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PREDICTION OF GRAPE POWDERY MILDEW USING METEOROLOGICAL FACTORS.

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ABSTRACT

This study was depend upon meteorological data recorded at Noubaria location Behaira Governorate during the period from 2003 to 2013. Disease severity (DS) of grape powdery mildew disease (GPM) at the same period was obtained from Fruit and Woody Trees Diseases Department, Plant Pathology Research Institute, Agriculture Research Center; Giza. The relationships among the collected data were studied to find out a prediction model of grape powdery mildew using meteorological factors.

Meteorological elements (monthly mean temperature (MT), relative humidity (RH) and wind speed (WS), showed positively or negatively correlated with fungal disease incidence. The final yield of grape in Egypt is strongly affected by powdery mildew disease. Its incidence depends on prevailing meteorological elements. In this study lights were throw on the relation between this economic and important disease (GPM) incidence represented as disease severity (DS) . Statistical analysis showed that positive Correlation Coefficient (CC) before 4 months of usual time of disease incidence and meteorological elements under investigation, +69% and +60%, respectively. Relative humidity has negative correlation with (DS) percent of (GPM), as -65%.

Also, positive value of CC between MT, WS and (DS) , 3 months before disease incidence. Correlation Coefficient (CC) was less than its value at the former period (4 months before disease incidence). It was +48% and +14 %, respectively while CC between RH and (DS) exceeds than its value at 4 months before disease incidence since it became -16%.

At the same time , negative correlation between GPM and MT and WS , 2 months before disease incidence was obtained. It reached to -21% and -35% respectively, whereas RH have positive CC with the percent of GPM, it became +36%.

Negative value of CC between MT, WS and (DS) percent of GPM , 1 month before disease incidence was recorded. It was less than its value at 2 months before disease incidence. It became -71% and -37 % respectively, whereas CC between RH and disease severity was more than its value at 2 months before disease incidence. It became +41%.

Many regression equations (models) are constructed and they were checked . They are proved their efficiency as a good manner to predict of GPM disease in the location under study.

Key words : Prediction , Powdery mildew, Humidity , Temperature , wind speed , grape.