

Table 2: Effect of sulphur fertilizer quantity and its application time on garlic plant growth at 135 days after planting under sandy soil conditions during 2006/2007 and 2007/2008 seasons

Sulphur treatments (Kg/ fed)	2006 / 2007 season					2007 / 2008 season				
	Dry weight/ plant (g)					Dry weight/ plant (g)				
	Root	Bulb	Leaves	Total	RTDW (%)	Root	Bulb	Leaves	Total	RTDW (%)
Control (without sulphur)	1.00g	1.66d	2.51f	5.17e	100	0.64e	2.52f	3.35bc	6.52f	100
100 Kg as 100% at SP	1.22e	2.95abc	3.98bcd	8.16cd	157	0.95de	2.94c	3.53bc	7.42de	113
200 Kg as 100% at SP	1.41cd	3.05ab	3.44e	7.90d	152	1.37bc	3.35b	4.82a	9.54b	146
300 Kg as 100% at SP	1.52ab	2.71c	4.20ab	8.43bc	163	1.43b	3.61a	5.17a	10.22ab	156
100 Kg as 50 % at SP+50 % at 30 DAP	1.09fg	2.82bc	4.25ab	8.17cd	158	0.91de	2.60ef	3.88b	7.40de	113
200 Kg as 50 % at SP+50 % at 30 DAP	1.36d	3.19a	4.46a	9.02a	174	2.06a	3.54a	4.83a	10.44a	160
300 Kg as 50 % at SP+50 % at 30 DAP	1.61a	2.80bc	4.02bc	8.44bc	163	1.09bcd	2.73de	4.05b	7.88cd	120
100 Kg as 50 % at SP+25 % at 30 DAP+25 at 60 DAP	1.40cd	2.69c	3.66de	7.76d	150	1.06cd	2.84cd	3.09c	6.99ef	107
200 Kg as 50 % at SP+25 % at 30 DAP+25 at 60 DAP	1.10f	2.92abc	3.86cd	7.89d	152	0.99de	2.77cde	3.28bc	7.04def	107
300 Kg as 50 % at SP+25 % at 30 DAP+25 at 60 DAP	1.48bc	2.92abc	4.26ab	8.66ab	167	1.27bcd	2.93c	4.05b	8.26c	126

Values having the same alphabetical letter(s) did not significantly differ at the 0.05 level of significance, according to Duncan's multiple range test.
 SP: Soil preparation, DAP: Days after planting, RTDW %: Relative total dry weigh.

Table 3: Effect of sulphur fertilizer quantity and its application time on N, P and K uptake of different garlic plant organs and total plant uptake at 135 days after planting under sandy soil conditions during 2007/2008 season

Sulphur treatments (Kg/ fed)	Minerals uptake (mg/g DW)									Minerals total uptake (mg/plant)		
	Root			Bulb			Leaves			N	P	K
	N	P	K	N	P	K	N	P	K			
Control (without sulphur)	6.87d	1.35e	6.98d	33.7d	9.01f	34.6d	113d	8.84f	83.9e	153e	19.2e	125e
100 Kg as 100% at SP	13.4c	2.71cd	11.7cd	50.0c	11.4e	50.6b	135bcd	11.3def	103cde	198cd	25.5d	165bcd
200 Kg as 100% at SP	18.6bc	3.80bc	17.6b	64.5b	19.9a	64.9a	206a	18.2ab	149a	290a	41.9a	232a
300 Kg as 100% at SP	23.2b	4.19b	17.9b	77.9a	18.2a	64.1a	201 a	18.8a	154a	302a	41.3a	236a
100 Kg as 50 % at SP+50 % at 30 DAP	14.2 c	2.65d	11.3cd	48.6c	12.1de	45.2c	160b	13.1cde	114cd	223bc	27.9cd	171bcd
200 Kg as 50 % at SP+50 % at 30 DAP	35.6a	5.64a	25.8a	66.7b	16.3b	63.7a	202a	18.0ab	144ab	305a	40.0a	234a
300 Kg as 50 % at SP+50 % at 30 DAP	17.8bc	2.98cd	14.0bc	60.9b	14.4c	52.5b	164b	15.0bc	124bc	243b	32.4b	190b
100 Kg as 50 % at SP+25 % at 30 DAP+25 at 60 DAP	14.0c	2.70cd	12.6c	46.8c	13.1cde	45.5c	112d	10.1ef	89.4de	173de	25.9d	147de
200 Kg as 50 % at SP+25 % at 30 DAP+25 at 60 DAP	14.6c	2.63d	12.2c	49.7c	13.3cde	45.9c	119cd	10.5ef	93.9de	183de	26.5d	152cd
300 Kg as 50 % at SP+25 % at 30 DAP+25 at 60 DAP	20.8b	3.22bcd	15.7bc	50.7c	13.8cd	49.6bc	146bc	13.9cd	111cd	218bc	31.0bc	177bc

Values having the same alphabetical letter(s) did not significantly differ at the 0.05 level of significance, according to Duncan's multiple range test.
SP: Soil preparation, DAP: Days after planting

Table 4: Effect of sulphur fertilizer quantity and its application time on garlic yield and its components during 2006/ 2007 and 2007/ 2008 seasons

Sulphur treatments (Kg/ fed)	Yield and its components (Ton/ fed)							#RTY (%)	Bulb weight (g)	*SUE
	Grade 1	Grade 2	Grade 3	Grade 4	Export- able	Market- able	Total			
2006/2007 season										
Control (without sulphur)	2.52e	2.34e	1.69ab	0.72b	5.86e	7.56e	8.28d	100	47.3d	--
100 Kg as 100% at SP	3.85de	3.20a-d	1.52bc	0.827b	7.06cd	8.58cd	9.41bc	113	53.7bc	11.2
200 Kg as 100% at SP	4.44ab	3.02a-d	1.53bc	1.04a	7.46a-c	8.99bc	10.05ab	121	57.4ab	8.83
300 Kg as 100% at SP	4.72a	3.37ab	1.63b	0.85b	8.08a	9.72a	10.58a	127	60.4a	7.65
100 Kg as 50 % at SP+50 % at 30 DAP	3.75de	2.78de	1.57b	0.73b	6.53de	8.10de	8.84cd	106	50.5cd	5.59
200 Kg as 50 % at SP+50 % at 30 DAP	4.57ab	3.46a	1.35c	1.12a	8.03ab	9.38ab	10.52a	126	60.1a	11.1
300 Kg as 50 % at SP+50 % at 30 DAP	4.41abc	2.91bcd	1.85a	0.74b	7.33bc	9.18abc	9.93ab	119	56.7ab	8.24
100 Kg as 50 % at SP+25 % at 30 DAP+25 at 60 DAP	4.15bcd	2.84cd	0.81e	0.84b	7.00cd	7.81e	8.65d	104	49.4d	3.72
200 Kg as 50 % at SP+25 % at 30 DAP+25 at 60 DAP	3.95cde	3.33abc	0.76e	0.76b	7.28c	8.05de	8.81cd	106	50.3cd	2.66
300 Kg as 50 % at SP+25 % at 30 DAP+25 at 60 DAP	4.34abc	2.71df	1.16d	1.16a	7.05cd	8.21de	9.38bc	113	53.6bc	3.65
2007/2008 season										
Control (without sulphur)	3.65f	2.67e	1.56cd	0.56bcd	6.33g	7.89g	8.45g	1000	44.2g	--
100 Kg as 100% at SP	3.75e	3.29bc	1.65bcd	0.66ab	7.04e	8.70e	9.36de	110	49.8d	9.10
200 Kg as 100% at SP	4.10d	3.16cd	1.51d	0.63abc	7.26d	8.78e	9.41de	111	49.1d	4.80
300 Kg as 100% at SP	4.82a	3.43b	1.77b	0.46d	8.25b	10.0b	10.50b	124	54.8b	6.82
100 Kg as 50 % at SP+50 % at 30 DAP	4.30c	3.08d	1.72bc	0.44d	7.38d	9.10d	9.55d	112	49.0de	10.96
200 Kg as 50 % at SP+50 % at 30 DAP	4.78a	3.94a	1.73bc	0.47d	8.72a	10.4a	10.94a	129	57.3a	12.43
300 Kg as 50 % at SP+50 % at 30 DAP	4.54b	3.22cd	1.55cd	0.53cd	7.77c	9.3cd	9.86c	116	52.1c	4.70
100 Kg as 50 % at SP+25 % at 30 DAP+25 at 60 DAP	4.19d	2.50f	1.60bcd	0.52cd	6.69f	8.30f	8.82f	104	45.9fg	3.73
200 Kg as 50 % at SP+25 % at 30 DAP+25 at 60 DAP	3.82e	2.79e	1.79ab	0.69a	6.61f	8.40f	9.10ef	107	47.0ef	3.27
300 Kg as 50 % at SP+25 % at 30 DAP+25 at 60 DAP	4.35c	3.06d	1.96a	0.56bcd	7.42d	9.38c	9.94c	117	50.7cd	4.98

Values having the same alphabetical letter(s) did not significantly differ at the 0.05 level of significance, according to Duncan's multiple range test.
 SP: Soil preparation, DAP: Days after planting , # RTY % = Relative total yield, # SUE = sulphur use efficiency as Kg bulbs/ Kg S fertilizer.

Table 5. Effect of sulphur fertilizer quantity and its application time on garlic bulb quality at harvesting during 2007/ 2008 season

Sulphur treatments (Kg/ fed)	Total carbohydrate	Total sugar	Sulphur (%)	Pungency (μ mol/ g FW)	TSS (%)	DM (%)	Volatile oil (cm³/ Kg FW)
Control (without sulphur)	59.4f	1.68e	0.54f	0.17e	31.0e	35.1d	0.15e
100 Kg as 100% at SP	69.3e	2.23d	0.63e	0.25cd	33.1de	37.1d	0.20cde
200 Kg as 100% at SP	70.4de	2.73bc	0.76d	0.30abc	34.5cd	39.2c	0.25bc
300 Kg as 100% at SP	72.9cd	2.75bc	0.82c	0.22ab	33.8cde	41.1ab	0.25bc
100 Kg as 50 % at SP+50 % at 30 DAP	71.6cde	2.57cd	0.60e	0.27bc	34.5bc	36.2d	0.22bcd
200 Kg as 50 % at SP+50 % at 30 DAP	74.1bc	2.75bc	0.75d	0.31abc	37.6a	36.1d	0.28b
300 Kg as 50 % at SP+50 % at 30 DAP	73.1cd	3.05ab	0.89b	0.34a	38.1a	39.1c	0.25bc
100 Kg as 50 % at SP+25 % at 30 DAP+25 at 60 DAP	71.6cde	2.57cd	0.65e	0.20de	33.0de	40.1bc	0.25bc
200 Kg as 50 % at SP+25 % at 30 DAP+25 at 60 DAP	77.1ab	2.93bc	0.78cd	0.26cd	35.0bcd	42.2a	0.26b
300 Kg as 50 % at SP+25 % at 30 DAP+25 at 60 DAP	78.0a	3.32a	0.95a	0.26bcd	36.6abc	42.1a	0.35a

Values having the same alphabetical letter(s) did not significantly differ at the 0.05 level of significance, according to Duncan's multiple range test
SP: Soil preparation, DAP: Days after planting

Table 6. Effect of sulphur fertilizer quantity and its application time under sandy soil conditions on bulb emaciation percentage among storage period during 2006/ 2007 and 2007/ 2008 seasons

Sulphur treatments (Kg/ fed)	2006/ 2007 season				2007/ 2008 season			
	Days in storage							
	210	240	270	300	210	240	270	300
Control (without sulphur)	1.72a	2.21a	3.94a	6.62a	0.98a	3.85ab	7.33a	8.29a
100 Kg as 100% at SP	0.77a	1.11a	2.56bc	3.74b	0.32a	3.96ab	5.63c	6.73b
200 Kg as 100% at SP	0.75a	1.60a	2.85b	3.27bc	0.00a	3.36bc	4.42d	4.72cd
300 Kg as 100% at SP	0.45a	0.84a	2.42bcd	2.42de	0.00a	2.58cd	3.61de	4.64cd
100 Kg as 50 % at SP+50 % at 30 DAP	0.37a	1.36a	1.74d	3.48b	1.21a	3.55ab	5.67c	6.08bc
200 Kg as 50 % at SP+50 % at 30 DAP	0.39a	1.25a	1.65d	2.45de	0.34a	2.29d	3.16ef	3.98de
300 Kg as 50 % at SP+50 % at 30 DAP	0.41a	1.23a	2.29bcd	2.71cde	0.31a	1.98d	2.53f	3.97de
100 Kg as 50 % at SP+25 % at 30 DAP+25 at 60 DAP	0.95a	1.53a	2.03cd	3.06bcd	0.00a	2.02d	2.88ef	3.84de
200 Kg as 50 % at SP+25 % at 30 DAP+25 at 60 DAP	0.80a	1.32a	2.18bcd	2.65cde	0.00a	0.83e	2.37f	2.53e
300 Kg as 50 % at SP+25 % at 30 DAP+25 at 60 DAP	0.00a	0.89a	1.74d	2.24e	1.88a	2.28d	2.28f	3.29de

Values having the same alphabetical letter(s) did not significantly differ at the 0.05 level of significance, according to Duncan's multiple range test.
 SP: Soil preparation, DAP: Days after planting , The storage zero time was May 10th and the end was March 10th in both seasons

Table 7. Effect of sulphur fertilizer quantity and its application time under sandy soil conditions on sprouting percentage among storage period during 2006/2007 and 2007-2008 seasons

Sulphur treatments (Kg/ fed)	2006/ 2007 season				2007/ 2008 season			
	Days in storage							
	210	240	270	300	210	240	270	300
Control (without sulphur)	2.18a	2.67ab	4.25bc	7.06a	2.70ab	4.53ab	9.04a	11.31a
100 Kg as 100% at SP	1.11bcd	1.89b	3.34cde	5.12bcd	0.36c	3.44bc	6.65c	8.76c
200 Kg as 100% at SP	0.89cd	1.71b	2.89de	3.67d	0.60c	3.25bcd	6.35c	8.39cd
300 Kg as 100% at SP	0.00e	1.69b	3.16cde	4.00cd	0.52c	2.34cde	4.76de	7.63de
100 Kg as 50 % at SP+50 % at 30 DAP	0.00e	2.38ab	3.62bcd	4.38cd	0.00c	1.37e	5.53cd	8.07cd
200 Kg as 50 % at SP+50 % at 30 DAP	1.85ab	1.85b	3.22cde	4.59cd	0.47c	1.88e	4.94de	7.50de
300 Kg as 50 % at SP+50 % at 30 DAP	0.00e	0.41c	2.29e	3.34d	0.00c	1.66e	4.54de	6.22f
100 Kg as 50 % at SP+25 % at 30 DAP+25 at 60 DAP	0.00e	0.45c	1.02f	4.05cd	0.32c	2.67cde	5.50cd	6.43f
200 Kg as 50 % at SP+25 % at 30 DAP+25 at 60 DAP	1.61abc	2.29ab	4.66ab	6.65ab	0.00c	1.93de	4.55de	6.73ef
300 Kg as 50 % at SP+25 % at 30 DAP+25 at 60 DAP	0.35de	3.04a	4.03bcd	4.89bcd	0.00c	1.87e	3.79e	5.76f

Values having the same alphabetical letter(s) did not significantly differ at the 0.05 level of significance, according to Duncan's multiple range test. SP: Soil preparation, DAP: Days after planting , The storage zero time was May 10th and the end was March 10th in both seasons

Table 8. Effect of sulphur fertilizer quantity and its application time under sandy soil conditions on weight loss percentage among storage period during 2006/2007 and 2007/2008 seasons

Sulphur treatments (Kg/ fed)	Weight loss (%)									
	Storage days									
	30	60	90	120	150	180	210	240	270	300
	2006/2007 season									
Control (without sulphur)	6.58a	8.89a	11.4a	14.2a	15.0ab	19.7a	22.0a	26.4a	34.2a	41.2ab
100 Kg as 100% at SP	6.45a	8.66a	9.49bc	11.4cd	13.8bcd	16.1bc	18.8b	24.4bc	33.6ab	41.6a
200 Kg as 100% at SP	5.52a	7.50b	9.00cd	11.5cd	13.6cd	16.8b	18.7b	24.3bc	32.8ab	39.4abc
300 Kg as 100% at SP	5.66a	6.98bc	7.85d	12.2bc	14.9abc	16.1bc	18.7b	26.0ab	30.9bc	38.9bc
100 Kg as 50 % at SP+50 % at 30 DAP	4.70a	6.83c	8.37cd	10.1de	11.8ef	14.3d	17.9b	20.7d	26.7def	34.8def
200 Kg as 50 % at SP+50 % at 30 DAP	5.70a	6.85bc	8.12cd	10.1de	11.6ef	13.9de	15.5c	19.6de	25.1f	34.3ef
300 Kg as 50 % at SP+50 % at 30 DAP	4.25a	6.31c	7.80d	9.59e	10.7f	12.8e	14.6c	18.0e	25.0f	33.3f
100 Kg as 50 % at SP+25 % at 30 DAP+25 at 60 DAP	5.24a	6.26c	8.85cd	10.3de	13.7bcd	17.1b	19.2b	22.8c	28.9cd	37.1cd
200 Kg as 50 % at SP+25 % at 30 DAP+25 at 60 DAP	4.62a	6.28c	8.02cd	10.6cde	12.8de	14.8cd	17.7b	22.7c	28.0de	36.4de
300 Kg as 50 % at SP+25 % at 30 DAP+25 at 60 DAP	3.70a	6.56bc	8.04cd	9.73e	11.5ef	13.6de	15.3c	20.0d	25.8ef	34.6ef
	2007/ 2008 season									
Control (without sulphur)	8.40a	10.18a	14.2a	15.4a	17.7a	19.9a	24.7ab	28.5ab	33.7a	40.0a
100 Kg as 100% at SP	6.46a	8.40b-e	12.3bcd	13.5be	15.6b	20.1a	24.1ab	26.8bcd	30.7d	38.7abc
200 Kg as 100% at SP	7.69a	9.77ab	11.2def	12.9c-e	14.9bc	16.4b	21.5cd	25.4def	31.0cd	37.6a-d
300 Kg as 100% at SP	7.91a	9.53abc	11.5cde	12.4def	14.2cd	16.6b	21.6cd	26.2cde	30.6de	36.7bcd
100 Kg as 50 % at SP+50 % at 30 DAP	7.26a	8.78b-e	11.0def	14.0a-d	13.8cde	15.4b	20.6de	24.9def	31.2bcd	35.1de
200 Kg as 50 % at SP+50 % at 30 DAP	7.06a	8.30cde	9.86fg	11.6fg	13.6cde	15.6b	18.5f	24.7ef	30.6de	36.9a-d
300 Kg as 50 % at SP+50 % at 30 DAP	5.89a	7.58e	9.30g	10.4g	12.4e	15.2b	17.2fg	22.3g	28.6e	35.5cde
100 Kg as 50 % at SP+25 % at 30 DAP+25 at 60 DAP	6.95a	9.11a-d	11.0def	11.8efg	15.8b	16.6b	23.2bc	25.2def	30.0de	34.7de
200 Kg as 50 % at SP+25 % at 30 DAP+25 at 60 DAP	5.90a	8.01de	10.4efg	12.0efg	13.5cde	15.9b	18.9ef	23.8fg	29.9de	35.8cde
300 Kg as 50 % at SP+25 % at 30 DAP+25 at 60 DAP	6.81a	8.03de	10.4efg	11.7efg	13.3de	15.1b	16.3g	22.4g	26.6f	32.9e

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 SP: Soil preparation, DAP: Days after planting , The storage zero time was May 10th and the end was March 10th in both seasons