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Prohexadione-Ca reduces plant height, improves yield and fruit quality on tomato and hot pepper crops

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Abstract

Prohexadione-Ca (P-Ca) is a growth retardant which has extensively been used in decidous fruit species; particularly in apple trees. This chemical is a plant bioregulator that is primarily used to reduce excessive vegetative growth; increase fruit set and improve fruit quality. However expertise of this compound on vegetables crops is scarse. Therefore, its effect and mode of action on this line may contribute to extend the uses of this growth retardant in horticulture.The present research was conducted with the purpose of learning on the effects of prohexadione-Ca on final plant height, yield and fruit quality in tomato, husk tomato, jalapeño pepper and wild pepper. The growth retardant was sprayed to experimental plants when reached 10 true leaves, 50% blossom and/or 20 days later. The concentration dosages of P-Ca were 0, 125, 175 and 200 $mg \cdot L^{-1}$. Results showed that prohexadione-Ca reduced final plant height. This effect was related with a reduction in the synthesis of gibberellins A_1, A_4 and A_7 in shoot tips of tomato plants. Yield was increased with the growth retardant. The content of lycopene in tomato fruits showed a remarkable increment in ripen fruits from P-Ca treated plants. Similar effects were also found on capsaicin content in fruits from jalapeño and wild peppers. The activity of catalase and peroxidase increased in tomato fruits treated with P-Ca; whereas this effect was seen only for catalase in husk tomato.

Biography

Homero Ramirez has completed his PhD from Bristol University, UK, and has made an extensive contribution in production systems design for developing countries. He is the delegate of MEXICO for ISHS, a well-known world-wide horticulture organization. He has directed over 100 research thesis for undergraduate and postgraduate students and has published more than 40 papers in reputed journals and serving as an editorial board member of several reputed scientific plant physiology and horticulture journals.