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EFFECT OF AGRICULTURE MEDIA, BIO-FERTILIZER AND SEAWEED EXTRACT ON THE GROWTH AND FLOWERING OF FREESIA BULBLETS *FREESIA HYBRID* L.

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Abstract

The experiment was conducted in the field belonging to Department of Plant production, Al- Mussaib Technical College, North of Babylon Province for the period from 2017/10/25 to 2018/5/5, to study the effect of Agricultural Media are (loamy sand, loamy sand+ sheep manures, loam + Sewage Sludge), with ratio of (1: 3), the biofertilizers (Without addition, Mycorrhiza, *Azotobacter*), and Seaweed Extract with three levels (0, 3, 6 ml.L^{-1}) in the growth and flowering of *Freesia hybrid* L. The study was conducted as a factorial experiment according to the Randomized Complete Blocks Design (R.C.B.D), with three replicates and the averages were measured according to the least difference test (L.S.D) below the 5% probability level. The treatment of (loamy sand + sheep manures) was significantly excelled in plant height (31.05 cm), number of florets (11.17) flowers, $plant^{-1}$), length of peduncle (19.57 cm) and the percentage of infected roots (59.0%). the results showed that the treatment of the biofertilizer (Mycorrhiza) was significantly excelled on the other treatments by giving it the best values for all the studied traits. While the spraying treatment with seaweed extract at 6 ml.L^{-1} concentration gave increase in the traits of plant height (30.91 cm) and leaves area (68.66 cm^2), the number of flowers (10.52 flowers), length of peduncle (18.61 cm), vase life of (9.14 days), and Corms number of (1.15 Corm.$Plant^{-1}$), the number of creams (6.24 cream.$plant^{-1}$). The results of the interaction between the study factors showed when plants treating with the combination of (loamy sand + sheep manures + Mycorrhiza + spraying Seaweed Extract with, 6 ml.L^{-1}concentration) led to an increase in all studied traits.

Key words : *Freesia hybrid* L., Organic Fertilizer, Seaweed Extract.

Introduction

Freesia hybrid L. is one of the most important cut flowers belonging to Iridaceae family. It is cultivated mainly for the production of cut flowers or pots plants and ranks seventh in the world among cut flowers (Arumitage and Laushman, 2003). South Africa is an indigenous country with a height of about 30-40 cm. It is characterized by green flat foliage leaves and repressive flowers with an attractive aromatic scent of floral clusters and inflorescence bearing a floral holder with a number of flowers (10-4) Red, yellow, blue, orange, white and cream (Al-Misri, 2004). The importance of agricultural processes is important for improving plant growth and obtaining good quality flowers and bulbs for commercialization of local and international markets. These include the use of organic fertilizers that improve physical properties of permeability and porosity, movement of water and air into the soil, spread of roots, retention of moisture and soil temperature, and act as a nutrient limiting nutrient loss and sedimentation as well as reducing soil acidity in the root region Awada and Al-Hassan, (2007). The use of biofertilizers has an important role in improving growth by increasing the availability of the nutrients necessary for plant growth such as nitrogen, which is establish by Azotobacter and phosphorus which are provide by Mycorrhiza and reduced the pH. This increases the availability of the micro nutrients and increases the production of different growth regulators such as Auxins, Cytokinines and gibberellins (Adelecke, 2010). The seaweed extract increase growth by stimulating the growth of roots, vegetative branches and

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early flowering, increasing the yield and increasing plant tolerance to stress conditions such as salinity, drought and heat stress (Battacharyya *et al.,* 2015; Elansary *et al.,* 2016). This study aims to determine the type of organic fertilizer, the type of biofertilizer and the best level of spraying of The seaweed extract, and knowing their effect on improving plant growth and increase the yield of flowers, corms and creams.

Materials and Methods

A factorial experiment was conducted of according to Randomized Complete Blocks Design (R.C.B.D), with three replicates) Al-Rawi and Khalafullah, (2000). conducted in the field of the Plant production department / Al- Mussaib Technical College/north of Babylon Province for the period from 2017/10/25 to 2018/5/5 to study the effect of Agriculture media, Bio-fertilizer and seaweed extract on the growth and flowering of Freesia bulblets *Freesia hybrid* L. The Freesia was cultivated on 2017/10/25 which was obtained from commercial shop in Baghdad Province. The average size was 2-4 cm with a depth of 6 cm for the large size and 4 cm for the small size, excluding Infected corms in plastic pot with diameter 24 cm after It was filled with Agricultural Media are (loamy sand, loamy sand+ sheep manures, loam + Sewage Sludge), (1: 3). Soil samples were taken before planting and analyzed chemically and physically in the Soil and Water Laboratory of the Department of the directorate of agriculture in Babylon (Tables 1 and 2) The biofertilizers were added to three levels (Without addition, Mycorrhiza, Azotobacter) (15 g). The number of spores in fungus were (40 spore.g^{-1}) and the strength of the vaccine for the bacteria 3.75 × 810 per gram, they were placed into the agricultural media of the peat moss, taking into account that they are close to the cultivated corms. All agricultural service operations were conducted from irrigation, hoeing, and fertilization Whenever needed. Follow a program to fertilize the experimental plants during their various stages of growth by using urea fertilizer, adding 0.13 g. pot $^{-1}$ each time Whenever needed and this process was continued until end the experiment (وسعد, 2000). The plants were sprayed with the seaweed extract (Alga Al-Zuhoor) (Table 3) and at three levels (0,3,6) ml.L^{-1}. In the early morning, until wetness of the vegetative group was added with a little addition of the Tween 20 and three spraying. The first at the stage of (3-2) pairs of leaves and the second after the completion of vegetative growth of plants and the beginning of the formation of the first bud floral, the third was during the flowering stage, A factorial experiment was conducted of according to Randomized Complete Blocks Design (R.C.B.D), below the 5% probability level. The following traits were studied:

1. Plant height (cm) The height of the plant was measured using metric tape.
2. Leaves area (cm^2) The leaves area was measured by the Planimeter
3. Number of florets (florets.inflorescence -1) The number of formed florets were calculated in each inflorescence and for all plants and the average of each replicate and then for each treatment was calculated
4. The diameter of florets (mm) was calculated between the two farthest points in the florets after its full opening from each the inflorescence for each treatment by Micro vernier
5. The length of the peduncle (cm): It is measured by the ruler starting from the axil of a leaf which originated from them to the base of the inflorescence. The average rate is calculated for each repeater and then for each treatment.
6. Vase life (day): It is calculated from cut the peduncle when flowering the first flower.
7. Calculation of the number of Mycorrhiza spores (spore.$10g^{-1}$ dry soil)
8. Number of Corms (Corm. $plant^{-1}$): The number of corms per plant was calculated and the average was taken per replicate and then for each treatment
9. The number of creams per plant (cream. $plant^{-1}$): It was calculated and the average was taken per replicate and then for each treatment.

Results

Plant height (cm)

Table 4 shows that the treatment of the agricultural media (loamy sand + sheep manures), biofertilizer (Mycorrhiza) and the spraying treatment with seaweed extract at 6 ml.L^{-1} concentration was significantly excelled by giving it a values of (31.05, 30.76, 30.91 cm), respectively, compared with the control treatment which gave (24.19, 25.01, 23.80 cm) respectively. Bi-interaction treatment between (loamy sand + sheep manures + Mycorrhiza) and (loamy sand + sheep manures+seaweed extract at 6 ml.L^{-1} concentration) was significantly excelled by recording it (32.71, 21.67, 34.76) cm respectively. Compared with the control treatment which gave (21.93, 34.83, 15.56) cm respectively. While the triple- interaction treatment between (loamy sand + sheep manures + Mycorrhiza+seaweed extract at 6 ml.L^{-1} concentration) recorded the highest average of

Table 1: Some physical and chemical properties of pots soil.

pH	E.C (ds.m^{-1})	Organic matter (g.kg^{-1})	Macro nutrients g.kg^{-1}			Soil separates (%)		
			N	P	K	sand	silt	clay
7.67	2.09	2.34	28	7.6	88	733	125	95

Table 2: Some physical and chemical properties of the Organic matter.

Traits	Unit	loamy sand+ sheep manures	loam + Sewage Sludge
PH	.....	15.8	10.73
E.C	ds.m^{-1}	7.50	7.60
The percentage of available nitrogen	ppm	49.70	42.00
The percentage of available Phosphorus	ppm	29	22
The percentage of available Potassium	ppm	188	160
Organic matter	%	5.88	6.70

It was analyzed in Soil and Water Laboratory belonging to the Department of Babylon Agriculture.

Table 3 : Components of seaweed extract.

Element	N%	P_2O_5%	K_2O%	Mgppm	Feppm	Mnppm	Znppm	Cuppm
Concentration	4	4	4	32	30	31	17.5	12.5

this trait (38.67 cm) Compared with the control treatment which gave the lowest average (14.67 cm).

Leaf area (cm^2)

Table 5 shows that the treatment of the agricultural media(loamy sand + Sewage Sludge), biofertilizer (Mycorrhiza) and the spraying treatment with seaweed extract at 6 ml.L^{-1} concentration was significantly excelled by giving (75.78, 76.35 and 68.66 cm^2) respectively, compared with the control treatment which gave (52.52, 55.57, 65.34 cm^2) respectively. While the Bi-interaction treatment between (loamy sand + sheep manures +

Table 4: Effect of Agricultural media, Biofilterizer and seaweed extract and their Interactions in the plant height (cm).

Agricultural Media	Biofertilizers	Spraying Seaweed Extract(ml.L^{-1})			Average of Agricultural Media × Biofertilizers
		0	3	6	
loamy sand	Without addition	14.67	15.33	16.67	15.56
	Mycorrhiza	25.00	32.48	31.00	29.49
	Azotobacter	25.33	30.00	27.25	27.53
loamy sand + sheep manures	Without addition	26.75	30.67	30.67	29.36
	Mycorrhiza	21.46	38.00	38.67	32.71
	Azotobacter	25.67	32.42	35.17	31.08
loam + Sewage Sludge	Without addition	24.36	33.33	32.67	30.12
	Mycorrhiza	24.33	33.81	32.07	30.07
	Azotobacter	26.67	31.67	34.00	30.78
LSD 0.05		4.17			2.41
Agricultural Media × Spraying Seaweed Extract(ml.L^{-1})					Average of Agricultural Media
loamy sand	21.67	25.94	24.97		24.19
loamy sand+ sheep manures	24.62	33.69	34.83		31.05
loam + Sewage Sludge	25.12	32.94	32.91		30.32
LSD 0.05	2.41				1.39
BiofertilizersSpraying Seaweed Extract(ml.L^{-1})					Average of Biofertilizers
Without addition	21.93	26.44	26.67		25.01
Mycorrhiza	23.60	34.76	33.91		30.76
Azotobacter	25.89	31.36	32.14		29.80
LSD0.05	2.41				1.39
Spraying Seaweed Extract(ml.L^{-1})	23.80	30.86	30.91		
LSD 0.05	1.39				

Mycorrhiza), (loam + Sewage Sludge+ seaweed extract at 6 ml.L^{-1} concentration) and (Mycorrhiza+seaweed extract at 3 ml.L^{-1} concentration) was significantly excelled by giving it a values of (82.83, 78.08, 80.31 cm^2) respectively. Compared with the control treatment which recording it (55.29, 50.79, 29.73 cm^2) respectively. The triple- interaction treatment also caused (loamy sand + sheep manures + Mycorrhiza+ seaweed extract at 6 ml.L^{-1} concentration) Increase of (88.57 cm^2), Compared with the control treatment which gave (28.13 cm^2).

Number of florets (florets.inflorescence^{-1})

Table (6) indicates to the significant differences between the treatment in the effect on the number of florets. the treatment of the agricultural media (loamy sand + Sewage Sludge), biofertilizer (Mycorrhiza) and the spraying treatment with seaweed extract at 6 ml.L^{-1} concentration) was significantly excelled by giving (11.17, 11.52, 10.52 florets.inflorescence^{-1}) respectively, compared with the control treatment which gave (8.57, 7.67, 10.03 florets.inflorescence^{-1}) respectively. Bi-interaction treatment between (loamy sand + sheep manures + Mycorrhiza), (loamy sand + sheep manures+seaweed extract at 6 ml.L^{-1} concentration) and(Azotobacter+seaweed extract at 3 ml.L^{-1} concentration) was significantly excelled by recording it (12.52, 11.49, 11.55 florets.inflorescence^{-1}) respectively, compared with the control treatment which gave (5, 33, 8.14, 7.00 florets.inflorescence^{-1}) respectively. While the triple- interaction treatment between (loamy sand + sheep manures + Mycorrhiza+seaweed extract at 3 ml.L^{-1} concentration) recorded the highest average of this trait (12.92 florets.inflorescence^{-1}) Compared with the control treatment which gave the lowest average (4.33 florets.inflorescence^{-1}).

The diameter of florets (mm)

Table 7 shows that the treatment of the agricultural media(loamy sand + Sewage Sludge), biofertilizer (Mycorrhiza) and the spraying treatment with seaweed extract at 6 ml.L^{-1} concentration was significantly excelled by giving it a values of (29.28, 29.80, 27.51 mm),

Table 5: Effect of Agricultural media, Biofilterizer and seaweed extract and their Interactions in the leaf area (cm^2).

Agricultural Media	Biofertilizers	Spraying Seaweed Extract(ml.L^{-1})			Average of Agricultural Media × Biofertilizers
		0	3	6	
loamy sand	Without addition	28.70	28.13	32.37	29.73
	Mycorrhiza	64.40	71.07	67.60	67.69
	Azotobacter	68.27	53.17	56.51	59.31
loamy sand + sheep manures	Without addition	66.33	66.67	60.87	64.62
	Mycorrhiza	71.40	88.57	88.53	82.83
	Azotobacter	69.57	78.33	77.80	75.23
loam + Sewage Sludge	Without addition	70.83	71.80	74.43	72.36
	Mycorrhiza	71.43	81.30	82.87	78.53
	Azotobacter	77.17	75.23	76.93	76.44
LSD 0.05		5.13			2.96
Agricultural Media × Spraying Seaweed Extract(ml.L^{-1})					Average of Agricultural Media
loamy sand	53.79	50.79	52.16		52.25
loamy sand+ sheep manures	69.10	77.86	75.73		74.23
loam + Sewage Sludge	73.14	76.11	78.08		75.78
LSD 0.05		2.96			1.71
BiofertilizersSpraying Seaweed Extract(ml.L^{-1})					Average of Biofertilizers
Without addition	55.29	55.53	55.89		55.57
Mycorrhiza	69.08	80.31	79.67		76.35
Azotobacter	71.67	68.91	70.41		70.33
LSD0.05		2.96			1.71
Spraying Seaweed Extract(ml.L^{-1})	65.34	68.25	68.66		
LSD 0.05		1.71			

Table 6: Effect of Agricultural media, Biofilterizer and seaweed extract and their Interactions in the Number of florets (florets.inflorescence-1).

Agricultural Media	Biofertilizers	Spraying Seaweed Extract(ml.L^{-1})			Average of Agricultural Media × Biofertilizers
		0	3	6	
loamy sand	Without addition	4.33	5.00	6.67	5.33
	Mycorrhiza	9.97	9.84	10.46	10.09
	Azotobacter	10.13	10.15	10.62	10.30
loamy sand + sheep manures	Without addition	9.00	7.67	10.33	9.00
	Mycorrhiza	11.90	12.92	12.75	12.52
	Azotobacter	12.09	12.46	11.37	11.97
loam + Sewage Sludge	Without addition	8.67	8.33	9.00	8.67
	Mycorrhiza	12.92	11.63	11.34	11.96
	Azotobacter	11.23	12.04	12.17	11.81
LSD 0.05	0.83				0.48
Agricultural Media × Spraying Seaweed Extract(ml.L^{-1})					Average of Agricultural Media
loamy sand	8.14	8.33	9.25		8.57
loamy sand+ sheep manures	11.00	11.02	11.49		11.17
loam + Sewage Sludge	10.94	10.67	10.84		10.81
LSD 0.05	0.48				0.27
BiofertilizersSpraying Seaweed Extract(ml.L^{-1})					Average of Biofertilizers
Without addition	7.33	7.00	8.67		7.67
Mycorrhiza	11.60	11.46	11.52		11.52
Azotobacter	11.15	11.55	11.39		11.36
LSD0.05	0.48				0.27
Spraying Seaweed Extract(ml.L^{-1})	10.03	10.00	10.52		
LSD 0.05	0.27				

respectively, compared with the control treatment which gave (23.76, 24.40, 26.63 mm) respectively. Bi-interaction treatment between (loamy sand + sheep manures + Mycorrhiza), (loamy sand + Sewage Sludge + seaweed extract at 3 ml.L^{-1} concentration) and (biofertilizer (Mycorrhiza) and the spraying treatment with seaweed extract at 3 ml.L^{-1} concentration was significantly excelled by recording it (31.2, 30.16,31.05 mm) respectively. Compared with the control treatment which gave (19.22, 23.38, 23.67) mm respectively. While the triple- interaction treatment between (loamy sand + sheep manures + Mycorrhiza+seaweed extract at 6 ml.L^{-1} concentration) recorded the highest average of this trait (32.19mm) Compared with the control treatment which gave the lowest average (18.67mm).

The length of the peduncle (cm)

Table 8 shows that the treatment of the agricultural media(loamy sand + Sewage Sludge), biofertilizer (Mycorrhiza) and the spraying treatment with seaweed extract at 6 ml.L^{-1} concentration was significantly excelled by giving it a values of (19.57, 20.08, 18.61 cm), respectively, compared with the control treatment which gave (14.75, 15.15, 17.02 cm) respectively. Bi-interaction treatment between (loamy sand + Sewage Sludge + Mycorrhiza), (loamy sand + sheep manures +seaweed extract at 3 ml.L^{-1} concentration) and (biofertilizer (Mycorrhiza) and the spraying treatment with seaweed extract at 3 ml.L^{-1} concentration was significantly excelled by recording it (22.35, 21.08,18.33 cm) respectively. Compared with the control treatment which gave (10.02, 14.27, 14.64 cm), respectively. While the triple- interaction treatment between (loamy sand + Sewage Sludge + Mycorrhiza + seaweed extract at 3 ml.L^{-1} concentration) recorded the highest average of this trait (27.75 cm) Compared with the control treatment which gave the lowest average (7.67 cm).

Vase life (day)

Table 9 shows that the treatment of the agricultural

Table 7: Effect of Agricultural media, Biofilterizer and seaweed extract and their Interactions in the diameter of florets (mm).

Agricultural Media	Biofertilizers	Spraying Seaweed Extract(ml.L^{-1})			Average of Agricultural Media × Biofertilizers
		0	3	6	
loamy sand	Without addition	18.67	18.67	20.33	19.22
	Mycorrhiza	25.33	29.97	27.33	27.54
	Azotobacter	26.14	22.70	24.75	24.53
loamy sand + sheep manures	Without addition	25.46	24.60	27.70	25.92
	Mycorrhiza	30.33	31.07	32.19	31.20
	Azotobacter	28.74	27.54	27.26	27.85
loam + Sewage Sludge	Without addition	26.87	28.25	29.03	28.05
	Mycorrhiza	29.32	32.10	30.61	30.67
	Azotobacter	28.78	30.13	28.43	29.11
LSD 0.05	1.89				1.09
Agricultural Media × Spraying Seaweed Extract(ml.L^{-1})					Average of Agricultural Media
loamy sand	23.38	23.78	24.14		23.76
loamy sand+ sheep manures	28.18	27.74	29.05		28.32
loam + Sewage Sludge	28.32	30.16	29.36		29.28
LSD 0.05	1.09				0.63
BiofertilizersSpraying Seaweed Extract(ml.L^{-1})					Average of Biofertilizers
Without addition	23.67	23.84	25.69		24.40
Mycorrhiza	28.33	31.05	30.04		29.80
Azotobacter	27.89	26.79	26.81		27.16
LSD0.05	1.09				0.63
Spraying Seaweed Extract(ml.L^{-1})	26.63	27.23	27.51		
LSD 0.05	0.63				

media (loamy sand + sheep manures), biofertilizer (Mycorrhiza) and the spraying treatment with seaweed extract at 6 ml.L^{-1} concentration was significantly excelled by giving it a values of (8.52, 8.82, 9.14 day), respectively, compared with the control treatment which gave (7.78, 7.13, 6.93 day) respectively. Bi-interaction treatment between (loamy sand + sheep manures + Mycorrhiza), (loamy sand + sheep manures +seaweed extract at 6 ml.L^{-1}concentration) and biofertilizer (Mycorrhiza) and the spraying treatment with seaweed extract at 6 ml.L^{-1} concentration was significantly excelled by recording it (9.15, 9.43, 9.85 day) respectively. Compared with the control treatment which gave (6.11, 6.21, 5.44) day, respectively. While the triple- interaction treatment between (loamy sand + sheep manures + Mycorrhiza + seaweed extract at 6 ml.L^{-1} concentration) recorded the highest average of this trait (10.30) day Compared with the control treatment which gave the lowest average (3.33 day).

Calculation of the number of Mycorrhiza spores (spore.10g^{-1} dry soil)

Table 10 shows that there were significant differences, where of the agricultural media(loamy sand + sheep manures) has significantly excelled by giving it 22,11 (spore.10g^{-1} dry soil), compared with the control treatment which gave 10,78 (spore.10g^{-1} dry soil). The spraying treatment with seaweed extract had no effect on the incidence of infection and (loamy sand + sheep manures + seaweed extract at 3 ml.L^{-1} concentration) has been giving it 20.33 (spore.10g^{-1} dry soil), compared with the control treatment which gave 11.33 (spore.10g^{-1} dry soil).

Number of Corms (Corm. plant^{-1})

Table 11 shows that the treatment of the agricultural media(loamy sand + Sewage Sludge), biofertilizer (Mycorrhiza) and the spraying treatment with seaweed extract at 6 ml.L^{-1} concentration was significantly excelled by giving it a values of (1.16, 1.16, 1.15 Corm. plant^{-1}), respectively, compared with the control treatment which gave (1.11, 1.12, 1.12 Corm. plant^{-1}) respectively.

Table 8: Effect of Agricultural media, Biofilterizer and seaweed extract and their Interactions in the length of the peduncle (cm).

Agricultural Media	Biofertilizers	Spraying Seaweed Extract(ml.L^{-1})			Average of Agricultural Media × Biofertilizers
		0	3	6	
loamy sand	Without addition	7.67	10.40	12.00	10.02
	Mycorrhiza	18.07	17.74	16.42	17.41
	Azotobacter	17.08	16.00	17.34	16.81
loamy sand + sheep manures	Without addition	16.67	20.00	22.67	19.78
	Mycorrhiza	19.67	22.92	18.87	20.49
	Azotobacter	17.42	20.33	17.58	18.44
loam + Sewage Sludge	Without addition	19.58	13.67	13.67	15.64
	Mycorrhiza	19.62	27.75	19.67	22.35
	Azotobacter	17.42	18.67	20.67	18.92
LSD 0.05	1.89				1.09
Agricultural Media × Spraying Seaweed Extract(ml.L^{-1})					Average of Agricultural Media
loamy sand	14.27	23.78	24.14		14.75
loamy sand+ sheep manures	17.92	27.74	29.05		19.57
loam + Sewage Sludge	18.87	30.16	29.36		18.97
LSD 0.05	1.09				0.63
BiofertilizersSpraying Seaweed Extract(ml.L^{-1})					Average of Biofertilizers
Without addition	23.67	23.84	25.69		24.40
Mycorrhiza	28.33	31.05	30.04		29.80
Azotobacter	27.89	26.79	26.81		27.16
LSD0.05	1.09				0.63
Spraying Seaweed Extract(ml.L^{-1})	26.63	27.23	27.51		
LSD 0.05	0.63				

Bi-interaction treatment between (loamy sand + sheep manures + Mycorrhiza), (loamy sand + sheep manures +seaweed extract at 3 ml.L^{-1} concentration and biofertilizer (Mycorrhiza) and the spraying treatment with seaweed extract at 3 ml.L^{-1} concentration was significantly excelled by recording it (1.18 , 1.17,1.18 Corm. plant^{-1}) respectively. Compared with the control treatment which gave (1.09,1.09,1.12 Corm.plant^{-1}) respectively. While the triple- interaction treatment between (loamy sand + sheep manures + Mycorrhiza + seaweed extract at 6 ml.L^{-1} concentration) recorded the highest average of this trait (1.21) Corm. plant^{-1} Compared with the control treatment which gave the lowest average (1.08) Corm. plant$^{-1.}$

The number of creams per plant (cream.plant^{-1})

Table 12 shows that the treatment of the agricultural media(loamy sand + sheep manures), biofertilizer (Mycorrhiza) and the spraying treatment with seaweed extract at 3 ml.L^{-1} concentration was significantly excelled by giving it a values of (6.45, 6.24, 6.17 cream. plant^{-1}), respectively, compared with the control treatment which gave (5.64, 5.24 , 5.54 cream. plant^{-1}) respectively. Bi-interaction treatment between (loamy sand + sheep manures + Mycorrhiza), (loamy sand + sheep manures +seaweed extract at 3 ml.L^{-1} concentration and biofertilizer (Mycorrhiza) and the spraying treatment with seaweed extract at 3 ml.L^{-1} concentration was significantly excelled by recording it (7.40, 7.12, 6.99 cream. plant^{-1}) respectively. Compared with the control treatment which gave (5.27,4.92,5.12 cream. plant^{-1}) respectively. While the triple- interaction treatment between (loamy sand + sheep manures + Mycorrhiza + seaweed extract at 3 ml.L^{-1} concentration) recorded the highest average of this trait (8.95) cream. plant^{-1} Compared with the control treatment which gave the lowest average (3.41)cream. plant^{-1}.

Discussion

The organic fertilizers reason an increase in the growth indicators represented by the results of tables (6,5,4). The reason may be due to that organic fertilizers

Table 9: Effect of Agricultural media, Biofilterizer and seaweed extract and their Interactions in the Vase life (day).

Agricultural Media	Biofertilizers	Spraying Seaweed Extract(ml.L^{-1})			Average of Agricultural Media × Biofertilizers
		0	3	6	
loamy sand	Without addition	3.33	6.33	8.66	6.11
	Mycorrhiza	7.57	9.67	9.33	8.86
	Azotobacter	7.73	8.43	8.97	8.38
loamy sand + sheep manures	Without addition	6.36	7.43	8.70	7.50
	Mycorrhiza	7.32	9.85	10.30	9.15
	Azotobacter	8.61	8.85	9.29	8.92
loam + Sewage Sludge	Without addition	6.63	7.94	8.79	7.79
	Mycorrhiza	7.78	7.71	9.91	8.46
	Azotobacter	7.07	8.87	8.34	8.09
LSD 0.05		0.84			0.48

Agricultural Media × Spraying Seaweed Extract(ml.L^{-1})				Average of Agricultural Media
loamy sand	6.21	8.14	8.99	7.78
loamy sand+ sheep manures	7.43	8.71	9.43	8.52
loam + Sewage Sludge	7.16	8.17	9.01	8.11
LSD 0.05		0.48		0.28

Biofertilizers Spraying Seaweed Extract(ml.L^{-1})				Average of Biofertilizers
Without addition	5.44	7.24	8.72	7.13
Mycorrhiza	7.55	9.07	9.85	8.82
Azotobacter	7.80	8.72	8.87	8.46
LSD0.05		0.48		0.28
Spraying Seaweed Extract(ml.L^{-1})	6.93	8.34	9.14	
LSD 0.05		0.28		

contain a high proportion of the basic nutrients, as well as increase their readiness and increase the efficiency of their absorption by the plant. Which increases their ability to exchange ions (Tisdale *et al.,* 1997), thus increasing the plant height and leaves area of Table 5.4). Organic fertilizers (sheep manures) play a role in improving the properties of flowers. This is due to that the media contains organic compounds absorbed by plants such as alanine, glycin and Vanillic acid, containing vitamins and hormones, and nitrogen element that enters to building of proteins and nucleic acids and therefore to Increase the accumulation of manufacturer nutrient material, which was positively reflected on the traits of flowering growth (Taiz and Zeiger, 2006). As well as increase the accumulation of carbohydrate and thus the formation of a high nutrient stock, which is reflected on the prolongation of the vase life of cut flowers, one third of the conservation capacity of flowers after the harvest depends mainly on the conditions and how to grow plants from which the flowers are taken, and thus increase flowering traits Table (9, 8, 7, 6). There has been a significant increase in the number of Mycorrhiza spores when using the organic fertilizers (sheep manures). The reason for the role of compost in increasing the effectiveness of microorganisms, including Mycorrhiza, has led to an increase in the number of spores (Myint *et al.,* 2010) Increased growth in vegetative and syphilitic growth indices The reason for this is that the microorganisms can increase the plant's ability to absorb water and Macro and Micro nutrients, which in turn improves the plant (Martinez-Medina *et al*., 2011) and the secretion of plant growth regulators such as Auxins, Cytokinines and gibberellins (El-Sayed, 2006, AL-Samerria and Rahi, 2006). (Bashan *et al.,* 2010), as well as increasing the efficiency of the ACC-deaminase enzyme, which analyzes the compound ACC to initiate the construction of ethylene in the plant, which explains the role of fungi of the microcora in reducing the high levels of ethylene, For cut flowers (Bashan and de-Bashan (2010, improve vegetative and flowering traits (9, 8, 7, 6, 5, 4). The spraying treatment with seaweed

Table 10: Effect of Agricultural media, Biofilterizer and seaweed extract and their Interactions in Calculation of the number of Mycorrhiza spores (spore.10g^{-1} dry soil).

Agricultural Media	Spraying Seaweed Extract(ml.L^{-1})			Average of Agricultural Media
	0	3	6	
loamy sand	11.33	7.67	13.33	10.78
loamy sand+ sheep manures	26.67	20.33	19.33	22.11
loam + Sewage Sludge	17.00	7.00	13.67	12.56
LSD 0.05	8.26			4.77
Average of Spraying Seaweed	18.33	11.67	15.44	
Extract (ml.L^{-1})	4.77			

Table 11: Effect of Agricultural media, Biofilterizer and seaweed extract and their Interactions in Number of Corms (Corm.plant-1).

Agricultural Media	Biofertilizers	Spraying Seaweed Extract(ml.L^{-1})			Average of Agricultural Media × Biofertilizers
		0	3	6	
loamy sand	Without addition	1.08	1.08	1.09	1.09
	Mycorrhiza	1.10	1.18	1.13	1.14
	Azotobacter	1.10	1.13	1.14	1.12
loamy sand + sheep manures	Without addition	1.11	1.17	1.11	1.13
	Mycorrhiza	1.13	1.19	1.21	1.18
	Azotobacter	1.13	1.15	1.16	1.15
loam + Sewage Sludge	Without addition	1.18	1.13	1.13	1.15
	Mycorrhiza	1.12	1.18	1.19	1.16
	Azotobacter	1.15	1.16	1.16	1.16
LSD 0.05	0.03				0.02
Agricultural Media × Spraying Seaweed Extract(ml.L^{-1})					Average of Agricultural Media
loamy sand	1.09	1.13	1.12		1.11
loamy sand+ sheep manures	1.13	1.17	1.16		1.15
loam + Sewage Sludge	1.15	1.16	1.16		1.16
LSD 0.05	0.03				0.02
BiofertilizersSpraying Seaweed Extract(ml.L^{-1})					Average of Biofertilizers
Without addition	1.12	1.13	1.11		1.12
Mycorrhiza	1.12	1.18	1.17		1.16
Azotobacter	1.13	1.15	1.15		1.14
LSD0.05	0.01				0.01
Spraying Seaweed Extract(ml.L^{-1})	1.12	1.15	1.15		
LSD 0.05	0.01				

extract at 6 ml.L^{-1} concentration reason an increase in the vegetative and flowering growth and number of corms and creams. This increase is due to the role of seaweed extract in supplying the plants with the necessary nutrients as potassium, phosphorus and nitrogen element which increases the level of amino acids And the production of important proteins in the stimulation of cell division in addition to the role of nitrogen and the important zinc in the construction of amino acid Tryptophan, which is the basic material in the manufacture of IAA is important in increasing elongation of cells and increase elasticity and plasticity of the cell wall, which leads to increased growth. Thus increasing the studies traits (Sheekh, Saied, 2000, Gollan and Wright, 2006). There was an increase in the number of number of corms and creams (tables 11 and 12) when the use of The organic fertilizers, spraying

Table 12: Effect of Agricultural media, Biofilterizer and seaweed extract and their Interactions in the number of creams per plant (cream.plant-1).

Agricultural Media	Biofertilizers	Spraying Seaweed Extract(ml.L^{-1})			Average of Agricultural Media × Biofertilizers
		0	3	6	
loamy sand	Without addition	3.41	5.96	6.44	5.27
	Mycorrhiza	5.19	6.04	5.26	5.49
	Azotobacter	6.17	6.33	5.99	6.16
loamy sand + sheep manures	Without addition	7.11	5.26	3.95	5.44
	Mycorrhiza	5.96	8.95	7.27	7.40
	Azotobacter	6.62	7.14	5.81	6.52
loam + Sewage Sludge	Without addition	5.81	4.14	5.04	5.00
	Mycorrhiza	4.84	5.99	6.66	5.83
	Azotobacter	4.75	5.74	5.81	5.43
LSD 0.05	1.37				0.75
Agricultural Media × Spraying Seaweed Extract(ml.L^{-1})					Average of Agricultural Media
loamy sand	4.92	6.11	5.90		5.64
loamy sand+ sheep manures	6.56	7.12	5.68		6.45
loam + Sewage Sludge	5.13	5.29	5.84		5.42
LSD 0.05	0.75				0.45
BiofertilizersSpraying Seaweed Extract(ml.L^{-1})					Average of Biofertilizers
Without addition	5.44	5.12	5.14		5.24
Mycorrhiza	5.33	6.99	6.40		6.24
Azotobacter	5.85	6.40	5.87		6.04
LSD0.05	0.75				0.45
Spraying Seaweed Extract(ml.L^{-1})	5.54	6.17	5.80		
LSD 0.05	0.45				

seaweed extract and Mycorrhiza was attributed to the same reasons (Awada and Al-Hassan, 2007)

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