



Artificial intelligence in the selection of common bean genotypes with high phenotypic stability

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Genet. Mol. Res. 15 (2): gmr.15028230

Received December 8, 2015

Accepted January 18, 2016

Published April 27, 2016

DOI <http://dx.doi.org/10.4238/gmr.15028230>

ABSTRACT. Artificial neural networks have been used for various purposes in plant breeding, including use in the investigation of genotype x environment interactions. The aim of this study was to use artificial neural networks in the selection of common bean genotypes with high phenotypic adaptability and stability, and to verify their consistency with the Eberhart and Russell method. Six trials were conducted using 13 genotypes of common bean between 2002 and 2006 in the municipalities of Aquidauana and Dourados. The experimental design was a randomized block with three replicates. Grain yield data were submitted to individual and joint variance analyses. The data were then

submitted to analysis of adaptability and stability through the Eberhart and Russell and artificial neural network methods. There was high concordance between the methodologies evaluated for discrimination of phenotypic adaptability of common bean genotypes, indicating that artificial neural networks can be used in breeding programs. Based on both approaches, the genotypes Aporé, Rudá, and CNFv 8025 are recommended for use in unfavorable, general and favorable environments, respectively by the grain yield above the overall average of environments and high phenotypic stability.

Key words: Artificial neural networks; Eberhart and Russell method; Genotype x environment interaction; *Phaseolus vulgaris* L.