

Effects of foliar application of different sources and rates of calcium on fruit blossom-end rot of bell pepper (*Capsicum annuum* L.)

A. Jahangiri¹, Sh. Kiani^{1*} and A. R. Hosseinpour¹

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Abstract

Blossom-end rot (BER) is one of the physiological disorders related to calcium (Ca) deficiency in the fruit which reduces yield and fruit quality of bell pepper (*Capsicum annuum* L.). Every year, occurrence of BER in bell pepper of Shahreza greenhouses causes a loss to farmers of this vegetable. This experiment was conducted to elucidate the effects of foliar application of calcium sources and rates on the nutrients concentration and blossom-end rot of bell pepper fruit under greenhouse conditions in Shahreza region during 2013. A factorial experiment using completely randomized blocks design was carried out with three factors of Ca fertilizer type, Ca concentration and pepper cultivars, and three replications. Calcium fertilizers were calcium chloride ($\text{CaCl}_2 \cdot 2\text{H}_2\text{O}$) and calcium nano-chelate that were sprayed at Ca concentration levels of 0 (foliar application of distilled water), 0.9 and 1.8 g/L. The three pepper cultivars were Inspiration (red), Arenkia (orange) and Toronto (yellow). Results indicated that foliar application of calcium chloride significantly decreased BER of bell pepper fruit, compared with the control. In this treatment, BER incidence was from 30.3 to 44.9 percent, compared with 65.5% in the control. Also, BER severity was from 1.3 to 1.6, compared with 2.1 in the control. This was due to increased Ca concentration and decreased N/Ca, K/Ca and Mg/Ca ratios in the fruits. While, foliar application of Ca nano-chelate had not significant effect on the incidence and severity of BER in pepper fruit. Based on the results of this research, it is suggested that direct spray of fruits with Ca (1.8 g/L from $\text{CaCl}_2 \cdot 2\text{H}_2\text{O}$ source) is recommendable to decrease BER of bell pepper fruit under similar conditions of this research.

Keywords: Pepper cultivars, Nutrients, Calcium chloride, Calcium nano-chelate.

1. Dept. of Soil Sci., College of Agric., Shahrekord Univ., Shahrekord, Iran.

* Corresponding Author, Email: shkiani2002@yahoo.com