

RESPONSE OF MOTH BEAN [*VIGNA ACONITIFOLIA* (JACQ.) MARECHAL] TO GRADED LEVELS OF N AND P

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A field experiment was conducted on a low fertility sandy soil at S.K.N. College of Agriculture, Jobner during kharif 1979 in randomised block design, to find out optimum dose of N and P for moth bean. The soil of the experimental field was sandy loam containing 131.90, 18.27 and 154.50 kg available nitrogen, phosphorus and potassium, respectively. The treatments consisted of four levels of N (0, 10, 20 and 30 kg/ha) and four levels of P₂O₅ (0, 20, 40 and 60 kg/ha). Each treatment was replicated four times. Sowing was done on 7 August, 1979, having plant spacing of 40 x 12.5 cm. As per treatment N and P were applied at the time of sowing, through urea and single super phosphate. The data pertaining to grain, straw, biological yield and harvest index and other ancillary characters are presented in Table 1.

Table 1: Grain, straw and biological yield, harvest index and yield attributes of moth bean as affected by N and P treatments

Treatments	Yield (q/ha)			Harvest Index (%)	No. of pods/plant	No. of grains/pod	1000-grain wt (g)
	Grain	Straw	Biological				
N (kg/ha)							
0	4.44	18.77	23.20	19.13	29.19	4.46	19.45
10	5.22	21.66	26.89	19.42	32.78	4.47	19.52
20	5.42	23.28	28.72	18.89	37.05	4.52	19.59
30	5.20	24.15	29.33	17.72	34.98	4.48	19.80
SEm ±	0.17	0.62	0.99	0.66	0.91	0.08	0.16
C.C. (5%)	0.49	1.76	2.83	ns	2.60	ns	ns
P ₂ O ₅ (kg/ha)							
0	4.18	20.17	24.35	17.18	21.28	4.34	18.44
20	5.04	24.00	29.04	17.36	35.46	4.40	18.93
40	5.73	24.30	30.03	19.09	40.03	4.54	19.78
60	5.33	19.38	24.71	21.54	39.71	4.64	21.21
SEm ±	0.17	0.62	0.99	0.66	0.91	0.08	0.16
C D (5%)	0.49	1.76	2.83	1.89	2.60	ns	0.47

ns = Non-significant

Nitrogen significantly increased the grain, straw and biological yield and number of pods per plant, whereas, harvest index, grains per pod and test weights were non-significant. The plots getting 20 kg N/ha produced the highest grain yield (5.42 q/ha), followed by 10kg N/ha (5.22 q/ha) and 30 kg N/ha (5.20 q/ha) and all

were statistically at par and superior to 0 kg N/ha (Table 1). Singh et al. (1975) also found similar results in mung bean. The highest yields of straw (2.5 q/ha) and biological yield (29.33 q/ha) were obtained at 30 kg N/ha.

Increasing levels of P_2O_5 (from 0 to 40 kg P_2O_5 /ha) significantly increased grain yield and favourably affected various yield attributes except the number of grains per pod. Similarly straw and biological yield also increased upto 49 kg P_2O_5 /ha; the yields from 40 and 20 kg P_2O_5 /ha were at par but significantly superior to 0 and 60 kg P_2O_5 /ha. Increase in the phosphorus level also increased the harvest index, numbers of pods per plant and test weight (1000-grain weight). Singh et al. (1975) and Panwar et al. (1978) also reported the significant response of mung bean upto 60 kg P_2O_5 /ha.

The response equations for nitrogen and phosphorus were significantly quadratic and are given below :

$$\text{For N} \quad Y = 4.4480 + 0.0998 x - 0.0025 x^2 \quad (R^2 = 0.9977)$$

$$\text{For P} \quad Y = 4.1342 + 0.0679 x - 0.0008 x^2 \quad (R^2 = 0.9674)$$

Where Y is the yield of moth bean (q/ha) and x is applied N or P_2O_5 (kg/ha) in the respective equations.

The calculated per hectare economic optimum doses were 17.76 kg N and 33.68 kg P_2O_5 and the expected yields from these levels were 5.43 q and 5.52 q, respectively.

REFERENCES

- Panwar, K.S., Pandey, K. and Singh, M. 1978. Response of some promising varieties of moong to levels of phosphorus. *Indian Journal of Agronomy*. 23 (4): 366-367.
- Singh, K.K., Hasan, W., Singh, S.P. and Prasad, R. 1975. Response of moong to graded levels of N and P. *Indian Journal of Agronomy*. 20 (2) 187-188.