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THE EFFECT OF AGRICULTURE MEDIA AND THE QUALITY OF IRRIGATION WATER IN THE SEEDLINGS GROWTH OF TWO POMEGRANATE CULTIVARS

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Abstract

The experiment was conducted in Al-Qasim district, Al-Bosmik village, Babylon Province in the season 2017 with three factors. The first factor was three agricultural media [soil only, soil + organic substance (Peat moss) with ratio of 1:1, soil + organic substance (Peat moss) with ratio of 1:3] which is symbolized by B1, B2 and B3, respectively. The second factor is the quality of irrigation water at four levels (1.2 river water, 4.48, 7.58, 10.46 ds.m^{-1} drainage water), which is symbolized by W1, W2, W3 and W4 Respectively, the third factor is two pomegranates cultivar (Wonderful and Salimi) which is symbolized by V1 and V2 respectively and interaction between them. The experiment was conducted as a factorial experiment according to Randomized Complete Blocks Design (RCBD), with three replicates, each replicate containing 24 treatments with 4 seedlings per experimental unit. The arithmetic averages were measured according to the least significant difference (LSD) %.The results showed that pomegranate seedlings grown in the media of 1 soil volume: 3 organic substance were significantly excelled on other treatments in all studied traits compared to control treatment. As for the quality of irrigation water, the drainage water with W4 treatment was gave the lowest averages in most traits of the study of 10.48 ds.m^{-1}, while the highest average of proline was 10.07 mg.g^{-1} and the electrical conductivity to 7.63 ds.m^{-1} in this treatment. The results showed that the American cultivar Wonder V1 was significant excelled in most of the studied traits compared to the local cultivar Salimi (V2), which gave the lowest average. The interaction treatment between agriculture media B3 and river water W1 gave the highest average in most studied traits, while the leaves content of proline decreased and the electrical conductivity decreased. As for the triple interaction between the factors of the experiment, the treatment V1B3W1 recorded the highest values in most studied traits, while the treatment V1B1W4 gave the lowest averages in the traits of seedlings height and leaf area.

Key words: agricultural media, the quality of irrigation water, pomegranate cultivars.

Introduction

Pomegranate is Globally called *Punica granatum* L. This name means the red fruit with many seeds belonging to the Punicaceae family, which includes only one genus (Punica Stover, 2007). Organic fertilizer has long been used as a soil enhancer and thus improved plant growth because it is rich in nutrients that contribute to increasing soil fertility. This in turn affects vegetative growth of the plant. It not only supplies the nutrients needed by the plants but also is a good source of organic substance. Animal or plant wastes These wastes are decomposed (Compost) and are useful in organic farming and are compensated for processed fertilizers (Kuepper, 2003 and Marr, 1998). The use of organic fertilizers in general and in various stages of decomposition as a fertilizers increases soil fertility and improves the yield due to the positive effects of organic substance that add to the soil (Brown, 2002). This study will examine the impact of the quality of irrigation water as water is the main factor of agricultural production and development, especially in dry and semi-dry regions, as agricultural expansion requires sufficient irrigation water, thus forcing water users to find additional sources of irrigation water. One of these sources is the use of salt water, The salinity of saline water is dependent on the extent to which it contains salts and when used over time it reduces the

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nutrient availability of the soil (Zubaidi, 1989). In most regions of the world, water is an important economic resource for most countries. Therefore, the source should be actively and effectively exploited to maximize the benefit and development. The water reserves Sourceshas been used. Due to the steady population Increasing, The need Urgent to provide larger quantities food and Good quality water has become Rare sources (FAO, 1992). In Iraq, there are many local cultivars, which are estimated to be 23 cultivars, including Salimi, Al-huluw, Rawah, Seedless, Nab Aljamal, Jilawi, Hijazi, Almasabiq, Pink, Black and American, which have been recently cultivated (Khafaji and Mukhtar, 1989; Ibrahim, 1989). Therefore, the study aims to test the effect of salinity on the growth of two pomegranate cultivars (Salimi and wonderful). Testing the role of addition of organic substance in the mitigation of salinity in addition to benefiting from limited-use water quality.

Materials and methods

Research implementation

The experiment was conducted in Al-Qasim district, Al-Bosmik village, Babylon Province on two seedlings of pomegranate (salimi and Wonderful), with two years old, as homogenous as possible, Purchased from the General Company for Horticulture and Forestry, Horticultural station in Al-Hindia, in Karbala province, cultivated in 1 kg bags on 5/1/2017 and was transferred on 22/1/2017 to 17 kg bags made of polyethylene filled with the agricultural media and according to the statistical plan of the experiment. The organic material was brought from (Kufa plant) to agricultural fertilizers belonging to college of Agriculture, University of Kufa, It consists of macro and micro-nutrients necessary for growth (Fe, Mn, Zn, Ca, Mg, K, P, N). The irrigation water was taken from the drainages distributed within the geographical area to Research implementation.

Experimental factors:

The first factor: - Agriculture media with three types are

A- Cultivation in soil.
B- Cultivation in soil + organic substance by 50:50.
C- Cultivation in soil + organic substance by 75:25

The second factor: - The qualities of irrigation water included four types:

A- River water (Control). (1.2 $ds.m^{-1}$)
B- Drainage water (4.48 $ds.m^{-1}$)
C- Drainage water (7.58 $ds.m^{-1}$)
D- Drainage water (10.46 $ds.m^{-1}$)

Third Factor: - Cultivars.

A- American cultivar (Wonderful).
B- The local cultivar (salimi).

Experiment Design:

The experiment was conducted as a factorial experiment according to Randomized Complete Blocks Design (RCBD), in three factors: the first factor with three levels of organic substance and the second factor with four types of water (River water, Drainage water with three concentrations). The third factor is cultivars (wonderful, salimi) to become (3×4×2). The experimental unit consisted of four seedlings, Thus, the total number of 96 seedlings per repeate, and for three replicates we planted 288 seedlings for both cultivars. The averages were measured by a last significant difference (L.S.D) unser the 5% probability level [Sahuki et al., 1990]. The data were analyzed using the genstat.

Studied traits:

1- Seedlings height (cm).
2- The average leaf area (cm^2).
3- Leaves content of Chlorophyll (SPAD unit).
4- Leaves content of carbohydrates (%).
5- Leaves content of proline acid ($mg.g^{-1}$)
6- Electrical conductivity EC ($ds.m^{-1}$).

3. RESULTS

Seedlings height (cm)

The results of the statistical analysis in table (1) showed that the organic substance in the media B3 was significantly excelled in the seedlings height, reaching 97.02 cm compared with the control treatment B1, which reaching 78.83 cm. This is consistent with (Al-Jubouri, 2007) that found when using the media of (loamy sand soil +decomposed animal fertilizer + peat moss with ratio 1: 2: 1) on *Pistachio vera* L. Seedlings that led to the highest seedlings height. The results of the table showed that the increase in salinity of irrigation water had a significant effect in lowering the seedlings height. The treatment W4 gave the lowest average of the seedlings height 80.02 cm compared to W1 treatment which gave 98.08 cm. The results in the same table showed no significant difference in the height of the seedlings between the American cultivar (Wonderful) V1 and the local cultivar (salimi) V2. While the bi-interaction between the agriculture media and the quality of irrigation water (B×W) showed significant differences, The seedlings height of B3W1 treatment reaching 107.57 cm while B1W4 treatment gave the lowest average of 72.13 cm. The bi-interaction between the agriculture media and the cultivar (B×V) had a significant effect in this trait. The treatment of V1B3 was excelled by giving it the highest average of seedlings height 101.00 cm while the

treatment of V1B1 gave the lowest average 76.23 cm. As for bi-interaction between cultivars and the quality irrigation water (V×W), The V2W1 treatment gave the highest average of 98.72 cm while the treatment of V2W4 gave the lowest average 77.41 cm. The results of triple interaction showed a significant difference in the average of increase in seedlings height, as the treatment V1B3W1 gave the highest average of the seedlings height 108.50 cm compared to V1B1W4 treatment which gave the seedlings height reaching 71.50 cm.

Leaf area (cm^2)

The results showed in table (1) that there was a significant increase in the average of leaf area when treated the pomegranate seedlings with organic substance, the treatment B3 significantly excelled by giving it the highest average of 2.76 cm^2 compared to treatment B1, which gave the lowest average 1.87 cm^2. This is consistent with (Khattab and Ayma, 2012) that found when treated pomegranate trees (Manfaluti cultivar) that cultivated in sandy soil with humic acid with irrigation water, in which the researchers obtained a significant increase in leaf area compared to the control treatment. As for the quality of irrigation water, there was a significant decrease in the average leaf area when the salinity of irrigation water increased. the treatment W4 gave the lowest average of (1.88 cm^2) while W1 treatment recorded the highest average of leaf area (2.72 cm2). The results showed that there were significant differences between the cultivars in this trait. the treatment V1 was significantly excelled by giving it 2.63 cm^2 compared with V2 treatment, which gave 2.04 cm^2. This is consistent with (Al-muali, 2012), which studied the effect of the cultivating date and agriculture media on strawberries cultivars (Glucose), Hapil cultivar significantly excelled by giving it the highest average of leaf area (172.24 cm^2) compared with the Fern cultivar, which gave the lowest average (138.08 cm^2). From the same table, there were significant differences in the bi-interaction treatments between agriculture media and the quality of irrigation water. The treatment B3W1 was excelled by giving it the highest average (3.20 cm^2) compared to the B1W4 treatment which gave the lowest average (1.34 cm2). In the triple interaction between agriculture media and cultivars, there was a significant difference between the treatments in this trait, the treatment V1B3 was significantly excelled by giving it the highest average (3.21 cm^2) compared to treatment V2B1, which gave the lowest average of (1.82 cm^2). As for the bi-interaction treatment between the quality of irrigation water and cultivars, the results of the following

Table 1: The effect of agriculture media and the quality of irrigation water in the seedlings height (cm) and the leaf area (cm^2) for two cultivars of pomegranate seedlings.

Cultivars (V)	Agriculture media (B)	Seedlings height (cm)					Leaf area (cm^2)				
		The quality of irrigation water water ($ds.m^{-1}$)				V×B	The quality of irrigation water ($ds.m^{-1}$)				V×B
		1.2 W1	4.48 W2	7.58 W3	10.46 W4		1.2 W1	4.48 W2	7.58 W3	10.46 W4	
Wonderful (V1)	B1	79.67	77.87	75.90	71.50	76.23	2.36	2.17	1.79	1.33	1.91
	B2	104.17	101.53	96.57	83.87	96.53	3.30	3.19	2.37	2.19	2.76
	B3	108.50	105.33	97.63	92.53	101.00	3.54	3.41	3.01	2.90	3.21
Salimi (V2)	B1	88.70	86.60	77.63	72.77	81.42	2.06	1.99	1.88	1.35	1.82
	B2	100.83	92.33	81.50	78.73	88.35	2.19	2.11	1.97	1.69	1.99
	B3	106.63	99.17	85.63	80.73	93.04	2.86	2.58	1.96	1.83	2.31
L.S.D 0.05		**13.90**				**6.95**	**0.41**				**0.20**
						V					V
V×W	V1	97.44	94.91	90.03	82.63	91.26	3.07	2.92	2.39	2.14	2.63
	V2	98.72	92.70	81.59	77.41	87.61	2.37	2.22	1.93	1.62	2.04
L.S.D 0.05		**8.02**				**4.01**	**0.24**				**0.12**
						B					B
W×B	B1	84.18	82.23	76.77	72.13	78.83	2.21	2.08	1.83	1.34	1.87
	B2	102.50	96.93	89.03	81.30	92.44	2.75	2.65	2.17	1.94	2.38
	B3	107.57	102.25	91.63	86.63	97.02	3.20	2.99	2.48	2.36	2.76
L.S.D 0.05		**9.83**				**4.91**	**0.29**				**0.14**
	W	98.08	93.81	85.81	80.02		2.72	2.57	2.16	1.88	
L.S.D 0.05		**5.67**					**0.17**				

table indicate significant differences, The treatment of V1W1 was significantly excelled and gave the highest average of 3.07 cm^2 compared to the treatment V2W4, which gave the lowest average of 1.62 cm^2. The triple interaction between the factors of the study, the treatment V1B3W1 gave highest average 3.54 cm^2 compared to the treatment V1B1W4, which gave the lowest average of 1.33 cm^2.

Estimation of leaves content of chlorophyll (SPAD)

It is noted from table (2) that the organic substance in agriculture media has a significant effect in this trait. The treatment B3 has significantly excelled and gave the highest average of leaves content of chlorophyll 48.95 SPAD compared with B1 treatment which gave 44.41 SPAD. As for the quality of irrigation water, there was a significant decrease in the leaves content of chlorophyll when the salinity of irrigation water increased. The treatment of W4 gave the lowest average of 41.58 SPAD while W1 treatment recorded the highest average of 50.76 SPAD. This is agreed with (Sevengor *et al.,* 2011] that the salinity works to destroy chlorophyll and slow the formation speed and increase the effectiveness of the chlorophylase enzyme and then decrease the chlorophyll content. The results showed significant differences between the cultivars in this trait. V1 treatment was significantly excelled by giving it 48.02 SPAD compared to V2 treatment, which gave 44.94 SPAD. From the same table, there were significant differences in the bi interaction treatments between agriculture media and the quality of irrigation water. The treatment B3W1 was significantly excelled which gave an average 53.15 SPAD compared with B1W4 treatment which gave an average of SP 39.68. This is consistent with (Blaket, 2014) that found when treating the date palms (Berhi cultivar) with humic acids and saline water. The treatment of river water with humic acid significantly excelled and gave the highest average of chlorophyll content compared to the control treatment. The results showed that there was a significant difference between the treatments. V1B3 treatment was significantly excelled and gave 49.94 SPAD compared with V2B1 treatment, which gave 42.46 SPAD. The bi-interaction between the quality of irrigation water and cultivars that the V1W1 treatment was significantly excelled and gave 51.28 SPAD compared to the V2W4 treatment which gave 38.58 SPAD. As for the triple interaction, the V1B3W1 treatment was significantly excelled by giving it the highest average of 53.67 SPAD while the V2B1W4 treatment gave the lowest average of 35.63 SPAD.

Percentage of carbohydrates in leaves (%)

Table 2: The effect of agriculture media and the quality of irrigation water in the leaves content of chlorophyll (SPAD)and Percentage of carbohydrates in leaves (%) for two cultivars of pomegranate seedlings.

Cultivars (V)	Agriculture media (B)	Leaves content of chlorophyll (SPAD)					Percentage of carbohydrates (%)				
		The quality of irrigation water water ($ds.m^{-1}$)				V×B	The quality of irrigation water ($ds.m^{-1}$)				V×B
		1.2 W1	4.48 W2	7.58 W3	10.46 W4		1.2 W1	4.48 W2	7.58 W3	10.46 W4	
Wonderful (V1)	B1	49.37	47.18	45.12	43.73	46.35	9.23	8.80	8.10	6.53	8.16
	B2	50.80	48.73	46.93	44.62	47.77	10.23	9.40	8.60	7.46	8.92
	B3	53.67	53.10	47.60	45.40	49.94	11.80	9.90	9.10	8.00	9.70
Salimi (V2)	B1	48.38	45.85	39.98	35.63	42.46	8.40	7.80	6.96	5.30	7.11
	B2	49.70	48.00	41.88	38.07	44.41	9.76	8.63	7.30	5.73	7.85
	B3	52.63	49.75	47.38	42.03	47.95	11.13	9.63	7.90	7.00	8.91
L.S.D 0.05		**3.98**				**1.99**	**0.60**				**0.30**
						V					V
V×W	V1	51.28	49.67	46.55	44.58	48.02	10.42	9.36	8.60	7.33	8.93
	V2	50.24	47.87	43.08	38.58	44.94	9.76	8.86	7.38	6.01	7.96
L.S.D 0.05		**2.29**				**1.14**	**0.35**				**0.17**
						B					B
W×B	B1	48.88	46.52	42.55	39.68	44.41	8.81	8.30	7.53	5.91	7.64
	B2	50.25	48.37	44.40	41.34	46.09	10.00	9.01	7.95	6.60	8.39
	B3	53.15	51.43	47.49	43.72	48.95	11.46	9.76	8.50	7.50	9.30
L.S.D 0.05		**2.81**				**1.40**	**0.42**				**0.21**
	W	50.76	48.77	44.82	41.58		10.09	9.02	7.99	6.67	
L.S.D 0.05		**1.62**					**0.24**				

The results showed in table (2) that there was a significant increase in the percentage of carbohydrates in the leaves when treated the pomegranate seedlings by the organic substance. The treatment B3 was excelled by giving the highest average compared to the rest of the treatments (9.30%). The results are consistent with (Al-Obeidi, 2008) that found when fertilizing apricot trees with organic manure (poultry, sheep and cows). The fertilization treatments (plant wastes) showed a significant increase respectively for this trait and for both the research seasons compared to the control treatment. As for the quality of irrigation water, there was a significant decrease in this trait when the salinity of irrigation water increased. The W4 treatment gave the lowest average of 6.67% while W1 treatment gave the highest average in this trait 10.09%. The results showed significant differences between the cultivars in this trait. The V1 cultivar was significantly excelled by giving it the highest average 8.93% compared with V2 cultivar, which gave the lowest average of 7.96%. From the same table, there were significant differences in the bi-interaction treatments between agriculture media and the quality of the irrigation water. The treatment B3W1 was excelled by giving it the highest average of 11.46% while the B1W4 treatment gave the lowest average of 5.91%. The bi-interaction between agriculture media and cultivars there was a significant difference between the treatments in this trait. The treatment V1B3 was significantly excelled by giving it the highest average of 9.70% compared with the treatment V2B1, which gave the lowest average of 7.11%. The results of the following table showed significant differences, the treatment V1W1 was significantly excelled and gave the highest average 10.42% compared with V2W4 treatment, which gave the lowest average of 6.01%. The triple interaction between the factors of the study, the treatment V1B3W1 recorded the highest average of 11.80 % Compared to the treatment V1BW4, which gave the lowest average of 5.30%.

Estimation the leaves content of proline ($mg.g^{-1}$)

Table (3) showed that there were significant differences between the treatments of agriculture media. The treatment B1 was significantly excelled by giving it the highest average 7.86 $mg.g^{-1}$ compared with treatment B3, which gave the lowest average of 5.99 $mg.g^{-1}$. It is noted from the same table that there is an effect of the quality of irrigation water on this trait, treatment W4 recorded the highest average, which amounted to 10.07 $mg.g^{-1}$ compared to treatment of river water W1, which gave a minimum average of 4.57 $mg.g^{-1}$. These results are consistent with (Awad, 2013) that found when irrigated Bitter orange seedlings with water at salinity levels (1, 2, 4 $ds.m^{-1}$), Which obtained the highest significant increase in the leaves content of proline when irrigated with water of level 4 $ds.m^{-1}$, which amounted to 1.011 $mg.g^{-1}$ dry weight compared to the control treatment that gave 0.910 $mg.g^{-1}$ dry weight. The same table showed that there were significant differences between the cultivars of the study in this trait, the V1 cultivar was significantly excelled and gave 7.43 $mg.g^{-1}$ compared to V2 cultivar, which gave 6.31 $mg.g^{-1}$. The interaction between agriculture media and the quality of irrigation water showed a significant effect on this trait. This indicates that the organic substance found in agriculture media reduced the salt stress exerted on the plant and thus reduced the values of proline for the treatments used in the organic media. The treatment B1W4 (normal soil With the highest saline level) obtained the highest average of proline in leaves 11.21 $mg.g^{-1}$ while the B3W1 treatment is the lowest average of 3.69 $mg.g^{-1}$. The results showed that there was a significant difference between the treatments. The treatment V1B1 was significantly excelled and gave 8.45 $mg.g^{-1}$ compared to the treatment V2B3 which gave 5.37 $mg.g^{-1}$. The triple interaction between the quality of irrigation water and cultivars that the treatment V1W4 was significantly excelled by giving it 10.95 $mg.g^{-1}$ compared to the treatment V2W1 which gave 4.08 $mg.g^{-1}$. As for the triple interaction, the treatment V1B1W4 was significantly excelled and gave 12.21 $mg.g^{-1}$ while treatment V2B3W1 gave 3.10 $mg.g^{-1}$.

Estimation the electrical conductivity of soil ($ds.m^{-1}$)

The results showed in table (3) that the organic substance had a clear effect in reducing the salinity of irrigation water when used in pomegranate seedlings. Treatment B3 gave the lowest average of electric conductivity of 4.45 $ds.m^{-1}$ compared to the treatment B1 which gave 5.59 $ds.m^{-1}$. These results are consistent with (Zanen, 2008) that found when adding organic soil wastes (goat and plant wastes) to a significant decrease in electrical conductivity respectively and for the two seasons relative to the control treatment. As for the quality of irrigation water, there was a significant increase in electrical conductivity when irrigation water was increased. The treatment W4 gave 7.63 $ds.m^{-1}$, while W1 treatment gave 3.02 $ds.m^{-1}$. The results showed that there were significant differences between the cultivars in this trait. The soil of V2 cultivar showed salinity with a concentration of 5.06 ds.m-1 compared to soil V1 cultivar which gave 4.92 $ds.m^{-1}$. From the same table, there were significant differences in the bi-interaction treatments between agriculture media and the quality of the irrigation water. The treatment B1W4 was excelled by giving it

Table 3: The effect of agriculture media and the quality of irrigation water in the leaves content of proline ($mg.g^{-1}$) and the electrical conductivity of soil ($ds.m^{-1}$) for two cultivars of pomegranate seedlings.

Cultivars (V)	Agriculture media (B)	The leaves content of proline ($mg.g^{-1}$)					Electrical conductivity ($ds.m^{-1}$)				
		The quality of irrigation water water ($ds.m^{-1}$)				V×B	The quality of irrigation water ($ds.m^{-1}$)				V×B
		1.2 W1	4.48 W2	7.58 W3	10.46 W4		1.2 W1	4.48 W2	7.58 W3	10.46 W4	
Wonderful (V1)	B1	5.88	7.50	8.23	12.21	8.45	3.16	4.36	5.60	8.85	5.49
	B2	5.02	6.00	7.12	10.83	7.24	2.91	3.89	5.03	7.55	4.85
	B3	4.28	5.67	6.64	9.81	6.60	2.87	3.58	4.55	6.66	4.41
Salimi (V2)	B1	4.91	5.98	7.99	10.20	7.27	3.24	4.67	6.70	8.20	5.70
	B2	4.22	4.73	7.22	9.01	6.29	2.99	3.96	5.21	7.78	4.98
	B3	3.10	4.03	6.02	8.34	5.37	2.92	3.62	4.66	6.74	4.48
L.S.D 0.05		**0.58**				**0.29**	**0.36**				**0.18**
						V					V
V×W	V1	5.06	6.39	7.33	10.95	7.43	2.98	3.94	5.06	7.69	4.92
	V2	4.08	4.91	7.07	9.18	6.31	3.05	4.08	5.52	7.57	5.06
L.S.D 0.05		**0.33**				**0.16**	**0.20**				**0.10**
						B					B
W×B	B1	5.40	6.74	8.11	11.21	7.86	3.20	4.51	6.15	8.52	5.59
	B2	4.62	5.36	7.17	9.92	6.77	2.95	3.92	5.12	7.67	4.92
	B3	3.69	4.85	6.33	9.08	5.99	2.90	3.60	4.60	6.70	4.45
L.S.D 0.05		**0.41**				**0.20**	**0.25**				**0.12**
	W	4.57	5.65	7.20	10.07		3.02	4.01	5.29	7.63	
L.S.D 0.05		**0.24**					**0.14**				

the highest average of 8.52 $ds.m^{-1}$ compared to the treatment B3W1 which gave the lowest average of 2.90 $ds.m^{-1}$. bi-interaction between agriculture media and cultivars showed significant differences between the treatments. The treatment V2B1 was significantly excelled and gave 5.70 $ds.m^{-1}$ compared with V1B3, which gave 4.41 $ds.m^{-1}$. As for the treatment of the bi-interaction between the quality of irrigation water and cultivars, the results of the following table indicate significant differences, the treatment V1W4 recorded a salinity with concentration 7.69 $ds.m^{-1}$ compared to the treatment V1W1 which gave 2.98 $ds.m^{-1}$. In the triple interaction between the experimental factors, treatment V1B1W4 recorded the highest values of 8.85 $ds.m^{-1}$ compared to the treatment V1B3W1, which gave the lowest concentration of 2.87 $ds.m^{-1}$.

Discussion

The results showed the superiority of the agriculture media (soil: peat moss with ratio 3: 1), respectively, which is symbolized by B3 on the rest of the treatments by giving it the highest values in most of the studied traits except the traits (the leaves content of proline and electrical conduction EC) This is due to organic substance in agriculture media that rich with micro and macro-nutrient elements, especially the basic elements such as nitrogen, phosphorus and potassium availability for absorption, these elements have a role of important in many of the activities of phylogenetic and vital, which stimulates the process of manufacturing food in the plant, Nitrogen works to stimulate the plant to produce Auxins and manufacture of proteins, Which encourages the process of cell division and elongated it, then increase the plant height, especially that the apical meristem contains high concentrations of Auxins that work on elongation of cells (Shiraki and Khadir, 1985 and 2003, Singh). The effect of organic fertilizers on the increase in leaf area may be attributed to the effect of reducing the adverse effect of salt stress, increasing soil nutrient content, improving the ability of roots to absorb water and nutrients, which provide growth requirements, stimulate growth of metastatic tissue, that participate in the completion or activation of vital and functional processes in plant tissues related to the biological representation of photosynthesis products in the leaves, which encourage the growth of the total vegetation and increase the number and area of leaf (Khaled and Hassan, 2011). As well as the role of organic fertilizer in increasing the ability of root to absorption water, which is necessary in the activity of enzymes, especially those responsible for the construction of Chlorophilled essential for the

construction of chlorophyll (Quiles and Lopez, 2004), the increase in the leaf area and its good content of chlorophyll, Which effectively activates the manufacture and accumulation of large amounts of carbohydrates (Rosen and Bierman, 2007). The decrease in leaves content of proline for plants that treated with organic substance is due to the role of organic media in reducing the adverse effects of salt stress on trees due to increased efficiency of the biochemical processes and decreased accumulation of Proline in it. Excess salinity causes protein build-up defect, increased degradation, and inhibiting the effectiveness of oxidizing enzymes of protein (Art, 2007). This is due to the low values of electrical conductivity of soil when treated with organic fertilizer because its degradation produces an abundance of organic and inorganic acids, which are soluble salts of humate, sodium vwlfat and salts of precipitated calcium and magnesium. These compounds tend to be washed with irrigation water inside the soil. As for the second factor: the quality of irrigation water, it has been shown that irrigation with saline water increased the salinity of the soil as shown in table (3), which increased its Osmotic pressure and reduced its water stress, resulting in a lack of water and nutrient availability for the plant, decreasing the Turgor pressure of the plant cells and thus decreasing the division and elongation of the cells (David and Nilsen, 2000). It is observed that high levels of salinity inhibit the expansion of leaves and this result from the inhibition of cell division more than the effect on the elongation of cells, also a high levels of salinity lead to the fall of leaves due to accumulation of sodium ions and chloride in them, which contributes to the reduction of leaf area (Greenway and Munns, 1980). The low leaves content of chlorophyll can be attributed to That salinity works on the destruction of chlorophyll and slow the speed of composition and increase the effectiveness of the enzyme chlorophylase (Sevengor *et al.,* 2011). The salinity effect in plant content of carbohydrates is due to its inhibitory effect on chlorophyll, which leads to reduced carbohydrate building processes, possibly due to disturbance of nitrogen metabolism or inhibition of nitrate absorption (El-Zeiny *et al.,* 2007). While the increase in the leaves content of proline when exposed to salt stress is due to the fact that the proline has a key role in the balance of the Osmosis when the plant exposure to salt stress and other environmental stresses, The plant content of this compound increases as a result of the increase of dissolved nitrogen compounds, including proline, which has a great role in regulating the Osmotic pressure and protecting membrane and cell components from the breakdown due to salinity, nitrogen conservation and preventing the oxidation of proteins inside the cell and thus preventing its degradation, The breakdown of protoplasmic bonds exposes the plant to senescence and death (Jaleel *et al.,* 2007). The values of electrical conductivity increased with increasing salinity of irrigation water due to the accumulation of salts during the plant growth phase. As for cultivars, Perhaps the superiority of the American cultivar (Wonderful) in most of the studied traits is due to genetic variation among cultivars (Darrow, 1966) Which have been positively reflected in the physiological events necessary for vegetative growth, The majority of these differences in the studied traits are due to the genetic variation and the different nature of the growth between the two cultivars. The wonderful cultivar has a large leaf area and this helps him to perform photosynthesis with high efficiency and thus reflected positively on the rest of the traits of growth and food stocks, It also has a dense and complex root system that provides the total vegetative with the greatest amount of water and nutrient elements. In terms of the bi-interaction between the organic media and the qualities of irrigation water, salt stress causes low plant growth and productivity by disrupting physiological processes, especially photosynthesis. It is noted from the research tables, the low average of seedlings height and leaf area, chlorophyll and carbohydrates While the leaves content of proline increased and also electrical conductivity of soil increased, while the organic substance showed a clear effect in improving plant growth in the conditions of salt stresses as the addition of organic fertilizer has an important role and effective in Improving chemical, physical and biological soil traits. The role of these organic substances From the Chemical side is to add a lot of ions and nutrient elements directly to the soil, *i.e.* processing the soil with nutrient elements. From the Physical side, organic wastes improve the soil structure, increase soil porosity, decrease the soil apparent density values and increase Soil retention with water. This indirectly affects the changing chemical traits of the soil through the process of washing salts down and changes the chemical composition of negative and positive ions and provides favourable conditions for microorganisms of ventilation, moisture and nutrient elements (Zaidi, 2011). As for the bi-interaction between the quality of irrigation water and cultivars, the drainages water led to the reduction of most of the studied traits of both types, especially in irrigation level W4, The direct effects caused by increased salinity in the soil solution are due to the inhibition of enzymes, resulting in imbalances in food balance, cellular membrane functions and plant metabolism in general, and consequently their effect on Photosynthesis, respiration and energy transfer.

Or the decrease may be due to the indirect effects of increasing salinity on the physical and chemical soil traits and therefore its effect on the growth of seedlings in these saline media. The height of Osmotic pressure leads to a decrease in the ability of the plant to absorb the water and decrease the bulging of the cells Which affects the softness of the cell wall and the lack of expansion and elongation. Thus, reducing the amount of CO_2 inside the Stoma, ionic imbalance and low chlorophyll content and thus the low production of carbohydrates, proteins and plant hormones all this leads to a lack of height of seedlings and reduce the leaf area and other growth traits (Hamdi and Shaddad, 2010).

Conclusion

The results showed that pomegranate seedlings bear salt water irrigation (4.48- 7.58 $ds.m^{-1}$), especially pomegranates Wonderful cultivar, The use of organic media (Peat Moss) in soils Which suffer from water scarcity and that irrigated with salt water, the two cultivars seedlings of pomegranate has helped to withstand the conditions of salt stresses and improved the growth of plants, especially the media (3: 1 soil: Peat Moss). It also appeared that the American cultivar (Wonderful) more tolerable conditions of salt stresses and was the best.

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