

EFFECT OF N, P AND K ON THE YIELD OF HORSEGRAM VARIETY CO 1

Horsegram being a pulse crop has excellent capacity to fix atmospheric nitrogen and consequently enriching the soil fertility. Although this crop is being cultivated in different parts of Kerala, systematic fertiliser application is not being followed. The present investigation was carried out using Co 1 variety of horsegram to arrive at the optimum N, P and K requirements of this crop under the agroclimatic conditions of Kerala.

The experiment was carried out at the Research Station and Instructional Farm, Mannuthy. The soil of the experimental areas was lateritic loam analysing 0.075% total nitrogen, 83.93 kg/ha of available P_2O_5 and 225.6 kg/ha of available K_2O and pH of 5.5. The treatment consisted of 3 levels each of nitrogen (0,10,20 kg/ha), 3 levels each of phosphorus (0,25,50 kg P_2O_5 /ha) and 3 levels each of potassium (0,10,20 kg K_2O /ha) and were studied in a 3^3 confounded factorial design partially confounding NPK in replication 1 and NPK^2 in replication 2. The plot size was 20 sqm. A uniform basal dressing of lime at the rate of 500 kg/ha was given a week prior to sowing. The horsegram variety Co 1 was sown on 30-9-1980 and harvested on 15-12-1980. After harvest, the grain yield was statistically analysed. A quadratic response curve for phosphorus also was fitted.

It is seen that nitrogen had no significant effect on the yield of horsegram. The lack of response might be due to the fact that the nitrogen present in the soil would have been sufficient for the establishment of the plant. The nitrogen fixed by the root nodule bacteria would have been utilised for further growth and development and hence it emphasises that additional nitrogen has no much influence on the growth and yield of horsegram. Similar observations were reported by Homer and Mojtehed (1970).

The effect of phosphorus was positive and significant upto 25 kg/ha of P_2O_5 and it showed a negative trend beyond that level. The increase in green yield obtained with the application of phosphorus might be due to the beneficial effect of phosphorus on increased root proliferation, flower primordia initiation and maturity of seeds. Similar results were reported by Mohankumar and Balakrishna Pillai (1979). -

Though not significant, the effect of potash was positive upto 10 kg/ K_2O /ha and it showed a declining trend beyond that level. However, a synergistic influence of phosphorus and potassium on the yield of horsegram is evident from Table 1. The treatment combination of 25 kg of P_2O_5 and 10 kg K_2O gave the highest grain yield of 776.39 kg/ha which was superior to all other combinations indicating clearly the need for potassium application for horsegram (Brown and Potter, 1950).

The quadratic response curve was fitted using the data. The optimum dose of phosphorus giving the maximum yield has been worked out to be 28.37 kg/ha. The economic optimum level of phosphorus was worked out to be 28.26 kg/ha at a price of Rs 2.00 per kg of horsegram and Rs 0.80 per kg of superphosphate.

Table 1

Combined effect of P and K on the grain yield of horsegram

Levels of K ₂ O(kg/ha)	Levels of P.O. (kg ha)			Mean yield (kg/ha)
	0	25	50	
0	451.39	532.41	483.79	487.20
10	417.87	776.39	506.94	567.07
20	402.32	575.0	540.74	506.02
Mean	423.86	627.93	510.49	
CD (P= 0.05)		115.96		

സംഗ്രഹം

പാകൃഷ്ണകം, ഭാവഹം, ക്ഷാരം ഇവ വിവിധ അളവുകളിൽ കൊടുത്ത് മുതിരയിൽ ഒരു പരീക്ഷണം നടത്തിയതിൽ നിന്ന്, ഭാവഹം ഹെക്ടറിന് 25 കിലോഗ്രാം വീതം നൽകുന്നതുകൊണ്ട് വിളവിൽ ഗണ്യമായ വർദ്ധനവുണ്ടാകുമെന്ന് കാണുകയുണ്ടായി.

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