Heritability and genetic correlations of mineral macronutrients in the biomass and leaves of forage peanut

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Forage peanut (*Arachis pintoi* and *A. repens*) is an important legume used in mixed pastures in Western Amazon. However, there are few materials available and it is necessary to develop new cultivars. This study aimed to estimate heritability coefficients and genotypic correlations of mineral macronutrients in forage peanut. Sixteen genotypes and two controls were evaluated in trial implanted in December 2008 at Embrapa Acre. Agronomic evaluations were performed for two years, by harvesting biomass at 2 cm height aboveground. Among the harvests performed, two were used to obtain macronutrient contents in biomass and leaves, one in dry season (July 2009, 90-days of regrowth) and another in rainy season (January 2010, 75-days of regrowth). Macronutrients were determined by UV spectrophotometry (P) and atomic absorption spectroscopy (Ca and Mg) in g kg^{-1} of dry matter. Data were analyzed by mixed models methodology and variance components were estimated by restricted maximum likelihood, with subsequent estimation of mean heritability coefficients and experimental accuracy. Deviance analyses were performed and Pearson correlations between biomass and leaves for each mineral, considering predicted genotypic values. Genetic variability was observed for all macronutrients, except for Ca and Mg in leaves in dry season. The mean values of macronutrients in biomass were: Ca: 17.8 ± 1.1; Mg: 8.3 ± 0.5 and P: 1.7 ± 0.1 for dry season; and Ca: 10.2 ± 1.2; Mg: 3.8 ± 0.3 and P: 1.7 ± 0.1 g kg^{-1} for rainy season. Mean values were obtained for leaves: Ca: 24.2; Mg: 3.2 ± 0.3 and P: 1.9 ± 0.1 in dry season; and Ca: 25.4 ± 4.4; Mg: 11.3 and P: 2.4 ± 0.2 g kg^{-1} in rainy season. Mean accuracy for all macronutrients was high (>0.8). Mean heritability coefficients showed high magnitude: Ca: 0.64 ± 0.2; Mg: 0.67 ± 0.2 and P: 0.72 ± 0.1. Heritabilities were lower in dry season for both biomass and leaves, except for P in leaves and Ca in biomass. Genotypic correlations between Ca content in biomass and leaves had high magnitude in both seasons (0.79 and 0.88, dry and rainy seasons, respectively). The same occurs with Mg (0.71 and 0.89, dry season and rainy season). Correlations of P were medium and equal to 0.67 for both seasons. Ca, Mg and P have high mean heritability coefficients in specie, generally of greater magnitude in rainy season. The presence of genetic variability allows genotypes selection with higher macronutrients. High genotypic correlations observed between macronutrients in biomass and leaves indicate possibility of selecting based on values obtained only in biomass, especially for Ca and Mg in rainy season.