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EFFECT OF SOME DIFFERENT ROOTSTOCKS ON YIELD AND ITS COMPONENTS OF CUCUMBER.

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ABSTRACT

In this study, the effect of different rootstocks on cucumber survivals %, plant growth, fruit, yield and quality were studied by comparing grafted plants with non-grafted ones under plastic house during the winter seasons of ٢٠١٠/٢٠١١ and ٢٠١١/٢٠١٢, The cucumber (*Cucumis sativas* L,) c.v Balqis F١, was grafted onto ٦٠٠١ (*C.shantosa*), Strong (*C.mixita*), Gumbo (*C.maxima*), Bottle gourd (*Legenaria sosiraria*), Vegetable sponge (*Luffa cylindrica*) and pumpkin (*C.moschata*).
C.V Balqis F١ Non-grafted plants were used as control. Grafting significantly affected survival % , stem length ,stem diameter, internodes length , leaf area , plant fresh and dry weight.
Control plants had low survival %, short stem length, internodes length and low leaf area, plant fresh and dry weights in both seasons.

The highest number of flower/node, per plant and fruit setting % values were obtained from plants grafted onto ٦٠٠١ followed by those grafted onto strong. The highest early yield and total yield per plant as a number and weight were obtained from plants grafted onto ٦٠٠١ followed by the grafted onto strong. Grafting cucumber onto ٦٠٠١ significantly increased fruit weight, length and shape index.
Keywords: cucumber, rootstock, grafting, plant growth, yield, quality.

INTODUCTION

Cucumber is a favorite vegetable in Egypt. It used as a salad and pickles. It occupied ١١٩٠٢ and ١١٨٠٠ feddans in planting under plastic houses and low tunnels.

Within the last years, cucumber has become the main crop in plastic houses in Egypt, due to the higher production and monetary returns because of its short cycle and high economic value in off-season harvest. Cucumber is a warm season vegetable, while plants sown during the cold months (October and November) developed very slowly and leaves were chlorotic (Benzoini *et al* ١٩٩١).

There are some problems, which may face cucumber production in plastic houses such as soil borne diseases, insufficient organic matter content in soil, excessive use of mineral fertilizers and chemicals, soil salinity and excessive low temperature in winter even under plastic cover. Using different rootstocks of grafted cucumber can solve some of these problems.

Grafting has many benefits to plants grown in plastic houses, such as increasing tolerance to low temperature (Liebig, ١٩٨٤), tolerance to soil salinity (Matsubara, ١٩٨٩), and resistance to soil borne diseases (Oda, ١٩٩٥).

Eguchi and Koutaki (١٩٨٦) reported that cucumber plants grafted onto *C.ficifolia* could be used for widespread cucumber production, as the grafted plants were more vigorous than the non grafted ones.

Weng *et al*. (١٩٩٣) found that cucumber grafted onto *C.ficifolia*, increased leaf area by ٤٤-٧٠ % and chlorophyll content by ٣,٦-١١,٧ %. Moreover, El-Aidy *et al*. (١٩٩٦) reported that grafted cucumber onto *C.ficifolia* rootstocks increased the net assimilation rate, stem length, number of leaves, leaf area and plant fresh and dry weights, compared with the non-grafted plants. They indicated that grafted plants produced high number of female flowers per plant compared to the non-grafted ones. Abde-Alla(٢٠٠٢) studied the effect of soil polarization, fertilizer sort and grafting on growth and productivity of cucumber crop he mentioned that grafted plants onto fig leaf gourd had significantly the highest number of female flowers, followed by grafted plants onto bottle gourd while the lowest values were obtained from control (non-grafted cucumber) in both seasons.

Grafting leads to early fruit production. This was stated by many investigators. Nijs (١٩٨٠), (١٩٨٣) and (١٩٨٤), Weng *et al*. (١٩٩٣) and El-Aidy *et al*. (١٩٩٦).

In a grafting trial, Tsambanakis (١٩٨٤) grafted four cultivars of cucumber onto *C.ficifolia*. Data shown that yields of the grafted cultivars tested (Pepionex ٦٩, Brunex, Titon and Renova) were ٢٢, ٢٠, ٢٩, and ١٧ kg/m^{٢} respectively, and the corresponding yield of the non-grafted plants were ١٥, ١٣, ١٥ and ١١ kg/m^{٢}. Also, fruit weight, length and growth were increased by grafting. Similar results were obtained by (weng *et al*, ١٩٩٣, Vissor and Nijs, ١٩٨٧, El-Aidy *et al*, ١٩٩٦, Abd-Alla,٢٠٠٢, and Zhang et al, ٢٠٠٩)

In the present study, the influence of grafting on different rootstocks of cucumber plants growth, fruit yield and quality under plastic houses in North of Delta area, Egypt.

MATERIAL AND METHODS

An investigation of experiment using cucumber (*Cucumis sativus* L.),cv.Balqis hybrid plants, was conducted in a private farm at Talkha, Dakahlia Governorate, Egypt, under plastic house during the winter seasons of ٢٠١٠ / ٢٠١١ and ٢٠١١/٢٠١٢ to study the effect of different rootstocks on vegetative growth, flowering, yield and fruit quality of cucumber.

The experiment included ٧ treatments cucumber, cv. Balqis hybrid seedling was grafted onto different rootstocks. They could be illustrated as follows:

Cucumber seedling without grafting (control),Cucumber grafted onto ٦٠٠١, Cucumber grafted onto strong, Cucumber grafted onto Gumbo, Cucumber grafted onto bottle gourd , Cucumber grafted onto Pumpkin, and Cucumber grafted onto vegetable sponge.

The soil was clay loan (٤٥٪ clay, ١١,٥% sand, sillt ٤٠,٢٪, organic matter ١,٧٪ and PH ٧,٩) in the first season while in the second season (٤٦,٦٪clay, ١١٪ sand , ٤٠,٦٪ silt, organic matter ١,٩٪ and PH ٧,٨٥)
The characters of rootstocks used are presented in Table (١)

Table ١ : Rootstocks characters:-

Rootstock	Roots	Vegetative growth	Resistance					
			Cold	Heat	Fusarum	Verticillum	Pethum	Salinity
٦٠٠١ (*C.shantosa*)	Strong	Vigurus	+++	+++	+++	++	+	++
Strong *(C.mixita)*	Strong	Vigurus	+++	+++	+++	++	+	++
Gumbo *(C.maxima)*	Strong	Vigurus	+++	+++	+++	++	+	++
Vegetable Sponge *(Luffa cylindrica)*	Strong	High vigurus	++	+++	+++	+	+	+++
Pumpkin *(C.moschata)*	Very strong	Vigurus	+	+++	++	+	Unknown	+++
Bottle Guard *(Lagenoria sicoraria)*	Strong	Vigurus	++	++	++	+	Unknown	Unknown

+++ high resistance, ++ medium resistance, + limited resistance, - un-resistance

Grafting seedlings were transplanted under plastic house on both sides of ridges on November ١٠th (first season) and November ١٥th (second season) the ridges were ٦ meters in length and ١ meter in width. Plant spacing was ٤٠ cm i.e. plant density was about ٢،٥ plants per square meter.

Tongue approach grafting method was used according to Wittwer and Homma (١٩٧٩) and Yamakawa (١٩٨٢).

Data were recorded at ٣٠, ٦٠, ٩٠ and ١٥٠ days after transplanting for survival % while for other characters were recorded at ١٥٠ days from transplanting. Samples of ٥ plants were randomly chosen from each experimental unit to determine the following characters: stem length (cm), stem diameter(mm), internodes length (cm), leaf area ($m^٢$), plant fresh weight (g), plant dry weight %, number of flower/eye, No of flower/plant, fruit setting%, average fruit weight, fruit length (cm), fruit diameter (cm) and shape index.

Data of fruit yield included early and total yield. Early fruit yield was determined as a number and weight (kg) of fruits per plot. It was determined on base of yield of the first ٤ pickings. Total fruit yield was determined as number and weight (kg)/plant and per plot of all pickings.

The experiment included ٧ treatments which were randomly arranged using the complete randomized block design with ٣ replications. Data were tested by analysis of variance (Little and Hills, ١٩٧٢). Duncan's multiple range test (DMRT) was used for the comparisons among treatments means (Duncan, ١٩٥٥).

RESULT AND DISCUSION

The survival rates of plants grafted onto different rootstocks are presented in Table (٢). Data show that plants grafted onto ٦٠٠١ (*C.shantosa*) and strong (*C.maxita*) rootstock had, in general, the highest values at the different growth stages (٣٠،٦٠،٩٠ and ١٥٠ days after transplanting) compared with the other rootstocks. On the other hand, cucumber plants without

grafting (control) had the lowest values. The differences were significant at the both seasons and the different stages. The results there not strange because all rootstock resistance to main born disease in soil (Lee, ١٩٨٦).

Table ٢: Effect of grafting cucumber plants, onto different rootstocks on survival % of Plants at different stages in ٢٠١٠/٢٠١١ and ٢٠١١-٢٠١٢ seasons.

Rootstock	Survival at ٣٠ days		Survival at ٦٠ days		Survival at ٩٠ days		Survival at ١٥٠ days	
	١st	٢nd	١st	٢nd	١st	٢nd	١st	٢nd
Balqis , F١ *(Cucumis sativus L)*	٧١,٣٣ c	٧٠,٥٧e	٧١,٢٨c	٧٠,٠٠e	٧٠,١٠c	٦٩,٩٥e	٦٩,٩٧c	٦٩,٩٠e
٦٠٠١,F١ (*C.shantosa*)	٩٣,٦٧ a	٩٠,٠٠ a	٩٣,٦٠a	٨٩,٩٣a	٩٣,٥٢a	٨٩,٥٠a	٩٣,٢٠a	٨٩,٨٨a
Strong,F١ *(C.mixita)*	٨١,٣٣ b	٨٦,٦٧b	٨١,٠٠b	٨٦,٤٠b	٨١,٠٠b	٨٦,٣٥b	٨٠,٨٩b	٨٦,٢٠b
Gumbo,F١ *(C.maxima)*	٧٩,٣٣ b	٨٢,٣٣ c	٧٩,٣٣b	٨٢,٣١c	٧٩,٢١b	٨٢,٣٠c	٧٩,١٠b	٨٢,٢٨c
Vegetable Sponge *(Luffa cylindrica)*	٧٩,٣٣ b	٧٦,٠٠ d	٧٩,٢١b	٧٦,٠٠d	٧٩,١٢b	٧٥,٨٩d	٧٩,٠٠b	٧٥,٨٣d
Pumpkin *(C.moschata)*	٧٨,٦٧ b	٧٥,٠٠ d	٧٨,٥٣b	٧٤,٨١d	٧٨,٤١b	٧٤,٧٣d	٧٨,٣٢b	٧٤,٦٨d
Bottle Guard*(Lagenoria sicoraria)*	٧٢,٠٠ c	٧١,٣٣ e	٧٢,٠٠c	٧١,٠٠e	٦٩,٨١c	٧١,٠٠e	٦٩,٧٠c	٧٠,٨٠e

Means separation within columns and seasons by Dun cem's multiple rang test, P<٠,٠٥

The growth performance of grafted plants was compared to non-grafted control plants. The results showed that stem length (cm), stem diameter (cm), internodes length (cm), leaf area ($m^{٢}$), plant fresh weight (g) and plant dry weight were significantly inflounced by grafting Tables ٣،٤). Stem length of ٦٠٠١,F١ (*C.shantosa*) at ٢٦٤,١٠ cm and ٢٧٢,١٣ in first and second season was significantly higher than other grafted and control plants. The main stem diameter (mm) and internodes length were also affected by grafting . Control plants had the shortest main stem diameter (mm) and internodes length (cm) with ١٥,٦٣, ١٥,٥٣ and ٧,٩٠, ٨٧٦ in both seasons respectively when compared to the grafted plants.

It is clear the above-mentioned data that plants grafted onto almost rootstocks in two seasons had higher values for all vegetative growth parameters compared to control. This may be due to that grafted plants can absorb more water and nutrients than non-grafted plants (Masuda and Gomi, ١٩٨٤).Also, grafted plants can grow better than non-grafted plants under high soil salinity (Matsubara, ١٩٨٩) lowest temperature (Nijs *et al.*١٩٨٣) or soil borne disease existence (Lee, ١٩٨٦). Many workers studied the beneficial effect of grafting cucumber onto *C.Ficifolia* on vegetative growth (Eguchi and Koutaki., (١٩٨٦), Kim and Lee, (١٩٨٩), El-Aidy *et al*., (١٩٩٦), Zhang *et al*., (٢٠٠٩), and Lee ,(١٩٩٤) studied the effect of different rootstocks on plant growth of cucumber and melon, Significantly different resulted were obtained in plants growth depending on various rootstocks.

Flowering characteristics of grafted and non-grafted plants are presented in Table ٥, show that, grafted plants onto ٦٠٠١ (*C.shantosa)* had significantly the highest number of flower per node, number of flowers per plant and fruit setting %, followed by grafted plants onto Strong (*C.maxima*) while the lowest values were obtained from control (non-grafted) in the both seasons.

The obtained results could be interpreted as the rootstock may surpass cucumber in size of the root system, than a significant amount of xylem sap could be translocated by the rootstock, it is known to contain fairly high

concentration of mineral, organic substances and plant hormones such as cytokines and gibberellins which many control in number of flowers per node (Masuda and Gomi, ١٩٨٢ and Lee, ١٩٩٤). Similar resulted were reported by Abde-Alla (٢٠٠٢) studied the effect of grafting plants onto Fig leaf gourd had significantly the highest number of female flower, followed by grafted onto Bottle gourd while the lowest values were obtained from control (non-grafted) in both seasons.

From the other hand, grafting onto different rootstocks increased vegetative growth parameter at different growth stages (Tables ٣ and ٤) and that may affect flowering positively.

Table ٣: Effect of grafting cucumber plant, onto different rootstocks on vegetative growth in ٢٠١٠/٢٠١١ and ٢٠١١-٢٠١٢ seasons.

Rootstock	Stem length (cm)		Stem diameter (mm)		Internodes height (cm)	
	١st	٢nd	١st	٢nd	١st	٢nd
Balqis , F١ *(Cucumis sativus L)*	٢٣٩,٣٣ f	٢٤٠,٨٣ f	١٥,٦٣ e	١٥,٥٣ d	٧,٩٠ c	٨,٦٧ b
٦٠٠١,F١ (*C.shantosa*)	٢٦٤,١٠ a	٢٧٢,١٣ a	١٧,٥٧ a	١٧,٣٧ a	١٢,٣٣ a	١١,٠٠ a
Strong,F١ *(C.mixita)*	٢٦٠,٣٣ b	٢٦٨,٨٧ b	١٧,٣٠ ab	١٧,٢٧ a	١١,٦٧ ab	١٠,١٠ ab
Gumbo,F١ *(C.maxima)*	٢٦٠,٠٣ b	٢٦١,٨٦ c	١٧,٠٣ b	١٧.١٧ ab	١٠,٨٣ ab	١٠,٠٠ ab
Vegetable Sponge *(Lufa cylindrica)*	٢٥٧,٥٠c	٢٥٨,٣٠d	١٦,٤٣ c	١٦,٩٣ b	١٠,٥٠ a	٩,٤٣ ab
Pumpkin *(C.moschata)*	٢٥٠,٥٠c	٢٥٦,٥٧d	١٦,٠٧ d	١٦,٣٧ c	١٠,٠٠ b	٩,٣٣ ab
Bottle Guard*(Lagenoria sicoraria)*	٢٤٨,٨٣ e	٢٥٢,٩٧ e	١٥,٦٣ e	١٦,٢٠ c	٩,٦٧ bc	٨,٩٧ b

Means separation within columns and seasons by DMRT test, P<٠,٠٥

Table ٤ : Effect of grafting cucumber plant, onto different rootstocks on vegetative growth in ٢٠١٠/٢٠١١ and ٢٠١١/٢٠١٢

Rootstock	Leaf area (m^2)		Plant fresh weight (g)		Plant dry matter (%)	
	١st	٢nd	١st	٢nd	١st	٢nd
Balqis , F١ *(Cucumis sativus L)*	٠,١٥٢ f	٠,١٦٤ f	٧٠,٠٣ ef	٨٠,٥٠ a	١٤,٦٧ f	١٦,٣٠ e
٦٠٠١,F١ (*C.shantosa*)	٠,٢٢٢ a	٠,٢٢٩ a	٩١,٩٣ a	٨٦,٨٧ b	١٩,٥٠ a	٢١,٨٠ a
Strong,F١ *(C.mixita)*	٠,٢٠٥ b	٠,٢١٥ b	٨٦,١٠ b	٨٥,٧٧ bc	١٨,٠٧ b	٢١,٠٣ b
Gumbo,F١ *(C.maxima)*	٠,٢٠٥ b	٠,٢١٥ b	٨١-٦٣ c	٨٥,٣٣ bc	١٧,٩٣ b	١٩٤٧ c
Vegetable Sponge *(Lufa cylindrica)*	٠,١٨٩ cd	٠,١٩٩ d	٧٩,٧٧ cd	٨٥,٣٠ bc	١٦,٩٠ d	١٩,٥٣ c
Pumpkin *(C.moschata)*	٠,١٨٦ d	٠,١٩٥ d	٧٧,٧٣ de	٨٤,٩٣ c	١٦,٢٠ d	١٨,٣٣ d
Bottle Guard*(Lagenoria sicoraria)*	٠,١٧٤ e	٠,١٨٩ e	٧٣,٥٧ f	٨٣,٧٣ d	١٥,٠٧ e	١٦,٧٧ e

Means separation within columns and seasons by DMRT test, P<٠,٠٥

Fruit yield and quality characteristics of grafted and non-grafted plants in both seasons are presented in Tables (٦, ٧) Early yield as a number and weight and total yield as a number weight per plot (kg) in both seasons were significantly, affected by grafting onto different rootstocks. The highest values were obtained from grafted plants onto ٦٠٠١ (*C.shantosa*) followed those grafted onto Strong (*C.maxima*). On the other hand, the lowest values were obtained from control (non-grafted plants).

The increase in early yield and total yield as a number and weight per plot in both seasons in grafted onto ٦٠٠١ (*C.shantosa*) is mainly due to the consequent higher vegetative growth (Table ٣ and ٤), number of flowers per

eye, per plant and high fruit setting % (Table ٥).), Also the increase of net assimilation rate (NAR) values which was a limiting factor to the yield (Watson,١٩٥٨). From another hand, root death in cucumber at the onset of harvesting caused by competition for assimilates between fruits and root could be prevented by grafting cucumber onto Fig leaf gourd (Vlugt, ١٩٨٦).Similar results were obtained by Lee (١٩٨٦) when using cucumber plants grafted onto shantosaNo.١ (*C.maxima* x *C.moschata*) under low temperature conditions. Also Abde-Alla (٢٠٠٢) reported that grafted cucumber plants significantly increased total fruit yield per $m^{٢}$ (as weight and number of fruits quality), Characteristics of grafted and non-grafted plants are presented in Table ٧. Average fruit weight (g) and fruit length (cm) show that grafted plants onto ٦٠٠١ (*C.shantosa*) had the highest values followed by those grafted onto Strong (*C.maxita*) while the lowest values were obtained from non-grafted plants. The differences were significant in both seasons. Fruit diameter and shape index were not significantly affected by all different rootstock in both seasons. The enhancement in average weight and length with different rootstocks may be due to the differences in the effectiveness of their root systems, or in the interaction between root and shoot (Nijs, ١٩٨٠ and Zijilstra *et al*., ١٩٩٤), hence, that may lead to variable ability of mineral uptake.

Similar results were obtained by El-Aidy *et al*., (١٩٩٦) and Abde-Alla (٢٠٠٢).

Table ٥: : Effect of grafting cucumber plants, onto different rootstocks on flowering and fruit setting% at ١٥٠ days from transplanting in ٢٠١٠/٢٠١١ and ٢٠١١/٢٠١٢ season.

Rootstock	No. of flower/eye		No. of flower/plant		Fruit setting %	
	١st	٢nd	١st	٢nd	١st	٢nd
Balqis , F١ *(Cucumis sativus L)*	٢,٠٠ c	٢,٣٣ b	٦٠,٥٨ d	٦٤,٧٣ d	٥٢,٦٧ d	٥١,٣٣ e
٦٠٠١,F١ (*C.shantosa*)	٥,٦٧ a	٦,٣٣ a	١٢١. ٤٥ a	١٥٦,٦٠ a	٦٨,٠٠ a	٦٠,٣٣ a
Strong,F١ *(C.mixita)*	٥,٠٠ ab	٥,٦٧ a	١٠٩,٦٥ a	١٥٠,٨٢ b	٦٤,٠٠ b	٦٥,٦٧ b
Gumbo,F١ *(C.maxima)*	٤,٣٣ b	٣,٦٧ b	١٠٣,٩٦ b	٩٥,٩٣ bc	٥٨,٣٣ c	٦٠,٠٠ c
Vegetable Sponge *(Lufa cylindrica)*	٢,٦٧ c	٣,٣٣ b	٦٥,٤٧ bc	١٠٠,٧٣ cd	٥٨,٣٣ c	٥٩,٣٣ c
Pumpkin *(C.moschata)*	٢,٣٣ c	٣,٣٣ b	٥٨,٣٧ c	٩١,٥٨ d	٥٧,٠٠ c	٥٧,٠٠ cd
Bottle Guard*(Lagenoria sicoraria)*	٢,٣٣ c	٣,٣٣ b	٥٩,٩٥ d	٩٣,٩١ cd	٥٢,٦٧ d	٥٥,٦٧ d

Means separation within columns and seasons by DMRT test, P<٠,٠٥

Table ٦ : Effect of grafting cucumber plants, onto different rootstocks on early and total as a number and weight in ٢٠١٠/٢٠١١ and ٢٠١١/٢٠١٢ season.

Rootstock	Early yield				Total yield			
	Number/plot		Weight/plot (kg)		Number/plot		Weight/plot (kg)	
	١st	٢nd	١st	٢nd	١st	٢nd	١st	٢nd
Balqis , F١ *(Cucumis sativus L)*	١٩٠,٩٤f	١٨٧,١١e	١٥,٥٠d	١٥,٩٣c	٥٦٦,٦٧d	٥٦١,٣٣a	٤٦,٥٠d	٤٧,٨٠c
٦٠٠١,F١ (*C.shantosa*)	٣٤٣,٢٨e	٣٢٨,٨٩a	١٨,٦٢a	١٨,٥٨a	١٠٢١,٣٣a	٩٨٦,٦٧a	٥٥,٩٣a	٥٥,٧٧a
Strong,F١ *(C.mixita)*	٣١٢,٣٥b	٢٩٤,٦٦d	١٨,٣٣a	١٨,٣٣a	٩٣٠,٠٠a	٨٨٤,٠٠b	٥٥,١٠a	٥٥,٠٠a
Gumbo,F١ *(C.maxima)*	٢٤٣,٤٠d	٣٦٠,٧٨c	١٨,١٣a	١٧,٦٧a	٧٨٣,٠٠b	٧٨٢,٣٣c	٥٤,٤٠a	٥٣,١٠ab
Vegetable Sponge *(Lufa cylindrica)*	٢٣٤,٨٣e	٢٥١,١١b	١٧,٤٢b	١٦,٩٣bc	٧٢٥,٠٠bc	٧٥٣,٣٣c	٥٢,٣٠b	٥٠,٨٣bc
Pumpkin *(C.moschata)*	٢٦١,٨٦c	٢٢٩,٣٢e	١٦,٧٧c	١٦,٧٠bc	٦٩٩,٠٠bc	٦٨٨,٠٠d	٥٠,٤٠c	٤٩,٣٠c
Bottle Guard*(Lagenoria sicoraria)*	١٩١,٠٥f	١٩٥,٦٦e	١٦,٣٢c	١٦,٤٣c	٦٦٦,٠٠cd	٥٨٧,٠٠e	٤٨,٩٧c	٤٩,١٣ c

Means separation within columns and seasons by DMRT test, P<٠,٠٥

Table ٧ : Effect of grafting cucumber plants, onto different rootstocks on fruit characteristics in ٢٠١٠/٢٠١١ and ٢٠١١/٢٠١٢ season.

Rootstock	Average fruit weight (g)		Fruit length (cm)		Fruit diameter (cm)		Shape index	
	١st	٢nd	١st	٢nd	١st	٢nd	١st	٢nd
Balqis , F١ *(Cucumis sativus L)*	٥٤,٢٥g	٥٥,٧٥f	١٢,٩٠e	١٢,٧٠e	٣,٢٧a	٣,٢٠b	٣,٤٩c	٣,٥٢c
٦٠٠١,F١ (*C.shantosa*)	٨٧,١٧a	٨٧,٥٠a	١٨,١٧b	١٦,٦٣a	٣,٨٧a	٣,٨٣a	٤,٦٨a	٤,٨١a
Strong,F١ *(C.mixita)*	٨١,١٧b	٨١,٥٠b	١٦,٢٧a	١٥,٦٧ab	٣,٧٣a	٣,٦٧ab	٤,٥١a	٤,٥٥ab
Gumbo,F١ *(C.maxima)*	٧٨,٠٧c	٧٧,١٧c	١٤,٨٧b	١٤,٦٧bc	٣,٧٠a	٣,٦٧ab	٤,٣٤ab	٤,٣٩ab
Vegetable Sponge *(Lufa cylindrica)*	٧٤,٥٠d	٧٤,٠٠d	١٤,٢٠bc	١٤,٥٣c	٣,٥٠a	٣,٥٠ab	٤,١٣abc	٤,٣١abc
Pumpkin *(C.moschata)*	٦٢,٣٣e	٦٣,٠٠e	١٣,٨٧bcd	١٣,٩٧cd	٣,٤٣a	٣,٣٧ab	٣,٩٧abc	٤,٩٦bc
Bottle Guard*(Lagenoria sicoraria)*	٥٥,٧٥f	٥٧,٥٠f	١٣,٤٣cd	١٣,٤٢ab	٣,٤٣a	٣,٢٣b	٣,٧٣bc	٣,٨١bc

Means separation within columns and seasons by DMRT test, P<٠,٠٥

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تأثير بعض الأصول المختلفة علي المحصول ومكوناتة في الخيار

طـــه محمـــد الســـيد الجـــزار :محمـــود محمـــد زغلـــول : وليـــد محمـــد الســـعدي و عبدالغني هارون عبدالغني الـقـللي
كلية الزراعة – جامعة المنصورة

أجريت هذه الدراسة في مزرعة خاصة بطلخا- المنصورة - محافظة الدقهلية خلال الموسمين الزراعيين ٢٠١٠/٢٠١١ و٢٠١١/٢٠١٢ حيث تمت دراسة تأثير بعض الأصول المختلفة علي محصول الخيار من حيث النسبة المئوية لإستمرار النباتات في النمو من الزراعة وحتي نهاية المحصول والنمو الخضري والمحصول ومكوناتة مقارنة بالنباتات الغير مطعومة – معامل المقارنة - (الكنترول) وذلك تحت ظروف الصوب البلاستيكية وكان صنف الخيار المستخدم هو هجين بلقيس حيث طعم علي الأصول الأتية : ٦٠٠١، إسترونج ، جمبوا ، القرع العوام ، اللوف والقرع العسلي وإستخدم صنف هجين بلقيس بدون تطعيم كمعاملة مقارنة (كنترول). ولقد أوضحت النتائج تأثير معنوي علي نسبة نجاح النباتات طوال الموسم وطول الساق وقطر الساق وطول السلاميات والمساحة الورقية والوزن الطازج والجاف للنبات.

وقد أظهرت معاملة المقارنة (الكنترول) أقل القيم للقياسات السابقة في كلا الموسمين .

كما سجلت النتائج أعلي معدل لعدد الأزهار علي العين علي النبات وأعلي نسبة عقدعلي النباتات المطعومة علي أصل ٦٠٠١ أتبعه في هذا الصدد الخيار المطعوم علي أصل على أصل إسترونج.

كما أوضحت النتائج أعلي محصول مبكر ومحصول كلي للنبات كعدد ووزن حينما طعمت النباتات غلي أصل ٦٠٠١ وتلاه في ذلك الصدد الخيار المطعوم علي أصل إسترونج كما أظهر الخيار المطعوم علي أصل ٦٠٠١ زياده معنوية في وزن وطول ومعامل الشكل للثمار فى كلا الموسمين..