T. R.
YUZUNCU YIL UNIVERSITY
INSTITUTE OF NATURAL AND APPLIED SCIENCES
DEPARTMENT OF HORTICULTURAL SCIENCES

EFFECTS OF CULTIVAR AND PRUNING IN MELON

M.Sc. THESIS

PREPARED BY: Abdulwahab Omran Mohamed AMMAR
SUPERVISOR: Prof. Dr. Ahmet KAZANKAYA

VAN-2017

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ACCEPTANCE and APPROVAL PAGE

This thesis entitled **EFFECTS OF CULTIVAR AND PRUNING IN MELON** prepares by Abdulwahab Omran Mohamed AMMAR under supervision of Prof. Dr. Ahmet KAZANKAYA in the department of Horticultural Science has been accepted as a M.Sc. Thesis according to Legislations of Graduate Higher Education on…..... /....... /.......... With unanimity / majority of votes members of jury.

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This thesis has been approved by the committee of The Institute of Natural and Applied Science on...…../......../...….... with decision number..................

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THESIS STATEMENT

All information presented in the thesis was obtained according to the ethical behaviors and academic rules frame. And also, all kinds of statement and source of information that does not belong to me in this work prepared in accordance with the rules of theses, were cited to the source of information absolutely.

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Abdulwahab Omran

Mohamed AMMAR

ABSTRACT

EFFECTS OF CULTIVAR AND PRUNING IN MELON

AMMAR, Abdulwahab Omran Mohamed
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Melon is one of the important crops and is widely produced in the World. The aim of the present study was to determine the effects of one or two stem growing on four melon cultivars (HV1: Zagrit, HV2: Maziane, HV3: Kirkagac, and HV4: Ananas) on plant growing and yield. The field experiment has been accomplished during the 2016-2017 season at the Tripoli Agricultural Technology Center in Libya. Morphological, phenological and fruit traits were observed or measured. The experiment was carried according to the split-block design R.C.B.D system. Least significant differences (LSD) were determined at the significance level of 0.05. The growing method had a significant effect the number of fruit; two-stem plants reached to 4.78 fruit/plant while the one-stem plants produced 3.31 fruit/plant. Moreover, growing method had a significant effect on the weight of the fruit. The plants with two stems scored the highest weight of the fruit reaching 0.910 kg/fruit, while the plants with one stem gave the fruit weight of amounting to 0.820 kg/fruit.

Keywords: Cultivars, Growing methods, Melon,

ÖZET

KAVUNDA ÇEŞİT VE BUDAMANIN ETKİSİ

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Kavun ekonomik olarak en önemli ürünlerden birisidir ve dünyada yaygın olarak yetiştirilmektedir. Çalışmanın amacı tek veya iki gövdeli yetiştiriciliğin dört farklı kavun çeşidinin (HV1: Zagrit, HV2: Maziane, HV3: Kirkagac ve HV4: Ananas) bitki ve meyve kalitesine etkilerinin araştırılmasıdır. Arazi denemesi 2016-2017 yetiştirme sezonunda Tripoli-Libya'daki Tarımsal Teknoloji Merkezinde kurulmuştur. Deneme boyunca morfolojik, fenolojik ölçüm ve gözlemler yapılmıştır. Deneme bölünmüş bloklar RCBD deneme desenine göre tasarlanmıştır. Sonuçlar 0.05 güven aralığında LSD testiyle saptanmıştır. Gövde sayısı, meyve sayısı üzerinde önemli etkilere sahip olmuştur: İki dallı yetiştirilen kavunda meyve sayısı 4.78 meyve/bitki olarak elde edilirken, tek dallı üretimde 3.31 meyve/bitki olarak elde edilmiştir. Ayrıca, yetiştirme yönteminin meyvenin ağırlığı üzerinde önemli bir etkisi olduğu ve iki gövdeli bitkilerin meyvelerinin 0.910 kg / meyve değerine sahip olurken, tek gövde üzerinde yetiştirilen bitkilerde ise meyve ağırlığının 0.820 kg / meyve olduğu belirlenmiştir.

Anahtar kelimeler: Çeşit, Kavun, Yetiştirme yöntemi,

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2017

Abdulwahab Omran Mohamed AMMAR

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1. INTRODUCTION

It is expected that the population of the world be 7.5 billion, and a demand for food to increase by 50% at 2030. By using the current, values of water, use for agriculture, the calculations indicate that the use of water in irrigation, will increase by 30% as general, and more than 40% of the annual food production comes from irrigated lands.

Crop production from greenhouses, is the most optimum, way to manage the exploitation of water. It is the extensive agricultural system, which requires an increase, in the cost of materials, and labor compared, with the open farming, because the costs of investment, and production are much higher, in greenhouses, than the agriculture, in the open fields, because of the methodologies used to produce crops, in greenhouses are more efficient, than those used in open farming, systems. The success of agricultural system, in greenhouses depends on the production, of more fruits and whit better quality. This property depends on the cultivated variety, and crop management system, and the growth season.

1.1. Geography / History

The melon is one of the most economically, important crops, and is grown widely, in the world. Most likely it originated in Africa, from Iran to India, and later introduced, to Europe in about, the 1890s, and became, one of the commercial crops, in the United States. The production of the *cantaloupe,* in 2009 was (53 million tones).

The most important producing countries are China, which accounts, for 52% of the worlds, total production, followed by Turkey, Iran. The United States, and Spain. Which is the most versatile, form in the genus Cucumis. In size shape and taste, of fruits, as well as. The characteristics of vegetative growth and climatic adaptation.

1.2. Applications

The melon also occupies a prominent position, among the various, agricultural crops. In relation to the efforts, being made to growing methods, melon in greenhouses to grow, or increase production and improve the quality of fruits in the unit area, and the most prominent methods of growing which contributed in improving the production, and fruit quality is production in greenhouse.

Growing on two stems which led to the continuation of production for a longer period, in a regular and balanced, manner, in addition to the increase, in the total production rate which reached (96-98%) than in land growing (73-87%) (Qarouti and Hamden, 2005).

Also it should be noted that, the growing two stem provided, more chance to control, and check the plants, and contributed in increasing, the total production (2.2 - 2.6 ton/Fadden), and the count of fruits (1871 - 2443 fruit/Fadden) in comparison with land growing which gives total production of (1.7-2.2 ton/Fadden) , and count of fruits (1800 - 2060 fruit/Fadden) . We can explain that by increasing the plant density in the rearing two stem than in the growing on land (Qarouti and Hamden, 2005).

This research, followed the scientific and practical steps, in which, tried to reach some conclusions about the effect, of growing on two stems, and one stem, different varieties of melon in terms of production, quantity, fruit specifications, and some other plant characteristics, within the greenhouse.

1.3. Research Aims

In this research, which conducted in greenhouses at the Tripoli Center for Agricultural Technology during the autumn of 2016. The aim was to identify and determine the following effects.

Compare of different varieties of melon in terms of plant growth production quantity, and the characteristics of fruits.

The effect of growing methods on the different cultivars in terms of growth, production and quality of fruits.

The effect of the interaction between melon cultivars and growing methods the production and quality of fruits and some other growth factors.

2. LITERATURE REVIEWS

2.1. Influence of Plant Density on Yield and Fruit Quality of Greenhouse-Grown Galia Muskmelons

Galia-type muskmelon (Cucumis melon cv. Gal-152) was grown as a fall and spring crop, to determine the effect, of plant, density (1.7, 2.5, 3.3, and 4.1 plants/ m^2) on yield, fruit quality, plant growth, and economic feasibility for producing the crop in a greenhouse. Plant density had no influence on the early or total number of fruit produced, per plant. Marketable yields increased, linearly from 11.0 to 20.0 kg/m^2 in fall and from 21.9 to 48.3 kg/m^2 in spring with increasing, plant density. Mean fruit size was unaffected, by plant density during fall (mean weight, 1.0 kg), but was reduced, linearly during spring from 1.8 kg at 1.7 plants/ m^2 to 1.5 kg at 4.1 plants/ m^2. Soluble solids, content was unaffected by plant density, in either fall or spring, and averaged, 10.1% in both seasons. Number of leaves per plant was unaffected by plant density, but internode length was increased at 4.1 plants/ m^2 compared with plants from the other densities. Increasing the plant density of 'Gal-152' muskmelon grown under protected cultivation led to increased yields in both fall and spring without negatively impacting fruit quality. When the market price is $1.44/kg, increased yields at 3.3 plants/ m^2 can potentially increase, net returns over yields, of plants spaced at 2.5 plants/ m^2 by 25% and nearly double net returns, from plants grown at 1.7 plants/ m^2. Muskmelons grown under greenhouse conditions at optimum plant populations and cultural practices can result in higher fruit production than field-grown crops. Greater fruit yields may occur under greenhouse conditions than field systems because plants can be arranged more uniformly avoiding large gaps between plants and rows while simultaneously optimizing light interception. Under field conditions, muskmelon yields may be improved by increasing plant density. Although higher plant populations may result in increased marketable yield per unit area, the number of fruit per plant and fruit size are often reduced. In field experiments conducted in north–central Florida, planting densities of 1.0, 2.0, and 3.0 plants/ m^2 of Galia-type muskmelons did not affect fruit yield. Soluble solids content (SSC) of muskmelon grown at higher densities has been reported to decrease as plant density increased from 2.0 to 8.0 plants/ m^2, whereas others reported no difference in SSC from fruit grown at 3.6 and 7.3 plants/ m² (Juan .et al., 2007).

2.2. Influence of Plant Density on Yield and Fruit Quality of Greenhouse-Grown *Galia* Muskmelon Sprotected Agriculture, Specialty Melon. Galia-type

Galia-type muskmelons planted in the field at plant densities of 1.0 and 2.0 plants/ m² resulted in yields of 1.8 and 2.1 fruit/m² respectively (Paris et al., 1988). Total fruit weight at both plant densities was ≈2.3 kg/ m² Although more fruit, per unit area, were produced muskmelon (Cucumis melon cv. Gal-152) was grown as a fall and spring crop, to determine the effect of plant density (1.7, 2.5, 3.3, and 4.1 plants/ m²) on yield, fruit quality, plant growth, and economic feasibility for producing the crop in a greenhouse. Plant density had no influence on the early or total number of fruit produced per plant. Marketable yields increased linearly from 11.0 to 20.0 kg m² in fall and from 21.9 to 48.3 kg m² in spring with increasing, plant density. Mean fruit size was unaffected by plant, density during fall (mean weight, 1.0 kg), but was reduced linearly during spring from 1.8 kg at 1.7 plants/ m² to 1.5 kg at 4.1 plants/ m². Soluble solids content was unaffected by plant density, in either fall or spring, and averaged 10.1% in both seasons. Number of leaves per plant was unaffected, by plant density, but internode, length was increased at 4.1 plants/ m² compared with plants, from the other densities. Increasing the plant density of 'Gal-152' muskmelon grown under protected cultivation led to increased yields in both fall and spring without negatively, impacting fruit quality. When the market price is $1.44/kg, increased yields at 3.3 plants/ m² can potentially increase net returns over yields of plants spaced at 2.5 plants/ m² by 25% and nearly double net returns from plants grown at 1.7 plants/ m² (Juan et al., 2007).

2.3. Effects of Different Irrigation Programs on the growth, Yield, and Fruit Quality of drip-irrigated Melon

Melon is moderately sensitive to soil salinity, and to the lack of soil water, (Kuşvuran et al., 2007). The most sensitive periods for soil water deficit are the fruit setting and flowering. Soil water deficit during the ripening period does not significantly affect fruit yield and generally increases or does not change the fruit quality, particularly the soluble solids, which are primarily the sugar content of the fruit flesh Irrigation close to harvest causes a reduction in the soluble solids Application of saline water lowers the yield but results in an increase in the soluble solids in general melon is commonly irrigated by furrow or drip irrigation methods. In soils with a considerably high water holding capacity and under full irrigation, similar yields could be obtained through both methods, but irrigation water requirements fall and water use efficiency rises up by using drip irrigation. Frequent irrigation causes cracks in fruit, and very rare irrigation limits root and shoot development and also the fruit size and the yield. Applying of drip irrigation increases the fruit size and the marketable yield and may also bring about early harvest in sandy soils. Application of limited amounts of water may improve fruit quality and sometimes improve the yield compared with the use of full irrigation. Yields could significantly decrease by using less amount of water than recommended for some cultivars. An excessive water deficit could reduce the fruit, count per plant, fruit size, and yield, but increases the soluble solids content. In general the studies on the effects of the irrigation programs on melon growth and yield indicate that selection of a particular cultivar could dictate the specific irrigation program and water requirements in addition to the usual factors such as climate, soil, topography, and water resource. However, little is known on this subject with respect to melon for this reason, a study was undertaken to determine the appropriate irrigation program (Esiyok et al., 2005).

2.6. Impact of Water-Deficit Stress on Growth, Yield and Sugar Content of Cantaloupe (Cucumis melon L.)

Deficit stress levels on growth parameters, yield and sugar content of melon (Cucumis melo L.) were studied(Mirabadi et al., 2013). In this experiment, three deficit-irrigation (DI) treatments based on 60, 80 and 100% crop evapotranspiration (ETc) were applied in a randomized completely block design (RCBD) under field conditions. Based on the results, DI levels had a significant effect on height, number leaves per plant, leaf area, shoots wet and dry weight, sugar content and yield .Increasing irrigation levels increased height, number of leaves per plant, leaf area, shoots wet and dry weight, chlorophyll index and yield. Fruit yield of treatments were 19.6, 28.3 and 30.3 t ha-1 at 60%, 80% and 100% ETc, respectively. There was no significant difference between 80 and 100% ETc in terms of yield. The highest height (194.7 cm), number of leaves per plant (243.3), leaf area (24375 cm^2) and shoots wet and dry weight (1135.9 and 111.6 g, respectively) obtained at 100% ETc. While, sugar content increased under water deficit stress. So that highest value of sugar content (9.3% Brix) obtained in irrigation based on 60%ETc.

2.5. Greenhouse Production of ‘Charentais’-type Cantaloupes (Cucumis melon L. var. cantalupensis)

Among the seven lines, differences occurred for each measured variable mean fruit number per plant was greater in spring, with four fruits per plant as compared with a mean of two fruits per plant in the fall crop. This trend was also observed in fruit number per square meter. Fruit yield was greatest for WS5033 (mean 9.5 kg/ m^2) and lowest for lines WS5016 and WS5033 (mean 5.4 kg / m^2). The significant drop in fruit numbers in the fall crop may have been attributed to higher temperatures (> 27 °C) during fruit development stage, which was in late Sept. (Low fruit number per plant in the fall as compared with increased spring yields have also been observed in greenhouse ‘Galia’ muskmelons. There were no cull fruits in either trial (data not shown). Fruit weight was greater than 0.5 kg for all fruit. Line WS5031 had the smallest fruits (0.6 kg/fruit), while all other lines had fruits that weighed greater than 0.8 kg, with the largest. Fruits from lines WS5016 and WS5019 (1.2 kg/fruit). Over both seasons, fruit yield weight, and width were also greater in the spring; however, the overall mean soluble solids content (SSC) was higher in fruits grown in fall (14 °Brix) as compared with those produced in spring (12 °Brix). The increased SSC in the fall crop could be attributed to cooler night temperatures (11.5 °Brix). The high SSC would place these ‘Charentais’-types at USDA grade ‘Fancy’ (the highest fruit quality grade for *melons*) (Lester and Shellie, 2004). Line × season interactions occurred for fruit length, flesh firmness and %PM .2007b). Overall, fruit width and weight were greater in the spring season (which was also true for fruit length in the spring for five lines, while two lines (WS5017 and WS5031) had similar lengths in both seasons. Two lines (WS5019 and WS5022) had similar internal fruit firmness in both seasons. However, during the spring season, these lines were among the least firm fruits. In the fall crop, line WS5019 was again among the least firm fruit, while WS5022 was among the firmest. Fruits were generally firmer in the spring crop.

Increased fruit firmness in a spring versus fall melon crop has also been observed in greenhouse-grown ‘Galia’ and ‘Galia’-type muskmelons (Mitchell et al., 2007; Daniel J et al., 2009).

2.6. Dependence of Pumpkin Yield on Plant Density and Variety

Plant density affects the growth and productivity of numerous vegetable crops including (Cucurbits such as squash watermelon muskmelon cucumber). In pumpkin, Reiners and Riggs reported a significantly linear increase in the number of fruit per acre as plant population increased from 1874 to 7495 plant/acre in two different types of pumpkin cultivars (semi-vining and large-sized vine). Increased plant population resulted in a significantly linear decrease in average fruit size. The same authors reported in a similar study a significantly linear increase in yield of same cultivars as plant population increased from 1210 to 3626 plants/acre. Increased plant population resulted in increased number of fruit per acre and decreased average fruit size. Increased number of fruit more than compensated for decreasing fruit weight and resulted in an overall increase in yield. Reported that plant population significantly affected pumpkin yield and yield components associated with plant productivity (fruit weight and size, number and weight of fruit per plant). Plant spacing had no significant effect on color, handle quality and shape of marketable *pumpkins*. Pumpkin fruit is characterized by its large volume and heavy weight which hinder the harvest and transportation processes. The consumption of pumpkin is constrained by the inappropriate size of the fruit to most of consumers. Small-to medium-sized fruits may assist in spreading of pumpkin between consumers. Pumpkin growers are exploring ways to increase yield per unit area in order to save on land and maximize profitability. Increasing the number of plants per area with careful attention to nitrogen nutrition and variety may accomplish this goal. Growers have two options when increasing plant populations per unit area, either within-row or between-row spacing can be decreased. Better understanding of genotype and environment interaction will help to optimize yield and quality of crops. Any individual organism is able to alter its morphology and/or physiology in response to changes in environmental conditions. The higher the proportion of the phenotypic variation attributed to the genotypic differences, the greater the feasibility of genetic manipulation to improve crop performance. Partitioning of phenotypic variance requires evaluating performance of genotypes in the relationship between crop yield and planting density (number of plant unit area) is of considerable.

Agronomic interest it is clear that the density-dependent effects on the yield are due to the competition between adjacent plants for the necessary natural resources. There is a basic assumption that a plant located at a given site is constrained to draw nutrients only from its immediate vicinity and this zone may be larger than the size of the If a crop is grown at a range of plant densities, and all the plants are harvested at one time, it is generally supposed that the total dry matter yield per unit area will increase with increasing density until a level of yield is reached which is barely exceeded as density increase further. This constant yield over a wide range of high density is thought of as representing the maximum fixation of energy that crop can achieve in the time between sowing and harvest. Yield eventually reaches a plateau as plant density increases to the point when crop yield become unmarketable. Since competition between plants greatly affect yield it is therefore possible to adjust size of the harvested crop to meet the requirements of the market by manipulating density Plant population can influence crop by pest interactions. For instance, closer plant spacing may give crops competitive advantage over (El-Sayed et al., 2011).

2.7. The Effects of Different Pruning Methods and Height of Fruit Setting on Plant Growth, Yield and Fruit Quality of Melons Grown in Greenhouses

This research was carried out to determine the effects of different pruning methods and height of fruit setting in greenhouse melon production for two years. The first year, the Makdimon F1 variety was used, the second year Galia H5 F1 and Deltex F1 varieties were also tested. The first year the plants were pruned as young plants were stopped after the second leaf and the strongest branch was left as the main stem (top shoot pruning) and control (non-pruned). In both treatments the heights of fruit setting were 30 and 60 cm. In the second year, two stems and 45 cm fruit setting height also were added. In the first year’s experiment, although there were no significant differences between the treatments, top shoot pruning increased the early and total yield compared with the control. A fruit setting height of 60 cm gave better results than 30 cm. In the second year, the best yield was obtained from top shoot pruning with two stems (8.30 kg/ m^2), followed by top shoot pruning with a single stem (6.92 kg/ m^2) and the control (6.93 kg/ m^2). Two stems increased total yield by 20 % compared with a single sitem. The height of fruit setting a affected plant growth, yield and fruit quality parameters. The best result was obtained from the plants with 45- 60 cm fruit setting height (Uygun et al., 2000).

2.8. The Effects of Different Number of Fruits Left on plant on Yield and Quality in Melon

The effect of foliar feeding with two fluid multicomponent fertilizers was investigated:

Florovit and Ekolist Warzywa + Urea on the yield and quality of three medium-fruit-size melon cultivars (‘Charentais F1’, ‘Melba’, ‘Fiesta’). Weather conditions in the consecutive years of the study had a significant influence on the yield level and quality of fruit. A higher yield of better quality was achieved in the years 2005 and 2007. That period was characterised by relatively high air temperature and low rainfall towards the end of the growing period of melon. The fertilizers applied in the experiment significantly influenced melon yielding. The plants fertilized with Ekolist Warzywa + Urea provided a higher marketable yield of melon fruit than the plants fertilized with Florovit. When applied, this fertilizer also caused an increase in flesh thickness and fruit flavour as compared with Foliar feeding with both studied patterns increased the average fruit weight and number of marketable fruit as compared to the non-fertilized treatment. Among the studied cultivars,
‘Fiesta’ gave the highest marketable yield and the best quality fruit (Temirkaynak et al., 2005).

2.9. Biological Control of Greenhouse Pests

Biological control is the using of living organisms (natural enemies) such as insects, mites, fungi or bacteria to control pests and diseases. Natural enemies are living organisms that need to be released when pest populations are low. They do not act as quickly as pesticides, so cannot be used as a rescue treatment. Natural enemies are best used preventatively, early in the cropping cycle, when plants are small, pest numbers are low and pest damage has not yet occurred. This is a completely different mindset compared to the traditional pest control that growers generally do – waiting until they see damage and then treating with insecticides or miticides. Biological control programs have a long history of use and extensive research base for greenhouse vegetable crops. Greenhouse vegetable crops are generally longer term crops, have a higher threshold for pest damage (only the fruit needs to be blemish free and not the foliage), and are often grown in monocultures. The laws controlling the use of pesticides are also stricter for food crops than for ornamentals. The use of bumble bees for pollination makes it very difficult to use pesticides when growing greenhouse vegetables. Many Connecticut growers produce a diverse mix of spring crops, so there is less of a research base. Growers often need to experiment to see what works best in their individual situation (Gavloski et al., 2012).

2.12. Exploding Fruits not Unique to *Watermelon* Fruit Cracking in Cucurbita Moschata

Most researchers attribute fruit cracking to the amount of water available to the plant as the fruit is ripening. Cracking appears to be the result of the buildup of internal turgor pressure caused by excess water availability. It may be especially common when insufficient water availability is followed by excess irrigation or rainfall. Proposed that the nighttime reduction in transpiration results in the high turgor pressure that causes cracking in fruits. A number of authors mention that the incidence of fruit cracking can vary among cultivars one of the goals of the tropical pumpkin (Cucurbit moschata) breeding program in Puerto Rico is to develop semi-bush cultivars with high dry matter content and deep orange color. The genetic materials used in this program derive from crosses between temperate (primarily ‘Bush Butternut’) and tropical material. It has often noticed that some of the derived lines are susceptible to fruit cracking. Cracking usually occurs just as the fruit is maturing and can be. According to a technical bulletin for Sakata Seed all squash fruit have the potential to crack and susceptibility varies among cultivars. ‘Taína Dorada’ has both the thin rind and high sugar content that, according to this bulletin, make a variety more susceptible to fruit cracking. High sugar levels result in a higher osmotic potential in the fruit, thus favoring greater uptake of water. The result is that fruit cells swell causing the fruit to crack. The bulletin notes that mature fruit are particularly affected and that over fertilization may play a role, evaluated 24 squash and pumpkin varieties in Kentucky during a very wet season. Several cultivars had cracked fruit, Selection against fruit cracking might not be effective if, at the same time, one wishes to select for increased fruit sugar and dry matter content. The best approach for minimizing this problem is likely to be good water management and prompt harvesting of mature fruit (Mayaguez and Rico, 2011).

2.11. Flower and Fruit Drop

Since so many factors can influence pollination in plants, it is sometimes difficult to identify the specific cause of the problems. Insects, diseases, too much or too little fertilizer, weed killers, excess moisture, sudden temperature change, high temperatures, high light intensity, physiological differences in plants and faulty pollination affect the physiological processes of plants. The following conditions, most often cause failure of blossoms and fruit to develop to full maturity. Climatic Factors .Freezing Temperatures. Plants blooming during periods of freezing temperatures are subjected to varying degrees of injury. Duration and the number of degrees below freezing are important factors in the amount of flower damage Frost can damage anthers (pollen producing pars of flower) and pistils (female part).Injury to flowers results in blossom drop or deformed fruit. Peach and strawberry often produce “nubbins” (double fruit) or misshapen small fruit. In plants such as tomato and melon, low temperatures above freezing will prevent complete or adequate pollination, Fertilization. Low soil fertility during blooming aggravates blossom and fruit drop. Temperature conditions may be favorable, but a great reduction in the number of blooms and fruit will be evident if a plant is in a starved condition; citrus and other fruit trees fall Into this category. Applying fertilizer at the time of bloom is not effective in stimulating a heavy set Apply fertilizers at least four to six weeks prior to the onset of bloom. Early application of fertilizer will permit the plants to absorb the mineral nutrients and be vigorous at the time of blooming watering (Anonymous., 2012).

2.15. Estimation of Yield of bakdon female flowers pretense (Cucurbita pepo *L.*)

He results of the study conducted by (Marie, 2005) to evaluate 25 varieties of squash C.pepo showed that there is a positive and significant correlation between the productivity characteristics and the percentage of the female flowers and the number of fruits on the plants (Mari, 2016).

2.13. The Effect of the Growing Method on the Production

There are significant differences of growing methods in the rate of the number, as the plant grown on two stem produced the largest number of fruits up to 63-66 fruit / plant and may be due to the increase in productivity or the number of flowers due to the multiplication of stands numbers, which the plant grow on, and this result agree with result of (Shimmery and Saud, 2014).

2.14. The Effect of the Growing Method on the Production

While the method of growing has a significant effect on the rate of the productivity of single plant, as the plants with growing on two stem recorded highest productivity of 4.359 kg, may be due to the superioty method of growing on two stands. Multiplication of the number of the leaves in the plant, and thus increase the amount of carbohydrates synthesize in it and this leads to the emergence of more floral buds, and increase the number of fruits in the plant, and then increase the yield and this result is consistent with what was found with both (Shimmery and Saud, 2014).

2.15. The Study of the Effect of Growing Methods on the Productivity of Several Varieties of French Melons

From the total production, and total number of fruits of plants, the Growing vertical was marked by the increase in total production per dunum (2.2 - 6.2 tons / dunum). And the number of fruits per dunum (1871-2443 fruits / dunums) compared with land growing, which gave total production (1.7-2.2 tons/dunums) and the number of fruits (1800-2060) per dunum. This can be explained by the increase in plant density in growing vertical than earth growing (Qarouti and Hamden, 2005).

2.16. Flower and Fruit Drop

(Such as squash, cucumber. and melon) need both male and female flowers to be open at the same time. Some recent varieties have all or mostly female flowers. Under these conditions 10-15 percent of plants of another variety, with a higher percentage of male flowers in its normal flowering pattern, must be present and open to obtain adequate pollination. In some situations, stress to the growing plants of pre- dominantly female flowering varieties (particularly pickling cucumber) may cause female flowers to revert to male before completion of development. If no pollination occurs, the female flowers drop off or become misshapen. Sometimes small fruit will form but will be yellow and dry. This is also a symptom of poor pollination (Anonymous. 2012).

2.20. Estimation of Some C. Statius

Have reached in there study of 15 varieties of cucumber (cucumis sativus) to a strong and significant relation (932 = 1) between the trait of productivity and number of fruits, was a mean and significant (0.332 = 1) with stand length Characteristic, while it was positive and week with the characteristic of length and diameter of fruits (Mari, 2016).

2.18. Effect Organic Nutrients and Method of Growing in Yield Cucumber

The growing method affected in clear, and significant differences among the plants. This reflected on the increase of plants production on two stem, while the plants bred on one stems gave a lower rate, and this study was in accordance with the results of While the method of growing has a significant effect on the trait of length of fruit, where the plants growing on one stems recorded the highest rate of fruit length of 14.48 cm. The reason for the superiority of plants reared on one stem is in the rate of the fruit length on its getting on more quantities of nutrients compared with plants rearing on two stems (Shimmery and Saud, 2014).

2.19. The effect of the method of growing on the fruit length

`While the method of growing has a significant effect on the trait of length of fruit, where the plants growing on one stem recorded the highest rate of fruit length of 14.48 cm. The reason for the superiority of plants reared on one stem is in the rate of the fruit length on its getting on more quantities of nutrients compared with plants growing on two stems (Shimmery and Saud, 2014).

2.20. Effect of plant density on the growth, development and yield of Brussels sprouts (Brassica oleracea L. var. gemmifera L.)

In the investigated range of plants density an increase of area per plant contributed to significant increase of leaf assimilation area, stalk diameter and height of plants. Similar results were obtained sprouts. In this study whole plant, stem, root and foliage, together with specific leaf area, leaf area ratio and number of leaves initiated were reduced by restricting cultivation area. In turn, was found that increasing plant density from 2.22 to 6.66 plants/ m^2 found that the stalk diameter increased linearly with an increase in the distance between plants for. In the study by number of branches, number of leaves and vine length decreased as the cucumbers plant spacing increased from 50 × 30 cm to 50 × 40 cm. and Szwejkowska a higher length was not noted change of cabbage plants height with change of plant density. An increase of area per plant at a range from 0.35 to 0.49 / m^2 contributed to increase the marketable yield of Brussels sprouts. Further increase of area per plant caused decrease of yield as a result of lower.

Number of plants on the cultivation area. A similar dependence of productivity on density was found for who noted an increase in the yield by 36% with an increase in plant density from 34170 to 64582 ha-1 observed a lower yield of green celery at a lower density because of fewer plants in the cultivation area. Found a higher productivity at a lower plant density by analysing the effect of plant distance in rows spaced 30 and 50 cm apart (4.5 and 3.0 plants per / m^2 sprouts, however, the yield of sprouts per hectare did not differ significantly. According to low plant density increased the sprouts size, however, did not have influence on the yield of Class 1 sprouts.

3. MATERIALS AND METHODS

3.1. Location

The experiment was conducted at The Tripoli Center for Agricultural technology, which is located geographically, within the area of. The municipal Council of Andalus Quarter Longitude N "58.432 °49 °Latitude E "27.213 °06 ° Height is 120 feet

3.2. The Experimental Design

The experiment was designed on (split-block design) (R-C-B-D). Its advantages are precision and distribution of errors on blocks, and there are no restrictions on the treatments replicates , makes the statistical analysis easier, and could evaluate the messing views two factors were used: Compare of the different types of melon cultivars with respect of growth and productivity.The effect of growing methods on production, growth and specifications of cantaloupe fruits.

3.3. Cultivation Practices before Planting

3.3.1. Soil Analysis

Three samples of greenhouse soil and were taken as following from the beginning, middle, and the end of the one at a depth of 30 cm for the purpose of soil analysis to determine the soil structure and soil salinity was conducted in the laboratory of The Agricultural Research Center. Also the sample of water used in irrigation is taken to determine the salinity, PH, and results were as follows. (Table 3.1)

3.3.2. Soil tillage

Because the production of cantaloupe in greenhouses depends greatly on the increase of production of the unit area, so it is necessary to care for the preparing the soil and fertilize well. The soil was well plowed by the caterpillars at a depth of 35 cm for the purpose of exposure to the sun to eliminate the weeds and mixing the added organic fertilizer(manure)

Table 3.1. Analysis of Soil Samples

Textures	**Sand (%)**	**Clay Sand (%)**	**Clay (%)**	**Sample Number**
Sandy Mud	84.58	12.64	2.78	1
Sandy Mud	83.58	12.14	4.28	2
Sandy Mud	80.58	14.64	4.78	3
General average	82.91	13.14	2.94	

Figure 3.1. Soil preparations before plants.

3.3.3. Soil Sterilization

Soil sterilization is considered one of the basic agricultural processes in greenhouses, because the repeated cultivation of the soil with a special crop and a family at close intervals leads to reproduce the pathogens found in the soils (nematodes, fungus, etc). So the method of sterilization by steam was used through perforated pipes extending over the surface of the soil and covered with thermoplastic foil with the edges of the chips firmly fixed by the soil and pumping the steam into the perforated tubes to lift the plastic and then the steam pressure drops to the minimum to obtain the best results.

The lid and steam treatment should be continued for 6-8 h. The degree of penetration of soil steam depends on the care given to soil tillage to more depth.

3.3.4. Design of irrigation network

After the completion of the sterilization and leveling, the soil comes the step of the installation of the irrigation network at the site of study on an area of 30 * 9 square meters, and the diameter of the secondary line of 32 mm which made of hard polyethylene and then the installation of irrigation lines connected to the side lines. Drip irrigation method with pipes 3/4 inch (16mm) in diameter were extended along the cultivated lines, and drippers from the type of Spakti with a drain of 7 L / h (Figure 3.2.) The distance between the drippers are 50 cm the side pipes were connected to the main pipes with 32 mm in diameter, and these were connected with 2000 liter tank and 2 hip pump as in the figure.

Figure 3.2. Irrigation network.

3.4. Fertilization after Cultivation

3.4.1. Add Organic Fertilizer

The following requirements were added to soil:
Organic Fertilizer per line (75 kg).Chemical fertilizer (NPK 12-24-12) by (12.5 kg / ha) per line and at 6 g per plant after the completion of sterilization, the pipes were buried and irrigate the greenhouse and lift up to 15 days which was sufficient to sterilize the soil which was an important and fundamental process in greenhouses cultivation to prevent the spread of diseases and nematodes.

3.5. Cultivation

The cultivation process was carried out on 17/9/2016, to plant the local varieties HV1 (Zagrit) and HV2 (Maziane). Its source was from the Zapatya Center for Agricultural Technology.

Two cultıvars of HV3 (Kırkağaç) and HV4 (Ananas) were imported from Turkey. The plants were irrigated lightly after cultivation. After that, the cultivation processes were followed which included.

Table 3.2. Studied Cultivars

Cultivers	**Melon Cultivers**				**Planting**
	HV4	**HV3**	**HV2**	**HV1**	
Harvesting	2016.12.05	2016.12.01	2016.11.20	2016.12.05	2016.09.17
	2016.12.20	2016.12.15	2016.12.06	2016.12.20	

3.5.1. Cultivating of empty area

The process of cultivating of the empty area, where the plants could not grow in, and called “patching” which was on 23/9/2016.

3.5.2. Weed control

The process of weeding, it’s the removal of the weeds which may be found inside the greenhouse because leaving the weeds works to weaken the plants through absorption of nutrients from the soil, and also caused the spread of diseases.

3.5.3. Irrigation.

The Irrigation was on 27 \ 9 \ 2016 and was in the early stages of plant growing , and its purpose is that the roots to penetrate deeply in order to balance the vegetative and root groups in order to accelerate the flowering process.

3.6. Control.

3.6.1. Preventive Control (1-10-2016)

Through this preventive program, several steps have been taken Eliminate of weeds inside and outside the greenhouse so it well not become a source of infection of plants inside the greenhouse with insects and diseases Spray the calcium hydroxide (lime) at the doors and in and out the sides of the greenhouse.

Figure 3.3. Hanging plants.

3.7. Hanging plants.

3.7.1. Plants reached to top

3.7.2. Pruning lateral branches

Of the main stem while continuing to direct the plant to the top. It was noted in this date after the increase in temperature in Tripoli, started the process of flowering significantly. The process of removing the lateral branches, leaves, and flowers from the main stem till 50 cm in high. After that, the removal process was stopped, and then began directing the plant to the top around the threads of head breeding according to the study plan, as the first line in which all the varieties distributed in the system of replicating growing on one stand, and the second line are in the same way, as all cultivars are cultivated in a replicate system on two stands as shown.

Figure 3.4. Hanging and pruning the plants.

3.8. Plant protection

Preventive measures were taken in the past, but after the plants were infected with insect pests and plant diseases, these diseases were kept under the level of economic damage the plant protection is performed according to rise of the infection on the cantaloupe crop Insecticidal and fungicidal pesticides are added alternatively to the crop until the infection is eliminated. We exchange the mixtures so as not to generate immunity against the used pesticides. The following is an illustrative table shows the quantities type of pesticide and the date of spray.

Figure 3.5. Diseases type.

Table 3.3. Pest type

Name of disease	Name of pesticide	Dose	Date of spraying
Mite-spider	Sparkle	200ml/1000L	17/10/2016
Fruit fly	Vantex	25ml/100L	1/11/2016
Australian Powdery bug	Vantex	25ml/100L	15/11/2016
Leafhopper	Confidor	50ml/100L	25/11/2016

3.8.1. Biological Control

The method of biological control was also used on 05-12-2016, when the bacteria (Antario) was applied against the green worm by mixing 50 mg /100 L of water and then spray the crop. This method proved its efficacy by 90% in eliminating the pest.

Figure 3.6. Biological control.

3.9. Fertilization

The cantaloupe plant respond to organic fertilization and it is recommended to add 23-30 [3] of it inside the trench of cultivation. The fertilizers were added as batches at different intervals.

Table 3.4. Showing of Chemical Fertilizers

Phases of plant growth	**Kg N/Fadden**	**P_2O_5/Fadden**	**K_2O/Fadden**	
After a week of cultivation	15 Kg/fadden N	24 kg / fadden P	24 kg / fadden K	25/9/2016
At flowering of plant	15 Kg/fadden N		24 kg / fadden K	20/10/2016
During fruit setting	15 Kg/fadden N		15 kg / fadden K	20/11/2016

Fadden = 2500 m²

3. 10. Irrigation

The method of light irrigation at short intervals was better for the cantaloupe than heavy irrigation at long intervals. In general, the need for soil moisture during flowering and fruit setting increases, Care was taken to avoid over irrigation before and during fruit ripening to avoid cracking of fruits the increase in irrigation in the final stages of the plant also affects the characteristics of the fruits such as not forming the external net of cantaloupe fruits.

3.11. Fruit Harvest

The fruits were harvested usually at the morning in several times, and the fruit that harvested were reached maturity, and maturity degree effect on the fruit in terms of taste and fitness for shipment and storage The fruits of the cantaloupe are sweeter as their maturity increases and the fruits are mature when the fruit is separated naturally.

3.12. Studied Character

3.12.1. Female flowers 20/10/2016

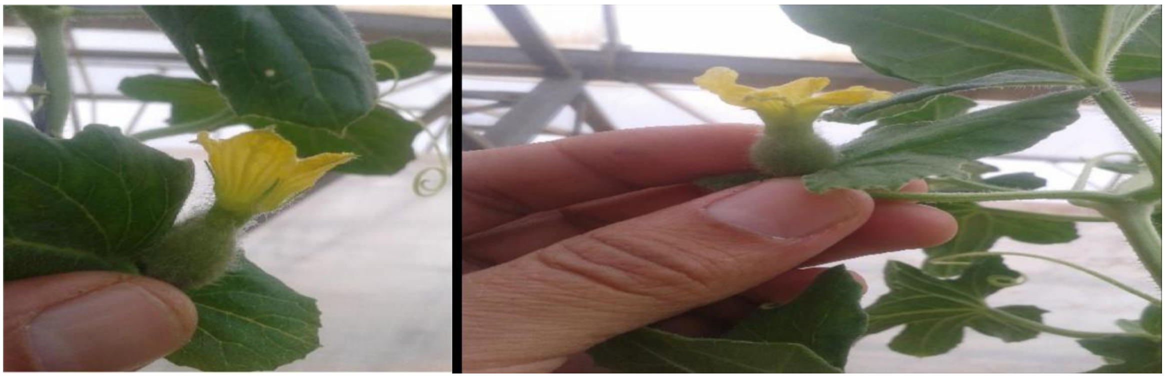

Figure 3.7. Female flowers.

Table **3**.5. Average number of female flowers.

Date : 20.10.2016		**Average number of female flower**	
Cultivars	**Average of cultivars**	**Effect of interaction**	
		two Stem 2S	one Stem 1S
HV1	24.32	28.05	20.15
HV2	12.33	12.05	12.16
HV3	11.17	13.33	9.01
HV4	20.09	22.0	19.08
General average	16.97	18.85	15.1

The Results of Average number flowers /plant

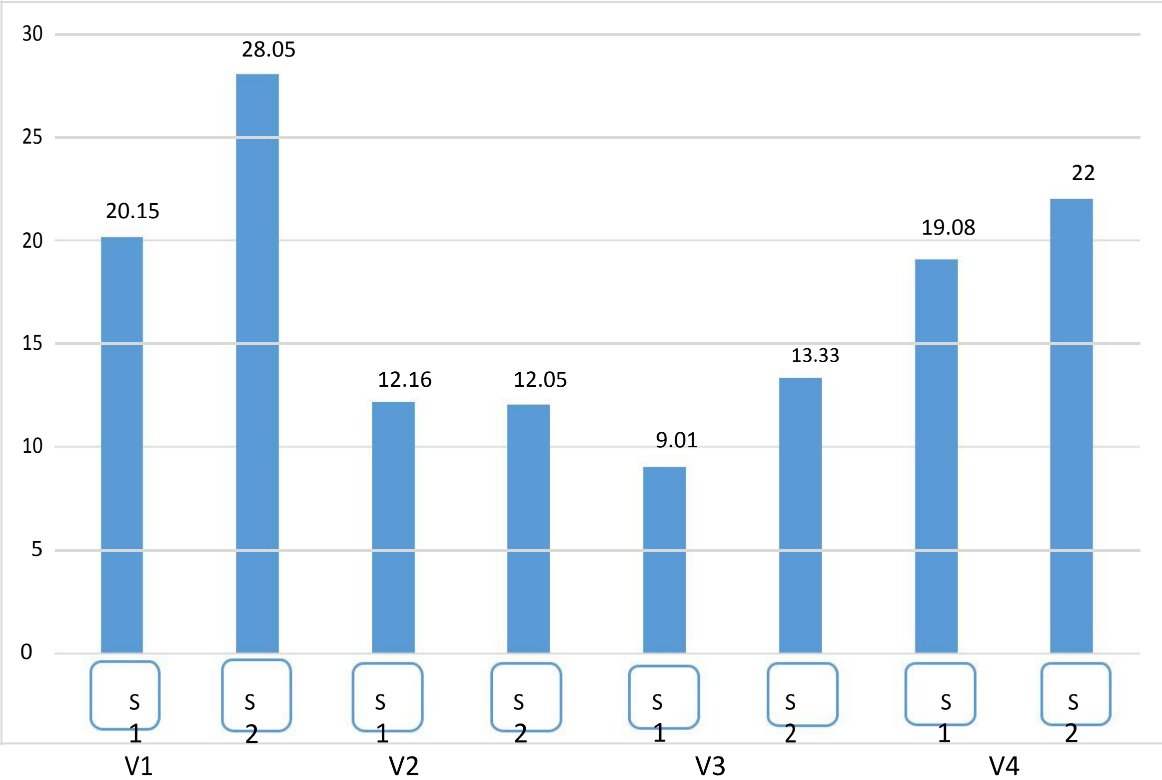

Figure 3.1. Effect of interaction between types and rearing methods on Female flowers.

Figure 3. 2. Effect of growing methods on female flowers. S1= One stem

S2= Two stem

3.12.1.1. Effect of cultivars on female flowers

It is clear from the results of Table (4.1.1) that the number of HV1 variety plants are significantly higher than the number of female flowers, which was given 24.32 flower/plant statical number the HV3 variety which was given 11.7 flower/plant as the minimum.

3.12.1.2. Effect of growing methods

The growing méthodes were signifiant diffèrent in the number of fruits for plants The plants grown on two stems produced the highest rate of female flowers, reaching 19.8 Flower/plant while the plants grown on one stem produced 15.2 flower/plant and. No İnteraction signifiant differences between varieties and methods of rearing.

3.12.2. The Male flowers 20-10-2016

Figure 3.8. Male flowers.

Table 3.6. Average number of male flower.

	Date : 20.10.2016	**Average number of Male flower**	
Cultivars	**Average of cultivars**	**Effect of interaction**	
		two stem 2S	one stem 1S
HV1	18.06	21.05	14.62
HV2	14.72	17.05	11.95
HV3	15.99	18.65	13.33
HV4	13.18	17.35	9.01
General average	15.48	18.52	12.22

The Results of Average number flowers /plant

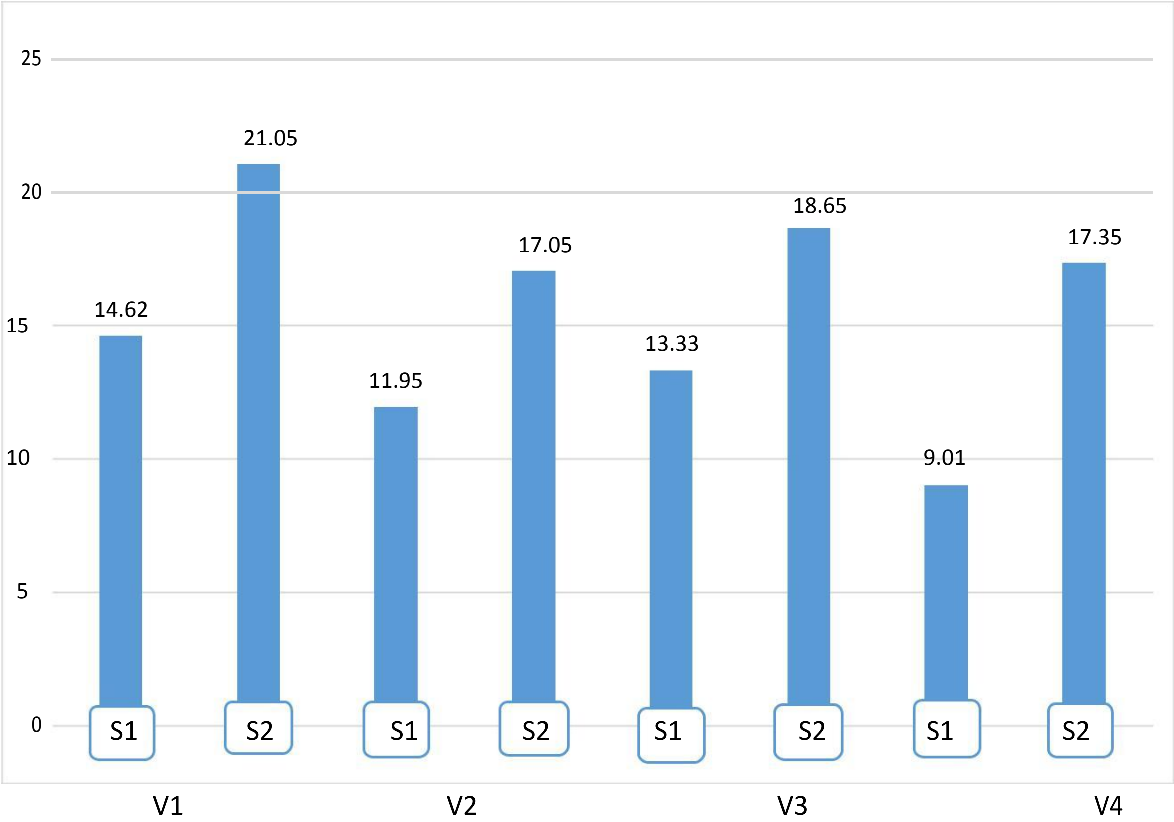

Figure 3.3. Effect of interaction between types and grow methods on Male flowers.

Figure 3.4. Effect of growing methods on Male flowers. S1= One stem

S2= Two stem

Table (3.4.) also showed that the overlapping between the varieties and the methods of rearing among them that there are no significant differences between them. No significant differences between the cultivars.

3.12.2.1. Effect of growing methods on male flowers.

As for the effect of the method of growing, which differed significantly among them in the rate of number of male flowers, where the plants grown on two-stem produced the highest rate reaching 18.78 flower/plant, while plants produced on one stem gave the rate 12.22 flower/plant.

3.12.3. The Grand total of fruits' setting 5-11-2016

Figure 3.9. Grand total of fruits' setting.

Table 3.7. Average Grand total of fruits' setting.

Date : 05.11.2016		**Total Sum of fruit setting**	
Cultivars	**Average of cultivars**	**Effect of interaction**	
		two Stem 2S	one Stem 1S
HV1	14.91	18.99	10.83
HV2	4.08	5.16	3.0
HV3	8.32	9.66	6.99
HV4	12.08	13.33	10.83
General average	9.84	11.78	7.91

The Results rate setting fruit /plant

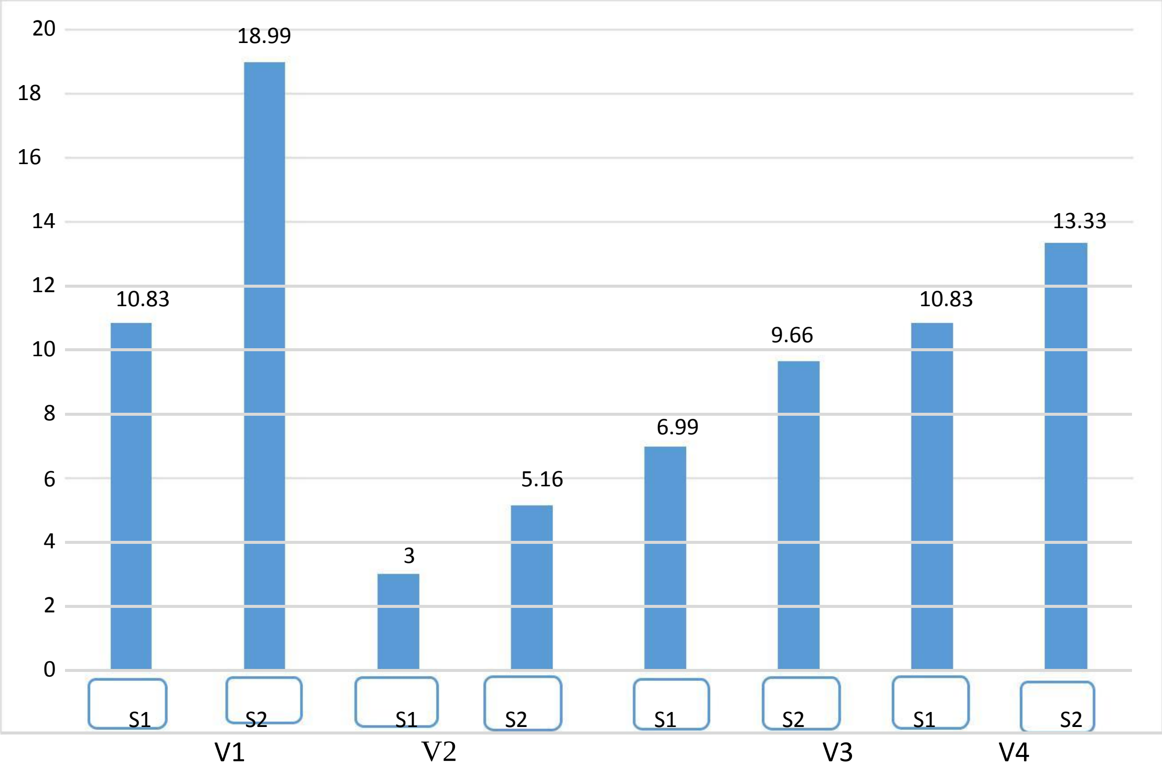

Figure 3.5. Effect of interaction between types and growing methods on total of fruits' setting.

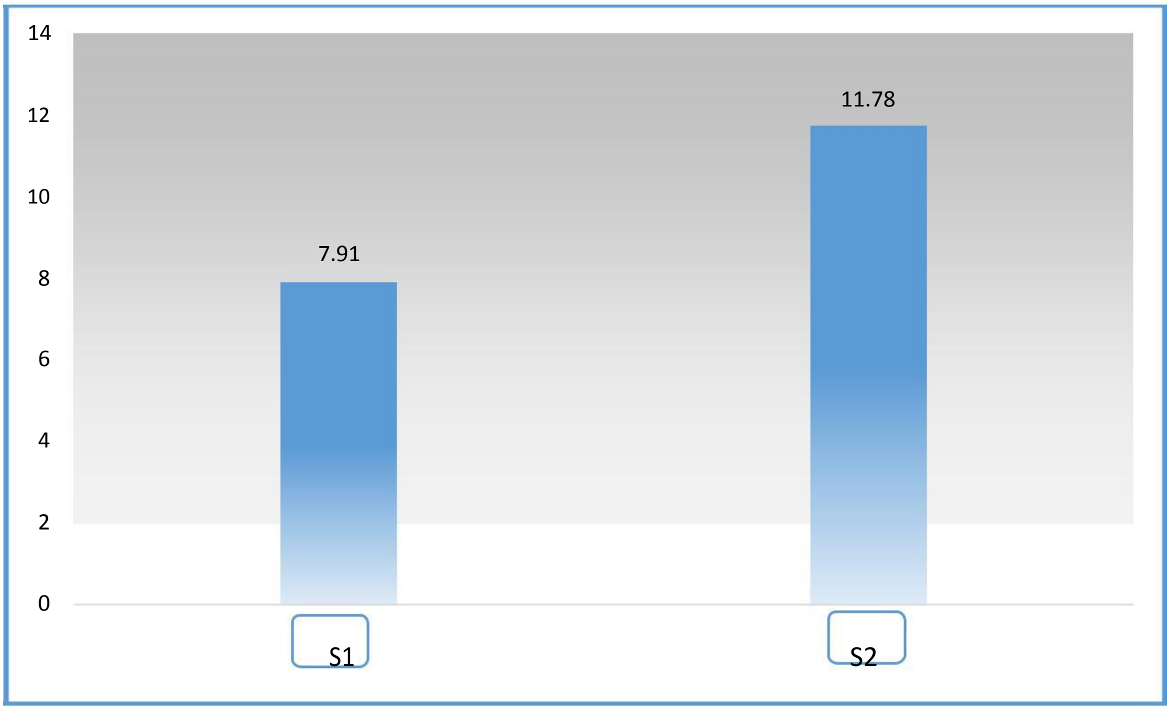

Figure 3.6. Effect of growing methods on total of fruits' setting.

S1= One stem

S2= Two stem

3.12.3.1. Effect of cultivars on fruits

It is clear from the results of Table (3.12.3.1) that the HV1 plants are significantly higher than the average number of fruits' setting, which reached 14.90 setting fruit/plant. The HV2 variety has recorded 4.08 setting fruit/plant.

3.12.3.2. Effect of growing methods on fruits

The growing methods were significantly different in the fruit setting rate, where the grown plants on two stems had recorded the highest fertility rate of 11.75 setting fruit/plant while the plants on one stem gave an average of 7.91 setting fruit/plant.

3.12.3.3. Effect of interaction between cultivars and growing methods on fruits

It is also evident that the overlap between cultivars and methods of growing had significantly affected the rate of the setting fruit/plant. The plants in the HV1 grown on the two stems were superior and gave the highest rate of 18.99 setting fruit/plant while the rate of the plants grown on one stem was 10.83 setting fruit/plant.

3.12.4. Average number of fruits: 20/11/2016

Figure 3.10. Number of fruits.

Table 3.8. Average number of fruits

Date : 15.11.2016		Average number of fruits	
Cultivars	**Average of cultivars**	**Effect of interaction**	
		Two Stem 2S	One Stem 1S
HV1	5.91	6.16	5.66
HV2	3.08	3.67	3.93
HV3	4.32	4.83	3.82
HV4	2.66	2.66	2.66
General average	3.99	4.33	4.01

The Results of rate production fruit /plant

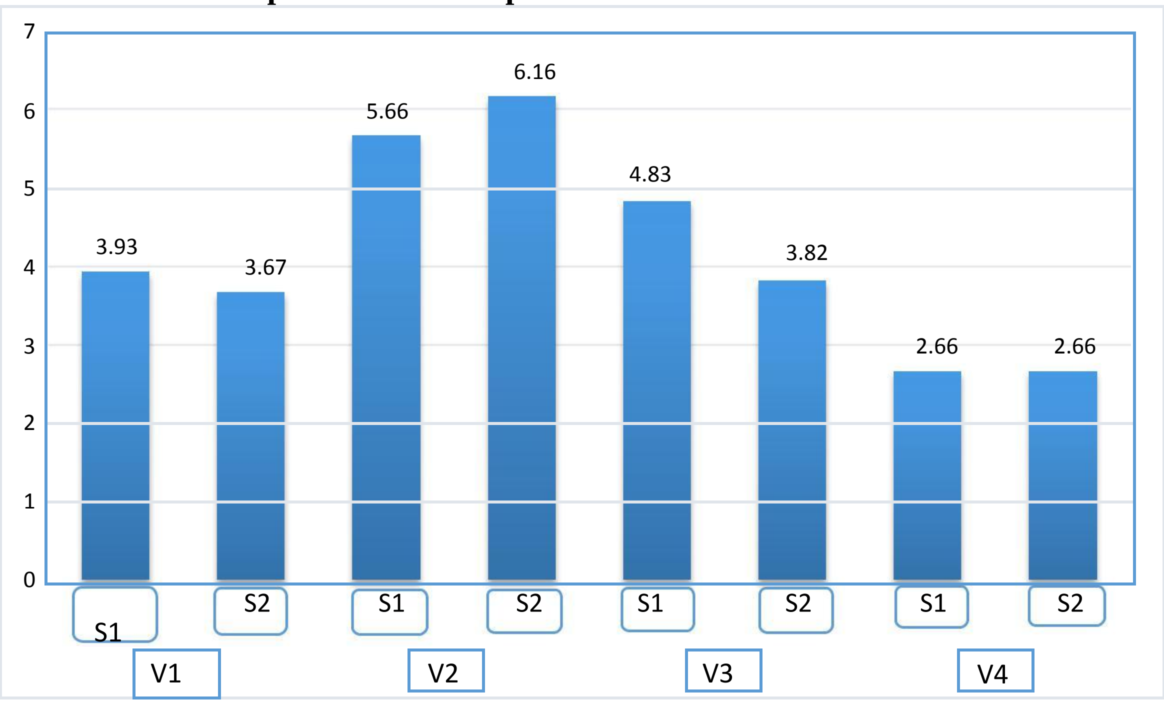

Figure 3.7. Effect of Interaction between types and growing methods on number of fruits.

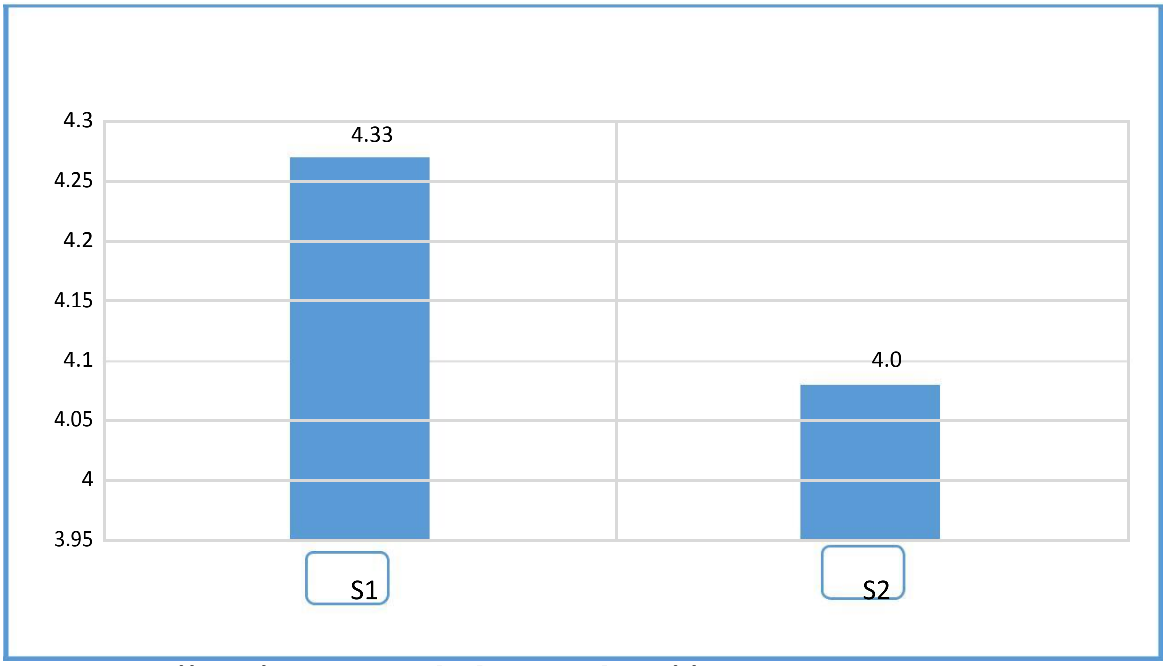

Figure 3.8. Effect of growing methods on number of fruits.

S1= One stem

S2= Two stem

3.12.4.1. Effect of cultivars on fruits

It is clear from the results of Table (3.7.) that the number of HV1 variety plants are significantly higher in the average number of fruits, which reached 5.91 fruit/plant while fruit/plant while the lowest rate of 2.66 fruit/plant.

3.12.4.2. Effect of Interaction between cultivars and growing methods on fruits

The İnteraction between the two varieties and methods of growing had a significant effect on the rate of number of fruits, as the plants of the category of HV1 grown on two stems were superior and gave the highest rate of 6.16 fruit/plant, while the plants grown on one stem produced the rate of 5.66 fruit/plant.

3.12.4.3. Effect of growing methods on fruits

as well as the methods of rearing were different by a significant difference between them, where the plants raised on two stems produced 4.08 fruit/plant while the plants that were grown on one stem gave 4.27 fruit/plant.

3.12.5. Average number of fruits 20/12/2016

Figure 3.11. Number of fruits.

Table 3.9. Average number of fruits.

Date : 20.12.2016		**Average number of fruits**	
Cultivars	**Average of cultivars**	**Effect of interaction**	
		two Stem 2S	one Stem 1S
HV1	7.33	6.83	7.83
HV2	1	1	1
HV3	3.82	4.99	2.66
HV4	4.04	6.33	1.75
General average	4.47	4.78	3.31

The results of Rate production fruit /plant

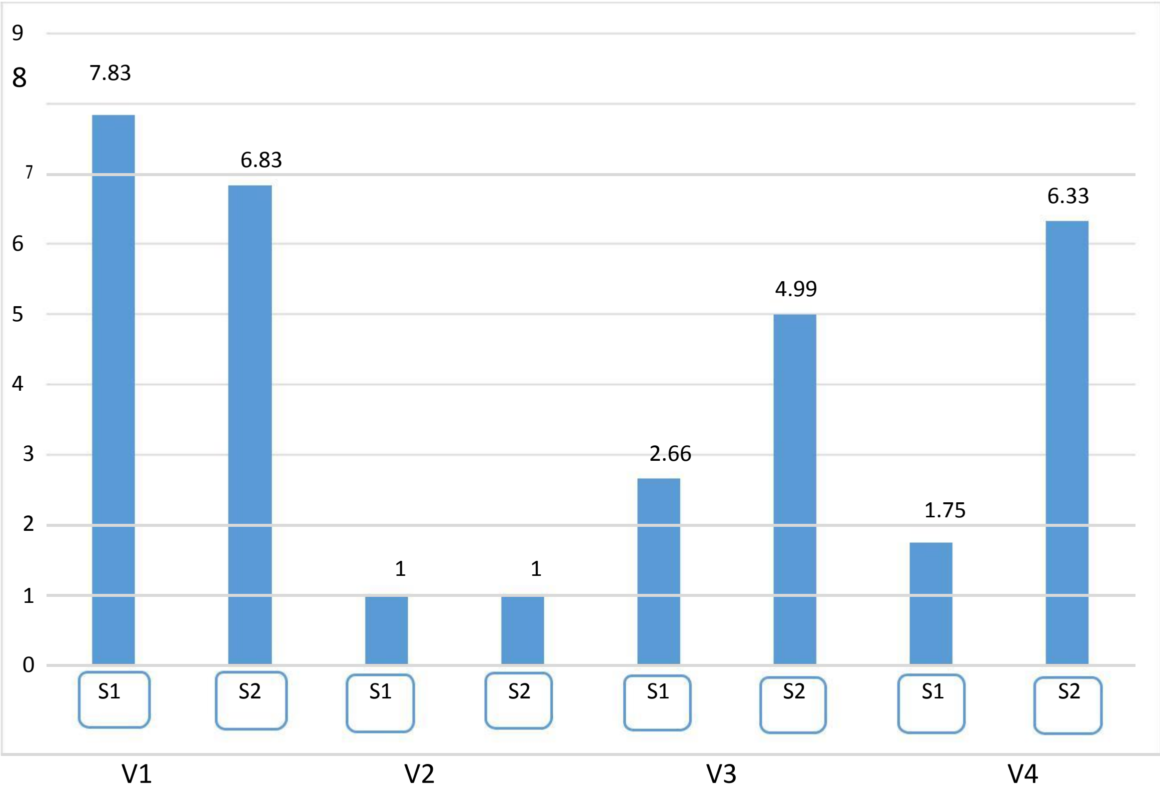

Figure 3.9. Effect of interaction between types and growing methods on number of fruits.

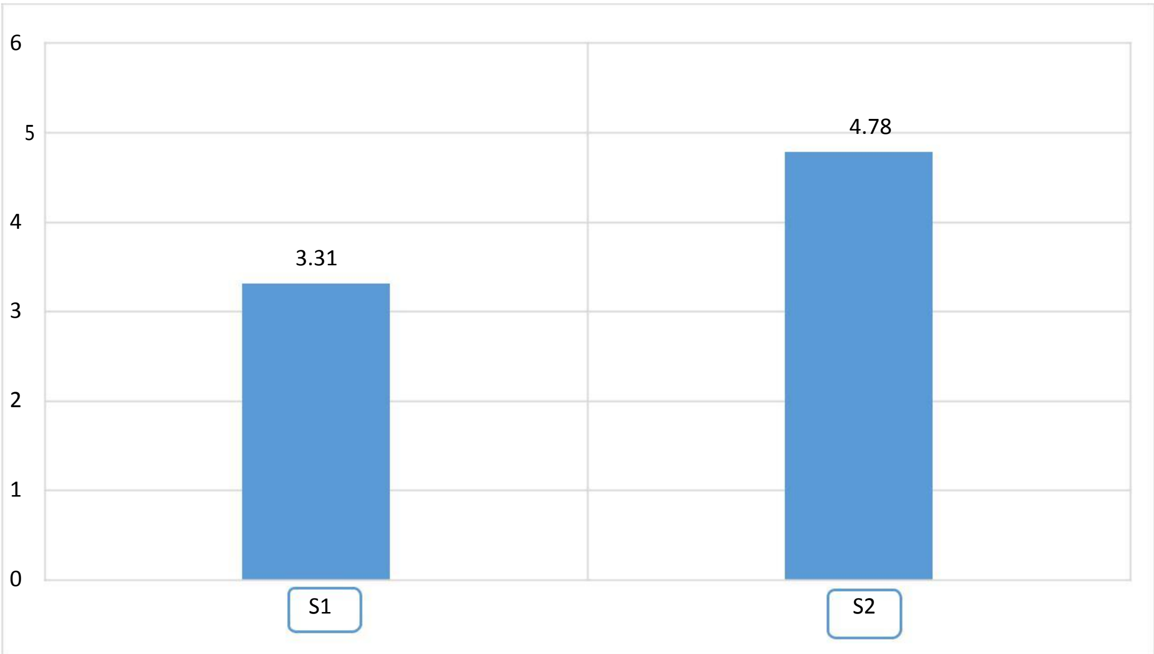

Figure 3.10. Effect of growing methods on number of fruits.

S1= One stem
S2= Two stem

3.12.5.1. Effect of Interaction between cultivars and growing methods on fruits

The binary İnteraction between cultivars and methods of rearing had a significant effect on the average number of fruits. The type HV4 plants produced grown on the two stems had the highest rate of 6.33 fruit/plant. While the plants grown on one stem produced 1.75 fruit/plant. This is a clear indication of the increase in productivity of the unit area by increasing the plant density. Also we find that the HV2 type has decreased the yield of fruits to the lowest degree where the rate of plant grown on two stems has given one fruit/plant and plants grown on one stem has given the rate of one fruit/Plant. The interpretation seems that the variety has suffered from a large loss of fresh setting fruit. These fruits were formed in a distorted and yellow color and quickly fell from the plant significantly. This is due to a defect in the pollination process, noting that this species was the beginning of the opening of flowers before the rest of the varieties by one week.

3.12.5.2. Effect of growing methods on fruits

The growing method had significant effects on the rate of plant yield, where the plants recorded on two stems with the highest yield of 4.78 fruit/plant, while the plants grown on one stem recorded 3.31 fruit/plant, due to the density of vegetative growth and the subsequent increase in production from the unit area.

3.12.6. Average Plant height 10-11-2016

Figure 3.12. Plant height.

Table 3.10. Average plant height.

Date : 10.11.2016		**Average plant height (cm)**	
Cultivars	**Average of Cultivars (cm)**	**Effect of interaction**	
		two Stem 2S	one Stem 1S
HV1	139	153	124
HV2	165	107	165
HV3	204	208	203
HV4	199	193	205
General average	176	165	174

The results of Average plant height / cm

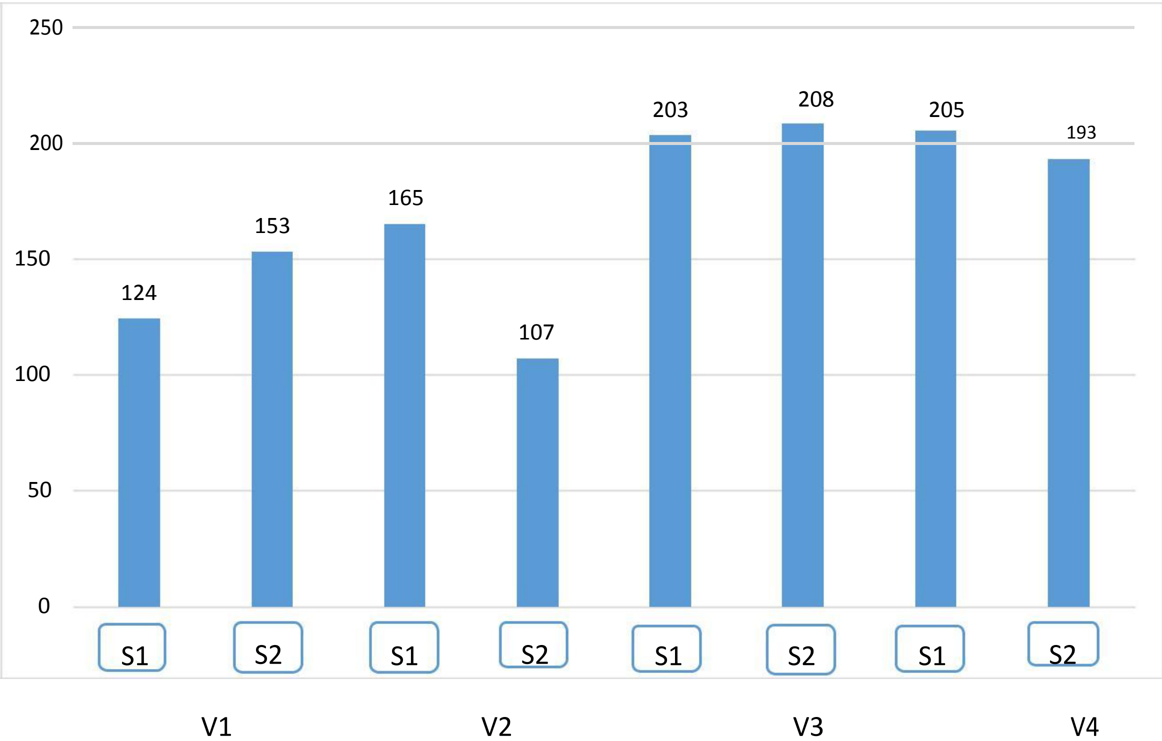

Figure 3.11. Effect of Interaction between types and growing method on height of the plant.

No significant differences towards the growing Methods.

No İnteraction differences between cultivars and methods of growing.

3.12.6.1. Effect of cultivars on height

It is noted the existence of differences in the length of plants, especially between the classes HV1 which has given the average length of 1.39 cm compared to the variety HV3 which gave the average length of 2.04 cm. But as for the rest of varieties, there are no significant differences between them.

3.12.7. Average plant height 20-12-2016

Figure 3.13. Plant height.

Table 3.11. Average plant height.

Date : 20.12.2016	**Average plant height (cm)**		
Cultivars	**Average of cultivars (cm)**	**Effect of interaction**	
		two Stem 2S	one Stem 1S
HV1	255	271	239
HV2	172	181	164
HV3	251	269	233
HV4	236	220	252
General average	228	235	222

The results of Average plant length / cm

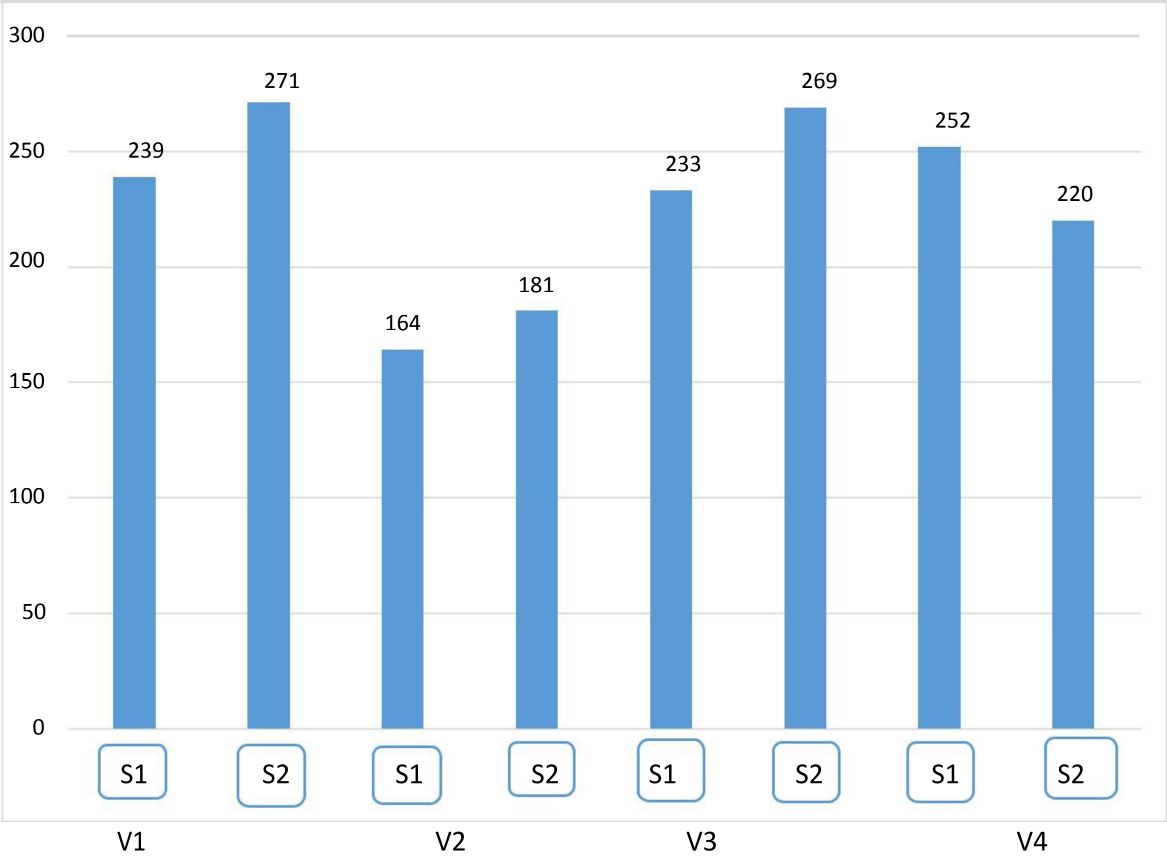

Figure 3.12. Effect of interaction between types and growing method on length of the plant.

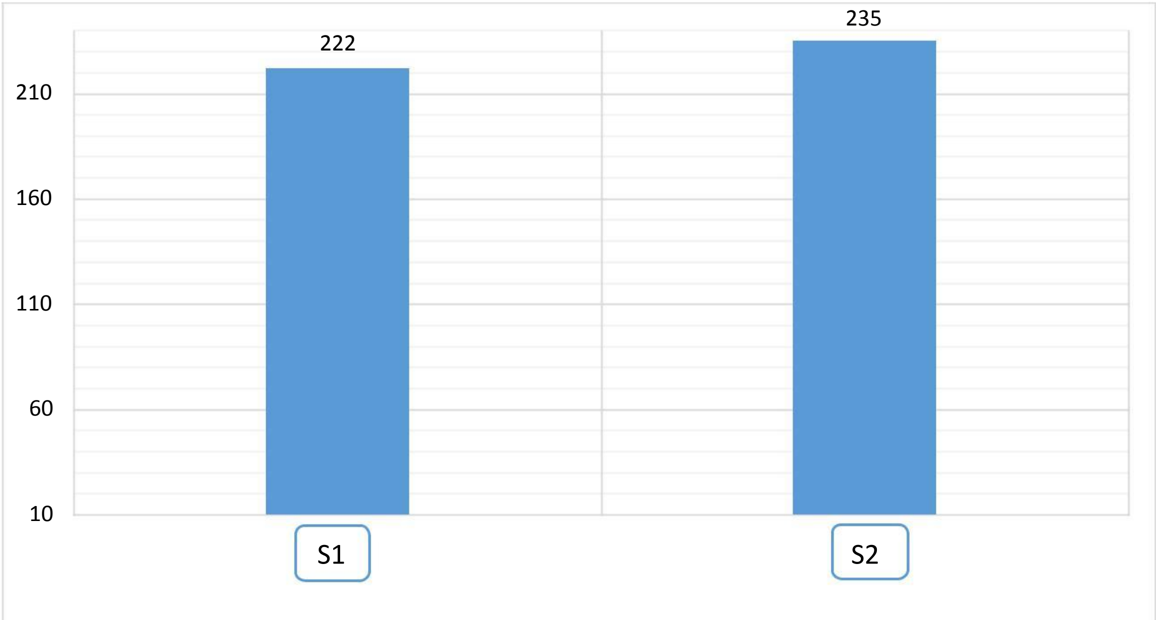

Figure 3.13. Effect of growing methods on length of the plant.

S1= One stem
S2= Two stem

3.12.7.1. Effect of Interaction between cultivars and growing methods on length

The cultivars and methods of growing had a significant effect on the length of the plants. The class HV1 grown on two stem were superior and gave the highest rate of 2.71 cm/plant, while the plants grown on one stem gave 2.39 cm/plant.

3.12.7.2. Effect of growing methods on length

It is clear that the method of growing has a significant effect on the plant height rate, where the plants on the two stems scored the highest rate of 2.35 cm/plant, while the plants recorded on one stem scored the rate of 2.22 cm/plant.

3.12.7.3. Effect of cultivars on length

It is noted the existence of differences in the length of plants, especially between the classes HV1 which has given the average length of 2.55 cm compared to the cultivar HV2 which gave the average length of1.7 2 cm. But as for the rest of cultivars, there are no significant differences between them.

3.12.8. Weight of fruits

Figure 3.14. Weight of fruits.

Table 3.12. Average Weight of fruits.

Cultivars	Average of cultivars(kg)	Average weight of fruits (kg) Effect of interaction	
		two Stem 2S	one Stem 1S
HV1	0.840	0.890	0.800
HV2	0.840	0.900	0.780
HV3	1.020	1.090	0.960
HV4	0.760	0.780	0.750
General average	0.865	0.915	0.822

The results of Average Weight fruits /plant kg

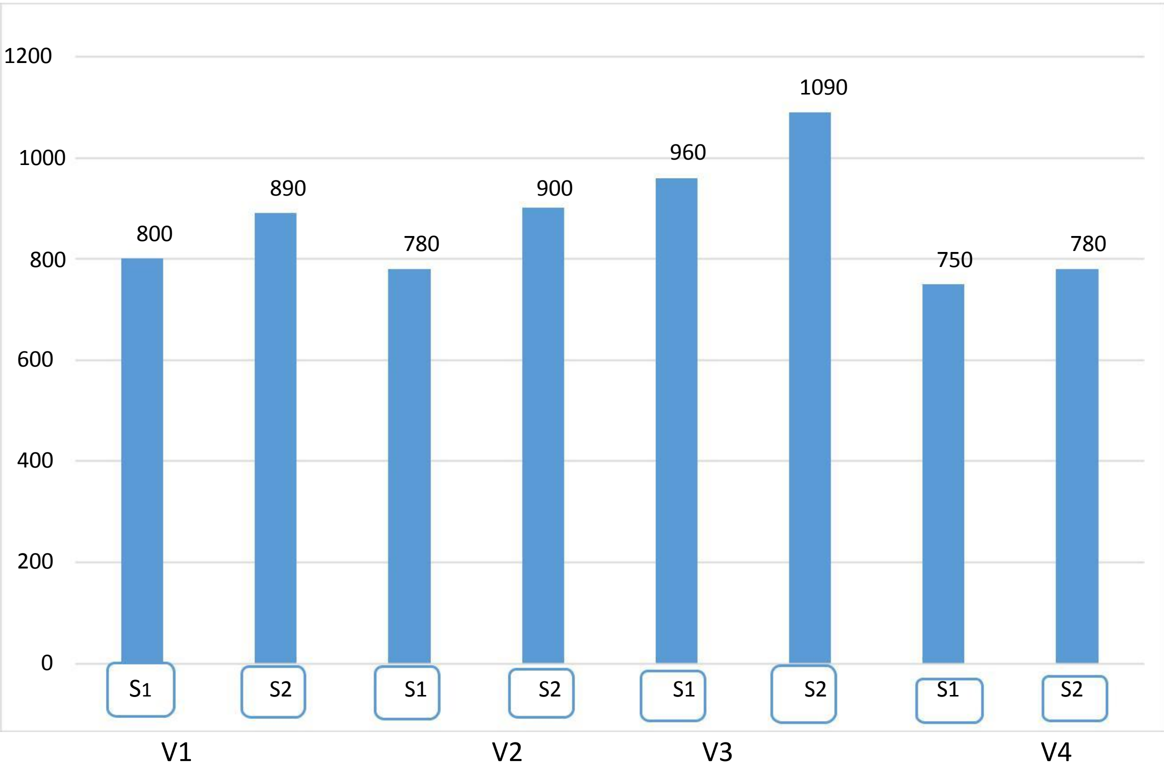

Figure 3.14. Effect of interaction between types and growing method on fruit weight.

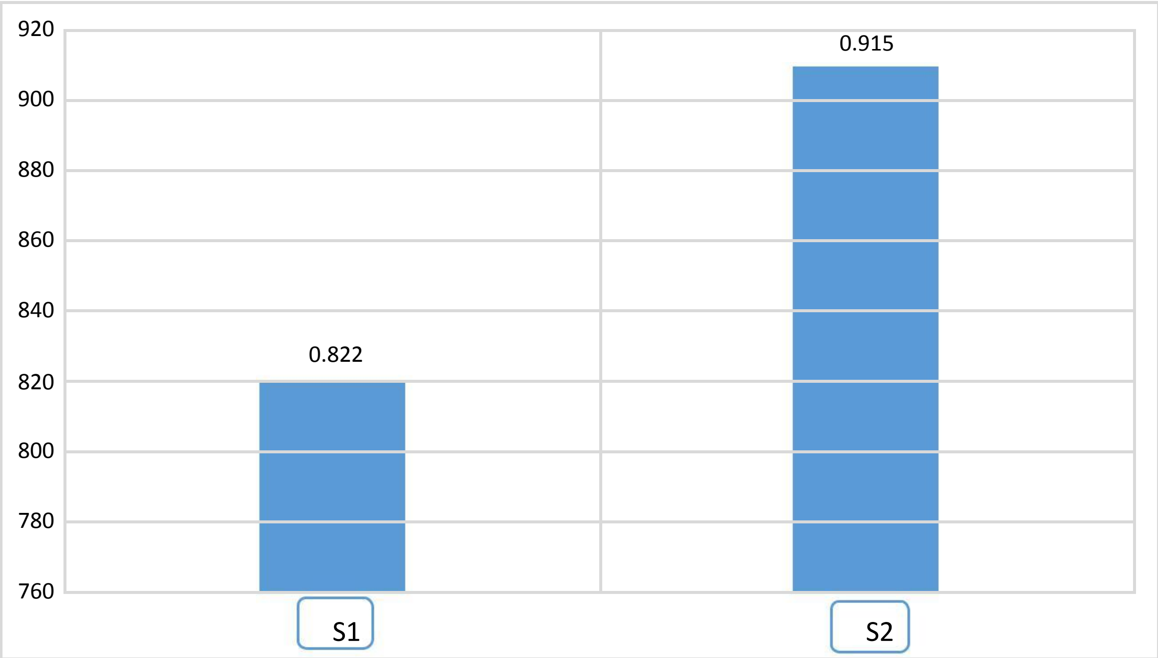

Figure 4.1. Effect of growing method on fruit weight.

S1= One stem
S2= Two stem

3.12.8.1. Effect of Interaction between cultivars and growing methods on fruit weight

The bifurcation (binary Interaction) between the cultivars and the growing method had a significant effect on the weight of the fruit. The plants on two stems produced the highest rate of 0.915 kg/fruit. While the plants grown on one stem gave an average rate of 0.822 kg/fruit.

3.12.8.2. Effect of growing methods on fruit weight.

While the growing method had a significant effect on the weight of the fruit, where the plants bred on two stems scored the highest weight of the fruit reaching 0.910 kg/fruit, while the plants bred on one stem gave the fruit weight of amounting to 0.820 kg/fruit.

3.12.8.3. Effect of cultivars on fruit weight

There were significant differences between cultivars in terms of fruit weight.

3.12.9. Extent response of plants to control 1-12-2016

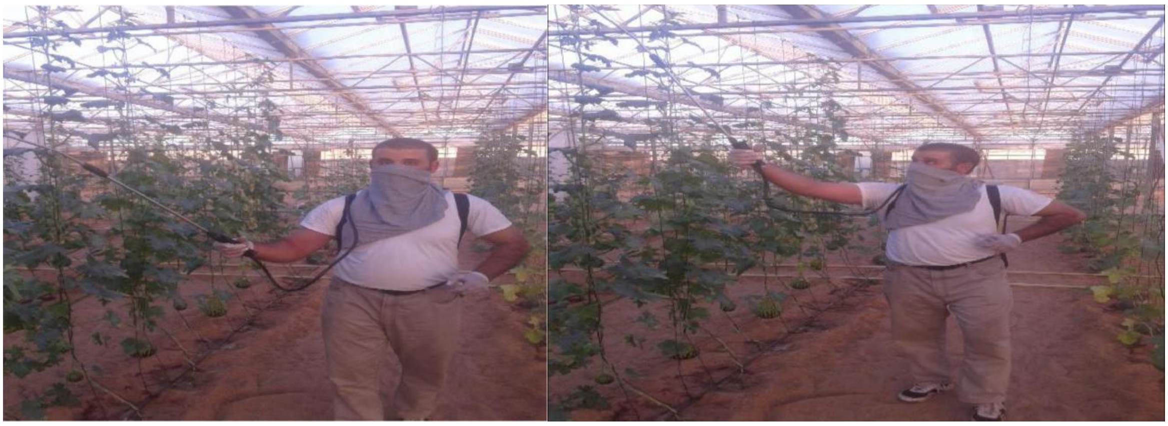

Figure 3.15. Response of plants to biological control.

3.12.9.1. Chemical and biological control

The plants were infected with various diseases during their growth stages (manna, spider-fruit fly, bacillus, hippocampus, green worm). The pesticides were given at different stages of plant growth and according to the recommended dose, but some varieties were limited in response to spraying with chemical pesticides through evaluating its effectiveness after spraying. The biological control system was also used for diseases using (Antario) bacteria in the form of 20 g/20 liter dissolved powder. It was added by spraying to combat some diseases spread among the plants, including manna and green worm. A significant response was observed in all cultivated varieties, where diseases were eradicated, including green worm and manna. The use of biological fight led to reduction of chemical pesticides and their negative impact, especially if the guidelines for use are not followed. It was also found that these components have a negative impact on the process of pollination and what it causes during the spraying of bee killing, which is one of the most important factors for the completion of the pollination process.

3.12.10. Average Thickness of pulp

Figure 3.16. Thickness of pulp.

Table 3.13. Average thickness of pulp.

Cultivars	Average of cultivars	Average thickness of pulp(cm) Effect of interaction	
		two Stem 2S	one Stem 1S
HV1	2.32	2.44	2.21
HV2	2.87	2.95	2.80
HV3	2.60	2.50	2.70
HV4	2.33	2.21	2.46
General average	2.53	2.52	2.54

there were no significant differences in pulp thickness in terms of overlap between cultivars and methods of rearing there were also no significant differences in terms of growing methods.

3.12.10.1. Effect cultivars on thickness of pulp

In terms of cultivars, the comparison of cantaloupe varieties has a significant effect on the thickness of the pulp due to the genetic differences between the cultivars.

3.12.11. The Stem thickness average 15-12-2016

Figure 3.17. Stem thickness.

Table 3.14. Stem thickness average.

Cultivars	Date : 15.12.2016 **Average stem thickness(mm)** Effect of cultivars on stalk thickness
HV1	9.74
HV2	9.65
HV3	11.57
HV4	10.38

the overlapping between the cultivars and growing methods had no significant effect on stem thickness.

3.12.11.1. Comparison of the cultivars on stalk thickness

In the comparison of cultivars, there was a significant effect on the thickness of the stem, where the HV3 class has recorded the highest rate at 11.57 m m/plant while the HV2 type was less than 9.65 mm/plant.

3.12.12. Dry matter ratio

Figure 3.18. Dry matter ratio.

Table 3.15. Dry matter ratio.

Cultivars	Dry matter ratio Effect of interaction (%)	
	two Stem 2S	one Stem 1S
HV1	15.36	13.14
HV2	13.39	13.0
HV3	14.48	13.38
HV4	16.09	13.7
General average	14. 83	13.30

3.12.12.1. Dry Matter Calculation

The percentage of dry matter in the plants was calculated for each of the cultivars as stated below. Each plant was randomly selected from all replicates and then the whole plant weight was measured as wet weight. and then they were put in an oven at 70 ° C for 24 hours and then the plant was weighed where the value represented the dry weight and then carried out a calculation of which has reached the percentage of dry matte.

When the results were extracted, the differences in some varieties were clearly found between the plants grown on one stem and the plants grown on two stems the results of the table (13.12.12.1) showed that the plants grown on two stems were in the ratio of dry matter where the plants grown on two stems recorded the highest percentage of 14.81%, while the percentage of dry matter of the plants grown on one stem was 13.30%. Through this disparity and differences between the ratios of dry matter and the method of breeding of influence of the dry matter rates, we conclude that the plant density has effective and direct role in increasing the percentage of dry matter where the more vegetative total density increases in terms of increase of leaves and branches, this leads to an increase of photosynthesis i.e. increase chlorophyll which in turn reflects the plant's ability to absorb nutrients and water from the soil.

3.12.13. Fruits cracking

Figure 3.19. Cracking of fruits.

Some fruits have been exposed to cracking phenomenon, where the fruit of the newly grown setting fruit starts in growth and increase in size until it reaches the stage of maturity and then start automatically cracking. The reason after that.

1 - The sensitivity of the fruits at that stage to the irrigation process, especially that this phenomenon was prominent and noticeable in HV3 category and very few in HV2 category.

3.12.14. Recorded on the date 29-1-2016

Figure 3.20. Recorded on the date.

It has occurred the fall of Plant in each of the HV type and the fall of another plant of the HV type bred on one stem, where a sudden fall of the plant takes place in the whole vegetative group. I have tied up the plants and supported them with an additional wire to ensure the non-recurrence of this phenomenon. It is observed that the fall of plants that happened is confined to the plants of one stem.

4. RESULTS AND DISCUSSION

4.1. Female Flowers 20/10/2016

Table 4.1. Average number of Female flower.

Date : 20.10.2016	Average number of Female flower			
Cultivars	**Average of Cultivars**	**Effect of interaction**		**Growing Methods**
		two Stem 2S	one Stem 1S	
HV1	24.32 A	28.05 a	20.15 a b	S1
HV2	12.33 BC	12.05 a b	12.16 a b	15.1 B
HV3	11.17 C	13.33 a b	9.01 c	S2
HV4	20.09 AB	22.0 a b	19.08 a b	18.85 A
General average	16.97	18.85 A	15.1 B	

LSD for cultivars = LSD 7.95

LSD for growing methods = LSD 3.96

LSD for Interaction = LSD 15.91

4.1.1. Effect of cultivars on female flowers

It is clear from the results of Table (4.1.) that the number of HV1 cultivar plants are significantly higher than the number of female flowers, which was given 24.32 flower/plant and then the HV2 variety which was given 12.5 flower/plant of the HV1 type. This is due to the growth of vegetative growth, the number of leaves increased and the density of each plant significantly increased from the rest of the cultivars. As mentioned in the context of the correlation between the total number of flowers and the number of flowers and production, the study stated the results of the study conducted by (Marei (2005) to evaluate 25 varieties of squash C.pepo showed that there is a positive and significant correlation between the productivity characteristics and the percentage of the female flowers and the number of fruits on the plants (Abdalmohsen., 2016).

4.1.2. Effect of growing methods on female flower

The growing methods were significantly different in the number of fruits for plants. The plants grown on two stems produced the highest rate of female flowers, reaching 18.85 flower/plant while the plants grown on one stem produced 15.0 flower/plant and were consistent with the results of the previous study (There are significat différences of rearing methods in the rate of the number, as the plant grown on two stem produced the largest number of fruits up to 63-66 fruit / plant and may be due to the increase in productivity or the number of flowers due to the multiplication of stands numbers, which the plant grow on, and This resulte agree with resulte of (Shimmery and Saud, 2014).

Cucumber (such as squash, cucumber. and cantaloupe) need both male and female flowers to be open at the same time. Some recent varieties have all or mostly female flowers. Under these conditions 10-15 percent of plants of another variedty, with a higher percentage of male flowers in its normal flowering pattern, must be present and open to obtain adequate pollination. In some situations, stress to the growing plants of pre dominantly female flowering varieties (particularly pickling cucumber) may cause female flowers to revert to male before completion of development. If no pollination curs, the female flowers drop off or become misshapen. Sometimes small fruit will form but will be yellow and dry. This is also a symptom of poor pollination (Anonymous., 2012).

4.2. The Male flowers 20-10-2016

Table 4.2. Average Number of male flowers.

Date : 20.10.2016		**Average number of male flower**		
Cultivars	**Average of cultivars**	**Effect of interaction**		**Growing Methods**
		two Stem 2S	one Stem 1S	
HV1	18.06A	21.05a	14.62a	S1
HV2	14.72A	17.05a	11.95a	12.22 A
HV3	15.99A	18.65a	13.33a	S2
HV4	13.18A	17.35a	9.01 a	18.52 B
General average	15.48	18.52 B	12.22 A	

LSD for growing methods = LSD 3.30

LSD for cultivars = LSD 6.62

LSD for Interaction = LSD 13.25

No significant differences. Between the cultivars

4.2.1. Effect of growing methods on male flower

As for the effect of the method of growing, which differed significantly among them in the rate of number of male flowers, where the plants grown on two-stem produced the highest rate reaching 18.52 flower/plant, while plants produced on one stem gave the rate 12.22 male flower/plant.Table (4.2.1) also showed that the overlapping between the cultivars and the methods of growing among them that there are no significant differences between them.

4.3. The Grand total fruit setting 5-11-2016

Table 4.3. Average Grand total fruit setting.

Date : 05.11.2016		**Total sum of fruit setting**		
Cultivars	**Average production varieties**	**Effect of interaction**		**Growing methods**
		two Stem 2S	one Stem 1S	
HV1	14.91 A	18.99 e a	10.83 c	S1
HV2	4.08 D	5.16 b	3.0 a e	7.91 B
HV3	8.32 C	9.66 c	6.99 b	S2
HV4	12.08 B	13.33 d	10.83 c	11.78 A
General average	9.84	11.78	7.91	

LSD for growing methods = LSD 0.24

LSD for cultivars = LSD 1.02

LSD for Interaction = LSD 2.05

4.3.1. Effect of cultivars on grand total fruit settings

It is clear from the results of Table (4.3.1) that the HV1 plants had significantly the highest average number fruit setting, which reached 14.90 fruit/plant The HV2 variety had the lowest fruit setting (4.08 fruit /plant) due to the genetic differences between the varieties and the effect on the amount of production which agree with this result.

In another experiment yield and some quality properties of 5 melon cultivars were investigated at two locations (Bornova and Cine). Statistically significant differences were found among cultivars and locations on studied yield and quality parameters. The highest yield per plant, fruit weight, number of fruit per plant, early and total yield, soluble solid content, fruit Length and diameter obtained from Cine location (Dursun et al., 2005).

4.3.2. Effect of growing methods on grand total fruit settings

The growing methods were significantly different in the fruit setting rate, where the grown plants on two stems had recorded the highest fertility rate of 11.78 setting fruit/plant, while the plants on one stem gave an average of 7.91 setting fruit/plant. Several author have previously reported increased muskmelon yields with increased plant density when field produced (Juan et al., 2007).

4.3.3. Effect of İnteraction between cultivars and growing methods on fruit setting

It is clear from Table (4.3) that the binary interaction between the cultivars and the methods of growing has an effect on the rate of the fruit setting, where the HV1 category plants grown on two stems were superior and produced the highest rate of 18.99fruit/plant, while, the plants grown on one stem gave an average of 10.83 fruit/plant. In view of the past reading, we found that the increase is still significant and noticeable in plants grown on two stems. The growing of cantaloupe plants on two stems has a great effect in terms of increasing the number of flowers and doubling the number of stems and leaves and the grand total of the setting fruit was found to be superior by a large percentage and the rates of increase in some varieties are up to 100% in terms of productivity and flowering. Muskmelon (*Cucumis* melon cv. Gal-152) was grown as a fall and spring crop to determine the effect of plant density (1.7, 2.5, 3.3, and 4.1 plants/m^2) on yield, fruit quality, plant growth, and economic feasibility for producing the crop in a greenhouse. Plant density had no influence on the early or total number of fruit produced per plant. Marketable yields increased linearly from 11.0 to 20.0 kg/m^2 in fall and from 21.9 to 48.3 kg/m^2 in spring with increasing plant density (Juan et al., 2007).There is a positive and significant positive correlation between the total productivity and the number of leaves and fruits on the plant (Abdalmohsen., 2016).

4.4. Average number of fruits: 20/11/2016

Table 4.4. Average number of fruits.

Date : 15.11.2016		**Average number of fruits**		**Growing methods**
Cultivars	**Average of cultivars**	**Effect of interaction**		
		two Stem 2S	one Stem 1S	
HV1	5.91 A	6.16 a	5.66 a	S1
HV2	3.08 C	3.67 e	3.93 e	4.33 A
HV3	4.32 B	4.83 f	3.82 b	S2
HV4	2.66 D	2.66 c	2.66 c	4.01 B
General average	3.99	4.33 A	4.01 B	

LSD for growing methods = LSD 0.23
LSD for cultivars = LSD 0.49
LSD for Interaction = LSD 1.0

4.4.1. Effect of cultivars on fruit

It is clear from the results of Table (4.4.) that the number of HV1 variety plants had significantly the highest average number of fruits, which reached 5.91 fruit/plant while the HV4 variety produced the lowest rate of 2.66 fruit/plant. The reason is due to the genetic differences between the varieties due to their direct effect in determining the quantity of production. This study with (Jubouri et al., 2006) that genetic correlations were higher than the phenotypic correlations of most studied varieties.

4.4.2. Effect of Interaction between cultivars and growing methods on fruit

The interaction between the cultivars and methods of growing had a significant effect on the rate of number of fruits, as the plants of the category of HV1 grown on two stems were superior and gave the highest rate of 6.16 fruit/plant, and the plants grown on one stem produced the rate of 5.66 fruit/plant. Early and total yield per area increased linearly with increasing plant density; total marketable yield increased from 11.0 kg/m² at 1.7 plants/ m² to 20 kg/m² at 4.1 plants/m² (Juan et al., 2007).

4.4.3. Effect of growing methods on fruit

as well as the methods of growing were different by a significant difference between them, where the plants raised on two stems produced 4.01 fruit/plant, while the plants that were grown on two stem gave 4.33 fruit/plant. When studying the melon plant, increasing the vegetative growth characteristics and the number of flowers in the plant and ratios, which leads to an increase in the number of fruits and then increase the value of each plant. (Henshel et al., 2010).

4.5. Average number of fruits 20/12/2016

Table 4.5. Average number of fruits.

Date : 20.12.2016		**Average number of fruits**		
Cultivars	**Average of cultivars**	**Effect of interaction**		**Growing Methods**
		two Stem 2S	one Stem 1S	
HV1	7.33 A	6.83 d	7.83 d	S1
HV2	1.0 C	1.0 a	1.0 a	3.31 B
HV3	3.82 B	4.99 b c	2.66 b	S2
HV4	4.04 B	6.33 c d	1.75 ab	4.78 A
General average	4.47	4.78	3.31	

LSD for growing methods = LSD 0.75

LSD for cultivars = LSD 1.52

LSD for Interaction = LSD 3.06

4.5.1. Effect of Interaction between cultivars and growing methods on fruit

The binary interaction between cultivars and methods of growing had a significant effect on the average number of fruits. The cultivar HV4 plants produced grown on the two stems had the highest rate of 6.33 fruit/plant. While the plants grown on one stem produced 1.75 fruit/plant. This is a clear indication of the increase in productivity of the unit area by increasing the plant density. In another study the best yield was obtained from top shoot pruning with two stems (8.30 kg/ m^2) followed by top shoot pruning with a single stem (6.92 kg/ m^2) and the control (6.93 kg/ m^2) Two stems increased total yield by 20 % compared with a single stem (Nilgün et al., 2000).

While the method of growing has a significant effect on the rate of the productivity of single plant, as the plants with growing on two stem recorded highest productivity of 4.359 kg, may be due to the superioty method of breeding on two stands, and multiplication of the number of the leaves in the plant, and thus increase the amount of carbohydrates synthesize in it and this leads to the emergence of more floral buds, and increase the number of fruits in the plant, and then increase the yield and this result is consistent with what was found in(Muhamad and Sigh, 2007) and (Shimmery and Saud, 2014). Also we find that the HV2 type and decreased the yield of fruits to the lowest degree where the rate of plant grown on two stems has given two fruit/plant and plants grown on one stem has given the rate of one fruit/plant. The interpretation seems that the variety has suffered from a large loss of fresh setting fruit. These fruits were formed in a distorted and yellow color and quickly fell from the plant significantly. This is due to a defect in the pollination process, noting that this species was the beginning of the opening of flowers before the rest of the varieties by one week.

Cucurbits (such as squash, cucumber. and cantaloupe) need both male and female flowers to be open at the same time. Some recent varieties have all or mostly female flowers. Under these conditions 10-15 percent of plants of another variety, with a higher percentage of male flowers in its normal flowering pattern, must be present and open to obtain adequate pollination. In some situations, stress to the growing plants of pre-dominantly female flowering varieties (particularly pickling cucumber) may cause female flowers to revert to male before completion of development. If no pollination occurs, the female flowers drop off or become misshapen. Sometimes small fruit will form but will be yellow and dry. This is also a symptom of poor pollination. (Anonymous, 2012).

4.5.2. Effect of growing methods on fruit

The growing method had significant effects on the rate of plant yield, where the plants recorded on two stems with the highest yield of 4.78 fruit/plant, while the plants grown on one stem recorded the lowest rate 3.31 fruit/plant, due to the density of vegetative growth and the subsequent increase in production from the unit area consistent with.When studying the melon plant, increasing the vegetative growth characteristics and the number of flowers in the plant and ratios, which leads to an increase in the number of fruits and then increase the value of each plant, (Henshel et al., 2010).

4.6. Average Plant height 10-11-2016

Table 4.6. Average plant height.

Date : 10.11.2016	**Average plant height (cm)**			
Cultivars	**Average of cultivars (cm)**	**Effect of interaction** two Stem 2S	one Stem 1S	**Growing Methods**
HV1	139 B	153 ab	124 ab	S1
HV2	165 AB	107 a	165 ab	171 A
HV3	204 A	208 bc	203 bc	S2
HV4	199 A	193 bc	205 bc	176 A
General average	176	165	174	

LSD for growing methods = LSD 0.19

LSD for cultivars = LSD 0.40

LSD for Interaction = LSD 0.83

There was no significant differences for the growing methods, and no interaction differences between varieties and methods of growing.

4.6.1. Effect of cultivars on plant height

It is noted the existence of differences in the height of plants, especially between the classes HV1 which has given the average length of 1.39 cm compared to the variety HV3 which gave the average height of 2.04 cm. And HV4 had 199 cm.

4.7. Average plant height 20-12-2016

Table 4.7. Average plant height.

Date : 20.12.2016	**Average plant height (cm)**			
Cultivars	**Average Of cultivars (cm)**	**Effect of interaction**		**Growing methods**
		two Stem 2S	one Stem 1S	
HV1	255 A	271 a	239 d	S1
HV2	172 D	181 b	164 j	222 B
HV3	251 B	269 f	233 e	S2
HV4	236 C	220 c	252 j	235 A
General average	228	235	222	

LSD for growing methods = LSD 0.09

LSD for cultivars = LSD 0.03

LSD for Interaction = LSD 0.036

4.7.1. Effect of Interaction between cultivars and growing methods on heights

The cultivars and methods of growing had a significant effect on the height of the plants. The class HV1 grown on two stem were superior and gave the height value of 271 cm/plant, while the plants grown on one stem gave 239 cm/plant and the explanation for that The increase in plant density in plants grown on two stems increased the proportion of dry matter, which means that the increase in chlorophyll (photosynthesis), which stimulates the plant to absorb water and nutrients from the soil, which in turn helps increase the length of the plant more.

Based on the results to another study, DI levels had a significant effect on height, number leaves per plant, leaf area, shoots wet and dry weight, sugar content and yield. Increasing irrigation levels increased height, number of leaves per plant, leaf area, wet dry weight, chlorophyll index and yield (Mirabad et al., 2013).

4.7.2. Effect of growing methods on height

It is clear that the method of growing had a significant effect on the plant height rate, where the plants on the two stems scored the highest rate of 235 cm/plant, while the plants recorded on one stem scored the rate of 222 cm/plant.

4.7.3. Effect of cultivars on height

It is noted the existence of differences in the height of plants, especially between the classes HV1 which had given height the average height of 255 cm compared to the cultivar HV2 which gave the average height of 172 cm.

4.8. Weight of fruits

Table 4.8. Average weight of fruits.

Cultivars	Average of cultivars (kg)	Average weight of fruits (kg)		
		Effect of interaction		Growing methods
		two Stem 2S	one Stem 1S	
HV1	0.840 B	0.890 a	0.800 a	S1
HV2	0.840 B	0.900 a	0.780 a	0.822 B
HV3	1.020 A	1.090 a	0.960 a	S2
HV4	0.760 B	0.780 a	0.750 a	0.915 A
General average	0.865	0.915	0.822	

LSD for growing methods = LSD 0.04

LSD for cultivars = LSD 0.08

LSD for Interaction = LSD 0.19

4.8.1. Effect of Interaction between cultivars and growing methods on fruit weight

The interaction between the cultivars and the growing method had a significant effect on the weight of the fruit. The plants on two stems produced the highest rate of 0.915 kg/fruit, while the plants grown on one stem gave an average rate of 0.822 kg/fruit. In view of the weight of the fruits, we find that the weight of the fruits of the plants grown on two stems and with reference to the rate of the number of fruits also we find that the number of fruits produced by growing on two stems was more. Thus, we have superiority of the plants bred on two stems in the number of their fruits and their weight and it has agreed with the previous study. In terms of fruit qualities, the effect of pruning treatments were found to be statistically significant on cumulative yield, average of fruit weight, fruit scale and height, cavity scale and height, fruit firmness and total soluble solid content TSSC (Temirkaynak et al., 2005). While the method of breeding has a significant effect on the trait of length of fruit, where the plants growing on one stem recorded the highest rate of fruit length of 14.48 cm. The reason for the superiority of plants reared on one stem is in the rate of the fruit length on its getting on more quantities of nutrients compared with plants growing on two stem (Shimmery and Saud, 2014).Fruit width, length, and SSC were unaffected by plant density at either the early or to harvests (Juan et al., 2007).

4.8.2. Effect of growing methods on fruit weight

While the growing method had a significant effect on the weight of the fruit, where the plants grow on two stems scored the highest weight of the fruit reaching 0.915 kg/fruit, while the plants bred on one stem gave the fruit weight of amounting to 0.820 kg/fruit. The reason is referred to the increase in plant density, which led to increase in the total vegetative and thus increase of the flowers and fruits in terms of the proportion of the number of fruits the researcher pointed out that.

(Miha et al., 2000) found that the average weight of a single fruit had the highest direct effect (1.699) in the production of cantaloupe followed by the number of fruits on the plant (0.932) as a result of the (JIA . 2004) study on the path factor in ten characteristics of ten cultivars of gourd . The results of the study productivity was affected mainly and direct (Mari, 2016).

The results of the study showed that the production class was affected directly and directly by both the number of fruits on the plant and the rate of weight of the fruit respectively) (Abdalmohsen, 2016).

4.8.3. Effect of cultivars on fruit weight

There were significant differences among cultivars in terms of fruit weight and it has agreed with the study. Among cultivars when they were not pruned, however, there were differences among cultivars when plants were pruned or temperatures were below 20ºC. Average fruit weight was greater than 1.20 kg when plants were not pruned and less than 0.80 kg when

Temperatures were below 20ºC (Nicole et al., 2001).

Soleima et al (2009) have reached in there study of 15 varieties of cucumber to a strong and significant relation (932 = 1) between the trait of productivity and number of fruits, was a mean and significant (0.332 = 1) with stand length characteristic, while it was positive and week with the characteristic of length and diameter of fruits (Mari, 2016).

4.9. Extent Response of plants to control 1-12-2016

Chemical and biological control the plants were infected with various diseases during their growth stages (manna, spider-fruit fly, bacillus, hippocampus, green worm). The pesticides were given at different stages of plant growth and according to the recommended dose, but some varieties were limited in response to spraying with chemical pesticides through evaluating its effectiveness after spraying. The biological control system was also used for diseases using (Antario) bacteria in the form of 20 g/20 liter dissolved powder. It was added by spraying to combat some diseases spread among the plants, including manna and green worm.

A significant response was observed in all cultivated varieties, where diseases were eradicated, including green worm and manna. The use of biological fight led to reduction of chemical pesticides and their negative impact, especially if the guidelines for use are not followed. It was also found that these components have a negative impact on the process of pollination and what it causes during the spraying of bee killing, which is one of the most important factors for the completion of the pollination process. This has been consistent

It has been controlled by a percentage of 100% control is required, such as to control disease vectors Greenhouse pests for which biological controls have been developed and are commercially available include the greenhouse whitefly, spider mites, thrips, and aphids (Gavloski et al., 2012).

4.10. Average thickness of pulp

Table 4.9. Average thickness of pulp.

Cultivars	**Average of cultivars**	**Average thickness of pulp(Cm) effect of interaction**		**Growing methods**
		two Stem 2S	one Stem 1S	
HV1	2.32 C	2.44	2.21	S1
HV2	2.87 A	2.95	2.80	2.54 A
HV3	2.60 B	2.50	2.70	S2
HV4	2.33 C	2.21	2.46	2.52 A
General average	2.53	2.52	2.54	

LSD for growing methods = LSD 0.04

LSD for cultivars = LSD 0.02

LSD for Interaction = LSD 0.06

There were no significant differences in pulp thickness in terms of overlap cultivars and methods of growing.

There were also no significant differences in terms of *rearing* methods. The previous study has agreed with there is fruits width, length, and SSC were unaffected by plant density at either the early or total harvests (Juan et al., 2007).

4.10.1. Effect of cultivars on thickness of pulp

In terms of cultivars, the comparison of cantaloupe varieties has a significant effect on the thickness of the pulp due to the genetic differences between the varieties. HV2 give the heights value 2.88 cm

4.11. Average the Stem thickness 15-12-2016

Table 4.10. Stem thickness.

Date : 15.12.2016	
Cultivars	**Average Stalk thickness**
	Effect of Cultivars on stalk thickens (mm)
HV1	9.74
HV2	9.65
HV3	11.57
HV4	10.38

The overlapping between the cultivars and growing methods had no significant effect on stem thickness.

4.11.1. Effect of cultivars stem thickness

In the comparison of varieties, there was a significant effect on the thickness of the stem, where the HV3 class has recorded the highest value at 11.57 mm/plant while the HV2 type was 9.65 mm/plant. This is due to the differences in genetic factors between the cultivars.

4.12. Dry matter ratio

Table 4.11. Dry matter ratio.

Cultivars	Dry matter ratio (%) Effect of interaction	
	two Stem 2S	one Stem 1S
HV1	15.36	13.14
HV2	13.39	13.0
HV3	14.48	13.38
HV4	16.09	13.7
General average	**%14. 83**	**%13.30**

The percentage of dry matter in the plants was calculated for each of the cultivars as stated below. Each plant was randomly selected from all replicates and then the whole plant weight was measured as wet weight. And then they were put in an oven at 70 ° C for 24 hours and then the plant was weighed where the value represented the dry weight and then carried out a calculation of which has reached the percentage of dry matter. When the results were extracted, the differences in some varieties were clearly found between the plants grown on one stem and the plants grown on two stems. The results of the table (4.12.) showed that the plants grown on two stems were in the ratio of dry matter, where the plants grown on two stems recorded the highest percentage of 14.83%, while the percentage of dry matter of the plants grown on one stem was 13.30%. Through this disparity and differences between the ratios of dry matter and the method of breeding of influence of the dry matter rates, we conclude that the plant density has effective And direct role in increasing the percentage of dry matter where the more vegetative total density increases in terms of increase of leaves and branches, this leads to an increase of photosynthesis i.e. increase chlorophyll which in turn reflects the plant's ability to absorb nutrients and water from the soil. This has been mentioned in a previous study. If a crop is grown at a range of plant densities, and all the plants are

Harvested at one time, it is generally supposed that the total dry matter yield per unit area will increase with increasing density (El-Sayed et al., 2011).

4.13. Cracking of fruits

Some fruits have been exposed to cracking phenomenon, where the fruit of the newly grown setting fruit starts in growth and increase in size until it reaches the stage of maturity and then start automatically cracking. The reason after that.

The sensitivity of the fruits at that stage to the irrigation process, especially that this phenomenon was prominent and noticeable in HV3 category and very few in HV2 category. It has agreed with the study high sugar levels leads to increased potential of osmosis in the fruit and thus it is preferred the greatest amount of water absorption and the result is that the Fruit cells are blooming and they cause elimination of the fruit. In order to reduce this problem it is advised to have management of water suitable for irrigation and immediate harvesting). High sugar levels result in a higher osmotic potential in the fruit, thus favoring greater Uptake of water. The result is that fruit cells swell causing the fruit to crack. For minimizing this problem is likely to be good water management and prompt harvesting of mature fruit (Mayaguez and Rico, 2011).

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EXTENDED TURKISH SUMMARY

GENİŞLETİLMİŞ TÜRKÇE ÖZETİ

Tezin Adı: KAVUNDA ÇEŞİT VE BUDAMANIN ETKİSİ İNCELENMESİ

Yüksek Lisans Öğrencisi: Abdulwahab Omran Mohamed AMMAR
Danışman: Prof. Dr. Ahmet KAZANKAYA

Kavun ekonomik olarak en önemli ürünlerden birisidir ve dünyada yaygın olarak yetiştirilmektedir. Genel olarak, İran'dan Hindistan ve Afrika'ya oradanda 1890'lı yıllarda Avrupaya geçmiş ve Amerika Birleşik Devletlerinde ticari bir ürün olmuştur. Kavun üretimi 2009 yılında (53 milyon ton). En önemli üretici ülke dünya üretiminin %52'sini karşılayan Çin'dir. Çin'i surasıyla, Büyüklüğü, şekli ve meyve tadının yanı sıra Türkiye, İran, ABD ve İspanya takip eder. Çalışmanın amacı farklı budalama farklı *kavun* çeşitlerindeki üretim ve meyve kalitesine etkilerinin anlaşılmasıdır. Arazi denemesi 2016-2017 sezonu boyunca Tripolideki tarımsal teknoloji merkezinde kurulmuştur. Bu deneme *kavun* bitkisinin çeşitleri arasındaki verim karşılaştırmaslarını, 4 farklı *kavun* çeşidinde (HV1 Zagrit, HV2 Maziane, HV3 Kavun Ananas 1 ve HV4 Ananas 2) 12 farklı uygulamayla bir ve iki ana gövde üretim yöntemleriyle incelemiştir. Deneme bölünmüş bloklar RCBD sistemine göre tasarlanmıştır. Sonuçlar 0.05 güven aralığında LSD testiyle saptanmıştır. İki kök yetiştilen *kavunda* meyve sayısı 4.78 meyve/bitki olarak elde edilirken, tek ana gövdeli üretimde 3.31 meyve/bitki olarak elde edilmiştir.

Ayrıca, yetiştirme yönteminin meyvenin ağırlığı üzerinde önemli bir etkisi olduğu ve iki ana gövde üzerinde yetiştirilen bitkilerin meyvelerinin en yüksek ağırlığının 0.910 kg / meyve olduğu, tek ana gövde üzerinde yetiştirilen bitkilerde ise meyve ağırlığının 0.820 kg / meyve olduğu belirlenmiştir.

Giriş:

Kavun, ekonomik açıdan en önemli bitkilerden biridir ve dünyada yaygın olarak yetiştirilir. Muhtemelen İran'dan Hindistan'a, Afrika sonradan 1890'lı yıllarda Avrupa'ya girdi ve Birleşik Devletler'deki ticari bitkilerden biri oldu. 2009 yılında kavun üretimi 53 milyon ton olarak gerçekleşti. En önemli üretilen ülkeler Çin, dünyanın% 52'sini oluşturan Çin, İran, Amerika Birleşik Devletleri ve İspanya izliyor.

Malzemeler ve yöntemler

Yer:

Deney, Trablus Tarım Teknolojileri Merkezi'nde yapıldı ve coğrafi olarak Boylam N "58.4 49 32 Latitude E "27.2 06 13 yükseklik 120 feet

Toprak sterilizasyonu

Buhar ile sterilizasyon yöntemi, zemin yüzeyinde uzanan delikli borular aracılığıyla kullanıldı

Sulama şebekesinin tasarımı.

30 * 9'luk bir alan üzerinde sulama şebekesinin kurulum alanına yerleştirilmesi

Damlatıcılar arasındaki mesafe 50 cm'dir Yan borular 32 mm çaplı ana borulara bağlanmış,

Ekim sonrasında servis işlemleri

yetiştirme

Kültür bitkisi 17/9/2016 tarihinde,

Boş alanın yetiştirilmesi

Boş alanın yetiştirilmesi ve 23.09.2016 tarihinde olan "yama" adı verilen süreç

SONUÇLAR VE TARTIŞMA

Kadın çiçekleri 20/10/2016

Yetiştirme yöntemlerinin etkisi

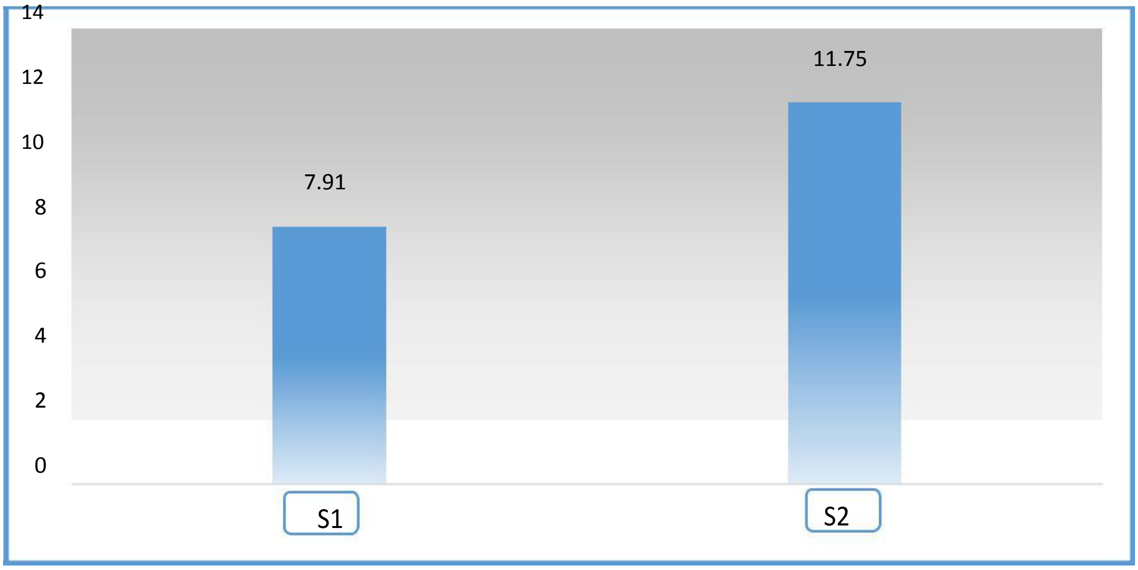
Okuma METHODES bitkiler bitkiler için meyve sayısında önemli farklıydı grown on two ise 19.8 Çiçek / bitki ulaşan dişi çiçeklerin oranının en yüksek, üretilen saplar plants grown tek gövde üzerinde 15.2 çiçek / bitki üretilip

Şekil 3.12.1.2. Dişi çiçekler üzerinde yetiştirme yöntemlerinin etkisi.

Meyvelerin Genel Toplamı 5-11-2016

Yetiştirme yöntemlerinin etkisi

Yetiştirme yöntemleri meyve verme hızında belirgin olarak farklıydı, burada yetiştirilen İki kök üzerindeki bitkiler, en yüksek doğurganlık oranını 11.75 ayarlama meyve / bitki kaydederken Bir kökteki bitkiler ortalama 7.91 meyve / bitki sağladı

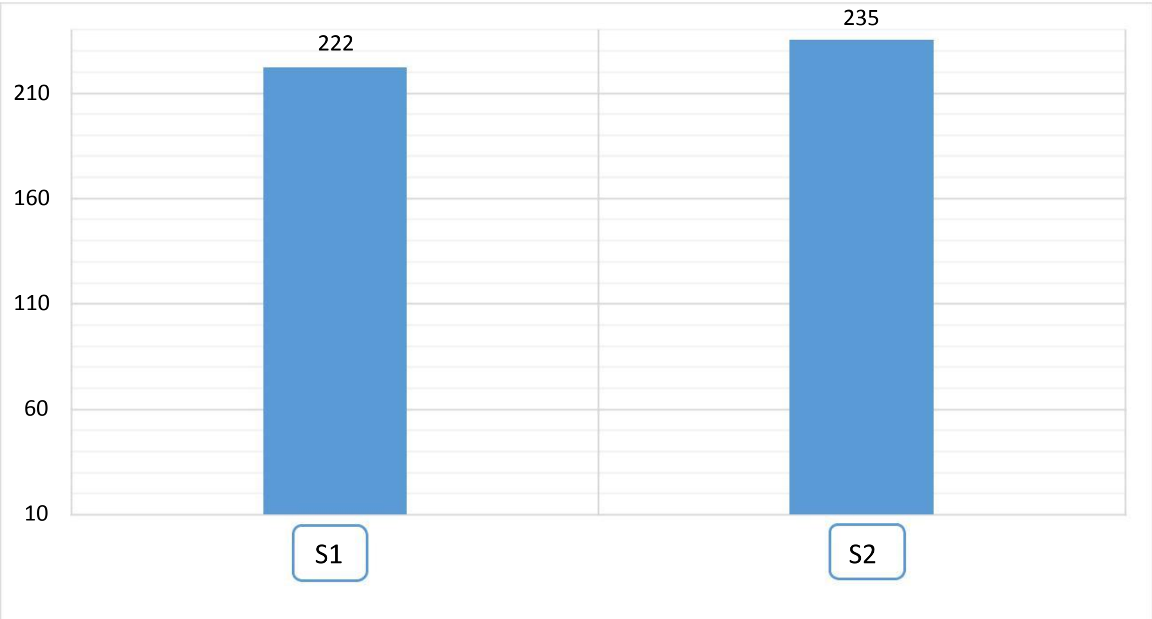


Şekil 3.12.3.2. Yetiştirme yöntemlerinin meyvelerin toplamına etkisi.

Ortalama bitki uzunluğu 20-12-2016

Yetiştirme yöntemlerinin etkisi

Yetiştirme yönteminin, bitki boyu oranı üzerinde önemli bir etkisi olduğu açıktır Iki kök üzerindeki bitkiler 2.35 cm / bitki en yüksek oranını atarken bitkiler Bir kök üzerinde kaydedilen 2.22 cm / bitki oranı atıldı



Şekil 3.12.7.2. Yetiştirme yöntemlerinin bitki boyuna etkisi.

CURRICULUM VITAE

Abdulwahab Omran Mohamed AMMAR was born in Tripoli –North Libya in 1978. He completed primary and secondary school in Tripoli Center. He was graduated in Horticulture Department, Higher Institute of Agricultural Sciences in 2008. He was registered for Master of Horticultural Science Department, Yüzüncü Yıl University, Van-Turkey in 2015.