EFFECT OF SOME ORGANIC FERTILIZER TREATMENTS ON GROWTH AND PRODUCTIVITY OF SOME HUSK TOMATO CULTIVARS

By

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B. Sc. Agric. Sc. (Vegetable Crops), Cairo University, 2004

M. Sc. Agric. Sc. (Horticulture), Ain Shams University, 2012

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ABSTRACT

Ahmed El Sayed Hamza Osman: Effect of Some Organic Fertilizer Treatments on Growth and Productivity of Some Husk Tomato Cultivars. Unpublished Ph.D. Thesis, Department of Arid Lands, Faculty of Agriculture, Ain Shams University, 2017.

Two field experiments were carried out during the two successive growth seasons of 2013 and 2014 in Abu-Ghaleb-Giza governorate (58 Km north Cairo from the desert road). The experiment include 15 treatments which were the simple combination between five levels of organic nitrogen Fertilizer (100% organic, 75% organic + 25% mineral, 50% organic + 50% mineral, 25% organic + 75% mineral and 100% mineral), with three husk tomato cultivars (Toma Verd, Pi1291561 and local one), The obtained results indicated that, the two foreign cultivars resulted have more plant growth measurements (height of plant, leaves and shoots number per plant, fresh and dry weight of whole plant) over the local cultivar. Within the two foreign cultivars Toma Verd, gained the more vigoursity than Pi1291561 cultivar. Also, the highest values of fruits, early, marketable and un-marketable of husk tomato, all of them were correlated to growing Toma Verd cultivar. The physical fruits quality (weight, diameter and size of fruit) recorded their highest values with cultivation foreign cvs. However local cultivar produced the highest values of dry matter, TSS values and Vit. C content. The foreign cultivars resulted the highest values of N, P, K and total acidity values. Concerning to addition of different percents of organic nitrogen, the decreasing organic parts in nitrogen mixture gained an increase in all plant growth measurement (plant height, leaves and shoots number, and dry weight of plant. That plants which recorded its nitrogen requirements as 100% mineral form resulted the earliest flowering and the highest flowers number. Moreover, total fruits yield and its marketable, un-marketable one were correlated with increasing the percent of mineral nitrogen in

fertilizing mixture. It could be summarized that, the heaviest husk tomato fruits yield were produced with that plants which received 100% as mineral nitrogen. The physical fruits properties (fruits weight, diameters, and size) as well mineral values (TSS, total acidity, N, P and K contents), all of these criteria's were detected with that plants which recorded its nitrogen needs as mineral form (100%).

Key words: Productivity, Husk Tomato, Cultivars, Organic, mineral, Fertilizer.

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INTRODUCTION

Husk tomato (*Physalis pubescens* L.) is one of the most important vegetable crops in Egypt. The husk tomato belongs to the nightshade family (Solanaceae). The genus Physalis, established by Linnaeus in 1753, contains about 463 species but 100 species are well known and have more fanciful names such as golden berry, ground cherry, strawberry tomato, cape gooseberry and pubescent ground cherry, (**El Sheikha, 2010**), bladder cherry, Chinese Lanterns, and tomatillo. Physalis has been known in Egypt since the sixteen century under the name of its varieties 'Harankish', 'Halawyat' and 'El-Set El-Mestihya'. Because the fruit is covered in papery husk; giving it its name **(El Sheikha *et al,* 2010**).

Husk tomato plants produce small orange fruits similar in size and shape to a cherry tomato. It is a highly nutrition fruit; low in fat and contains no cholesterol or sodium. Husk tomato fruits provide an excellent source of the vitamin A and C, minerals (phosphorus and iron), protein, carotene, sugars and organic acids because of this they are a good choice for making health (**Mustafa, 2009**). Medical and edible applications of (*Physalis peruviana*) cape gooseberry are used in folk medicine for treating diseases such as malaria, asthma, hepatitis, dermatitis, diuretic and rheumatism.

Husk tomato is considered as an important non-traditional horticultural crop in Egypt for both local consumption and exportation. It is cultivated through limited areas near the large and main Egypt. Also, it cultivated in Toshki. About 300 feddan are cultivated with husk tomato in Egypt, producing 3000- 4500 tons **(Agricultural statistics newsletters, 1996).** Farmers may get good income by exporting it to many other countries all over the world. Nowadays in Egypt, a great attention is given for promoting husk tomato production to meet the progressive demands of local fresh market, medicinal purposes, developing processing industry and rapidly growing exportation. Therefore, more attention was paid to