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Propagation of Kantola (*Momordica dioica* Roxb.) Through Cuttings by Use of Indole Butyric Acid

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ABSTRACT

In the present study Indole butyric acid and Naphthalene acetic acid were used to induce rooting in the stem cuttings. The concentrations used were 500, 1000, 1500 and 2000 ppm for both the auxins. Stem cuttings with one leaf and one axillary bud were treated by quick dip method. The various concentrations of both the auxins induced rooting and sprouting of the cuttings after 15 days. However, IBA 1500 ppm gave a higher percentage of success and can be used for large scale commercial propagation of this dioecious vegetable plant.

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INTRODUCTION

Momordica dioica Roxb. commonly known as Kantola. Kankoda, Kakrol or Kartoli in local languages is a dioecious tropical vegetable plant of cucurbitaceae family. Both diploid (2n=28) and tetraploid (2n=56) forms are found (Agarwal and Roy, 1976). Till recently it was a neglected and under exploited vegetable plant. Now a days farmers are growing it because of its high remunerative prices. It is mainly propagated by tubers, less commonly by seeds and never by cuttings. Cultivators face difficulties in growing this crop because the tubers are not easily available, and secondly germination of seeds is poor. Also the seeds give 52 per cent male plants which do not bear fruits. To overcome these difficulties, propagation of this crop through cuttings if exploited may be economical and less time consuming. Mishra and Sahu (1983), have described a method of propagating this crop from rooting of cuttings by using Naphthalene acetic acid (NAA). Present study was undertaken to findout the effect of another auxin Indole butyric acid (IBA) and also of NAA in root induction and to know the possibility of growing this crop through cuttings.

MATERIALS AND METHODS

Four concentrations (500, 1000, 1500 and 2000 ppm) of Naphthalene acetic acid Indole butyric acid were used. The solutions were made by dissolving the required quantity of NAA or IBA in few drops of 1 N NaOH and then finally making the volume with hot distilled water (Dixon, 1985). Two cm long cuttings with one axillary bud and a mature leaf of diploid form were used. The lower one cm end of cuttings were dipped in NAA or IBA solutions for 5 seconds (quick dip method) in the month of August 1989, when relative humidity was high. As a control, cuttings were dipped in water, however rooting did not occur in this case. There were 20 cuttings in each treatment which

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were replicated thrice in C.R.D. After the treatment, the cuttings were planted in a mixture of soil, sand and compost (1:2:1) in polythene bags. The bags were kept in shade under intermittent misting. Observations were recorded after 25 days on per cent rooting, number of roots per cutting, length of longest root, per cent sprouting, length of shoot and number of leaves.

RESULTS AND DISCUSSION

Highly significant differences were observed between treatments. Various concentrations of NAA and IBA induced rooting in the cuttings within 15-20 days (Fig. 1) and the axillary buds developed into shoots within 20-25 days. The per cent rooting ranged from 79.96 to 93.30 in various auxin concentrations (Table 1). The per cent rooting was comparatively high in IBA (84.40 to 93.30 %) than NAA treatments (79.96 to 88.86 %). IBA 1500 ppm induced 93.30 per cent rooting and was found to be the best. Mishra and Sahu (1983) have recommended the use of NAA 500 ppm for propagating this vegetable plant through cuttings. However present study indicated that IBA 1500 ppm was better than NAA in induction of roots.

Number of roots per cutting induced by various treatments ranged from 7.48 to 17.27. In NAA treatments, number of roots was low as compared to IBA treatments. A maximum of 17.27 roots per cutting was obtained in IBA 1500 ppm. The length of the longest root did not differ much from treatment to treatment and ranged from 13.37 to 15.00 cm in various auxin concentrations. Per cent sprouting ranged from 71.06 to 84.43. The length of shoot ranged from 4.97 to 12.17 cm. Shoot length was low in NAA treatments as compared to IBA treatments. The

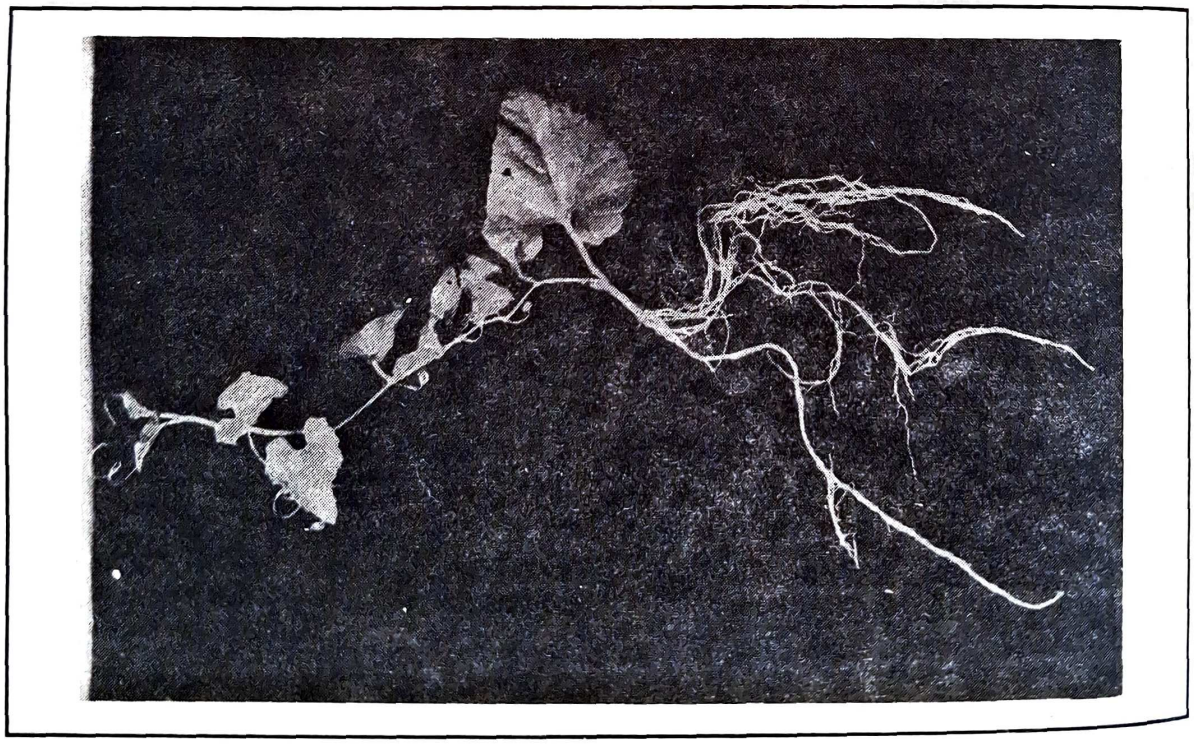


Fig. 1 : Rooting and sproting of cutting in IBA 1500 ppm.

TABLE 1

Effect of various auxin concentrations on the cuttings in *Momordica dioica* Roxb.

Treatment		*Per cent rooting*	*Number of roots per cutting*	*Length of longest root (cm)*	*Per cent sprouting*	*Length of shoot (cm)*	*Number of leaves per cutting*
IBA	2000	84.40	15.00	15.00	75.53	12.17	5.33
IBA	1500	93.30	17.27	14.74	84.40	10.43	5.60
IBA	1000	86.63	14.40	13.65	84.43	7.58	5.86
IBA	500	91.06	10.67	14.87	82.16	9.68	6.26
NAA	2000	88.86	9.60	13.37	82.20	4.97	4.46
NAA	1500	79.96	8.47	13.91	71.06	3.15	4.73
NAA	1000	86.63	7.48	13.65	77.76	5.83	6.20
NAA	500	84.43	7.77	14.57	75.50	9.29	7.00
S. Em.		3.93	0.86	0.65	4.84	0.76	0.46
C.D. at 5%		11.78	2.58	1.38	14.53	2.28	1.38
C.V. %		7.76	13.19	5.64	10.61	16.73	14.07

longest shoots were obtained in IBA 2000 (12.17 cm) and 1500 ppm (10.43 cm) treatments. Number of leaves per cutting ranged from 4.46 to 7.00 and did not show much difference. Thus the cuttings showed differential response to IBA and NAA. In general IBA treatment was better than NAA and among various treatments, IBA 1500 ppm was the best. Therefore, it can be concluded that for a large scale vegetative propagation of this vegetable plant in a suitable sex ratio, two cm long cutting with one axillary bud and one leaf should be planted after treating for five seconds in IBA 1500 ppm solution.

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