USE OF ARTIFICIAL NEURAL NETWORKS IN DETERMINING GENETIC DIVERGENCE IN A SEGREGATING SOYBEAN POPULATION

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RESUMO

The use of artificial neural networks (RNA) allows the simulation of data in a similar way to the biological neuron, allows the prediction of information and the establishment of clusters, in addition, they mimic the ability to learn from experiences, do not need prior information from data, can adapt to the environment, has good predictive capacity and operates even with incomplete information, capturing more complex information from the data, and therefore with great potential for use in plant breeding. The present study aimed to compare the use of RNA to determine the divergence in an F3 soybean population, with 70 progenies and two controls (TMG 801 and BMX Desafio RR), in the municipality of Uberlândia, MG, in the 2018/2019 harvest. Randomized complete blocks were used with two repetitions in which they were determined: grain production, number of days for flowering, number of days for maturation and number of days of the reproductive period. From the data, the Genes computer program was obtained, an analysis of variance, the grouping of genotypes by the Cluster dendogram method, as well as the grouping by the use of RNA. Through the analysis of variance it was possible to observe that there was genetic variability between the genotypes for all the evaluated characters, confirming that the progenies are likely to be selected for breeding purposes. Such information was confirmed by the Cluster grouping, in which the genotypes were classified into five groups, and by the RNA grouping that allowed the formation of seven distinct groups. The RNA's captured more complex information from the data, identifying groups more consistent with the variations in characteristics and measuring the most relevant variables for the allocation of genotypes in each group, so the method aggregates information for decision making, by establishing dissimilarity patterns more coherent among the genotypes.

PALAVRAS-CHAVE: Artificial neural networks, Genetic divergence, Segregating population

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