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Agronomic traits of pinto peanut genotypes in response to variable management strategies

Características agronômicas de genótipos de amendoim forrageiro em resposta a estratégias de manejo variáveis

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Highlights

Defoliation interval and harvest height do not influence the nutritional value.
Harvesting *Arachis pintoi* at a height of 5 cm results in greater forage accumulation.
Higher harvest heights are associated with increased invasive plant mass.

Abstract

Different defoliation strategies can lead to varying performances in forage legumes. Therefore, the objective of this study was to assess the variations in forage accumulation and nutritional value among four cultivars of *Arachis pintoi* Krapov. & W. C. Greg. (Alqueire-1, Amarillo, Belmonte, and BRS Mandobi) across two harvest intervals (28 and 35 days) and two harvest heights (5 and 10 cm). The parameters measured included accumulation of forage dry matter (DM), morphological composition, nutritional value, *in vitro* organic matter digestibility, and mass of invasive plants. The Belmonte cultivar exhibited the highest accumulation of forage DM, averaging 5.9 Mg DM ha^{-1} season^{-1} across the various management methods. It also showed the highest average accumulation of leaflet DM compared to the other cultivars, while the Amarillo cultivar had the lowest. Additionally, Belmonte showed higher concentrations of crude protein (277 g kg^{-1} DM) and higher *in vitro* organic matter digestibility (717 g kg^{-1} DM) compared to Alqueire-1 and Amarillo, with intermediate levels of neutral detergent fiber (366 g kg^{-1} DM) relative to the other cultivars. A harvest height of 5 cm yielded the highest accumulation of forage

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DM in *A. pintoi*. Canopies managed at this height also exhibited a greater presence of invasive plants. The management practices adopted did not affect the chemical composition or *in vitro* organic matter digestibility across the cultivars. Overall, the Belmonte cultivar displays productive and nutritional traits that identify it as the pinto peanut with the most potential for utilization.
Key words: *Arachis pintoi*. Belmonte cultivar. Defoliation strategy. Legume.

Resumo

Diferentes manejos de desfolhação podem resultar em desempenhos variáveis nas leguminosas forrageiras. Diante disto, o objetivo deste estudo foi avaliar as variações no acúmulo de forragem e valor nutritivo de quatro cultivares de *Arachis pintoi* Krapov. & W. C. Greg. (Alqueire-1, Amarillo, Belmonte e BRS Mandobi) em dois intervalos de corte (28 e 35 dias) e duas alturas de corte (5 e 10 cm). Determinou-se o acúmulo de matéria seca (MS) de forragem, composição morfológica, valor nutritivo, digestibilidade *in vitro* da matéria orgânica da forragem e massa de plantas invasoras. O cultivar Belmonte apresentou maior acúmulo de MS de forragem, com média de 5,9 Mg MS ha^{-1} $estação^{-1}$ nos diferentes manejos adotados. Belmonte apresentou maior acúmulo médio de MS de folíolos em relação aos demais cultivares, com o menor acúmulo médio de MS de folíolos obtida pelo cultivar Amarillo. O cultivar Belmonte também apresentou maior concentração de proteína bruta (277 g kg^{-1} MS) e de digestibilidade *in vitro* da matéria orgânica (717 g kg^{-1} MS) em relação aos cultivares Alqueire-1 e Amarillo e concentrações de fibra em detergente neutro (366 g kg^{-1} MS) intermediárias comparativamente aos demais cultivares. O manejo com altura de corte de 5 cm confere maior acúmulo de MS de forragem ao *A. pintoi*. Plantas invasoras são mais evidentes em dosséis manejados sob altura de corte de 5 cm. Os manejos adotados não afetam a composição química e a digestibilidade *in vitro* da matéria orgânica dos cultivares. O cultivar Belmonte apresenta características produtivas e nutritivas que lhe caracterizam como o amendoim forrageiro com maior potencial para uso.
Palavras-chave: *Arachis pintoi*. Cultivar Belmonte. Estratégia de desfolhação. Leguminosa.

Introduction

The intensification of animal production systems under pastoral conditions offers an alternative to mitigate the need for opening new areas while maintaining productivity gains. In this context, incorporating forage legumes either in mixed cropping systems with grasses or as monocultures is a viable option for the sustainable intensification of livestock operations (Andrade et al., 2021). Among the tropical legumes studied in Brazil, *Arachis pintoi* cultivars are noted for their persistence, nutritional value, and productivity (Valls & Simpson, 1994; Simeão et al., 2016). These cultivars exhibit a stoloniferous growth habit with rooting at nodes, deep roots, and numerous growing points, which provide high tolerance to trampling and intensive defoliation (Valls & Simpson, 1994; Pizarro & Rincón, 1994). However, comparative studies focusing on the varietal differences in productive and nutritional potential under various harvesting conditions are scarce.

Defoliation strategies distinctly affect the quantitative and qualitative aspects of forage. More frequent defoliation typically results in younger harvested forage characterized by a high leaf proportion, low fiber content, and increased digestibility, which positively influences animal intake and performance but may impede forage accumulation. Defoliation intensities, determined by post-grazing stubble height, dictate the canopy structure, morphological composition, and residual leaf area index, crucial for plant regrowth and structure reformation (Silva et al., 2015; Pereira et al., 2013). Accordingly, post-grazing objectives are established to maximize canopy recovery speed, ensure plant community persistence, and enhance productivity.

This study aimed to assess the productive and nutritional responses of four commercial cultivars of *A. pintoi* over two growing seasons, considering two defoliation intervals and two harvest heights.

Material and Methods

The research was conducted at the Escola Superior de Agricultura "Luiz de Queiroz", Universidade de São Paulo, located in Piracicaba, SP, Brazil, on a 0.11 ha plot (altitude 519.0 m; 22°42'19.17" S, 47°38'28.07" W). The local climate is classified as Cwa (Köppen-Geiger), a humid subtropical mesothermal climate with dry winters (Cervellini et al., 1973). Table 1 presents the climatic data for the experimental period. The soil in the experimental area was classified as a red typic Eutroferric Nitisol (Empresa Brasileira de Pesquisa Agropecuária [EMBRAPA], 2006). A soil analysis to determine its chemical composition was conducted before the experiment started. The chemical properties of the 0-20 cm soil layer included: pH (0.01 mol L^{-1} $CaCl_2$) = 4.9; organic matter = 32.0 g dm^{-3}; phosphorus (ion exchange resin method) = 50.0 mg dm^{-3}; potassium = 2.2 mmolc dm^{-3}; calcium = 49.0 mmolc dm^{-3}; magnesium = 14.0 mmolc dm^{-3}; H + Al = 58.0 mmolc dm^{-3}; sum of bases = 65.2 mmolc dm^{-3}; cation exchange capacity = 123.2 mmolc dm^{-3}; and base saturation = 53.0%. No liming or fertilization was applied to the experimental area.

Table 1
Climatic variables throughout the experimental period and historical average (1917-2016) obtained at the meteorological station of the Department of Exact Sciences at ESALQ

Climatic variable	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.
			(2014/2015)					
Maximum temperature (°C)	30.7	32.5	33.7	32.2	30.1	29.7	26.3	26.5
Minimum temperature (°C)	19.1	20.5	21.6	20.9	19.9	17.5	14.9	13.7
Average temperature (°C)	24.9	26.5	27.7	26.5	25.0	23.6	20.6	20.1
Precipitation (mm)	159	257	104	248	134	13	87	4
			(2015/2016)					
Maximum temperature (°C)	30.5	32.5	31.9	31.5	30.5	31.3	25.2	23.8
Minimum temperature (°C)	20.7	21.7	21.2	20.9	19.6	17.9	13.8	11.0
Average temperature (°C)	25.6	27.1	26.6	26.2	25.0	24.6	19.5	17.4
Precipitation (mm)	251	247	268	198	127	6	106	17
			(1917/2016)					
Maximum temperature (°C)	34.9	34.5	34.3	34.3	33.6	32.3	30.3	29.5
Minimum temperature (°C)	12.1	14.1	15.4	16.0	14.6	10.6	6.7	4.5
Average temperature (°C)	23.5	24.3	24.9	25.1	24.1	21.4	18.5	17.0
Precipitation (mm)	132	200	229	180	142	66	54	45

The experimental design was a completely randomized split-plot arrangement. The main plots were combinations of *A. pintoi* cultivars (Alqueire-1, Amarillo, Belmonte, and Mandobi) and defoliation intervals (28 and 35 days) arranged in a 4 × 2 factorial design, with three replicates, totaling 24 plots. The subplots were the harvest heights (5 and 10 cm), resulting in 48 experimental units of 9 m^2 each.

The experiment was initiated on March 9, 2011, with seedlings sourced from Embrapa Acre. Treatment applications began in early September 2014. The experimental duration included two agrostological summer cycles, lasting 147 days in the first year (12/11/2014 to 05/04/2015) and 140 days in the second year (11/11/2015 to 04/28/2016). For the 28-day defoliation interval, five harvests were conducted, and for the 35-day interval, four harvests took place in each of the agrostological summer cycles.

Forage mass was measured at the end of each regrowth period (28 and 35 days). Two samples were collected from each experimental unit using a 0.25 m^2 metal frame. All plant material within the frames above the harvest heights of 5 and 10 cm was harvested. This collected mass represented the accumulation of forage over the set harvest intervals. One sample was sorted into leaflets, petioles, stolons, dead material, and invasive plants. Each fraction was then dried separately in a forced-air circulation oven at 55 °C until constant weight was achieved, and weighed to determine the dry matter (DM) content and component proportions of the forage mass. Subsequently, the samples were ground to 1 mm using a Wiley mill. The second sample was used to determine the fresh matter, which, based on the DM content, facilitated the estimation of average forage accumulation during the growing seasons (Mg DM ha^{-1} $season^{-1}$).

The ground samples were analyzed for concentrations of crude protein (CP), organic matter (OM), ash, neutral detergent fiber (NDF), and *in vitro* organic matter digestibility (IVOMD). Crude protein was determined by multiplying nitrogen, ascertained through the micro Kjeldahl method (Gallaher et al., 1975; Hambleton, 1977), by 6.25. Organic matter and ash analyses were conducted as per the methods described by Silva and Queiroz (2002). The NDF content was measured using the Ankom Fiber Analyzer - A2000 Filter Bag Technique - Method 13 (Ankom Technology, 2024). Lastly, IVOMD was obtained using the two-step technique of Tilley and Terry (1963), modified by Moore and Mott (1974).

Analysis of variance of the data was performed using PROC MIXED from the SAS® (Statistical Analysis System) statistical package (Littel et al., 2006). The Akaike Information Criterion (Wolfinger & O'Connell, 1993) was employed to select the variance and covariance matrix. The fixed effects considered were genotype, defoliation interval, harvest height, and their interactions; the agrostological summer effect was considered random (Littel et al., 2006). Treatment means were estimated by "LSMEANS," and comparisons were made using Tukey's test (P<0.05).

Results and Discussion

The average accumulation of forage DM was influenced by the interactions between cultivar and defoliation interval (P = 0.040), cultivar and harvest height (P = 0.027), and interval and harvest height (P = 0.017). Cultivar Belmonte demonstrated higher (P<0.05) average DM accumulation compared to the other cultivars, regardless of the defoliation interval (Table 2). At both harvest intervals, cv. Amarillo showed significantly lower (P<0.05) yield than cvs. Alqueire-1 and Belmonte, being 28.32% and 45.24% lower than cvs. Alqueire-1 and 42.28% and 54.15% lower than cv. Belmonte at the 28-day and 35-day intervals, respectively. BRS Mandobi exhibited lower (P<0.05) average DM accumulation in the 28-day defoliation interval compared to the 35-day interval, a pattern not observed in the other cultivars.

Table 2
Dry matter accumulation of *A. pintoi* cultivars according to defoliation intervals and harvest heights

Defoliation interval	Cultivar			
	Alqueire-1	Amarillo	Belmonte	BRS Mandobi
	------------------------ Mg DM ha^{-1} $season^{-1}$ ------------------------			
28 days	4.59^{bA} (0.30)	3.29^{cA} (0.51)	5.70^{aA} (0.50)	3.98^{bcB} (0.41)
35 days	5.15^{bA} (0.17)	2.82^{cA} (0.39)	6.15^{aA} (0.45)	4.71^{bA} (0.39)
Harvest height				
5 cm	4.95^{bA} (0.17)	4.03^{cA} (0.19)	6.31^{aA} (0.21)	5.04^{bA} (0.27)
10 cm	4.79^{aA} (0.34)	2.08^{cB} (0.11)	5.55^{aB} (0.61)	3.66^{bB} (0.33)

Means followed by common lowercase letters in the rows and uppercase letters in the columns do not differ from each other according to Tukey's test at 5% probability. Values in parentheses represent the standard error of the mean (SEM).

Defoliation at a harvest height of 5 cm resulted in higher (P<0.05) average DM accumulation in cv. Belmonte compared to other cultivars (Table 2). At the higher harvest height of 10 cm, the average accumulation of cvs. Alqueire-1 and Belmonte was greater (P<0.05) by more than 1.13 Mg DM ha^{-1} than that of cvs. BRS Mandobi and Amarillo. The mean accumulation of Alqueire-1 was not affected by harvest height (P>0.05).

The harvest height of 5 cm did not lead to a difference (P>0.05) in forage DM accumulation between the defoliation intervals (Table 3). However, at a defoliation height of 10 cm, the 35-day interval exhibited greater (P<0.05) accumulation, with 0.86 Mg DM ha^{-1} more than the 28-day interval. In fact, a longer period available for growth, i.e., the period between successive defoliations, allows for increased tissue production capacity (forage growth) until reaching an asymptote, beyond which increases between defoliations no longer enhance tissue production (Parsons & Penning, 1988). Thus, an increase of seven days in the defoliation interval (from 28 to 35 days) and the use of a 10 cm stubble height resulted in greater DM accumulation, demonstrating that 35 days allowed for higher forage mass production.

Table 2

Dry matter (DM) accumulation of *A. pintoi* cultivars according to defoliation intervals and harvest heights

Harvest height	Defoliation interval	
	28 days	35 days
	---------------------- Mg DM ha^{-1} $defoliation^{-1}$ --------------------	
5 cm	5.19^{aA} (0.30)	4.97^{aA} (0.26)
10 cm	3.59^{bB} (0.33)	4.45^{aB} (0.55)

Means followed by common lowercase letters in the rows and uppercase letters in the columns do not differ from each other according to Tukey's test at 5% probability. Values in parentheses represent the standard error of the mean (SEM).

Regardless of the defoliation interval, cv. Belmonte showed greater forage DM accumulation. This result may be linked to its higher mass of leaflets (Table 4), a leaf segment known for its higher photosynthetic capacity, which provides faster and more vigorous regrowth.

Table 4

Average accumulation of leaflet dry matter in *A. pintoi* cultivars according to defoliation intervals and harvest heights

Defoliation interval	Cultivar			
	Alqueire-1	Amarillo	Belmonte	BRS Mandobi
	---------------------- kg DM ha^{-1} $defoliation^{-1}$ ----------------------			
28 days	704^{bB} (60)	483^{cB} (51)	950^{aB} (73)	594^{bcB} (61)
35 days	1023^{bA} (68)	650^{cA} (55)	1386^{aA} (62)	909^{bA} (94)
Harvest height				
5 cm	833^{bcA} (74)	672^{cA} (43)	1217^{aA} (68)	868^{bA} (103)
10 cm	894^{bA} (112)	460^{dB} (44)	1120^{aA} (150)	636^{cB} (80)

Means followed by common lowercase letters in the rows and uppercase letters in the columns do not differ from each other according to Tukey's test at 5% probability. Values in parentheses represent the standard error of the mean (SEM).

Cultivar Amarillo was identified as one of the varieties with the lowest forage DM accumulation. Despite being the most widespread pinto peanut globally (Fernandes et al., 2003), its production potential is below that of other available cultivars. Ramos et al. (2010) characterized Amarillo across 11 locations and concluded that it has low production potential and unstable development, which has led to its reduced adoption by producers.

Cultivars Alqueire-1 and BRS Mandobi exhibited intermediate forage DM accumulation compared to the other cultivars. The productive performance of Alqueire-1 was lower than that observed by Perez (2004). A potential explanation for this discrepancy could be the contrasting climatic conditions between the studies. Cultivar Alqueire-1 was selected for its productivity and perennial nature in regions with low temperatures and frost incidence (Perez, 2004). In the present study, as well as in the study by Assis et al. (2008) where the cultivar yielded 3.8 Mg DM ha^{-1}, the temperature, rainfall, and soil conditions, which differ significantly from those in which this genotype was selected, may have impacted its actual productive potential. When the cultivars were managed at a harvest height of 10 cm, a better productive response was observed for Alqueire-1, similar to the DM accumulation seen in Belmonte. Alqueire-1 was chosen, among other attributes, for its rapid regrowth capacity (Perez, 2004), suggesting that the increased production at this residue stage can be attributed to its ability to store and rapidly utilize reserve compounds for the growth of new tissues post-defoliation.

The average accumulation of leaflet DM was influenced by the interactions between cultivar and defoliation interval (P = 0.046) and cultivar and harvest height (P = 0.012). Regardless of the defoliation interval (28 or 35 days), cv. Belmonte exhibited higher (P<0.05) average leaflet DM accumulation compared to the other cultivars (Table 4). During the 35-day harvest interval, cv. Amarillo had a lower average accumulation of leaflet DM. All cultivars showed an increase (P<0.05) in average leaflet DM accumulation with longer defoliation intervals. Generally, harvest height did not impact (P>0.05) the average DM accumulation of leaflets for cvs. Alqueire-1 and Belmonte, whereas a height of 5 cm led to greater (P<0.05) DM leaflet DM accumulation in cvs. Amarillo and BRS Mandobi.

The average DM accumulation of stolons was affected (P<0.05) by the cultivar and defoliation interval (P<0.05), but no significant interaction was detected (P>0.05) between these factors. Cultivars Alqueire-1 (129 kg DM ha^{-1} $defoliation^{-1}$), Belmonte (105 kg DM ha^{-1} $defoliation^{-1}$), and BRS Mandobi (88 kg DM ha^{-1} $defoliation^{-1}$) showed similar (P>0.05) average DM accumulations among themselves. The Amarillo cultivar (53 kg DM ha^{-1} $defoliation^{-1}$) displayed a mean DM accumulation comparable to that of BRS Mandobi but lower than that of cvs. Alqueire-1 and Belmonte. Higher (P<0.001) mean DM accumulations were recorded with a 35-day defoliation interval (118 kg DM ha^{-1} $defoliation^{-1}$) compared to 28 days (69 kg DM ha^{-1} $defoliation^{-1}$).

According to Stobbs (1973), in the absence of forage mass limitations, animals will be more selective during grazing, opting for live, tender, and easily prehensible tissues over stems and senescent material. In the management practices evaluated, Belmonte showed a greater accumulation of leaflet DM (Table 4), indicating that, in addition to having greater total mass production, it also had a higher proportion of leaf tissues in its composition. This characteristic is desirable when selecting a cultivar for pasture establishment, as a greater proportion of active photosynthetic tissue contributes to increased productivity and, following a defoliation event, to the rapid reestablishment of the forage stand.

The greater average accumulation of stolon DM in the Belmonte, Alqueire-1, and BRS Mandobi cultivars, compared to cv. Amarillo, can be viewed as a desirable agronomic trait, since each stolon can be used for seedling production in plantations through vegetative propagation. Moreover, Prine et al. (1986) and Pizarro and Rincón (1994) noted that the persistence of pinto peanut, among other factors, is attributed to its large number of stolons, which house growth points close to the ground, away from the grazable layer, thus protecting them from defoliation by animals. The potential negative effects for animal consumption may be less significant than those of the stem structure for tropical grasses (Silva et al., 2018). There was no significant difference (P>0.05) in dead material across any of the evaluated factors.

The average accumulation of DM of invasive plants was influenced by the harvest height (P = 0.049), with the greatest mass observed at a defoliation height of 5 cm above the ground (152 kg DM ha^{-1}), which was 23% higher than that achieved with 10 cm stubble (117 kg DM ha^{-1}). An interaction effect between the cultivar and defoliation interval factors was also noted (P = 0.002). The evaluation of cultivars with a 28-day interval allowed for differentiation (P<0.05) only between cv. Belmonte and cv. Amarillo (Table 5). In the 35-day interval, Alqueire-1 showed a greater (P<0.05) average accumulation of DM of invasive plants compared to cvs. Belmonte and Amarillo, with 85% and 45% more invasive plants, respectively. In pasture-based production systems, it is feasible to suppress the emergence of undesirable species through various methods, including pasture management or grazing management. In this context, Severino and Christoffoleti (2001) reported that *A. pintoi* can reduce the germination and proliferation of invasive plants, serving as a cover crop to diminish the growth of undesirable species. This observation is supported by Nascimento et al. (2010), who noted a significant reduction in invasive plants in monocultures of *A. pintoi*. In the current study, invasive plants exhibited greater mass when managed at a harvest height of 5 cm, compared to 10 cm. Higher stubble heights led to more intense competition for resources, such as light, thereby reducing the growth or even the germination of undesirable species.

Table 5
Average accumulation of invasive plant dry matter in stands of *A. pintoi* cultivars according to defoliation intervals

Defoliation interval	Cultivar			
	Alqueire-1	Amarillo	Belmonte	BRS Mandobi
	------------------------ kg DM ha^{-1} defoliation^{-1} ------------------------			
28 days	119^{abB} (17)	173^{aA} (32)	63^{bA} (9)	86^{abB} (22)
35 days	254^{aA} (49)	139^{bA} (21)	37^{cA} (4)	208^{abA} (38)

Means followed by common lowercase letters in the rows and uppercase letters in the columns do not differ from each other according to Tukey's test at 5% probability. Values in parentheses represent the standard error of the mean (SEM).

Regarding the defoliation intervals, the average accumulation of invasive plant DM varied by cultivar (Table 5). At 28-day intervals, cv. Amarillo exhibited a higher infestation of invasive plants compared to cv. Belmonte, suggesting less suppression of invasive plants by this cultivar when managed at shorter intervals. For 35-day intervals, cv. Belmonte showed a lower invasive plant mass. This outcome, coupled with the cultivar's greater average accumulation of leaflet DM under the same harvest height management (Table 4), suggests a suppressive effect on the growth of unwanted plants in the cultivated area. Furthermore, it is well-established that an increase in leaflet DM accumulation correlates with increased leaf area, production of photoassimilates, and, consequently, rapid growth and reestablishment of canopy cover, which reduces the presence of invasive plants in the area. However, the management practices adopted must be suitable for the crop in question to ensure its preservation and prevent the invasion and establishment of other invasive species over time (Teasdale, 1998).

There was no significant difference (P>0.05) in the composition of OM, ash, CP, NDF, and IVOMD in relation to the interval and harvest height factors, nor were there any effects (P>0.05) from interactions between the response variables. The chemical composition and IVOMD were influenced by the cultivar (Table 6). The concentrations of OM (P<0.001) and CP (P = 0.009) in cv. Belmonte were higher, and the ash component was lower (P<0.001) compared to other cultivars. The NDF concentration was 6% higher (P = 0.022) in BRS Mandobi compared to Alqueire-1 (23 g kg^{-1}). Cultivars Amarillo and Belmonte showed no significant differences (P>0.05) in their NDF concentrations, either in relation to Alqueire-1 or BRS Mandobi. Belmonte was the most digestible cultivar, with a higher (P = 0.001) IVOMD than cultivars Alqueire-1 and Amarillo, but similar (P>0.05) to that of cultivar BRS Mandobi.

Chemical and digestible attributes significantly influence forage intake and, consequently, affect the performance of animals in grazing (Santos et al., 2004).

Belmonte exhibited greater potential to enhance animal performance due to its high concentrations of CP and IVOMD compared to cvs. Alqueire-1 and Amarillo, and had intermediate NDF levels compared to all other cultivars (Table 6). These results stem from Belmonte's higher production of leaflets (Table 4) in all management practices adopted, as this is the morphological component with the highest nutritional value (Valadares et al., 2015).

Table 6
Mean concentrations of organic matter, ash, crude protein, neutral detergent fiber, and *in vitro* organic matter digestibility (IVOMD) of *A. pintoi* cultivars

Variable	Cultivar			
	Alqueire-1	Amarillo	Belmonte	BRS Mandobi
	------------- g kg^{-1} DM -------------			
Organic matter	901^{b} (2)	897^{b} (1)	915^{a} (2)	900^{b} (2)
Ash	99^{a} (2)	103^{a} (1)	85^{b} (2)	100^{a} (2)
Crude protein	248^{b} (5)	252^{b} (3)	277^{a} (3)	263^{ab} (5)
Neutral detergent fiber	360^{b} (5)	364^{ab} (9)	366^{ab} (3)	383^{a} (5)
IVOMD	684^{b} (4)	684^{b} (5)	717^{a} (4)	694^{ab} (5)

Means followed by common lowercase letters in the rows do not differ from each other according to Tukey's test at 5% probability. Values in parentheses represent the standard error of the mean (SEM).

Cultivars with lower NDF levels are desirable because they provide animals with forage of better nutritional quality, indicative of a greater proportion of cellular content in the composition of plant cells, as well as a higher content of non-fibrous carbohydrates (Van Soest, 1994). The results presented show higher CP levels and lower NDF levels compared to those found by Liz et al. (2014), who evaluated pure stands of cultivar Amarillo. In this study, the CP concentration was also higher than that reported by Prine et al. (1981), where the CP of pinto peanut varied between 120 and 190 g kg^{-1}. Considerations should be made based on the management practices and cultivation regions adopted, as these factors directly influence the qualitative and quantitative characteristics of forage plants.

Conclusions

The management strategy with a harvest height of 5 cm leads to greater accumulation of forage dry matter in *A. pintoi,* irrespective of the defoliation interval used.

The highest average accumulation of leaflet dry matter is achieved with a defoliation interval of 35 days.

The greatest average accumulation of invasive plant dry matter occurs at a stubble height of 5 cm.

Defoliation intervals of 28 and 35 days, and harvest heights of 5 and 10 cm, do not affect the chemical composition or *in vitro* organic matter digestibility of the four *A. pintoi* cultivars evaluated.

Belmonte exhibits productive and nutritional characteristics that give it a greater potential for use compared to cultivars Alqueire-1, Amarillo, and BRS Mandobi.

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