

Table 3: Effect of foliar spray with humic acid (HA) and green microalgae extract (GMAE) on N,P and K contents (%) in bulb and leaves at 135 days after planting during 2008/2009 and 2009/2010 seasons

Treatments	Bulb						leaves					
	N		P		K		N		P		K	
	1 st Season	2 nd Season	1 st Season	2 nd Season	1 st Season	2 nd Season	1 st Season	2 nd Season	1 st Season	2 nd Season	1 st Season	2 nd Season
	<i>Effect of HA (%)</i>											
0.0	1.60	1.61	0.349	0.455	1.51	1.63	3.36	3.56	0.330	0.325	2.50	2.54
0.1	1.73	1.77	0.425	0.474	1.66	1.80	3.60	4.10	0.351	0.351	2.61	2.97
0.2	1.74	1.80	0.470	0.478	1.74	1.82	3.77	4.20	0.347	0.366	2.73	3.04
LSD at 0.05 level	0.07	0.05	0.026	NS	0.04	0.08	0.22	0.17	0.014	0.011	NS	0.33
	<i>Effect of GMAE (%)</i>											
0.0	1.61	1.61	0.389	0.435	1.56	1.67	3.48	3.83	0.331	0.334	2.46	2.59
0.1	1.66	1.69	0.412	0.470	1.60	1.73	3.54	3.93	0.339	0.345	2.53	2.74
0.2	1.80	1.89	0.443	0.502	1.75	1.85	3.71	4.10	0.357	0.362	2.86	3.22
LSD at 0.05 level	0.04	0.05	0.021	0.026	0.04	0.04	0.06	0.06	0.007	0.008	0.20	0.13

Table 4: Effect of foliar spray humic acid (HA) and green microalgae extract (GMAE) on N,P and K uptake (mg/ organ) by bulb and leaves at 135 days after planting on garlic during 2008/2009 and 2009/2010 seasons

Treatments	Bulb						leaves					
	N		P		K		N		P		K	
	1 st Season	2 nd Season	1 st Season	2 nd Season	1 st Season	2 nd Season	1 st Season	2 nd Season	1 st Season	2 nd Season	1 st Season	2 nd Season
	<i>Effect of HA (%)</i>											
0.0	39.08	38.32	8.49	10.80	36.82	38.72	146.38	145.20	14.34	13.22	109.00	104.80
0.1	45.44	43.33	11.14	11.48	43.58	43.78	173.18	219.90	16.84	18.80	125.58	160.28
0.2	49.96	49.52	13.35	12.98	50.08	49.81	186.06	234.54	17.12	20.42	135.35	170.58
LSD at 0.05 level	3.28	5.18	1.20	1.24	1.76	6.72	12.70	14.04	1.03	1.98	14.36	17.88
	<i>Effect of GMAE (%)</i>											
0.0	40.68	35.86	9.82	9.64	39.50	37.16	162.94	179.88	15.51	15.62	115.34	121.72
0.1	41.64	41.80	10.26	11.54	40.02	42.82	158.56	179.78	15.14	15.72	113.30	125.48
0.2	52.16	53.48	12.86	14.06	50.98	52.30	184.10	239.98	17.68	21.12	141.26	188.48
LSD at 0.05 level	2.30	5.54	0.54	1.46	1.96	5.28	12.80	14.78	1.28	1.46	12.38	12.62

Table 5: Effect of foliar spray with humic acid (HA) and green microalgae extract (GMAE) on N, P and K total uptake (mg/ plant) by garlic plant at 135 days after planting during 2008/2009 and 2009/2010 seasons

Treatments	N		P		K	
	1 st season	2 nd season	1 st season	2 nd season	1 st season	2 nd season
	Effect of HA (%)					
0.0	185.44	183.52	22.84	24.04	145.82	143.52
0.1	218.62	263.24	27.98	30.30	169.16	204.06
0.2	236.02	284.06	30.46	33.42	185.42	220.38
LSD at 0.05 level	14.20	15.70	1.68	1.84	13.18	23.54
	Effect of GMAE (%)					
0.0	203.62	215.76	25.34	25.26	154.85	158.90
0.1	200.20	221.60	25.40	27.28	153.33	168.28
0.2	236.28	293.46	30.54	35.20	192.24	240.78
LSD at 0.05 level	13.24	19.22	1.48	2.52	13.68	16.62

Table 6: Effect of interaction between foliar spray humic acid (HA) and green microalgae extract (GMAE) on N, P and K contents (%) in bulb and leaves at 135 days after planting during 2008/2009 and 2009/2010 seasons

Treatments			Bulb						leaves					
HA (%)	x	GMAE (%)	N		P		K		N		P		K	
			1 st	2 nd	1 st	2 nd	1 st	2 nd	1 st	2 nd	1 st	2 nd	1 st	2 nd
			Season	Season	Season	Season	Season	Season	Season	Season	Season	Season	Season	Season
0.0	0.0		1.51	1.56	0.333	0.384	1.46	1.57	3.28	3.46	0.320	0.314	2.30	2.29
	0.1		1.63	1.62	0.354	0.474	1.51	1.63	3.32	3.55	0.332	0.325	2.40	2.40
	0.2		1.67	1.66	0.359	0.507	1.55	1.69	3.48	3.69	0.337	0.336	2.79	2.94
0.1	0.0		1.69	1.65	0.373	0.463	1.61	1.71	3.49	4.00	0.338	0.338	2.53	2.66
	0.1		1.70	1.73	0.424	0.462	1.64	1.76	3.60	4.11	0.349	0.350	2.54	2.98
	0.2		1.81	1.94	0.478	0.498	1.74	1.92	3.72	4.19	0.366	0.364	2.77	3.28
0.2	0.0		1.63	1.63	0.461	0.459	1.62	1.73	3.66	4.03	0.336	0.351	2.55	2.81
	0.1		1.67	1.71	0.458	0.473	1.64	1.80	3.70	4.14	0.335	0.359	2.64	2.86
	0.2		1.94	2.07	0.492	0.501	1.97	1.94	3.94	4.43	0.369	0.387	3.01	3.45
LSD at 0.05 level			0.08	0.09	0.036	0.045	0.09	0.06	0.08	0.10	0.012	0.013	0.36	0.22

Table 7: Effect of interaction between foliar spray with humic acid (HA) and green microalgae extract (GMAE) on N,P and K uptake (mg/ organ) by bulb and leaves at 135 days after planting on garlic during 2008/2009 and 2009/2010 seasons

Treatments			Bulb						Leaves					
HA (%)	x	GMAE (%)	N		P		K		N		P		K	
			1 st Season	2 nd Season	1 st Season	2 nd Season	1 st Season	2 nd Season	1 st Season	2 nd Season	1 st Season	2 nd Season	1 st Season	2 nd Season
0.0	0.0	0.0	36.12	34.78	7.96	8.52	34.95	35.00	144.28	123.84	14.06	11.23	101.30	82.32
		0.1	40.00	37.42	8.68	10.90	37.24	37.64	141.24	136.54	14.12	12.51	102.32	92.34
		0.2	41.10	42.74	8.82	13.00	38.29	43.50	153.62	175.22	14.86	15.97	123.36	139.74
0.1	0.0	0.0	43.68	34.04	9.60	9.52	41.49	35.28	167.62	210.14	16.26	17.74	121.72	139.50
		0.1	44.30	44.42	11.00	11.72	42.77	44.94	169.58	185.42	16.38	15.79	119.94	134.18
		0.2	48.38	51.52	12.78	13.18	46.51	51.10	182.32	264.16	17.88	22.92	135.08	207.18
0.2	0.0	0.0	42.22	38.76	11.92	10.92	42.07	41.24	176.96	205.68	16.18	17.89	123.02	143.36
		0.1	40.62	43.60	11.12	12.02	40.05	45.88	164.86	217.38	14.90	18.91	117.66	149.90
		0.2	67.02	66.18	16.98	16.00	68.15	62.30	216.38	280.56	20.28	24.51	165.34	218.50
LSD at 0.05 level			4.00	9.54	0.96	2.54	3.40	9.18	22.26	25.40	2.20	2.46	21.50	21.92

Table 8: Effect of interaction between foliar spray humic acid (HA) and green microalgae extract (GMAE) on N,P and K total uptake (mg/ plant) by garlic plant at 135 days after planting during 2008/2009 and 2009/2010 seasons

Treatments			N		P		K	
HA (%)	x	GMAE (%)	1 st Season	2 nd Season	1 st Season	2 nd Season	1 st Season	2 nd Season
			0.0	0.0	0.0	180.40	158.62	22.04
0.1	181.24	173.96			22.80	23.41	139.56	129.98
0.2	194.70	217.96			23.68	28.97	161.64	183.26
0.1	0.0	0.0	211.28	244.20	25.88	27.28	163.20	174.80
		0.1	213.88	229.84	27.38	27.52	162.70	179.10
		0.2	230.72	315.70	30.68	36.11	181.58	258.28
0.2	0.0	0.0	219.18	244.44	28.10	28.80	165.08	184.58
		0.1	205.50	260.98	26.04	30.93	157.70	195.78
		0.2	283.40	346.74	37.26	40.53	233.48	280.80
LSD at 0.05 level			22.92	33.32	2.58	4.20	23.66	28.76

Table 9: Effect of foliar spray with humic acid (HA) and green microalgae extract (GMAE) on photosynthetic pigments (mg/gm DW) in leaf tissues of garlic at 135 days after planting during 2008/2009 and 2009/2010 seasons

Treatments	Chlorophyll a		Chlorophyll b		Total Chlorophyll (a+b)		Carotenoids	
	1 st Season	2 nd Season	1 st Season	2 nd Season	1 st Season	2 nd Season	1 st Season	2 nd Season
Effect of HA (%)								
0.0	2.54	2.46	1.13	1.29	3.67	3.75	2.22	2.23
0.1	2.57	2.71	1.18	1.55	3.76	4.26	2.36	2.62
0.2	2.52	2.89	1.21	1.65	3.74	4.55	2.40	3.00
LSD at 0.05 level	NS	0.15	NS	0.04	NS	0.13	NS	0.09
Effect of GMAE (%)								
0.0	2.46	2.42	1.15	1.31	3.61	3.74	2.16	2.42
0.1	2.55	2.69	1.13	1.46	3.68	4.16	2.27	2.63
0.2	2.63	2.93	1.24	1.72	3.88	4.66	2.54	2.80
LSD at 0.05 level	NS	0.15	NS	0.08	NS	0.15	0.24	0.09

Table 10: Effect of interaction between foliar spray with HA and GMAE on photosynthetic pigments (mg/gm DW) in leaf tissues of garlic at 135 days after planting during 2008/2009 and 2009/2010 seasons

Treatments			Chlorophyll a		Chlorophyll b		Total Chlorophyll (a+b)		Carotenoids	
HA (%)	x	GMAE (%)	1 st Season	2 nd Season	1 st Season	2 nd Season	1 st Season	2 nd Season	1 st Season	2 nd Season
0.0		0.0	2.51	2.24	1.12	1.03	3.63	3.27	2.10	2.17
		0.1	2.61	2.43	1.12	1.13	3.73	3.56	2.27	2.18
		0.2	2.51	2.71	1.14	1.71	3.65	4.42	2.30	2.35
0.1		0.0	2.32	2.30	1.14	1.39	3.47	3.69	2.17	2.49
		0.1	2.69	2.78	1.18	1.59	3.87	4.38	2.43	2.63
		0.2	2.72	3.04	1.22	1.69	3.94	4.73	2.47	2.74
0.2		0.0	2.54	2.73	1.19	1.53	3.74	4.26	2.22	2.60
		0.1	2.34	2.88	1.08	1.67	3.43	4.55	2.12	3.09
		0.2	2.68	3.06	1.37	1.77	4.05	4.84	2.86	3.32
LSD at 0.05 level			NS	0.27	NS	0.14	NS	0.26	NS	0.15

Table 11: Effect of foliar spray with humic acid (HA) and green microalgae extract (GMAE) on dry weight (gm) of garlic plant at 135 days after planting during 2008/2009 and 2009/2010 seasons under sandy soil conditions

Treatments	Leaves		Bulb		Total/plant	
	1 st Season	2 nd Season	1 st Season	2 nd Season	1 st Season	2 nd Season
			Effect of HA (%)			
0.0	4.34	4.06	2.42	2.36	6.78	6.42
0.1	4.80	5.34	2.60	2.40	7.40	7.76
0.2	4.92	5.54	2.82	2.70	7.74	8.26
LSD at 0.05 level	0.26	0.50	0.14	0.24	0.38	0.64
			Effect of GMAE (%)			
0.0	4.66	4.64	2.52	2.22	7.18	6.86
0.1	4.46	4.53	2.50	2.46	6.96	6.98
0.2	4.92	5.80	2.86	2.80	7.78	8.60
LSD at 0.05 level	0.34	0.42	0.12	0.28	0.40	0.98

Table 12: Effect of interaction between foliar spray with humic acid (HA) and green microalgae extract (GMAE) on dry weight (gm) of garlic plant at 135 days after planting during 2008/2009 and 2009/2010 seasons, under sandy soil conditions.

Treatments			Leaves		Bulb		Total/plant	
HA (%)	x	GMAE (%)	1 st Season	2 nd Season	1 st Season	2 nd Season	1 st Season	2 nd Season
0.0	0.0	0.0	4.38	3.58	2.38	2.22	6.78	5.80
		0.1	4.24	3.84	2.44	2.30	6.70	6.14
		0.2	4.40	4.74	2.46	2.56	6.86	7.32
0.1	0.0	0.0	4.80	5.24	2.56	2.06	7.38	7.30
		0.1	4.70	4.50	2.60	2.54	7.30	7.04
		0.2	4.88	6.30	2.66	2.64	7.56	8.94
0.2	0.0	0.0	4.82	5.08	2.58	2.38	7.40	7.46
		0.1	4.44	5.24	2.42	2.54	6.88	7.78
		0.2	5.48	6.32	3.44	3.20	8.94	9.52
LSD at 0.05 level			0.60	0.74	0.20	0.48	0.72	0.98

Table 13: Effect of foliar spray with humic acid (HA) and green microalgae extract (GMAE) on yield and its components of garlic during 2008/2009 and 2009/2010 seasons

Treatments	Average bulb weight (gm)		Yield (ton/fed.)							
			Grade 1		Grade 2		Grade 3		Total yield	
	1 st Season	2 nd Season	1 st Season	2 nd Season	1 st Season	2 nd Season	1 st Season	2 nd Season	1 st Season	2 nd Season
	Effect of HA (%)									
0.0	58.74	71.27	3.364	4.512	2.288	2.548	0.516	0.424	6.168	7.484
0.1	65.61	77.70	3.952	4.882	2.603	2.900	0.334	0.377	6.889	8.159
0.2	70.82	78.04	4.447	4.928	2.868	2.953	0.121	0.314	7.437	8.195
LSD at 0.05 level	5.02	4.94	0.423	NS	0.206	0.109	0.097	NS	0.529	0.519
	Effect of GMAE (%)									
0.0	61.38	71.92	3.620	4.504	2.473	2.612	0.352	0.436	6.445	7.552
0.1	65.01	76.73	3.971	4.909	2.535	2.794	0.321	0.355	6.826	8.057
0.2	68.78	78.35	4.173	4.909	2.751	2.996	0.299	0.323	7.223	8.228
LSD at 0.05 level	3.29	1.98	0.359	0.248	0.127	0.124	NS	0.070	0.384	0.208

Table 14: Effect of interaction between foliar spray with humic acid (HA) and green microalgae extract (GMAE) on yield and its components of garlic during 2008/2009 and 2009/2010 seasons

Treatments			Average bulb weight (gm)		Yield (ton/fed.)							
HA (%)	x	GMAE (%)			Grade 1		Grade 2		Grade 3		Total yield	
			1 st Season	2 nd Season	1 st Season	2 nd Season	1 st Season	2 nd Season	1 st Season	2 nd Season	1 st Season	2 nd Season
0.0	0.0	0.0	57.88	67.78	3.339	4.373	2.217	2.138	0.522	0.605	6.078	7.117
		0.1	59.12	71.71	3.360	4.525	2.328	2.675	0.520	0.330	6.208	7.530
		0.2	59.22	74.32	3.392	4.636	2.320	2.831	0.506	0.336	6.219	7.804
0.1	0.0	0.0	61.34	74.81	3.528	4.458	2.504	3.009	0.408	0.389	6.441	7.856
		0.1	66.45	79.34	4.090	5.195	2.569	2.741	0.319	0.396	6.978	8.331
		0.2	69.04	78.95	4.239	4.993	2.736	2.951	0.275	0.345	7.250	8.290
0.2	0.0	0.0	64.92	73.19	3.992	4.680	2.698	2.689	0.127	0.315	6.817	7.685
		0.1	69.46	79.15	4.462	5.007	2.709	2.965	0.123	0.339	7.294	8.311
		0.2	78.08	81.79	4.887	5.097	3.197	3.205	0.115	0.287	8.199	8.589
LSD at 0.05 level			5.73	3.42	0.622	0.431	0.220	0.215	NS	0.122	0.603	0.361