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Behavior of some Local and Foreign Tomato Hybrids under Organic Fertilization and High Salinity Water Conditions in El- Arish-North Sinai

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ABSTRACT

Two field experiments were conducted during late summer seasons of 2015-2016 at the Agric. Res. Station, Veg. Res. Dept., Hort. Res. Inst., Agric. Res. Center, in El- Arish, North Sinai Governorate, Egypt. The aim of this work was to study the effect of three tomato hybrids (*Lycopersicon esculentum* Mill.); i.e. one local "Eyeon" hybrid as well as two foreign hybrid (Alisa and GS-12) and two sources of organic fertilization each at 120 and 150 Kg N fed^{-1} (Chicken manure "ChM" and Cow manure) under sandy soil condition and high saline water with drip irrigation system. The treatments were arranged randomly in a split-plot design arrangement in randomized complete block design, in three replications where the three tomato hybrids were randomly arranged in the main plots, the two sources of organic fertilization were randomly distributed in sub plots. The results showed that, all growth parameters, (roots, leaves, and stems, as well as clusters fresh weight and both total fresh and dry weight) gave the highest values under "Eyeon" hybrid plantation and application of high rate (150 Kg N fed^{-1}) from ChM followed by "GS-12" with the same of fertilization treatment. Yield and its components for early and total yield results showed that planting of local "Eyeon" hybrid with application the high rate of 150 kg Nfed^{-1} from ChM recorded the best values for yield characters i.e., number of fruits and fruit weight for grades A and B (g $plant^{-1}$ and ton fed^{-1}) as well as early and total yield for grade (A+B ton fed^{-1}.) compared to other treatments, in both seasons. Regarding to the fruit quality, the obtained results showed that fertilization of local "Eyeon" hybrid by ChM at the rate of 150 Kg N fed^{-1} recorded the highest values for pH, V.C, T.S.S in tomato fruit juice as well as fruit firmness and dry matter content in tomato fruits. The Local "Eyeon" hybrid was more responses to the high rate (150 Kg N fed^{-1} from ChM). For that it can recommend by cultivation the local "Eyeon" hybrid in North Sinai which it was more superior for produce high fruit yield with best quality when fertilized with chicken manure at the rate of 150 Kg N fed^{-1} under the condition of saline water irrigation compared with using the foreign tomato hybrids either Alisa or GS-12 which it is import from abroad.

INTRODUCTION

Tomato (*Lycopersicon esculentum* Mill.) is one of the most important vegetables grown for their edible fruits. The tomato is cultivate in Egypt as an annual production, it producing about 8625219 tonnes according to Statistics of 2012 season (FAO, 2015).

Tomato is considered the first vegetable crop in Egypt (Kawsar *et al*., 2013). Growth and productivity of the tomato plants are affected by many abiotic stresses like salinity, heat, cold and drought…etc. (Sana *et al*., 2016).

Water quality is a major constraint for crop production in the North Sinai region. The underground water is the main irrigation source under drip irrigation system and most of irrigation water characterized with high salinity. (Adolf *et al*., 2013) they said that salinity is one of the major constraints in crop production in arid and semi-arid regions, (Wafaa *et al*., 2013; Abou Baker and El-Dardiry 2016) reported that salinity stress imposes ionic and osmotic influences in plants. When the salt oxidized by water, producing Na^+ and Cl^-, which are easily absorbed by roots of plants, as well as cause ionic and osmotic stress at cellular rate of plants.

It is known that the soil in North Sinai region is sandy or sandy calcareous, which is very poor in its organic matter content and nutrients. In addition it has low-water holding capacity and therefore it required addition of organic fertilizer because of its significant role for overcome various problems of those types of soil, for increasing organic matter in sandy soil, it was recommend to adding organic fertilizers, as compost, chicken manures or cow manure as source for nitrogen fertilizers and also for enhancing soil quality (Abuo El-Kasem, 2016a).

Organic manure (OM) improves soil structure, water, air and nutrient retention in the soil, buffers soil chemical imbalances, supports living organisms, … etc. (I.F.A.S, 2005). The application of OM in saline soils reduce the main parameters of salinity i.e. pH, SAR, ESP and EC. In fact, organic manures result a greater adsorption of Ca^{++}, Mg^{++} and K^+ than Na^+ which leads to lower soil ESP (Jalali and Ranjbar, 2009). It has been proved that soil amendments such as manure and organic matter could mitigate the impacts of water salinity stress on crops (Mahmood Abadi *et al*., 2010; Ouni *et al*., 2014). Chicken manure is high in nitrogen content compared with the other livestock manure, nitrogen supports vigorous growth and it is essential in photosynthesis, nitrogen is equally said to be the motor of plant growth (IFA and FAO, 2000). In addition, (Ayeni *et al*., 2010) found that poultry manure increased cumulative tomato yield which was increased with the increasing in the level of poultry manure at a rate of 30 t ha^{-1}., Also, (Adeniyi and Aemoyegum., 2012) found that application of ChM at the rate of 20 t ha^{-1} was the superior for high values of the titratable acidity and lycopene content more than the addition of 10 t ha^{-1} of ChM.

In North Sinai, the farmers depending on imported hybrid GS.12 beside same unknown hybrids does not suitable for the conditions of North Sinai characterized with sandy soil, high temperature, saline water....etc.

This study was carried out to compare between three hybrids and two organic manure sources (Chicken and Cow manure) under two rates for each to enhance the growth, yield, and fruit quality of tomato plants under underground saline water and sandy soil conditions in North Sinai.

MATERIALS AND METHODS

The present work was carried out during the two successive late summer seasons of 2015 and 2016 at the Agriculture Research Station, Veg. Res. Dept., Hort.

Res. Inst., Agric. Res. Center, in El- Arish, North Sinai Governorate, Egypt. Three tomato hybrids were used in the study. Seeds were sown on 5th May in the nursery. Uniform seedlings were selected and transplanted on 10th and 15th Jun in 2015 and 2016 seasons, respectively. Seedlings were transplanted beside drippers; the distance between every two dripper lines was 120 cm. The distance between plants in the same line was 40 cm. The plot area was 12 m^2 (10 m long and 120 cm between each two dripper lines in each row).

The aim of this work was to comparing between three tomato hybrids of (*Lycopersicon esculentum* Mill.); i.e., local Eyeon hybrid, and the two foreign hybrids GS-12 and Alisa. The two sources of organic fertilization (chicken manure and cow manure) were used at two rates for each (120 and 150 Kg N fed^{-1}) pure or as a unit fed., calculated and converted into amounts in cubic meters, it is nearly equal to 35.18 and 43.97 m^3 fed^{-1} or equal 11.08 and 13.85 ton fed^{-1} for ChM, and equal 35.57 and 44.46 m^3 fed^{-1} or equal 10.10 and 12.63 ton fed^{-1} for cow, Respectively. The treatments were arranged randomly in a split-plot design arrangement, in three replications where three tomato hybrids were randomly arranged in the main plots, the two sources of organic fertilization were randomly distributed in sub plots. The mechanical and chemical analysis of the soil and chemical analysis of irrigation water as well as analysis of organic fertilizer sources are presented in Tables 1, 2 and 3, respectively, the determinations were recorded according to (Ryan *et al*., 1999) methods

Table 1.Mechanical and chemical properties of the experimental soil.

Mechanical analysis %			Chemical analysis (soluble ion in 1:5 extract)														Organic matter (%)
Sand	silt	clay	Total (ppm)				meq./l								ECe	pH	
							Cations				Anions						
84.9	7	8.10	N	P	K	Ca^{++}	Mg^{++}	Na^{+}	K^{+}	$So^{-}4$	Cl-	Co_3	Hco_3	Ca Co_3			
Soil texture (Sand)			12.2	53.60	24	2.30	2.10	0.72	0.30	1.5	2.8	-	0.32	0.30	0.49	7.98	0.07

Table 2. Some chemical analysis of the irrigation water.

pH	EC (dSm^{-1})	Soluble ions(meq.1-1)								S.S.P %	S.A.R	R.S.C
		Cations				Anions						
		Ca^{++}	Mg^{++}	Na^{+}	K^{+}	Cl^{-}	HCO_3^{-}	CO_3^{--}	SO_4^{--}			
7.88	8.40	20.0	13.7	46.20	0.28	50.32	2.8	-	26.88	14.44	60.4	33.11

Table 3.Some analysis of organic manure.

	Seasons	Total (%)			Total (ppm)				Organic matter %	Organic carbon %
		N	P	K	Fe	Cu	Zn	Mn		
Chicken manure	2014	1.60	0.30	1.77	528	340	230	55.62	30.24	20.21
	2015	1.57	0.32	1.80	530	343	233	53.71	28.71	23.25
Cow manure	2014	1.52	0.29	1.02	380	310	180	80.60	31.25	19.36
	2015	1.55	0.31	1.20	3.92	350	192	83.74	32.51	22.61

The measurements:

1. **Vegetative growth:** A random sample of 5 plants from each plot was taken at 75 days after transplanting and the following vegetative characters were recorded: fresh and dry weight of roots, stem, leaves, and clusters fresh weight, as well as total fresh and dry weight/plant were calculated.
2. **Fruit yield:** Fruit yield was divided into two grades (grade A: fruits weighed more than 100g, and grade B: fruits weighed less than 100g). The following measurements were studied for both early and total yield: a) Number of fruits b), average fruit weight, c) total yield per plant, and d) total yield per fed. (ton).
3. **Fruit quality:** On the red ripe stage of the third picking fruits sample were randomly taken from each sub plot and the following data were recorded:

a. pH: it was measured using pH meter (A.O.A.C., 1990),

b. Fruit content from ascorbic acid (V.C): It was determined in fruit juice as mg/100 ml juice) using 2,6 diclorophenol endophenol as described in (A.O.A.C., 1990),

c. Fruit total soluble solids (TSS %): It was measured using a hand refractor-meter according to (A.O.A.C., 1990),

d. Fruits firmness: It was measured at the middle of the fruit by using caliper pressure tests,

e. Dry mater (%) in the fruits: fruits were dried at 70 ^{0}C till constant weight to determinate fruit dry matter percentage according to the following equation: average dry weight of fruit (g)/ average fresh weight of fruit (g) x 100., and

f. Fruit dimension: Fruit length (L), fruit diameter (D), and fruit shape (L/D)

4. **Statistical analysis:** Statistical analysis of the obtained data was carried out according to (Snedecor and Cochran., 1980)., Duncan's multiple range tests was used for comparison among the means (Duncan., 1958). The M stat C program was used for analysis.

RESULTS AND DISCUSSION

1. Fresh and dry weight of tomato plant organs.

1. Effect of tomato hybrids

Data presented in Table 4 show significant differences between tomato hybrids in both seasons for fresh and dry weight traits (roots, leaves, branches,

clusters, total fresh weight and total dry weight), except leaves dry weight. The local "Eyeon" hybrid followed by hybrid "GS-12" were the best for most studied traits in both seasons. That is mean the local "Eyeon" hybrid was more tolerant for the unfavorable soil and water conditions which, these results on it is vegetative vigorous.

Table 4. Effect of tomato hybrids and organic manure sources on fresh and dry weight of plants under salinity condition during 2015-2016 seasons.

Characters / Variables		Fresh weight (g)					Dry weight (g)			
		Roots	Leaves	Branches	Clusters	Total plant	Roots	Leaves	Branches	Total plant
Effect of tomato hybrids					75 Days from transplanting					
					Season 2015					
Eyeon		76.12a	182.63a	530.52a	725.44a	1514.72a	24.47a	43.77a	118.17a	186.41a
Alisa		59.03c	131.34b	409.81b	515.08b	1115.29c	21.19b	37.38a	96.46b	155.05b
G.S-12		66.17b	151.73ab	452.87ab	570.69b	1241.47b	23.88a	39.97a	117.56a	181.42a
					Season 2016					
Eyeon		78.34a	184.82a	532.52a	727.97a	1523.67a	27.11a	46.33a	120.88a	194.33a
Alisa		61.61c	133.68b	412.18b	518.62b	1126.10b	24.00b	40.19a	99.19b	163.39b
G.S-12		68.19b	154.31ab	455.34ab	573.37b	1251.21b	26.67a	42.70a	120.35a	189.74a
Effect of organic fertilizers (Kg N/fed)							Season 2015			
Cow 120		62.07c	122.29b	373.49c	550.90b	1108.75c	21.01a	36.63b	96.51b	154.15c
Cow 150		68.00ab	162.46a	425.55bc	580.83ab	1236.85b	22.19a	40.96ab	101.95b	165.11c
ChM 120		66.64b	154.55a	473.12b	581.44ab	1275.76b	24.26a	40.64ab	116.04a	180.95b
ChM 150		71.73a	181.64a	585.44a	701.79a	1540.61a	25.26a	43.26a	128.43a	196.96a
					Season 2016					
Cow 120		64.63c	124.06c	375.17c	553.35b	1117.22c	23.62b	39.18b	99.27b	162.07c
Cow 150		69.34b	164.73ab	428.34bc	584.50ab	1246.92b	24.91ab	43.54a	104.68b	173.14c
ChM 120		69.20b	157.30b	475.25b	584.47ab	1286.24b	27.08ab	43.47a	118.84a	189.40b
ChM 150		74.35a	184.31a	587.96a	704.30a	1550.93a	28.10a	46.10a	131.12a	205.33a
Effect of the interactions							Season 2015			
Eyeon	Cow 120	67.63cd	133.37d-g	388.33d	623.33b-d	1212.63c-e	21.50c-e	37.77ef	103.10de	162.37e-g
	Cow 150	78.78ab	197.38b	493.33bc	665.29bc	1434.79b	23.34a-e	45.63ab	108.43cd	177.42de
	ChM 120	75.82b	171.46bc	530.13b	683.91b	1461.33b	25.82a-c	43.59bc	120.55bc	189.97cd
	ChM 150	82.26a	228.33a	710.28a	929.26a	1950.14a	27.21a	48.08a	140.59a	215.88a
Alisa	Cow 120	56.34h	111.84g	353.33d	483.62d	1005.14g	20.17e	35.17f	87.68f	143.04h
	Cow 150	58.78gh	128.33e-g	363.33d	496.27d	1046.72fg	20.84de	37.71ef	92.05ef	150.61gh
	ChM 120	59.51gh	140.06d-g	407.57cd	531.29cd	1138.37d-f	21.55c-e	38.32ef	99.38d-f	158.94f-h
	ChM 150	61.51fg	145.21c-f	515.03b	549.16b-d	1270.92c	22.21b-e	38.65d-f	106.75c-e	167.62ef
G.S-12	Cow 120	62.24e-g	121.66fg	378.81d	545.75b-d	110.48e-g	21.37c-e	36.94ef	98.73d-f	157.05f-h
	Cow 150	66.44de	161.66cd	420.12cd	580.93b-d	1229.04cd	22.39b-e	39.54c-f	105.37de	167.31ef
	ChM 120	64.58df	152.19c-e	481.66bc	529.14cd	1227.58cd	25.40a-d	40.35c-e	128.18ab	193.94bc
	ChM 150	71.41c	171.39bc	531.01b	626.95b-d	1400.77b	26.35ab	43.07b-d	137.94a	207.37ab
						Season 2016				
Eyeon	Cow 120	70.36cd	135.36e-f	390.01d	625.59b-d	1221.32c-e	23.85de	40.12de	105.90de	169.88e-g
	Cow 150	79.72b	198.91b	495.48bc	668.09bc	1442.21b	26.01a-e	47.97ab	111.22cd	185.20de
	ChM 120	78.62b	174.26bc	532.38b	686.80b	1472.08b	28.68a-c	46.45bc	123.31bc	198.45cd
	ChM 150	84.68a	230.77a	712.21a	931.42a	1959.08a	29.92a	50.79a	143.09a	223.80a
Alisa	Cow 120	59.14g	112.94g	355.08d	486.73d	1013.90g	22.97e	37.97e	90.54f	151.49h
	Cow 150	60.84fg	130.93e-g	366.26d	501.78d	1059.81fg	23.63de	40.50de	94.59ef	158.72gh
	ChM 120	62.07ef	142.76d-f	409.91cd	534.60cd	1149.35d-f	24.31c-e	40.76de	102.10d-f	167.18f-h
	ChM 150	64.39ef	148.09c-f	517.48b	551.36b-d	1281.33c	25.09b-e	41.53de	109.54c-e	176.17ef
G.S-12	Cow 120	64.40ef	123.89fg	380.42d	547.72b-d	1116.44e-g	24.04de	39.45de	101.36d-f	164.86f-h
	Cow 150	67.47de	164.36cd	423.27cd	583.63b-d	1238.74cd	25.09b-e	42.17c-e	108.23de	175.49f-g
	ChM 120	66.91de	154.90c-e	483.47bc	532.25cd	1237.29cd	28.26a-d	43.21cd	131.11ab	202.59bc
	ChM 150	73.99c	174.08bc	534.21b	630.12b-d	1412.39b	29.28ab	46.13bc	140.72a	216.01ab

Values having the same alphabetical letter(s) did not significantly differ at 0.05 levels of significance, according to Duncan's multiple range test.
Organic manure rates = Chicken manure (ChM) at a rates 120 and 150 Kg Nitrogen per fed., and Cow manure (Cow) = at a rates 120 and 150 Kg Nitrogen per fed.

2. Effect of organic fertilizers

Application of organic fertilizers from cow and chicken manure exhibited significant differences on all fresh and dry weight traits in both seasons as shown in Table 4, except roots dry weight in the first season. The highest effects were with application the high rate (150 kg N fed^{-1}.) from cow or chicken manure for most traits. Tomato plants fertilized at rate of 150 kg N fed^{-1}. from chicken manure gave the highest values for total fresh and dry weight in both seasons. Regard to the high salinity of the underground water which was the source of irrigation water in this study which consider more injuries for tomato growth and this due to it is contents from high values of the Electric conductivity (E C dSm^{-1}), Sodium soluble percentage (S.S.P %), Sodium exchangeable percentage (S.A.R) and Residual sodium carbonate (R.S.C) as shown in Table 2. It is values were (8.40, 14.44, 60.4 and 26.15 respectively) these values are very high and have a negative impact on tomato plants. Some researchers pointed out that the addition of organic substances has a vital role to reduce the effect of salinity on the plant and its growth. (Lax *et al*., 1994) found that Addition of organic

matter can accelerate the leaching of Na^+, increase water-holding capacity and aggregate stability, and decrease all of the exchangeable sodium percentage (ESP), the sodium adsorption ratio (SAR), pH, and the electrical conductivity (EC). Also, (Abuo El-Kasem., 2016a) reported that fertilization of tomato plants at a rate of 140 Kg N fed^{-1}. from chicken manure, increased significantly the fresh and dry weight of different plant organs; Viz., roots, stems, leaves, as well as clusters and both total fresh and dry weight of tomato plants, compared to the application at the rate of 120 Kg N fed^{-1}. from chicken manure.

3. Effect of the interaction between tomato hybrids and organic fertilizers

The results of the interactions between tomato hybrids and organic fertilizers on plant fresh and dry weight were presented in Table 4. The data show significant effects of the all interaction treatments on all studied traits (fresh and dry weight of tomato plant) in both seasons. For fresh weight traits, the highest values in both seasons were reflected by interaction between the local hybrid Eyeon and organic fertilizer (ChM) with the high rate of (150 kg N fed^{-1}). As for the dry weight of tomato plant, both of the two hybrids, Eyeon and GS-12 combined with high rates of the cow or ChM were had best values for roots dry weight, while their combined with high rate of ChM gave the highest values for branches and total dry weight in both seasons. However, local Eyeon hybrid combined with high rate from Cow or ChM recorded the best value for leaves dry weight in both seasons. The increment in both total fresh and dry weight for Eyeon may be due to the ability of the roots response for organic fertilization under the conditions of irrigation with high saline water this is show through high values of roots and both fresh and dry weight as shown in Table 4. In this connection (Lesaint and Coïc, 1983) reported that organic manure mineralization releases and enriches the soil solution with K^+ and Ca^{++}, which can prevent, through the ionic antagonism effect, the absorption of the excess of toxic ions that are often required in small quantities such as Na^+ and Cl^-. also, (Montasser., 1987) found that addition of farmyard manure (FYM) or (ChM) increased the availability of N, P, and K in a sandy soil. In the same direction, results achieved by (Mohammad *et al*., 1998) indicated that increasing the P level enhanced tomato root growth through increasing both root length and surface area. In addition, (Altaey., 2017) found that the poultry fertilization was due to the reduction of sodium uptake in the root.

2. Fruit yield

1. Early yield and its components

1. Effect of tomato hybrids

Data in the Table 5 show that the different tomato hybrids had a significant effects on all studied traits of early fruit yield in both seasons, except average fruit weight for grade A and B (g per plant) in both seasons, fruit weight for grade B (g per plant) in the second season, and grade B (ton per fed.) for total early yield in the first season. Local Eyeon hybrid registered the highest values for the number of fruits (per plant) and fruits weight (g per plant) for grade A, and total early yield for grade A (ton per fed.) as well as total early fruit yield (A+B ton per fed.) in the both seasons. The increased in total early fruit yield of Eyeon may be due to the increase in the number of fruits per plant and fruit weight (g per plant) for grade A.

2. Effect of organic fertilizers

The data in Table 5 show that all organic fertilizers had a significant effect on all studied traits of early fruit yield in both seasons, except average fruit weight for grade A in both seasons and grade B in the first season. Application of ChM with high rates 150 and/or 120 kg N fed^{-1} which gave the highest values for most studied traits compared to addition of the same rates from cow manure in both seasons. (Oustani *et al*., 2015) on potato plant, found that the application of poultry manure at rate of 60 m^3 ha^{-1} produced the highest averages in all yield parameters i.e., number of tubers per plant, tuber size per plant, tuber yield per plant, and total tuber yield per ha^{-1} compared to adding of PM at rates of 20, 30, 40, and 50 m^3 ha^{-1}.,They also referred in their findings that the average of Na^+ contents measured in both potato leaves and roots proportionally and significantly decreased with the increase of PM rates.

3. Effect of the interaction between tomato hybrids and organic fertilizers

The data in Table 5 show significant effects for the interaction among hybrids and organic fertilizers on all studied traits in both seasons, except average fruit weight for grade A, and same trait for grade B in the first season. Local tomato hybrid "Eyeon" when fertilized with the high rate (150 kg N fed^{-1}) recorded the best values for most traits (no. of fruit per and fruit weight for grade A, fruit weight for grade B, grade A and total early fruit yield) in both seasons. The same treatment was the best for no. of fruit per plant of grade B in the first season and grade B for early fruit yield in the second season. Both of Eyeon and Alisa hybrids combined with chicken manure at the rate (150 and/or 120 kg N fed^{-1}) recorded the best values for no. of fruits per plant and average fruit weight of grade B in the second season, and for grade B of total early fruit yield in first season.

2. Total yield and its components

1. Effect of tomato hybrids

Data presented in Table 6 show no significant effects of tomato hybrids on all studied traits of total fruit yield in both seasons, except no. of fruits per plant and fruit weight for grade B (g per plant), also grade B and total fruit yield (A+B) ton per fed. in the second season. Generally, the local Eyeon hybrid recorded the highest values for all yield parameters in both seasons compared to both of GS-12 or Alisa hybrids. The superiority of local Eyeon hybrid in most growth characteristics led to increasing accumulation of dry matter as shown in Table 4 which is expressed in end-stage an increasing the total fruit yield and its components.

2. Effect of organic fertilizers

The data in Table 6 show that all studied traits of total fruit yield were significantly affected by application of organic fertilizers in both seasons, except

average fruit weight for grade A in both seasons and grade B in the first season. It was found that no significant differences among the two rates of chicken manure (150 and 120 kg N fed^{-1}), where both rates recorded the highest values for all studied traits in the first season, and for no. of fruits for grade A and B in the second season. However, the high rate (150 kg N fed^{-1}) was the best for fruit weight of grade A and B (g per plant) , average fruit weight and fruit weight of grade B, grade, A and B for total fruit yield (ton per fed.) as well as total fruit yield (A+ B ton per fed.). In this respect (Oustani *et al.*, 2015) found that the improvement of yield parameters of potato following fertilization with high rate of PM (60 m^3 ha^{-1}) could be attributed to the improvement of both soil moisture retention and potentials of nutrient supply with macro and micro nutrients for the sandy soils., i.e. which it is the experiments site.

Table 5. Effect of tomato hybrids and organic manure sources on early yield and its components under salinity condition during 2015 - 2016 seasons.

Characters Variables		Early yield and its components								
		Grade A			Grade B			Total early yield (ton/fed.)		
		N0. fruis/ plant	Average fruit weight (g/plant)	Fruit weight (g/plant)	N0. fruis/ plant	Average fruit weight (g/plant)	Fruit weight (g/plant)	Grade A	Grade B	Total early yield (A+B)
Effect of tomato hybrids								Season 2015		
Eyeon		4.60a	126.11a	581.66a	7.91a	83.86a	675.95a	4.07a	4.73a	8.80a
Alisa		3.63b	123.65a	449.39b	7.90a	75.91a	606.97a	3.14b	4.24a	7.39ab
G.S-12		3.03b	123.37a	373.66c	6.98b	77.80a	541.80a	2.61c	3.79a	6.40b
Season 2016										
Eyeon		4.58a	130.07a	596.59a	8.39a	85.33a	730.91a	4.17a	5.11a	9.29a
Alisa		3.82b	122.59a	467.94b	8.51a	77.24a	657.02b	3.27b	4.59b	7.87b
G.S-12		3.34b	125.38a	421.06b	7.24b	81.27a	590.85c	2.94b	4.13c	7.08b
Effect of organic fertilizers (Kg N/fed)								Season 2015		
Cow 120		2.55c	120.47a	295.31d	6.39c	66.93a	395.72c	2.06d	2.76c	4.83d
Cow 150		3.40b	122.70a	426.71c	6.69c	78.78a	562.27b	2.98c	3.93b	6.92c
ChM 120		4.29a	126.08a	540.13b	8.11b	83.67a	677.65ab	3.78b	4.74ab	8.52b
ChM 150		4.78a	128.26a	610.79a	9.19a	87.38a	797.34a	4.27a	5.58a	9.85a
								Season 2016		
Cow 120		2.74c	121.34a	320.21c	6.81b	70.07c	442.06d	2.24c	3.09d	5.33d
Cow 150		3.50b	126.50a	451.19b	7.04b	80.44b	606.72c	3.15b	4.24c	7.40c
ChM 120		4.50a	126.16a	568.02a	8.89a	85.03ab	742.22b	3.97a	5.19b	9.17b
ChM 150		4.93a	130.05a	641.37a	9.45a	89.59a	847.37a	4.49a	5.93a	10.42a
Effect of the interactions								Season 2015		
Eyeon	Cow 120	2.70fg	122.82a	330.88j	5.76ef	66.23a	381.61f	2.31j	2.67f	4.98f
	Cow 150	4.41c	125.06a	547.26d	7.75cd	86.05a	666.82b-d	3.83d	4.66b-d	8.51c
	ChM 120	5.11b	126.71a	645.05b	8.42bc	89.25a	747.56b	4.51b	5.23b	9.74b
	ChM 150	6.19a	129.86a	803.44a	9.73a	93.90a	907.84a	5.62a	6.35a	11.98a
Alisa	Cow 120	2.89e-g	118.93a	309.03k	6.11e	67.31a	411.71f	2.16k	2.88f	5.04f
	Cow 150	2.54gh	122.02a	341.21i	7.10d	74.49a	529.16d-f	2.39i	3.70d-f	6.09e
	ChM 120	4.14c	125.79a	519.07e	8.76b	79.19a	693.52bc	3.63e	4.85ac	8.48c
	ChM 150	4.95b	127.88a	628.25c	9.62a	82.66a	793.52ab	4.39c	5.55ab	9.95b
G.S-12	Cow 120	2.07h	119.67a	246.02l	7.31d	67.26a	393.85f	1.72l	2.75f	4.48f
	Cow 150	3.25de	121.03a	391.67h	5.23f	75.79a	490.85ef	2.74h	3.43ef	6.17e
	ChM 120	3.63d	125.75a	456.26f	7.16d	82.58a	591.86c-e	3.19f	4.14c-e	7.33d
	ChM 150	3.18d-f	127.05a	400.70g	8.21bc	85.57a	690.65bc	2.80g	4.83bc	7.64cd
								Season 2016		
Eyeon	Cow 120	2.88fg	124.56a	355.95fg	6.43f	68.60e	438.91i	2.49fg	3.07i	5.56gh
	Cow 150	4.52cd	127.73a	569.64cd	7.96c	87.76ab	709.35e	3.98cd	4.96e	8.95d
	ChM 120	5.11b	132.77a	675.01b	9.32ab	91.54ab	835.59b	4.72b	5.85b	10.57b
	ChM 150	5.84a	135.23a	785.78a	9.87a	93.43a	939.77a	5.50a	6.58a	12.08a
Alisa	Cow 120	3.17fg	118.03a	344.11fg	6.82ef	69.05e	464.61i	2.41fg	3.25i	5.66gh
	Cow 150	2.71g	126.99a	374.46f	7.74cd	75.25de	583.02g	2.62f	4.08g	6.70f
	ChM 120	4.55cd	119.98a	545.06cd	9.75a	78.93cd	760.92d	3.81cd	5.32d	9.14cd
	ChM 150	4.86bc	125.37a	608.12bc	9.72a	85.76a-c	819.53bc	4.25bc	5.73bc	9.99bc
G.S-12	Cow 120	2.15h	121.45a	260.57g	7.18de	72.56de	422.65i	1.82g	2.96i	4.78h
	Cow 150	3.28f	124.79a	409.46ef	5.42g	78.32cd	527.79h	2.86ef	3.69h	6.56fg
	ChM 120	3.86e	125.74a	484.01de	7.59cd	84.62bc	630.16f	3.39de	4.41f	7.82e
	ChM 150	4.09de	129.56a	530.21cd	8.77b	89.58ab	782.82cd	3.71cd	5.48cd	9.19cd

Values having the same alphabetical letter(s) did not significantly differ at 0.05 levels of significance, according to Duncan's multiple range test.
Organic manure rates = Chicken manure (ChM) at a rates 120 and 150 Kg Nitrogen per fed., and Cow manure (Cow) = at a rates 120 and 150 Kg Nitrogen per fed.

3. Effect of the interaction between tomato hybrids and organic fertilizers

The data in Table 6 show significant effects for the interaction among hybrids and organic fertilizers on all studied traits in both seasons, except average fruit weight for grade A (g per plant) in both seasons and average fruit weight for grade B in the first season. The local Eyeon hybrid fertilized with the high rate (150 kg N fed^{-1}) from ChM increased number of fruits and fruit weight for grades A and B (g per plant) as well as total yield for grade A , B (ton per fed.), and total fruit yield (A+B ton per fed.) in both seasons, However, The Local Eyeon hybrid was more responses to the high rates (150 Kg N fed^{-1} from ChM) this could give superiority for using local Eyeon hybrid under saline irrigation water, as well as the high rate of ChM, may stimulate the local Eyeon hybrid for saline water tolerance, this may be due to the content of organic fertilizer (ChM) from organic matter, macro and micro nutrients compared to cow manure content as shown in Table 3., in addition, the role of organic fertilizers for improvement of soil properties.

Table 6. Effect of tomato hybrids and organic manure on total yield and its components under salinity condition during 2015-2016 seasons.

Characters		Total yield and its components								
		Grade A			Grade B			Total yield (ton/fed.)		
Variables		N0. fruis (per plant)	Average fruit weight (g/plant)	Fruit weight (g/plant)	N0. fruis (per plant)	Average fruit weight (g/plant)	Fruit weight (g/plant)	Grade A	Grade B	Total yield (A+B)
Effect of tomato hybrids						Season 2015				
Eyeon		13.43a	121.46a	1634.37a	20.43a	80.62a	1553.68a	11.44a	10.87a	22.31a
Alisa		11.96a	117.53a	1409.00a	19.29a	72.81a	1412.36a	9.86a	9.88a	19.75a
G.S-12		12.30a	118.91a	1463.82a	19.79a	76.29a	1524.56a	10.24a	10.67a	20.92a
						Season 2016				
Eyeon		13.56a	131.89a	1782.64a	20.73a	84.14a	1753.84a	12.47a	12.27a	24.75a
Alisa		11.67a	126.55a	1469.26a	18.67b	82.53a	1552.80c	10.28a	10.87c	21.15b
G.S-12		13.43a	125.63a	1683.18a	20.36a	80.62a	1658.66b	11.78a	11.61b	23.39a
Effect of organic fertilizers (Kg N/fed)						Season 2015				
Cow 120		11.43b	114.82a	1309.77b	18.30b	64.88a	1093.28b	9.16b	7.65b	16.82c
Cow 150		11.35b	119.01a	1354.54b	16.76b	76.03a	1241.75b	9.48b	8.69b	18.17bc
ChM 120		13.44a	119.84a	1610.98ab	20.95ab	80.03a	1678.49ab	11.27ab	11.74ab	23.02ab
ChM 150		14.04a	123.53a	1734.29a	23.35a	85.35a	1973.96a	12.13a	13.82a	25.95a
						Season 2016				
Cow 120		11.78b	121.85a	1428.39c	17.44c	70.42c	1216.47d	9.99c	8.51d	18.51d
Cow 150		12.21ab	126.41a	1536.42c	19.42b	76.13c	1472.08c	10.75c	10.30c	21.06c
ChM 120		13.25ab	129.69a	1712.98b	20.71ab	85.55b	1773.15b	11.99b	12.41b	24.40b
ChM 150		14.32a	134.14a	1902.30a	22.12a	97.61a	2158.71a	13.31a	15.11a	28.42a
Effect of the interactions						Season 2015				
Eyeon	Cow 120	11.15c-e	115.72a	1282.56de	23.11ab	66.04a	1236.03b-d	8.97de	8.65b-d	17.63de
	Cow 150	11.62c-e	121.36a	1408.69b-e	13.35e	83.44a	1100.94cd	9.86b-e	7.70cd	17.57de
	ChM 120	14.23b	121.37a	1725.20b	20.81a-c	84.85a	1755.59a-c	12.07b	12.28a-c	24.36b
	ChM 150	16.74a	127.43a	2121.01a	24.47a	88.14a	2122.16a	14.84a	14.86a	29.70a
Alisa	Cow 120	10.35e	113.75a	1172.84e	15.20de	63.98a	974.31d	8.21e	6.82d	15.03e
	Cow 150	11.03de	117.58a	1306.61de	18.50b-d	71.01a	1287.34b-d	9.15de	9.01b-d	18.15c-e
	ChM 120	14.01b	117.95a	1656.38bc	20.29a-c	73.62a	1482.32a-d	11.59bc	10.37a-d	21.97b-d
	ChM 150	12.45b-d	120.84a	1500.17b-e	23.18ab	82.63a	1905.49ab	10.51b-e	13.34ab	23.84bc
G.S-12	Cow 120	12.81b-d	115.02a	1473.90b-e	16.59c-e	64.64a	1069.51cd	10.32b-e	7.48cd	17.80de
	Cow 150	11.41c-e	118.10a	1348.32c-e	18.43b-d	73.62a	1336.96b-d	9.43c-e	9.36b-d	18.79b-e
	ChM 120	12.08c-e	120.20a	1451.36b-e	21.76ab	81.62a	1797.55a-c	10.16b-e	12.58a-c	22.74b-d
	ChM 150	12.92bc	122.33a	1581.69b-d	22.40ab	85.27a	1894.24ab	11.07b-d	13.26ab	24.33b
						Season 2016				
Eyeon	Cow 120	10.76cd	128.46a	1379.48d	19.02d-f	71.69cd	1352.18f	9.65d	9.46f	19.12f
	Cow 150	12.81b-d	130.51a	1659.74c	20.53a-d	75.11c	1538.76d	11.61c	10.77d	22.39e
	ChM 120	14.14b	132.92a	1877.30b	21.07a-d	88.44b	1863.38c	13.14b	13.04c	26.18c
	ChM 150	16.53a	135.75a	2214.03a	22.32a	101.36a	2261.06a	15.49a	15.82a	31.32a
Alisa	Cow 120	10.92cd	120.16a	1312.31d	14.89g	76.85c	1142.49g	9.18d	7.99g	17.18g
	Cow 150	10.54d	126.72a	1339.00d	17.86f	79.10c	1402.40f	9.37d	9.81f	19.19f
	ChM 120	12.69b-d	126.98a	1596.66c	19.99b-e	79.27c	1583.56d	11.17c	11.08d	22.26e
	ChM 150	12.55b-d	132.36a	1629.06c	21.95a-c	94.89ab	2082.75b	11.40c	14.58b	25.98cd
G.S-12	Cow 120	13.65b	116.94a	1593.39c	18.41ef	62.71d	1154.75g	11.15c	8.08g	19.23f
	Cow 150	13.24bc	122.03a	1610.54c	19.88c-f	74.21c	1475.09e	11.27c	10.33e	21.61e
	ChM 120	12.94b-d	129.19a	1664.98c	21.07a-d	88.95b	1872.50c	11.65c	13.10c	24.76d
	ChM 150	13.89b	134.38a	1863.83b	22.08ab	96.59ab	2132.32b	13.04b	14.92b	27.97b

Values having the same alphabetical letter(s) did not significantly differ at 0.05 levels of significance, according to Duncan's multiple range test.
Organic manure rates = Chicken manure (ChM) at a rates 120 and 150 Kg Nitrogen per fed., and
Cow manure (Cow) = at a rates 120 and 150 Kg Nitrogen per fed.

(Oustani *et al*., 2015) reported that application of organic manures decreased the adverse effects of salinity on the potato yield.

The addition at rate 140 kg N fed^{-1} from (ChM) had a significant effect on the total fruit yield and its components of the tomato plant compared to the addition of 120 Kg N fed^{-1} from (ChM). which mentioned by (Abuo El-Kasem., 2016a)

Table 7. Effect of tomato hybrids and organic manure sources on fruit quality under salinity condition during 2015-201seasons.

Characters Variables		pH	V.C (mg/100gm juice)	TSS (%)	Firmness (Kg/cm2)	Dry matter (%)	Fruit dimensions: Fruit length L. (cm)	Fruit dimensions: Fruit diameter D. (cm)	Fruit dimensions: Fruit shape (L/D)
Effect of tomato hybrids					Season 2015				
Eyeon		4.18a	23.82a	5.35a	2.65a	4.49a	6.00ab	5.92a	1.02a
Alisa		4.11a	22.60a	4.62a	2.16a	4.19c	5.56b	6.28a	0.89b
G.S-12		4.15a	23.06a	5.06a	2.59a	4.37b	6.27a	6.07a	1.03a
						Season 2016			
Eyeon		4.29a	26.00a	5.86a	2.86a	5.49a	6.45a	5.76a	1.35a
Alisa		4.22b	23.95a	5.02b	2.22b	4.72b	5.58b	6.06a	1.19a
G.S-12		4.26ab	25.74a	5.50ab	2.74a	5.45a	6.47a	5.93a	1.39a
Effect of organic fertilizers (Kg N/fed)						Season 2015			
Cow 120		4.13a	22.03b	4.39b	2.20c	4.24b	5.75a	6.34a	0.90a
Cow 150		4.11a	22.86ab	4.93ab	2.30c	4.26b	5.97a	6.17a	0.97a
ChM 120		4.14a	23.59a	5.06ab	2.49b	4.35b	6.04a	6.04a	1.01a
ChM 150		4.18a	24.16a	5.67a	2.88a	4.54a	6.01a	5.82a	1.05a
						Season2016			
Cow 120		4.20a	23.63a	5.02c	2.31c	4.92b	5.95a	6.21a	1.27a
Cow 150		4.24a	25.41a	5.32bc	2.50bc	5.01b	6.10a	5.90a	1.31a
ChM 120		4.27a	25.75a	5.56ab	2.64b	5.41a	6.17a	5.78a	1.35a
ChM 150		4.32a	26.13a	5.92a	3.00a	5.54a	6.44a	5.79a	1.31a
		Effect of the interactions					Season 2015		
Eyeon	Cow 120	4.13ab	22.58c-f	4.30c-d	2.17e	4.31cd	5.80a-d	6.21a	0.94b-e
	Cow 150	4.16ab	23.59a-d	5.45ab	2.41c	4.35c	5.80a-d	5.92a	0.98a-e
	ChM 120	4.21ab	24.16a-c	5.58a-b	2.81b	4.51b	6.19a-c	5.75a	1.07a-c
	ChM 150	4.23a	24.94a	6.06a	3.24a	4.81a	6.22a-c	5.83a	1.11a
Alisa	Cow 120	4.06b	21.65f	4.33cd	2.09e	4.17e	5.49d	6.40a	0.86e
	Cow 150	4.06b	22.45d-f	4.18d	2.15e	4.18de	5.71b-d	6.43a	0.88de
	ChM 120	4.11ab	22.99b-f	4.56b-d	2.19e	4.19de	5.53cd	6.45a	0.86e
	ChM 150	4.16ab	23.32b-e	5.42a-c	2.23de	4.24c-e	5.55cd	5.85a	0.95b-e
G.S-12	Cow 120	4.10ab	21.86ef	4.53b-d	2.34cd	4.25c-e	5.98a-d	6.44a	0.92c-e
	Cow 150	4.10ab	22.55c-f	5.16a-d	2.35cd	4.27c-e	6.43a	6.15a	1.04a-d
	ChM 120	4.13ab	23.61a-d	5.03a-d	2.47c	4.35c	6.42a	5.92a	1.09ab
	ChM 150	4.16ab	24.21ab	5.53ab	3.18a	4.61b	6.25ab	5.78a	1.09ab
						Season 2016			
Eyeon	Cow 120	4.28ab	24.11bc	5.35bc	2.23d	5.25de	6.19bc	5.99ab	1.33a-c
	Cow 150	4.28ab	26.16ab	5.73bc	2.71c	5.32d	6.58ab	5.99ab	1.36ab
	ChM 120	4.29ab	26.47ab	5.86b	3.08b	5.61b	6.48ab	5.58b	1.40a
	ChM 150	4.32a	27.28a	6.49a	3.45a	5.81a	6.57ab	5.51b	1.31a-c
Alisa	Cow 120	4.13b	22.71c	4.51e	2.16d	4.22f	5.41d	6.15ab	1.16c
	Cow 150	4.22ab	23.96bc	4.75de	2.25d	4.29f	5.42d	5.97ab	1.16c
	ChM 120	4.23ab	24.49a-c	5.29bc	2.21d	5.11e	5.61d	6.12ab	1.24a-c
	ChM 150	4.31a	24.64a-c	5.53bc	2.27d	5.26de	5.91cd	6.01ab	1.21b-c
G.S-12	Cow 120	4.18ab	24.07bc	5.21cd	2.53c	5.29d	6.26bc	6.48a	1.32a-c
	Cow 150	4.24ab	26.12ab	5.49bc	2.54c	5.42cd	6.30a-c	5.74b	1.42a
	ChM 120	4.29ab	26.31ab	5.54bc	2.62c	5.54bc	6.44a-c	5.65b	1.42a
	ChM 150	4.32a	26.46ab	5.74bc	3.28a	5.55bc	6.86a	5.87ab	1.42a

Values having the same alphabetical letter(s) did not significantly differ at 0.05 levels of significance, according to Duncan's multiple range test.
Organic manure rates = Chicken manure (ChM) at a rates 120 and 150 Kg Nitrogen per fed., and Cow manure (Cow) = at a rates 120 and 150 Kg Nitrogen per fed.

3. Fruit quality

1. Effect of tomato hybrids

Data presented in Table 7 show significant differences between tomato hybrids for dry matter, fruit length (L), and fruit shape (L/D) traits in first season. However, significant differences were detected for all traits in the second season, except, content of V.C, fruit diameter (D), and (L/D) traits. The local Eyeon hybrid and imported hybrid GS-12 were the best for most studied traits in both seasons.

2. Effect of organic fertilizers

The results in Table 7 show that application of organic fertilizers (cow and chicken) exhibited significant differences on total soluble solids (TSS%), fruit firmness and dry matter in both seasons, as well as vitamin C (V.C) content in the first season. However, no significant

differences were recorded between treatments for the other traits. Application of cow manure (150 kg N fed^{-1}) and ChM (120 and 150 kg Nfed^{-1}) were the best for V.C content in the first season and TSS% in the both seasons. Tomato plants fertilized with (150 kg Nfed^{-1}) from ChM gave the high values for firmness and dry matter in both seasons. No significant effects on pH of fruit juice were recorded with the addition on any of organic fertilizer treatments in the both seasons. The differences in the management of soil fertility under organic practices effects on soil dynamics and plant metabolism, which results in differences in plant composition and nutritional quality (Worthington., 2001) in this respect, (Adeniyi and Ademoyegum., 2012) on tomato, found that application of ChM at a rate of 20 t ha^{-1} gave significant increases on the TSS % content in tomato fruits. Also, (Ibrahim *et al*., 2013) on tomato, found different effects of adding different types of organic fertilizer such as compost, ChM, ChM + cow, and ChM + compost on fruit quality of tomato. They found also that the application of all organic manure treatments significantly increased total TSS %, total soluble sugars, V.C, and total protein compared to untreated control.

3. Effect of the interaction between tomato hybrids and organic fertilizers

The results of the interactions between hybrids and organic fertilizers on fruit quality were presented in Table 7 The data show significant effects of the interaction on all studied traits in both seasons. The interaction between the local Eyeon hybrid and the rate of 150 Kg N fed^{-1} from ChM recorded the highest values of pH, V.C, and TSS% in fruit juice; and dry matter content in tomato fruits compared to the other treatments in the two growing seasons. However, GS-12 hybrid recorded the best values for fruit length with adding rates of 120 and 150 Kg N fed^{-1} from ChM and cow manure, respectively in the first season, but in the second season, the highest value for fruit length was recorded with the adding the rate of 150 Kg N fed^{-1}. from ChM. Concerning, the fruit diameter no significant differences among the all treatments were recorded when added the three tomato hybrids in the first season. On the other hand, GS-12 hybrid recorded the best values for fruit diameter with adding rates of 120Kg N fed^{-1} from ChM in the second season. Generally, the local Eyeon hybrid recorded the highest value for fruit diameter with the application of ChM at the rate of 150Kg N fed^{-1} in the first season., while, in the second season the highest values were recorded with the two hybrids, i.e., Eyeon and GS-12 for fruit dimensions with adding of ChM at the rate of 120 or 150 Kg fed^{-1}. and or 150 Kg N fed^{-1}. from cow manure for hybrid GS-12; and with 150 Kg N fed^{-1} for hybrid Eyeon. Fertilization of local Eyeon hybrid by ChM at the rate of 150 Kg N fed^{-1} recorded the highest values of pH, V.C, T.S.S%, fruit firmness and dry matter content in tomato fruits.

CONCLUSION

According to the obtained results, it can be said that, the superior treatment to produce high fruit yield was planting local Eyeon hybrid and fertilizer it with the rate of 150 Kg N fed^{-1} from chicken manure (ChM). It was found also that the high rate of (ChM) gave the best quality for PH, V.C, T.S.S, fruit firmness and dry matter content in tomato fruits.

The local Eyeon hybrid was the superior comparing to the other hybrids under sandy soil conditions and saline water in El- Arish region, when fertilize it with the high rate of (ChM) at the rate of 150 Kg N fed^{-1}., which may stimulate and alleviated of the local Eyeon hybrid for more tolerance to saline water than the other hybrids.

Generally, It can recommend to cultivate the local tomato Eyeon hybrid according to its superiority than the foreign ones for most studied traits, therefore, it can consider that replace the local tomato Eyeon hybrid instead foreign tomato hybrid GS-12 which import yearly from abroad and save some of foreign currency.

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سلوك بعض هجن الطماطم المحليه والاجنبيه تحت ظروف التسميد العضوى وملوحة مياه الرى بالعريش- شمال سيناء

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أجريت تجربة حقلية خلال الموسم الصيفى المتأخر لعامى 2015و2016 فى محطة البحوث الزراعية- بالعريش- شمال سيناء. وكان الهدف من البحث دراسة سلوك ثلاث هجن منها هجين محلي وهو عيون بالاضافه الى هجينين أحنبين وهما جى إس 12 وأليسا، وتضمنت الدراسة: التسميد بمصدرين من السماد العضوى وهما سماد سبلة الدواجن وسماد الابقار حيث أضيف كلا منهما بمعدلين، المعدل الاول 120 كجم نيتروجين/الفدان والثانى 150كجم نيتروجين /الفدان وتم دراسة تاثير هذه المعاملات على النمو والمحصول وصفات الجوده لنباتات الطماطم تحت ظروف الاراضى الرمليه والرى بماء عالى الملوحه بنظام الرى بالتنقيط. أستخدم لتصميم التجربة نظام القطع المنشقة مره واحده فى ثلاث مكررات. أظهرت النتائج أن زراعة الهجين المحلى عيون مع اضافة التسميد العضوى من سبلة الدواجن بمعدل 150 كجم نيتروجين/الفدان أعطى أعلى القيم للنمو الخضرى متمثلا فى الوزن الطازج والجاف للجذور والسيقان والاوراق والوزن الطازج للعناقيد الزهريه وكذلك الوزن الكلى الطازج والجاف لأعضاء النبات، يليه الهجين جى اس 12 مع نفس المعامله السابقه مقارنة بباقى المعاملات تحت الدراسة. كما اظهرت النتائج تفوق الهجين المحلى عيون مع التسمد بالمعدل 150 كجم نيتروجين من سبلة الدواجن للفدان لصفات المحصول ومكوناته (المحصول المبكر،المحصول الكلى) معبرا عنها فى عدد الثمار على النبات، ومتوسط وزن الثمره للدرجه الاولى والثانيه ووزن الثمار بالجرام للنبات والطن للفدان، أما بالنسبة لصفات الجودة فقد أظهرت النتائج زيادة محتوى العصير لثمار الطماطم من فيتامين سى، المواد الصلبه الذائبه الكليه، وحموضة العصير بالاضافة الى صلابة الثمار معبرا عنه بالكيلوجرام على سم^2 وكذلك النسبة المئوية لمحتوى الثمار من الماده الجافه. وكان الهجين المحلى عيون اكثر استجابة من الهجن الاخرى الاجنبية (اليسا و جى اس 12) مع التسميد العضوى بمعدلات عاليه من سبلة الدواجن تحت ظروف الاراضى الرمليه والرى بمياه عالية الملوحه مما يؤكد ان للتسميد العضوى دور مهم فى تنشيط وتخفيف اثار الملوحه على هجن الطماطم تحت الدراسة. ولذلك يوصى هذا البحث بزراعة الهجين المحلى عيون لتفوقه فى معظم الصفات تحت الدراسة عن الهجن الاجنبية الاخرى سواء الهجين السائد بالمنطقة وهو جى اس 12 او بعض الهجن الاخرى الغير معروفة تحت ظروف العريش بشمال سيناء، مما يقلل الاستيراد للبذور من الخارج وتوفير العمله الصعبه.