

## EFFECT OF PHOSPHORUS AND POTASSIUM FERTILISATION ON *URID (VIGNA MUNGO (L) HEPPER).*

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Investigations were carried out to study the effect of P and K fertilization on *Urid* varieties T-9 and RU-2 at the Agriculture College Farm, Rewa (M.P.) during *Kharif* season 1982. Increased application of P increased the yields of both the varieties. Potash application did not show significant response in both the varieties. Variety T-9 gave higher yield and net return/ha than variety RU-2.

Pulses are of immense importance because of high protein content, their ability to fix atmospheric nitrogen and thus to enrich soil. It is widely cultivated in India and is an important *Kharif* pulse crop grown in light soils of Madhya Pradesh. Being short duration crop, it can be grown even with scanty rainfall. Though all pulses respond to phosphate application they may also respond to potash where the soils are deficient. But the yields obtained in these areas are very poor mainly due to inadequate information with regard to the fertilizer requirement (in sandy loam soils of Madhya Pradesh). Hence an attempt, was made to find out the optimum doses of P and K as well as cost and return.

### MATERIALS AND METHODS

The field experiments were conducted on with *Urid* varieties T-9 and RU-2 at the Agriculture College Farm Rewa, (M. P.) during *Kharif* season on well drained sandy loam soil. It was low in organic C (0.33%), available N (114 kg/ha) and available P (9.61 kg/ha) contents and medium in available

K (195 kg/ha) content. The pH and EC of the soil were 7.8 and 0.35 mmhos/cm respectively.

Phosphate was applied as single super phosphate for varieties T-9 and RU-2 at 0, 15, 30, 45 and 60 and 0, 20, 40 and 60 kg/ha P respectively. In both the experiments the levels of K were 0, 15 and 30 kg/ha. Nitrogen was applied as urea @ 20 kg/ha. The trials were laid out in randomized block design with four replications. Sowing was done by hand dibbling in soil after application of all the fertilizer as per treatments. Economics of various treatments was calculated from the prevailing market prices.

### RESULTS AND DISCUSSION

The data presented in Table-reveal that due to P application in variety T-9, plant height was significantly influenced at each level of P over control and subsequent lower levels. Maximum height was recorded at 60 kg P/ha. But height was not affected significantly by levels of P in variety RU-2; though increase was recorded at each level of P over control. It may be because the variety

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Table 1. Effect of P and K fertilization.

Treatment	Height of plant (cm) 2	Pods/Plant 3	Seed/pod 4	1000 grain weight 5	Yield q/ha 6	Gross return 7	Cost of cultivation. 8	Net return 9
<b>Variety T-9.</b>								
P 0	33.08	26.10	5.12	36.84	10.58	3171	905	2266
P 15	35.57	28.23	5.27	37.37	11.73	3515	996	2519
P 30	42.54	34.75	5.45	37.74	14.00	4200	1087	3118
P 45	46.97	40.26	5.59	38.22	15.85	4753	1177	3576
P 60	49.92	45.33	5.75	38.45	17.19	5157	1268	3889
C.D. at 5%	1.31	4.30	0.11	0.20	1.01	—	—	—
<b>Variety RU-2.</b>								
K 0	40.34	33.66	5.39	37.65	13.61	4083	1063	3030
K 15	41.84	35.14	5.43	37.73	13.88	4166	1091	3075
K 30	42.67	35.94	5.51	37.79	14.11	4234	1129	3105
C.D. at 5%	1.01	NS	NS	NS	NS	—	—	—
<b>Variety RU-2.</b>								
P 0	91.58	16.91	6.23	41.37	7.43	2229	905	1324
P 20	91.75	20.80	6.33	41.22	8.71	2613	1026	1587
P 40	102.83	20.80	6.35	41.45	9.23	2769	1147	1622
P 60	102.91	21.91	6.46	41.74	10.38	3114	1268	1846
C.D. at 5%	NS	2.69	NS	NS	1.15	—	—	—
K 0	89.62	17.03	6.23	41.37	8.71	2613	1063	1550
K 15	101.06	19.68	6.31	41.07	8.84	2652	1096	1556
K 30	101.12	23.62	6.48	41.88	9.23	2769	1129	1640
C.D. at 5%	NS	2.33	0.23	NS	NS	—	—	—

RU-2 is an erect type and T-9 is of spreading type.

Yield and its attributes viz. number of pods/plant, number of seeds/pod, and test weight in variety T-9 were significantly affected at each level of P over control except number of pods/plant at 15 kg P/ha. Similarly in the variety RU-2 the number of pods/plant increased significantly over control at each level of P. The maximum number of pods/plant were recorded at 60 kg P/ha in both the varieties. Application of P did not affect significantly the number of seeds/pod, in variety RU-2. However, the maximum number of seeds/pod were recorded at 60 kg p/ha. A significant increase in yield was also noticed at each level of P in both the varieties. The maximum yields 17.19 and 10.38 q/ha were recorded at 90 kg P/ha from T-9 and RU-2 respectively.

Significant increase in yield attributing characteristics i.e. pods/plant, seeds/pod and 1000 grain weight resulted in increase of yield. This may be due to beneficial effect of P which play an important role in plant nutrition (Kanwar, 1976). The increase in yield in both the varieties with the P application probably also due to response of sulphur, contained in superphosphate (Deshpande and Bathkal, 1965) and may be attributed to the ability of plant type to accumulate more food material with in seed. These findings are in consonance with earlier reports by Sharma and Richharia (1962) on gram and Dahatonde and Rahate (1974) on groundnut.

Application of K influenced the height of plants significantly over control but yield and yield attributes of variety T-9 were not affected significantly. However there was an increasing trend with subsequent levels of K over control. In variety RU-2, 30 kg K/ha increased the number of pods/plant and number of seeds/pod significantly over control. 15 Kg K/ha also increased these characters over control but difference was significant only in the number of pods/plant.

Phosphorus application, at all levels increased the net return per hectare over control in both the varieties; but not marked by potash application.

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