

GGE-Biplot Analysis of Nano-Titanium Dioxide and Nano-Silica Effects on Sunflower

Authors : Naser Sabaghnia, Mohsen Janmohammadi, Mehdi Mohebodini

Abstract : Present investigation is performed to evaluate the effects of foliar application of salicylic acid, glycine betaine, ascorbic acid, nano-silica, and nano-titanium dioxide on sunflower. Results showed that the first two principal components were sufficient to create a two-dimensional treatment by trait biplot, and such biplot accounted percentages of 49% and 19%, respectively of the interaction between traits and treatments. The vertex treatments of polygon were ascorbic acid, glycine betaine, nano-TiO₂, and control indicated that high performance in some important traits consists of number of days to seed maturity, number of seeds per head, number heads per single plant, hundred seed weight, seed length, seed yield performance, and oil content. Treatments suitable for obtaining the high seed yield were identified in the vector-view function of biplot and displayed nano-silica and nano titanium dioxide as the best treatments suitable for obtaining of high seed yield.

Keywords : drought stress, nano-silicon dioxide, oil content, TiO₂ nanoparticles

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