



Sustainable control of late blight in potatoes

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Abstract

The global potato production is threatened by the devastating late blight disease caused by *Phytophthora infestans*. This oomycete causes each year crop losses estimated worldwide at € 10 billion per year. Over the last decade *P. infestans* has changed its habitats: it has increased its aggressiveness and acquired resistance to some specific fungicides. Late blight can only be controlled by integrating all the available disease management tools. Four important tools are:

- *The control of primary inoculum:* In the mild climate of Europe, potato dumps are one of the major primary inoculum sources. Other sources are seed potatoes, early potatoes, volunteers and other infested potato crops. A special inoculum source is the soil which may contain oospores. Alternative hosts like tomato and hairy nightshade may contribute to the inoculum source in some European countries.
- *The use of cultivar resistance:* The susceptibility of potato cultivars to *P. infestans* varies a great deal. Some varieties become blighted if only *P. infestans* is present. Whereas other varieties are highly resistant and only succumb under a mass attack. Or if the defence of the cultivars is weakened by the end of the season due to senescence of the crop.
- *The fungicide management strategy:* Preventative control is the basis of late blight control. Fungicides with preventative properties are able to control late blight before *P. infestans* is able to penetrate the potato plant. Fungicides have to be used in such a way that their specific characteristics are used in the best possible way.
- *The use of decision support systems (DSS):* The sporulation and infection processes of *P. infestans* are well described. Various disease models have been made throughout Europe. Using a DSS enables the farmer to pin-point spray application just before the critical weather. Thus only spraying when necessary.

Incorporating these tools into the daily routine of the farmer ensures adequate late blight control at a minimum of environmental side-effects and costs.