Physiological assessment of drought tolerance of two ecotypes of cumin (*Cuminum cyminum* L.) under greenhouse conditions

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Abstract

Drought has adverse effects on plant growth and production. Plants respond to drought stress through biochemical and physiological processes. In the present study, physiological responses of two cumin (*Cuminum cyminum* L.) ecotypes including Ravar and Gonbad, which belong to dry and sub-humid regions of Iran, respectively, were evaluated in a split-plot factorial experiment with three replications in controlled greenhouse conditions. Physiological traits such as relative water content, relative leaf water loss and electrolyte leakage were measured. Analysis of variance showed that there are considerable genetic variations for drought tolerance between the ecotypes. Drought stress decreased relative water content and relative leaf water loss rate, while electrolyte leakage was significantly increased in both ecotypes. Most of the significant changes were recorded in Gonbad ecotype. The Ravar ecotype demonstrated higher tolerance to drought stress, as compared to Gonbad ecotype, which can be due to compatibility of this genotype to water-deficit conditions. Therefore, this ecotype was recommended as a tolerant ecotype to drought stress. In conclusion, the investigated traits in this experiment were found to be valuable criteria in selection of drought-tolerant ecotypes at seedling stage under greenhouse conditions.

Keywords: Drought stress, Relative water content, Electrolyte leakage.

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