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ENHANCING TOMATO FRUITS YIELD AND QUALITY USING FOLIAR SPRAY WITH CALCIUM.

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ABSTRACT

Two field experiments were performed during the two successive seasons of 2003 and 2004 at Mansoura Vegetable Research station at El-Baramon, Dakahlia Governorate, Egypt, to study the effects of some calcium sources and levels as a foliar spray applications to reduce the disordered fruits; *i.e.,* cracking and blossom end rot as well as improving fruit yield and quality of tomato cv. GS 12.

The main findings obtained from this investigation showed that:

- Sprayed tomato plants with Ca-nitrate at 1.5 or 2 g Ca /L gave the lowest values of the percentage of cracked fruit types; radial, longitudinal, ring, transversals and total cracked fruits as well as fruits infected with blossom end rot.
- Total marketable yield per feddan was significantly increased and reaches its maximum values by foliar application with Ca-nitrate at 1, 1.5 or 2 g Ca /L.
- Fruit dry matter content was significantly affected by foliar spray of 1.5 g Ca /L of Ca-nitrate compared with all other treatments and control.
- The most effective treatment affected on fruit total soluble solids was that of using 1.5 g Ca /L of Ca-chloride or Ca-nitrate.
- Ascorbic acid content and titratable acidity of tomato fruit did not significantly influenced with all used calcium treatments.
- Foliar application of 2 g Ca /L of Ca-chloride or Ca-nitrate showed a significant enhancing effect on Ca content of tomato fruits.
- Tomato plants which sprayed with 2 g Ca /L of Ca-chloride or 1, 1.5 or 2 g Ca /L of Ca-nitrate were reached the highest total carbohydrate of tomato fruits.
- Nitrate content in tomato fruit was significantly decreased with foliar application of Ca-chloride at 1.5 or 2 g Ca /L followed by using Ca-nitrate at 1.5 or 2 g Ca /L.

It can be recommended that foliar spray tomato plants with Ca-nitrate at 1.5 g Ca /L at the beginning of flowering and repeating every 15 days produce good tomato yield with less percentage from disorders fruits.

In conclusion, this study demonstrated that it is possible to minimize disorders fruits and produce highest yield and quality of tomato by foliar spraying with Ca-nitrate at 1.5 g Ca /L at the beginning of flowering 4 times each 15 day intervals.

INTRODUCTION

Tomato (*Lycopersicon esculentum* Mill) is the first vegetable crop in Egypt for local consumption and export. Fruit cracking and Blossom end rot are serious problems in tomato cause a significant economic degradation of fresh market yield and fruits quality, Calcium plays a very important role in the structure of the cell wall and occurs in plant as calcium pectate, which is a component of every plant cell wall (Bennett, 1994 and Burns and Pressey, 1987), also calcium involved in plant tolerance to heat stress by regulating antioxidant metabolism (Jiang and Huang, 2001). Calcium deficiency usually induced in plants because calcium is not a highly mobile element (Mengel and Kirkby, 1978). Moreover, favourable calcium nutrition is important for preventation of cracking in tomatoes (Peet, 1992). Fruit cracking is a