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Companion crops for pasture establishment in the state of Minas Gerais , Brazil

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Key words : pasture , *Brachiaria brizantha* , dry matter , crude protein

Introduction The establishment of pastures is expensive and to reduce costs , it is sometimes recommended to seed one or more crops along with the forage , in order to pay for , at least , part of the costs . The results of this practice vary , and changes with the season and the year of planting , due to changing climatic conditions (Crowder & Cheddar , 1982 and Decker et al . , 1976) . The objective of this research was to study the use of companion crops on the establishment of *Brachiaria brizantha* (Bb) pasture in the State of Minas Gerais-Brazil .

Material and methods We used two dry farm rice cultivars (Aymoré and Douradão) and two sorghums (in the first year it was DK-57 and in the second BR-304) . We also seeded Bb at three depths of sowing (5 , 10 , and 15cm) . In order to measure the effects of Bb on crop production of rice and sorghum , one plot of each crop cultivar did not contain Bb , the control . The experiment was then composed of 12 treatments : 1-Aymoré and Bb seeded at 5cm of depth ; 2-Aymoré and Bb seeded at 10cm ; 3-Aymoré and Bb seeded at 15cm ; 4-Douradão and Bb seeded at 5cm ; 5-Douradão and Bb seeded at 10cm ; 6-Douradão and Bb seeded at 15cm ; 7-DK-57 and Bb seeded at 5cm , in the 1st year , and BR-304 in the 2nd year ; 8-DK-57 and Bb seeded at 10cm 1st year , and BR-304 2nd year ; 9-DK-57 plus Bb seeded at 15cm , 1st year , and BR-304 2nd year ; 10-Aymoré ; 11-Douradão ; 12-DK-57 (1st year) and BR-304 (2nd year) as a single culture . The experimental design was a randomized complete block in a factorial scheme 4x1x3 with three replications . Three cereals were grown with Bb or in a single culture and Bb seeded in three depths . Each experimental unit measured 5 by 10 m . First , it was planted rice and sorghum and 10 days after it was seeded Bb . There was a row of Bb between two rows of rice , and between two rows of sorghum there were two rows of Bb . The spacing of rice crops was 0.50m and the sorghum 1.00m . In order to be 0.50m apart from each other each row of Bb was 0.25m apart from rice and sorghum crops . We used the sowing rate of 40kg/ha of seeds of rice , 8kg/ha of sorghum , and 5kg/ha of Bb . The fertilizer was : for rice-10kg of Nitrogen , 60kg of P₂O₅ , 60kg of K₂O , and 15 kg/ha of ZnSO₄ . For the sorghum it was 10kg of N , 70kg of P₂O₅ , 45kg of K₂O , and 20kg of ZnSO₄ . The dressing fertilizer was used 30 and 60kg/ha of N 30 and 60 days after the emergence of the plants . In the Bb furrows we did not use any fertilizer . In the 1st year we measured the rice and sorghum grain production , and in the 2nd year , because of using a forage sorghum cultivar , we measured sorghum dry matter (DM) production , besides rice grain production . We also counted the number of Bb plants in a five 1m rows at random locations in each plot of Bb , 21 and 35 days after emergence of the plants . The amount of available Bb forage dry matter was also sampled . From the forage sample a small sub sample was taken to analyze for dry matter content , crude protein , calcium , and phosphorus . These data were subjected to analysis of variance as well as to the Tukey test .

Results and discussion The results obtained in the 1st year , revealed no effects for crude protein , phosphorus , or calcium content for the dry matter (DM) of Bb . Planting depth affected the number of plants at 21 and 35 days after the germination of Bb . The number of plants/m for Bb was 12.4 , 11.2 , and 9.6 for the planting depth of 5 , 10 , and 15cm , respectively . DM production/ha was affected by rice and sorghum cultivars . In the treatments with Aymore the DM production for Bb was 2 , 098kg/ha ; Douradão 2 , 191kg ; and DK-57 2 , 481kg/ha . The seeding depth of Bb also affected Bb's DM production , with a production of 2 , 037 , 2 , 287 , and 2 , 446 kg/ha for 5 , 10 , and 15cm , respectively . In the 2nd year the planting dates for rice and sorghum were 11-29-1999 and for Bb was 12-10-1999 . Statistical analysis did not show (P<0.05) any difference due to treatments for the number of plants/m . Bb production was higher when it was seeded with rice and at the depth of 10 and 15cm . Pasture planting with Bb , using rice and sorghum as nurse crops is a viable practice , and the returns with rice covered 169 to 270% of the costs in the 1st year . However , in the 2nd year the economic efficiency was smaller . In the 2nd year sorghum showed a better cost/benefit relationship .

References

- Crowder , L.V . & Chheda , H.R . (1982) . Grassland Improvement : Establishment and renovation of the sward . In : *Tropical Grassland Husbandry* . 562pp .
- Decker , A.M . ; Taylor , T.H . & Willard , C.J . (1976) . Establishment of new seeding . In : Forages—The Science of Grassland Agriculture . Edited by HEATH , M.E . ; METCALFE , D.S . & BARNES , R.F . *The Iowa State University Press/Ames , Iowa , 3rd ed* . 384-395 .