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스마트 팜을 위한 미기상 분석 기반 서리 및 병해충 예측

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Frost and Pest Forecasting based on Microclimate Analysis for Smart Farm

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A microclimate is a distinctive climate of a small area where the atmospheric conditions such as temperature and humidity are different from those in the surrounding area due to geographical characteristics. When we compared between the global climate and the microclimate, there is a noticeable difference in terms of RMSE (Root Mean Square Error). The RMSE of temperature are between 3.47 and 3.84. The RMSE of the humidity ranges from 16.28 to 24.75. The main objective of this study is to provide a predictive system to give advance decision support based on microclimate data analysis. Our system notifies the possibilities of frost for farmer to protect crops against frost damage. And it also sends several pest forecast information based on weather data to the farmer using Push-Service. For example, plum pocket disease is a important disease in plum production occurred in the flowering season, and it's occurrence depends on a specific weather environment for short period. In this study, curve fitting of plum pocket was carried out using microclimate data collected from automatic weather system. Forecasting system was designed to generate warning automatically to be 50% incidence that was calculated with this curve fitting. Also, this model was applicated to other diseases like anthracnose, brown rot and leaf spot and insect like scale, moths.

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