

Response of blackgram (*Phaseolus mungo*) varieties to levels of phosphorus under rainfed conditions

C. M. MISHRA¹

Agricultural Research Station, Jawaharlal Nehru Krishi Vishwa Vidyalaya,
Sidhi, Madhya Pradesh 486 661

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A field experiment was conducted during the rainy seasons of 1986 and 1987 at the Operational Research project, Nibuha, Sidhi, on farmer's field, to study the response of blackgram (*Phaseolus mungo* L.) varieties to levels of phosphorus under rainfed conditions. Three blackgram varieties ('UP 2', 'BP 1' and 'Local') each at 0, 20, 40 and 60 kg P and 20 kg N/ha were fertilized

basally in 30 cm × 10 cm apart. Sowing of crop was done on 12 and 13 July 1986 and 1987 respectively. The crop was hand-weeded 20 and 45 days after sowing during both the years. The crop was harvested 74-75 days after sowing. The crop received 1,015 mm rain in 1986 and 956 mm in 1987 during crop season. The soil was sandy loam with pH 7.8, having low organic carbon

Table 1. Effect of blackgram varieties to levels of phosphorus on yield and yield attributes (on basis of 2 years pooled data)

Treatment	Dry weight/ plant (g)	Pods/ plant	Seeds/ pod	1,000-grain weight (g)	Grain yield (kg/ha)
<i>Variety</i>					
'RU 2'	5.5	12.8	5.6	37.4	764.9
'BP 1'	4.8	10.7	4.8	35.8	738.9
'Local'	4.2	8.5	4.1	34.4	634.6
CD (P = 0.05)	0.32	0.82	0.41	1.2	13.44
<i>P₂O₅ (kg/ha)</i>					
0	4.2	8.4	3.4	33.7	592.0
20	4.9	10.2	4.6	35.2	655.3
40	5.8	11.7	5.0	36.5	750.9
60	5.9	12.5	5.3	37.9	846.3
CD (P = 0.05)	0.45	0.73	0.20	1.3	15.52

Present address: ¹Zonal Agricultural Research Station, Khargone, Madhya Pradesh 451 001

(0.352%), medium available 34 kg P/ha and high available 415 kg K/ha. The variety 'RU 2' gave the maximum grain yield of 764.9 kg/ha and it was significantly more than that of 'BP 1' and 'Local' variety (Table 1). The 'Local' variety gave the minimum yield of 634.6 kg/ha.

Grain yield increased progressively with an increase in level of P and the maximum response was at 60 kg P/ha. P @ 60 kg P/ha gave 43, 29 and 13% higher grain yield than the control, 20 and 40 kg P/ha respectively. This may be due to higher pods/plant, seeds/pod and 1,000-grain weight. Shrivastava *et al.* (1980) also reported the similar findings. Yield attributes, viz. dry weight/plant, pods/plant, seeds/pod and 1,000-grain weight, were the maximum in 'RU 2' and the

minimum in 'Local'. Yield attributes were also significantly improved owing to application of 60 kg P/ha compared with unfertilized and the plots receiving fertilizer @ 20 and 40 kg/ha. The interaction effect of variety $\times$ phosphorus was also significant. The results confirm the findings of Tomar *et al.* (1984).

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Response of greengram (*Phaseolus radiatus*) to nitrogen, phosphorus and *Rhizobium* inoculation

R. B. ARDESHNA, M. M. MODHWADIA, V. D. KHANPARA AND J. C. PATEL

Department of Agronomy, Gujarat Agricultural University, Junagadh 362 001

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A field experiment was conducted during the rainy season of 1990 at Junagadh, to study the effect of nitrogen, phosphorus and *Rhizobium* inoculation on yield of greengram (*Phaseolus radiatus* L.). The soil was clayey in texture, medium in total nitrogen (0.066%) and available P_2O_5 (30.4 kg/ha), high in available potassium (288.2 kg/ha) and slightly alkaline (7.7 pH) in

reaction, with normal electrical conductivity (0.33 dS/m). The treatments consisting of 3 levels each of N (10, 20 and 30 kg/ha) and P (20, 40 and 60 kg/ha) and 2 levels of *Rhizobium* inoculation (with and without inoculation) were laid out in a factorial randomized block design replicated 4 times. Full dose of N and P_2O_5 was applied as urea and single superphosphate respectively at