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THE EFFECT OF FARMYARD , AND FOLIAR SPRAY WITH DRY YEAST , VITAMIN C ,AND ETHREL ON SQUASH (*Cucurbita pepo*L.) PLANTS.

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ABSTRACT:

Two field experiments were conducted during season of 2017and 2018growth seasons at Vegetable Private Farm of Shiba Distrect ,Zagazig Sharkia, Governorate, Egypt to study the effect of some treatments (control , Farmyard manure ,at 4m^3/fad, dry yeast at 5 g/l, and vitamin C at200mg /l and ethrel concentrations (0 , 100 , 200 and 300ppm) , and their interactions on plant growth (Cucurbita pepo cv. Zuccini), flowering traits , fruits yield and quality of squash plant.

These treatments were laid out in split plot design arrangement with three replications. The treatments of organic manure, ascorbic acid were randomly distributed in main plots, while the ethrel concentration was randomly arranged in sub – plots .The summarized results obtained from this district study that, foliar spray of dry yeast at 5 g/l, being the most effective on vegetative growth characters , chemical composition of leaves, female flowers, fruit yield and quality of squash. Moreover, the concentration of 200 ppm ethrel, caused an increases in the all abovementioned characters of squash.

In addition, the interaction between dry yeast at 5 g/l and 200 ppm ethrel came to the same trend in most of characters of squash plants

***Conclusively,** obtained results indicate that foliar spray of dry yeast being the most effective on vegetative growth characters, chemical composition of leaves, number of female flowers, fruit yield and quality. Moreover, application ethrel at the concentration of 200 ppm caused an effective increase in all above mentioned parameters. In addition, the combination treatment between spraying dry yeast at the rate 5 g/l and ethrel at the concentration of 200 ppm came to the same effective trend in most studied characters of squash plants.*

Key word : Squash , Farmyard manure, Vit. C, ethrel, yeast, growth, yield.

INTRODUCTION

Squash plant *(Cucurbita pepo* L.) belongs to family cucurbitaceae, growth in summer season in tropical and subtropical conditions, it should be harvested when fruits are physiolocally immature. It is has various health and medicinal benefits to human race, it is very rich in nutrients and bioactive compounds, such as flavonoids, vitamins, amino acids, carbohydrates and minerals (specially potassium). As well as, it is low in calories and with large amount of fibers. It has various medicinal effects , such as comprising ant diabetic , antitumor, ant-imutagenic ,antibacterial and ant inflammation affects.

Squash plants have many responses to organic manure, yeast, ascorbic acid and ethiphon for increasing plant growth, fruit set, sex expression and yield. Organic manure improve the fertility of soil and release nutrients slowly, steadily and activates soil microbial biomass (Belay *et al*., 2001). It has been observed that addition of organic manure increases growth characters and fruits number of the cucurbits(Salehabadi *et al*., 2014).

It is known that yeast considered as a natural source of cytokinins that stimulate cell division and enlargement as well as, the synthesis of proteins, nucleic acids and chlorophyll (Fathy and Farid ,1996 and Shafeek *et al*., 2015). As well as, yeast in creased plant growth, chemical composition , yield and quality (Sarhan *et al* , 2011 , Shehata *et al* . 2012).

The application of ascorbic acid (Vitamin C) may have a stimulatory effect on plants, *i.e*. its application caused a significant increases in growth parameters and fruit setting and total yield of plants (El-Banna *et al*., 2006). The growth regulator of ethrel have an effect on sex expression and flowering in various cucurbites, which had an increases in the number of female flowers (Yongan *et al*., 2002 on squash; Thappa *et al*., 2011 on cucumber and Sure *et al*., 2013 on pumpkin).

Therefore, this study was done to study the effect of organic manure, yeast, ascorbic acid and ethrel on growth characters, chemical composition, sex expression and yield and quality of squash plants.

MATERIALS AND METHODS:

Two field experiments were conducted at a Vegetable Private Farm in Sheiba distrect, Zagazig, Sharkia Governorate during the summer seasons of 2016 and 2017, to study the effect of Farmyard , dry yeast , ascorbic acid and ethrel on growth , chemical content , flowering traits and yield and quality of squash plants. This experiment included 16 treatments were the combination between four treatments , *i.e.* control , FYM , dry yeast and vit. C, and four concentrations of ethrel, *i .e*. (0, 100, 200 and 300 ppm). These treatments were laid out in split plot design arrangement with three

replications. The treatments of FYM, vit. C were randomly distributed in main plots, while the ethrel concentrations were randomly arranged in sub – plots. The plot area was 8.40 m^2 (3 m long, 4 ridges and 70 cm width). The seeds of squash sown in the fourth week of April in hills handily at 50 cm distance between seeds on ridges. The physical and chemical soil and irrigation water analyses are presented in Tables 1 and 2.

Table (1): Physical and chemical properties of the experimental soil

Properties	**Values**
Physical analysis	
Sand (%)	76.9
Silt (%)	8.9
Clay (%)	14.2
Soil texture	Sandy loam
Chemical analysis	
Calcium carbonate (Ca CO_3, g./ kg	7.80
Organic matter (9/kg)	2.11
pH (1: 2.5 Soil- Water suspension)	7.94
Elctric conductivity (EC) (dS/m)	1.30
Soluble cations (mmol/L.)	
Calcium (Ca^{++})	10.21
Magnesium (Mg^{++})	3.34
Sodium (Na^{+})	1.20
Potassium (K^{+})	1.30
Soluble anions (mmol/L.)	
Carbonate (CO_3^{--})	-
Bicarbonate (HCO_3^{-})	3.90
Chlorine (Cl^{-})	2.85
Sulphate (SO_4^{--})	3.33
Available nutrient (mg/L.)	
I. Macronutrients	
Nitrogen (N)	36.0
Phosphorus (P)	11.0
Potassium (K)	220
II, Micronutrients	
Fe	9.02
Zn	2.21
Cu	2.26
Mn	4.40

Table (2): Analysis of used irrigation water in the Experimental soil.

Characters	**Concentration**
Total Salts (ppm)	1250
Ca^{++} (mmol/L)	12
Mg^{+} (mmol/L)	14.1
Na^{+}(mmol/L)	10.1
K^{+}(mmol/L)	1.80
SO_4^{--} (mmol/L)	3.85
HCO_3^{-}(mmol/L)	2.90
E C (Electric conductivity , dS/m)	0.62

Organic manure in the form of farmyard manure ,was added at $4m^3$/ fed. during preparing the soil , dry yeast (5 g/ L.), vitamin C (200 mg /L), and ethrel (0.100, 200 and 300 ppm), were used as foliar application at , *i. e.* 30 ,40 and 50 days after sowing. The analyses of organic manure (FYM) and dry yeast are presented as shown in Tables (3 and 4).

Data will recorded as follows

A -Plant growth characters

Random samples of three plants were taken from each treatment at 60day from sowing to measure: Plant growth parameters, *i.e.*, (plant height, cm), number of leaves and fresh and dry weight of leaves and stem of plant).

***B- Flowering characters*:** Number of male and female flowers. It was determined by counting the male and female flowers at two days intervals up to the end of the season.

***C-Fruit yield and quality* :**Squash fruits at marketable stage were harvested twice weekly, number of fruits / plant, mean weight of fruits (g), fruit length (cm), fruit diameter (cm) and total yield (ton/ ha)were calculated.

Total yield*:* It was calculated as the total weight of fruits through the entire harvesting season.

*D-**Fruit analysis**:* Total nitrogen , phosphorus and potassium concentrations were determined as described the methods of for determined of nitrogen and phosphorus , and for determined potassium.

Vitamin C: It determined according to the method described by Gheng *et al*, (2000).

Table 3: Chemical analysis of used farmyard manure (FYM)

Characters	**Values**
OM %(Organic Matter)	38.7
C %	22.6
N %	0.75
C/N ration	30.13 : 1
P %	0.39
K %	0.45
pH	6.05
EC (m.mchs/ cm)	4.36

Table 4: Chemical analysis of activated yeast (mg /100 g dry weight) .

Characters	**Values**
Total N	7.21
P_2O_5	51.59
K_2O	33.75
MgO	5.69
CaO	3.03
SO_2	0.44
Nacl	0.31
Fe	0.90
Mn	80.9
Zn	336.4
Vitamins **:**	
Thiamin	2.73
Riboflavin	4.93
Nicotinic acid	39.76
Foil acid	4.33
Enzymes	
Oxidase	0.348
Perexidase	0.279
Catalase	0.067
Carbohydrates	22.90

Statistical analysis**:**

The obtained data were subjected to statistical analysis the growing season of the two experiments according to SAS Institute (2008). The

difference between the treatments were compared using least significant differences (LSD) as described by Snedecor and Cochran (1980).

RESULTS AND DISCUSSION

Plant growth characters:

a – ***Effect of some treatments ; Farmyard , dry yeast and vitamin C***:

The vegetative growth parameters, *i.e*. plant length, number of leaves / plant (Table 5), leaf neck length (Table 6), leaves fresh weight (Table 7), were affected by foliar spray of dry yeast. Meanwhile, foliar spray with ascorbic acid and application of FYM increased leaf area (Table 6) , and leaves dry weight (Table 7) of squash plants , respectively . Regarding the effect of dry yeast on plants, Fathy and Farid (1996) demonstrated that yeast considered as a natural source of cytokines that stimulate cell division and enlargement, as well as, the synthesis of proteins, nucleic acids and chlorophyll, besides of vitamins.

Respecting the role of vitamin C (ascorbic acid) in increasing the plant growth, El Banna *et al*.,(2006) and Helal *et al*., (2005) illustrated that ascorbic acid may have a stimulatory effect on plants, and activation the enzymes in biochemical to building the tissues and caused a significant increases in growth parameters. As well as, the application of farmyard manure and its role in increasing plant growth ,it might be due to the improvement of physical and chemical properties of soil , which affected soil fertility and play an important role in nutrients availability and uptake and then increased plant growth parameters (Fakry and waffaa,(2016) .These favorable conditions allow the plant organs to grow better and gave a good results for in increasing plant growth (Fawzy *et al*., 2007). These results followed the same results of that reported by Neame *et al*., (2014) who working on yeast, Ibrahim (2015) on vit. C, and Ahmed *et al* (2013) on organic manure.

***b – Effect of ethrel concentrations*:**

The foliar spray of squash plants with ethrel caused a significant increases in plant length and number of leaves/ plant (Table 5) , leaves fresh weight and leaves dry weight (Table 7), and leaf area (Table 6), by the concentration of 200 ppm ethrel. Meanwhile, leaf neck length was increased by foliar spray with the concentration of 300 ppm ethrel. On the other hand, the control treatment was recorded the lowest values on all studied growth characters .As the favorable effect of ethrel in increasing plant growth it might be due to its role when it to ethylene performs various physiological

Table (5): Effect of some treatments farmyard (FYM) , vitamin C and dry yeast, ethrel on plant length and number of leaves of squash plants at during 2017 and 2018 seasons.

Treatments		**Plant length (cm)**		**No. of leaves plant**	
Fertilizers :(A)		**Season (2017)**	**Season (2018)**	**Season (2017)**	**Season (2018)**
Control		67.00	66.62	21.75	20.41
FYM		74.87	74.41	20.83	19.91
Dry yeast		95.45	94.87	24.75	24.33
Vit .C		81.87	81.62	20.50	19.33
LSD(0.05)		2.61	2.28	0.96	1.13
Ethel Concentrations (B)					
0		63.00	62.45	17.83	16.91
100 ppm		83.58	83.16	23.58	22.75
200 ppm		94.37	93.91	27.08	26.25
300 ppm		78.25	78..00	18.75	18.08
LSD(0.05)		2.61	2.28	0.96	1.13
Interaction(A*B)					
Control	**0**	47.22	45.13	15.11	14.66
	100ppm	74.31	73.15	22.20	21.33
	200 ppm	79.20	76.25	26.13	25.33
	300 ppm	68.17	67.33	21.30	20.33
FYM	**0**	63.13	61 .11	18.53	16.66
	100ppm	74.22	73.17	23.33	22.66
	200 ppm	87.11	84 .10	24.11	23.33
	300 ppm	75.32	73.66	18.17	17.14
Dry yeast	**0**	70.50	69.33	20.18	20.15
	100ppm	106.11	105.10	26.13	25.66
	200 ppm	114.12	113.3	32.33	32.25
	300 ppm	91.50	90.50	20.31	19.66
Vit. C	**0**	71.50	71.33	17.66	19.33
	100ppm	80.10	79.42	22.33	21.33
	200 ppm	97.50	98.10	26.12	24.33
	300 ppm	78.50	78.13	16.11	15.33
LSD (0.05)		5.21	5.33	1.93	1.90

Table 6: Effect of some treatments farmyard (FYM) , vitamin C and dry yeast, ethrel on leaf neck length and Leaf area(cm^2) of squash plant during 2017and 2018 seasons.

Treatments		**leaf Neck length (cm)**		**Leaf area (cm^2)**	
***Fertilizers* :(A)**		**Season (2017)**	**Season (2018)**	**Season (2017)**	**Season (2018)**
Control		16.88	19.76	303.4	303.2
FYM		21.14	21 .00	295.5	296.7
Dry yeast		28.11	27.69	399	401.4
Vit .C		21.27	20.95	406	407.4
LSD(0.05)		0.84	2.81	2.59	2.32
***Etheral Koncentrations (B*)**					
0		18.13	17.95	281.6	283.2
100 ppm		17.37	17.29	319.1	319.0
200 ppm		24.82	24.32	482.5	482.5
300 ppm		27.08	26.84	324.9	324.9
LSD(0.05)		0.84	0.81	2.32	2.32
Interaction(A*B)					
Control	**0**	12.82	12.73	275	274.3
	100ppm	16.69	16.46	281	279
	200 ppm	19.40	19.35	383	382
	300 ppm	18.62	18.50	273.6	272
FYM	**0**	17.31	17.26	272	271
	100ppm	15.39	15.43	279	277
	200 ppm	21.57	21.33	347	345
	300 ppm	30.28	30.00	284.3	282
Dry yeast	**0**	17.71	17.48	271	268
	100ppm	13.33	18.29	328	327
	200 ppm	35.33	34.33	628.3	627
	300 ppm	41.07	40.66	368.6	367
Vit . C	**0**	24.66	24.32	308.3	308
	100ppm	19.07	18.98	381.6	380
	200 ppm	23.00	22.30	567	566
	300 ppm	18.35	18.20	368	367
LSD (0.05)		0.97	2.95	2.99	2.90

Table (7): Effect of some treatments farmyard (FYM), vitamin C and dry yeast, ethrel on fresh weight and dry weight of leaves/ plant on squash plants in 2017 and 2018 seasons

Treatments		**Fresh weight of leaves (g)**		**Dry weight of leaves (g)**	
***Fertilizers* :(A)**		**Season (2017)**	**Season (2018)**	**Season (2017)**	**Season (2018)**
Control		56.12	55.90	17.75	17.86
FYM		82.22	81.60	25.45	25.06
Dry yeast		84.92	84.95	24.45	24.47
Vit . C		76.45	75.91	24.27	24.07
LSD(0.05)		**1.27**	**1.10**	**3.47**	**3.49**
Etherl Concentrations:(B)					
0		60.51	60.16	18.76	18.57
100 ppm		81.30	81.06	23.10	23.04
200 ppm		89.40	89.01	28.90	28.84
300 ppm		68.50	68.12	21.16	21.01
LSD(0.05)		**1.27**	**1.10**	**3.47**	**3.49**
Interaction :(A*B)					
Control	**0**	50.73	50.67	17.00	17.03
	100ppm	55.28	55.23	17.60	17.32
	200 ppm	61.38	61.07	18.93	18.90
	300 ppm	57.10	56.65	17.47	16.95
FYM	**0**	66.44	86.73	20.03	19.93
	100ppm	87.46	102.66	26.86	26.51
	200 ppm	103.7	71.00	33.73	33.33
	300 ppm	71.18	67.33	21.18	21.21
Dry yeast	**0**	67.79	67.33	19.40	18.66
	100ppm	97.17	97.29	22.26	22.16
	200 ppm	103.5	104	35.70	35.16
	300 ppm	71.22	71.17	20.46	20.00
Vit . C	**0**	57.07	56.65	18.60	18.07
	100ppm	85.28	85.00	25.71	25.48
	200 ppm	88.95	27.29	27.29	26.99
	300 ppm	74.49	73.66	25.53	25.00
LSD (0.05)		**1.47**	**1.42**	**4.03**	**4.02**

functions in plant, it has stimulatory and its effects depending upon the concentration and sensitivity to plants(Fekry and wafaa ., 2016). These results are in accordance with those obtained by Sure *et al* . (2013) , and Shafeek *et al*. (2016).

***C– Effect of the interaction between some treatments (FYM, dry yeast and vit .C and ethrel concentrations*:**

Data in Tables (5, 6 and 7) revealed that the interaction between some treatments (FYM, dry yeast, vit. C and different ethrel concentrations had a significant effect on vegetative growth parameters of squash plants in both growth seasons . The interaction between dry yeast with foliar spray of ethrel at the concentration of 200 ppm significantly increased the plant length, number of leaves/ plant; leaf fresh weight, leaves dry weight at Tables 5, 6 and 7, respectively, followed by the interaction between foliar spray of dry yeast and the concentration of ethrel at 300 ppm on leaf neck length (Table 6). These results are true in both growth seasons .It is known that yeast considered as a natural source of many active compounds, like as, hormones nutrients and vitamins (Shafeek *et al*., 2015).

Flowering traits:

Effect of some treatments (FYM, dry yeast, ethrel and vit . C):

Regarding the effect of applying with Farm manure , and spring with dry yeast and ascorbic acid , the results in Table (8) show clearly that , spraying squash plants with dry yeast or ascorbic acid significantly decreased number of female flowers in both growing seasons .On the other hand , the lowest values of female flowers were recorded from untreated plants (control).Increments of female flowers with spraying squash plants by dry yeast or vitamin C may be attributed to the simulative effect of them in increasing the female and decreasing the male flowers (Abou El – yazid and Mady, (2011) and Cheng *et al* .,(2002) , on dry yeast and ascorbic acid , respectively .These results are in confirming with those reported by Shehata *et al*., (2012), with yeast on cucumber and El-Banna *et al.,* (2006).with vitamin C on sweet pepper .

Effect of ethrel concentration :

It is clearly evident from data in Table (8) that spraying squash plants with ethrel concentrations had a significantly increased in female flowers per plant, compared with control treatment in both growing seasons. The concentration of 200 ppm or 300 ppm ethrel, being the most effective on flowering traits in increasing female flowers and decreasing male flowers.

Mary investigators illustrated that ethiphon increased female flowers and deceased male flowers of squash plants (Gad *et al*., (1993); and Cardoso *et al*., (1998), Cheng *et al*., (2002) and Manzano *et al*., (2011). The obtained results are in harmony with those reported by Yongan *et al*. (2001).

Table (8): Effect of some treatments farmyard (FYM) y , vitamin C and dry yeast, ethrel on male and femal flower /plant of squash plants during 2017 and 2018 seasons**.**

Treatments		**No . of Male flowers plant^{-1}**		**No. of Female flowers plant^{-1}**	
Fertilizers :(A)		**Season (2017)**	**Season (2018)**	**Season (2017)**	**Season (2018)**
Control		4.31	4.33	1.54	1.53
FYM		4.32	4.80	1.97	1.97
Dry yeast		2.23	2.22	4.17	4.16
Vit .C		2.44	2.41	4.63	4.62
LSD(0.05)		0.68	0.63	0.41	0.22
Etheral concentration(B)					
0		4.04	4.43	2.16	2.17
100ppm		3.18	3.17	3.15	3.15
200 ppm		3.01	3.08	3.45	3.45
300 ppm		3.07	3.08	3.53	3.54
LSD(0.05)		0.68	0.63	0.31	0.10
Interaction :(A*B)					
Control	**0**	4.22	4.22	1.05	1.04
	100ppm	4.27	4.28	1.26	1.26
	200 ppm	4.58	4.58	1.86	1.84
	300 ppm	4.18	4.25	1.98	1.97
FYM	**0**	4.88	4.86	1.71	1.72
	100ppm	4.28	4.28	1.86	1.87
	200 ppm	4.07	4.37	2.11	2.11
	300 ppm	4.05	4.05	2.21	2.20
Dry yeast	**0**	4.06	4.04	1.29	1.28
	100ppm	1.82	1.82	4.77	4.76
	200 ppm	1.51	1.50	5..24	5.23
	300 ppm	1.52	1.52	5.37	5.37
Vit .C	**0**	2.99	2.96	4.62	4.61
	100ppm	2.35	2.31	4.73	4.72
	200 ppm	1.89	1.88	4.61	4.61
	300 ppm	2.53	2.51	4.57	4.56
LSD (0.05)		1.18	1.16	0.2	0.2

Data recorded in Table(8), indicate that dry yeast with concentration of 200 or 300 ppm ethrel, exhibited the maximum values in female flowers, while the lowest values of female flowers and highest values of male flowers were recorded by the treatment of control with any addition.

Fruit yield and its components:

Effect some treatments(FYM) , dry yeast,ethrel and vitaminC :

Obtained data in Table (9), indicated that maximum values of fruit fresh weight , fruit dry weight , and total fruit yield / fed ., were affected by the treatments of FYM , dry yeast and yeast and vitamin C . The results revealed that foliar spray with dry yeast , being the most effective on squash fruit yield and its components , followed by the treatment of ascorbic acid on fruit fresh weight and fruit dry weight , meanwhile , on total fruit yield per feddan , the treatment of ascorbic acid or organic manure without any significant differences between them. As the role of yeast in increasing fruit yield, (Fathy and Farid ,(1996), showed that yeast as a source of hormones. These results are followed by the foliar application with ascorbic acid, which plays an important role in increasing fruit yield , ascorbic acid is one of the essential ingredients necessary in high end plants to increase the cell division and increase the effectiveness some of enzymes which consists of photosynthesis and breathing, (Belay *et al*., 2001; Eifediyi and Remison, 2010), consequently , in controlling the timing of flowering and aging and increasing the fruit. Moreover, organic manure addition, had a simulative affect in increasing fruit of cucurbits (Salehbadi *et al* (2014). These results are confirmed with those recorded by Sarhan *et al* . (2001) and with yeast, vit. C and organic manure, respectively.

***Effect of ethrel concentration*:**

Fruit yield squash, *i. e.* fresh weigh of fruit, and dry weight of fruit, and total fruit yield per feddan, were significantly increased by foliar spray with ethrel concentration (Table 10). The positive effect of squash plants spraying with 200 ppm ethrel, being the most effective treatment in fruit yield and its components, followed by the treatments of 100 ppm and 300 ppm etherl, in deciding order, respectively, in this respect, in both growing seasons, compared to the control treatment.

The superiority of 200 ppm ethrel on increasing fruit yield may be due to significantly effects of vegetative growth (Tables 5, 6 and 7) and incensing the flowering (Table 9).

Table (9): Effect of some treatments farmyard (FYM) y , vitamin C and dry yeast, ethrel on fresh weight and dry weight fruit plant and total yield of squash plants during 2017 and 2018 seasons.

Treatments		**Fruit Fresh weight (g)**		**Fruit Dry weight (g)**		**Total fruit yield (t/fed)**	
Fertilizers :(A)		**Season (2017)**	**Season (2018)**	**Season (2017)**	**Season (2018)**	**Season (2017)**	**Season (2018)**
Control		86.27	85.63	27.14	26.60	7.89	7.99
FYM		117.76	116.91	37.31	36.82	9.01	9 .00
Dry yeast		161.80	161	53.09	52.74	12.42	12.34
Vit . C		133.45	133.16	44.21	43.76	8.24	8.19
LSD(0.05)		4.05	3.96	1.04	1.41	0.78	0.81
Etherl Concentrations:(B)							
0		75.46	75 .00	25.52	23.34	4.60	4.75
100 ppm		179.80	149 .0	48.70	47.81	11.07	19.06
200 ppm		190.85	190.33	61.99	60.94	12.73	12.68
300 ppm		83.10	82.33	26.54	25.29	9.17	9.13
LSD(0.05)		3.97	3.96	1.04	1.41	0.78	0.81
Interaction(A*B)							
Control	**0**	65.73	65	21.36	20.66	3.77	3.75
	100ppm	92.33	91.87	29.00	28.53	8.93	9.25
	200 ppm	112.6	112	35.00	34.40	10.64	10.67
	300 ppm	74.40	73.66	23.20	22.82	8.24	8.25
FYM	**0**	77.23	76.33	25.23	24.33	4.90	4.93
	100ppm	140.8	140	41.93	41.66	10.93	10.89
	200 ppm	166.6	166	53.56	53.32	12.05	12.06
	300 ppm	86.36	85.3	28.53	27.98	8.18	8.14
Dry yeast	**0**	86.46	86.0	25.76	25.32	5.36	5.32
	100ppm	189.5	188.3	65.20	64.66	15.13	15.10
	200 ppm	278.3	277.33	92.26	92.00	17.61	17.37
	300 ppm	92.90	192.33	29.13	29.00	11.61	11.59
Vit . C	**0**	72.43	72.66	25.73	25.33	4.38	4.29
	100ppm	176.9	176	58.70	57.66	9.29	9.30
	200 ppm	205.7	206	67.13	67.07	10.63	10.63
	300 ppm	78.73	78	25.30	25.00	8.66	8.54
LSD (0.05)		4.67	4.61	1.20	4.61	0.90	0.96

Table(10). Effect of some treatments farmyard (FYM) y , vitamin C and dry yeast, ethrel on fruit diameter and length (fruit quality) and No. of fruit on squash plants during 2017 and 2018 seasons.

Treatments		**Fruit length (cm)**		**Fruit Diameter (cm)**		**No. of fruits /plant**	
Fertilizers :(A)		**Season (2017)**	**Season (2018)**	**Season (2017)**	**Season (2018)**	**Season (2017)**	**Season (2018)**
Control		11.91	11.96	3.12	3.13	5.10	5.15
FYM		13.14	13.46	3.39	3.39	5.95	5.84
Dry yeast		16.13	14.89	3.92	3.92	6.95	6.89
Vit . C		15.01	14.98	3.35	3.34	6.30	6.35
LSD(0.05)		0.41	0.39	0.14	0.14	0.16	0.16
Etherl Concentrations (B)							
0		13.31	13.32	2.95	2.96	6.30	6.29
100 ppm		14.44	14.56	3.50	3.55	6.95	6.90
200 ppm		14.73	14.56	3.91	3.90	7.60	7.55
300 ppm		13.70	14 .00	3.36	3.37	7.10	7.12
LSD(0.05)		0.40	0.36	0.17	0.14	0.17	0.18
Interaction(A*B)							
Control	**0**	11.57	11.50	2.54	2.55	5.32	5.26
	100ppm	11.80	11.82	3.21	3.21	5.40	5.45
	200 ppm	12.10	12.16	3.72	3.71	5.72	5.69
	300 ppm	12.04	12.06	2.99	3.06	5.85	5.90
FYM	**0**	12.37	12.37	3.04	3.10	6.30	6.35
	100ppm	13.23	13.23	3.52	3.51	6.90	6.89
	200 ppm	13.90	13.90	3.73	3.72	7.00	7.10
	300 ppm	12.80	14.	3.25	3.25	6.60	6.65
Dry yeast	**0**	14.73	14.76	3.44	3.43	6.66	6.63
	100ppm	16.63	16.80	4.15	4.16	7.96	7.89
	200 ppm	16.51	16.53	4.36	4.35	8.75	8.81
	300 ppm	15.37	15.41	3.74	3.73	6.75	6.70
Vit . C	**0**	14.60	14.64	2.78	2.77	6.55	6.51
	100ppm	15.53	15.33	3.32	3.32	6.95	6.89
	200 ppm	15.64	15.63	3.82	3.81	7.96	7.91
	300 ppm	14.42	14.39	3.46	3.46	6.80	6.79
LSD (0.05)		1.23	1.22	0.35	0.33	0.18	0.17

So that promoted the fruit yield than treatments. Similar results were also, reported by Yongan (2002), Thappa *et al*., (2011) and Sure *et al*., (2013).

***Effect of interaction between some treatments (FYM, dry yeast vitamin C and etherl concentration* :**

It was obvious from data expressed in Table 10 , the interstate between dry yeast and 200ppm ethrel significantly increased the both of fresh and dry weight of squash fruit, and total fruit yield per feddan, in both growing seasons. This treatment followed by the interstate between vit .C and 200 ppm ethrel fruit dry weight, meanwhile, it followed by the interstate between dry yeast with 100ppm ethrel on total yield per feddan.

Fruit quality:

***Effect of some treatments (FYM , dry yeast and vit . C* :**

Data presented in Table (9), revealed clearly that all treatments of FYM dry yeast and vit. C, significantly increased the fruit. Dry yeast foliar spray treatment , being the most effective on fruit quality and nutritive value of squash fruit , followed by vit. C, organic manure, respectively in most cases. The superiority of dry yeast on fruit quality and nutritive value may be due to attributed the high vegetative growth of squash plants (Tables, 5, 6 and 7), chemical composition, increased female flowers (Table 8), fruit yield (Table 9), consequently, increased the quality of fruit (Tables 10). These results are agreement with those obtained by Sahan *et al*., (2011), Shehata *et al.*,(*2012*) and Shafeek *et al* .,(2015). The higher fruit quality was obtained as a conclusion of Thappa *et al*, (2011) and Sure *et al*., (2013).

Conclusively, Obtained results indicate that foliar spray of dry yeast being the most effective on vegetative growth characters, chemical composition of leaves, number of female flowers, fruit yield and quality. Moreover, application ethrel at the concentration of 200 ppm caused an effective increase in all above mentioned parameters. In addition, the combination treatment between spraying dry yeast at the rate 5 g/l and ethrel at the concentration of 200 ppm came to the same effective trend in most studied characters of squash plants.

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تاثير السماد البلدي والرش بالخميرةو بفيتامين C والايثريل على نمو نباتات قرع الكوسة .

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اجريت تجربتان حقليتان خلال موسمي 2017، 2018 في مزرعة خاصة في منطقة شيبة ،الزقازيق ، محافظة الشرقية لدراسة تاثير اربع معاملات (المقارنة ، السماد البلدي4 م ^{2} فدان ، الرش بكل من الخميرة الجافة بمعدل 5 جرام / لتر ، حمض الاسكوربيك بمعدل 200ملجرام / لتر) مع أربع معاملات رش بالايثريل (200, 100 , 0 300, جزء في المليون) والتفاعل فيما بينهم على نبات قرع الكوسة صنف زوكينى على نموالنبات ، ، قياسات الازهار ، محصول الثمار والجودة .
صممت التجربة بنظام القطع المنشقة في ثلاث مكررات. حيث وضعت معاملات السماد العضوي ، الخميرة الجافة ، وحمض الاسكوربيك في القطع الرئيسية موزعة عشوائيا ، بينما وزعت معاملات تركيز الايثريل عشوائيا في القطع المنشقة وامكن تلخيص نتائج هذه الدراسة في الاتي :
كان الرش بالخميرة 5 جرام / لتر هو الاكثر فعالية في صفات النمو الخضري ، محتوى الاوراق الكيماوي ، الازهار المؤنثة ، محصول الثمار وجودتها . زيادة على ذلك ، أن تركيز 200 جزء في المليون ايثريل ، قد سبب زيادات في كل من الصفات المذكورة سابقا .
بالاضافة الى ان التفاعل بين الخميرة الجافة 5 جرام / لتر، وتركيز 200 جزء في المليون ايثريل قد كان في نفس الاتجاه في معظم الصفات لنباتات قرع الكوسة .
التوصية: ان الرش بالخميرة هو الأكثر فعالية في صفات النمو الخضري، محتوى الأوراق الكيماوي، الأزهار المؤنثة، محصول الثمار وجودتها. زيادة على ذلك، ان تركيز 200 جزء في المليون ايثريل، قد سبب زيادات في كل من الصفات المذكورة سابقا. بالإضافة إلى ان التفاعل بين الخميرة الجافة وتركيز 200 جزء في المليون ايثريل قد كان في نفس الاتجاه في معظم الصفات المدروسة لنباتات قرع الكوسة.