

Characterization of genetic diversity of bird-of-paradise accessions⁽¹⁾

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ABSTRACT

This study aimed to characterize genetic diversity in the bird-of-paradise (*Strelitzia reginae*) collection at the Universidade do Estado de Mato Grosso Carlos Alberto Reyes Maldonado (UNEMAT) by estimating genetic divergence among genotypes based on agronomic characteristics. Seven agronomic characters were evaluated with average Euclidean distance. The UPGMA (Unweighted Pair Group Method with Arithmetic Mean) hierarchical clustering method was used between groups, as well as Tocher's optimization clustering method and principal component analysis (PCA), in order to classify the genotypes with maximum similarity between groups. Measures of genetic dissimilarity with average Euclidean distance verified the existence of genetic variability among accessions since the amplitude of dissimilarity values ranged from 1.09 to 36.97. Tocher's clustering method verified the formation of two distinct groups. UPGMA hierarchical clustering, based on the dissimilarity matrix, verified the formation of three groups with 30% cutoff point. Based on the main components analysis, we verified genetic divergence between the bird-of-paradise accessions in the UNEMAT Collection. The most promising combinations for future crosses in breeding programs comprise accessions 1, 11, and 23 and accession 1 as the most divergent among the accessions evaluated.

Keywords: *Strelitzia reginae*, main components, cluster methods, divergence, tropical flowers.

RESUMO

Caracterização da diversidade genética de acessos de ave-do-paraíso

Este trabalho foi realizado com o objetivo de caracterizar a divergência genética de acessos de ave do paraíso da coleção de mudas da UNEMAT com base em características agrônomicas. Foram avaliadas sete características agrônomicas, com emprego da distância Euclidiana Média, foram utilizados os métodos de agrupamento médio entre grupos (UPGMA), o método de agrupamento de Otimização de Tocher, além da análise de componentes principais, a fim de classificar os genótipos que apresentassem a máxima similaridade entre os grupos. As medidas de dissimilaridade genética em relação às características avaliadas, fazendo uso da distância Euclidiana Média, demonstraram a existência de variabilidade genética entre os acessos avaliados, uma vez que a amplitude dos valores de dissimilaridade foi de 1,09 a 36,97. Na análise de agrupamento com a utilização do método de Otimização Tocher verificou-se a formação de dois grupos distintos. No agrupamento hierárquico UPGMA, fundamentado na matriz de dissimilaridade, apresentou a formação de três grupos com o ponto de corte a 30%. Com base na análise dos componentes principais pode-se observar que houve divergência genética entre os acessos de ave do paraíso avaliados.

Palavras-chave: *Strelitzia reginae*, componentes principais, métodos de agrupamento, divergência, flores tropicais.

1. INTRODUCTION

Tropical ornamental plants and flowers are gaining importance in floriculture owing to the attractiveness of the flowers and leaves, as well as their exotic colors, shapes, sizes and durability. Among tropical species, bird of paradise (*Strelitzia reginae*) has been cultivated for cut flowers based on their exotic colors and shapes, as well as vase life (durability), length of stems, and plant resistance to pests and diseases (WOOD, 1995; MACNISH et al., 2010; TERAO et al., 2005). Bird of paradise plants are frequently used in landscaping, but they are more attractive and exotic as cut flowers in arrangements and for decoration.

The bird of paradise tends toward polymorphism; thus, each plant originated from seed presents its own

characteristics, especially as reflected in plant height, shape and size of leaves, stem length, and flower size, among other characteristics (TERAO et al., 2005). Species characterization has been very important to breeding programs since they provide parameters by which to identify the parents, contributing to greater heterosis in the progeny and high probability of achieving superior genotypes in segregating generations, in addition to gaining increased knowledge about the genetic basis of plant populations as a whole (FERRÃO et al., 2002).

The present study aimed to genetically characterize bird of paradise accessions from the UNEMAT Collection based on agronomic characteristics.

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