Development of Forecasting Models for Disease Prevalence of Rice Panicle Blast

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Summary

The influence of winter and spring climatic variation on the regional prevalence of rice panicle blast for the first crop season during 1967-1982 was studied by the correlation and regression analysis. In most regions, prevalence of panicle blast was significantly associated with climatic factors. In Taipei, disease prevalence was positively correlated with winter mean and maximun temperatures, evaporation、December evaporation、January temperatures and relative humidity. In Taichung, disease prevalence was positively correlated with winter mean and minimum temperatures. December minimum temperature and precipitation, and negatively correlated with winter and December temperature range. Disease prevalence was positively correlated with March minimum temperature, and April mean and minimum temperatures and duration of sunshine; and negatively correlated with duration of sunshine in May in Hsinchu. In Kaohsiung, disease prevalence was positively correlated with December and January precipitation、March evaporation, and negatively correlated with winter and December sunshine duration. In Taitung, disease prevalence was positively correlated with winter relative humidity, wind speed, January no. of precipitation days, May relative humidity and wind speed, whereas negatively correlated with December and May sunshine duration. No significant simple correlation for disease prevalence and climatic factors was observed in Tainan and Hualien at 5% level.

Seven regional forecasting models were developed; and the forecasts were verified against independent survey data for 1979, 1980, 1981 and 1982. A partial failure of forecasts from the models was observed.