

## **Effect of fungicidal sprays on growth and yield parameters of tomato against *Alternaria solani* (Early blight)**

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### **ABSTRACT**

Early blight of tomato caused by *Alternaria solani* is an important disease in India. The effect of fungicidal spray on growth parameters and Yield losses against *Alternaria solani* were tested at Department of plant pathology, Marathwada Agricultural University Parbhani during year 2006. The effect of fungicidal spray on different growth parameters studied and the data showed that there was no significant difference in number of branches, leaf area, days required to flowers, number of days required for fruit setting and number of fruits. per plant and fruit weight, but plant height was influenced by Propineb UPL @ 1050 ai./ha.

**Key words :** Fungicides effect, Growth parameter, Tomato, *Alternaria solani*.

**T**omato originates from Brazil and it has spread to other parts of the world. It is the world's largest vegetable crop and known as protective food because of its special nutritive value and also because of its wide spread production. Amongst various constraints contributing to low yields, disease are major ones. There are several fungal diseases infecting tomato such as early blight caused by *Alternaria solani* and late blight caused by *Phytophthora infestans* (Ell and Martin.) etc.

The present study was carried out as field trials at college of Horticulture, M.A.U. Parbhani during the year 2004-2005 to know the effect of different fungicidal sprays on growth parameters and yield losses.

### **MATERIALS AND METHODS**

The tomato variety Ankur Research Tomato-308 was used for experiment. Seeds were sown on the raised beds at College of Horticulture, M.A. U. Parbhani. Forty days old seedlings were transplanted in the main field on Ridges and furrows, with a spacing of 60x45 cm. Recommended doses of fertilizers were applied at prescribed timings and weeding and watering was done as and when necessary. Earthing up was done twice during the growth of the crop.

The present investigation was undertaken with 8 treatments, T<sub>0</sub> : Control, T<sub>1</sub> : Copper oxychloride, T<sub>2</sub> : Chlorothalonil, T<sub>3</sub> : Mancozeb, T<sub>4</sub> : Antracol, T<sub>5</sub> : Propineb UPL sub lethal (UPL-United phosphorus Limited), T<sub>6</sub> : Propineb UPL RDC (RDC-Recommended dose), T<sub>7</sub> : Propineb UPL higher than RDC, T<sub>8</sub> : Propineb UPL toxic

The observations on different growth parameters were recorded on 15, 30, 45 and 60 days after transplanting. For recording different growth parameters five plants were selected randomly from each plot were

used for recording the observations. The observations were recorded in respect of plant height, number of branches, leaf area, number of days required for flowering, number of days required for fruit setting, number of fruits and fruit weight.

### **RESULTS AND DISCUSSION**

#### **Number of branches:**

The effect of fungicidal sprays on number of branches per plant of tomato were studied and results are presented in Table 1. The data clearly indicated that there was no significant difference in number of branches due to fungicidal sprays. However, the plots sprayed with Propineb UPL at recommended dose showed the higher number of branches per plant (11.13%).

#### **Plant height:**

The effect of different fungicidal sprays on height of plants of tomato were studied and observations were recorded on 15, 30, 45 and 65 DAT. The data clearly indicated (Table 1) that the plots sprayed with Propineb UPL (31.62cm) showed the highest plant height than the remaining plots at all the dates of observations followed by Propineb UPL higher than RDC (26.70 cm) and Antracol (26.15 cm).

#### **Leaf area:**

The data (Table 1) clearly indicated that there was no much influence of fungicidal sprays on mean leaf area. Non significant variations in leaf area were evident due to different fungicides and it was again the UPL Propineb which recorded higher mean leaf area (6.85 cm<sup>2</sup>) followed by Antracol (6.34 cm<sup>2</sup>).

**Table 1 : Effect of fungicidal sprays on growth parameters of tomato**

Sr. No.	Treatment	Growth Parameters											
		Number of Branches / Plant				Plant Height (CM)				Leaf Area (CM <sup>2</sup> )			
		15 DAT	30 DAT	45 DAT	60 DAT	15 DAT	30 DAT	45 DAT	60 DAT	15 DAT	30 DAT	45 DAT	60 DAT
1.	Control	4.27	5.67	6.87	8.07	10.64	16.69	20.55	20.91	3.65	4.01	4.35	4.52
2.	Coc @ 1250 a.i./ha	4.60	6.40	7.93	8.20	12.34	17.48	21.48	22.33	3.93	4.32	4.56	4.78
3.	Chlorothalonil @ 937 a.i./ha	4.93	7.20	8.87	9.93	11.86	20.13	21.23	21.61	4.50	5.55	5.91	6.07
4.	Mancozeb @1500 ai/ha	4.67	7.13	8.80	9.87	10.91	19.58	20.86	21.52	4.49	5.04	5.35	5.59
5.	Antracol @1050 a.i./ha	5.47	7.40	9.80	10.67	15.00	24.25	24.30	26.15	5.37	5.87	6.15	6.34
6.	Propineb UPL sub lethal @700 a.i./ha	4.47	7.07	8.33	9.73	11.99	18.54	22.64	22.89	4.60	5.83	6.14	6.32
7.	Propineb UPLRDC @1050 a.i./ha	5.80	7.53	10.07	11.13	18.31	27.64	30.05	31.62	5.94	6.21	6.64	6.85
8.	Propineb UPL higher than RDc @1575 a.i./ha	5.13	7.27	9.27	10.47	17.85	25.10	26.21	26.70	4.07	5.02	5.33	5.53
9.	Propineb UPL Toxic @ 3150 a.i. / ha.	4.47	7.00	8.13	9.33	13.67	23.07	23.91	24.85	3.89	4.21	4.53	4.76
10.	S.E. ±	0.60	0.59	1.13	1.28	0.58	0.35	0.32	0.26	0.64	0.80	0.81	0.81
11.	C.D. (P=0.05)	NS	NS	NS	NS	1.15	1.04	0.96	0.77	NS	NS	NS	NS

DAT = Days after transplanting,

NS=Non-significant

**Days to flower and number of flower:**

The effect of fungicidal sprays on number of days required for flowering and number of flowers per plant were studied and observations were recorded on 40 and 60 DAT. The relevant data (Table 2) clearly indicated that there was no effect of fungicidal sprays on number of days required for flowering and number of flowers.

Different fungicides and their concentrations had no significant difference in these flowering parameters and UPL propineb (5.33) helped to produce more number of flowers in least period.

**Days to fruit setting and number of fruits:**

The effect of fungicidal sprays on number of days required for fruit setting and number of fruits per plant were studied and the relevant data so obtained are present in Table 2.

The data clearly indicated that there was no much influence of fungicidal sprays on number of days required for fruit setting and number of fruits per plant. However, the plots sprayed with propineb UPLRDC required less number of days for fruit setting (61.67) and showed higher number of fruits per plant (7.40).

**Table 2 : Effect of fungicidal sprays on number of days required for flowering, number of flowers per plant, number of days required for fruit setting, number of fruits per plant and weight of fruits per plant**

Treatment	No of days required For flowering	No of flowers per plant	No of days Required for fruit setting	No of fruits per plants	Weight of fruits per plant (g) 90 DA T
Control	44.13	2.87	64.33	3.00	77.00
Coc @ 1250 a.i./ha	41.60	3.07	63.47	4.00	90.67
Chlorothalonil @ 937 a.i./ha	42.27	4.00	62.67	6.53	185.33
Mancozeb @1500 ai/ha	41.70	3.53	62.33	6.47	166.00
Antracol @1050 a.i./ha	41.27	4.80	61.93	6.93	191.00
Propineb UPL sub lethal @700 a.i./ha	42.53	3.13	63.60	4.40	159.00
Propineb UPLRDC @1050 a.i./ha	40.93	5.33	61.67	7.40	215.33
Propineb UPL higher than RDc @1575 a.i. / ha	41.27	4.33	62.20	6.80	188.87
Propineb UPL Toxic @3150 a.i. / ha.	42.33	3.00	62.33	4.20	114.33
S.E. ±	0.97	1.14	1.25	1.84	0.81
C.D. (P=0.05)	NS	NS	NS	NS	NS

DAT = Days after transplanting,

NS=Non-significant

**Weight of fruits per plant:**

The data presented in Table 2 showed that there was no effect of fungicidal sprays on weight of fruits. However, the plots which were sprayed with propineb UPL recommended dose showed maximum weight of fruits per plant (215.33 g.) than remaining plots.

The effect of fungicidal spray on different growth parameters was studied and the data showed that there was no significant difference in number of branches, leaf area, days required to flower and number of flowers, number of days required for fruit setting, number of fruits per plants and weight of fruit, but plant height was influenced by propineb UPL @ 1050 a.i. per ha. The results obtained in the present investigation are in full agreement with those reported in the past. Varietal variation in growth parameters had been reported by several workers. Biswas and Malik (1989) reported that variety Pusa Ruby had more number of primary branches per plant and Satyanarayan and Reddy (1986) reported that variety Sioux had maximum number of primary branches followed by S-2 and Pusa Ruby. Nautiyal and Lal (1983) reported maximum plant height (80.3 cm) in Gamed variety followed by AC-238 variety and minimum plant height was observed in KS-2.

Prasad and Prasad (1977) reported that the variety Kalyanpur TI was the earliest in flowering followed by Sioux. All these fungicides are safe for use even at little higher concentration in fungicidal control of tomato early blight.

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