European Journal of Research Development and Sustainability (EJRDS)
Available Online at: https://www.scholarzest.com
Vol. 3 No. 2, February 2022
ISSN: 2660-5570

THE EFFECT OF IRRIGATION WITH MAGNETIZED WATER AND SPRAYING WITH HUMIC ACID ON THE PRODUCTION OF CUT FLOWERS OF THE ROSE PLANT CV (ELIDA).

Inas Yashar Jabbar **Alaa Hussien A.-Q. AL-Bakkar**
alaaalbakkar@uokirkuk.edu.iq
• University of Kirkuk - College of Agriculture
• **The research is extracted from a master's thesis of the first researcher**

Article history:
Received: 10th December 2021
Accepted: 7th January 2022
Published: 18th February 2022

Abstract:
This experiment was carried out in the green-house of the Department of Agriculture, with a percentage of 50% shading, located at latitude (35.456) and longitude (44.388), Kirkuk during the period from 1/6/2020 to 1/6/2021 in order to monitor the growth of the hybrid rose plant during a whole year. In the city of Kirkuk and observing the effect of the study of magnetized water and spraying with humic acid on the vegetative and flowering growth characteristics of Elida rose plant. Humic concentration (0, 2.5 and 5) g L^{-1} and by four sprays. The experiment was carried out using the RCBD randomized complete block design with three replications, and one experimental unit contained two plants. The plants were bred on three flowering stems in the spring season. The results showed the superiority of plants treated with two intensity of magnetized water (900, 1800 gauss) in the characteristic of the number of days required for flowering diameter Flower, flower weight with holder, Vase life, which reached 65 days, 54.6 days, 5.53 cm, 5.83 cm, 8.60 g, 11.98 g, 9.33 days, 13 days), while the results showed the superiority of plants treated with powers of 1800 gauss only in the character of the length of the holder. Syphilis, which reached 55.83 cm. The concentration of 5 g.L^{-1} was significantly superior to the characteristic of flower diameter, flower weight with length flower stalk, and it was 5.56 cm, 10.42 g. The results showed the superiority of plants treated with both concentrations of humic acid (2.5, 5 g L^{-1}) in Vase life, which reached 9.66 days, 11 days, respectively.

Keywords: rose plant, magnetized water, humic acid.

INTRODUCTION

Ornamental plants are important from the psychological point of view, including the Jouri rose, which has a special appreciation for the beauty it brings to our daily life, Heba Obeid (1991). Its cultivation is spread in the temperate and cold regions of most countries of the world, and its original home is the mountains in southwest and central Asia. Zieslin et al. (1976). Jari roses are grown throughout Iraq. And almost no private garden or public garden is devoid of different types of bush roses. In addition to the multi-colored flowers and their suitability for picking, they have an aromatic smell. Therefore, rose oil is extracted from rose flower petals, which is used as a perfume, as well as adding to many pastries to give it the desired flavor (Wikipedia 2009). . Rose is also known for its high economic value because it provides raw materials for the agriculture-based industry of cosmetics and perfumes and has an important role in medicine and nutrition (Bott, 2003). Magnetism is an ancient science that has been newly rediscovered. This technology has been used in many fields such as medicine, industry, and agriculture, but the use of magnetic technology in agricultural fields is limited compared to studies conducted in other fields of science. The plant cell can be considered a generator of small magnets, given that its activity depends on the movement of positive and negative ions entering and leaving it (Slawiniski, 1988). In a study conducted by (Mohammed Amin et al. 2011), it was found that irrigation of Rosa damascene Mill plants with magnetically treated water led to a significant increase in most of the studied vegetative and flowering growth characteristics when using magnetized water with a strength of 500 gausses. In an experiment conducted by Bakli and Saadoun (2013) on the response of the carrot plant Daucus Carota L. to two types of magnetized irrigation water, the results showed a significant increase in most of the studied traits, including the content of leaves from total chlorophyll pigment, the potassium content of leaves, root length and weight as a result of irrigation with magnetized river water compared to the treatment Irrigation with the sewage water. Several studies have proven the possibility of using magnetized water to increase and flower the plants of Zinnia, Gerbera, and Jaafari (Al-Jubouri and Al-Maadidi 2006). At the present time, there is a global trend to use organic fertilizers of all kinds and sources to mitigate as much as possible the negative effects of chemical fertilizers. Humic acid is among the widely used organic fertilizers

due to its many benefits in improving soil properties and its effect on plant growth and production. Organic fertilizers are known as They are materials originally produced from plant residues and animal waste, and these fertilizers are rich in water and carbon compounds, and the value of these fertilizers is not only estimated by their content of nutrients only, but the readiness of these plants is of great importance (Kirkby and Mengel 1982). Pettit (2003) asserted that adding humic to plants improves plant growth, nutrient absorption, and crop growth, and humic contains carbon, hydrogen, oxygen, and nitrogen in different proportions, resulting in compounds of varying molecular weights (Sensei 1992) and these substances when added to the total It plays a key role in plant nutrition, which is reflected in improving growth through its effect on photosynthesis and respiration, as it activates certain enzymes and inhibits other enzymes. It also increases the plant's resistance to harsh environmental conditions during the growing season and increases the permeability of cell membranes and stimulates many of the biological interactions in the plant.

MATERIALS AND METHODS:

The experiment was carried out in one of the wooden sheds (50% deception) affiliated to the Kirkuk Agriculture Department in order to know the effect of magnetized water force and spraying with humic acid on the vegetative and flowering growth of the hybrid rose plant (Elida). One-year-old rose plants (Elida) were transferred to plastic anvils with a diameter of 10 cm, and then transferred into anvils with a diameter of 40 cm, the capacity of 26 liters, on 1/6/2020. One experimental unit contained two observations with a total number of plants (54). A plant. During this experiment, plants were cut at a height of 12 cm on February 15, 2020. They were bred on three stems.

The first factor: humic lion (Acrohumic lion). The granular type of acrohumic lion produced by (Acronic) was designed to be mixed with water with a solubility of 100%. The humic acid granules were dissolved in distilled water and the plants were sprayed in the early morning (the beginning of Sunrise) at a rate of four sprays for four months (according to the company's recommendation). The spraying dates were as follows: - June 1, July 2, August 1, and September 3.

1- The comparison treatment is spraying with distilled water only.

2- Treatment of spraying with humic acid at a concentration of (2.5 g. L^{-1}).

3- Treatment of spraying with humic acid at a concentration of (5 g. L^{-1}).

The second is magnetized water with three forces

1- The comparison treatment (0 caus).

2- Treatment of irrigation with magnetized water with a strength of (900 gausses).

3- Treatment of irrigation with magnetized water with a strength of (1800 gauss).

SAS (1996) program was used to analyze the data and the rates were tested according to Duncan's Multiple Range Test at a probability level of 5% (Mead and Hasted 2003,).

RESULTS AND DISCUSSION:

1- Number of days needed for flowering (day)

We notice from table (1) that there are significant differences in the number of days needed for flowering in the spring season when irrigating rose plants with magnetically treated water at an average of (1800 gauss) of magnetized water and it gave the least number of days needed for flowering, which amounted to (54.60 days), and it differed significantly with The average (0 gausses of magnetized water), which recorded (77 days). This agrees with Muhammad Amin et al. (2010) in studying the effect of watering with treated water on the vegetative and flowering growth characteristics of the rose bush. It was found that irrigating plants with treated water with 500 gausses led to significant differences in the flowering period. As for the effect of humic acid, we notice significant differences regarding the number of days needed for flowering, although the concentration (5 g L^{-1}) recorded the lowest number of days needed for flowering (63.33 days), but without significant differences. As for the interactions, we note that the least number of days needed for flowering was when the interaction was treated (5 humic and 1800 gauss, and it was recorded (54.00 days) with a significant difference with most of the other interactions, and the highest value of the number of days needed for flowering was for the interaction (0 gausses of magnetized water with 0 g L^{-1} humic acid.

Table No. (1) The effect of magnetic field strength and humic acid concentrations on the average number of days needed for flowering by breeding plants on three flowering stems for the spring season of Elida rose.

The effect of the magnetic field	The effect of humic acid gm L^{-1}			The average strength of the magnetic field
	0	2.5	5	
0	80.00 a	78.00 a	74.00 ab	77.00 a
900	68.00 bc	65.00 c	62.00 dc	65.00 b
1800	56.00 d	60.00 dc	54.00 d	54.60 c
average humic acid	68.00 a	67.66 a	63.33 a	

2- Flower diameter (cm):

We notice from Table (2) that there are significant differences in flower diameter when irrigating Elida rose plants with magnetically treated water. Magnetized water (4.40 cm) and agrees with Muhammad Amin et al. (2010) in studying the effect of watering with treated water on the vegetative and flowering growth characteristics of the rose bush. It was

found that irrigating plants with treated water with 500 gausses led to a significant increase in flower diameter**.** the same table shows an increase in flower diameter when spraying rose plants with humic acid at an average of (5 g L^{-1}) of humic acid, and it reached (5.56 cm), with a significant difference with the average of the comparison treatment (0 g L^{-1}) of humic acid. Humic (4.90 cm).

It appears from the interactions that there were significant differences as a result of the interaction between the treatments, where the interaction treatment between (1800 and 900 gauss of magnetized water with 5, 2.5, and 0 g.L^{-1}) of humic acid excelled with a significant difference with all interactions (0 gausses with 5, 2.5 and 0 g. L^{-1}).

Table No. (2) The effect of magnetic field strength and humic acid concentrations on the average flower diameter through plant breeding on three spring flowering stems of Elida rose.

The effect of the magnetic field	The effect of humic acid gm L^{-1}			The average strength of the magnetic field
	0	2.5	5	
0	4.00 d	4.50 cd	4.70 cd	4.40 b
900	5.30 b	5.50 b	5.50 b	5.53 a
1800	5.50 b	5.50 b	6.50 a	5.83 a
average humic acid	4.90 b	5.16 ab	5.56 a	

3- flower stalk length

We notice from Table (3) an increase in the length of the flower stalk irrigating plants with magnetically treated water, where the average exceeded (1800 gauss of magnetized water) and reached (55.83 cm) with a significant difference with the rest of the averages. It appears from the same table that there was an increase in the length of the flower stand Where the average (5 g L^{-1} of humic acid) recorded the highest length of the flower carrier (52.86 cm), but without significant differences with the rest of the averages and from the interactions, we note the superiority of the interaction treatment between (1800 gauss of magnetized water with 5 and 0 g L^{-1} of Humic acid), which recorded the highest length of the flower stalk (54.50 and 65.00 cm), respectively, with a significant increase with the rest of the interactions.

Table No. (3) The effect of magnetic field strength and humic acid concentrations on the average length of the flower stalk by raising plants on three flowering stems for the spring of the Elida rose plant.

The effect of the magnetic field	The effect of humic acid gm L^{-1}			The average strength of the magnetic field
	0	2.5	5	
0	44.00 d	49.50 bcd	46.60 cd	46.70 b
900	51.00 bc	50.00 bcd	47.00 cd	49.33 b
1800	54.50 a	48.00 bcd	65.00 a	55.83 a
average humic acid	49.83 a	49.16 a	52.86 a	

4- Weight of flower with stalk (g):

We note from Table (4) that there are significant differences when irrigating the rose plant with magnetically treated water, where the average (1800 gauss) of magnetic water was superior, and the largest weight of the flower with the stalk was recorded (11.98 g), as well as the superiority of the average (900 gausses) of magnetically treated water, where It was recorded (8.60 g), and this agrees with Muhammad Amin et al. (2010) in studying the effect of watering with treated water on the vegetative and flowering growth characteristics of the rose bush. It was found that irrigating plants with treated water with 500 gausses led to a significant increase in the dry weight of flowers. We note from the same table that there was an increase in the flower weight with the pregnant woman when rose plants were treated with humic acid at an average of (5 g L^{-1} of humic acid) and it reached (10.42 g) with a significant difference with the rest of the averages As for the interactions, we note from the same table that the treatment overlaps between (1800 gauss of magnetized water with 5 and 0 g L^{-1} of humic acid) and it reached (14.65 g and 13.35 g) respectively over the rest of the interactions, and the lowest weight was for the interaction for the treatment (0 cups of magnetized water with 0g.L^{-1} humic acid), which amounted to (6.15g).

Table No. (4) Effect of magnetic field strength and humic acid concentrations on average flower weight (gm) with stalk by breeding plants on three spring-flowering stems of Elida rose.

The effect of the magnetic field	The effect of humic acid gm L^{-1}			The average strength of the magnetic field
	0	2.5	5	
0	6.15 c	8.05 b	7.63 bc	7.27 c
900	7.60 bc	9.22 b	9.00 b	8.60 b
1800	13.35 a	7.95 b	14.65 a	11.98 a
average humic acid	9.033 b	8.40 b	10.42 a	

5- Vase life (day):

We note from Table (5) that there are significant differences when treating rose plants with magnetized water, where the average time (1800 gauss of magnetized water and recorded (13 days) of vase life, as well as the average outperformed (900 gausses) of magnetized water and recorded (9.33). day) of average vase life compared with (0 caus) recorded the lowest age of (7.16) days. This is with Damamin et al. (2010) in studying the effect of watering with treated water on the vegetative and flowering growth characteristics of the rose bush. It was found that plants treated with 500 gausses led to a significant increase in vase life. We note from the same table an increase in the flowering age of flowers when treating rose plants with humic acid, where the average (5 g L^{-1} of humic acid) recorded the longest life for the vase and you (11 days), as well as the superiority of the average (2.5 g. L^{-1} of humic acid), recorded (9.66 days) and averaged (0 gausses), where the lowest age of the vase was recorded (8.83 days).Among the interactions, we note the superiority of the interaction treatment between (1800 gauss of magnetized water with 2.5 and 5 g L^{-1} of humic acid), which reached (13 and 14 days), respectively, where both interactions differed significantly with the rest of the interactions.

Table No. (5) The effect of magnetic field strength and humic acid concentrations on the average vase life of flowers by breeding plants on three spring-flowering stems of Elida rose.

The average strength of the magnetic field	The effect of humic acid gm L^{-1}			The effect of the magnetic field
	0	25	5	
0	6.50 f	7.00 ef	8.00 de	7.16 c
900	8.00 de	9.00 cd	11.00 c	9.33 b
1800	12.00 b	13.00 a	14.00 a	13.00 a
average humic acid	8.83 c	9.66 b	11.00 a	

REFERENCE:

1. **Al-Bakkar, A.H.A.Q., Saleh, Y.M., Lateef, M.A.A. and A.M. Noori (2021).** A study to production of flowers from culturing different weights of Iris Bulbs in Kirkuk City. Int. J. Agricult. Stat. Sci., 16(Supplement 1), 1931-1933.
2. **ALA'A, H. A. A. B., NOORI, A. M., HASAN, H. M., & AHMED, A. M. A. (2020).** Effect of humic acid and seaweed and number of doses additive on growth and chlorophyll content of seedlings weeping bottlebrush plant. Plant cell biotechnology and molecular biology, 99-104.
3. **Al-Jubouri, Intisar Razak. (2006)**.The effect of spraying with liquid fertilizer Agrotonic, water type, and planting date on vegetative and flowering growth and the production of some carotenoid pigments for the Jaafari plant Tagestes erecta L. Master's thesis. Department of Horticulture - College of Agriculture - University of Baghdad.
4. **Al-Maadidi, Ali Farouk Qassem. (2006).** the effect of magnetic technology on some ornamental plants. Ph.D. thesis - Department of Horticulture - College of Agriculture - University of Baghdad.
5. **Bakli, Ahmed Baqer and Saadoun Abdel-Hadi Saadoun (2013)** The response of the carrot plant Daucus carota L. to two types of magnetized irrigation water and the duration of magnetization of seeds, Al-Furat Journal of Agricultural Sciences, 5(2):56-65.
6. **Butt, S.J. (2003)**. A review on prolonging the vase life of roses. Pakistan Rose Annual, Published by Pakistan National Rose Society, pp. 49-53.
7. **Heba, Obaid (1991)**.The Art of the Home Garden, Amman Press.
8. **Lateef, M. A., Noori, A. M., Saleh, Y. M., & Al-Taey, D. K. (2021).** THE EFFECT OF FOLIAR SPRAYING WITH SALICYLIC ACID AND CALCIUM CHLORIDE ON THE GROWTH, YIELD, AND STORAGE TRAI OF TWO STRAWBERRY CULTIVARS, FRAGARIA X ANANASSA DUCH. Int. J. Agricult. Stat. Sci. Vol 17(2), 611-615.
9. **Lateef, M. A. A., Fadhil, N. N., & Mohammed, B. K. (2021, November).** Effect of Spraying With Cal-Boron and Potassium Humate and Maturity Stage on Fruit Quantity, Quality Characteristics of Apricot Prunus Armeniaca L. CV." Royal". In IOP Conference Series: Earth and Environmental Science (Vol. 910, No. 1, p. 012038). IOP Publishing.
10. **Mengel ,K.and E.Kirkby (1982).**Principles of plant nutrition .3rd.ed.Int. Potash Instiute Bern,Switzerland.
11. **Muhammad Amin, Sami Karim and Nasreen Khalil Abdel Aziz, Nawal Mahmoud Alwan (2010).**Effect of irrigation with water treated with different magnetic flux intensities and phosphate fertilizer on vegetative and flowering growth characteristics of Rose damascene Mill Diyala Journal of Agricultural Sciences, 2 (1): 194-207.
12. **Muhammad Amin, Sami Karim, Nasreen Khalil Abdel Aziz, Nawal Muhammad Alwan (2011).** Effect of watering with water treated with different magnetic flux intensities and spraying with benzyl adenine on the growth and flowering of Rosa damascene

Mill. Journal of Tikrit University for Agricultural Sciences Volume (11) Issue (2).

13. **pettit,** R. E.(2003). Organic matter Humus, Humates, Humic Acid, Fulvic Acid and Humin, Their importance in soil fertility and plant health. Available at.
14. **Senesi, N. (1992).**Metal- Humic Substances Complexes in the Environment – Molecular and Mechanistic Aspects by Multiple Spectroscopic Approach. Lewis Pub.Co., Washington, D.C.
15. **Slawiniski, J. (1988).** Laminescenae research and its relation to ultra-weak cell radiation.Gxperientia. 44:559-571.
16. **wikipedia. (2009).** Rosa damascene. Http:// wikipedia.
17. **Zieslin, N.; Mory., Bachrach, A., Haaze, H. and Kofrane K, A. M.(1976)**Controlling the growth and development of rose plant after planting Scientia Horticulturae., 4:63 – 72.