14 a	38.23 a
PM33	12.76 b	69.01 b	36.88 a
PM34	12.03 c	73.15 a	36.58 a
PM36	12.49 c	70.04 b	37.73 a
PM37	11.83 b	73.98 a	37.41 a
PM38	9.95 d	73.19 a	36.12 a
PM39	13.56 a	72.41 b	36.08 a
PM40	11.33 c	71.43 a	35.73 b
PM41	12.44 b	71.99 a	36.73 a
B16	11.07 c	70.08 b	35.07 b
B46	10.91 c	73.45 b	38.11 a
B126	13.71 a	70.26 b	37.82 a
C12	10.43 d	73.44 a	37.54 a
Massai	10.89 c	73.11 a	36.78 a
Tanzânia	11.43 c	72.09 b	36.24 a
Mombaça	12.35 b	72.34 a	35.97 a
BRS Zuri	12.77 b	71.58 a	35.03 b
BRS Tamani	13.21 a	69.88 b	35.11 b
BRS Quênia	13.83 a	69.16 b	34.93 b

- Means followed by the same letter, in the column, are not significantly different by the Scott-Knott test at 5% probability. Source: Research data

For NDF concentration, genotypes PM33 (69.01%), PM36 (70.04%), PM19 (70.05%), B16 (70.08%) and B126 (70.26%) and the cultivars BRS Quênia (69.16%), BRS Tamani (69.88%) presented the lowest values while for the ADF contents, the lowest percentages were observed in the genotypes PM14 (34.56%), B16 (35.07%), PM15 (35.43%) and PM40 (35.73%) and cultivars BRS Quênia (34.93%), BRS Zuri (35.03%) and BRS Tamani (35.11%).

In general, the highest levels of CP and the lowest of NDF and ADF were directly correlated with the highest percentage of leaves recorded in the genotypes and cultivars evaluated. For all grass genotypes and cultivars, NDF and ADF contents were higher than the limits suggested by Van Soest (1994) of 30 and 60% for ADF and NDF, respectively, as indicators of high quality forage, since forages with ADF values around 40% or more show a marked reduction in voluntary consumption and in its digestibility.

The chemical composition of the most promising genotypes can be considered satisfactory and possible to fully supply the nutritional requirements demanded by ruminants under grazing in tropical pastures. In the Brazilian´s savanna, Fernandes et al. (2014), evaluating a collection of 14 genotypes of *M. maximus*, estimated average concentrations of 73.7% for NDF and 36.5% for NDF, values higher than those recorded in this work however, the average content of CP was 15.7%, a higher value than registered with the genotypes evaluated in this work. For the cultivars Mombaça and Tanzania, Euclides et al. (2021) recorded CP contents of 14.6% and 15.4%, respectively, which can be considered high and possibly due to the level of nitrogen fertilization used in the pastures (150 kg of N ha^{-1} year^{-1}). Braga et al. (2019) estimated at 9.9% the average CP content of a collection of 21 genotypes of *M. maximus*, despite the levels of NDF (66.8%) and ADF (37.4%) being relatively low in the forage.

4. Final Considerations

The genotypes and cultivars evaluated affected the yields and the chemical composition of the grass forage.

The most promising genotypes were B16; PM10; PM40 and PM14, which showed superior agronomic performance than the commercial cultivars evaluated providing the highest green dry matter yields and forage with better nutritional quality, higher crude protein and lower fiber contents.

The genotype PM15 evidenced the highest productive performance during the dry season, constituting an option for regions with climatic restrictions, notably reduced rainfall.

In general, higher crude protein and lower fiber contents were directly correlated with the percentage of leaves in the available forage.

The genotypes of *Megathyrsus maximus* evaluated present great genetic variability for the accumulation of forage and its chemical composition that can subsidize the generation of new commercial cultivars.

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