

Improving drought tolerance in sweet basil (*Ocimum basilicum*) with salicylic acid

Christos A. Damalas

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Abstract

Sweet basil (*Ocimum basilicum*) is sensitive to drought stress and, therefore, finding ways to improve plant tolerance to this stress is very useful for sweet basil production. In this study, the role of foliar spray of salicylic acid (SA) at 200 ppm in sweet basil plants (*Ocimum basilicum* L.) growth under water deficit was studied. Water shortage conditions provoked lower shoot fresh weight, dry weight, and plant height in stressed plants by 48.3%, 50.6%, and 40.1%, respectively compared with non-stressed plants. However, plants treated with SA showed higher fresh and dry weight values in shoots and greater plant height under water shortage compared with non-treated plants. Foliar application of SA showed higher values of the Mean Productivity index (from 10.71 to 13.48) and higher values of the Harmonic Mean index (from 9.60 to 13.23) than non-treated plants. Water deficit significantly diminished the level of Chl-a by 23.9% and the level of Chl-b by 15.8% compared with non-stressed plants, whereas SA alleviated those effects. Elevated values of proline content were observed under water shortage both in non-treated and SA-treated plants. The value of RWC was decreased by 29.2% under water deficit. However, plants treated with SA showed a significant raise in leaf RWC compared with non-treated plants. Sweet basil growth severely suffered by water deficit, but application of SA promoted plant growth parameters, photosynthetic pigments, and RWC under water deficit conditions. Foliar application of SA could be considered as an economical practice for increasing sweet basil performance under water deficit conditions.