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Uma Kant Singh
Department of Horticulture,
RRS Agwanpur, Saharsa, BAU,
Sabour, Bhagalpur, Bihar, India

Sourabh Kumar
Department of Economics, Ph.d
Scholar, Veer Kunwar Singh
University Ara, Bihar, India

Shubham Raj
B. Tech (Civil) NIT Patna, Govt.
of India, Bihar, India

Response of nitrogen and phosphorus on pointed gourd (*Trichosanthes dioica* Roxb.)

Uma Kant Singh, Sourabh Kumar and Shubham Raj

Abstract

An experiment was conducted at horticulture farm, RRS, Agwanpur, Saharsa to find the effect of N and P₂O₅ on Pointed gourd (Parwal). Present study shows that the improvement in yield was due to increase in fruit length, fruit number and fruit weight under the influence of N and P₂O₅. Results shows that 50 Kg N/ha and 75 Kg N/ha was equally effective for this trait. Similarly, 30 kg P₂O₅/ha increased the fruit yield per plant in comparison with no application of P₂O₅. 15 kg P₂O₅/ha and also 30 Kg P₂O₅/ha and 45 kg P₂O₅/ha were on per for yield per plant. This showed that N and P₂O₅ @ 45 kg /ha and 30 kg/ha, respectively, proved beneficial in increasing fruit yield as compared to their higher levels.

Keywords: Nitrogen, phosphorus, pointed gourd, yield, floral characters and growth

Introduction

Pointed gourd (Parwal) is one of the most important cucurbitaceous vegetables extensively grown in Diara areas of Bihar, U.P. and West Bengal. Colloquially, in India, it is called *parwal* or *green potato*. It is widely cultivated in the eastern and some northern parts of India, particularly in North eastern Andhra, Odisha, Bengal, Assam, Bihar, and Uttar Pradesh. It is used as an ingredient for soup, stew, curry, sweet, or eaten fried and as *potoler dorma* or *dolma* (dolma) with fish, roe or meat stuffing. Parwal is also used to make Kalonji, a deep fried cuisine filled with spices. This is a rich sources of vitamins A,B&C; carbohydrates and minerals. Nitrogen and phosphours proved useful in increasing the yield of various cucurbitaceous vegetables. However, no systematic work on the manorial requirement of parwal has been done under the areas of Bihar. The plant remains inactive during the winter season and prefers a fertile, well-drained sandy loam soil due to its susceptibility to water-logging. Parvar looks very much like a shorter, more robust version of a cucumber. Roots are tuberous with long taproot system. Stem is villous and scabrous, 0.5–1.0 cm thick with simple tendrils. Vines are pencil thick in size with dark green cordate simple leaves. Leaves are 7-10 cm long, 4-8 cm broad, ovate-oblong, sub-scabrous, cordate, sinuate dentate, neither angled nor lobed, acute petiole 5 cm long, villous. Flowers are white color with a tubular appearance. Flowers of this plant are dioecious type. The male flowers are not strobile. Stigma remains viable for about 14 hours and 40–70% of flowers set fruit. Pointed gourd is a good source of vitamins and minerals. It is a good source of carbohydrates, vitamin A, and vitamin C. It also contains major nutrients and trace elements (magnesium, potassium, copper, sulfur, and chlorine) which are needed in small quantities, for playing essential roles in human physiology. 9.0 mg Mg, 2.6 mg Na, 83.0 mg K, 1.1 mg Cu and 17 mg S per 100 g edible part.

Materials and methods

The experiment was laid out Simri bakhatiyarpur diara near saharsa in randomized block design, with four levels of N (0, 25,50 and 75 kg/ha) and P₂O₅(0, 15, 30 and 45 kg/ha) replicated thrice the planting was done in October 2019. Half the quantity of N and all doses 2019 of P₂ O₅ and K₂O (30Kg/ha) as applied at the time of planting in small basins. Remaining half dose of N was applied 65 days after planting in small basins. Remaining half dose of N was applied 65 days after planting. The soil of the experimental plot was sandy loam having near neutral PH. Observation were recorded on number of days and node to first length and diameter, number of fruits/plant, fruit weight and yield/ plant.

Results and Discussion

Application of N and P₂O₅ showed no effect on the number of days and node number for the appearance of first female flower (Table-1).

Corresponding Author:
Shubham Raj
B. Tech (Civil) NIT Patna, Govt.
of India, Bihar, India

These results are contrary to those of Brantley and Warren [1] and Randhawa and Singh [5]. This may be due to difference in soil and climatic condition 50 kg N/ha increased fruit length significantly as compared to 25 kg N/ha. Increase in nitrogen from 50 kg N/ha to 75 Kg N/ha failed to show any further increment in fruit length. 30 KgP₂O₅ on fruit length but application of P₂O₅ proved non-significant for fruit diameter. There was significant increase in number of fruit per plant and fruit weight by increasing the N level from 0 kg N/ha to 45 kg

N/ha to 75 kg N/ha failed to show significant response. Application of P₂O₅ upto 30 kg/ha increased the number of fruits and fruit weight significantly in a linear with the finding of Prabhakar *et al.* [4] and Randhawa and Singh [5] the interaction between N and P₂O₅ application was significant for number of fruit per plant indicating that application of N and P₂O₅ has a profound effect on this trait. 45 kg N/ha increased the fruit yield per plant as compared to no application of N. 25 Kg N/ha and 50 kg N/ha.

Table 1: Response of different doses of nitrogen and phosphorus on various characters in pointed gourd.

Treat Ment (kg/ha)	No. of days For first female Flower Appearance	Nodes no. for 1 st female flower appearance	Fruit length (cm)	Fruit diameter (cm)	No. of fruit per plant	Individual fruit weight (g)	Yield/ plant (Kg)
N. Response							
0	133.52	6.51	6.51	3.41	111.31	31.21	3.49
25	133.77	6.73	6.79	3.45	123.16	31.83	3.91
50	135.65	7.28	7.71	3.73	167.17	35.86	6.05
75	136.81	7.40	7.73	3.65	165.44	36.43	6.06
P. Response							
0	135.82	6.99	6.72	3.40	130.82	31.83	4.20
15	135.02	6.89	7.29	3.54	137.64	33.68	4.71
30	134.97	7.01	7.45	3.62	147.78	35.15	5.25
45	134.95	7.00	7.38	3.64	150.80	34.71	5.31
C.D. at 5% for							
N	NS	NS	0.49	NS	4.35	1.85	0.52
P	NS	NS	0.49	NS	4.35	1.82	0.54
NXP	NS	NS	NS	NS	8.67	NS	NS

Also 50 Kg N/ha and 75 Kg N/ha was equally effective for this trait. Similarly, 30 kg P₂O₅/ha increased the fruit yield per plant in comparison with no application of P₂O₅. 15 kg P₂O₅/ha and also 30 Kg P₂O₅/ha and 45 kg P₂O₅/ha were on par for yield per plant. This showed that N and P₂O₅@ 45 kg/ha and 30 kg/ha, respectively, proved beneficial in increasing fruit yield as compared to their higher levels. These results are in consonance with the finding of Mahakal *et al.* [3] and Srinivas and Doijode [6]. The improvement in yield was due to increase in fruit length, fruit number and fruit length, fruit number and fruit weight under the influence of N and P₂O₅.

Conclusion

The findings of the present investigation concludes that there was significant increase in number of fruit per plant and fruit weight by increasing the N level from 0 kg N/ha to 45 kg N/ha to 75 kg N/ha failed to show significant response. Application of P₂O₅ upto 30 kg/ha increased the number of fruits and fruit weight significantly.

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