

INFLUENCE OF ARGININE ACID AND CALCIUM NITRATE ON SOME
GROWTH AND YIELD AND STORABILITY OF TOMATO FRUITS C.V KANZE
Lycopersicon esculentum Mill

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Abstract

The field experiment was carried out in plastic houses at the nursery, Agriculture Directorate Diyala governorate during the growing season 2011-2012 using the hybrid tomato Kanze. The tomato seedling was planted on 1.2.2012 and sprayed with arginine acid at a concentration of 0.2 g.L⁻¹ and calcium nitrate at a concentration of 20 g.L⁻¹ on two stages, the first was 70 days after planting and the second was two week after the first application the seedling in the control treatment was sprayed with distilled water. The experiment was laid using Complete Randomized Design (C.R.D) with three replicates, the averages were compared using the least significant differences test at 0.05 level. The experimental results were as follows: 1- Spraying tomato seedling with calcium nitrate gave the highest values of vegetative and yield parameters such chlorophyll content 181.1mg.g⁻¹ , stem diameter 18.1cm, leaf area 30.23 dm² and the yield per plant 3.932 kg as compared with control treatment . Foliar spray arginine acid significantly increased the vegetative and yield parameters such as chlorophyll content, stem diameter, leaf area and yield per plant. The storage experiment was carried out in a refrigerator, in Horticultural Department, College of Agriculture, Diyala University. Tomato fruits at lighted mature stage taken from the control treatment and either soaked in a solution of arginine acid or calcium nitrate at the same concentrations used in the field experiment, the soaking treatments was done for five minutes and the fruits from the spraying treatments and the soaking treatment were packaged in polyethylene bags and stored in the refrigerator at 4 ± 1 C° on 16. 5.2012 for one month .The Experimental design was C.R.D. The average were compared using L.S.D. test at a level of 0.05. The experimental results can be summarized as follow: 1- Soaking tomato fruits with calcium nitrate at 20 g. L⁻¹ significantly influenced most the studied parameters. It reduced the percentage of weight loss rate to 6.83% and the physiological and biological spoilage, delayed the climacteric peak and maintained the fruit firmness, total acidity, Vitamin C also maintained Beta-Carotene and the arginine acid percentage and protein and nitrogen and increased the calcium content in tomato fruits. 2- The foliar sprays with arginine acid significantly reduced some storage parameters such the percentage of weightless the percentage of physiological and biological spoilage, and maintain TSS and the percentage of acidity and Vitamin C and Beta –carotenes and low Lycopene content. 3- The foliar spray with calcium nitrate significantly reduced the percentage of weight loss and physiological spoilage and gave the highest TSS at the end of storage period 08466% and

delayed the intensity Lycopene as compared to the control treatment. 4- Soak tomato fruits in arginine acid solution significantly decreased the percentage of weight loss and maintain the percentage of total acidity and Betacarotene and Lycopene contents . 5- The tomato fruits from the control treatment characterized by highest percentage of weight loss and percentage of physiological and biological spoilage and highest respiration rate and highest Lycopene content 148460 mg.100g-1 while the TSS and the percentage of total acidity, Vitamin C and Beta –carotenes and calcium content were the lowest. 6- Prolong storage period significantly increased the percentage of weight loss, the total percentage of spoilage, increasing the respiration rate followed by decreasing in the rate of respiration until the end of storage period and increasing Beta –carotenes content , while it decrease pressure to 0.892 kg/cm² TSS, the percentage of total acidity, Vitamin C content and Beta–carotene content.