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EFFECT OF GROWTH REGULATORS ON FRUIT CHARACTERS AND SEEDINESS IN IVY GOURD (*COCCINIA GRANDIS* L)

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ABSTRACT

Field experiment was conducted on Ivy gourd (Coccinia *grandis* L) during *kharif* 2003, to study the effect of different growth regulators *viz.*, GA, NAA and 2, 4, D on fruit characters and seediness. The results showed significant differences and the longest fruit (5.95 cm) was obtained with GA_3 100 ppm, followed by NAA 400 ppm and all other treatments were superior to control (5.00cm). Among the different treatments, GA_3 100 ppm and 2, 4, D 100 ppm were found to be more effective on fruit girth, which recorded 5.71 and 5.70 cm respectively. $GA_3$100 ppm (13.25 g) and $GA_3$200 ppm (12.75 g) gave significantly superior individual fruit weight over control (8.03g).Among the treatments, GA_3 100 ppm (1.72 g) and NAA 400 ppm (1.73 g) produced lesser amount of seeds and gave better individual fruit weight.

Ivy gourd (*Coccinia grandis* L) is a minor but a highly nutritious vegetable grown in the tropics for its edible fruits. Coccinia is widely grown in the Eastern, Western and Southern states of India (Nath, 1976). Besides culinary uses, its use in Siddha and ayurvedic systems to cure diabetes is well known. Coccinia has been cultivated in small pockets, mostly in natural fences and also as a nature sown crop from which fruits are collected and sold in the market. Plant growth regulators play an important role in enhancing the growth, flowering, fruiting and yield of many crops. There are reports that GA_3, NAA and 2,4, D had increased yield and seedlessness in pumpkin (Das and Das, 1996, Arora and Partap, 1988) cucumber (Rafeekher *et al.*,2002; Singh and Singh, 1984), watermelon (Wong, 1939)tinda (Singh *et al.*, 1965) sponge gourd (Dubey, 1983). Pointed gourd (Sarkar *et al.*, 1989) and kakrol (Vijay and Jalikop, 1980). The present investigation was undertaken with an object to study the effect of different growth regulators on fruit characters and seedlessness of Ivy gourd under tropical climate and sandy loam soil conditions of Coimbatore in Tamil Nadu.

Field experiment was conducted at the Nutrition Garden, Department of Vegetable Crops, TNAU, Coimbatore during *kharif* season of 2003 in ivy gourd in randomised block design with three replications. The treatments included were GA_3 @ 50 ppm (T_1), 100 ppm (T_2), 200 ppm (T_3), NAA @ 100 ppm (T_4), 200 ppm (T_5), 300 ppm (T_6), 400 ppm (T_7), 2, 4, D @ 25 ppm (T_8), 50ppm (T_9) and 100 ppm (T_{10}). Water spray (T_{11}) was used as control. The growth regulators were sprayed in two year old ivy gourd plants at the flowering stage. The vines were trained on pandal and recommended cultivation practices were adopted uniformly. The plant protection measures were taken up to control the infestation of mealy bugs and aphids. The observations on fruit characters and seed content were recorded. The analysis of the data was done by the standard methods described by Panse and Sukhatme, 1978.

The results showed that the size of the fruit varied considerably under different concentrations of the growth regulators. The average length of the fruit was the highest (5.95 cm) at GA_3 100 ppm followed by NAA 400 ppm (5.81 cm) NAA @ 300 ppm and GA_3 @ 200 ppm produced longer fruits of 5.80 cm. All these treatments produced comparatively more fruit length than control (5.00 cm). The longer fruits under GA_3 might be due increased

Table 1. Effect of different growth regulators on fruit characters and seediness in Ivy gourd

Treatments	Fruits length (cm)	Fruit girth (cm)	Fruit weight (g)	Seed content (weight basis) (g/fruit)
T_1 - GA_3 50ppm	5.65	4.99	9.95	1.79
T_2 - GA_3 100 ppm	5.95	5.71	13.25	1.72
T_3 - GA_3 200 ppm	5.80	5.25	12.75	2.47
T_4 - NAA 100 ppm	5.10	4.88	9.18	2.94
T_5 - NAA 200 ppm	5.38	5.20	10.37	2.70
T_6 - NAA 300 ppm	5.80	5.60	10.90	2.18
T_7 - NAA 400 ppm	5.81	5.62	12.36	1.73
T_8 - 2, 4, D 25ppm	5.11	5.35	8.25	1.90
T_9 - 2, 4, D 50 ppm	5.38	5.65	8.47	1.86
T_{10} - 2, 4, D 100 ppm	5.40	5.70	9.30	1.77
T_{11} - Control (Waterspray)	5.00	4.51	8.03	3.20
Mean	5.49	5.31	10.25	2.20
SEd	0.19	0.08	0.20	0.14
CD at 5%	0.40	0.17	0.42	0.29

promotes cell division and cell elongation which would have favoured uptake of water and nutrients. A similar effect with gibberellic acid application was reported by Singh *et al*. (1998). NAA increased the fruit length possibly by activating cell division, enlarging the cell and increasing the metabolic activity. Similar findings were reported by Dubey (1983). Similarly the fruit girth was also increased at GA_3 100 ppm (5.71 cm). This was followed by 2, 4, D @ 100 ppm spray. Application of 2, 4, D might have increased the endogenous level of growth promoters which in turn increased cell division and cell elongation and thus enhanced the growth rate and development of fruits. Similar results were reported by Vijay and Jalikop (1980).

The effect of different treatments of growth regulators on individual fruit weight of Ivy gourd was found to be significant. The individual fruit weight varied from 8.03 g to 13.25 g. The highest fruit weight (13.25 g) was obtained with GA_3 100 ppm, followed by GA_3 200 ppm (12.75 g) and these were significantly superior over control (8.03 g). NAA 400 ppm (12.36 g) NAA 300 ppm (10.90 g), NAA 200 ppm (10.37 g) and GA_3 50 ppm (9.95 g) treatments produced higher fruit weight than control. Similar observations were recorded by Vijay and Jalikop (1980) Das *et al*. (2001) and Sarkar *et al*. (1989).

The seed content was lower in GA_3 100 ppm (1.72 g) and NAA 400 ppm (1.73 g) This was followed by 2, 4, D 100 ppm and GA_3 50 ppm (1.79 g). The findings of the present experiments showed that there was a notable reduction in seed content per fruit by the application of GA_3 and 2, 4, D. Application of NAA at increasing concentrations reduced the seed content in the fruits. External application of auxins (NAA and 2, 4, D) and the Gibberllins can replace pollination and fertilization stimulus and produce seedless fruits (Desai *et al*., 1997). Similar findings were reported by Rafeekhar *et al*. (2002).

REFERENCES

Arora, S.K and Partap, P.S. (1988). *HAU J. Res.*, **28**: 284-290.
Das, B.C. and Das, T.K. (1996). *Orissa J. Hort.*, **24**: 74-78.
Desai, B.B. *et al*. (1997). Seeds Hand Book. Marcel Dekkar INC, New York, pp. 16.
Dubey, K.C. (1983). *Indian J. Agric. Sci.*, **53**: 437-441.

Nath, P. (1976). Vegetables for the Tropical Region. Low Priced Book Series. No. 2. ICAR, New Delhi.
Panse, V.G and Sukhatme, P.V. (1961). Statistical Methods for Agricultural Workers. ICAR, New Delhi.
Rafeekhar, M. *et al.* (2002). *J. Soil Crops,* **12**:108-110.
Sarkar, S.K *et al.* (1989). *Indian J. Hort.,* **46**: 509-515.
Singh, R.K. and Singh, G.P. (1984). *Veg. Sci.,* **2**: 15-20.
Singh, B. *et al.* (1998). *Prog. Hort.,* **30**: 175-180.
Singh, S.M. *et al.* (1965). *Indian J. Hort.,* **22**: 358-364.
Vijay, O.P and Jalikop, S.H. (1980). *Indian J. Hort.,* **37**: 167-169.
Wong, C. (1939). *Proc. Am. Soc. Hort. Sci.,* **36**: 632-636.