Managing Late Blight Using the Cornell Decision Support System

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Late blight is a perennial concern for potato and tomato producers in New York. Calendar-based fungicide application strategies are often employed for the management of late blight regardless of cultivar resistance or prevailing weather. Such strategies may result in economically and environmentally inefficient disease management. The objective of this study was to evaluate the utility of the Cornell Decision Support System (DSS) for late blight management using (a) field tests and (b) computer simulation. Three treatment schedules were evaluated i) weekly applications, ii) applications according to the DSS, or iii) no fungicide. All experiments involved at least two cultivars with different levels of resistance. (a) Field evaluation was conducted through naturally inoculated field experiments in 2010, 2011, 2012, and 2013, using Simcast in the DSS to guide fungicide applications. DSS-guided and weekly scheduled fungicide treatments were successful at protecting against late blight in all field experiments. However, DSS-guided schedules were influenced by prevailing weather and host resistance and resulted in schedules that reduced the amount of fungicide used by up to 50%. Simulation experiments utilized 10 years of observed weather data from 59 locations in potato producing states representing the equivalent of 770 field experiments. For each season at each location, DSS recommended application schedules for susceptible, moderately susceptible, and moderately resistant potato cultivars were compared to seven-day schedules regarding their expected number of applications and simulated disease progress. In situations with unfavourable weather, the DSS recommended fewer fungicide applications with no loss of disease suppression and in situations of very favourable weather, the DSS recommended more fungicide applications but with improved disease suppression. In general, the DSS guided schedules resulted in improved and more consistent disease management compared to weekly applications.

To obtain a Cornell DSS account, or for more information contact:
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