

## Post-planting survival of *Anadenanthera colubrina* (Vell.) Brenan var. *cebil* [Griseb.] Altschul inoculated with mycorrhizal fungi under nitrogen and potassium fertilization in the Brazilian Pantanal

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The objective of this work was to compare the post-planting survival of *Anadenanthera colubrina* (Vell.) Brenan var. [Griseb.] Altschul inoculated with mycorrhizal fungi (MF) under nitrogen plus potassium fertilization in Brazilian Pantanal. The experimental area is located in the sub-region of Nhecolândia, in a physiognomy called “cordilheira”, where there was almost complete suppression of tree vegetation, with few individuals remaining. The experimental design was randomized blocks with subdivided plots and three replicates. The main treatments consisted in seedlings planted (March 2015) in 6 m<sup>2</sup> (3 x 2 m) space, submitted or not to MF (*Glomus clarum* and *Gigaspora margarita*) inoculation. The secondary treatments received at the planting pit, respectively, 15 g + 5 g (A), 30 g + 10 g (B) and 30 g + 15 g (C) of ammonium sulphate and potassium chloride. At two months after planting, there was no effect of MF inoculation on survival and regrowth of seedlings. However, the survival were higher in the plots located in the inferior position of the “cordilheira”, closer to the watercourse, and under a lower dose of nitrogen plus potassium fertilization ( $p < 0.01$ ). The results obtained suggested that, in Pantanal Wetland conditions, it is extremely recommended the monitoring and adaptation of soil fertility management in function of soil water supply, to reduce the environmental vulnerability related with the typical hydric and climatic fluctuations of this region.

## Modelling diametric distribution of *Brachystegia spiciformis* Benth. in Miombo forest, Mozambique

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The identification and estimation of quantitative characteristics of tree species are considered as the initial requirement for forest planning. Therefore, it was intended with this work, to select among Weibull, Gamma, Beta, Sb Johnson, Normal and Log-normal, provide the most appropriate to describe the diametric distribution *Brachystegia spiciformis* Benth. The quality adjustment produced by the methods of probability distribution was measured by the nonparametric adherence index Kolmogorov-Smirnov a 5% level of probability. The results indicated that there are more trees on the smaller diameter class than in larger diameter class. The functions of Weibull and Gamma, were selected to describe the diameter distribution of *Brachystegia spiciformis* Benth.

## Genetic variability for juvenile characteristics of progeny of *Apuleia leiocarpa* Vog. Macbride / Variabilidade genética para caracteres juvenis de progênes de *Apuleia leiocarpa* Vog. Macbride

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Os estudos de variabilidade genética em populações de espécies nativas servem de subsídio para a busca de progênes com alto desempenho, que podem ser utilizadas para restauração florestal ou em estudos para plantios comerciais. Com este foco, o objetivo do trabalho é verificar a existência de variabilidade genética para caracteres juvenis em 13 progênes de *Apuleia leiocarpa*. As matrizes foram marcadas em área de Floresta Estacional Decidual no Sul do Brasil, destinadas à coleta de sementes. Realizou-se a biometria (comprimento e largura) em um lote de 100 sementes de cada matriz. A semeadura foi efetuada em blocos acaso com 13 tratamentos (progênes), 17 plantas por parcela linear e oito repetições. Coletou-se informações sobre o índice de velocidade de germinação e taxa de germinação (%). A análise dos dados foi realizada por análise de variância (ANOVA) com o auxílio do software estatístico SELEGEN (modelo 82). Os resultados apontam que a maior taxa de germinação foi de 92,6% para a matriz AL 09 e menor taxa de 33% para a matriz AL 37. Para a biometria de sementes, houve diferença significativa entre as matrizes pela ANOVA ( $p < 0,05$ ), sendo que a matriz AL 09 obteve as menores médias de comprimento e largura, não interferindo na taxa de germinação. Para análise genética, a herdabilidade individual no sentido restrito foi alta, com valor de 1,40 ( $\pm 0,58$ ) para a variável comprimento de sementes e 3,04 ( $\pm 0,86$ ) para a variável largura, sendo características com alto potencial de herdabilidade.

## Leaf litter decomposition and nutrient content of selected agroforestry tree species

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Litter decomposition and nutrient release are major sources of nutrient return into the soil. Investigation was carried out on leaf litter decomposition and nutrient content of three agroforestry species - *Annona muricata* L., *Senna siamea* (Lam.) and *Cola nitida* (Vent.). Oven-dry leaf litters of each species was put in 144 litterbags of 23 g each. These were divided into two sets with a set placed on soil surface (SSP) and the other, soil incorporated (SIP) mode of leaf litter decomposition giving a 3 x 2 factorial in RCBD. Initial nutrient content (INC), decay constant and half-lives (weeks) were determined. Decomposition rates, nitrogen release pattern (NRP), total organic carbon (TOC) and litter quality were measured fortnightly for 24 weeks after litter placement (WALP). Data collected were subjected to descriptive statistics and ANOVA at  $p < 0.05$ . The INC was significantly different among the species. N concentration decreased from *C. nitida* < *A. muricata* < *S. siamea*. P was significantly higher in *S. siamea* (0.38%) than *C. nitida* (0.22%) and *A. muricata* (0.32%). In SSP, decay constant and half-lives for *A. muricata* and *S. siamea* (0.004) (24.8) were significantly higher than *C. nitida* (0.005) (19.8) while *C. nitida* and *S. siamea* (0.002) (49.5) were significantly higher than *A. muricata* (0.003) (33.0) in SIP. Results on decomposition rates, NRP, TOC and litter quality are shown in the figures. These species could be effective in soil nutrient addition in an agroforestry system.