

EPIDEMIOLOGY OF GREY LEAF SPOT AND FOLIAGE BLIGHT OF TOMATO

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Grey leaf spot and foliage blight of tomato induced by *Stemphylium botryosum* Wallr. have a definite correlation with temperature, relative humidity and rainfall. Maximum CODEX (57.5) was recorded in second fortnight of August while minimum CODEX (18.8) was observed in second fortnight of December. Disease incidence increased in old plants and reached its peak at harvest time.

Keywords : Epidemiology, Grey Leaf Spot, Relative Humidity; Temperature.

Grey leaf spot and foliage blight caused by *Stemphylium botryosum* Wallr. (IMI No. 324632) is an important disease of tomato during Kharif Season in Rajasthan. Sharma and Bhatnagar¹ observed this disease in seven forms in Udaipur region and later it was reported from Ajmer region.² Some of the tomato fields around Jaipur, Ajmer, Tonk and Dausa districts were surveyed for disease severity and incidence.³ The disease causes heavy losses in yield ranging from 27 to 46 percent depending on the age and growing season of the crop. Atmospheric temperature, relative humidity and age of plant play an important role in disease development.⁴ However, no adequate information is available on the epidemiology of this disease in India. Therefore, studies on effect of environmental factors and age of plants on disease development were undertaken.

A trial was conducted at Agriculture Research Station, Durgapura, Jaipur starting from 1st July, 1988 to 15th June, 1989. Tomato variety used for this purpose was "Pusa Ruby". Sowing was done at every fortnight interval in nursery and transplanting was done one month after sowing in miniplots

(1x1 sq.m.). Observations on percent disease severity and percent disease incidence along with meteorological data were recorded during the whole year.⁵ Co-efficient of disease index (CODEX) was worked out as suggested by Datar and Mayee.⁶

Studies on the effect of age of host plants on disease severity were taken separately under ephytotic conditions by inoculating plants of various ages starting from 20 days old seedling to 120 days old plants with regular interval of 10 days. For inoculation a 10 day old culture of pathogen was used.

The disease appeared in the first fortnight of July and gradually increased upto September after which a decline in disease severity was observed upto December with the lowering of temperature and relative humidity. Maximum CODEX (57.5) was recorded in second fortnight of August when temperature varied between maximum of 30.1-32.7 °C and minimum 22.5 - 22.8 °C, RH ranged between 72-78 percent and rainfall between 63-67.5 mm. The minimum CODEX (18.8) was observed in second fortnight of December when both

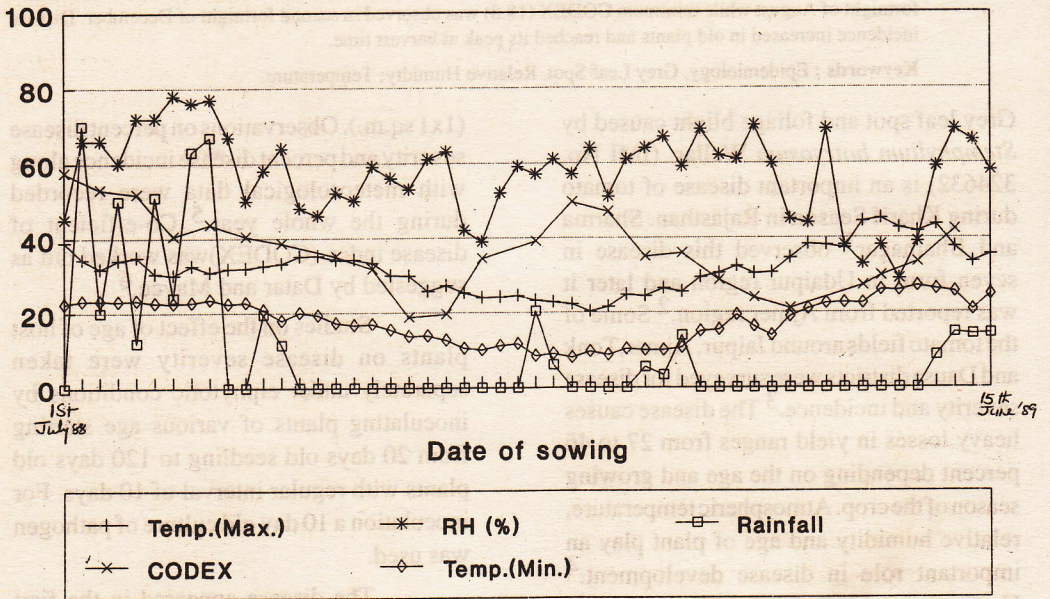


Fig 1. Effect of Relative humidity, Temperature and Rain fall on disease development (CODEX) on tomato CV Pusa Ruby

Table 1. Effect of different chronological age of tomato plants cv. "Pusaruby" on severity of *Stemphylium* leaf spot.

Age of plant (in days)	Percent disease severity
20	14.50(22.30)*
30	20.30 (26.75)
40	27.50 (31.60)
50	38.10 (38.12)
60	48.00 (43.83)
70	51.50 (45.84)
80	52.50(46.41)
90	58.20 (49.70)
100	70.20 (57.11)
110	72.50 (58.35)
120	74.10 (59.39)
SEm ±	0.65
C.D. 5%	1.91
C.D. 1%	2.59

* Figures in parentheses are angular values.

temperature (10-24.2⁰C) and RH (35-42%) was very low. CODEX further increased upto second fortnight of Feb., and when there was gradual decline in CODEX values upto second fortnight of May and again there was gradual increase in CODEX values. This trend of disease development was observed through out the year (Fig.1). Gradual increase or decrease in CODEX values definitely have a correlation with meteorological parameters like temperature, RH and rainfall. However, maximum disease severity was observed during Kharif season. This could be attributed to high relative humidity coupled with maximum rainfall during this season. The average temperature ranged between 23 to 33⁰C during this

period, while winter and summer season crop of tomato exhibited poor development of the disease. The disease severity was adversely affected by extremely low and high temperatures during winter and summer season crop, respectively.

It was also observed that the maximum disease severity (59.4%) was observed in 120 days old plants closely followed by 110 and 100 days old plants (Table 1). While 20 days old young seedling showed minimum disease severity (22.3). These data are in close agreement with Rotem⁷ and Rotem and Cohen.⁸ The epidemic of *S.botryosum* f.sp. *lycopersici* in Israel is facilitated by prolonged wetting due to sprinkler irrigation.⁷ In the field, occasional lesion caused by this pathogen may be found on young plants but the disease incidence increased on old plants and reached its peak at harvest time.

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