

Late Blight Forecasting in Korea

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1. Prediction of initial appearance of potato late blight

Potato late blight (*Phytophthora infestans*) has been known as a very serious disease in the Daegwallyeong area located 800m above the sea level, one of the alpine region where the most of Korea's seed potatoes are produced. Like other countries, late blight is one of the most important diseases on potato crop. Because most of the cultivars except cv. 'Jopung' in Korea are very susceptible to the pathogen, Chemical applications are requested 3 to 10 times in early growing areas and in alpine areas, respectively, during a growing season. Also, it has been known to be occurred every year except the year 1994 since 1961 at Daegwallyeong area. Therefore, in order to save chemicals, improve productivities of potato and also control efficacy of the disease, the forecasting system was going to be established as one of the best ways of control disease. Usually in alpine area ; Daegwallyeong it used to take 19 to 59 days from potato shoot emergence to the initiation of late blight in alpine area, Daekwallyeong during 1981 to 2001. At the average, the first symptom of late blight was observed on 37.1 days after shoot emergence of potatoes(Fig. 1).

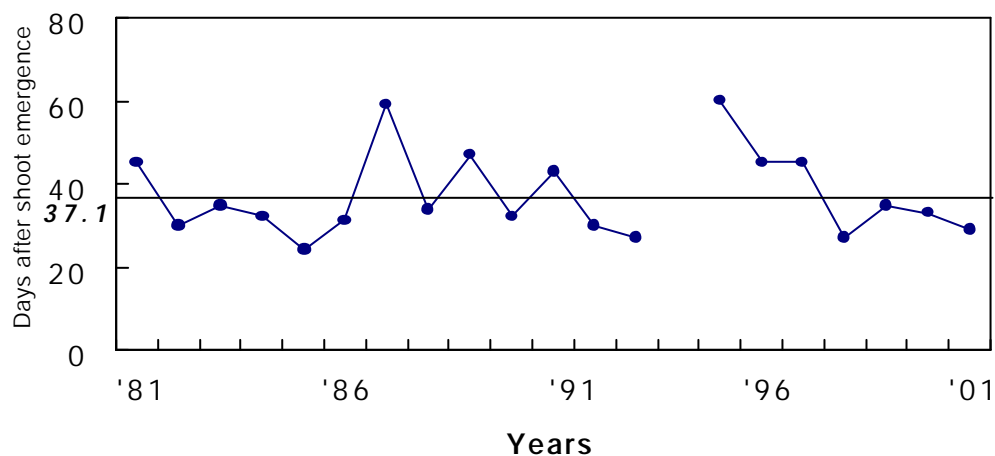


Fig. 1. The yearly variance of days from potato shoot emergence to disease appearance at Daegwallyeong area in 1981-2001.

Potato late blight at Daegwallyeong area had been forecasted by the moving graph method from 1975 to 1995(Table. 1), but the accuracy of prediction was appeared only 23.5% in moving graph method. Therefore, in order to develop a new forecasting system for integrated late blight management, late blight data and weather information from Daegwallyeong Weather Station were analysed and processed together. The new forecasting systems such as BLITECAST,, and the *f*moving average method(NAAESCAST),, has been developed by National Alpine Agricultural Experiment Station for alpine areas. The observed dates of initial appearance of the disease were compared with results of forecasting by the old 'moving graph' method and *f*BLITECAST,, system, and the new developed 'NAAESCAST' system based on the weather data(Table 1). Both *f*BLITECAST,, system and the 'NAAESCAST' system' appeared to predict accurately the date of initial development of late blight, and then the accuracy of prediction was 81.0% with both systems.(Table. 1)

Table 1. Comparison of forecasting methods for prediction of initial appearance of potato late blight

	Moving graph method	BLITECAST system	NAAESCAST system (Movingaverage method)
Weather conditions	1. The moving average temp. of the previous		