

Response of greengram (*Phaseolus radiatus*) cultivars to levels of phosphorus

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An experiment was conducted to find out response of greengram (*Phaseolus radiatus* L.) cultivars to levels of phosphorus during the rainy season of 1988-89 in sandy-loam soil of Bapatla. The soil was low in available P_2O_5 (9.0 kg/ha). All combinations of 4 varieties ('Pusa Baisakhi', 'LGG 407', 'LGG 410' and 'MS 267') and 3 levels of phosphorus (0, 25 and 50 kg P_2O_5 /ha) were tested in randomized block design with 3 replications. A uniform dose of 20 kg N/ha was applied basal for all treatments.

Among the varieties tested, 'Pusa Baisakhi' proved superior to the other 3 varieties in respect of all growth parameters,

yield components and yield. 'Pusa Baisakhi' gave the highest seed yield compared with the other varieties which were at par. Haulm yield followed the similar trend as that of seed (Table 1). Dixit and Swain (1987) also observed varietal difference in pods/plant in greengram.

Irrespective of varieties, all the growth parameters, yield components, grain and haulm yields increased significantly with an increase in P level from 0 to 50 kg P_2O_5 /ha. Phosphorus application increased the grain yield by 18 and 51.2% at 25 and 50 P_2O_5 /ha over no P. However, 'Pusa Baisakhi' out-yielded all the other varieties at 50 kg

Table 1. Yield components, yield and uptake of phosphorus as influenced by varieties and levels of phosphorus

Treatment	Pods/ plant	Seeds/ pod	Test weight (g)	Grain yield (q/ha)	Haulm yield (q/ha)	P uptake	
						Seed	Haulm
<i>Variety</i>							
‘Pusa Baisakhi’	13.50	11.23	32.25	11.25	49.35	3.09	7.07
‘LGG 410’	12.20	10.92	31.5	10.29	45.72	2.33	5.97
‘LGG 407’	12.50	10.87	31.15	10.55	46.53	2.46	6.57
‘ML 267’	12.40	10.94	31.10	10.24	46.97	2.37	6.39
CD (P = 0.05)	0.67	0.14	0.059	0.34	0.70	0.05	0.30
<i>P₂O₅ kg/ha</i>							
0	10.16	9.0	29.50	8.60	40.87	1.49	4.01
25	12.33	11.04	30.58	10.15	46.96	2.06	6.38
50	15.58	12.93	34.10	13.00	53.59	4.13	9.11
CD (P = 0.05)	0.58	0.12	0.047	0.29	0.61	0.04	0.20

P_2O_5 /ha. The results reported regarding increased number of pods/plant (Yein *et al.*, 1981), number of pods (Vasamalai and Subrahmanayam, 1980), test weight (Gupta and Rai, 1989) and grain yield (Dixit and Swain, 1981) due to application of P were in agreement with the present findings.

The maximum uptake of P was recorded with 'Pusa Baisakhi' followed by 'LGG 407', 'ML 267' and 'LGG 410'. In all the varieties significant increase in P uptake was recorded at 25 and 50 kg P_2O_5 /ha over no P. The P uptake by seed and haulm at harvest was the maximum in 'Pusa Baisakhi' and it increased significantly with each increment in P over the other varieties. 'LGG 410' and 'ML 267' were equally efficient for this character at 50 kg P_2O_5 /ha (Table 1). Arya and Kalra (1988) also reported increased P

uptake by greengram with increasing levels of P. The highest benefit : cost ratio of 5.52 : 1 was with 50 kg P_2O_5 /ha.

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Response of lentil (*Lens esculentus*) to *Rhizobium* inoculation, nitrogen and phosphorus fertilization

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A field experiment was conducted at Gurukul-Narsan during the winter season (*rabi*) 1989-90. The soil was loam with medium available nitrogen (0.7% organic carbon) and high available phosphorus (40 kg P_2O_5 /ha) and potash (370 kg K_2O /ha) and was neutral in reaction. Twelve treatments

consisting of 2 levels of inoculation (uninoculated and inoculated with *Rhizobium* culture), 2 levels of N (no N and 20 kg N/ha) and 4 levels of P (25, 50, 75 and 100 kg P_2O_5 /ha) were tried in randomized block design and replicated 3 times. Full amount of N as urea and phosphorus as