ROLE OF WEATHER FACTORS IN THE DISEASE DEVELOPMENT AND SPREAD OF ANTHRACNOSE OF GRAPE

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ABSTRACT

Field trial was carried out to investigate effects of environment on anthracnose of grape caused by Sphaceloma ampellinum on two successive seasons of 1999 and 2000. Among the epidemiology factors viz., temperature, rainfall and relative humidity were studied on disease development. Further the percent disease index was correlated with previous weeks average of weather parameters. The present study revealed that, the disease development was observed from 2nd week of August to 2nd week of September and this period was characterized by decrease in maximum and minimum temperature and increase in maximum and minimum relative humidity followed by increase in rainfall. Further it indicated highly significant positive correlation between the disease index and rainfall ($r = 0.602$), maximum and minimum relative humidity ($r = 0.801$ and $0.936$). However, it showed negative correlation with maximum and minimum temperature ($r = -0.902$ and $-0.240$).

Grape in India occupies nearly 1.06 per cent total area and contributes 1.98 per cent of total fruit production. (Yadav, 1997). Anthracnose is one of the most destructive diseases of grape. Once the disease is established in the field, it is very difficult to eradicate. Hence, it is better to take preventive measures prophylactic sprayings is effective when applied in appropriate time particularly when the disease pressure is low. The disease incidence has been reported to be greatly influenced by the epidemiological factors such as rainfall, relative humidity and temperature, (Rao and Satyanaryan, 1991; Mohanchander and Thind, 1995; Pedrojunior et al., 1998). In the present study attempt has been made to find out correlation if any, between the incidence of anthracnose of grape and weather variables viz., temperature (minimum and maximum), relative humidity (minimum and maximum) and rainfall.

Role of weather factors on development of anthracnose in the cv. Thompson seedless was assessed during 1999 at Horticultural Farm, Regional Agricultural Research Station, Raichur. In experimental plot, twelve treatment were included and each treatment three plants were selected. The plants were randomly selected from all the direction of the orchard and the disease intensity between two pruning of April and October.

Per cent Disease Index = \[
\frac{\text{Sum of individual disease ratings}}{\text{Number of samples}} \times \frac{\text{Maximum disease grade}}{100}
\]

Per cent disease index (PDI) was calculated by using following the procedure of Wheeler (1969).

The per cent disease index (PDI) was correlated with previous weeks average of rainfall, temperature, and relative humidity.

Results from the Table 1 showed the disease symptoms first appeared on 3rd July, 1999. The disease spread was slow up to 7th August, 1999, when the disease index was 32.2%. During this period there was not much change in the temperature and relative humidity. The per cent disease severity increased from 32.24 in the 2nd week of August
to 98.16 in the 2nd week of September. During this period the maximum temperature ranged from 30-34, minimum temperature was almost constant, maximum and minimum relative humidity were in increasing trend and rains were received throughout the period. Suhag and Joshi (1971) related the disease to pre monsoon showers which not only increased the relative humidity but also reduced temperature. The per cent disease index had correlation coefficient values of -0.902 with rainfall per cent temperature.

The per cent disease index was highly correlated with maximum and minimum relative humidity having correlation values of 0.801 and 0.936 respectively. The per cent disease index was negatively correlated with maximum and minimum temperature with correlation coefficient values of -0.902 and -0.240 respectively. Singh and Joshi (1971); Rao and Satyanarayan (1991); Mohanchander and Thind (1995) reported that development of disease was mainly dependent on rainfall rather than temperature.

REFERENCES