## Mejores prácticas para el control de enfermedades en papa

Huub Schepers

PRAKTIJKONDERZOEK PLANT & OMGEVING WAGENINGEN UR

## Mejores prácticas (IPM)

Preventive measures & observations in the field must have been considered before intervention with direct plant protection measures takes place


PRAKTIJKONDERZOEK PLANT & OMGEVING WAGENINGEN UR

## Mejores prácticas (IPM) principles

1. Preventive measures, e. g. crop rotation, resistant varieties
2. Usage of tools for monitoring
3. Usage of threshold values and decision-making systems
4. Non-chemical methods to be preferred
5. Agrochemicals applied as target-specific as possible and with least side effects
6. Reduction of use to necessary levels
7. Application of anti-resistance strategies
8. Check of success based on records and monitoring

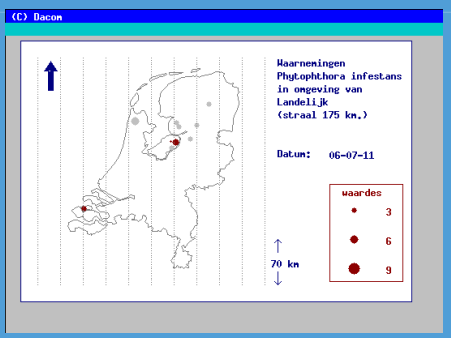
PRAKTIJKONDERZOEK PLANT & OMGEVING WAGENINGEN UR

## 1. Resistant varieties


DuRPh

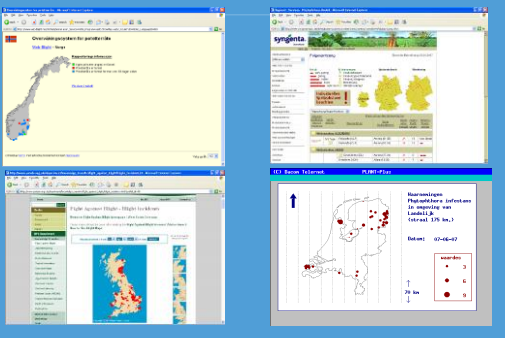
PRAKTIJKONDERZOEK PLANT & OMGEVING WAGENINGEN UR

## 2. Usage for tools of monitoring



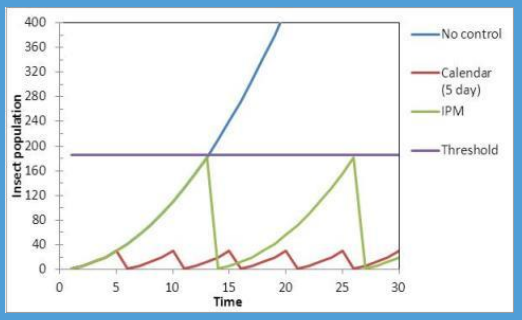

PRAKTIJKONDERZOEK PLANT & OMGEVING WAGENINGEN UR

## 2. Monitoring infected fields in Europe



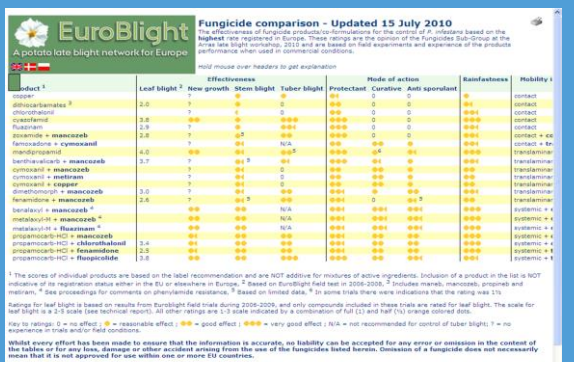
PRAKTIJKONDERZOEK PLANT & OMGEVING WAGENINGEN UR

## 3. Usage of threshold values

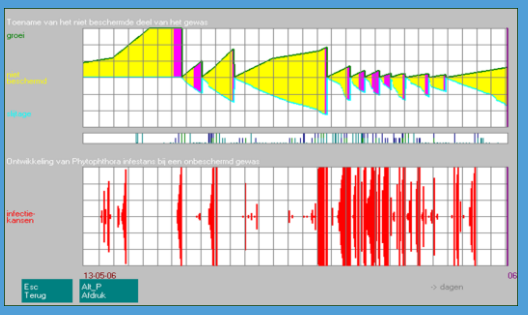



## 4. Usage of non-chemical methods

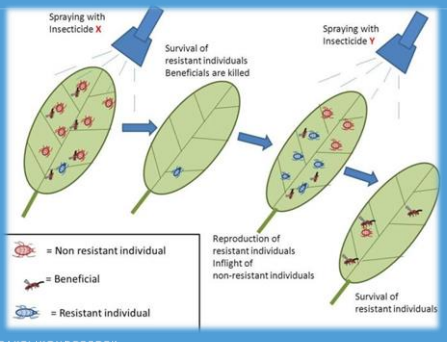
## 5. Agrochemicals applied as target-specific as possible and with least side effects




## 6. Reduction of use to necessary levels



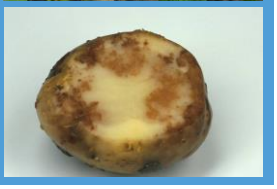

## 7. Anti-resistance strategies




## 8. Check of success & monitoring

Potato-Vietnam (Dec-Jan-Feb)

| | |
|---|---|
| 18 | mancozeb |
| 20 | chlorothalonil |
| 21 | mancozeb + cymoxanil |
| 24 | copperOH |
| 25 | mancozeb |
| 28 | chlorothalonil |
| 30 | mancozeb + cymoxanil |
| 31 | chlorothalonil |
| 37 | copperOH |
| 48 | mancozeb |
| 56 | chlorothalonil |
| 62 | mancozeb |
| 67 | mancozeb + cymoxanil |



## Most important potato diseases


Phytophthora infestans
(late blight)


Alternaria spp.
(early blight)


Rhizoctonia solani
(black scurf)


Helminthosporium solani
(silver scurf)

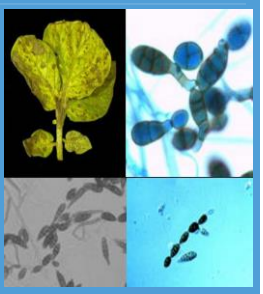
## *P. infestans* (late blight)




## Mejores prácticas (IPM) de tizón tardio

- Crop Rotation
- Primary inoculum sources
- Resistant Varieties
- Fungicides
  - First spray, spray frequency, product choice
- Decision Support Systems
  - Historical weather and forecast
  - Monitoring of disease in region/field
  - Details on pathogen, fungicides, variety

## *Alternaria solani* *A. alternata*

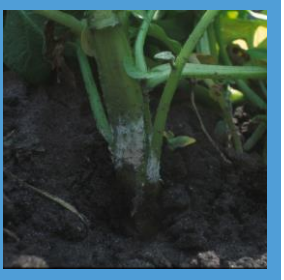



Photos: Plant Research International

## Mejores prácticas (IPM) de tizón temprano

- Prevent stress: fertilisation, virus
- Resistant varieties?
- Fungicides
  - Side effect of LB fungicides
  - Specific Alternaria fungicides
  - Timing
  - Resistance management (QoI's)
- Harvest: very dry harvesting conditions cause small wounds→ Alternaria in tubers

## Rhizoctonia: stem canker & black scurf

## Rhizoctonia: stem canker & black scurf

## Mejores prácticas (IPM) of Rhizoctonia

- Tuber treatment in ware & starch potatoes
- Furrow treatment in seed potatoes
- Risk analysis
  - Growing frequency of potato low (1:4-5)
  - Planting later (rel. warm soil)
  - Big seed tuber
  - Planting tubers without black scurf
  - Ridging later (around emergence)
  - Haulm pulling or green harvesting
  - Harvest early after haulm destruction
  - Applying Carvon inhibits sprout growth & Rhizoctonia

## *Helminthosporium solani* (silver scurf)

- Quality problem for table potatoes and seed potatoes
- Loss of water
  - Financial loss
  - Loss of viability →late emergence & reduced crop vigour
  - Less stems

## Mejores prácticas (IPM) of silver scurf

- Quick drying and no condensation of water during storage
- Planting disease free seed potatoes
- Fungicide against Rhizoctonia in furrow for seed and table potatoes has side effect on silver scurf
- Applying fungicides before storage of seed potatoes
  - Harvest early
  - Harvest in two fases for fast drying tubers

## Gracias por su atención