Project: BlightPro: The Next Generation of Plant Disease Forecasting

Researcher: William Fry

Need:
Each year, commercial growers apply up to 2,000 tons of fungicide to prevent and treat late blight of potatoes and tomatoes. Late blight is a serious fungal disease responsible for many past and present crop failures, including the well-known and widespread famine in Europe in the 19th Century. While some basic forecasting tools exist to help producers plan for and manage the disease, greater precision in both time and geographic space would improve crop survival, reduce costs, and minimize environmental impacts by eliminating unnecessary fungicide applications and directing applications to crops that are most in need.

Approach:
Dr. William Fry and his collaborators on the project (NYC-153421) developed an innovative disease forecasting system called BlightPro that integrates the most important predictors of late blight infection. Predictors include actual and forecasted weather, crop information, host resistance, and details on specific strains of the pathogen. Unlike its predecessors, BlightPro operates in real time and uses specific information about the pathogen(s) present in growers' fields to inform the models, resulting in farm-specific forecasts of late blight infection.

Results and Impact:
Over the course of the 3-year project, BlightPro was developed, tested, and released to the greater community as a mobile and web application (http://blight.eas.cornell.edu/blight). The research team introduced the application to potential users through workshops, meetings, and publications in grower magazines, while results were delivered to the scientific community through five peer reviewed publications. Growers in at least eight states have started using BlightPro in their operations. Early evaluations and simulations indicate that it improves disease suppression and results in more efficient fungicide use than the standard grower practice of weekly applications. Researchers expect that employing the software can reduce fungicide use by as much as 10% – 20%, greatly minimizing both pesticide costs and environmental impacts. Preliminary economic analyses by scientists at Purdue University support the economic benefits of these projections.

Related Information: The Fry Lab