

Occurrence and severity of alternaria blight of pigeonpea in central U.P.

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SUMMARY

Pigeonpea [*Cajanus cajan* (L.) Millsp.] is an important pulse crop, and it suffers from Alternaria blight caused by *Alternaria tenuissima*. Studies were carried out on the prevalence and severity of disease in central Uttar Pradesh and effect of temperature, relation to the effect of temperature, relative humidity and rainfall on disease development. The incidence of disease varied from 18.0% to 37.5% at different locations. The temperature and humidity played the significant role in disease development while rainfall had no positive correlation with disease development.

Key words :

Alternaria tenuissima,
Cajanus cajan,
Climatic factors

Pigeonpea [*Cajanus cajan* (L.) Millsp.] is the major pulse crop and ranks second next to the chickpea in area, production and productivity. It suffers greatly from Alternaria blight and Alternaria infestation may cause 40-45% reduction in yield, in most pigeonpea growing states of India. It was reported for the first time from Varanasi, India by Patwardhan and Singh (1971). Later, Kannaiyan and Nene (1977) reported its occurrence from Hyderabad as a disease of minor importance. Agarwal (1985) also reported *Alternaria tenuissima* on pigeonpea from Delhi.

MATERIALS AND METHODS

To find out the prevalence and severity of Alternaria leaf blight of pigeonpea, an extensive survey was conducted during the crop season 1999-2000 and 2000-2001 at different research farms of the C.S.A. University, K.V.K. Farm (Rae Baraeli), Saraimira (Farrukhabad), C.R.S. (Etawah) Uttaripura (Kanpur) and some local farmer's field thus representing different locations of Central U.P. where this crop was grown. Naturally infected leaves of pigeonpea showing the characteristic symptoms of Alternaria leaf blight were collected at regular intervals. All the specimens collected were critically examined in the laboratory for the presence of the causal organism and some were properly preserved, labelled and kept in dry and wet forms for further studies.

Study was carried out on the effect of atmospheric temperature and relative humidity on disease development. Pigeonpea var. BAHAR was sown during the two consecutive crop years viz., 1999-2000 and 2000-2001. Upon the occurrence of disease, the number of leaves infected were recorded and subsequently, the disease intensity was worked out at fortnightly intervals and it was correlated with the weather data. Thus, the data on the maximum and minimum temperatures, relative humidity, rainfall and disease intensity were recorded and critically analyzed to ascertain the most conducive climatic conditions for severity and development of the disease.

RESULTS AND DISCUSSION

With view to assess the prevalence, severity and distribution of disease, eleven fields in seven districts were surveyed during the crop season. The observations in respect to the severity of disease in different locations are summarized in Table 1.

The observations of the Table 1 clearly indicate the Alternaria leaf blight of pigeonpea, was prevalent in all the areas surveyed showing its wide spread occurrence. The disease severity in different locations varied from 18.00 to 39.00%.

The disease was more prevalent in university farm of C.S. Azad University of Agriculture and Technology, Kanpur (39.00%) whereas, it was lowest (18.00%), Krishi Vigyan

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Table 1: Prevalence and severity of Alternaria leaf blight of pigeonpea in different areas of U.P.

Sr. No.	Location/District	Disease severity (%)
1.	C.S.A. University of Agriculture and Technology, Kanpur	39.00
2.	C.S.A. University, Crop. Research Station, Uttaripura, Kanpur	34.35
3.	Krishi Vigyan Kendra, Thariyan, Fatehpur	32.25
4.	C.S.A. Crop Research Station Gurshaiganj, Kannauj	28.00
5.	C.S.A. University, Mainpuri, Crop Research Station,	29.25
6.	C.S.A. University, Crop Research Farm, Saraimira, Farrukhabad	26.35
7.	Devipurwa, Bithoor Road, Kanpur	18.50
8.	C.S.A. University, Ambedkar College of Engineering C.R.S., Etawah	24.00
9.	Sambharpur, Kanpur Dehat	23.15
10.	C.S.A. Univ. K.V.K. Farm, Dariapur, Rae Baraeli	18.00

Table 2 : Weekly weather data from Nov. 1999 to Dec. 1999 and Jan. 2001 to March 2001 at Kanpur and disease development of Alternaria blight

Meteorological weeks	Temperature (°C)		Relative humidity		Rainfall	Date of Rainfall	Development of disease (%)
	Max.	Min.	Max.	Min.			
17.11.1999-02.12.1999	21.4	8.7	81.8	38.7	0.00	-	1.8
03.12.1999-12.12.1999	19.1	8.2	84.2	68.1	0.00	-	8.9
13.12.1999 - 18.12.1999	18.0	7.9	89.0	79.8	0.00	-	7.9
19.12.1999-25.12.1999	17.2	6.5	92.0	80.1	0.00	-	9.8
26.12.1999-31.12.1999	16.7	6.0	93.2	80.0	0.10	22.12.1999	17.2
01.01.2000-08.10-2000	16.0	5.4	94.3	82.5	0.00	-	17.12
09.01.2000 - 15.01.2000	22.5	8.5	89.9	70.1	0.20	13.01.2000	21.02
16.01.2000 - 23.01.2000	20.7	6.8	92.8	53.4	0.00	-	23.87
24.01.2000 - 29.01.2000	23.7	7.8	91.2	56.3	0.00	-	25.89
30.01.2000 - 05.02.2000	23.4	8.7	89.3	53.4	0.20	02.02.2000	29.18
06.02.2000 - 13.02.2000	22.0	7.6	94.4	63.3	0.00	-	31.87
14.02.2000 - 20.02.2000	21.9	6.5	88.6	54.0	0.00	-	33.47
21.02.2000 - 26.02.2000	24.9	8.4	80.1	47.0	0.00	-	35.89
27.02.2000 - 04.03.2000	29.1	11.3	99.3	45.4	0.00	03.03.2000	37.36
05.03.2000 - 11.03.2000	28.7	13.3	78.0	36.4	0.00	-	37.36
12.03.2000 - 18.03.2000	29.7	15.5	74.6	50.9	0.27	24.03.2000	37.40
19.03.2000 - 25.03.2000	32.80	16.7	80.1	50.9	0.00	-	37.53

Kendra Farm, Dariapur, Rae Baraeli.

At Kanpur, Alternaria blight appeared in the third week of November 1999. The disease progress was slow in the month of December 1999 but became rapid in January 2000 and reached upto 39 % in the last week of March 2000. Critical observations on disease development in relation to weather parameters indicated that in 2000 the most favourable temperature (max. - 23.9°C and min. 7.5°C) during 22 January to 28 January 2000, as the rapid development was observed during this period. Rainfall had no positive correlation with disease development. Similar type of observations had been made by Kannaiyan and Nene (1977) and Agarwal (1985) in respect of disease severity.

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