Effect of NPK Fertilizer and the Treatment with Neutro-sol (CaO) in Some Morphological Growth traits of Two Olive Cultivars *Olea europaea* L. and its Economic Feasibility

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ABSTACT:-

This study was conducted in one of the private orchards in Al-Sanniyyah sub-district belonging to Al-Qadisiyah Governorate, south of Baghdad provainc, during the agricultural season 2021, with the aim of studying the effect of spraying levels of fertilizer, NPK compound, and ground addition of Ultrasol on some traits of olive cultivars Manzilillo and Bashiqi, and to study the economic feasibility criteria of using these fertilizers. Factorial experiment (3 × 3 × 2) according to the completely random block design CRBD, with duplicate seedlings, at the rate of 4 seedlings per observation, and the treatments included cultivar (V1: Manzilillo cultivar, V2: Baashiqi cultivar, and three levels of spraying NPK (N0: 0, N1 = 1, N2 = 2) gm - liter and the ground addition of ultrasol fertilizer (C0: 0, C1 = 1, C2 = 2) gm - liter, the results were analyzed using niaine analysis for the lowest level difference between the treatments and using the lowest level difference Lsd at the level of 0.05, and the results can be analyzed as follows. Differences were found in the triple overlap VNC treatments with V2N2C2 overlapping, the seedling height was 18.07 cm, while the treatment V2N2C2 excelled with the number of branches 9.87, the leaf area 2.733 cm. The triple overlap of V1N1C0 with a branch length of 12.57 cm . The wet weight of the roots and the wet weight of the shoot were 33.0 g and 120.3 g, respectively:

introduction-:

Evergreen olive trees. It belongs to Oleaceae family and it is one of the trees cultivated since ancient times, and it may live for more than a thousand years. Its cultivation is widespread in the warm temperate regions of the world (Agha and Dawood, 1991). Its leaves contain a thick layer of chitin, in addition to fluff, which works to reduce the loss of water from the leaves as a result of evaporation and transpiration, and thus increases the trees' resistance to thirst. It is believed that the Mediterranean region is the original home of the olive tree, and from there its cultivation moved to other regions. Olive oil is one of the best vegetable oils because it improves digestion and increases the activity of the bile gland. It also protects against atherosclerosis. The cultivation of commercial olive varieties is now widespread in the Mediterranean basin, and for this reason, it is called the Mediterranean tree (Agha and Daoud, 1990).Olive cultivation is concentrated in semi-arid regions located between latitudes (30-45 degrees) north of the equator, where rainfall ranges between 200-600 mm annually (Ibrahim and Hajjaj, 2007). Its medium-sized fruit tends to be round and weighs 4-6 g. The fruit is smooth and loose from the flesh, constituting 11% of the weight of the fruit, and the percentage of oil ranges from 16-20%. The fruits are used in green and black pickling, and the fruits are sensitive to the olive fly. The Bashiqi cultivar, which is considered one of the most important local olive varieties and is widely cultivated in Bashiqa district in Mosul, its fruit is conical in shape with a tapering tip, the base of the fruit is round, the fruit is medium to large in size, the oil content reaches 12-15% of its weight. (Mahdi and his group, 2011.)Chemical fertilizers play an

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important and vital role in the profitability of nursery owners due to their rapid impact on vegetative growth rates, which is what workers in this sector target. NPK compound fertilizer is one of the most important types of fertilizers added to seedlings during the growing season. Seedlings, including olives, are constantly fertilized with chemical fertilizers to provide the basic nutrients available for the plant, due to the importance of these elements in the stages of plant growth and development, but the readiness of most of the elements may decrease for various reasons, such as losing an amount of semen by washing and sedimentation, which often leads to large losses in the amount of added fertilizers.In order to reduce the loss of nutrients, the foliar feeding method is adopted, so trees can be fertilized by foliar spraying, which is considered highly efficient and its effectiveness lies in the rapid absorption of nutrients, especially when soil conditions are not suitable, as well as when there is a large variation in temperature or loss by washing. Also, this method provides the plant with nutrients in a homogeneous manner (Lovatt, 2013). Therefore, NPK was used in our study as a spray on plants. Salinity is a constant threat to horticultural crops in arid and semi-arid regions of the world, as it inhibits plant growth and reduces the availability of nutrients and thus growth and yield. agricultural crops to a large extent and the increase in soil salinity may result from natural processes or as a result of adding chemical fertilizers under poor drainage conditions, or from irrigation of crops with salty irrigation water. And although olive plants tolerate higher levels of salinity than other fruit trees, Ultrasol (calcium oxide) plays a key role in reducing the effect of salinity and greatly increasing the availability of nutrients because of its role in the possibility of replacing sodium and liberating chlorine, which is two of the most important elements that have a toxic effect on plants. There is no doubt that the response of different varieties of olives and their tolerance to salt stress depends on the cultivar, as studies have shown in this regard that the growth of different varieties of olives vary in their response to different levels of chemical fertilizers, as well as differences in their tolerance to salt stress.The seedlings offered for sale do not exceed 30 cm in length in the best cases and have limited growth. Therefore, it is necessary to work on producing olive seedlings characterized by strong growth, high performance, and the ability to overcome the state of stress that they are exposed to during transportation and cultivation. This can be achieved by following some scientific practices related to fertilization and plant breeding. Therefore, the study was know the effect of spraying with different levels of compound fertilizer NPK and the addition of Ultrasol and their interactions on some growth traits of the two olive cultivars, Manzililo and Bashiqi, and to study the economic feasibility of the above treatments

Materials and methods:

The study was conducted in one of the private orchards in Al-Suniya sub-district of Al-Qadisiyah province for the 2021 growing season. In order to know the effect of the interaction of different levels of compound fertilizer NPK and ultrasol CaO on some growth traits of young olive seedlings of two cultivars Manzilillo and Bashiqi, in addition to using economic evaluation criteria to study the economic feasibility of fertilization treatments. The young seedlings of one year of age for both cultivars (Manzilillo and Bashiqi) were brought from the horticultural station of the Directorate of Agriculture in Diwaniyah province for the reliability of the studied varieties at the station. for each cultivar .The planting medium was prepared in proportions (1:2) (Peat moss: river sand), and seedlings were planted in 20 cm diameter poles. Agricultural service operations for seedlings of both cultivars were coundected in an integrated manner. A factorial experiment was coundected with three factors (3×3×2), which includes the first factor, the cultivars, and it included Manzilillo cultivar (V1), Baashiqi

cultivar (V2),The second factor is Ultrasol levels (includes 0:0, C1:1 (C2:2, C) ml.L^{-1} (the weight of a gram of the material was dissolved in water and added with irrigation water) and the third factor is the levels of NPK fertilization (it includes 0:0 , N1:1 (N2:2, N g.L^{-1} for each supplement. (Muhammad et al., 2013)The experiment was conducted using a randomized complete block design (CRBD). With three replicates for each treatment, the results were analyzed using analysis of variance, then the differences between the averages were compared using the least significant difference L.sd. At a probability level of 5%, Al-Rawi and Khalaf Allah (1980).The rate of increase in plant height, branches length, number of vegetative branches, leaf area, percentage of dry matter in leaves, vegetative wet weight, and root total wet weight were measured.

Results and discussion :-

The results of Table (1) indicated that there was a significant difference between the two studied cultivars in the increase in plant height, as the cultivar Baashiqi V2, with an average of 12.66 cm, excelled on the cultivar Manzilillo V1, with an average of 8.04 cm. The results indicate that there is a significant difference for the NPK fertilization treatments, as the N2 level was higher at an average of 12.49 cm, while the lowest average plant length for the N0 treatment was 8.35 cm.The results of the table also showed that there were significant differences for the ultrasol treatments, where the second level, C2, was excelled on the rest of the treatments, at an average of 12.53 cm, and the lowest rate was for treatment 0C, at an average of 8.63 cm. The results also showed that there were significant differences between the treatment of the cultivar and the levels of NPK spraying, as the treatment V2N2 was excelled . It gave 15.04 cm, while the lowest value was V1N0 at an average of 6.08 cm. The results of the bi-interaction between the cultivar and ultrasol indicated that there were significant differences, as the V2C2 treatment excelled at an average of 16.03 cm, while the lowest value was for the V1C0 treatment, as it gave 6.98 cm. The data also indicated that there were significant differences between the levels of spraying NPK with ultrasol, as the treatment N2C2 excelled and gave the highest value an average of 14.67 cm, and the lowest value was for the treatment N0C0 at an average of 6.96 cm. The results in the table below indicate that there are significant differences for the triple interaction between the factors, where the interaction treatment V2N2C2 excelled at an average of 18.07 cm over the rest of the interaction treatments, and the lowest value was for the triple interaction treatment V1N0C0 as it gave the lowest rate of 5.20 cm.

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Table 1: Effect of compound fertilizer NPK and Ultrasol and their interaction on the increase in plant height of the two studied olive cultivars.

interaction cultivar NPK×	Ultrasol g.L-1			NPK g.L-1	cultivar
	C_2	**C_1**	**C_0**		
6.08	6.63	6.40	5.20	N0	Manzilo V1
8.12	10.40	7.10	6.87	N1	
9.94	11.27	9.67	8.87	N2	
11.04	14.77	9.63	8.73	N0	Baashiqui V2
11.89	15.27	10.87	9.53	N1	
15.04	18.07	14.43	12.63	N2	
3.338	5.781			LSD 0.05	
average cultivar	interaction cultivar x Ultrasol			cultivar	
8.04	9.43	7.39	6.98	Manzilo V1	
12.66	16.03	11.64	10.30	Baashiqui V2	
1.927	3.338			LSD0.05	
average NPK	interaction NPK x Ultrasol			NPK	
8.35	10.07	8.02	6.96	N0	
10.00	12.83	8.98	8.20	N1	
12.49	14.67	12.05	10.75	N2	
2.360	4.088			LSD 0.05	
L.S.D.0.05 2.360	12.52	9.68	8.63	average Ultrasol	

The results showed in Table (2) that there was a significant difference between the two studied cultivars in the number of branches, as the treatment of the Manzililo V1 cultivar, with an average of 8.28 branches, excelled on the Baashiki V2, with an average of 4.21 branches.The levels of NPK fertilizer spraying did not affect the number of branch, nor did Ultrasol treatments significantly affect the average number of branches.The results also indicate that there is a significant difference between the interaction between the cultivar and the NPK treatment, as the interaction between the cultivar and the NPK treatment excelled on the V2N2 treatment with a rate of 8.74 branches, and the lowest value was for the bi-interaction V2N0 with an average of 2.89 branches. The results also indicated that there were significant differences between the treatment of the cultivar and Ultrasol The bi-interaction treatment V1C2 excelled with an average of 9.31 cm and was the lowest value for bi-interaction treatment V2C0 with an average of 3.30 in the number of branches.As the results of the bi-interaction between the levels of NPK fertilization with Ultrasol indicate that there are no significant differences in the number of branch.The results in the table below indicate that there are significant differences, as the triple interaction treatment V1N2C2 outperformed the rest of the treatments with an average power of 9.87, and the lowest value for the triple interaction treatments of treatment V2N1C0 in the number of branches and an average trait of 1.40 branch.

Table 2: Effect of NPK and Ultrasol compound fertilizers and their interaction on the number of branch of the two studied olive cultivars.

interaction cultivar NPK x	Ultrasol g.L-1			NPK g.L-1	cultivar
	C2	**C1**	**C0**		
5.36	6.10	5.53	4.43	N0	
7.46	8.63	7.00	6.73	N1	Manzilo V1
8.63	9.87	8.20	7.83	N2	
2.89	4.30	2.97	1.40	N0	
4.38	4.73	4.33	4.07	N1	Baashiqui V2
8.74	9.43	8.83	7.97	N2	
3.683	6.380			LSD 0.05	
average cultivar	interaction cultivar x Ultrasol			cultivar	
8.28	9.31	8.01	7.51	Manzilo V1	
4.21	5.04	4.28	3.30	Baashiqui V2	
2.127	3.683			LSD0.05	
average NPK	interaction NPK x Ultrasol			NPK	
6.56	7.08	6.58	6.02	N0	
5.17	6.47	4.98	4.07	N1	
6.99	7.98	6.87	6.13	N2	
N.S	N.S			LSD 0.05	
N.S	7.18	6.14	5.41	average Ultrasol	

The results showed in Table (3) that there was a significant difference between the two studied cultivars in the rate of increase in the length of the branch, as the cultivar Baashiqi was excelled at an average of 10.96 cm, and the lowest value for the cultivar Manzilillo was 7.32 cm. Fertilization levels also affected the average length of branch, where treatment 2N excelled at an average of 9.85 cm, and the lowest value was for treatment N0, at an average of 8.33 cm. Ultrasol also affected the average length of branches, as treatment C2 excelled over the rest of the treatments, at an average of 10.29 cm, and the lowest value for the average length of branches was for treatment C0, at an average of 7. 92 cm. The results also indicated that there was a significant difference between the interaction between the cultivar and NPK treatment, as the V2N1 treatment excelled at an average of 11.62 cm, and the lowest value was for the V1N1 treatment at an average of 6.87 cm. The interaction between the cultivar and Ultrasol showed significant differences, as the V2C2 treatment excelled at an average of 12.24 cm, and the lowest value was for the V1C0 treatment at an average of 5.92 cm. The results also showed that there was a significant difference between the level of NPK fertilization and Ultrasol, as the treatment N2C2 excelled at an average of 11.19 cm, and the lowest value was for the treatment N0C0 at an average of 6.94 cm. The triple interaction treatments indicated that there were significant differences, as the V2N2C2 interaction treatment outperformed the rest of

the treatments with an average trait of 12.57 cm, and the lowest value was for the triple interaction treatments V1N0C0 with an average bi-interaction of 5.42 cm.

Table 3: The effect of NPK and Ultrasol compound fertilizers and their interaction on the increase in the branches length of the two studied olive cultivars.

interaction cultivar x NPK	Ultrasol g.L-1			NPK g.L-1	cultivar
	C2	**C1**	**C0**		
6.93	7.93	7.45	5.42	N0	Manzilo V1
6.87	7.30	7.29	6.04	N1	
8.16	9.82	8.34	6.31	N2	
9.73	11.77	8.96	8.46	N0	Baashiqui V2
11.62	12.38	11.63	10.85	N1	
11.53	12.57	11.60	10.43	N2	
2.185	3.784			LSD 0.05	
average cultivar	interaction cultivar x Ultrasol			cultivar	
7.32	8.35	7.69	5.92	Manzilo V1	
10.96	12.24	10.73	9.91	Baashiqui V2	
1.261	2.185			LSD0.05	
average NPK	interaction NPK x Ultrasol			NPK	
8.33	9.85	8.21	6.94	N0	
9.25	9.84	9.46	8.44	N1	
9.85	11.19	9.97	8.37	N2	
1.545	2.675			LSD 0.05	
L.S.D.0.05 1.545	10.29	9.21	7.92	average Ultrasol	

The results in Table (4) indicate that there is a significant difference between the two studied cultivars in the average leaf area, as the V2 cultivar excelled at an average of 11.05 cm^2, and the average leaf area of the 1V cultivar was 9.56 cm^2.While the levels of fertilization affected the average leaf area, where treatment 1N excelled at an average of 10.75 cm^2, and the lowest rate in leaf area was for treatment N0, at an average of 10.04 cm2. The paper is for C0 treatment at an average of 9.94 cm^2.The results also showed that there was a significant difference between the interaction between the treatment of the cultivar and the NPK, where the treatment V1N2 excelled at an average of 11.79 cm^2, and the lowest rate was for the treatment V2N1 with a trait of 9.43 cm^2. While the interaction between cultivar and Ultrasol showed significant differences with the excelled of the two treatments V2C2 and V1C2 on the rest of the treatments at an average of 11.79 cm^2 and at an average of 10.93 cm^2 respectively, and the lowest value of the interaction was 1V1C at an average of 9.29 cm^2.The results also indicated that there was a significant difference between the level of fertilization NPK and Ultrasol, as the treatment N1C1 excelled at an average of 11.24 cm2 and the lowest rate was for treatment N1C0 at an average of 9.39 cm2.

Table 4: Effect of compound fertilizer NPK and Ultrasol and their interaction on leaf area cm2 of the two studied olive cultivars.

interaction cultivar x x NPK	Ultrasol g.L-1			NPK g.L-1	cultivar
	C2	**C1**	**C0**		
9.73	10.61	8.86	9.73	N0	Manzilo V1
9.52	9.59	9.93	9.04	N1	
9.43	9.62	9.07	9.60	N2	
10.34	11.30	9.92	9.80	N0	Baashiqui V2
11.97	11.58	12.55	11.79	N1	
10.83	12.50	10.33	9.68	N2	
1.801	3.119			LSD 0.05	
average cultivar	interaction cultivar x Ultrasol			cultivar	
9.56	9.94	9.29	9.46	Manzilo V1	
11.05	11.79	10.93	10.42	Baashiqui V2	
1.040	1.801			LSD0.05	
average NPK	interaction NPK x Ultrasol			NPK	
10.04	10.96	9.39	9.76	N0	
10.75	10.58	11.24	10.41	N1	
10.13	11.06	9.70	9.64	N2	
1.273	2.206			LSD 0.05	
L.S.D.0.05 1.273	10.87	10.11	9.94	average Ultrasol	

The results in Table(5) showed that there was a significant difference between the two studied cultivars in the average stem diameter, where the Manzilillo V1 cultivar was excelled at an average of 9.62 mm, and the lowest value was in the average stem diameter of the Baashiki V2 cultivar at an average of 7.00 mm.It was not observed that there was a significant difference for the NPK fertilization rates in the average stem diameter. The results indicated that there were significant differences for Ultrasol treatments, as treatment C2 excelled at an average of 8.83 mm on the rest of the treatments, and the lowest value was for treatment 0C in the average stem diameter at an average of 7.82 mm.The results also indicated that there was a significant difference of the bi-interaction between the treatment of the cultivar and the NPK, as the treatment V2N2 excelled over the rest of the treatments at an average of 10.12 mm, and the lowest value of the bi-interaction was for the treatment V2N0 at an average of 6.43 mm.While the bi-interaction between the treatment of cultivar and Ultrasol showed significant differences, where the treatment V1C2 and V1C1 excelled on the rest of the treatments at an average of 9.98 mm and an average of 9.73 mm, respectively, and the lowest value was for the treatment V2C0 at an average of 6.49 mm.The results also indicate that there is a significant difference between the level of NPK fertilization and Ultrasol, as the N2C2 treatment was excelled on the rest of the treatments at an average of 9.21 mm, and the lowest value was for the treatment N2C0

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at an average of 7.63 mm.The triple interaction treatment indicated that there were significant differences, as the interaction treatment V2N2C2 excelled on the rest of the treatments with an average trait of 10.32 mm, and the lowest value was for the treatment V2N0C0 with an average trait of 6.00 mm in the mean diameter of the stem.

Table 5: The effect of NPK and Ultrasol compound fertilizers and their interventions on the stem diameter of the two studied olive cultivars.

interaction cultivar x NPK	Ultrasol g.L-1			NPK g.L-1	cultivar
	C2	**C1**	**C0**		
7.14	9.78	10.27	8.16	N0	Manzilo V1
9.10	9.35	9.27	8.68	N1	
9.63	10.26	9.65	8.97	N2	
6.43	7.15	6.15	6.00	N0	Baashiqui V2
7.41	7.75	7.30	7.18	N1	
10.12	10.32	6.98	6.29	N2	
1.177	2.038			LSD 0.05	
average cultivar	interaction cultivar x Ultrasol			cultivar	
9.62	9.98	9.73	9.14	Manzilo V1	
7.00	7.69	6.81	6.49	Baashiqui V2	
0.619	1.177			LSD0.05	
average NPK	interaction x NPK Ultrasol			NPK	
8.28	8.73	8.21	7.89	N0	
8.25	8.55	8.29	7.93	N1	
8.39	9.21	8.32	7.63	N2	
N.S	1.441			LSD 0.05	
L.S.D.0.05 0.832	8.83	8.27	7.82	average Ultrasol	

The results showed in Table (6) that there was a significant difference between the two studied cultivars in the average weight of the wet root system, as the cultivar Bashiqi V2 excelled with an average of 23.83 g, and the lowest rate was for the cultivar Manzilillo V1 with an average trait of 20.67 g.While the levels of fertilization affected the average wet root mass weight, as the N2 treatment excelled at an average of 23.83 g, and the lowest rate was in the wet root system weight of the N0 treatment at an average of 19.50 g. Ultrasol also affected the average wet root system weight, as treatment C2 excelled over the rest of the treatments at an average of 24.83 g. The results also showed that there was a significant difference between the interaction between the treatment of the cultivar and the NPK, as the treatment V2N2 excelled over the rest of the treatments with an average trait of 25.67 g, and the least interaction was for the treatment V2N0 with an average trait of 18.67 g. While the interaction between cultivar and Ultrasol showed significant differences, with the two treatments V2C1 and V2C2 excelling over the rest of the treatments at an average of 25.00g and 24.67g, respectively, and the lowest value of the interaction was V1C0 at an average of

17.00g.The results also indicate that there is a significant difference between the level of NPK fertilization and Ultrasol, as the treatment N2C1 was superior, with an average trait of 30.25 g, and the lowest rate was for the treatment N0C0, with an average of 16.25 g.The triple interaction treatment indicate that there are significant differences, as the V1N2C1 overlap treatment outperformed the rest of the treatments with an average trait of 33.00 gm, and the lowest rate was for the triple interaction treatment V1N2C0 with an average trait of 15.00 gm.

Table 6: Effect of compound fertilizer NPK and Ultrasol and their interactions on the wet weight of the root system of the two studied olive cultivars

interaction cultivar x NPK	Ultrasol g.L-1			NPK g.L-1	cultivar
	C2	**C1**	**C0**		
20.33	26.00	19.00	16.00	N0	Manzilo V1
19.67	17.00	22.00	20.00	N1	
22.00	18.00	33.00	15.00	N2	
18.67	22. 00	17.50	16.50	N0	Baashiqui V2
27.17	27.50	30.00	24.00	N1	
25.67	25.00	27.50	24.50	N2	
4.238	7.341			LSD 0.05	
average cultivar	interaction cultivar x ultrasol			cultivar	
20.67	20.33	24.67	17.00	Manzilo V1	
23.83	24.83	25.00	21.67	Baashiqui V2	
2.447	4.238			LSD0.05	
average NPK	interaction NPK x Ultrasol			NPK	
19.50	24.00	18.25	16.25	N0	
23.42	22.25	26.00	22.00	N1	
23.83	21.50	30.25	19.75	N2	
2.997	5.191			LSD 0.05	
L.S.D.0.05 2.997	24.83	22.58	19.33	average Ultrasol	

The results showed in Table (7) that there was no significant difference between the two studied cultivars in the average vegetative fresh weight, while the levels of fertilization affected the average vegetative fresh weight, where treatment N2 excelled at a rate of 58.0 g, and the lowest rate was in the average vegetative fresh weight of treatment N1 At a rate of 42.7 g Ultrasol also excelled in the average vegetative fresh weight, where treatment C2 was excelled on the rest of the treatments, at a rate of 59.6 g, and the lowest rate was in the vegetative fresh weight of treatment C0, at a rate of 44.3 g.The results also indicate that there is a significant difference between the interaction between the treatment of the cultivar and the NPK, where the treatment V2N2 excelled at a rate of 68.85

g and the lowest rate was the treatment V2N0 at a rate of 37.2 g.While the interaction of the cultivar and Ultrasol showed significant differences, with the two treatments V1C2 and V2C2 excelling onthe rest of the treatments at a rate of 68.0 g and 51.2 g, respectively, and the lowest value was for the interaction V2C0 at a rate of 42.2 g. The results also indicate that there is a significant difference between the level of NPK fertilization with Ultrasol, as the treatment N2C2 excelled at a rate of 92.8 gm and the lowest rate for the treatment was N0C0 with an average of 35.5 gm.The triple overlap treatments showed that there were significant differences, as the N2V2C2 interaction treatment excelled on the rest of the treatments with an average capacity of 79.0 gm, and the lowest rate was for the triple interaction treatment V1N2C0 with an average capacity of 25.0 gm.

Table 7: Effect of compound fertilizer NPK and Ultrasol and their interaction on vegetative fresh weight of the two studied olive cultivars

interaction cultivar x NPK	Ultrasol g.L-1			NPK g.L-1	cultivar
	C2	**C1**	**C0**		
60.5	40.0	65.0	37.5	N0	Manzilo V1
39.7	46.0	47.5	25.5	N1	
26.8	20.5	25.0	35.0	N2	
37.2	38.0	40.0	33.5	N0	Baashiqui V2
45.7	55.0	33.5	48.5	N1	
55.8	79.0	62.5	65.0	N2	
23.71	41.07			LSD 0.05	
average cultivar	interaction cultivar x Ultrasol			cultivar	
53.4	35.3	45.8	46.5	Manzilo V1	
46.2	51.2	45.3	42.2	Baashiqui V2	
N.S	23.71			LSD0.05	
average NPK	interaction NPK x Ultrasol			NPK	
48.8	58.5	52.5	35.5	N0	
42.7	50.5	40.5	37.0	N1	
58.0	92.8	43.8	37.5	N2	
16.77	29.04			LSD 0.05	
L.S.D.0.05 16.77	59.6	45.6	44.3	average Ultrasol	

The most important aspects of vital activity in the plant are represented by the physiological and vital processes that occur in the vegetative part, whose role is certainly reflected in the vegetative and root growth, so the traits of vegetative growth are an important indicator of the vitality and activity of the plant (Zipori et al., 2020). The presence of a significant

difference between the two studied cultivars in the increase in plant length Table (1)The number of branches is table (2), the average length of branches is table (3), and the leaf area is table (4) in the plant due to the strength of the cultivar's growth and its response to fertilizer additives, and these are genetically controlled traits.Since the provision of suitable environmental conditions surrounding the plant, such as the provision of mineral elements in the soil, environmental conditions, and the level of carbohydrate and hormonal substances in the plant tissues, the cultivars differ in their response ranges to fertilizer additives, as is evident from most of the results of the study.In turn, it affects the increase in leaf area in particular, which is a source for the production of most of the metabolites necessary for plant growth, and the results are consistent with what was stated by Hagagg et al. 2013) when studying two cultivars of olives.As for the effect of spraying with NPK fertilizer, as shown by the results of the vegetative and root growth indicators of the average leaf area Table (4) on the presence of enzymatic activity resulting from the increase in physiological processes, especially the process of photosynthesis, and an increase in metabolic rates, which is attributed to the effect of successive spraying of the compound fertilizer NPK As foliar nutrition ensures optimum utilization of the fertilizer content of nutrients, represented by macro elements such as nitrogen, phosphorus and potassium, in an easy way and reducing the loss to the lowest possible limits compared to other methods of addition. As the use of fertilizer sprayed on the vegetative system causes direct and rapid permeability of the mineral elements through the sprayed surface area to the leaves of the plant without losses in the energy consumed for the active absorption process, which requires rates of energy required for ionic absorption.In addition to the role of fertilizer in increasing the osmosis of plant cells and increasing their activity and thus in increasing the absorption of water and with it the nutrients already present in the soil or that are provided to plants through fertilization with important nutrients that the plant needs in building proteins and nucleic acids and hormonal activity that stimulates meristematic cells to divide And the increase in the number of cells, which increases the growth rates, which in turn affected other growth traits such as plant length Table (1), the number of branches Table (2), and the average length of branches Table (3),In view of the basic role played by these elements in increasing growth rates as they are the most important macronutrients, this led to the significantly excelled of the seedlings that were fertilized with the second level N2 of the compound fertilizer on the plants of the control treatment, which is an indication of the efficiency of using the NPK fertilizer that contains the major mineral elements. N, P and k, which positively affected the indicators of vegetative and root growth in two tables (5 and 6) in general, and were associated with an increase in the concentration of mineral substances contained in the fertilizer, as the mineral fertilizer contains the major mineral elements mentioned that the plant needs.The results show a significantly exceled for most of the studied traits of the Ultrasol soil addition treatments, and the two cultivars varied in their response to the rates of addition, which is a genetic trait associated with the strength of cultivar growth, while the effect was significant for the second level and for most of the studied trits such as the length of the branches Table (3) and the average leaf area Table (6).The reason is due to the fact that ultrasol is considered a remedy for soil salinity, as it has an effect in reducing the negative effects resulting from the accumulation of the sodium element, whose levels rise due to the soil content of sodium chloride, in addition to that, the irrigation water content of this salt, which affects the electrical conductivity of the soil and a hand from the effect On the one hand, the negative osmosis and the toxic properties of sodium chloride at high salinity levels. This may be due to the positive effect of ultrasol due to its

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role in improving soil chemical properties, including the cationic exchange capacity (CEC), (Bustan. et al., 2020), which may have been positively affected by the effectiveness of ultrasol used within the addition levels in the study, which works to reduce contact between added phosphate fertilizers and colloids. Clay or carbonate minerals and thus reduce the fixation of phosphorus on them (Bustan et al., 2020) The effect of antrasol may be due to increasing the readiness of plant nutrients, especially N, P, and K, and reducing the phenomenon of antagonism between nutrients in the soil solution (Erel et al., 2014). This is due to the roles that calcium plays in the added levels. A role in increasing the availability of nutrients and increasing their absorption, in addition to improving soil properties and increasing its ability to retain water and nutrients. It may have caused an increase in the effectiveness of microorganisms that have an improvement in the physical traits of the soil and works to create the appropriate conditions for the growth of plant roots and increase the ability to absorb nutrients, including the element P, and increase its absorption, which enters into the formation of protein and other vital processes in the plant, including the activity of enzymes and increase the movement of carbohydrates and the regulation and increase of the rate of photosynthesis that participate in building the plant body (plant height, number of leaves, and leaf area) (Dag et al., 2019; Taiz and Zeiger 2006). Al-Tanmour palm, Sultani cultivar (.The results of the study (Table 8) showed that breeding olive seedlings in nurseries is economically feasible, and that this feasibility can be increased by using some fertilizer treatments or those related to improving soil properties. The treatment (V2N2C2) achieved the highest profit amounting to (750 dinars / seedling) excelled on all other treatments based on the sale price amounted to (2000 dinars / seedlings),Note that this transaction has surpassed all transactions in production costs, which amounted to (1250 dinars / seedlings). While the transaction (V2N2C0) ranked second in terms of profit (680 dinars / seedlings) on the basis of a selling price of (1750 dinars / seedlings).Production costs amounted to (1070 dinars / seedlings). The results of the economic feasibility analysis showed that the selling prices of Bashiqi cultivar (V2) for all transactions were higher compared to the seedlings of Manzilillo cultivar (V1).The results of the study were similar to the results of many studies that dealt with the economic feasibility of propagating, breeding, cultivating and producing olive trees (Hassan and Ahmad, 2019; Maesano et al, 2021; Stillitano et al, 2018; Stillitano et al, 2016; Kinigopoulou et al, 2022). Witness, 2021: Idris et al., 2016)

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Table (8) Analysis of the economic feasibility of the fertilizer treatments for the two olive cultivars, Manzilillo and Baashiqui

cultivar	Treatment	Cost items (Dinar. Seedling-1)									The selling price of the seedling (revenues) (Dinar	)Revenues - Total Costs (Dinar)
		Seedling price	Transport fees	price of pits	price of soil	Transfer the seedlings to pits	CaO Salinity processor	NPK fertilizer	Labor wages	Total costs		
Manzilo V1	N0C0	500	75	250	25	50	0	0	60	960	1000	40
	N0C1	500	75	250	25	50	0	80	110	1090	1250	160
	N0C2	500	75	250	25	50	0	160	110	1170	1250	80
	N1C0	500	75	250	25	50	30	0	110	1040	1250	210
	N1C1	500	75	250	25	50	30	80	160	1170	1250	80
	N1C2	500	75	250	25	50	30	160	160	1250	1500	250
	N2C0	500	75	250	25	50	60	0	110	1070	1500	330
	N2C1	500	75	250	25	50	60	80	160	1200	1500	300
	N2C2	500	75	250	25	50	60	160	160	1280	1500	220
Baashiqui V2	N0C0	500	75	250	25	50	0	0	60	960	1250	190
	N0C1	500	75	250	25	50	0	80	110	1090	1500	410
	N0C2	500	75	250	25	50	0	160	110	1170	1750	580
	N1C0	500	75	250	25	50	30	0	110	1040	1500	360
	N1C1	500	75	250	25	50	30	80	160	1170	1500	330
	N1C2	500	75	250	25	50	30	160	160	1250	1750	500
	N2C0	500	75	250	25	50	60	0	110	1070	1750	680
	N2C1	500	75	250	25	50	60	80	160	1200	1750	550
	N2C2	500	75	250	25	50	60	160	160	1280	2000	720

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