



Sampling for potato cyst nematodes

Ton Stolte



Programme

- General information
- Sampling
- Policy





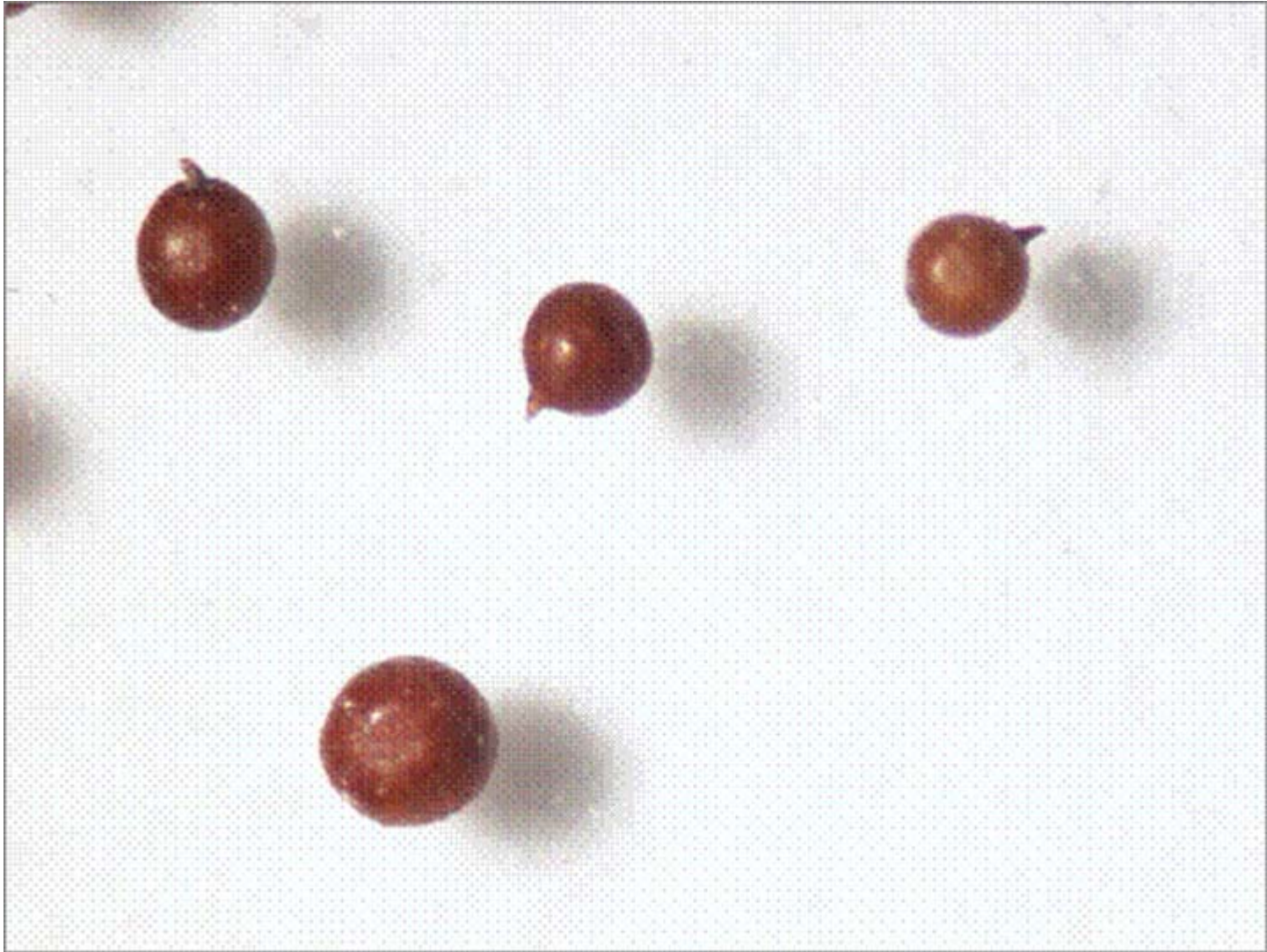
General information

- Free living nematodes and root knot nematodes





Potato cyst nematode (round)





Beet cyst nematode (lemon shaped)



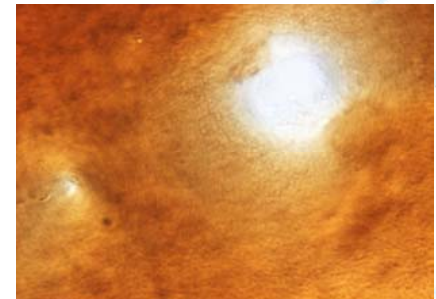
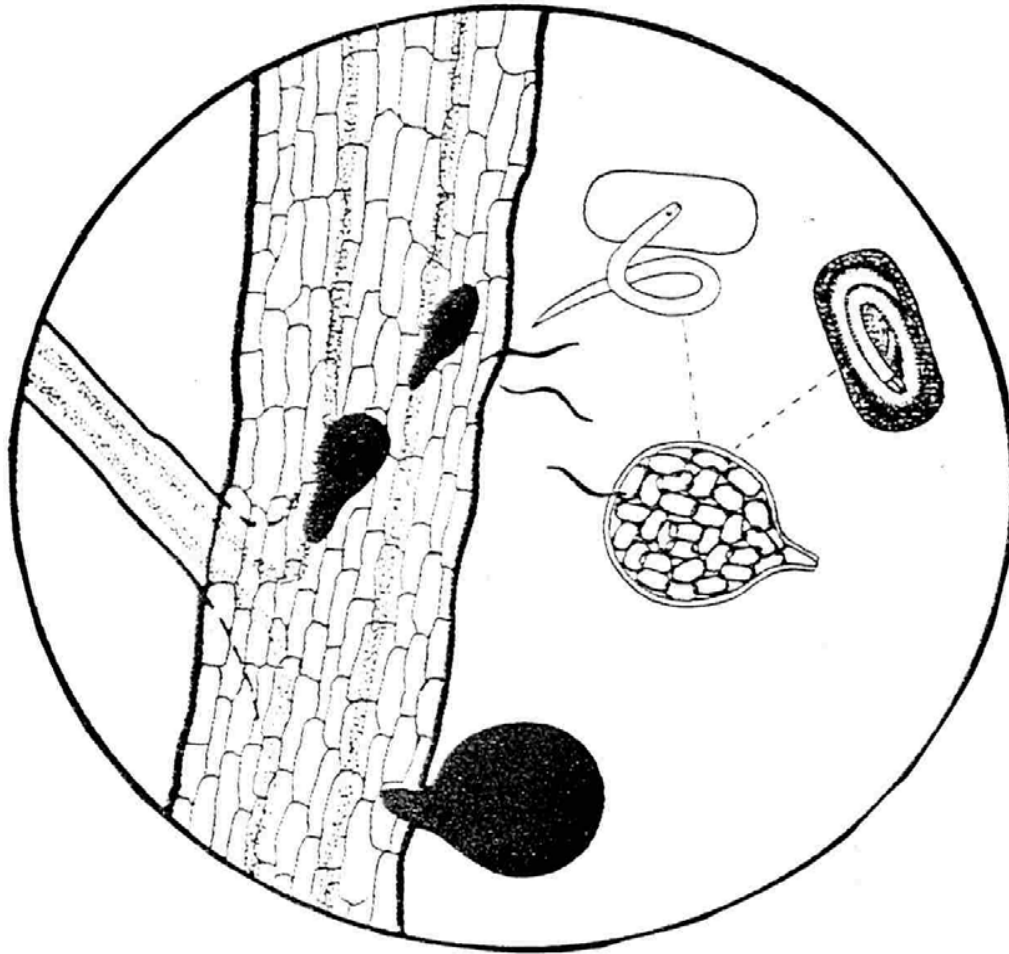


Grass cyst (oval)





PCN – life cycle







PCN - species/pathotypes

- *Globodera rostochiensis*

A (Ro1 en Ro4)

B (Ro2)

C (Ro3)

- *Globodera pallida*

D (Pa2)

E (Pa3)

- With PCR the two are distinguished



Difference

Increase susceptible variety:

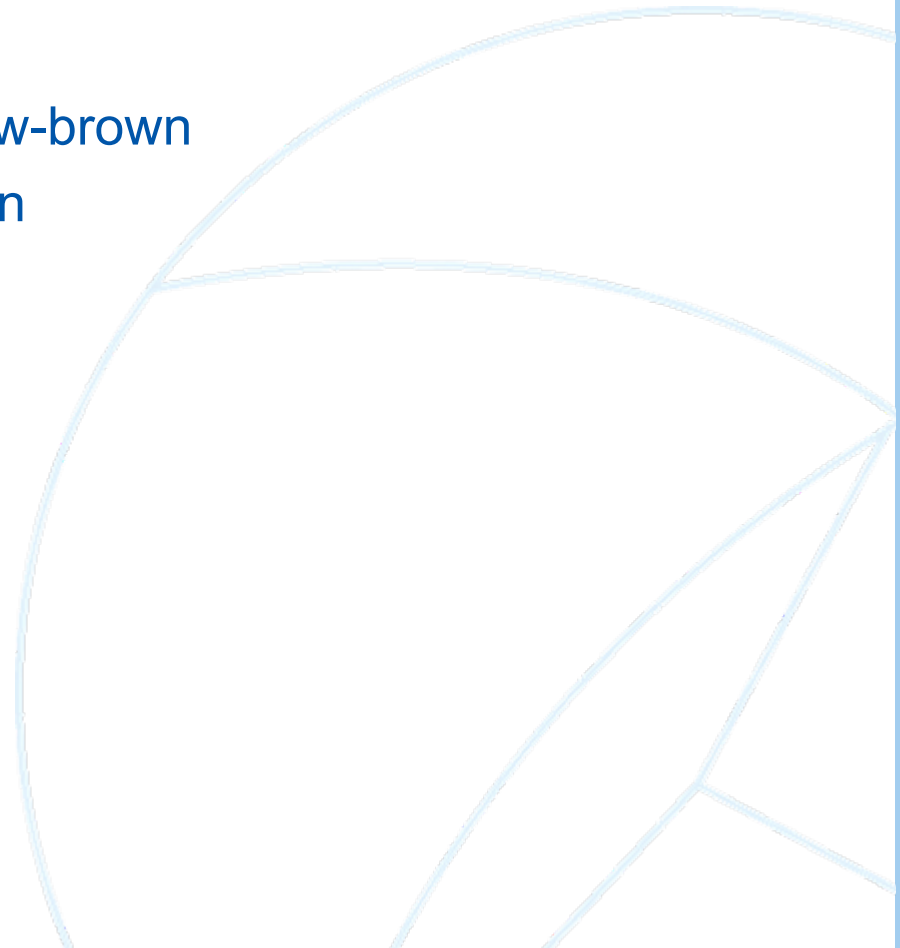
- G. ros. 20-30 x
- G. pal. ca.15 x

Colour:

- G.ros white-yellow-brown
- G.pal white-brown

Resistance:

- G.ros fully
- G.pal partial





Increase and decrease of an infection

Increase:

- Susceptible variety
 - G. ros. 20-30 x
 - G. pal. ca.15 x

Decrease:

- No host plant (no potatoes): about 35%
- Resistent variety
 - G. ros. (fully resistant; 80%)
 - G. pal. (partial resistant; different)
- Soil fumigation: maximum 80%
- Solanum sisymbrijfolium: 50 tot 90%



Infection possibility

- Soil from machines
- Transported by wind
- Unqualified 'seed' potatoes



General information

- Sampling (and testing) by NAK
- Testing (carousel):
 - about 100,000 samples a year
 - 700 samples a day





sampling

- Mandatory ⇔ Voluntary
- extensive sampling:
 - Detection probability of an infection with 100 cysts per kg soil

Name	Detection probability
AMEX 200 cc per 1/3 ha	29.5 %
AMEX 600 cc per 1 ha	29.5 %



Grids and methods

AMEX

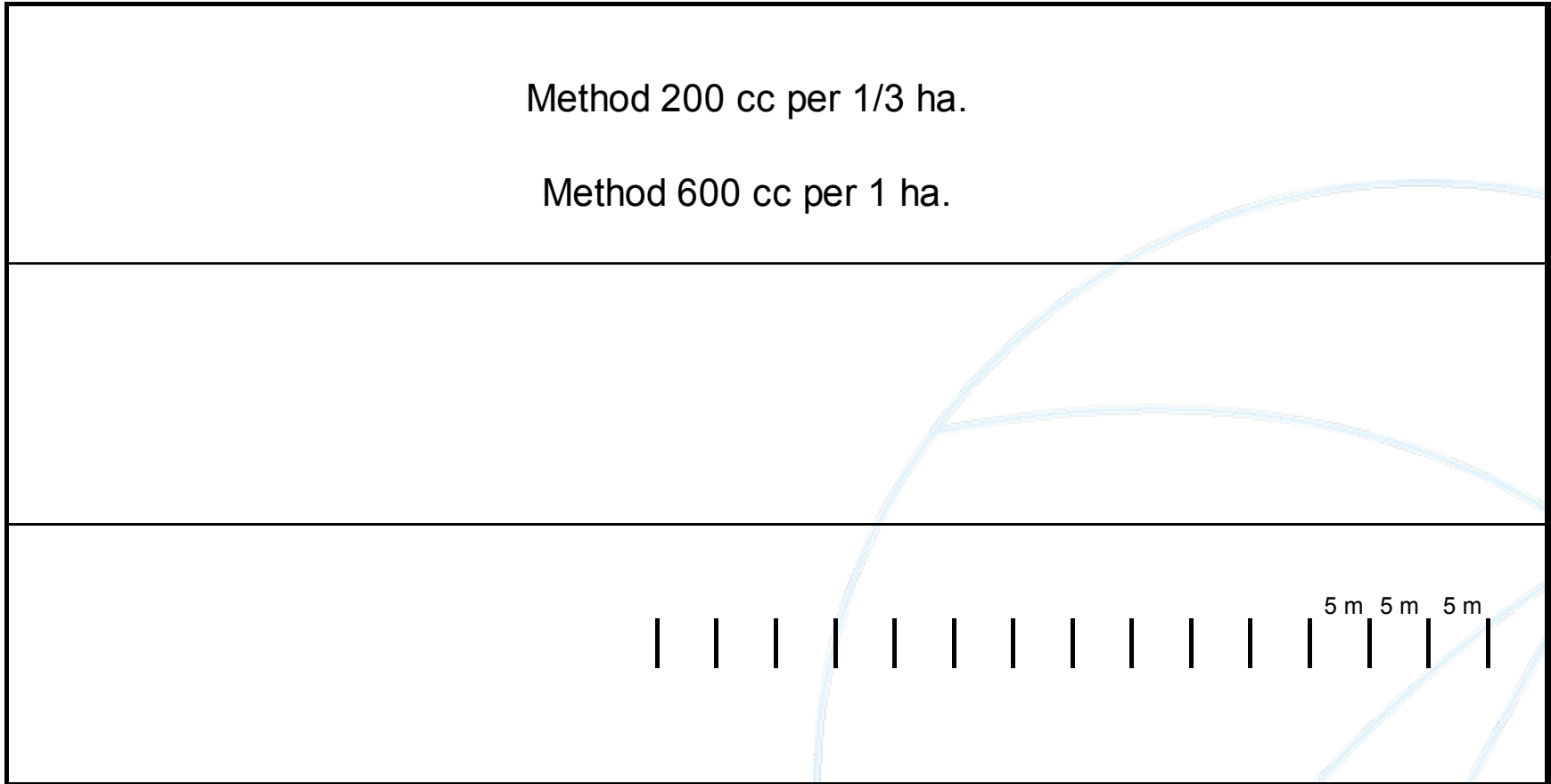
- Core number: 150 - 180
- Core size: 3 – 4 cc
- Grid with: 11 meter
- Grid length: 5 meter
- Sample size per ha.: 600 cc



Grids and methods

Method 200 cc per 1/3 ha.

Method 600 cc per 1 ha.



300 m

5 m 5 m 5 m

11 m



Sampling

- Voluntary
 - Intensive (90% detection probability)
 - AM-I 100 cysts : 600 cc per 900 m² 12 samples/ ha
 - AM-I 150 cysts: 600 cc per 1200 m² 9 samples/ha
 - AM-I 225 cysts: 600 cc per 1800 m² 6 samples/ha



Sampling by hand





Sampling by hand





Sampling by quad





Sampling by quad





Policy

Current:

- Minimum 600 cc soil sample per ha.
- Restrictions on infected fields
- Resampling after control measures
 - soil fumigation
 - resistant varieties (G. Ros – G. Pal)
 - *Solanum sisymbrijfolium*
- Additional soil test during grading



New policy (EU)

- 1500 cc soil/ha (as from 2010)
(about 56% detection probability)
- Buffer zones (increase as from 2009)
- Re sampling possible after 6 years, or 3 years after control measures