Table (4): Effect of chicken manure and *Spirulina platensis* algae biofertilizer as a partial replacement of inorganic N on vegetative growth characteristics of Barhi date palms during 2015& 2016 season.

Treatments	Pinnae length (cm.)		Pinnae width (cm)		Pinnae area (cm)2		Number of pinnae / leaf		Leaf area (m^2)	
	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016
1- 100 % mineral N (MN)	53.4	54.1	2.35	2.41	57.59	58.33	214.0	217	1.23	1.27
2- 75% MN + 25% C.M.	55.1	55.8	2.42	2.49	59.63	61.70	218.0	221	1.30	1.26
3-50% MN + 50% C.M.	57.0	57.7	2.50	2.56	63.02	64.96	221.0	224	1.39	1.45
425 % MN + 75% C.M.	49.4	50.1	2.21	2.27	50.68	52.37	208.0	212	1.05	1.11
5- 0.0 % MN + 100 % C.M.	47.8	48.4	2.15	2.21	48.31	47.87	205.0	208	0.99	1.04
6- -75% MN + 25% C.M.+ 5 ml S.P.	58.4	59.0	2.57	2.64	65.82	67.92	225	228	1.48	1.55
7- 50% MN + 50% C.M. + 10 ml S.P.	59.9	60.4	2.66	2.74	69.24	71.52	231	234	1.60	1.67
8 25% MN + 75% C.M. + 20 ml S.P.	51.2	51.9	2.27	2.34	53.29	55.23	211.0	211	1.12	1.18
New L.S.D. at 5%	**1.1**	**0.8**	**0.04**	**0.03**	**1.11**	**1.23**	**2.0**	**2.4**	**0.04**	**0.05**

C.M.= Chicken manure (2.5 %N) , S.P. = *Spirulina platensis* algae.

Table (5): Effect of chicken manure and *Spirulina platensis* algae biofertilizer as a partial replacement of inorganic N on some vegetative growth characteristics of Barhi date palms during 2015& 2016 season.

Treatments	Leaf length (cm)		Leaf width (cm)		Number of spines/ leaf		Spine length (cm)	
	2015	2016	2015	2016	2015	2016	2015	2016
1- 100 % mineral N (MN)	5.99	6.11	16.52	17.00	26.1	25.1	14.9	15.0
2- 75% MN + 25% C.M.	6.41	6.50	16.80	16.89	28.3	27.4	16.1	16.3
3-50% MN + 50% C.M.	6.69	6.80	17.11	17.20	30.0	29.1	17.0	17.2
425 % MN + 75% C.M.	5.30	5.39	15.51	15.60	21.0	20.9	12.3	12.5
5- 0.0 % MN + 100 % C.M.	4.91	5.01	15.11	15.21	18.1	17.0	11.2	11.5
6- -75% MN + 25% C.M.+ 5 ml S.P.	7.04	7.15	17.49	17.61	32.0	31.0	17.9	18.1
7- 50% MN + 50% C.M. + 10 ml S.P.	7.35	7.46	17.81	17.92	36.0	35.2	19.4	19.7
8 25% MN + 75% C.M. + 20 ml S.P.	5.61	5.72	15.91	16.01	23.3	22.1	14.0	13.7
New L.S.D. at 5%	**0.26**	**0.29**	**0.29**	**0.24**	**1.9**	**2.1**	**0.7**	**1.0**

C.M.= Chicken manure (2.5 %N) , S.P. = *Spirulina platensis* algae

Table (6): Effect of using chicken manure organic fertilizer and *Spirulina platensis* algae biofertilizer as a partial replacement of inorganic N on some leaf pigments of Barhi date palms during 2015& 2016 season.

Treatments	Chlorophyll a (mg/ 1.0 g F.W.)		Chlorophyll b (mg/ 1.0 g F.W.)		Total Chlorophylls (mg/ 1.0 g F.W.)		Total carotenoids (mg/ 1.0 g F.W.)	
	2015	2016	2015	2016	2015	2016	2015	2016
1- 100 % mineral N (MN)	3.22	3.41	1.19	1.30	4.41	4.71	1.01	1.04
2- 75% MN + 25% C.M.	3.33	3.55	1.25	1.36	4.58	4.91	1.06	1.07
3-50% MN + 50% C.M.	3.44	3.66	1.33	1.43	4.77	5.09	1.11	1.11
425 % MN + 75% C.M.	3.61	3.79	1.41	1.49	5.02	5.28	1.17	1.18
5- 0.0 % MN + 100 % C.M.	3.71	3.91	1.50	1.59	5.21	5.50	1.22	1.25
6- -75% MN + 25% C.M.+ 5 ml S.P.	4.00	3.99	1.59	1.70	5.59	5.60	1.29	1.29
7- 50% MN + 50% C.M. + 10 ml S.P.	4.25	4.12	1.66	1.79	5.91	5.91	1.36	1.33
8 25% MN + 75% C.M. + 20 ml S.P.	4.59	4.60	1.80	1.84	6.39	6.44	1.41	1.39
New L.S.D. at 5%	**0.06**	**0.04**	**0.05**	**0.03**	**0.05**	**0.06**	**0.03**	**0.02**

C.M.= Chicken manure (2.5 %N) , S.P. = *Spirulina platensis* algae

Table (7): Effect of using chicken manure organic fertilizer and *Spirulina platensis* algae biofertilizer as a partial replacement of inorganic N on the percentages of N, P, K and Mg in the leaves of Barhi date palms during 2015& 2016 season.

Treatments	Leaf N %		Leaf P %		Leaf K %		Leaf Mg %	
	2015	2016	2015	2016	2015	2016	2015	2016
1- 100 % mineral N (MN)	1.41	1.39	0.119	0.130	1.11	1.15	0.51	0.56
2- 75% MN + 25% C.M.	1.49	1.48	0.129	0.140	1.19	1.21	0.60	0.64
3-50% MN + 50% C.M.	1.56	1.56	0.141	0.150	1.29	1.28	0.69	0.73
425 % MN + 75% C.M.	1.71	1.65	0.149	0.161	1.36	1.36	0.76	0.81
5- 0.0 % MN + 100 % C.M.	1.79	1.74	0.160	0.169	1.41	1.43	0.82	0.90
6- -75% MN + 25% C.M.+ 5 ml S.P.	1.86	1.82	0.171	0.184	1.47	1.51	0.88	0.98
7- 50% MN + 50% C.M. + 10 ml S.P.	1.91	1.91	0.183	0.195	1.55	1.60	0.94	1.05
8 25% MN + 75% C.M. + 20 ml S.P.	1.96	1.97	0.191	0.206	1.61	1.66	1.02	1.15
New L.S.D. at 5%	0.05	0.07	0.09	0.10	0.04	0.06	0.06	0.08

C.M.= Chicken manure (2.5 %N) , S.P. = *Spirulina platensis* algae

Table (8): Effect of using chicken manure organic fertilizer and *Spirulina platensis* algae biofertilizer as a partial replacement of inorganic N on number of strands/ spathe, number of flowers/ strand . number of fruits / strand at fruit setting and just before harvesting and percentage of initial fruit setting of Barhi date palms during 2015& 2016 season.

Treatments	Number of strands / spathe		Number of flowers / strand		Number of fruits / strand at berry setting		Number of fruits / strand just before harvesting		Initial fruit setting %	
	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016
1- 100 % mineral N (MN)	83.0	83.9	83.0	85.0	46.5	48.2	38.0	39.0	56.0	56.7
2- 75% MN + 25% C.M.	86.9	87.0	90.0	92.0	52.5	54.3	43.0	45.5	58.3	59.0
3-50% MN + 50% C.M.	90.0	90.9	101.0	104.0	61.0	64.5	50.6	53.7	60.4	62.0
425 % MN + 75% C.M.	75.0	75.5	69.3	73.0	36.3	39.4	29.0	32.0	52.5	54.0
5- 0.0 % MN + 100 % C.M.	71.9	72.3	59.0	66.0	29.6	34.3	23.0	27.0	50.1	52.0
6- -75% MN + 25% C.M.+ 5 ml S.P.	93.0	94.0	108.0	110.0	68.0	71.5	57.0	60.0	63.0	65.0
7- 50% MN + 50% C.M. + 10 ml S.P.	96.0	97.0	117.0	118.0	77.0	81.0	64.0	67.0	65.9	68.7
8 25% MN + 75% C.M. + 20 ml S.P.	78.9	79.7	77.0	79.0	41.6	44.0	34.0	36.0	54.0	56.0
New L.S.D. at 5%	2.1	2.6	5.1	6.3	4.1	3.9	3.8	4.0	1.9	2.0

C.M.= Chicken manure (2.5 %N) , S.P. = *Spirulina platensis* algae

Table (9). Effect of using chicken manure organic fertilizer and *Spirulina platensis* algae biofertilizer as a partial replacement of inorganic N on the percentage of fruit retention, bunch weight and length and yield / palm (kg.) of Barhi date palms during 2015& 2016 season.

Treatments	Fruit retention %		Bunch weight (kg.)		Bunch length (cm)		Yield (kg/ palm)	
	2015	2016	2015	2016	2015	2016	2015	2016
1- 100 % mineral N (MN)	45.7	46.0	14.3	14.9	124.0	123.8	143.0	149.0
2- 75% MN + 25% C.M.	48.0	49.4	15.4	16.0	126.0	125.7	154.0	160.0
3-50% MN + 50% C.M.	50.1	51.6	16.3	16.9	128.2	128.0	163.0	169.0
425 % MN + 75% C.M.	91.9	43.9	12.4	13.0	120.0	119.7	124.0	130.0
5- 0.0 % MN + 100 % C.M.	39.0	40.8	11.6	12.1	118.0	117.7	116.0	121.0
6- -75% MN + 25% C.M.+ 5 ml S.P.	53.0	54.6	17.4	18.0	130.0	129.7	174.0	180.0
7- 50% MN + 50% C.M. + 10 ml S.P.	54.9	56.9	18.3	18.9	131.8	133.3	183.0	189.0
8 25% MN + 75% C.M. + 20 ml S.P.	44.0	46.0	13.6	14.0	122.1	121.8	136.0	140.0
New L.S.D. at 5%	1.4	1.6	1.0	0.9	1.7	1.9	6.9	6.4

C.M.= Chicken manure (2.5 %N) , S.P. = *Spirulina platensis* algae

Table (10): Effect of using chicken manure organic fertilizer and *Spirulina platensis* algae biofertilizer as a partial replacement of inorganic N on some physical characteristics of Barhi date palms during 2015& 2016 season.

Treatments	Fruit weight (g.)		Fruit height (cm.)		Fruit diameter (cm.)		Seed weight %		Flesh %	
	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016
1- 100 % mineral N (MN)	14.5	14.6	3.11	3.07	2.47	2.45	9.11	9.00	90.89	91.00
2- 75% MN + 25% C.M.	15.1	15.3	3.24	3.18	2.56	2.52	9.00	8.66	91.00	91.34
3-50% MN + 50% C.M.	15.8	16.0	3.35	3.30	2.66	2.60	8.70	8.41	91.30	91.59
425 % MN + 75% C.M.	16.3	16.6	3.46	3.41	2.76	2.68	8.40	8.20	91.60	91.80
5- 0.0 % MN + 100 % C.M.	16.8	17.2	3.60	3.53	2.85	2.76	8.00	7.90	92.00	92.10
6- -75% MN + 25% C.M.+ 5 ml S.P.	17.4	18.0	3.71	3.66	2.96	2.85	7.80	7.74	92.20	92.26
7- 50% MN + 50% C.M. + 10 ml S.P.	18.0	18.7	3.83	3.76	3.06	2..93	7.60	7.57	92.40	92.43
8 25% MN + 75% C.M. + 20 ml S.P.	18.5	19.3	3.96	3.94	3.16	3.00	7.40	7.36	92.60	72.64
New L.S.D. at 5%	**0.5**	**0.6**	**0.11**	**0.09**	**0.09**	**0.07**	**0.06**	**0.05**	**0.18**	**0.14**

C.M.= Chicken manure (2.5 %N) , S.P. = *Spirulina platensis* algae

Table (11): Effect of using chicken manure organic fertilizer and *Spirulina platensis* algae biofertilizer as a partial replacement of inorganic N on some physical and chemical characteristics of the fruits of Barhi date palms during 2015& 2016 season.

Treatments	Flesh / seed		T.S.S. %		Total sugars %		Reducing sugars %	
	2015	2016	2015	2016	2015	2016	2015	2016
1- 100 % mineral N (MN)	10.0	10.1	28.0	28.3	23..0	23.4	16.5	16.7
2- 75% MN + 25% C.M.	10.1	10.5	28.8	29.1	23.7	24.1	17.1	17.4
3-50% MN + 50% C.M.	10.5	10.9	29.7	30.0	24.5	25.0	17.8	18.0
425 % MN + 75% C.M.	10.9	11.2	30.8	30.8	25.1	25.5	18.3	18.5
5- 0.0 % MN + 100 % C.M.	12.9	11.7	31.6	31.7	26.0	26.5	18.8	19.1
6- -75% MN + 25% C.M.+ 5 ml S.P.	11.8	11.9	32.3	32.6	26.7	27.0	19.4	19.7
7- 50% MN + 50% C.M. + 10 ml S.P.	12.2	12.2	33.0	33.5	27.5	27.5	20.0	20.2
8 25% MN + 75% C.M. + 20 ml S.P.	12.5	12.6	33.7	34.3	28.9	28.4	20.5	20.7
New L.S.D. at 5%	0.3	0.4	0.7	0.8	0.6	0.4	0.5	0.4

C.M.= Chicken manure (2.5 %N) , S.P. = *Spirulina platensis* algae

Table (12): Effect of using chicken manure organic fertilizer and *Spirulina platensis* algae biofertilizer as a partial replacement of inorganic N on some chemical characteristics of the fruits of Barhi date palms during 2015& 2016 season.

Treatments	Non- reducing sugars %		Titratable acidity %		Total fiber crude %		Total soluble tannins %		Nitrite in the flesh (ppm)	
	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016
1- 100 % mineral N (MN)	6.5	6.7	0.249	0.255	1.99	1.85	0.95	1.00	1.99	2.11
2- 75% MN + 25% C.M.	6.6	6.7	0.218	0.230	1.70	1.69	0.88	0.90	0.80	1.94
3-50% MN + 50% C.M.	6.7	7.0	0.181	0.204	1.47	1.54	0.80	0.80	1.62	1.65
425 % MN + 75% C.M.	6.8	7.0	0.171	0.180	1.25	1.38	0.71	0.69	1.41	1.39
5- 0.0 % MN + 100 % C.M.	7.2	7.4	0.161	0.171	1.00	1.05	0.64	0.61	0.64	0.60
6- -75% MN + 25% C.M.+ 5 ml S.P.	7.3	7.3	0.159	0.162	0.82	0.90	0.59	0.54	1.31	1.36
7- 50% MN + 50% C.M. + 10 ml S.P.	7.5	7.3	0.155	0.150	0.62	0.74	0.53	0.46	0.99	0.94
8 25% MN + 75% C.M. + 20 ml S.P.	8.4	7.7	0.125	0.125	0.41	0.48	0.47	0.36	0.84	0.76
New L.S.D. at 5%	**0.2**	**0.2**	**0.026**	**0.023**	**0.18**	**0.15**	**0.06**	**0.08**	**0.09**	**0.10**

C.M.= Chicken manure (2.5 %N) , S.P. = *Spirulina platensis* algae