

Development of powdery mildew and *Alternaria blight* epidemics in chickpea in relation to weather parameters

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ABSTRACT

Powdery mildew (*Leveillula taurica*) appeared on chickpea 68 DAS i.e. at podding while *Alternaria* blight at seedling stage. The mean maximum temperature 32°C, mean minimum temperature 15°C, mean morning relative humidity 86 per cent and mean evening relative humidity 43 per cent found congenial for the spread of powdery mildew as well as *Alternaria* blight. The severity of powdery mildew and *Alternaria* blight was positively correlated with maximum and minimum temperature while there was negative correlation with relative humidity. The multiple regression analysis revealed that there was positive correlation of severity of both diseases with temperature (maximum and minimum) and Relative humidity (morning and evening). The result also indicated that there was a strong correlation between powdery mildew and *Alternaria* blight.

Key words : Powdery mildew, *Alternaria* blight, Chickpea, Epidemics, Correlation, Regression

INTRODUCTION

Chickpea (*Cicer arietinum* L.) is an important pulse crop grown in India and Maharashtra has the major share in area and production in the country. In India, the area under this crop was 7.20 million ha with 6.00 million tone production and 833 kg/ha productivity (Anonymous, 2004). Maharashtra contributes 4.66 lakh tones of chickpea from 8.30 lakh ha area with 562 kg/ha productivity (Anonymous, 2005). Several pathogens have been reported to cause diseases in this crop (Nene *et al.*, 1996). Occurrence of powdery mildew (*Leveillula taurica*) on chickpea in Maharashtra was reported (Mandhare *et al.*, 2005). *Alternaria* blight was reported by Haware and Nene (1976) from Hyderabad, Andhra Pradesh, Bhatnagar and Gupta (1982) from Gwalior, Madhya Pradesh, Raut and Somani (1988) from Vidarbha region of Maharashtra and Gaur and Singh (1990) from Rajasthan. The severity of powdery mildew was 44 % and *Alternaria* blight was 30 % on chickpea during the year 2003-04 and 2004-05 at Pulses Improvement Project, M.P.K.V., Rahuri, Maharashtra. Therefore, the study was undertaken during the year 2003-04 to 2004-05 to know the role of climatic factors in the development of these two diseases.

MATERIALS AND METHODS

The variety Phule G-1 susceptible to powdery mildew and Phule G-12 to *Alternaria alternata* was sown separately in the first week of Nov. during 2003-04 and 2004-05 at Pulses Improvement Project, M.P.K.V.,

Rahuri. The plot size was 5 x 3 m with 30 x 10 cm spacing and three replications. The observations on powdery mildew and *Alternaria* blight was recorded at 7 days interval on 25 tagged plants in each plot from initiation of the diseases (0-9 scale). The percent diseases severity was calculated by the formula given below :

$$\text{Per cent disease severity} = \frac{\text{Sum of all numerical rating}}{\text{Number of plants scored} \times \text{Maximum diseases rating}} \times 100$$

The data on meteorological factors such as temperature and relative humidity were obtained from the meteorological observatory situated in the vicinity of Pulses Improvement Project, M.P.K.V., Rahuri. The effect of temperature, relative humidity on powdery mildew and *Alternaria* blight was studied by working out simple and multiple correlation and multiple regression analysis.

RESULTS AND DISCUSSION

The powdery mildew disease appeared in meteorological week No.52 i.e last week of December, during both years under study when the crop was at podding stage. During this period the mean maximum temperature was 26.7°C, mean minimum temperature 9.9°C, mean morning relative humidity 78 per cent and mean evening relative humidity was 38 per cent. The

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