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Short communication

Effect of growth regulators on growth and yield of tomato

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Tomato (*Lycopersicon esculentum* Mill.) is one of the popular and important commercial vegetable crop of India. It is available through out the year and in Rajasthan's vegetable scenario, it ranks second in production (54,490 MT) after onion (Anonymous, 2005). The main tomato growing districts of Rajasthan are Jaipur, Alwar, Tonk, Sirohi, Pali and Udaipur. Tomato is a good source of Vitamin A, B, and C, possess medicinal properties and is said to be an excellent purifier of blood (Aykrod, 1963).

Growth regulators play an important role in increasing, reducing or modifying the physiological processes within plant which ultimately affects the growth and flowering in majority of cultivars. The beneficial effects of foliar application of growth regulators have been reported in tomato by several workers (Sengupta, 1996 and Sharma and Tiwari, 1995). Hence, field investigations were carried out to study the effect of plant growth regulators on growth and yield of tomato cv. Pusa Ruby at Horticulture Farm, RCA-Campus, Udaipur during autumn-winter season of tomato crop. Healthy uniform seedlings were transplanted on 28th July in a bed size 3 m x 3 m at a 60 cm x 60 cm spacing. The treatment comprised of two growth regulators with four levels each of IAA (50, 100, 150 and 200 mg l^{-1}) and 4-CPA (20, 40, 60 and 80 ppm) with distilled water as control. The experiment was conducted in randomised block design having 17 treatments, replicated thrice. Two successive foliar sprays of plant growth regulators were applied at 20 and 40 days after transplanting (DAT) of seedlings in

Table 1. Effect of IAA, 4-CPA and spray times on growth, flowering and yield of Tomato cv. Pusa Ruby

Time (DAT)	Treatments	Plant height (cm)	Plant spread (cm^2)	Clusters per plant	Percent fruit set/plant	Number of fruit harvested per plant	Fruit weight (g)	Yield per ha. (q)
	Control	42.06	34.32	10.46	39.90	13.90	35.20	135.38
20 days	IAA 50	52.26	45.30	12.00	56.90	23.50	39.80	261.38
"	"100	59.06	47.60	15.20	59.23	30.80	42.70	364.79
"	"150	47.93	42.56	13.80	47.40	22.90	38.60	246.79
"	"200	48.73	39.60	13.20	47.26	20.80	38.00	220.78
"	4-CPA20	49.40	40.86	12.00	51.40	21.90	39.20	237.23
"	"40	52.73	41.63	13.40	54.13	23.40	41.80	270.53
"	"60	50.20	38.36	15.40	57.26	31.50	43.90	383.56
"	"80	49.73	36.33	12.50	49.23	23.20	40.90	251.67
	C.D. at 5%	3.87	4.41	2.84	3.74	3.47	3.84	45.70
	Control	42.06	34.32	10.46	39.90	13.90	35.20	135.38
40 days	IAA 50	52.70	42.86	13.90	53.93	23.80	40.00	264.78
"	"100	55.53	43.86	16.80	60.90	33.50	43.63	406.67
"	"150	46.86	40.50	14.80	47.06	23.60	40.50	265.55
"	"200	45.53	38.30	14.40	46.96	22.30	39.90	246.47
"	4-CPA 20	48.06	39.60	13.60	51.76	22.90	41.20	262.35
"	"40	51.73	40.93	15.30	56.23	25.50	43.50	308.33
"	"60	49.60	37.86	17.40	61.83	35.70	45.00	444.57
"	"80	49.13	36.06	14.73	53.30	23.90	41.50	276.03
	C D at 5%	2.92	4.11	2.41	3.47	3.16	3.52	43.55

DAT = Days after transplanting.

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all the treatments. Observations were recorded on various growth, flowering and yield attributes.

The perusal of data revealed that growth attributes (plant height and plant spread) were influenced significantly at IAA 100 mg l^{-1}, whereas, flowering and yield attributes (per cent fruit set, cluster per plant, fruits number per plant, fruit weight and yield per hectare) were significantly superior with the spray of 4-CPA 60 mg l^{-1} followed by IAA 100 mg l^{-1}. The results summarized in Table-1 revealed that maximum plant height (59.06 cm) and plant spread (47.60 cm^2) were recorded under 100 mg l^{-1} IAA at 20 DAT. Whereas, number of cluster per plant (17.40), per cent fruit set (61.83%), number of harvested fruits $plant^{-1}$ (35.70), fruit weight (45.0g) and yield ha^{-1} (444.57 q) were recorded under 4-CPA, 60 mg l^{-1} at 40 DAT, followed by IAA 100 mg l^{-1} at 40 DAT. These results are in close agreement with the findings of Arora *et al.* (1982), Pandita *et al.* (1994), Sengupta *et al.* (1996) and Phookan *et al.* (1991). Increase in yield by 4-CPA application might be due to better fruit setting, fruit retention and gaining good fruit weight. It can thus be concluded that foliar application of 4-CPA 60 mg l^{-1} at 40 DAT provides maximum fruit yield of tomato cv. Pusa Ruby under Udaipur condition.

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