https://doi.org/10.29321/MAJ.10.A02573

Madras agric. J. 70 (1), 36—38, January 1983

Epidemiology of Powdery Mildew of Blackgram and Greengram Caused by *Erysiphe Polygoni* DC

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In order to determine the role of meteorological factors in powdery mildew incidence in black gram and green gram, field experiments were conducted from May 1979 to April 1980. The seeds of Co 4. blackgram and Co 3. greengram were sown at fortnightly intervals maintaining 3 replications. The severity of the infection exhibited by the individual plants was scored on the 60th day after sowing by the scale described below.

Grade 0 No visible powdery growth on the leaves.

Grade 1 1-10 percent of the leaf area covered by fungal growth.

Grade 2 10-25 percent of the leaf area covered by fungal growth.

Grade 3 25-50 percent of the leaf area covered by fungal growth, accompanied by slight drying of the leaves.

Grade 4 More than 50 percent of area covered by fungal growth accompanied by extensive drying and defoliation of the leaves.

The percentages of disease index (PDI) were calculated on the basis of their reaction, using modified Mc Kinney's (1923) Formula.

Simple correlations (Table 2) between maximum and minimum temperature, humidity, rain fall and disease index were worked out. Multiple correlations, and regression analysis were also carried out (Tables 3 and 4). The data in the Tables 1to4 suggested that the meteorological factors as a whole had significant effect on the development of powdery mildew disease Among the four meteorological factors considered, the minimum temperature and rain fall influenced the percentage disease index significantly. For every 1°C increase in the minimum temperature there was a reduction of 3.49 in the percentage disease index in blackgram, while in greengram the reduction in percentage disease index was 3.53. Similarly for every increase in 1 cm of rain fall there was a reduction of 0.85 in the percentage disease index in blackgram and in case of greengram there was reduction of 0.82 percent. Yu (1946) reported that *E.polygoni* on broadbean occurred only when there was an air temperature of less than 21°C and that the disease seldom occurred at temperatures more than 31°C. But Delp (1954) reported that *E.polygoni* did not survive on red clover in early summer because high temperature (32°C) inhibited sporula-

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tion. These findings are in accordance with the findings of the present study. The present study indicated that rainfall caused a reduction in the percentage disease index of the powdery mildew disese on black gram and green gram. When there was increased precipitation, reduction of disease index was seen. it might be due to the damage to the conidiophores caused by rainfall. But Wastie (1967, 1972) observed that rain showers stimulated powdery mildew of rubber by raising the atmospheric humidity level, and refoliation, possibly because of favourable alterations in the microclimate around rubber planting. But it was observed in the present study if there was frequent rain after initial occurence of the powdery mildew disease, further spread was restrcted.

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BOOK REVIEW

Ever since Vanderplank (1963) published the book on "Plant diseases: Epidemics and control", the science of Plant disease eqidemiology has developed into a branch of plant Pathology. During the past decade epidemiological investigations on all important crop diseases in India have received a fillip from research workers. The work on epidemiology of plant diseases under Indian conditions was so far scattered in publication in several gournals. The author has brought such information under one cover. The author has given a critical analysis of the various lfacets of the subject in a simple language. It contains chapters on pathogen and the disease, pathogen variability, host population, weathers, pace, pathometry, epidemic growth and analysis, systems approach and epidemic avoidance. In the current trend in plant pathology which aims at disease management rather then disease control, the chapter on epidemic avoidance by means other then chemicals indicates the potential of cultural practices for disease management. This is a useful book for students and researchers. In the end useful exercises have been suggested.

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Table-1 Simple Correlation between weather factors and Percentages of disease index no blackgram.

Character	V	X1	X2	X3	X4
Maximum temperature		* 0.33	-0.62**	0 07	-0.50
Minimum temperature		1,00	0.23	0.66**	0 36
Relative humidity			1.00	-0.10	0.37
Rainfall				1.00	0.36

Table-2 Results of Multiple Regression Analysis

Character	Partial regression coefficent	S.B	significance
Maximum temperature	3.49	1,36	
Minimum temperature	2.00	1.17	
Relative humidity	0.30	0.61	
Rainfall	0.85	0.29	

Table-3 Simple Correlation between weather factors and Percentage disease index on greengram

Characters	X1	X2	X3	X4
Maximum temperature	-0,34	-0,63	-0,05	0.51
Minimum temperature	1,00	0.23	0,66	-0,36
Relative humidity,		1.00	-0,10	0,37
Rainfall			1,00	0 36

Table-4 Results of Multiple Regression Analysis

Character	Partial regression analysis,	SB
Maximum temperature	-3.5273	1,2338
Minimum temperature	-1,9026	1,0786
Relative humidity	0.3773	0,4728
Rainfall	-0,8215	0.2667

Equation = $Y = 205.50 - 3\ 53\ X_1 - 1,90\ X_2 - 0,38\ X_3 - 0\ 82\ X_4$