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RESEARCH PAPER

Effect of different plant growth regulators and micronutrients on fruit quality and plant micronutrient content of tomato

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Abstract : An experiment was conducted to find out the effect of different plant growth regulators and micronutrients on fruit quality and micronutrient content of tomato at Horticulture Farm, Junagadh Agricultural University, Junagadh, Gujarat, India during 10 December, 2010 to 10 April, 2011. Eleven different treatments which consisted of four plant growth regulators and three micronutrients were used, *viz.*, T_1= Gibberellic acid @ 50 ppm, T_2= Gibberellic acid @ 75 ppm, T_3= Naphthalene acetic acid @ 50 ppm, T_4= Naphthalene acetic acid @ 75 ppm, T_5= Boron 50 ppm, T_6 = Boron 75 ppm, T_7= Zinc 0.5%, T_8= Zinc1%, T_9=Iron 100 ppm, T_{10}= Iron 150 ppm and T_{11} = Control (No application of plant growth regulator and micronutrients) in the study. The fruit quality and micronutrient content parameters in plant significantly differed due to different plant growth regulators and micronutrients in tomato. The maximum acidity per cent (1.41%) and ascorbic acid (109.33 mg/l00g pulp) were found in T_4= Naphthalene acetic acid @ 75 ppm, maximum reducing sugars (1.68%), non-reducing sugars (1.98%), total sugars (3.67%) and TSS (4.33 ^{0}Brix) were found in treatment T_2 (GA_3 75 ppm), whereas maximum boron content (10.33 ppm), Fe content (10.33 ppm) and Zn content (22.33 ppm) were found in treatment T_8 (Boric acid 75 ppm), T_{10} ($FeSO_4$ 150 ppm) and T_6 ($ZnSO_4$ -1%), respectively, the minimum for all the parameters were found in control treatment.

Key Words : Naphthalene acetic acid, Gibberellic acid, Boron, Zinc, Iron, Growth, Yield, Tomato

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INTRODUCTION

Tomato (*Lycopersicon esculentum* Mill.) belonging to Solanaceae and its origin is the Andean zone particularly Peru-Ecuador Bolivian areas, but cultivated tomato originated in Mexico (Salunkhe *et al.*,1987). Tomato is one of the most highly praised vegetables consumed widely and it is a major source of vitamins and minerals. It is one of the most popular salad vegetables and is taken with great relish. It is widely employed in cannery and made into soups, conserves, pickles, ketchup, sauces, juices etc. Tomato juice has become an exceedingly popular appetizer and beverage. The well ripe tomato (per 100 g of edible portion) contains water (94.1%), energy (23 calories), calcium (1.0 g), magnesium (7.0 mg), vitamin A (1000 IU), ascorbic acid (22 mg), thiamin (0.09 mg), riboflavin (0.03 mg) and niacin (0.8 mg) (Davies and Hobes, 1981). Plant growth substances are essential for growth and development of tomato plant. It plays an important role in flowering, fruit setting, ripening and physiochemical changes during storage of tomato. GA_3 significantly increases growth characters, yield and also improved quality of tomato whereas NAA application increased total soluble solid percentage significantly (Pundir and Yadav, 2001). Fruit set in tomato was successfully improved by application of plant growth regulators and micronutrients. In fact the use of growth regulators had improved the production of tomato including other vegetables in respect of better growth and quality (Saha, 2009). This ultimately led to generate interest between the scientists and famers for commercial application of growth regulators and micronutrients. So the present investigation was undertaken, to find out the

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