

Submitted Abstract

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Abstract

ABSTRACT

Soil salinity is the main abiotic stress that limits productivity in the arid and semi-arid regions of the world and arbuscular mycorrhizal fungi are considered as bio-ameliorators of salinity tolerance in plants. The effect of phosphorous application and arbuscular mycorrhizal inoculation was investigated on growth parameters (number of leaves, leaf surface area, stem height and noose diameter), ionic distribution, chlorophyll content, biochemical constituents and non-enzymatic antioxidants on *Capsicum annuum* L. (green pepper) in a greenhouse for a period of six weeks under different salt conditions. Plants were subjected to four levels of salinity (0, 50, 100 and 200 mM NaCl). They were grouped into five blocks (treatments) with four replications per block. Seedlings in the first block were subjected to NaCl only, those in the second block were treated with combined application of NaCl and phosphorous, the third and fourth block were inoculated with 25 g of Bio1 [*Gigaspora margarita* and *Acaulospora tuberculata*] and 25 g of Bio2 (*Scutellospora gregaria*) with 1g of phosphorous in each. The fifth treatment was subjected to 1g of phosphorous and inoculated with 25 g mixture of Bio (1+2). Results of the treatment with NaCl only, showed that, growth parameters, ionic distribution, chlorophyll content biochemical constituents and non-enzymatic antioxidants reduced significantly ($P < 0.001$) with increased levels of salinity. Treatment with phosphorous at different NaCl concentrations increased the growth parameters, ionic distribution, chlorophyll content, biochemical constituents and non-enzymatic antioxidants with increased in NaCl concentration when compared to the treatment with NaCl only. For the treatment with arbuscular mycorrhiza, there was a significant increase ($P < 0.001$) in the rate of growth parameters, ionic distribution (K^+ , Ca^{2+} and Mg^{2+}) chlorophyll content, biochemical constituents and non-enzymatic antioxidants with increased concentration of NaCl when compared with treatments without biofertilizers. Therefore, combined application of phosphorous and Bio1 (*Gigaspora margarita* and *Acaulospora tuberculata*) should be used by farmers in the Littoral, arid and semi-arid regions in order to improve productivity and yield of green pepper;