بسم الله الرحمن الرحيم

شبكة المعلومـــــات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

﴿ قـــسـم ﴾

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد اعدت دون آية تغيرات

يجب أن

تحفظ هذه الأفلام بعيداً عن الغبار

في درجة حرارة من 15 – 20 مئوية ورطوبة نسبية من 20-40 %

To be kept away from dust in dry cool place of
15 – 25c and relative humidity 20-40 %

بعض الوثائق الأصلية تالفة

بالرسالة صفحات

لم ترد بالأصـــل

EFFECT OF SOME AGRICULTURAL PRACTICES ON EARLY AND TOTAL YIELD OF TOMATOES (*Lycopersicon esculentum*, Mill.)

By

Mohamed Hassan Kassem

B.Sc. (Agric.) Tanta Univ., 1980

M.Sc. (Agric.) Tanta Univ., 1991

Thesis
Submitted in Partial Fulfillment of the Requirements
for the Degree
of
Doctor of Philosophy
In
Vegetable Crops

Faculty of Agriculture
Kafr El-Sheikh,
Tanta University

1998

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INTRODUCTION

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Tomato is one of the most important, popular and widely distributed vegetable crops grown in Egypt. It is primarily important for local market, export and processing. The cultivated area of tomato in Egypt (according to lately estimation of the Ministry of Agriculture, 1996) was 412,103 feddans with an average yield of 14.6 tons/fed. Summer planting is the main season for tomato production in Egypt. It occupied 167, 544 fed. with an average yield of 13.8 tons per fed.

Great efforts are needed to increase the production of tomatoes to face the increase in local requirements and foreign markets demand.

Also, production of early fruits of tomatoes is a major objective of the market growers, since markets supplied with early fresh fruits in the summer season are generally little, although the demand is great and the prices are high. Besides, high fruit quality is of a considerable importance. Pruning, density and foliar nutrition with urea play an important role in increasing the production and improving the quality in tomatoes.

Harvesting is done in a short time during the summer season, therefore, any treatment leads to increase the early crop, may improve the economy of tomato cultivation for the growers.

Pruning is a common practice in many countries in the world, either in the open field or in the protected cultivation for this purpose. In Egypt, there is no pruning application at all in the open field until now, although all the summer tomato areas are cultivated under the open field conditions.

The cost of pruning operation is inexpensive in comparison with the total costs for tomato production. Moreover, operation of pruning

may have a great effect on early crop yield and quality. Very little information are available on how to prune tomato cultivars prevailing in the summer season. The pruning of tomato may reduce the yield per plant and consequently the yield/fed., particularly if the pruning was heavy. Therefore, it was necessary to increase the density of plants more than the usual density through the control of planting system and planting spacing within the row. This may compensate the reduction in tomato yield per unit area as the yield may be increased under these new conditions.

Foliar application of urea on tomato plants is already an accepted agricultural practice for obtaining higher yields and better quality of the fruits. Urea is useful as a percentage of total N fertilizer is partially used as foliar spray for tomato plants, but most of the previous studies were conducted on cultivars which nitrogenous requirements were lower than recent determinate cultivars. Therefore, an important aim of the study was to determine the quantities of urea as foliar spray for the present tomato cultivars prevailing in the summer season.

So, the objectives of this research were to study the effect of planting system, plant spacing, pruning and their interactions as well as foliar application of urea (in two separate experiments) on growth, flowering and fruits set, early and total yields, fruit quality and chemical composition of tomato plants.

REVIEW OF LITERATURE

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I. Effect of planting system and density:

1. Vegetative growth:

Competition among plants for light, water and nutrients sources through high plant densities may alter vegetative growth of plant.

Fery and Janick (1970) working on five types of tomatoes (indeterminate, jointless, determinate, miniature and dwarf), indicated that plant height and number of branches/plant for all entries were decreased with increasing plant population from 3, 000 to 41,000 plants/acre. Moreover, vine weight/plant was declined with increasing plant population. **Frost and Kretchman (1988)** reported that, tomato plants grown in a twin-row had a greater shoots dry weight than the single row arrangement. The dry weight per plant decreased at higher densities (43,050 plants/ha.). In addition, when density increased from 21,530 to 57,400 plants/ha., canopy coverage per unit area increased from 55% to 66%. **Grela Lorenzo *et al.* (1988)** studied the effect of plant spacing on growth and development of commercial tomato cultivars (Campbell 28, Peto mech and Roma VF/P-73). They observed that, the higher planting density (1 or 2 plants/hole) produced taller plants with more leaves. **Stoffella *et al.* (1988)** working on a variety of staked and ground-cultural tomatoes, found that plant size increased with increasing row spacing and shoot weight increased linearly with an increase in within-row spacing.

On the other hand, **Hassan (1978)** found that stem length, leaves and branches number per plant and leaf dry weight of the fifth leaf from the growing tip of tomato plants cv. Prichard were not significantly affected by plant spacing. Also, **El-Zawily (1981)** studied the effect of planting system and plant density on tomato growth (Prichard cv.). He