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COMPARING TWO METHODS OF FORECASTING LATE BLIGHT OF POTATO IN THE MONTREAL AREA IN 1962

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Abstract

The methods developed by Hyre and Wallin respectively were investigated for a third year at several localities in the Montreal area, The two methods were in close agreement on forecasting the first occurrence of blight. However, further development of the disease was more accurately reflected by Wallin's method in the muck soil districts, On muck, foliage growth is luxuriant and dew deposits and high relative humidity are frequent toward the end of the growing season, It is suggested that under these conditions Hyre's method should be supplemented by Wallin's method for more accurate results.

Introduction

This study was started in 1960 for the purpose of establishing a Spray Warning Service mainly for the potato growers in the muck soil district south of Montreal, In both 1960 and 1961, the two methods under investigation reflected quite well the potato blight situation in the area where the): were used, (4, 5).

Methods and Procedure

The two methods used in this study were developed by Hyre and Wallin respectively (2, 3) and have already been described in an earlier paper (5). The criteria of Hyre's method are 10-day cumulative rainfall and temperatures. Those of Wallin's method, relative humidity and temperature expressed as "severity values" of secondary infections of Phytophthara infestans.

The two methods were used concurrently in the four following districts of the muck soil area south of Montreal: Ste-Clotilde, Sherrington, Napierville (St-Blake) and Farnham (Ste-Sabine). Hyre's method alone was used at the two stations on mineral soil: L'Assomption and Lennoxville, respectively north and east of Montreal.

Again this year, observations on blight occurrence and development were made mainly in unsprayed potato plots of the susceptible variety Green Mountain maintained in "disease observation gardens" located in the four muck soil districts mentioned above. These gardens were established for the first time in 1961 (8) and were found quite useful €or that purpose. The key devised by the British Mycological Society (I) was used for measuring blight on foliage.

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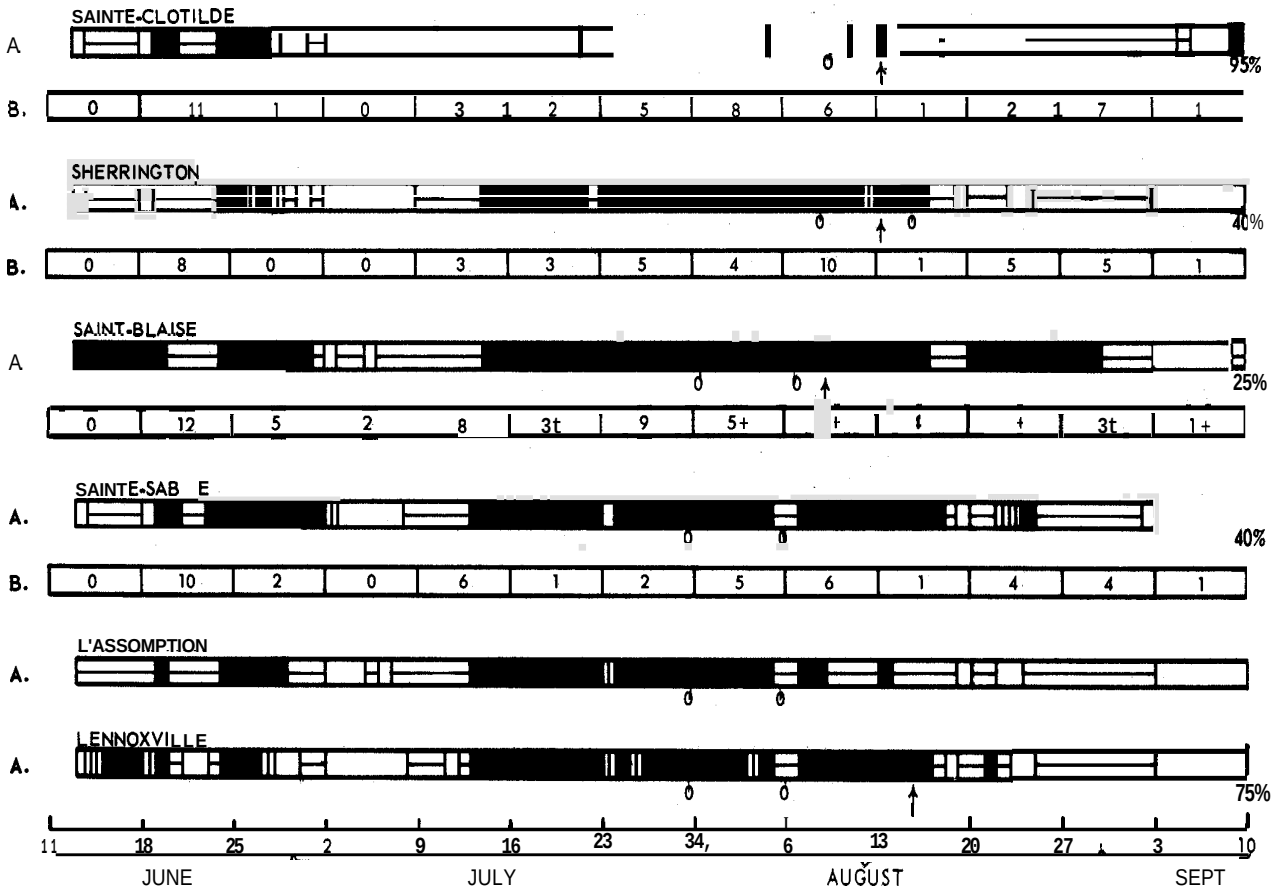

FIGURE 1. OCCURENCE AND DEVELOPMENT OF LATE BLIGHT OF POTATO ACCORDING TO THE CRITERIA OF TWO METHODS OF FORECASTING.

Results and Conclusions

The experimental forecasts and observations on blight development are summarized in Figure 1. According to Hyre's method, the first occurrence of blight was forecast at all localities for the first two weeks of August, At all localities, except Ste-Sabine and L'Assomption, the disease was first detected at the time it was expected. At Ste-Sabine, 40% of the foliage was blighted on September 10, indicating that the disease must have started there at about the time it was predicted. At L'Assomption, no visible amount of blight was observed on foliage though traces of tuber rot were reported at digging time, This indicates that blight, after establishing itself as predicted, had been checked in its spread by the dry spell of the second half of August and that a certain amount of blight had been revived by the rainy weather which prevailed in all districts in September.

The first blight occurrence was also accurately forecast by Wallin's method, if favourable periods occurring before the last week of June are ignored as the results of 1961 suggested (5, 7). Figure 1 shows that in 1962 the two methods were in almost perfect agreement on this point. Further development of the disease was however, better reflected by Wallin's method. The high incidence of foliage blight on September 10 can best be explained by the high cumulated "severity values" recorded by the hygrotherrnograph in the latter part **of** August, since at about all localities the amount of rainfall in the same period was too low to be blight favourable according ***to*** Hyre's criteria.

This is in agreement with an opinion expressed in an earlier paper *(6)* on the probable greater accuracy of blight forecasts by using a method based on relative humidity in areas where growth is luxuriant and dew deposits and high relative humidity occur frequently toward the end of the season. This situation is typical of potato fields on muck soil and possibly too in the Eastern Townships (Lennoxville). In those regions, Hyre's method could be used for its great convenience and simplicity, but supplemented at a few strategic stations by Wallin's method.

Ack edge nt

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