



Monitoring of primary sources of inoculum of *Phytophthora infestans* in The Netherlands 1999 - 2005

A. Evenhuis¹, L.J. Turkensteen², P. Raatjes³, M.G. Förch¹ & W.G. Flier¹

Introduction

A range of primary sources of inoculum is responsible for primary and early outbreaks of potato late blight. Infected tubers (dump piles and volunteer potatoes), (latently) infected seed tubers and oospores are distinguished as primary sources of inoculum (Figure 1). The most likely origin of 184 primary and early foci of *P. infestans* were examined from 1999 – 2005.

Examination of early *P. infestans* infections

The inoculum source responsible for a specific early infection was determined using the following data:

- Age of the infection by retrospective assessment of disease development.
- Spatial distribution of infections within and between fields.
- Infection of the seed tubers.
- Phenotypic and genotypic characteristics of the *P. infestans* isolates collected.

Quantitative data (Figure 2) on early sources were subsequently used to optimize the potato late blight control strategy.



Figure 1. Different sources of (primary) inoculum for *Phytophthora infestans*.

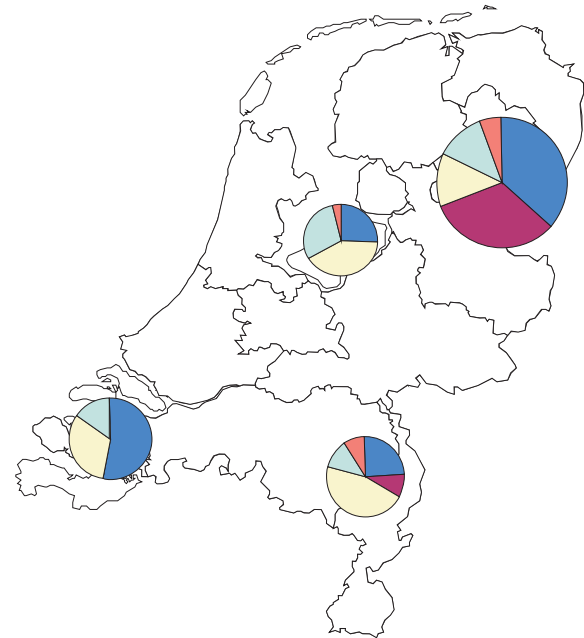


Figure 2. Regional contribution of infected seed tubers (■); oospores (■); far away sources (■); nearby sources, including dumps (■) and unknown sources (■) to early outbreaks of potato late blight. The size of the pie chart reflects the number of outbreaks examined.

Conclusions

- 83% of the early outbreaks were not treated with fungicides prior to infection, indicating the importance of timing the first spray application.
- The first reports on early infections often came from infected plants on potato dumps.
- Infected seed tubers formed an important source of primary inoculum in all regions. Strict potato late blight control in seed potato crops is thus imperative.
- Expression of (seed) tuber infection is strongly dependent on weather conditions.
- Oospore based infections are found on sandy soils and most frequently in the starch potato growing area in the north east of The Netherlands.
- Potato late blight should be strictly controlled during the whole growing season to avoid tuber infection and oospore formation.

¹ Plant Research International b.v.
P.O. Box 16, 6700 AA Wageningen, The Netherlands
Tel: +31 317 47 89 49 - Fax: +31 317 41 80 94
E-mail: bert.evenhuis@wur.nl

² Soil & Crop Improvement
P.O.Box 427, 9400 AK Assen, the Netherlands

³ Dacom PLANT-Service B.V.
P.O.Box 2243, 7801 CE Emmen, the Netherlands