



Netherlands Food and Consumer
Product Safety Authority
Ministry of Economic Affairs

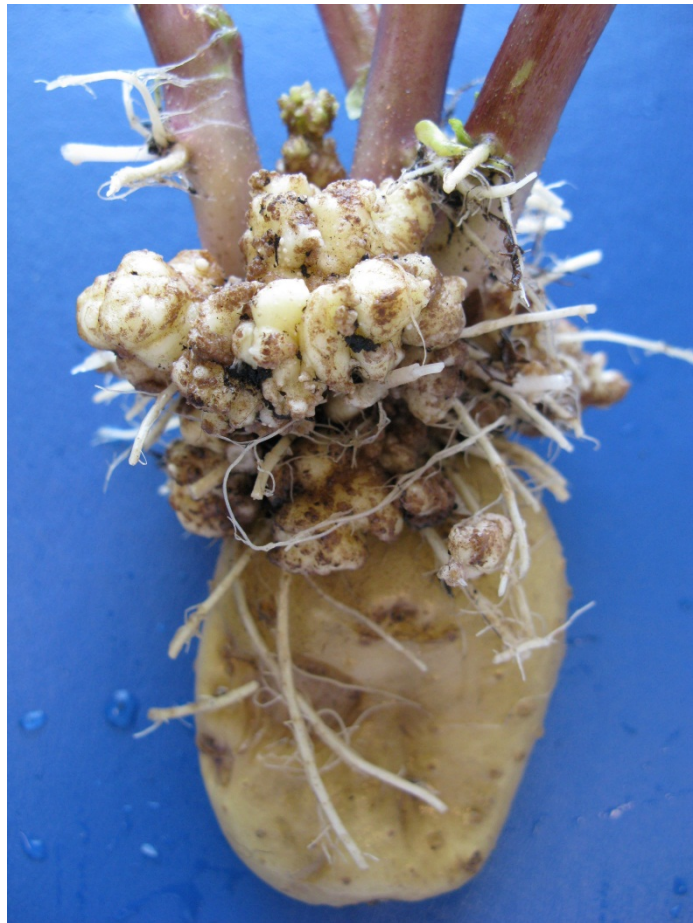


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diagnostics for plant
pests



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Results of the Euphresco-SENDO project : improving diagnostics in *Synchytrium endobioticum*

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Contents of my presentation

Euphresco –SENDO project : January 2012-May 2015

-focus on potato wart disease (*Synchytrium endobioticum*)

1. Pathotypes/races, bio-assays

-Search for 'new' cultivars to replenish/replace the current set of differential cultivars

-Test Performance Study with three pathotypes, 5-6 laboratories; Glynne-Lemmerzahl method.



Euphresco –SENDO project : January 2012-May 2015

2. Molecular tests

- two types of PCR's tested : to detect/identify *S. endobioticum*, and a test to discriminate between pathotype 1(D1) and non-pathotype 1(D1) isolates (Bonants et al., 2015)

PJM Bonants, MPE van Gent-Pelzer, GCM van Leeuwen & TAJ van der Lee, 2015. A real-time Taqman PCR assay to discriminate between pathotype 1(D1) and non-pathotype 1(D1) isolates of *Synchytrium endobioticum*. European Journal of Plant Pathology 143, p 495-506



Consortium Euphresco-SENDO

- FERA, UK
- ILVO, Belgium
- DAFF, Ireland
- MOA, Lithuania
- SASA, UK
- VIZR, Russia (St Petersburg)
- All-Russian Plant Quarantine Center, Russia (Moscow)
- CLPQ, Bulgaria
- JKI, Germany
- IHAR, Poland
- NPPO-NL, Plant Research International, Hilbrands laboratory (all the Netherlands)



Kick-off meeting Wageningen, January 2013





Euphresco SENDO

Pathotypes/races in *Synchytrium endobioticum*

- Principle = bioassay used to identify pathotype, several cultivars included

Objective of the project :

- search for 'new' cultivars to replenish/replace the current set of differential cultivars
- Test Performance Study with three pathotypes, 5-6 laboratories (Glynne-Lemmerzahl method)



State of the art (differential cultivars)

- **EPPO Diagnostic Protocol-
PM 7/28 (2004)**

Cultivar	1(D1)	2(G1)	6(O1)	8(F1)	18(T1)
Deodara	S	S	S	S	S
Tomensa	S	S	S	S	S
Eersteling	S	S	S	S	S
Producent	R	S	S	S	S
Combi	R	S	S	S	S
Saphir	R	S	R	R	R
Delcora	R	R	R	S	S
Miriam	R	R	R	R	S
Karolin	R	R	R	R	R
Ulme	R	R	R	R	R
Belita	R	R	R	R	–

S = wart
formation

R = no wart
formation



EPPO Diagnostic protocol

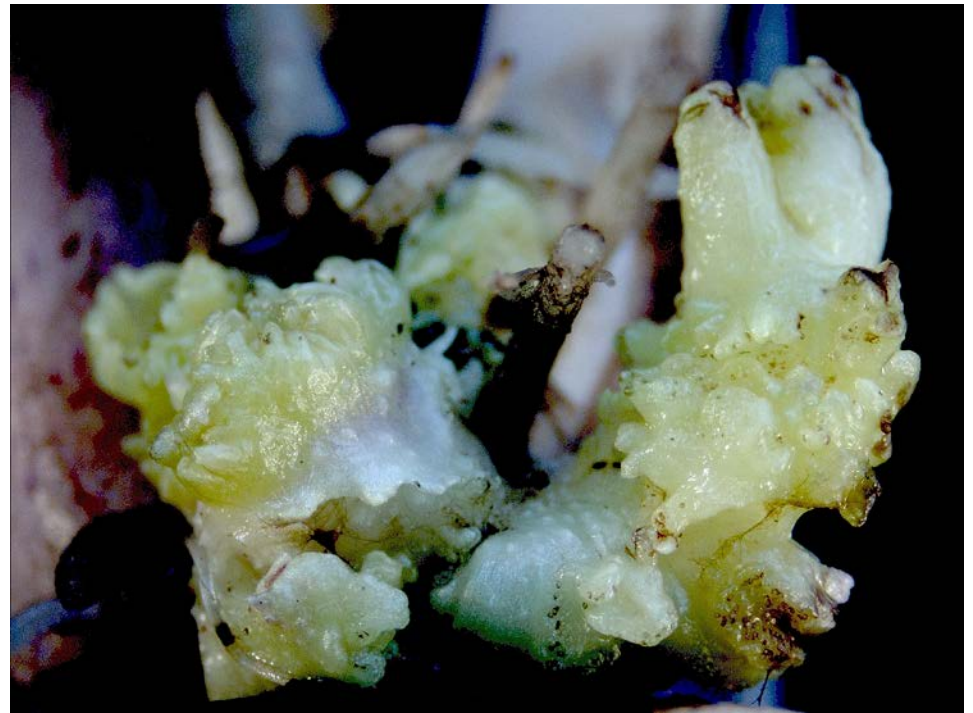
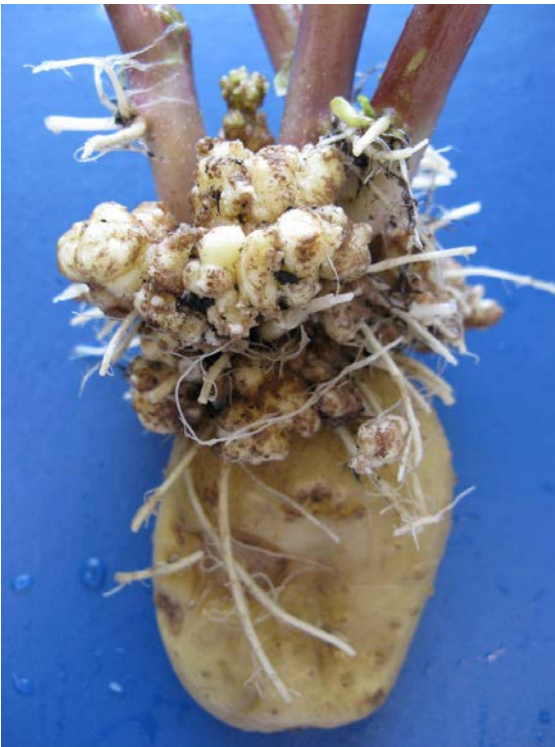
- Results in the table of PM 7/28 are mostly based on results obtained with the Spieckermann method (NL)





EPPO Diagnostic protocol (Table 1)

- and based on wart formation : yes/no (S and R)
- conclusion : ... a Dutch table





- Which reaction types do we score when scoring the reaction of potato cultivars to infection with *Synchytrium endobioticum* ?

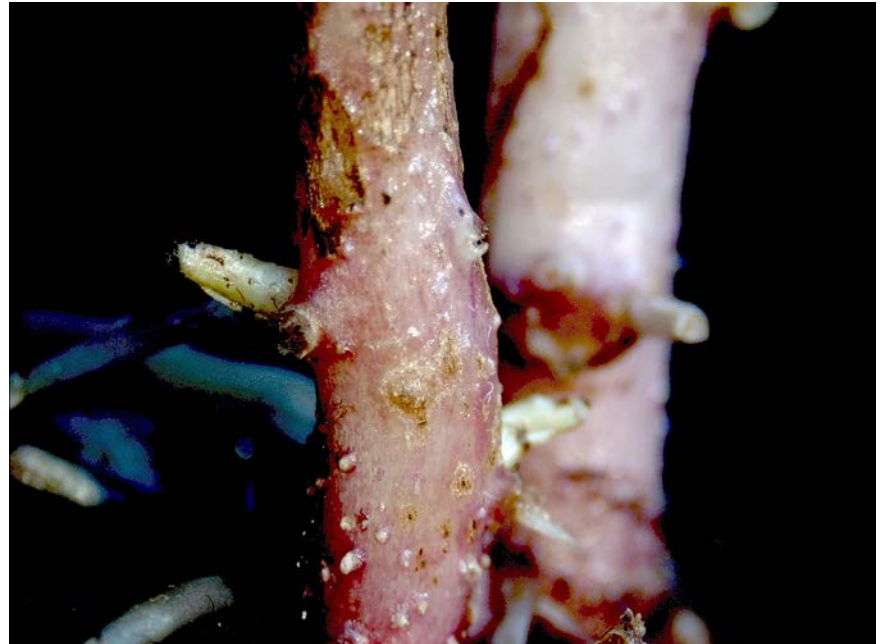




Reaction types in scoring results (5 classes)



1. Type '-'



2. Type 'P'



Reaction types in scoring results (5 classes)



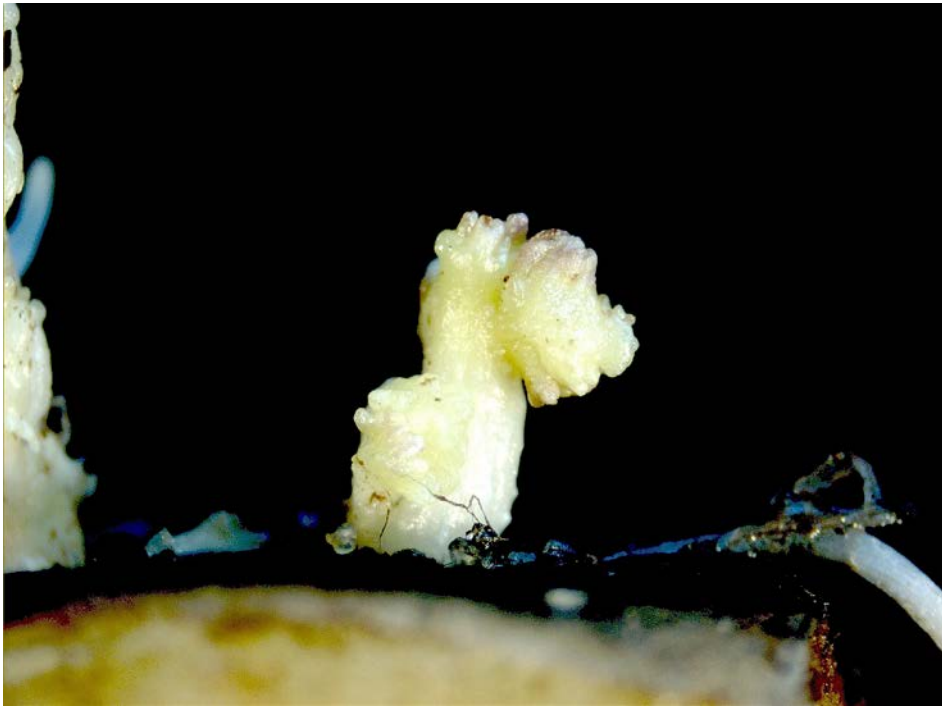
3. Type 'F'



4. Type 'R'



Reaction types in scoring results (5 classes)



5. Type 'wart'....



Euphresco-SENDO

- Initiative in Euphresco-SENDO :
 - rely on the Glynne-Lemmerzahl method (Test Performance Study)
 - some differential cultivars proved to give non reliable/non-consistent results in interlaboratory tests (Flath et al., 2014)
- 1) Flath K, Przetakiewicz J, van Rijswick PCJ, Ristau V & GCM van Leeuwen, 2014. Interlaboratory tests for resistance to *Synchytrium endobioticum* in potato by the Glynne-Lemmerzahl method. EPPO Bulletin 44(3), p 510-517



EPPO Diagnostic Protocol

Cultivar	1(D1)	2(G1)	6(O1)	8(F1)	18(T1)
Deodara	S	S	S	S	S
Tomensa	S	S	S	S	S
Eersteling	S	S	S	S	S
Producent	R	S	S	S	S
Combi	R	S	S	S	S
Saphir	R	S	R	R	R
Delcora	R	R	R	S	S
Miriam	R	R	R	R	S
Karolin	R	R	R	R	R
Ulme	R	R	R	R	R
Belita	R	R	R	R	–



New differentials

- New cultivars tested in the project : cv Logo, Talent and Transit (German origin), and cv Gawin (Polish origin)
- Logo, Talent : to replace Miriam
- Transit and Gawin : to replace Ulme, Belita



Results – pathotype 18(T1)

		IHAR		HLB		JKI		ILVO		PPS-BG	
		c 4	c 5	c 4	c 5	c 4	c 5	c 4	c 5	c 4	c 5
Talent	rep 1	1	9	2	2	0	9	3	7	2	5
	rep 2	0	10	3	3	0	7	0	4	0	8
	rep 3	0	10	1	8	0	7	6	3	0	3
Logo	rep 1	9	0	0	0	5	0	0	0	1	2
	rep 2	10	0	0	0	2	0	0	0		
	rep 3	10	0	0	0	3	0	0	0	0	0
Gawin	rep 1	0	0	0	0	0	0	0	0	0	0
	rep 2	0	0	0	0	0	0	0	0	0	0
	rep 3	1	0	0	0	0	0	0	0	0	0
Transit	rep 1	4	0	0	0	0	0	0	0	0	0
	rep 2	4	0	0	0	1	0	0	0	0	0
	rep 3	6	0	0	0	1	0	0	0	0	0



Conclusion and confusion ...

Conclusions :

- cv Talent to replace Miriam (distinction between path 6(O1) and 18(T1))
- cv Gawin to replace Ulme/Belita (resistant to all pathotypes mentioned in EPPO DP 7/28)

Confusion ...

- Identity of pathotype 8(F1) ?



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- Margriet Boerma, Ineke van Holst (Hilbrands laboratory)