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EFFECT OF HORMONES APPLIED AS FOLIAR SPRAY ON THE FLOWERING AND YIELD OF TOMATO

Hormones are important in regulating the biological system of plants in many ways. The plant regulators have shown various responses in tomato such as induction of flowering, increasing fruit-set and higher yield (Randhawa, 1950, Krishna Murthy and Subramoniam; 1955). Hence the effect of three hormones at different doses on the flowering, fruitset and yield of 'Marglobe' variety of tomato was studied.

The investigations were carried out at Rafi Ahmed Kidwai Agricultural College Farm, Sehore (M.P.). Three hormones viz. indole butyric acid (I. B. A.), Indole acetic acid (i. A. A.) and 2, 4 - Dichlore - Phenoxy acetic acid (2, 4 - D) each in three concentrations (vide Tables 1 and 2) were tried. A factorial experiment was laid out in Randomized Block Design. Each treatment replicated 4 times, There were 5 observational plants in each treatment plot. The first spraying was done when two flower clusters had started opening. A second spraying was done after three weeks. Plants sprayed with distilled water alone served as control. Observations on number of flower buds and flowers, number of fruit-set, weight of fruits, yield per plot and number of seeds/100 g weight of fruits were recorded and data analysed as per the method suggested by Fisher (1950).

The results obtained from the preseat investigations are presented in tables 1 and 2. The hormones 2, 4 - D at 5 and 10 ppm, IBA and IAA at 100 ppm were effective in producing more flower buds and flowers. These results are in agreement with the findings of Chattopadhyay (1956). An increased fruit-set was observed with 2, 4 - D at 10 ppm and IBA at 100 ppm. The treatments IBA and IAA at 200 ppm produced more fruit-set than their higher concentrations and control, but 2, 4- D at 20 ppm reduced fruit-set during later stages as compared to control. The results obtained with 2, 4 - D at 10 ppm are in accordance with the earlier findings. (Strong, 1946; Krishnamurthy and Subramoniam; 1955; and Chattopadhyay, 1956). The findings with IBA at 100 ppm are in close agreement with the results obtained by Howlett (1945) and Chattopadhyay (1956).

With regard to the effect of hormones on the size of fruits, 2, 4 - D at 10 ppm was superior over IBA at 400 ppm and IAA at 200 and 400 ppm and the control. The hormones at highest concentrations did not significantly increase the size of tomato fruits (Strong, 1946; Mullison and Mullison, 1948).

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Table 1

Effect of hormones on the mean number of flower buds & flowers/plant (Seven days after first spraying);
pooled mean number of fruit—set and pooled mean weight per fruit (g)

Hormone Treatment	IBA	IAA	2,4-D	Mean	IBA	IAA	2,4-D	Mean	IBA	IAA	2,4-D	Mean	IBA	IAA	2,4-D	Mean
	Flower buds/plant				Flowers/plant				Fruit-set/plant				Weight/fruit (g)			
C ₁	47.35	49.60	43.80	48.58	23.20	27.25	19.40	23.28	41.69	42.30	40.93	41.46	45.65	43.81	45.08	44.85
C ₂	43.15	46.65	49.65	46.48	22.82	28.85	21.30	24.33	43.25	40.70	41.78	41.91	43.84	36.02	51.15	43.67
C	40.75	38.80	40.30	39.95	20.10	18.00	18.20	18.76	35.94	29.70	32.20	32.61	34.26	36.12	49.09	39.83
Control	...	...	...	39.60	...	...	...	18.63	...	...	...	36.41	...	...	...	41.00
Mean	43.75	45.02	45.25		22.05	24.70	19.63		40.29	37.57	38.30		41.25	38.65	48.44	
	C. D. I (5%) = 4.770				C. D. I (5%) = 3.316				C. D. I (5%) = 2.450				C. D. I (5%) = 5.863			
	C. D. II (5%) = 8.265				C. D. II (5%) = 5.743				C. D. II (5%) = 4.243				C. D. II (5%) = 10.030			

IBA & IAA - C₁ = 100 ppm; C₂ = 200 ppm; C₃ = 400 ppm
2,4-D - C₁ = 5 ppm; C₂ = 10 ppm; C₃ = 20 ppm

C. D. I - for hormone means or concentration means
C. D. II - For combinations,

Table 2

Effect of hormones on the yield/plot (Kg) and mean number of seeds/100 g fruit

Hormone Treatment	IBA	IAA	2,4-D	Mean	IBA	IAA	2,4-D	Mean
	Yield/plot				Mean number of seeds			
C ₁	18.91	16.99	16.61	17.53	255.45	260.00	113.10	209.51
C ₂	15.42	13.58	19.21	16.06	294.91	230.65	9.10	178.22
C ₃	11.39	8.58	11.84	10.66	211.42	154.73	3.80	123.32
Control	...	...	...	11.64	...	...	...	222.49
Mean	15.24	13.05	15.89		253.93	215.13	42.00	
	C. D. I (5%) = 2.310				C. D. I (5%) = 53.787			
	C. D. II (5%) = 3.426				C. D. II (5%) = 93.160			

IBA & IAA - C₁ = 100 ppm; C₂ = 200 ppm; C₃ = 400 ppm
 2,4-D - C₁ = 5 ppm; C₂ = 10 ppm; C₃ = 20 ppm
 C. D. I - For hormone means or concentration means.
 C. D. II - For Combinations.

It is seen in Table 2 that 2, 4-D at 10 ppm produced highest yield compared to the same hormone at 20 ppm and control. IBA at 100 and 200 ppm and IAA at 100 ppm also increased the yield when compared to those of control. But higher concentrations of the hormones were not effective in increasing the yield as compared to control. The increase in the yield due to hormone treatment particularly with 2, 4-D and IBA have been reported earlier (Strong, 1946; Mullison, 1948; Mehrotra *et al*, 1970 and Nair *et al*, 1974). The hormones were effective in reducing the number of seeds and inducing seedlessness particularly with 2, 4 - D at 20 ppm as reported by Zimmermann and Hitchcock (1944) and Randhawa (1950).

സംഗ്രഹം

തക്കാളിയിൽ ഹോർമോണുകളുടെ പ്രയോഗത്താൽ കൂടുതൽ പച്ചപ്പങ്ങളും കായ്കളും ഉണ്ടാകുന്നു എന്നതിനെ *raw, cjtQ£BO(SS)1* വ്യത്യസ്ത സാന്ദ്രതയിലുള്ള മൂന്നിനം അസ്ലഹോർമോണുകൾ (ഇൻഡോൻബ്യൂട്ടയറിക്, ഇൻഡോൽ അസറിക് ആൻഡ് 2, 4-ഡൈക്ലോറോഫിനോക്സി അസറിക് *rerogoj* ഗപയോഗിച്ച് റഫിഅറമദ് ക്വിട് വായ് കാർഷികകോളേജ് കൃഷിത്തൊട്ടത്തിൽ (മധ്യപ്രദേശ്) *ffi'jn5co'cgosaj'* ഇനം തക്കാളിയിൽ നടത്തിയ നിരീക്ഷണങ്ങളുടെ ഫലങ്ങളാണ് ഇവിടെ വിവരിക്കപ്പെട്ടിട്ടുള്ളത്.

മേൽ വിവരിച്ച ഹോർമോണുകൾ യഥാക്രമം ഒരു ദശലക്ഷത്തിൽ 100-200 *raംശവും*; 100 *അംശവും*; 5-10 *അംശവും* *rosn<ftiej* പൂക്കൾ ഉണ്ടാകുന്നസമയം സ്പ്രേ ചെയ്യാൻ കൂടുതൽ പച്ചപ്പങ്ങളും കായ്കളും ഉണ്ടാകുന്നതിലുപരി വലിയ കായ്കൾ ഉണ്ടാകുന്നതിനും സഹായകമാണെ

