

Comparison of the effect of nano Fe chelate with Fe-chelate on growth and physiological characteristics of two cultivars of pepper under alkaline conditions in soilless culture system

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Abstract

In order to determine the best source of iron fertilizer for green pepper (*Capsicum annuum*, L.) under alkaline conditions, an experiment was conducted as factorial, based on completely randomized design, with three factors including iron fertilizer at three levels (control, Fe-EDDHA and nano Fe chelate), sodium bicarbonate at two levels (0 and 10 mM) and two cultivars (Bonanza and Griffaton) with three replications, in greenhouse of Faculty of Agriculture, Vali-e-Asr University of Rafsanja. Fourty five days after planting, plants were treated with sodium bicarbonate for 2 months. Results indicated that maximum reduction in vegetative characteristics (root and shoot fresh and dry weight), reproductive traits (number of fruits, fruit length, fruit weight and fruit diameter) and echophysiological paramnters (Fv/Fm, PI and RWC) was found in control (no Fe fertilizer) treatment. Under the alkaline conditions, minimum and maximum chlorophyll a and b and carotenoids content were obtained in control and Fe-EDDHA treatments, respectively. Sodium bicarbonate stress significantly decreased the nutrients concentration in roots and shoots of the pepper. According to the obtained results, and considering the measured traits, Fe-EDDHA was the best iron fertilizer under the 10 mM sodium bicarbonate stress, and nano Fe chelate was next in this situation.

Keywords: Alkalinity, Nano-chelate iron, Nutrients, Hydroponics.

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