

## Effect of auxin on rooting of African marigold (*Tegetes erecta* L.)

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**ABSTRACT :** The experiment was conducted on *Dendrobium Species* in greenhouse, Department of Floriculture and Landscaping, ASPEE College of Horticulture and Forestry, Navsari Agriculture University, Navsari in the State of Gujarat to study effect of Auxin on rooting of African marigold (*Tegetes erecta* L.). Growth regulators, NAA at (50, 100, 150, 200 mg/l) and IBA (50, 100, 150, 200 mg/l) were used as treatments. Growth of stems and shoots of various plants and formation of roots in cuttings were remarkably stimulated by the application of various plant regulators. Significantly variations were recorded among the treatments with regard to the root characteristics in tip cuttings in Marigold. The result revealed that maximum average number of roots per cutting after 20 and 30 days was 40.53 and 58.79, respectively under the treatments at IBA + NAA 150 mg/l (T<sub>10</sub>). The average length of stem per cutting was maximum (6.1 and 15.33 cm) under IBA + NAA 150 mg/l after 20 and 30 days, respectively. The average length of root per cutting was recorded maximum (4.6 cm) under NAA 200 mg/l (T<sub>1</sub>) after 20 days and (5.51 cm) under IBA + NAA 150 mg/l (T<sub>10</sub>) after 30 days.

**Key Words :** IBA (Indol butyric acid), NAA (Naphthalene acetic acid), Auxin, African marigold

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Marigold is one of the most popular flowers in our country. "Pusa Narangi" is a beautiful newly released marigold variety from IARI, New Delhi having orange flower colour, compactness, marketable size and high yielding. Marigold is propagated by seeds. However, true to type plant cannot be obtained through seed propagation because it is an often cross pollinated crop. Hence, for precaution to maintain true to type of all characters of particular plant one should follow vegetative propagation like cutting for planting material.

The present experiment was conducted at floriculture farm. ASPEE College of Horticulture and Forestry, Navsari Agriculture University, Navsari in the State of Gujarat to study effect of auxin on rooting of African marigold (*Tegetes erecta* L.). Growth regulators, NAA at (50, 100, 150, 200 mg/l) and IBA (50, 100, 150, 200 mg/l) were used as treatments. Tip cutting with convenient size of 3-4 cm length from healthy moderately vigorous stock plants cutting were grown in net house. Growth regulators, NAA at (50, 100, 150, 200 mg/l), IBA (50, 100, 150, 200 mg/l) were used as treatments. Tap water was used as a control. All treatments were arranged in Randomized Block Design with 3 replications. Each cutting was dipped up to 1 cm length in each solution for one hour and planted in sand media. Thirty cuttings were taken in each treatment. Observations on

the average number of roots per cuttings, average length of root per cuttings, average length of stem per cuttings were recorded after 20 and 30 days and recorded data were statistically analyzed.

Significant variations were recorded among the treatments with regard to the root characteristics in tip cuttings in Marigold. The result revealed that maximum average number of roots per cutting after 20 and 30 days was 40.53 and 58.79, respectively under the treatments at IBA + NAA 150 mg/l (T<sub>10</sub>). The average length of stem per cutting was maximum (6.1 and 15.33 cm) under IBA + NAA 150 mg/l after 20 and 30 days, respectively. The average length of root per cutting was recorded maximum (4.6 cm) under NAA 200 mg/l (T<sub>1</sub>) after 20 days and 5.51 cm under IBA + NAA 150 mg/l (T<sub>10</sub>) after 30 days. Bose and Mandal (1973) also reported the same.

Thus, IBA at medium concentration 100 and 150 ppm either alone or in combination with NAA at 150 ppm were found to be most effective in the present experiments regarding average number of roots / cutting, average length of root / cutting and average length of shoot / cutting. This combination of IBA with NAA was found superior over other treatments and control. IBA alone being more effective than NAA was earlier reported in ornamental plants cutting (Bose and Mandal,

**Table 1 : Effect of Auxin of rooting of cutting in African marigold after 20 and 30 days**

Treatment details	Avg. No. of root/ cutting		Avg. length of stem/ cutting		Avg. length of root/ cutting	
	20 days	30 days	20 days	30 days	20 days	30 days
T <sub>1</sub> - NAA 200 ppm	37.66	49.28	3.53	6.05	4.60	4.41
T <sub>2</sub> - NAA 150 ppm	36.03	47.05	3.93	10.10	4.40	4.73
T <sub>3</sub> - NAA 100 ppm	30.06	37.08	4.55	13.62	4.08	3.99
T <sub>4</sub> - NAA 50 ppm	31.40	30.15	4.10	12.55	3.72	4.28
T <sub>5</sub> - IBA 200 ppm	25.26	42.37	4.57	10.92	3.45	4.45
T <sub>6</sub> - IBA 150 ppm	36.93	42.51	5.69	13.71	3.49	5.28
T <sub>7</sub> - IBA 100 ppm	32.86	51.97	5.06	10.88	3.31	5.04
T <sub>8</sub> - IBA 50 ppm	23.46	42.22	4.94	14.33	2.95	4.47
T <sub>9</sub> - IBA + NAA 200 ppm	31.60	40.93	5.80	11.16	3.13	4.49
T <sub>10</sub> - IBA + NAA 150 ppm	40.53	58.79	6.11	15.33	3.88	5.51
T <sub>11</sub> - IBA + NAA 100 ppm	32.30	55.42	4.80	13.99	3.46	3.74
T <sub>12</sub> - IBA + NAA 50 ppm	33.03	56.34	4.52	12.55	3.27	3.22
T <sub>13</sub> - Control	27.40	40.09	3.80	10.89	2.89	3.12
S.E. <sub>±</sub>	2.35	2.22	0.34	1.09	0.42	0.26
C.D. %	6.86	6.50	0.99	3.19	NS	0.77

NS=Non-significant

1973). Better performance of IBA and NAA combination may be attributed to their synergistic effect. This was reported by Patil and Shirol (1991) in oliender softwood cuttings. The differential root promoting effect of different auxin at various concentrations could be due to their respective difference in initiating hydrolysis of nutritional resources which forms the basis for rooting.

Growth of stems and shoots of various plants and formation of roots in cuttings was remarkable stimulated by the application of various plant regulators. Significantly variation was recorded among the treatments with regard to the root characteristics in tip cuttings in Marigold. The result revealed that maximum average number of roots per cutting after 20 and 30 days was 40.53 and 58.79, respectively under the treatments at IBA + NAA 150 mg/l (T<sub>10</sub>). The average length

of stem per cutting was maximum under (6.1 and 15.33 cm) under IBA + NAA 150 mg/l after 20 and 30 days, respectively. The average length of root per cutting was recorded maximum (4.6 cm) under NAA 200 mg/l (T<sub>1</sub>) after 20 days and 5.51 cm under IBA + NAA 150 mg/l (T<sub>10</sub>) after 30 days.

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