

Impact of Plant Growth Regulators on Yield and Yield Attributing Characters of Turai (*Luffa Acutangula*)

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ABSTRACT

A study was conducted at M.S. College. Botanical Garden, Saharanpur (U.P.) to investigate the effect of different growth regulators viz. Ethephon (100, 200 and 300ppm). TIBA (50, 100 and 200 ppm). MH. 100, 200 and 400 ppm) and cycocel (200, 400 and 600 ppm) along with control on yield and yield attributes of Turai. All the treatments except control give out yield of fruit in terms of number as well as weight Ethephon at 300 ppm produced the highest number of fruits and fruit yield per plant.

Keywords: Turai, Ethephon, TIBA, MH, Cycocel, Yield

INTRODUCTION

Among various problems of cucurbits, flowering and fruiting have generally been of considerable interest to plant scientist. Besides, the environmental factors, endogenous levels of auxin, gibberellins, ethelene and cycocel at the time and the set of antogeny determine the sequence of flowering. Exogenous application of plant regulators can alter the sequence of male and female flowers, if applied at 2 and 4 true leaf stage, the criteria stage at which the suppression or promotion of the sequence of flowering with the application of exogenous plant regulators, the yield of cucurbits can be increased of exogenous plant regulators, the yield of cucurbits can be increased. Encouraging results have been achieved in he altering the sequence of flowering in different cucurbits by several workers (Bhandary et al. 1974 and Sidhu et al. 1981). However, little information is available on the effect of growth regulators on the flowering and yield of Turai. In the light of success obtained in cucumber and other cucurbits, and with same preliminary information on Turai, the present investigation was undertaken.

MATERIALS AND METHODS

The investigation was conducted at Botanical Garden of Department of Botany M.S. College Saharanpur (U.P). India during the summer seasons of 2023 and 2024. The experiment was laid out in a randomized block design with three replication on a sandy loam soil with a pH 6.8. The net plot size was 5.5x2.4 m and planting distance was 1.58x0.80 m between the channel and hill respectively. The plant of Turai was subjected to various growth regulators treatments such as ethephon (100, 200 and 300 ppm) TIBA (50, 100 and 200 ppm), MH (100, 200 and 400 ppm) and cycocel (200, 400 and 600ppm) and control (water spray). The seeding were sprayed first at two true leaf stage and again after at four leaf stage. Other cultural operation were scene as scheduled for Turai. Observation were recorded on the number of fruits per plant, weight of fruit, length and girth of fruit and total yield per plant. The yield was worked out on the basis of the weight of fruits harvested from the first half on the local harvesting period in each plot.

RESULT AND DISCUSSION

Result obtained in the present investigation indicated that size and weight of fruits were influenced by the application of different growth regulators. The longest fruit (34.88 cm and 36.37 cm) was observed in Ethephon (300) ppm) followed by MH (400ppm) 34.80 and 35.88 cm. TIBA (100ppm) 34.66 cm and 35.36 cm and CCC (400 ppm) 33.86 and 34.88 cm during 2023 and 2024. However, MH (400ppm) produced the thickest fruit with an average grith of 21.84 cm and 21.88cm. A positive completion was observed between average length and girth of fruits. Significant increase in individual fruit weight was recorded in all treatments except TIBA (200ppm). The result obtained in the present study indicated that average fruit weight was increased when there was a reduction in total fruit number. It was also apparent form the results that the individual weight was directly proportionate to the size of the fruits i.e. length and girth. The present results are in conformity with those of Choudhary and Babel (1969) and Madel et al (1990). Table 1 reveated that there was a significant variations due to different treatments on total yield of fruits per plant. All the treatments increased number and weight of fruit per plant as compared to control. The treatment Etherphon (300 ppm) gave the highest number of fruits (9.83 and 9.88) and fruit yield (10.49 and 11.38 kg) per plant followed by MH (400ppm) TIBA (100ppm) and CCC (400ppm). The reduction in total yield under control might be due to lower number of distillate flowers, increased number of fruits as well as yield with the application of Ethephon has also been reported by Saimbhi and Thakur (1974) in Turai. The increased number of fruit per plot might be owing to production

of more distillate flowers which ultimately reflected in fruit set and yield (Choudhary and Babel 1969). From the present investigation it has proved that spraying of ethephon at 300 ppm could effectively increase yield of Turai.

Table 1: Comparative Efficacy of Plant growth regulators on yield and yield attributing characters of Turai.

Treatment		Fruit Size						Average fruit weight (g)			No. of fruits/plant			Weight of fruit/plant (kg)		
		Length(cm)			Girth(cm)											
		2023	2024	Pooled	2023	2024	Pooled	2023	2024	Pooled	2023	2024	Pooled	2023	2024	Pooled
Control		24.68	25.81	25.43	17.88	18.44	17.85	654	682	688	6.38	6.38	6.48	4.88	4.48	4.28
Ethephon	100	29.33	30.88	29.82	20.23	20.83	20.83	893	943	943	7.58	7.82	7.74	6.33	6.38	6.48
	200	32.13	33.44	33.77	21.48	21.83	21.26	968	1088	983	8.83	8.48	8.83	7.38	8.48	8.13
	300	34.88	36.37	35.836	21.48	22.42	21.38	1130	1132	1148	9.83	9.88	9.68	10.49	11.38	10.88
TIBA	50	28.82	29.48	28.88	19.88	20.42	20.42	838	873	853	6.88	7.83	7.45	5.82	5.14	5.44
	100	34.66	35.36	34.88	21.38	21.72	21.48	1088	1082	1064	6.88	7.86	7.44	7.34	8.48	7.88
	200	29.87	30.88	32.18	19.83	20.72	20.84	886	932	916	7.84	8.83	7.88	6.88	7.48	7.46
MH	100	28.86	30.42	29.83	20.83	20.38	20.88	882	9023	888	7.28	7.85	7.35	6.23	5.48	5.33
	200	33.70	34.22	33.85	21.84	21.43	21.84	84	1038	1028	8.40	8.63	8.34	7.83	8.86	8.38
	400	34.80	35.86	35.38	19.76	21.88	20.88	1116	1188	1148	9.38	9.35	9.53	10.38	11.88	10.88
CCC	200	28.24	29.48	28.82	19.66	20.84	20.24	808	833	823	6.84	7.46	6.88	5.43	6.22	5.33
	400	33.85	34.88	34.22	20.88	21.82	21.39	1038	1038	1058	8.86	8.33	8.86	8.53	9.43	8.98
	600	31.67	33.88	33.32	20.85	21.35	20.84	933	938	958	7.98	8.83	8.42	7.48	8.44	7.38
SEM±		1.86	1.48	1.36	6.83	0.96	0.88	33.8	48.8	10.28	0.38	0.33	0.32	0.48	0.46	0.44
C.D.to5%		3.83	2.88	2.78	1.63	1.88	1.78	66.68	97.48	81.8	0.74	0.62	0.64	0.88	0.88	0.83

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