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EFFECT OF NPK FERTILIZERS IN RELATION TO SEED YIELD IN *BRASSICA JUNCEA* (L) VAR. PUSA BOLD

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ABSTRACT
An field experiment was conducted on cotton black soil to investigate the effect of various levels of NPK on the plant height, number of branches and on the seed yield. NPK application from 20:10:10 kg/ha, progressively and significantly enhanced the seed yield. The maximum seed yield was with the application of 50:40:25 kg NPK /ha, while the NPK application at the rate of 60:50:30 and 70:50:35 kg NPK/ha, receives decrease in yield. Similarly their was no enhancement in plant height, number of branches per plant and number of pod per plant in higher doses.

INTRODUCTION

Brassica juncea (Mustard) is one of the oil yielding and promising crop in India. The average productivity is low but it can be improved by nutrient and water management (Parihar and Tripathi, 1989; Tomar and Raghu, 1994; Arthamwar, 1993; Reddy and Shastry, 1983). However, information about nutritional requirements of chemical fertilizers is scanty in Vidarbha region and particularly in black cotton soil. Present study highlights the increasing capacity of Mustard seed yield by various treatments of NPK fertilizers.

MATERIALS AND METHODS

Field experiment was conducted at the research field of Dept. of Botany, P. G. T. D. Nagpur University,Nagpur, during the winter season of 2000-2001 and 2001-2002. Soil sample was collected from 0-30 cms of depth for the analysis of soil.The soil of the experimental site was clayey with a pH 7.2, CEC 0.02 dsm-1, available N 334.9 kg/ha, available P_2O_5 23.29 kg/ha, and available K 245.2 kg/ha. The trial was conducted in 18 treatments, 6 levels of N (0, 10, 20, 30, 40, 50, 60 and 70 kg/ha), 6 levels of P (0, 5, 10, 20, 30, 40, 50 and 60 kg/ha), and 6 levels of K (0, 5, 10, 15, 20, 25, 30 and 35 kg/ha) was supplied in split doses. Half dose was supplied, as a basal dose in all treatments and remaining dose was top dressed after the 28th day of seedlings. All the uniform conditions of irrigation were maintained along with control. The observations were undertaken at different growth parameters viz. height of the plants, number of branches per plant, number of pods per plant, weight of seeds per plant, and seed yield per plant and productivity per hectare was calculated.

RESULTS AND DISCUSSION

All the growth parameters showed that with increase in the levels of fertilizers from $N_0P_0K_0$ to $N_{50}P_{40}K_{25}$ kg/ha the average yield (1.29 t/ha), the maximum increase in the seed yield was reported in $N_{50}P_{40}K_{25}$ (average of two years *i.e.* 1.42 t/ha) (Table 1), but decline with higher doses of NPK *i.e.* $N_{60}P_{50}K_{30}$ and

Table 1: Effect of irrigation and NPK fertilizers on different growth parameters of *Brassica juncea* (L) and seed yield t/ha

Growth parameters	Fertilizer levels kg/ha							
	$N_0P_0K_0$	$N_{10}P_5K_5$	$N_{20}P_{10}K_{10}$	$N_{30}P_{20}K_{15}$	$N_{40}P_{30}K_{20}$	$N_{50}P_{40}K_{25}$	$N_{60}P_{50}K_{30}$	$N_{70}P_{60}K_{35}$
Height of plant (cm)	92.8	102.0	114.0	135.0	135.0	140.0	132.0	130.0
No. of branches/ plant	3.0	4.4	5.0	6.0	6.0	6.0	5.5	5.4
No. of pods / plant	55.3	102.0	170.0	176.0	210.0	230.0	210	201
Wt. of seeds/ plant(gm)	0.850	2.421	2.912	2.933	4.323	6.199	4.838	4.359

* Significant at 5% level

$N_{70}P_{60}K_{35}$. The impact of fertilizers and irrigation was realized in all growth parameters were observed. In controls and low levels of fertilizers $N_0P_0K_0$ (1.07t/ha), to $N_{10}P_5K_5$ (1.075t/ha), the yield was not significant. However, in the levels of fertilizers, from $N_{20}P_{10}K_{10}$ to $N_{50}P_{40}K_{25}$ the seed yield of mustard has been observed highly significant over the control. So also declining effect of NPK fertilizers at $N_{60}P_{50}K_{30}$ (1.33 t/ha), and $N_{70}P_{60}K_{35}$ (1.23 t/ha) were also observed. These results were compare with Agarwal and Gupta (1991), Kumar *et al.,* (2000), Patel and Shelke (2000), Dawande *et al.,* (1997) also reported increase in the seed yield of mustard at higher levels of fertilizers. Thus from above findings it was concluded that in black cotton soil, the yield of mustard can be increased by the proper management of water supply and the required quantity of nutrient supply (NPK), resulting into a good yield of seed of *Brassica juncea* var. Pusa bold.

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