

Effect of NPK on Growth Parameters of Ash Gourd (*Benincasa hispida*) (Thumb.) (cogn.)

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ABSTRACT

A field experiment was conducted during Rabi season 2015-16 at vegetable research field, Department of Horticulture, Allahabad School of Agriculture, Sam Higginbottom Institute of Agriculture, Technology and Sciences, Allahabad. The experiment was laid out in a Randomized Block Design (RBD) with 13 treatments and each replicated thrice. The result revealed that T_6 (150 kg N ha^{-1}) recorded the maximum vine length (214.29 cm), maximum no of branches (10.33) minimum days (49.33) to earliest flowering. Maximum length of the lateral Branch (117.69 cm) and was recorded with T_7 ($100\text{N}+100\text{P}+100\text{K}$) through FYM 50 % NPK in the form of Urea, SSP, MOP. T_{10} ($150\text{N}+75\text{P}+100\text{K}$) recorded minimum days (59.00) required from sowing to first female flower appearance and minimum node number (4.33) at which male flower appears was recorded with the same treatment. T_1 ($100\text{N}+150\text{P}+100\text{K}$) recorded the minimum node number at which female flower appears is (7.33).

Key words: Ash gourd, Growth, NPK,

INTRODUCTION

Among the Vegetables crops Cucurbitaceous is the biggest family, in which Ash gourd is one of the important crop. Ash gourd is also known with other Names like winter melon, wax gourd, Petha in Hindi Boodidagummadikai in Telugu, and Pushnikai in Tamil is a cosmopolitan cucurbitaceous vegetable grown successfully in tropical and subtropical regions of the world. It is a highly cross-pollinated crop due to its monocious and andromonocious nature

and wide genetic diversity. Being a cross pollinated crop, it has wide range of variability for maturity, yield and fruit characters like shape and size. It is a warm season vegetable, which thrives well in warm and humid climate but it can be grown throughout North India as off season vegetable. In India the Ash gourd is offered to the gods in religious ceremonies. It is also considered to be effective in warding off evil spirit and the evil eye. Hence it is hung outside newly constructed homes and buildings.

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The major producing countries of Ash gourd in the world are India, Bangladesh, Indonesia, Brazil China, Nigeria .India is the second largest producer of Ash gourd after China. In India it is extensively grown in UP, Tamilnadu, Andrapradesh. It is cultivated almost throughout the year in an area of 117 ha with a production of 2783 with a productivity of 10.2 tones /ha.

MATERIAL AND METHODS

The present investigation Effect of NPK on plant growth Parameters of, Ash gourd (*Benincasa hispida*) was conducted with 13 treatments with three replications adopting Randomized Block Design (RBD). The experiment was carried out at Vegetable Research Field, Department of Horticulture, Allahabad School of Agriculture, Sam Higgin

Bottom Institute of Agriculture and Technology and Science, Allahabad (U.P.) The soil of the experimental field was sandy loam in texture, poor in Nitrogen, comparatively rich in Phosphorous and medium in Potash with slightly alkaline reaction.

About 250 to 300 quintals of farmyard manure (FYM) was added at the time of field preparation and in addition to it 60 kg Nitrogen(N), 80 kg Phosphorus(P₂O₅) and 60 kg Potash(K₂O) per hectare were added through chemical fertilizers. Half dose of Nitrogen and full dose of Phosphorus and Potash were given at the time of sowing. Rest half dose of Nitrogen will be given by top dressing in two splits of doses, first at 25 days after sowing and second at flowering stage

Treatment details:

S.No	Treatment symbol	Treatment combination
1	T ₀	Control(100% RDF(NPK))
2	T ₁	100 N+150 P+100K
3	T ₂	125N+75 P+125K
4	T ₃	150N+100P+150K
5	T ₄	170N+120P+170K
6	T ₅	110N+100P+110K
7	T ₆	150N +100P+150K
8	T ₇	170N+120P+170K
9	T ₈	100N+100P+100K
10	T ₉	150N+80P+80K
11	T ₁₀	120N+60P+90K
12	T ₁₁	120N+80P+100K
13	T ₁₂	110N+70K+80K

Observations were recorded for following characters Growth Parameters like Vine length (cm), Number of branches, Length of lateral branch (cm), Flowering parameters like Days to appearance of first male flower , Days to appearance of first female flower, Node number at which first male flower appear , Node number at which first female flower appear.

RESULTS AND DISCUSSION

Observations are recorded for the following growth parameters

1) Growth parameters-vine length (cm), Number of branches, Length of lateral branch (cm)

2) Flowering parameters- Days to appearance of first male flower, Days to appearance of first female flower, Node Number at which first male flower appears, Node number at which first female flower appears

Growth parameters

The vine length of Ash gourd recorded under different treatments and their combinations is presented in (Table 2). The data contained in

the table reveals that the vine length was significantly influenced by different levels of Nitrogen, Phosphorus, and their interaction. T₆ (150 kg N ha⁻¹) recorded the maximum vine length (214.29 cm) which was significantly superior through urea SSP, MOP and followed by (167.34 cm) with T₃ (150 kg N ha⁻¹) through Urea ,SSP,MOP +poultry Manure @ 1.25 t /ha and T₁₂ (110 kg N ha⁻¹) (164.28 cm) and the minimum was found with T₀ (140.23 cm) (0 kg N ha⁻¹). Nitrogen increases vigour of the plant and assimilating area. Phosphorus is an equally essential nutrient as a constituent of nucleoproteins, enzymes and high energy bonds. Higher vine length with 150 kg N ha⁻¹ + 100 kg P ha⁻¹ may be attributable to these factors. These results are in conformity with the finding of Umamaheshwarappa *et al.*¹⁷.

The maximum in number of branches was recorded in T₆ (150N+100P+150K) (10.33) through urea, SSP, MOP, followed by T₈ (150N+80P+80K)(9.33) through Urea, SSP,\$MOP and T₉ (120N+60P+90P) (9.00) while the minimum no of branches was recorded in T₄ (170N+120P+170K) (4.33) (Table 2) through poultry manure @1.0t/ha,which is due to incorporation of organic manure with Nitrogen fertilizer of recommended dose of inorganic fertilizer, the similar findings has been reported by Mujagid *et al.*, and Vadiraj *et al.*, in Brinjal

Maximum length of the lateral Branch (117.69 cm) was recorded with T₇ (100N+100P+100K) through FYM 50 % NPK in the form of Urea, SSP, MOP which was significantly superior followed by T₂ (115.00) (125N+75P+125K) through FYM, Urea, SSP, MOP and the minimum (107.16cm) (Table 2) remained with T₀ (000N+000P+000K) .Kg P ha⁻¹). Similar results was notice in Bano and Kale, in Brinjal

Flowering parameters:

Days to first male flower opening were largely influenced by different fertilizer treatment, the fertilizer treatment significantly decreased the

number of days to appearance of male flower Application of Nitrogen up to the highest dose of 150 kg N/ha had led to decrease the number of days for appearance of male flower

Minimum days (49.33) to earliest flowering was recorded with T₆ (150N+100P+150k) through application of Nitrogen Which was significantly superior followed by T₇ (100N+100P+100K) (49.67) and T₈ (150N+80P+100K), whereas, T₀ (0 kg N ha⁻¹) recorded maximum days (53.67) (Table 2) to first male flower appearance were noted under application of FYM and Urea Similar results was found with swaider *et al.*⁴.

Minimum days required from sowing to first female flower appearance was recorded with T₁₀ (150N+75P+100K) (59.00) through application of Nitrogen in form of urea Followed by T₆ (150 kg N ha⁻¹) (60.00.) Whereas, treatment combination T₀ R₁ (control) recorded maximum days (74.33) (Table 2) for appearance of first female flower under the application of FYM and N. First female flower appearance was with higher levels of Nitrogen and Phosphorus seems to have been advanced due to better availability of nutrients to the plants. Similar results was found with swaider *et al.*⁴.

The minimum node number at which male flower appears is T₁₀ (150N+75P+100K) through Urea, SSP, MOP (4.33) and followed by T₂ (125N+75P+125K) (4.67) through Urea, SSP, MOP respectively .while the Maximum Node number at which the first male flower appears is T₁₂ (8.33) 50 % NPK through the urea SSP and MOP (Table 2)

The minimum node number at which female flower appears is T₁ (100N+150P+100K) (7.33) through application of Nitrogen in the form of urea and followed T₈ (150N+80P+80K) (8.67) respectively .while the Maximum Node number at which the first male flower appears is T₁₂ (110N+70P+800P) (13.67) (Table 2) through the application of SSP, MOP and Urea.

Table: 2

Treatment Combinations	Vine length (cms)			branches per plant	lateral branches	Days to appearance of first flower		Node number of first flower	
	30 Days	60 Days	90 Days			Male	Female	Male	Female
T0 (000N+000P+000K)	16.40	98.33	140.23	8.33	107.16	53.67	74.33	5.33	11.00
T1 (100N+150P+100K)	16.60	98.67	155.70	4.67	113.16	51.67	66.33	5.00	7.33
T2 (125N+75P+125K)	20.05	97.67	145.39	6.67	115.00	51.00	63.67	4.67	9.33
T3 (150N+100P+150K)	19.32	91.87	167.34	8.67	114.67	48.67	60.33	6.33	10.00
T4 (170N+120P+170K)	17.00	94.67	154.90	4.33	113.31	51.33	67.33	5.00	9.33
T5 (110N+100P+110K)	16.93	102.07	150.14	6.67	107.26	50.00	63.00	5.33	9.67
T6 (150N+100P+150K)	17.20	99.53	214.29	10.33	110.33	49.33	60.00	5.33	10.00
T7 (100N+100P+100K)	16.67	94.93	158.93	9.00	117.69	49.67	68.00	6.67	11.67
T8 (150N+80P+80K)	15.93	93.13	159.18	9.33	111.73	49.67	63.00	5.33	8.67
T9 (120N+60P+90K)	16.53	93.33	150.84	9.00	107.29	53.33	66.67	6.00	10.00
T10 (150N+75P+100K)	18.07	90.87	143.95	5.00	108.00	51.00	59.00	4.33	10.33
T11 (120N+80P+100K)	16.73	111.55	156.27	6.33	108.58	54.00	63.00	6.00	9.33
T12 (110N+70P+80K)	17.82	97.53	164.28	5.67	113.91	53.00	66.33	8.33	13.67
F-test	S	S	S	S	S	S	S	S	S
C.D. (0.05%)	2.170	8.922	25.084	3.654	6.671	3.314	7.973	1.986	2.764
S.Ed(+)	1.051	4.323	12.154	1.770	3.232	1.606	3.863	0.962	1.339

CONCLUSION

On the basis of research findings it may be concluded that treatment (T₆) (Farm Yard manure) (150N:100P:150K) was found to be most suitable treatment combination in respect of growth parameters. However these results are based on one year experiment. Therefore, it should be repeated to substantiate the finding.

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