

Genetic diversity in *Stylosanthes capitata* based in morphological traits

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Forage legumes have high protein content, good development in relatively poor soil, easy propagation and can incorporate nitrogen to the soil. All these aspects promote a great benefit to the livestock production, including cost reduction on fertilizer in pastures. Species of the genus *Stylosanthes* are a viable alternative when used together with *Brachiaria* species in the formation of pastures. Genetic diversity knowledge in a breeding scheme can help in parental selection for controlled crosses, which may result in heterosis and amplification of breeding population genetic diversity. This study aimed to evaluate the genetic diversity and relative importance of morphological traits evaluated in different genotypes of *S. capitata*. The experiment was conducted at the Universidade Federal de São João del-Rei / MG – Brazil in a greenhouse. We evaluated 10 open-pollinated families (297-2, 49-5, 1064-4, 49-4, 1095-5, 141-6, 1064-6, 297-6, 625-3, 111-3), previously selected by the breeding program at Embrapa Gado de Corte/Brazil. The experimental design was a completely randomized with four replicates. In addition, each replicate contained one plot of the cultivar estilosantes-campo-grande (ECG) as control. The following morphological traits were evaluated: growth habit, length, width, length: width proportion both of central and lateral leaflets, plant height, stem length and number of secondary branches. The matrix of the Mahalanobis's generalized distance was obtained based on general phenotypic mean and residual variance-covariance matrix. Based in this dissimilarity matrix, the families and ECG were clustered using the method of Ward. All analyzes were performed using the program GENES. According the cluster analysis was possible to group the 10 families and the cultivar into five groups. The first group was formed by genotypes 111-3, 297-2 and 297-6, the second consisted of 141-6 and 49-5, the third by 1064-6, 625-3, ECG and 1095-5. Genotypes 1064-4 and 49-4 could not be included in any of the groups above. Groups 1 and 3 were characterized by plants with central and lateral leaflets wider. These traits are important when in cultivation with grass, as it they increase the leaf surface for photosynthesis and, improve the ability in compete with other plants. Despite the similarities, groups 1 and 3 can be distinguished by the length of principal branch which is bigger in group 1, as well as the plant height. Plants are higher in group 1 and this is advantageous in cultivation with grasses. The trait number of lateral branches is also important since it is related to the number of active buds, which in turn contributes to the process of regrowth after grazing. Families in group 2 presented more branch ramifications, however it was not statistically different of groups 1 and 3. The proportion of length and width of leaflets central and lateral was maximized in group 5, composed by the family 49-4. However, this family was characterized by overall smaller leaflets and was the shortest among the families evaluated. The families 1064-4 and 1064-6, and 49-5 and 49-4 were selected in accessions 1064 and 49, respectively, however they have shown to be sufficiently divergent to compose different groups. Families in groups 1 and 3 may be suitable for production systems in consortia with grasses.

Keywords: dissimilarity, forage breeding, legume, Mahalanobis distance