

## GENETIC DIVERGENCE BETWEEN GENOTYPES OF SWEET SORGHUM BASED ON AGRONOMIC AND MORPHOLOGICAL CHARACTERISTICS

Fabio Tomaz de Oliveira<sup>(1)</sup>; Maurício Daniel Kolling<sup>(1)</sup>; Ana Paula Sandoval Rodrigues<sup>(1)</sup>; Flávio Dessaune Tardin<sup>(2)</sup>; Marco Antonio Aparecido Barelli<sup>(1)</sup>

<sup>(1)</sup>Universidade do Estado de Mato Grosso; <sup>(2)</sup>Empresa Brasileira de Pesquisa Agropecuária, Centro Nacional de Pesquisa Milho e Sorgo.

Due to the energy crisis in the 1970s, Brazil has begun to invest in alternative sources of fuel, such as sweet sorghum (*Sorghum bicolor* L. Moench). In order to achieve success in the use sweet sorghum as an alternative source of fuel, it is important to consider a plant breeding program for it. In this context, it is necessary to be careful during the choice of parents in order to obtain superior cultivars. In the choice of parents, the mean of genetic divergence is considered as a measure of performance. The more divergent are parents more heterosis is achieved. Genetic divergence was evaluated by multivariate analysis, which is the evaluation of morphological, physiological and agronomic traits of the parents. Thus, the aim of the present study was to evaluate the genetic divergence of 16 cultivars of sweet sorghum based on agronomic and morphological characteristics applying multivariate analysis. The experiment was carried out at the experimental area of Universidade Estadual do Mato Grosso (UNEMAT) in Cáceres - MT, which is located in Southwest Mato Grosso at 176m, 16 4' 16'' S and 57 40' 44'' W, with temperature and average rainfall of 24C and 1.500mm, respectively. The planting occurred in December 2013. The cultivation was carried out based on the agronomic recommendations for the culture. 16 cultivars (BRS 511, CV 198, V82393, V82392, CMSXS629, CMSXS647, CMSXS646, CMSXS644, CMSXS630, BRS509, CMSXS643, V82391, BRS 508, BRS 506, Sugargraze, CV 568) of sweet sorghum from EMBRAPA Milho e Sorgo were assessed. The experiment was installed in randomized blocks design, with three repetitions, and plots were composed of four 5 m rows, 0.7 m distant. The two center lines were considered as useful plot. The following characters were evaluated: number of days to flowering; plant height (m); diameter of stem (mm); weight of dry matter (kg); weight wet (Kg); total soluble solids content (Brix, % Broth); weight of broth (Kg) and volume of broth (ml). It was estimated the genetic divergence between genotypes based on the distance of Mahalanobis, and the clustering was performed using the method of Tocher. The statistical analyzes were performed with the aid of the computer program GENES. There was significant difference in at 1% of probability for plant height and diameter of stem. There was significant difference in at 5% of probability for number of days to flowering, weight of broth, total soluble solids content and volume of broth. Such F test results demonstrate genetic distance between cultivars. The CV ranged from 5 to 20.9% for significant characteristics, indicating appropriate experimental accuracy. The Cluster analysis allowed the distribution of cultivars in three distinct groups that diverged mainly because of total soluble solids content (37%) and number of days to flowering (33%), which are important features related to plants with higher ethanol production capacity and lower vegetative cycle, therefore with high potential for exploitation of culture in the region of Cáceres-MT.



II Genetics and  
Plant Breeding  
Meeting of Rio de Janeiro

**ABSTRACTS**

**NOVEMBER 4-6 2014**  
**CONVENTION CENTER - UENF**  
**CAMPOS DOS GOYTACAZES - BRAZIL**

Organization



Sponsors

