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Drought stress affects size but not nutritional quality, antioxidant system and composition of phenolic acids of *Moringa oleifera* leavesWasif Nouman¹, Muhammad Zubair¹, Mark Earl Olson², Tehseen Gull³, Muhammad Tauseef Sultan¹ and Shahzad Maqsood Ahmad Basra³¹Bahauddin Zakariya University, Pakistan²National Autonomous University of Mexico, Mexico³University of Agriculture Faisalabad, Pakistan

A study was conducted to investigate the growth performance, antioxidant activities and nutritional quality of *Moringa oleifera*, a fodder crop, under the simultaneous effect of plant growth regulators and drought stress. For this, benzyl amino purine (BAP-50 mg L⁻¹), ascorbic acid (50 mg L⁻¹) and *Moringa* leaf extract (MLE-3.3%) were exogenously applied on *Moringa* plants at three field capacity levels i.e., 100 (normal), 75 (moderate stress) and 40% (severe stress) in a completely randomized design with three replications. Drought tolerance was evaluated based on growth development, chlorophyll a and b and total phenolic contents, antioxidant activities of superoxide dismutase (SOD), peroxidase (POD) and catalase (CAT), as well as crude protein and mineral contents. Moreover, variation in p-hydroxybenzoic acid, caffeic acid, gallic acid, p-coumaric acid and sinapic acid according to drought stress and foliar applications was also quantified by using RP-HPLC. A decrease in growth, photosynthetic pigments, total phenolics, antioxidant activities and nutritional quality of *Moringa* leaves was recorded at normal and severe drought conditions in comparison with moderate drought stress. BAP improved shoot length, root length, number of leaves and roots of *Moringa* plants followed by MLE while in the case of photosynthetic pigments, crude protein, calcium, potassium, magnesium and phosphorous MLE was more effective under severe drought. An increase in selected phenolic acids was also observed in *Moringa* leaves with increase in stress. It can safely be concluded that *Moringa* showed reduced growth and decreased nutritional quality under normal and severe water deficit conditions that can be mitigated by applying BAP and MLE.

Biography

Wasif Nouman has completed his PhD from the University of Agriculture Faisalabad, Pakistan in the field of Forestry. Currently, he is working as an Assistant Professor in the Department of Forestry and Range Management, Bahauddin Zakariya University, Multan, Pakistan. He has 21 publications in various national and international journals. He is also serving as an Editor of *International Journal of Agriculture and Biology*.

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