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EFFECT OF PLNAT REGULATORS ON THE QUALITY OF TOMATO FRUITS*

The chemical composition of tomato and its quality is known to vary considerably by the use of hormones. Hormones were found effective in increasing sugar and acid content of tomatoes (Chhonkar *et al* 1959; Janes, 1941; Pollard *et al*, 1945 and Hey and Hopf, 1951). The effect of hormones on the quality of harvested fruits has not received sufficient attention. Hence some studies were undertaken in these lines at Rafi Ahmed Kidwai Agricultural College, Madhya Pradesh.

Plant growth regulators viz. IBA, IAA and 2, 4-D each at three concentrations (vide Table 1) were tried on 'Marglobe' variety of tomato. A factorial experiment was laid out in randomised block design, each treatment being replicated four times. The hormones were applied twice as foliar sprays at an interval of three weeks starting from the stage when two flower clusters started opening on the plants. The control plants were sprayed with distilled water. Composite samples of fruits collected from treatments and combinations were analysed for various chemical constituents. Ascorbic acid and oxalic acid were estimated following the technique of "Association of the Official Agriculture Chemists" (1955) as modified by A. Sankaram (1958). The results are presented in Table 1.

Table 1

Effect of different hormones sprayed on tomato on the quality of fruits harvested.

Treatment	Hormones and concentrations									Control
	IBA			IAA			2, 4-D			
Chemical constituents	100 ppm	200 ppm	400 ppm	100 ppm	200 ppm	400 ppm	5 ppm	10 ppm	20 ppm	Distilled water
Ascorbic acid (mg/100 ml. of original juice)	12.50	11.50	10.25	10.50	11.20	12.40	12.50	12.80	12.00	12.10
Reducing sugar (g/100 g. of fresh fruit)	2.60	2.70	2.90	2.80	2.50	3.00	3.20	3.40	3.60	2.80
Non-reducing sugars (g/100g of fresh fruit)	0.22	0.25	0.38	0.23	0.28	0.40	0.45	0.49	0.56	0.27
Oxalic acid (Percentage)	0.31	0.32	0.51	0.26	0.51	0.42	0.42	0.61	0.40	0.24

[IBA = Indole butyric acid. IAA = Indole acetic acid.
2, 4-D = 2, 4-di-Chloropenoxy acetic acid].

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The results showed that the treatments had no marked effect on the vitamin 'C' content of fruits. The finding is in agreement with those of Janes, (1941), Mitchell and White head, (1942) and Randhawa and Thompson, (1949), Higher concentrations of the hormones were more effective in increasing the percentage of sugars than their lower concentrations and control. Similar findings have already been reported by earlier workers (Janes, 1941 and Pollard *et al*, 1945). In the case of oxalic acid the highest dose of IBA and middle doses of IAA and 2, 4-D caused highest increase.

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സംഗ്രഹം

കൂടുതൽ പോഷകമൂല്യങ്ങൾ ഉൾക്കൊള്ളുന്ന തക്കാളിക്കായ് ഉല്പാദിപ്പിക്കുന്നതിന്, ഹോർമോണുകൾക്കുള്ള പങ്കു നിർണ്ണയിക്കുവാൻ റഫി അഹമ്മദ് കിദ്വായ് കാർഷിക കോളേജ് കൃഷിത്തോട്ടത്തിൽ (മധ്യപ്രദേശ്) മാർഗ്ഗോബ് ഇനം തക്കാളിയിൽ നടത്തിയ നിരീക്ഷണങ്ങളുടെ ഫലങ്ങളാണ് ഇവിടെ വിവരിക്കപ്പെട്ടിട്ടുള്ളത്.

വ്യത്യസ്ത സാന്ദ്രതയിലുള്ള മൂന്നിനം ഹോർമോണുകൾ രണ്ടു കല പുക്കൾ വന്നതിനു ശേഷം മൂന്നാഴ്ച ഇട വിട്ട് രണ്ടു തവണ പരീക്ഷിക്കപ്പെട്ടു. ഇതിന്റെ ഫലമായി ഗ്ലൂക്കോസിനേറിയം ഓക്സലിക് അമ്ലത്തിന്റെയും അളവ് വർദ്ധിച്ചതായി തെളിയിക്കപ്പെട്ടു. എന്നാൽ ഹോർമോണുകൾ ഒന്നും തന്നെ വൈററിൻ 'സി'യുടെ അളവ് വർദ്ധിപ്പിക്കുന്നതിന് സഹായകമല്ലെന്നും തെളിയുകയുണ്ടായി.

REFERENCES

"Association of the Official Agriculture Chemists" 1955.
 Chonkar, V. S. Singh, S. N. 1959. Effect of naphthalene acetic acid on the growth, quality and yield of tomato. *Indian. J. of Horti.* (16), 236-242.
 Hey and Hopf. 1951. A new theory on the action of plant hormones, Reprint from Grower, 1951. 35 2, 3 and 4 p. 12.
 Janes, B. E., 1941. Some Chemical differences between artificially produced parthenocarpic fruits and normally seeded fruits of tomato. *Amer. Jour. Bot.* 28, 639-646.
 Mitchell, J. VV, and Whitehead M. R. 1942, Effects of Naporous naphthoxy acetic acid on development of tomato with special reference to vitamin 'C' content. *Bot. Gaz.* 104, 362-365.
 Pollard, A. Kieser M. E. and Steedman J. 1945. The nutritional value of parthenocarpic tomatoes. *Ann. Rept. Agri. and Horti. Res. Station, University of Pri-tol.* 179-184.
 Randhawa, G. S. and Thompson, H. C. 1949. Effect of application of harmones on yield of tomato grown in the Green House. *Proc. Amer. Soc. Hort. Sci.* S3, 337 -334.

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