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Mitigation Strategies for Blossom-end Rot and Fruit Cracking of Tomato under Protected Cultivation in the Tropics

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Abstract

Blossom-end rot (BER) and fruit cracking (FC) are prevalent disorders in tomato. It is widely accepted that a local Ca deficiency in the distal half of the fruits during the initial stage of fruit development is the main cause for BER. High fruit extension-growth particularly through excessive water uptake appears to be a main reason for FC. High light intensities, temperatures and humidity levels – typical attributes of tropical climates – have been suspected to aggravate BER as well as FC. Since most cultural practices leading to a reduction of FC might induce or aggravate BER and vice versa it is difficult to control both disorders at the same time. We attempted to develop mitigation strategies for BER and FC for greenhouse tomato production under the tropical climate conditions of Central Thailand. Cultivars differing in their susceptibility to BER and FC, foliar application of combined aqueous calcium (Ca) and boron (B) solutions and nighttime fertigation with nutrient solutions of either high or low electrical conductivity (EC) were tested. The Ca and B sprays decreased the incidence of BER but increased FC at the same time. Similarly, a decrease in BER by additional nighttime fertigation with nutrient solutions of low EC and in FC by high EC at night was counteracted by enhanced FC in the low EC and BER in the high EC treatment. It is concluded that under the tropical climate conditions of Central Thailand leading to high losses of marketable fruit yield through BER and FC an integrated approach is required combining an optimised management of the fertigation system, foliar Ca sprays when climate conditions are favouring BER and particularly the selection of genotypes highly tolerant of BER and FC.

Keywords: Blossom-end rot, Ca deficiency, Ca sprays, fertigation, fruit cracking, tomato

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