

Physiological characteristics of tomato seedlings under application of chemical and organic-based fertilizers

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Abstract

Production of a healthy and vigorous seedling is necessary for normal and economical plant growth, in which nutrition plays an important role. In this research, in order to investigate the effects of aminochelate fertilizers on growth of tomato (cv. Green Super) seedlings, a pot experiment was performed in soil medium, based on completely randomized design, under greenhouse conditions. Treatments were foliar application of NPK, aminochelates of Biomin, DelfonPlus, Humifolin, Biomin+Humifolin, synthetic macro-micro fertilizer (2‰), soil-applied NPK and control (without fertilizer) in 8 replications. Results showed that there was no significant difference among treatments for some plant traits such as plant height, number of leaves, length and width of leaf, length of main leaflet, and stem diameter, while the highest amount of these traits were found in Biomin+Humifolin and soil applied NPK treatments. The highest foliage fresh weight (2.8-2.9 g) and dry weight (0.17-0.19 g) and SPAD value (27.51) were measured for Biomin+Humifolin and soil-applied NPK treatments, which showed significant difference to control treatment. Foliar application of aminochelates significantly increased leaf soluble carbohydrates as compared to the control plants. The highest amount of this trait was recorded for Biomin+Humifolin (7.02), Biomin (6.91) and soil-applied NPK (6.3 mg/g DW) treatments. In general, application of Biomin+Humifolin aminochelate resulted in the best growth and quality of tomato seedlings.

Keywords: Aminochelate, Seedlings quality, Chlorophyll, Soluble carbohydrates, NPK.

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