



IPM 2.0 Potato late blight Control strategies based on cultivar resistance and virulence in the local *Phytophthora infestans* population.

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Abstract

The total area under potato cultivation in the Netherlands amounts to 165.000 ha, annually yielding 7.9 million Mg of potato representing a value of M€790. Potato late blight, the major problem during potato cultivation, requires an annual input of around 1400 tons of active ingredient in 10 to 16 fungicide applications per season, inferring a cost (chemicals, application and losses) of 125M€ per year, almost 16% of the total farm gate price.

From these figures it is clear that farmers, the potato industry, consumers and the environment could greatly benefit from more efficient and environmentally friendly ways to control late blight through e.g. the introduction and durable exploitation of host plant resistance. *P. infestans* however is renowned for its ability to adapt under the selection pressure exerted e.g. by the cultivation of resistant cultivars.

This paper describes development and field testing of an IPM 2.0 preventive potato late blight control strategy that uses host plant resistance as the backbone for PLB control, aims to deliver perfect PLB control and prevent *P. infestans* from breaking the host resistance deployed. The results demonstrate a potential reduction of the necessary fungicide input of 30 – 100% depending on the level of the host resistance deployed and the virulence spectrum of the local pathogen population. Future growing systems suitable for application of IPM 2.0 thus allow for a much more durable exploitation of host plant resistance, a strongly reduced burden to the environment due to PLB control and a cheaper PLB control.