



Exploiting epidemiological knowledge of apple scab to meet the residue requirements of supermarkets

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Abstract

Research on the dynamics behind transitions in food chains in the Netherlands revealed that the introduction of sustainable production systems (like IPM) should result in distinguishable products in the market. Otherwise the consumer cannot exhibit his willingness to pay for sustainable products. This finding provided the inspiration for the development of PREMISE, a simulation model combining the epidemiology of *Venturia inaequalis* with the economics of apple production and marketing. PREMISE is developed within the EU-project PURE.

PREMISE simulates the effect of various scab control strategies on product quality (% Class I), fungicide residues (numbers and levels), expected mean prices (€/kg), labour costs (hours/ha), machine costs (€/ha) and fungicide costs (€/ha). On basis of these economic indicators the returns on investment of the various control strategies are calculated and compared.

The economic indicators result from the epidemiological part of the model. In this part the infestation level of apple scab is simulated in three stages: the quiescence stage, the ascospores stage and the conidia stage. In each of these stages the fruit grower can influence the infestation level through specific measures, e.g. urea sprays, leaf shredding, fungicide application. Moreover he can simulate the effects of differences in weather conditions, cultivar choice, infection periods, etc. The outcome of one stage determines the start situation of the next stage. At the end of the conidia stage the scab infestation ends at a certain level, predicting a certain product quality.

PREMISE is used for ex-ante assessments of on-station and on-farm experiments and can also be used for game simulation in education or extension. We are eager to test and improve PREMISE through cooperation with colleagues in research stations and advisory services.