

# Growth, yield and biochemical constituents as well as post-harvest quality of water-stressed broccoli (*Brassica oleraceae* L. var. *italica*) as affected by certain biomodulators

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## Abstract

The present study was conducted to assess the effect of certain biomodulators (BMs) on growth, yield, and storability as well as on bioactive constituents either before or after storage of deficit-irrigated broccoli. The tested BMs were yeast extract (YE), moringa leaves extract (MLE), salicylic acid (SA) and humic acid (HA). Deficit irrigation (DI) was achieved by extending the duration between subsequent irrigations from five days (control) to either ten (IR10) or 15 days (IR15). Results indicated that all applied BMs alleviated DI effects on growth and yield. Post-harvest decline in quality was delayed by DI as biomass loss percentage (BLP %) and post-harvest decay percentage (PHD %) were decreased. All applied BMs also preserved inflorescence quality during storage as BL% and PHD% were lower in BMs-treated plants compared with control. Chlorophylls, carotenoids, ascorbic acid, total phenols and total soluble carbohydrates in broccoli inflorescence were decreased in IR10 and IR15 plants whereas increased in BMs-treated plants. Anthocyanins content was not significantly affected in response to DI treatments and peroxidase activity was not significantly affected in response to either DI or BMs treatments. It was concluded that treatments with BMs could be a feasible approach to avoid yield losses in water-stressed broccoli and that treatments with BMs of deficit-irrigated plants maintain post-harvest quality of broccoli heads during storage.