

Effect of NPK on Growth and Yield of Okra

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Abstract

The field experiment of effect of N, P and K was carried out at department of horticulture, C.S. Azad University of agriculture and technology, Kanpur, U.P. Field investigation entitle "Effect of NPK on growth and yield of okra" was conducted during session 2010 with 3 levels of nitrogen, 2 levels of phosphorous and 3 level of potash. The observations were made on yield various growth and yield contributing characters for proper assessment of various levels of nitrogen, phosphorous and potash on okra as per procedure. For this purpose, an experiment constituting 19 treatments combination of N, P, K combination and one control was conducted in a 3 replicate Factorial Randomized Block Design for one year. The effect of N₂ was Plant height of okra was increased 28.74, 55.53 and 107.62 cm at 30, 60 DAS and at the harvest time with the application of optimum level of 120 kg N/ha. The nodes per plant was obtained 22.50 with the application of 120 kg N/ha. Effect of Phosphorous was plant height of okra significantly obtained with the application of 60 kg P₂O₅/ha at all the stages of crop. It obtained 26.43, 55.33 and 106.09 cm at 30, 60 and at maturity. The nodes per plant significantly obtained 20.92 with the application of 60 kg P₂O₅/ha. The effect of potassium was plant height at 30, 60 DAS at the time of harvest were obtained maximum with the application of 60 kg K₂O/ha 27.16 cm, 53.72 and 104.17 cm, respectively. The number of nodes per plant of okra was obtained maximum 20.87 with the application of 60 kg K₂O/ha.

Keywords: Okra, Randomized Block Design, Yield, Replicate, DAS, Treatment.

Introduction

Vegetables play a vital role in the nutritional security of the Indian population and financial economy of the majority of small and marginal farmer. In the light of diversification of agriculture, vegetables have played a significant role by providing scope and opportunity for employment generation through export trade and post harvest industry development. It is almost a well-known fact that out of nearly 300 commonly grown crops in the world about half are vegetables. They produce maximum quantity of food per cent area, because of than quick and simple procedure of cultivation. According to ICMR (Indian Council of Medical research) per day per capita requirement of vegetable on India is 300 g (125 g leafy, 100 g root and tuber vegetable and 75 g other vegetable) while availability of vegetables in the country is very low 145 cm per day per capita. India stands on second place in vegetable production and shares about 133.3 m tones in the world. Okra (*Abelmoschus esculantus* L. (Moench.)) is an important crop having chromosome no. 2n = 130. It is believe to have originated in the Hindustan centre of origin. However Ethiopia is also considered as its native place from where it disseminated into Arabic countries. The roots and stem of okra are used for cleaning the cane juice from which gur or brown sugar is prepared. Mature fruits and stem containing crude fibre are used in the paper industry, seeds of okra in viewed as alternative source from edible oil. Okra provides on important source of vitamin, calcium, potassium and other mineral matter which are often lacking in the diet of developing countries.

Aim of the Study

This study is basically carried out for knowing what is the effect of N, P, K on the yield of Okra. In what quantity it should be supplied to the crop of okra for getting maximum cultivation.

Method and Materials

The present field investigation entitle "Effect of NPK on growth and yield of okra" was conducted during 2010 with 3 levels of nitrogen, 2 levels of phosphorous and 3 level of potash. The observations were made on yield various growth and yield contributing characters for proper

assessment of various levels of nitrogen, phosphorous and potash on okra as per procedure given in methods and material. The data was recorded on various aspects were statistically analyzed and the analysis of variance table have been included while the mean effect of N, P and K and their significant interactions have been described. Application of N, P and K fertilizer also evaluated on the basis of crop yield, gross income, net income and cost benefit ratio.

Result and Discussion

Present field investigation was made during Kharif 2010 in various N, P and K dose in okra.

Effect of Nitrogen

1. Plant height of okra was increased 28.74, 55.53 and 107.62 cm at 30, 60 DAS and at the harvest time with the application of optimum level of 120 kg N/ha.
2. The nodes per plant was obtained 22.50 with the application of 120 kg N/ha.
3. The number of primary and secondary branches per plant obtain 2.49 and 9.65 with the application of 120 kg N/ha.
4. The Number of Pods Per Plant Increased 15.05 With The Application Of 120 Kg N/ha.
5. The pod length obtain 13.73 cm with the application of 120 kg N/ha.
6. The width of pod increased with the 1.38 cm with the application of 120 kg N/ha.
7. The green pod yield 140.84 g per plant obtain with the application of 120 kg N/ha.
8. The green pod yield q/ha obtained 126.90 q/ha with the application of 120 kg N/ha.

Effect of Phosphorous

1. Plant height of okra significantly obtained with the application of 60 kg P₂O₅/ha at all the stages of crop. It obtained 26.43, 55.33 and 106.09 cm at 30, 60 and at maturity.
2. The nodes per plant significantly obtained 20.92 with the application of 60 kg P₂O₅/ha.
3. The number of primary and secondary branches per plant significantly obtained 2.45 and 8.79 with the application of 60 kg P₂O₅/ha.
4. The number of pods per plant significantly 14.45 with the application of 60 kg P₂O₅/ha.
5. The pod length of okra significantly obtained 13.28 cm with the application of 60 kg P₂O₅/ha.

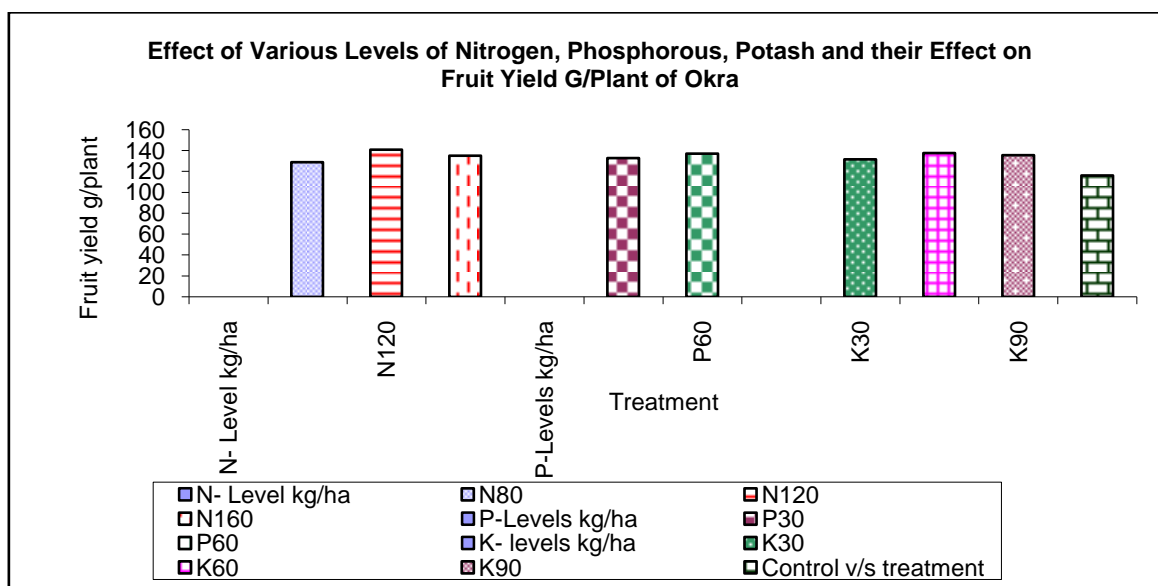
Effect of Potash

1. The plant height at 30, 60 DAS at the time of harvest were obtained maximum with the application of 60 kg K₂O/ha 27.16 cm, 53.72 and 104.17 cm, respectively.

2. The number of nodes per plant of okra was obtained maximum 20.87 with the application of 60 kg K₂O/ha.
3. The number of primary and secondary branches per plant were obtained maximum 2.45 and 9.17, respectively with application of 60 kg K₂O/ha. The green pod yield q/ha was obtained 116.16 q/ha with the application of 60 kg K₂O/ha.
4. The cost of cultivation was calculated maximum Rs. 26972 with the application of 60 kg K₂O/ha.
5. The gross income was calculated Rs. 116166/ha with the application of 60 kg K₂O/ha.
6. The net profit was calculated maximum Rs. 89718/ha with the application of 60 kg K₂O/ha.
7. The benefit cost ratio was obtained maximum 4.68 with the application of 60 kg K₂O/ha.
8. The number of pods per plant was obtained maximum 14.37 with the application of 60 kg K₂O/ha.
9. The pod length was obtained maximum 13.02 cm with the application of 60 kg K₂O/ha.
10. The width of the pod was obtained maximum 1.36 cm with the application of 60 kg K₂O/ha..
11. The green pod yield per plant was obtained 137.61 q with the application of 60 kg K₂O/ha.

Effect of Various Levels of Nitrogen, Phosphorous, Potash and Their Effect on Plant Height (Cm) of Okra After 30, 60 DAS and At Harvest-

Treatments	Plant height (cm) at 30 DAS	Plant height (cm) at 60 DAS	Plant height (cm) at harvest
N- Level kg/ha			
N80	24.89	49.54	98.22
N120	28.74	55.53	107.62
N160	26.67	53.06	103.47
C. D. at 5 %	0.44	1.10	1.75
P-Levels kg/ha			
P30	26.43	50.08	100.12
P60	27.10	55.33	106.09
C.D. at 5%	0.36	0.90	1.43
K- levels kg/ha			
K30	26.26	51.33	101.85
K60	27.16	53.42	104.17
K90	26.89	53.07	103.29
C.D. at 5%	0.44	0.90	1.75
Control v/s treatment	23.15	44.15	93.15
C.D. at 5%	79	1.36	3.12



Conclusion

In the study of effect of N, P, K on the yield of okra we found that on the basis of one year yield experiment made during Kharif 2010 following conclusion could be drawn- the balance dose of NPK, 120 kg N, 60 kg P₂O₅ and 60 kg K₂O/ha was obtained maximum green pod yield per hectare and maximum net return and benefit cost ratio.

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