

Conclusions and Cautions

This report provides a comprehensive case study that examines the value of a plant disease early-warning system. The analysis shows how the value of the system can be traced to the costs and benefits of different management strategies and to the precision and timeliness of the system's forecasts. To our knowledge, this study is the first to examine the value of a disease-warning system. The study is also unique in its scope, examining how risk aversion, price feedback effects, and heterogeneous beliefs affect the value of information.

Our aggregate regional estimates of the value of information provided by USDA's coordinated framework to soybean producers in 2005 range from \$11 million to \$299 million over the many scenarios considered. Although the range is broad and the estimation requires us to make assumptions that are not verifiable, the results suggest that the framework's benefits exceed its budgetary cost, which was between \$2.6 million and almost \$5 million. The value, whatever it may be, does not depend on whether SBR outbreaks occur or not. Rather, the value depends on prior beliefs—subjective beliefs at the beginning of the season about the probability that SBR will occur. It also depends on the framework's quality of infection forecasts. Information about farmers' prior beliefs may be more difficult to ascertain, especially because the beliefs are likely to change over time. Complicating factors, like risk aversion and market price impacts stemming from infection-related yield losses, have been shown to be of lesser importance.

Given the potential benefits of improved SBR forecasts in this case study, exploring the broader applicability of web-based information systems also might be useful to management of other crop pests. Our analysis of the SBR framework suggests that the potential benefits would be greatest for pest problems that can be mitigated through preventative management activities.