

EFFECT OF DIFFERENT LEVELS OF PHOSPHORUS AND SULPHUR ON GROWTH, YIELD AND QUALITY OF LENTIL (*Lens culinaris* M)

S. K. CHOUBEY^a, V. P. DWIVEDI^b AND N. K. SRIVASTAVA^{c†}

^aDepartment of Agronomy, National P.G. College, Barhalganj, Gorakhpur, Uttar Pradesh, India

^bDepartment of Horticulture, S.D.J. (P.G.) College, Chandeshwar, Azamgarh, Uttar Pradesh, India

^cDepartment of Botany, S.D.J. (P.G.) College, Chandeshwar, Azamgarh, Uttar Pradesh, India

ABSTRACT

A field experiment was conducted at Agricultural Research Farm of S.D.J. Post Graduate College, Chandeshwar, Azamgarh during Rabi season of 2010-11 and 2011-12 on a silty loam soil. Results revealed that sum treatments recorded higher value of growth, yield attributes and seed yield as compared to other treatments. Plant growth, yield attributes and seed yield improved with the application 60 Kg P₂O₅ and 40 Kg sulphur/ha produced highest yield and significantly achieving under Eastern U.P. conditions. On the basis of economics application of 60 Kg P₂O₅/ha along with 20 kg sulphur/ha best fertilizer net return and benefit cost ratio of lentil variety Narendra Masoor-2.

KEYWORDS : Water Quality, Industrial Effluent, Physico-chemical Parameter, Statistical Value and Public Health

Pulses, the wizard of the health owe a strategic position in agricultural economy of India. Pulses are important source of vegetable protein essential and supply building material for body. Lentil (*Lens culinaris* M) is one of the most oldest food crop, and is relatively tolerant to drought and grown throughout the world. Lentil has 26% protein. Legumes usually require almost equal amount of phosphorus and sulphur, and below critical amount in the soil adversely affect both plant growth and quality of produce.

MATERIALS AND METHODS

An experiment was conducted at Agricultural Farm of S.D.J. Post Graduate College, Chandeshwar, Azamgarh, U.P. during rabi seasons of 2010-11 and 2011-12. The soil was silty loam containing 0.39% organic carbon, 225.5 Kg. available N/ha. 23 Kg. available P/ha. and 251.76 available K/ha. with pH 7.5. The treatment consisted 4 phosphorus levels (Control 20, 40 and 60 Kg/ha) and 3 sulphur levels (Control 20 and 40 Kg/ha) were laid-out in Randomized Block Design with 4 replications. The variety Narendra Masoor-2 was sown in rows 30 cm apart and 5 cm depth in first fortnight of November in both the seasons. The phosphorus and sulphur (as pre-treatment) was applied as basal application through D.A.P. and elemental sulphur Nitrogen at the rate of 20 Kg/ha through urea and 40 Kg K₂O/ha through muriate of potash at the time of sowing. The crop was irrigated at 50 days after sowing.

RESULTS AND DISCUSSION

The data presented in Table,1 clearly indicate that different levels of phosphorus and sulphur caused significant differences in growth, yield and yield attributing character in both the years. While non-significant differences were recorded in protein content in the both the years. It was observed that application of 60 Kg P₂O₅ and 40 Kg S/ha were found to be highly effective in enhancing growth, yield and yield attributing characters as compared to other remaining treatments. It might be due to the beneficial effect of these treatments in physiological process which increased the growth and yield of lentil crop. These results are in confirmity with the findings of (Singh et al., 1996 ; Singh and Chauhan, 1987). The lowest growth and yield of lentil crop was recorded under control in both the year.

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[†]Corresponding author

Table 1 : Yield and yield components of lentil (*Lens culinaris* M) cropping year 2010-11 and 2011-12

Treatments	No. of pods/plant		No. of grain/pod		Grain yieldq/ha		Straw yield		Proteincontent	
	2010-11	2011-12	2010-11	2011-12	2010-11	2011-12	2010-11	2011-12	2010-11	2011-12
Phosphorus levels (Kg/ha-1)										
P ₀	106.91	106.36	1.63	1.62	16.48	16.40	31.96	31.97	32.31	23.18
P ₂₀	121.06	120.47	1.84	1.83	18.66	18.57	23.20	33.02	24.69	24.56
P ₄₀	132.70	132.56	2.02	2.02	20.46	20.44	35.66	35.62	23.61	25.37
P ₆₀	136.03	136.40	2.07	2.08	20.97	21.03	35.99	36.08	26.16	26.33
S.E. m±	2.49	4.31	0.05	0.04	0.50	0.38	0.67	0.89	N.S.	N.S.
C.D. at 5%	6.90	11.39	0.13	0.10	1.38	1.06	1.88	1.46	N.S.	N.S.
Sulphur levels (Kg/ha-1)										
S ₀	116.69	115.29	1.78	1.76	17.99	17.77	32.78	32.37	24.22	23.92
S ₂₀	126.36	126.65	1.92	1.93	19.48	19.53	34.44	34.32	25.07	25.13
S ₄₀	129.48	129.90	1.97	1.98	19.96	20.03	35.39	35.31	25.53	25.61
S.E. m±	2.15	3.56	0.04	0.03	0.43	0.33	0.58	0.77	N.S.	N.S.
C.D. at 5%	5.97	9.86	0.11	0.09	1.20	0.91	1.62	2.13	N.S.	N.S.

REFERENCES

Singh Bhagwan, Kumar Vinod, Singh B. and Kumar V., 1996. Effect of phosphorus and sulphur on lentil (*Lens culinaris* M) under rainfed condition. Indian Jour. of Agron., **41** (3): 420-423.

Singh Vijay and Chauhan D.V.S, 1987. Effect of phosphorus and sulphur on yield and quality of lentil (*Lens esculentus* M). Annuals of Plant Physio., **1**(2): 227-232.