



**Blight control in Denmark, the Netherlands and UK –
A comparative study**

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EuroBlight

EU.NET.ICP & EUCABLIGHT
Potato Late Blight Network For Europe



Objectives and methods

How can we improve late blight control in DK?

What can DK learn from NL and UK

Will climate change result in increased late blight risk and new inoculum sources - maybe like NL and UK have now.

Analyse differences in restrictions and opportunities for late blight control in the three countries

Analyse differences in blight weather conditions

Fungicide options

Control strategies used in 2008

Use of DSS

Compare blight weather in DK, NL & UK

Method

Weather data from 2-3 locations and three years (2006-2008) from each country

Calculate weather based Blight risk:

Infection pressure (HSPO) as used in DK

Prophy Disease pressure, NL

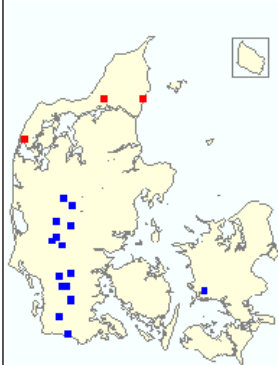
Plant Plus, Disease pressure, NL

Smith periods, UK

Calculation of blight weather is then comparable between countries and we compare four different methods

Potato late blight

Late blight monitoring



■ LB recordings last 10 days
■ LB recordings older than 10 days
[More information about blight recordings](#)

Links

[Info and articles from Extension service](#)
[Fungicide information](#)
[Euroblight workshop - Read presentations](#)
[NJF seminar - Read presentations](#)
[Cultivars and blight resistance](#)
[Results from Eucablight trials](#)

News from the field

Kort med skimmelfund i Holland

Se kort med skimmelfund i Holland [her](#). Kortet laves af DACOM. Til forskel fra DK indrapporterer konsulenterne selv når de finder skimmel. Angreb i UK kan ses [Her](#).
['less text'](#)

Updated 02-07-2007 09:15:00 of Jens Grønbech Hansen

Skimmel i Nordjylland

Så er der fundet skimmel to steder i Nordjylland og man regner med at finde fler ['more text'](#)

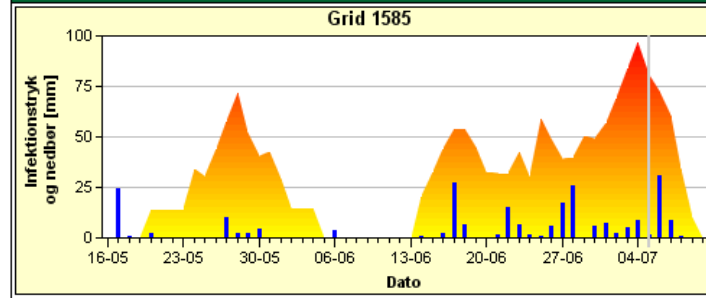
Updated 27-06-2007 07:37:00 of Peter Vestergård Klemmensen

Vejret og kartoffelskimmel

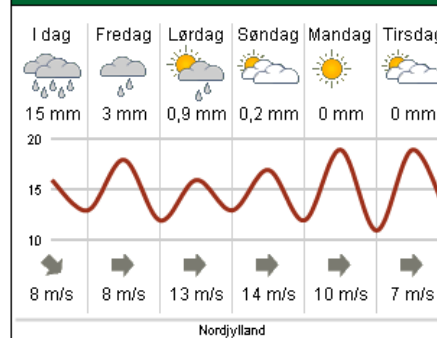
Selvom der endnu ikke er registreret skimmel i Nordjylland, er vejsituationen i ['more text'](#)

Updated 22-06-2007 14:48:00 of Jens Grønbech Hansen

Infection pressure

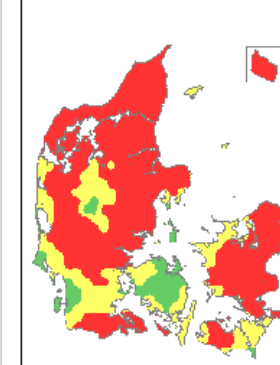


Weather forecast



- [North Jutland](#)
- [Mid- og West Jutland](#)
- [East Jutland](#)
- [South Jutland](#)
- [Funen](#)
- [West- and South Sealand and Lolland Falster](#)
- [Copenhagen and North Sealand](#)
- [Bornholm](#)

Blight weather 5/7

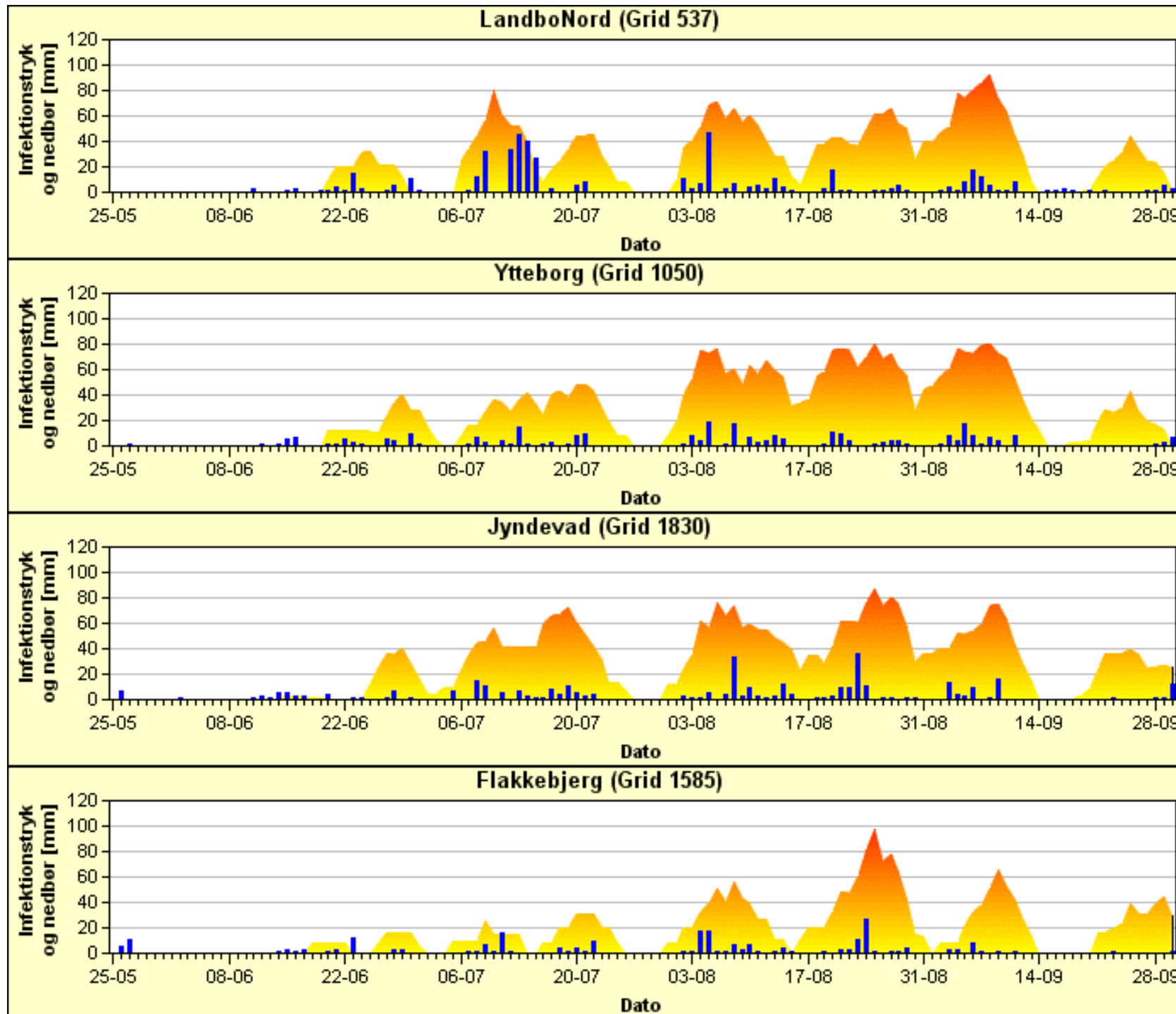


High risk	+10 hours with RH \geq 90% and Temp \geq 10°C
Possible risk	+10 hours with RH \geq 88% and Temp \geq 10°C
Low risk	

Tools

[Will it be blight weather tomorrow?](#)
[Was it blight weather last week?](#)
[Can I spray tomorrow?](#)
[Will there be rain tomorrow. When?](#)
[Daily blight weather in Denmark for the last 25 days](#)
[Daily precipitation in Denmark for the last 25 days](#)
[Infection pressure at trial sites](#)

2008,
Four
regions
in DK



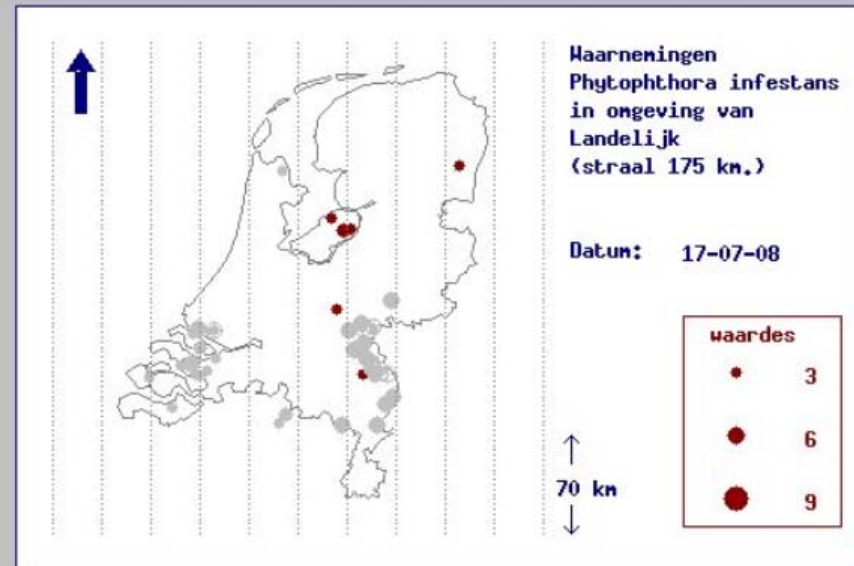


Monitoring information - 20.10.2008

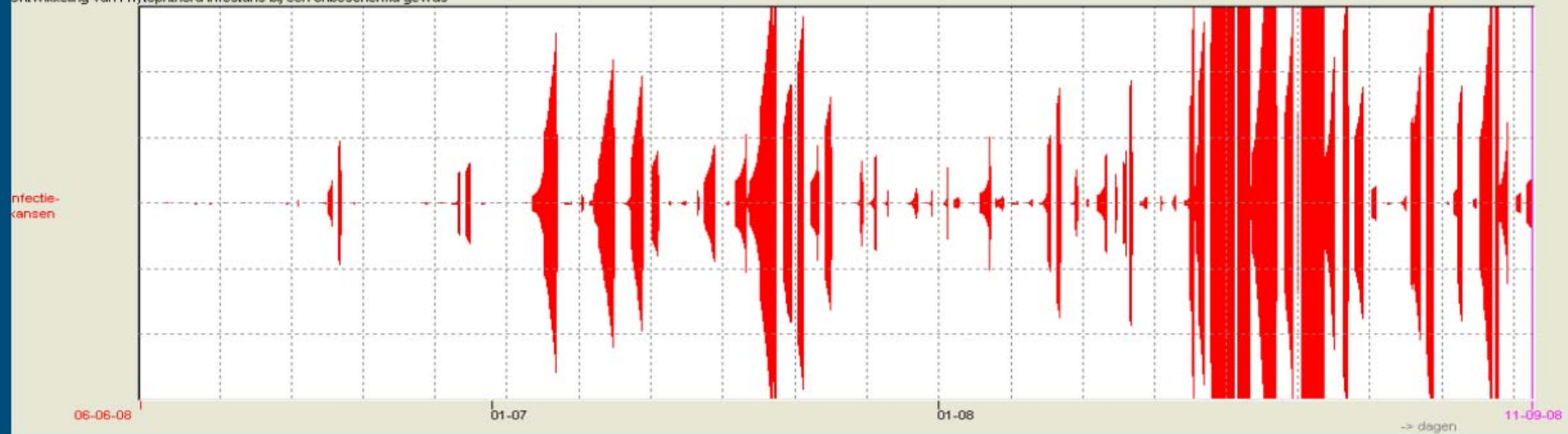
Field name	Field type	Variety	Date of crop emergence	Date of recording	Potato Late Blight key	BBCH growth stage	Reporter
Billund	Conventional	Sava		30.07.	One or few spots in the field, largest spot <1 m2	65	LBE
Sønder Omme	Conventional	Inova		30.07.	One or few spots in the field, largest spot 5-25 m2	65	LBE
Billund	Conventional	Binthe		30.07.	One or few spots in the field, largest spot <1 m2	65	LBE
Filskov	Conventional	Sibu		29.07.	One or few spots in the field, largest spot <1 m2	69	LBE
Tulstrup Ikast	Conventional	Binthe		25.07.	Attacks all over the field, severity 0.0-0.5 %	65	LBE
Tulstrup Ikast	Conventional	Sava		25.07.	One or few spots in the field, largest spot <1 m2	65	LBE
Flø Brande	Conventional	Folva		25.07.	Attacks all over the field, severity 1.1-5.0 %	69	LBE
Flø Brande	Conventional	Fakse		25.07.	Attacks all over the field, severity 1.1-5.0 %	69	LBE
Ølgod	Organic	Sava		25.07.	Attacks all over the field, severity >25 %	69	LBE
Hoven Tarm	Organic	Sava		25.07.	One or few spots in the field, largest spot <1 m2	69	LBE
Hals	Conventional	Ditta		25.07.	One or few spots in the field, largest spot <1 m2	61	LBE
Sønder Omme	Conventional	Sava		23.07.	One or few spots in the field, largest spot <1 m2	65	LBE
Åbybro	Conventional	Kuras		22.07.	One or few spots in the field, largest spot <1 m2	69	LBE
Urup Grindsted	Conventional	Binthe		22.07.	One or few spots in the field, largest spot <1 m2	69	LBE
Sunds	Conventional	Kuras	*****	22.07.	One or few spots in the field, largest spot <1 m2	69	LBE
Flakkebjerg	Conventional	Folva		22.07.	One or few spots in the field, largest spot <1 m2	65	LBE
Gredstedbro	Conventional	Verdi		18.07.	One or few spots in the field, largest spot <1 m2	65	LBE
Bække Vejen	Conventional	Sava		17.07.	One or few spots in the field, largest spot <1 m2	39	LBE
Sinding Herning	Conventional	Fakse	*****	17.07.	One or few spots in the field, largest spot 5-25 m2	65	LBE
Grønhøj Karup	Conventional	Kuras	*****	17.07.	One or few spots in the field, largest spot <1 m2	65	LBE
Hjørring	Conventional	Kardal		17.07.	One or few spots in the field, largest spot <1 m2	69	LBE
Bevtoft Vojens	Conventional	Saturna		14.07.	One or few spots in the field, largest spot <1 m2	69	LBE
Herning	Conventional	Fontana		11.07.	One or few spots in the field, largest spot <1 m2	69	LBE
Rødding	Conventional	Kardal		11.07.	One or few spots in the field, largest spot <1 m2	67	LBE
Ejstrupholm	Conventional	Frieslander	*****	09.07.	One or few spots in the field, largest spot <1 m2	69	LBE
Store Jyndeved Tinglev	Organic	Sava	*****	03.07.	Attacks all over the field, severity 10.1-25.0 %	61	LBE

Late Blight 2008

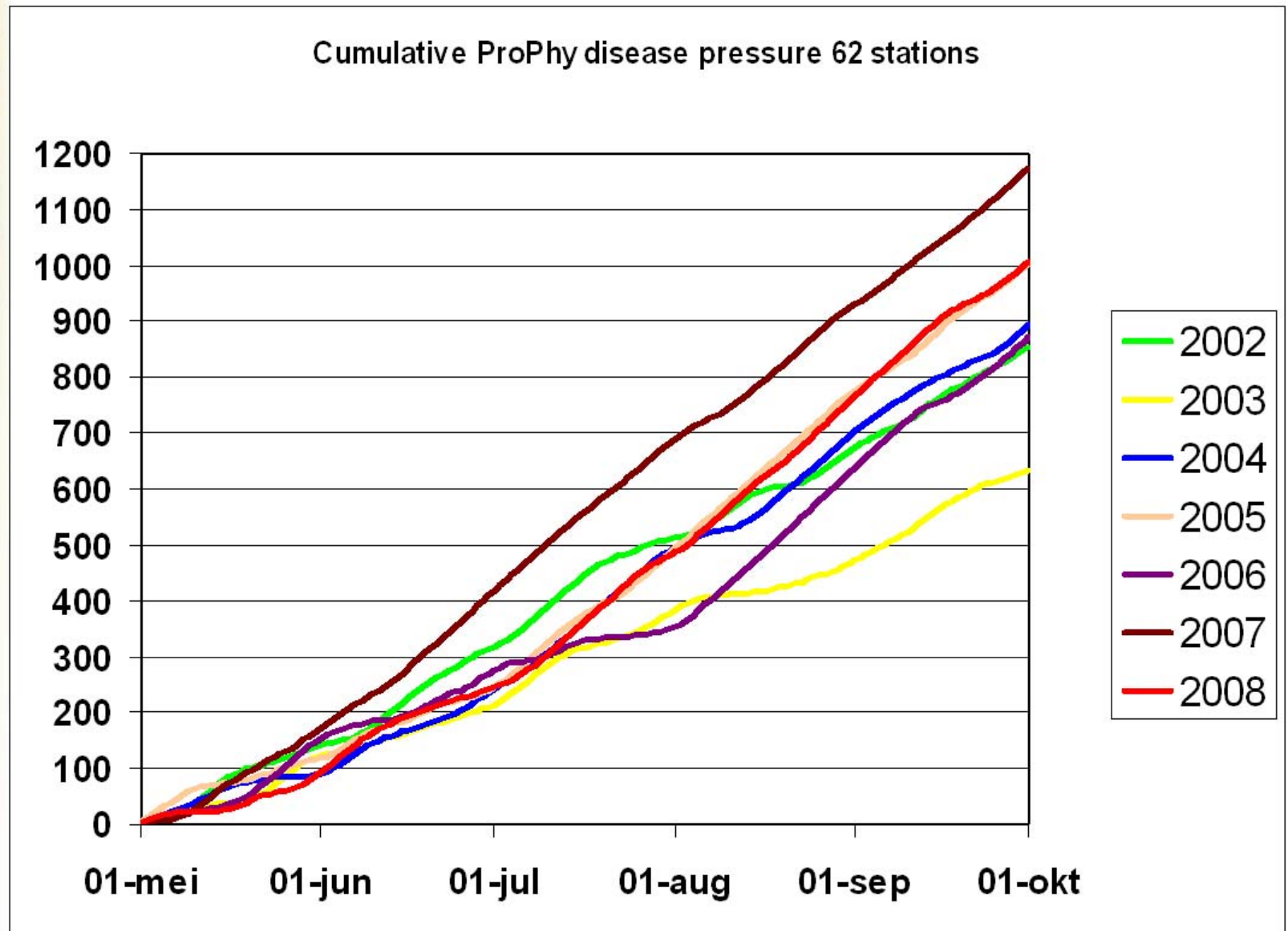
- Many periods without critical weather
- Late Blight observed only later in the season

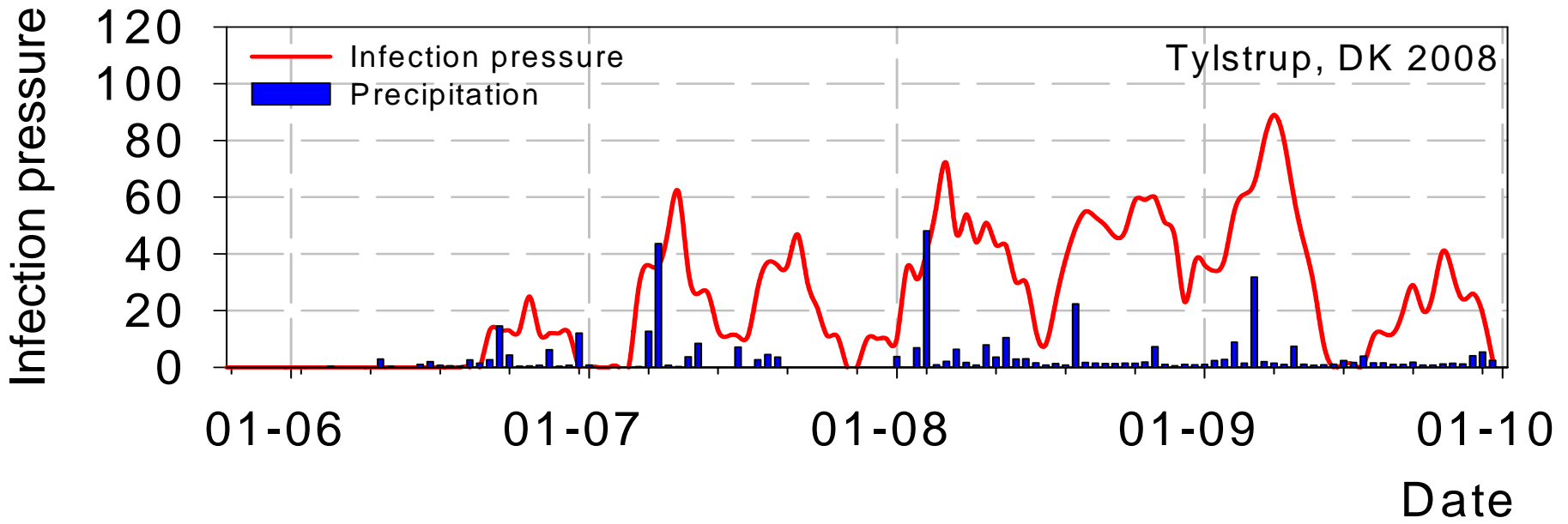
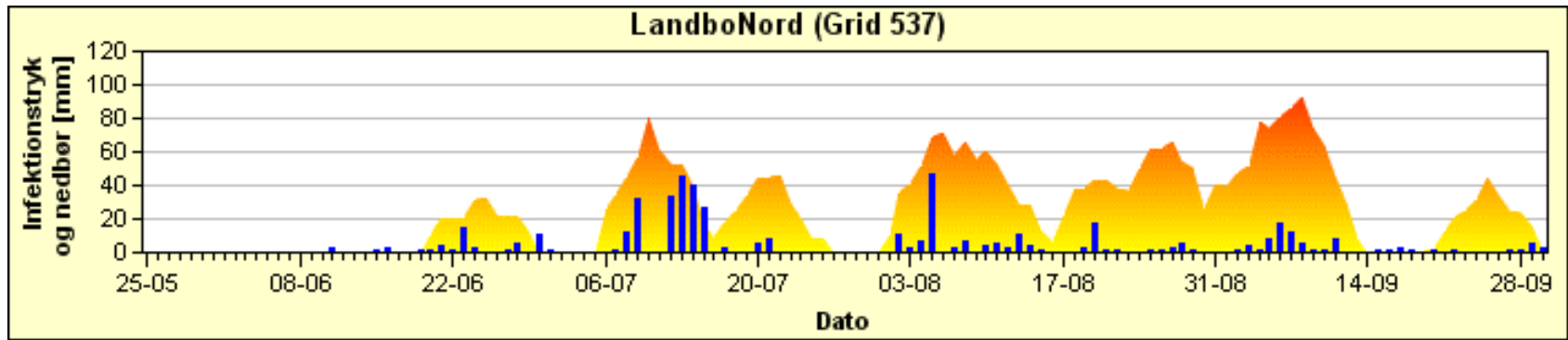


Ontwikkeling van Phytophthora infestans bij een onbeschermd gewas



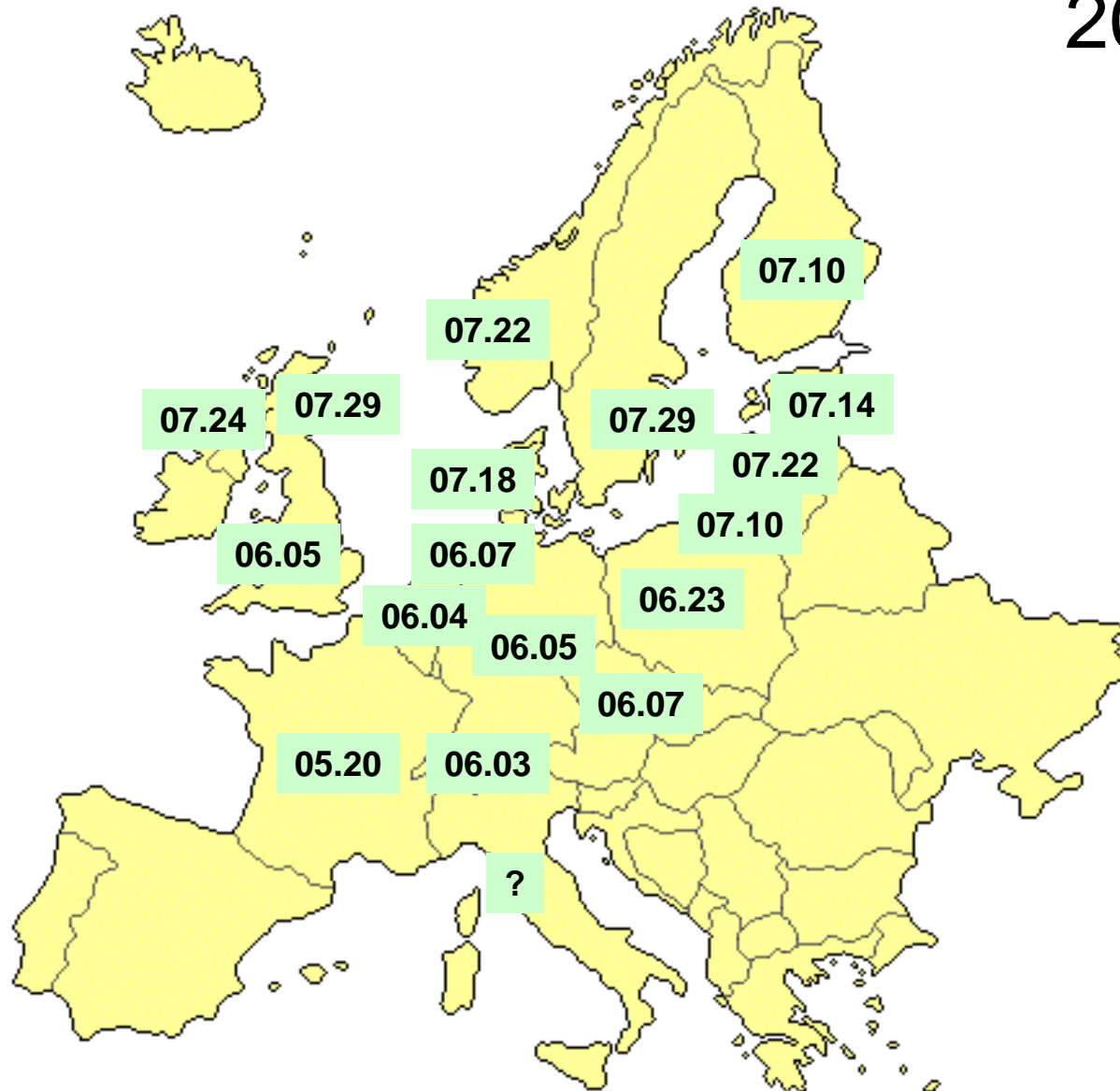
NL - Phytophthora 2002-2008

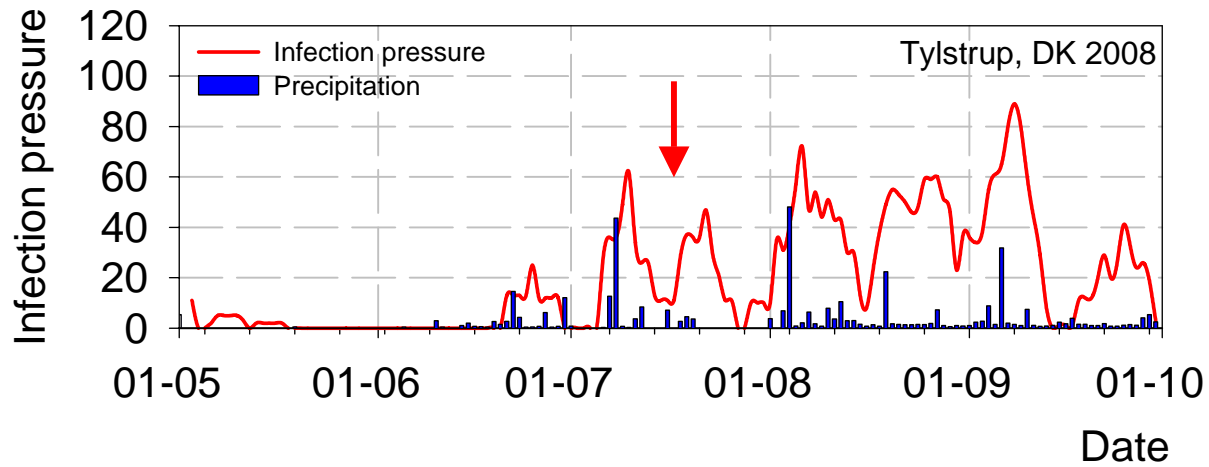




Date when first infections were reported in more than 5 conventional, normally planted potato fields

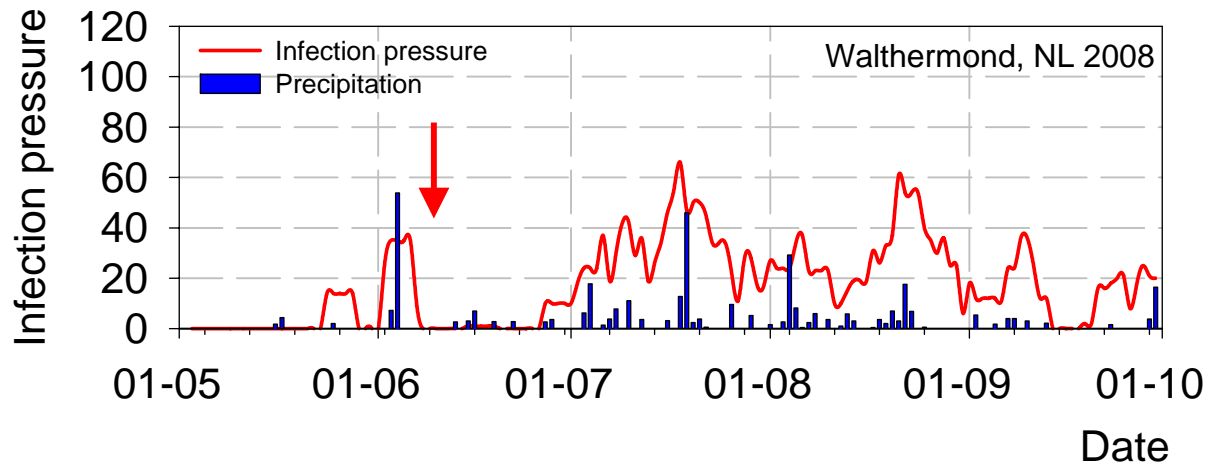
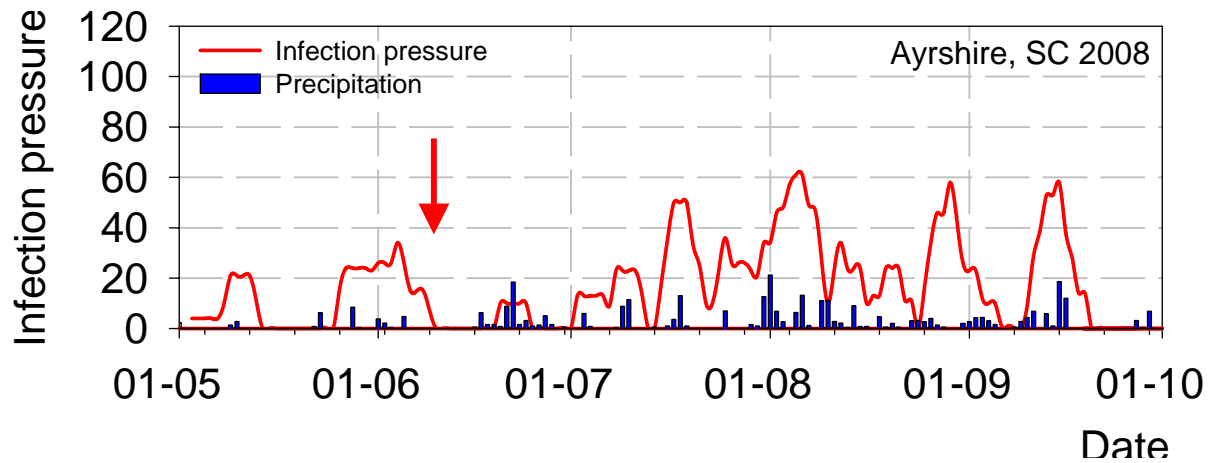
2008



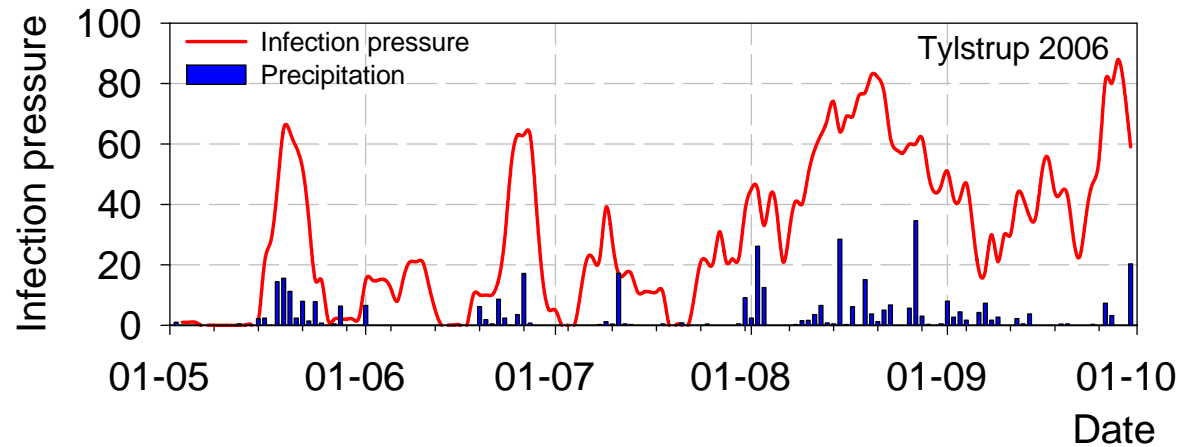


Date when first infections were reported in more than 5 conventional, normally planted potato fields

Country reports

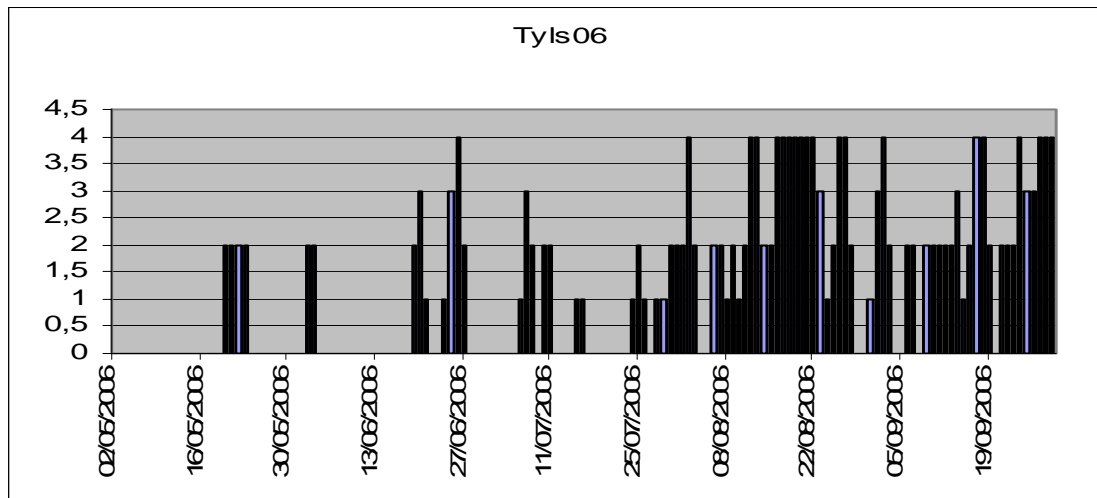


Comparing Infection pressure and Smith



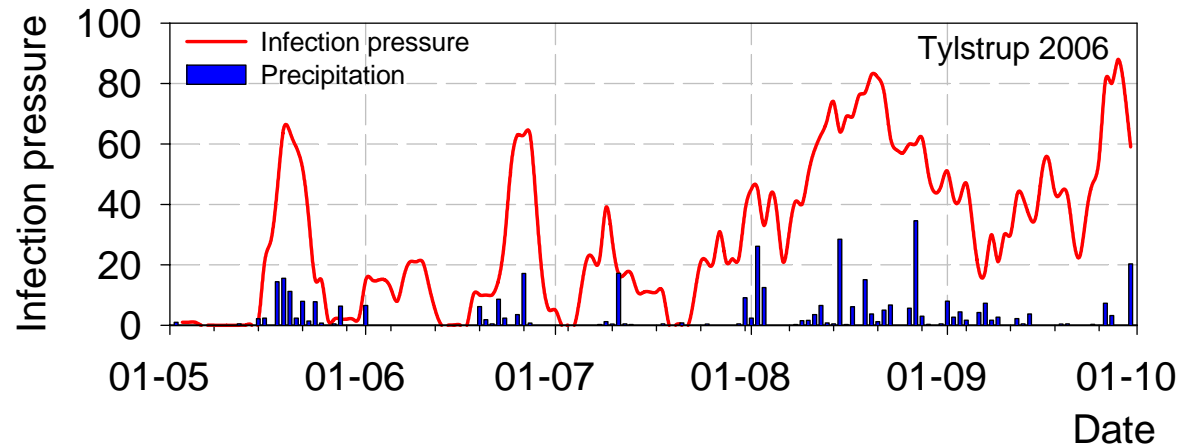
Method:

Inf. Pressure
(HSPO)



Smith

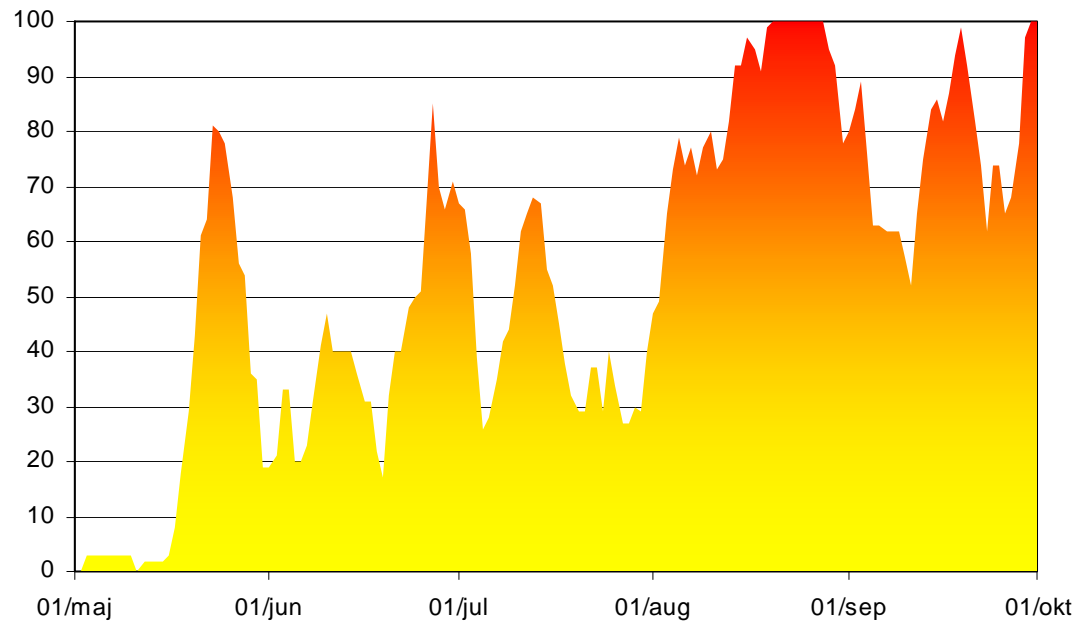
Comparing Infection pressure and ProPhy



Method:

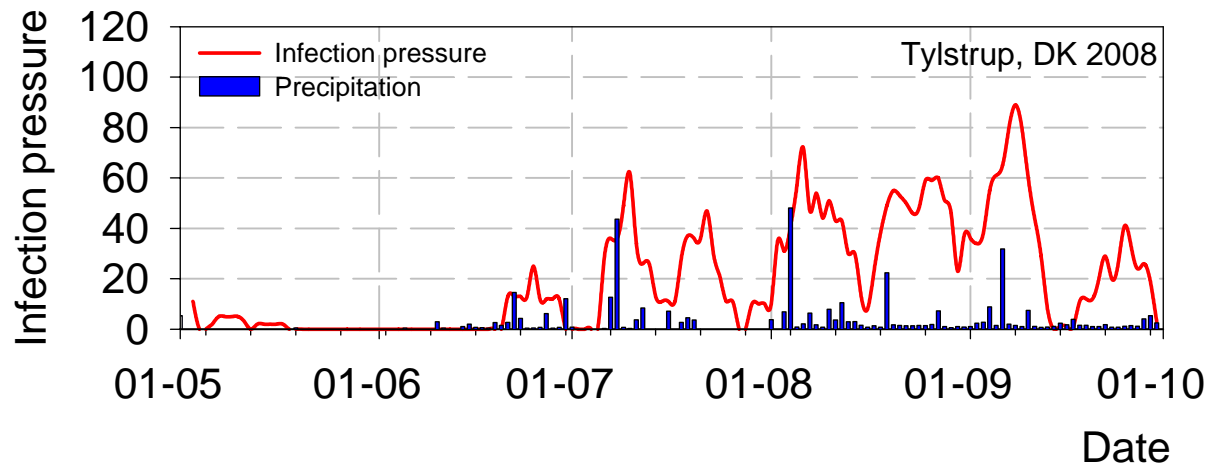
Inf. Pressure
(HSPO)

Phytophthora disease pressure 2006



Prophy
Disease pressure

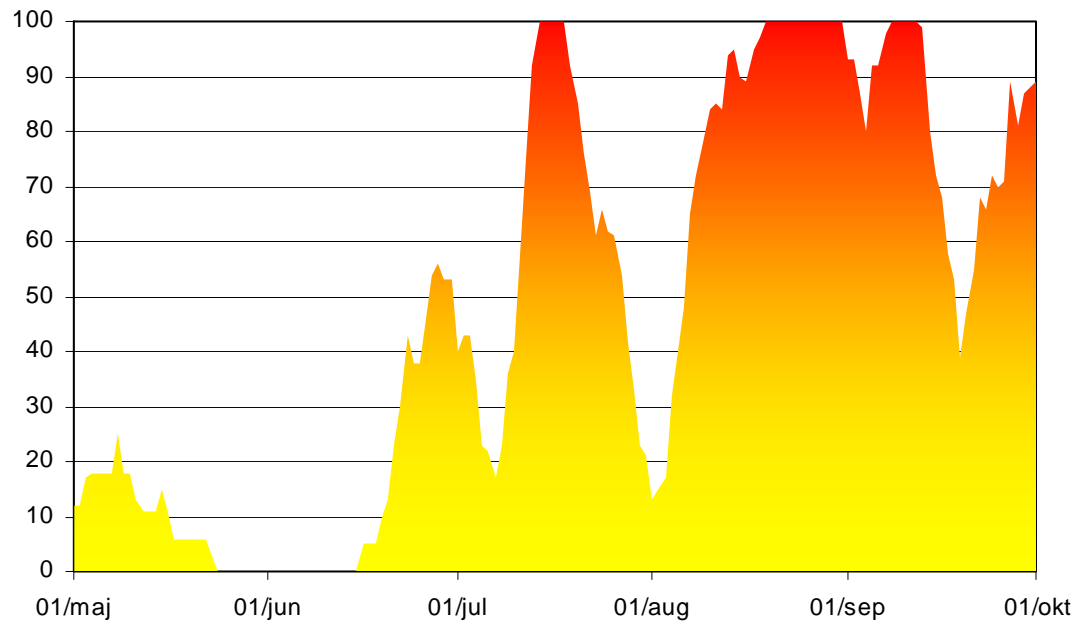
Comparing Infection pressure and ProPhy



Method:

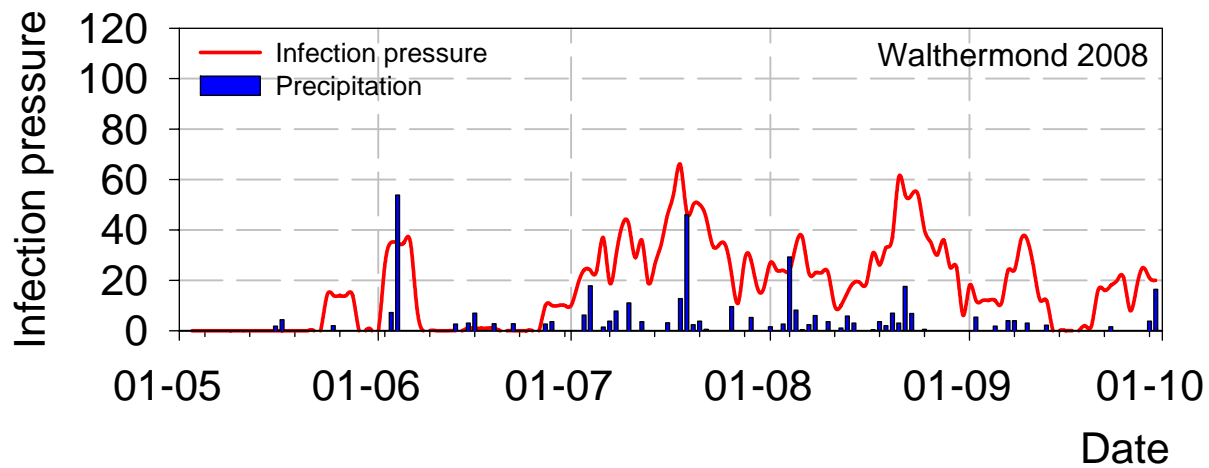
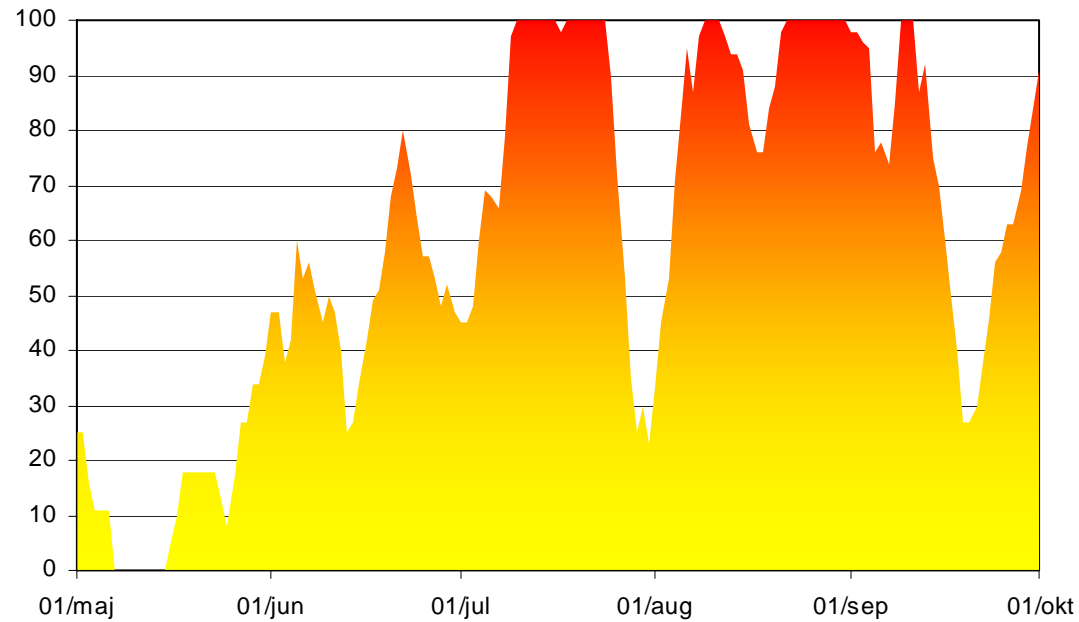
Inf. Pressure
(HSPO)

Phytophthora disease pressure 2008



Prophy
Disease pressure

Comparing Infection pressure and ProPhy



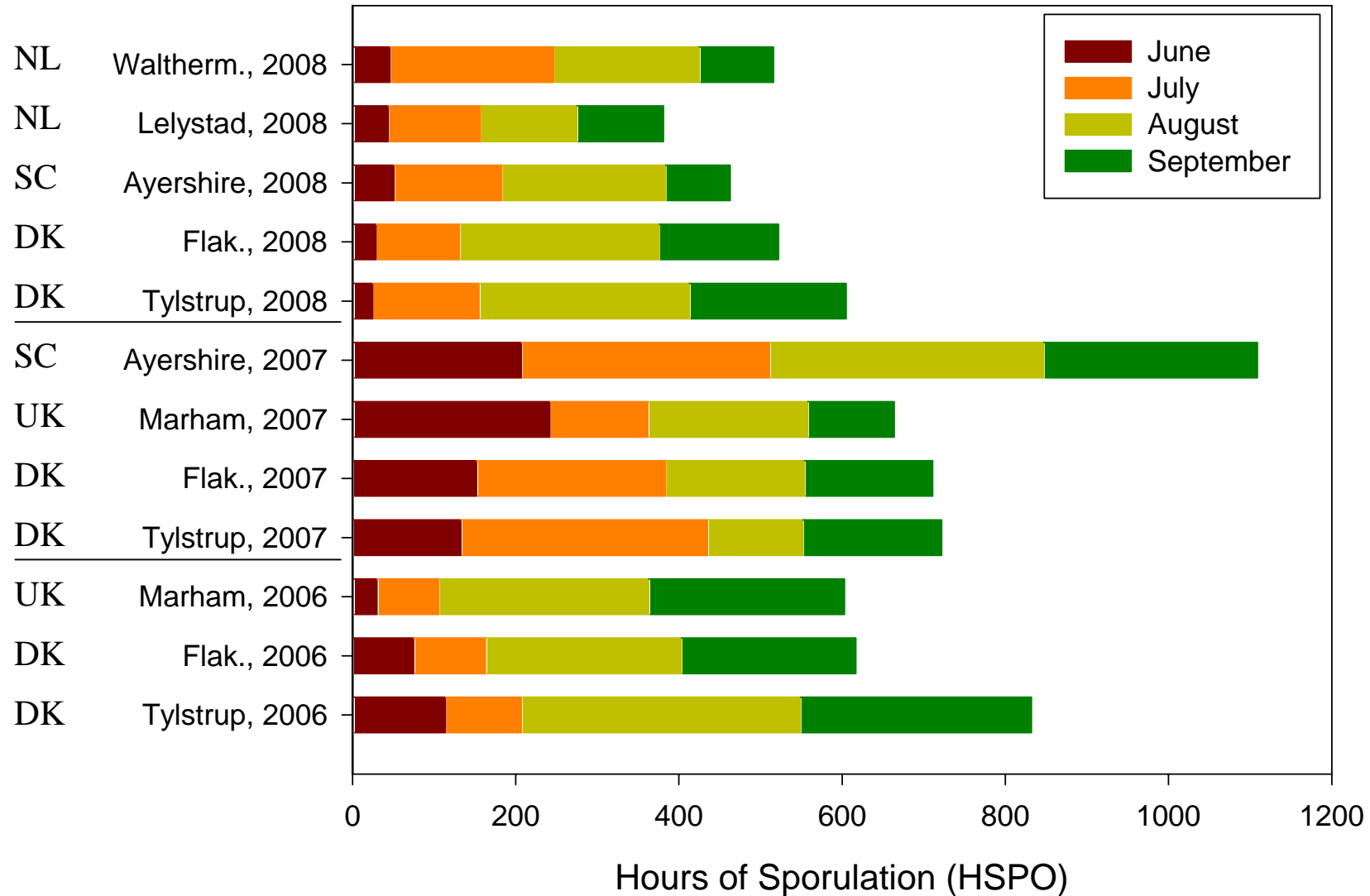
Results (preliminary)

Infection pressure (HSPO), ProPhy Disease pressure and Smith identify the same periods with high/low disease pressure

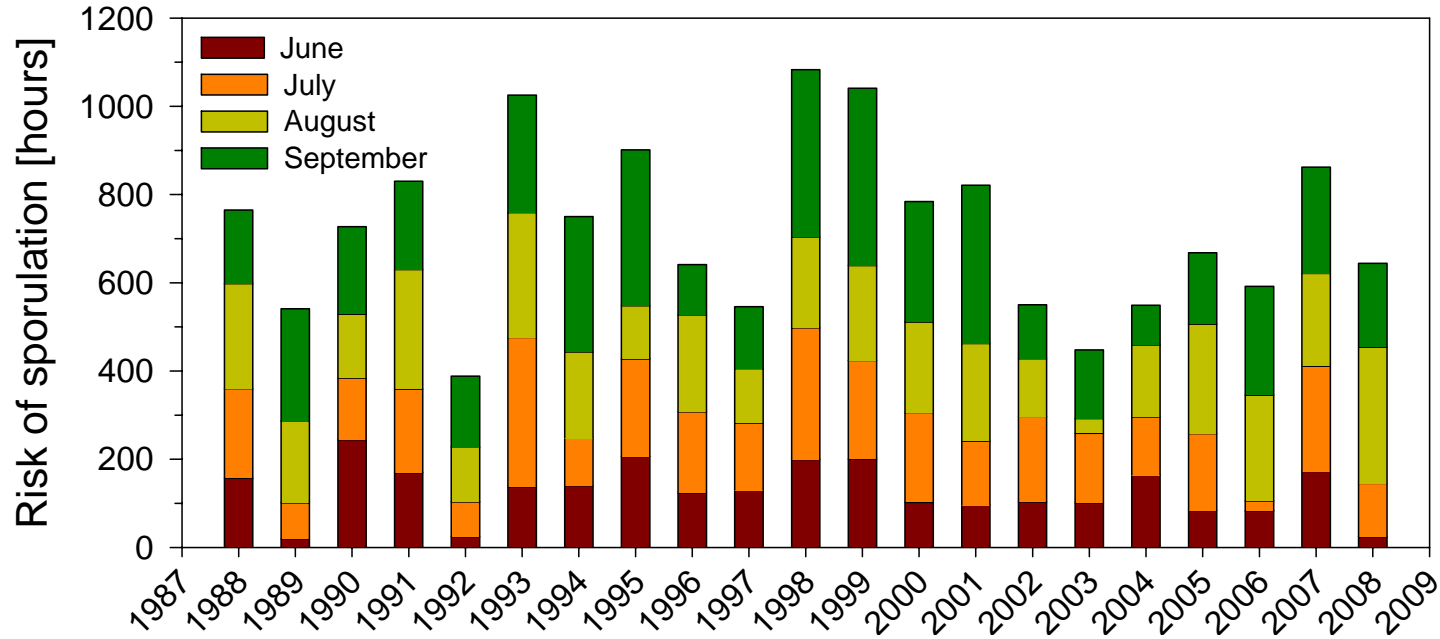
Correlation between calculation of blight weather and onset of epidemics and the rate of disease development

Infection pressure 2006-2008

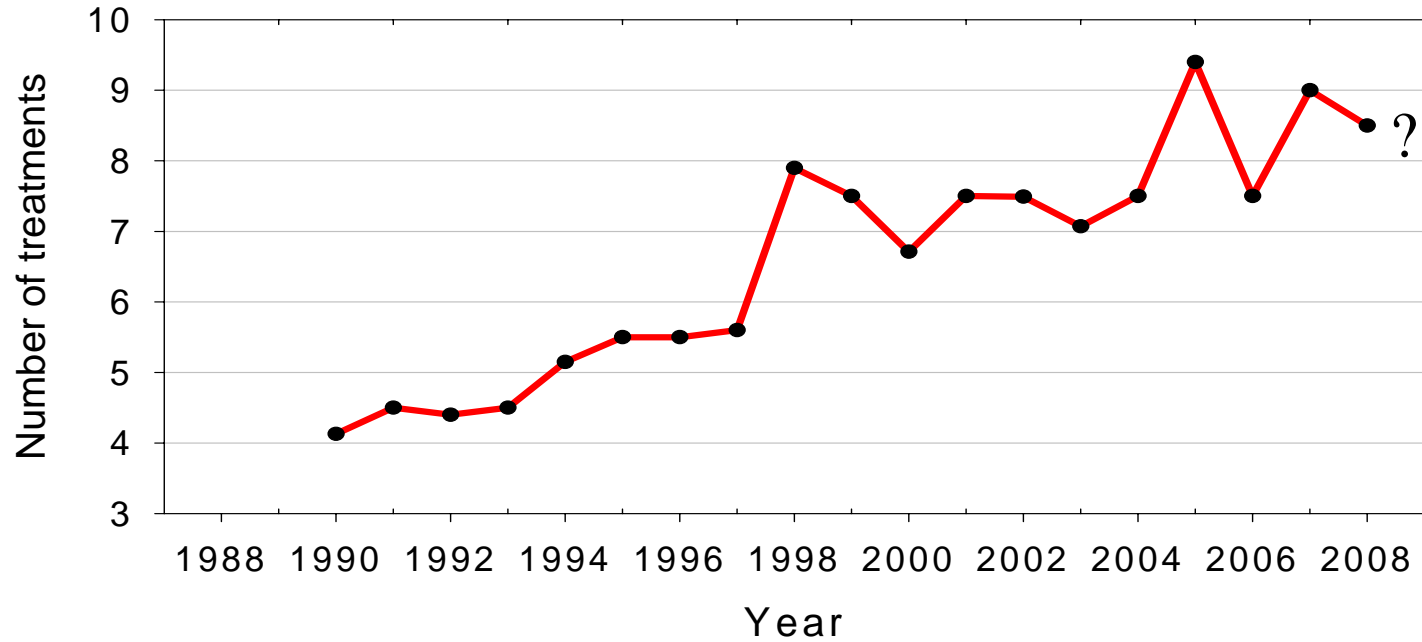
Infection pressure from stations in DK, UK and NL



Askov, Denmark



Official fungicide use in potato



Fungicides recognised in DK, UK and NL

Products	NL	UK	DK
benthiavalicarb + mancozeb (Valbon)	R	R	NR
chlorothalonil (Daconil)	R		NR
cyazofamid (Ranman)	R	R	R
maneb	R		NR
mancozeb	R	R	R
metiram	R		NR
famoxadone+cymoxanil (Tanos)	R	R	NR
fluazinam (Shirlan)	R	R	NR
zoxamide + mancozeb (Electis, Unikat)	R	R	R
cymoxanil solo	R		NR
cymoxanil+ mancozeb (Curzate)	R	R	R
dimethomorph + mancozeb (Acrobat, Invader)	R	R	R
fenamidone + mancozeb (Serenio)	R	R	R
metalaxyl-M + mancozeb or fluazinam (Ridomil, Fubol, Epok)	R	R	R
propamocarb-HCl+fluopicolide (Infinito)	R	R	NR
propamocarb-HCl + mancozeb or +chlorothalonil (Tattoo)	R	R	R
mandipropamid (Revus)	R	R	R
propamocarb-HCl+ fenamidone (Consento, Tyfon)	R	R	R

R: Registered;
NR Not registered

Kartoffelskimmel

Registreringsnet



■ Skimmelfund seneste 10 dage
■ Skimmelfund ældre end 10 dage
[Mere information om skimmelfund](#)

Fungicider

[Fungicider og strategier](#)
[Skimmelforsøg, AU, 2003](#)
[Skimmelforsøg, AU, 2004](#)
[Skimmelforsøg, AU, 2005](#)
[Skimmelforsøg, AU, 2006](#)
[Skimmelforsøg, AU, 2007](#)

Sorter og resistens

[Sorter og skimmelresistens](#)
[Skimmelresistens fra Eucablight-forsøg](#)

Ny viden

[Info og artikler fra LC](#)
[Euroblight workshop - læs indlæg](#)
[NJF seminar - læs indlæg](#)
[GILB konference, 2008 - læs indlæg](#)



Aktuelt fra marked

Lidt skimmel i mange marker

Der findes nu lidt skimmel i mange marker, specielt i kørespor for sprøjter og vandingmaskiner. Det betyder, at registreringsnettet er stoppet og ikke længere er dækkende for udbredelsen af skimmel. Det har været skimmelfavorabelt vejr størstedelen af august, så det er vigtigt at afgrøden beskyttes mod knoldskimmel ved ikke at overskride et interval på 7 dage. Hvor det er afgørende at afgrøden holdes helt fri for knoldskimmel anvendes fx. Ranman som har effekt overfor skimmelsporene.

['mindre tekst'](#)

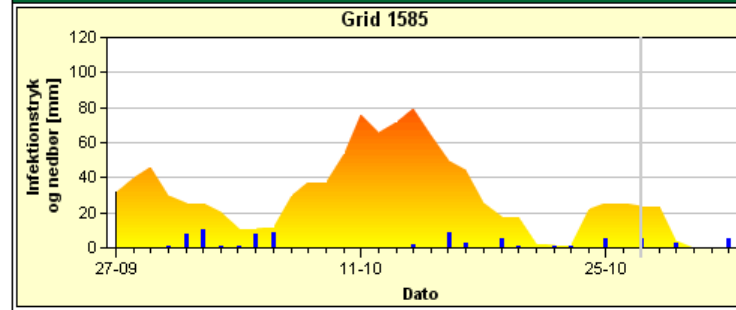
Opdateret 18-08-2008 09:16:00 af Lars Bødker

13. Juli. Risiko for skimmel - specielt i Midt og Nordjylland

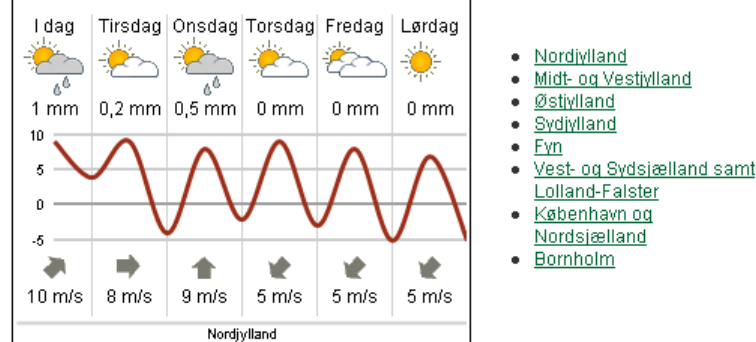
Det har været skimmelfavorabelt i det meste af landet, specielt i Midt- og Nordj ['mere tekst'](#)

Opdateret 13-07-2008 09:27:00 af Jens Grønbech Hansen

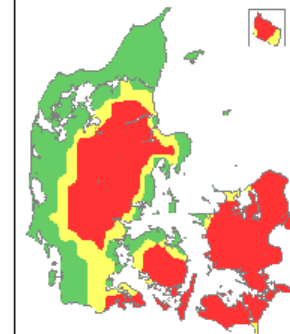
Infektionstryk



Vejrudsigt



Skimmelvejr 27/10



Høj risiko	+10 timer med RH ≥ 88% og Temp ≥ 10°C
Mulig risiko	+10 timer med RH ≥ 86% og Temp ≥ 10°C
Lav risiko	

Andre værktøjer

[Bliver det skimmelvejr imorgen?](#)
[Var det skimmelvejr i sidste uge?](#)
[Kan jeg sprøjte i morgen?](#)
[Kommer der regn i morgen?](#)
[Hvornår?](#)
[Dagens skimmelvejr i Danmark de seneste 25 dage](#)
[Dagens nedbør i Danmark de seneste 25 dage](#)
[Infektionstryk ved forsøg](#)

Use of fungicides for Potato Late Blight - Microsoft Internet Explorer

Address: http://www.euroblight.net/Fungicide/FungicideCountry.asp?CountryID=DK&language=UK

Use of fungicides for Potato Late Blight

[Læs mere om bekæmpelsesstrategier og fungicider](#)




































Basic strategies for use of late blight fungicides

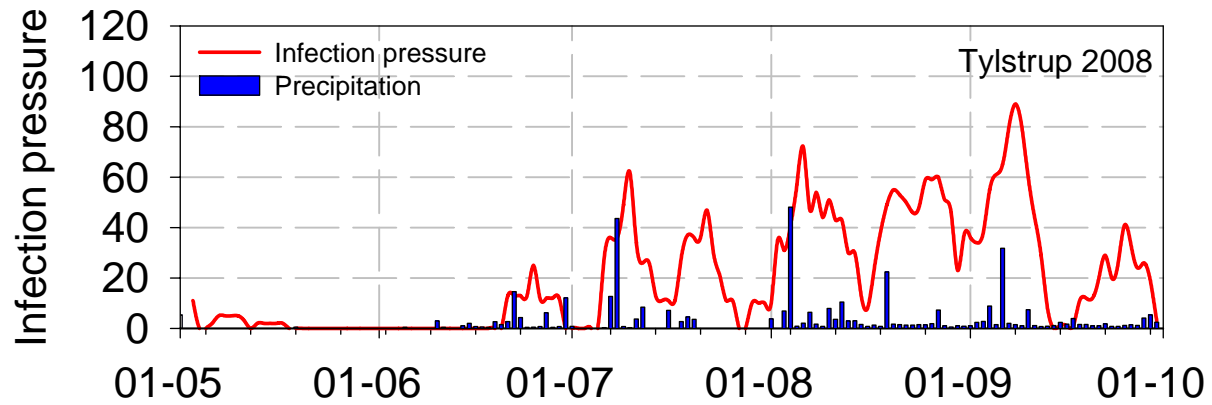
Risk for Late Blight attack	Before row closing	After row closing and until flowering, BBCH 60. New leaves still expanding	After flowering and until senescence. Full expanded leaves	Senescence. Last treatments including tuber blight protection
Low risk	Dithane/Tridex	Dithane/Tridex	Dithane/Tridex	Dithane/Tridex (Hvis ingen skimmel og direkte forarbejdning)
High risk	Curzate M68	½ Ranman+ ½ Dithane Shirlan Electis Acrobat WG Curzate M68 Ranman Revus	½ Ranman+ ½ Dithane Shirlan Electis Ranman Revus Ridomil Gold Tyfon	½ Ranman+ ½ Dithane Shirlan Ranman
Treatment carried out after infection	Curzate M68 Tyfon	Tyfon Curzate M68 Tyfon	Curzate M68 Tyfon Ridomil Gold	Ranman

Fungicides efficacy against Late Blight and mode of action (Data from the Euroblight database)

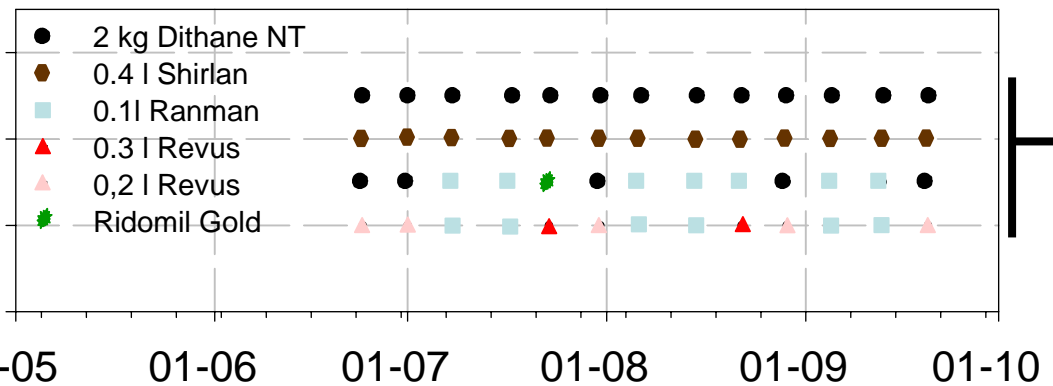
Product	Effectiveness				Mode of action			Rainfastness	Mobility in the plant
	Leaf blight	New growth	Stem blight	Tuber blight	Protectant	Curative	Anti sporulant		
Acrobat WG	●●●	?	●●	●●	●●●	●	●●	●●●	Translaminar + Contact
Curzate M68 WG	●●●	?	●●	0	●●●	●●	●	●●	Translaminar + Contact
Dithane NT	●●	?	●	0	●●	0	0	●●	Contact
Electis	●●●	?	●	●●	●●●	0	0	●●●	Contact + Contact
Ranman	●●●	●●	●	●●●	●●●	0	0	●●●	Contact
Revus	?	?	?	?	?	?	?	?	Translaminar
Ridomil Gold MZ Pipete	●●●	●●	●●	N/A	●●●	●●●	●●●	●●●	Systemic + Contact
Shirlan	●●●	?	●	●●●	●●●	0	0	●●●	Contact
Tridex DG	●●	?	●	0	●●	0	0	●●	Contact
Tyfon	●●●	●●	●●	●●	●●●	●●	●●	●●●	Systemic + Translaminar

Links to the Danish Pesticide database, rules and remarks about use of late blight fungicides

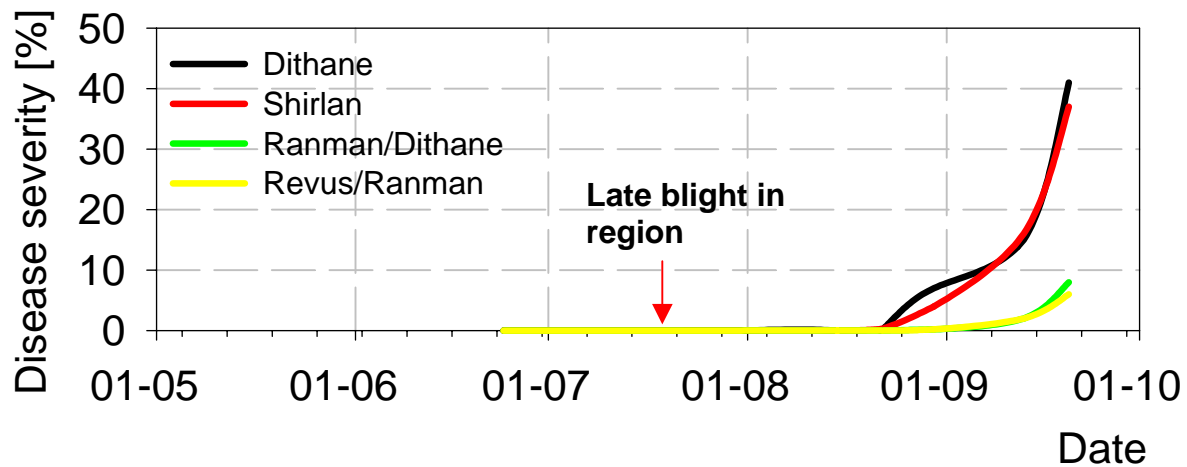
Product	Company	Active ingredient	Normal dosage	Dosage by treatment index	Max. treatments	Treatment limit (days before harvest)	Distance (m) to water	Remarks and resistance strategy
Acrobat WG	  	dimethomorph - 75 g/kg mancozeb - 667 g/kg	2,00 kg/ha	1,68 kg/ha		14	20	
Curzate M68 WG	  	cymoxanil - 45,2 g/kg mancozeb - 680 g/kg	2,0-2,2 kg/ha	1,47 kg/ha	7	14	20	
Dithane NT	  	dithiocarbamates - 750g/kg	2,00 kg/ha	2,00 kg/ha		7	20	
Electis	  	mancozeb - 667 g/kg zoxamide - 86 g/kg	1,80 kg/ha	1,37 kg/ha	10		10	
Ranman	  	cyazofamid - 400 g/l	0,20 l/ha	0,20 l/ha	6	7	2	
Revus	  	mandipropamid - 250 g/l	0,6 l/ha	0,6 l/ha	6	3	2	
Ridomil Gold MZ Pipete	  	mancozeb - 640 g/kg metalaxyl-M - 40 g/kg	2,00 kg/ha	1,21	1	7	10	
Shirlan	  	fluazinam - 500 g/l	0,40 l/ha	0,40 l/ha		7	20	
Tridex DG	  	dithiocarbamates - 750 g/kg	2,0 kg/ha	2,0 kg/ha		7	20	
Tyfon	  	fenamidone - 75 g/l propamocarb-HCl - 375 g/l	2,00 l/ha	1,59 l/ha	6	7	10	



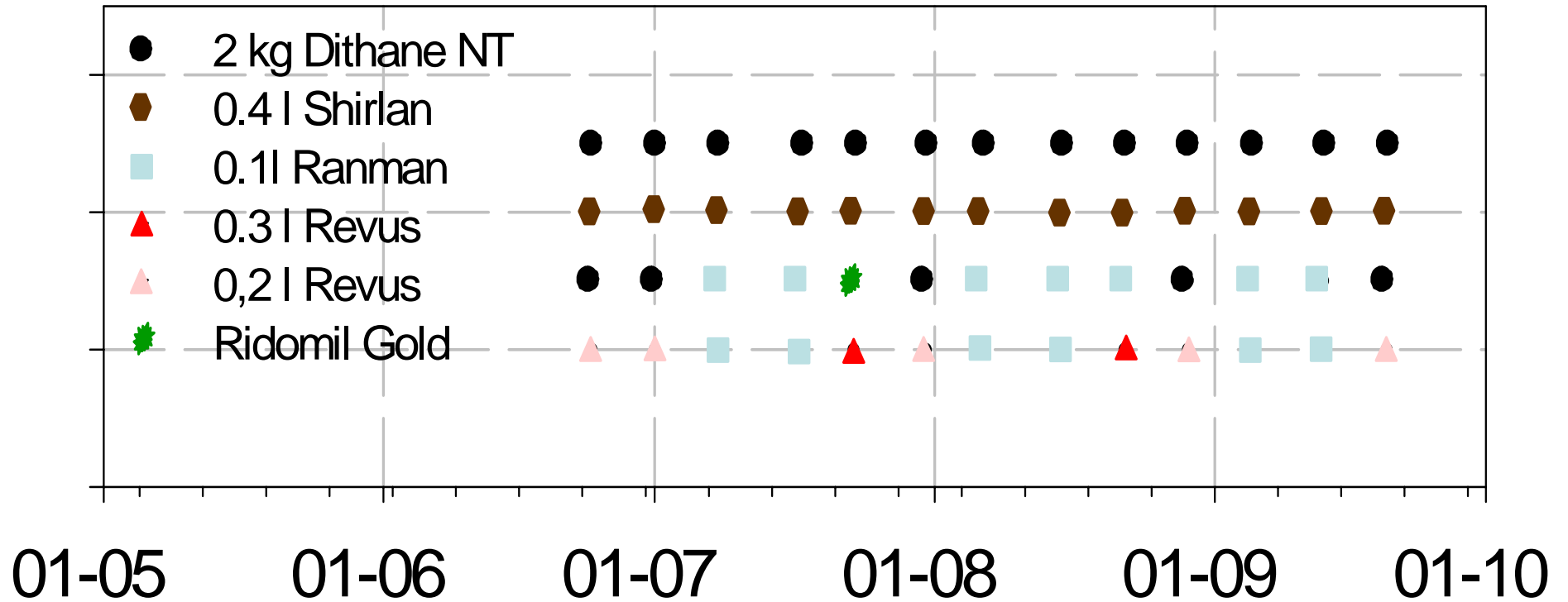
**Fungicide use =
Number of normal dosages**



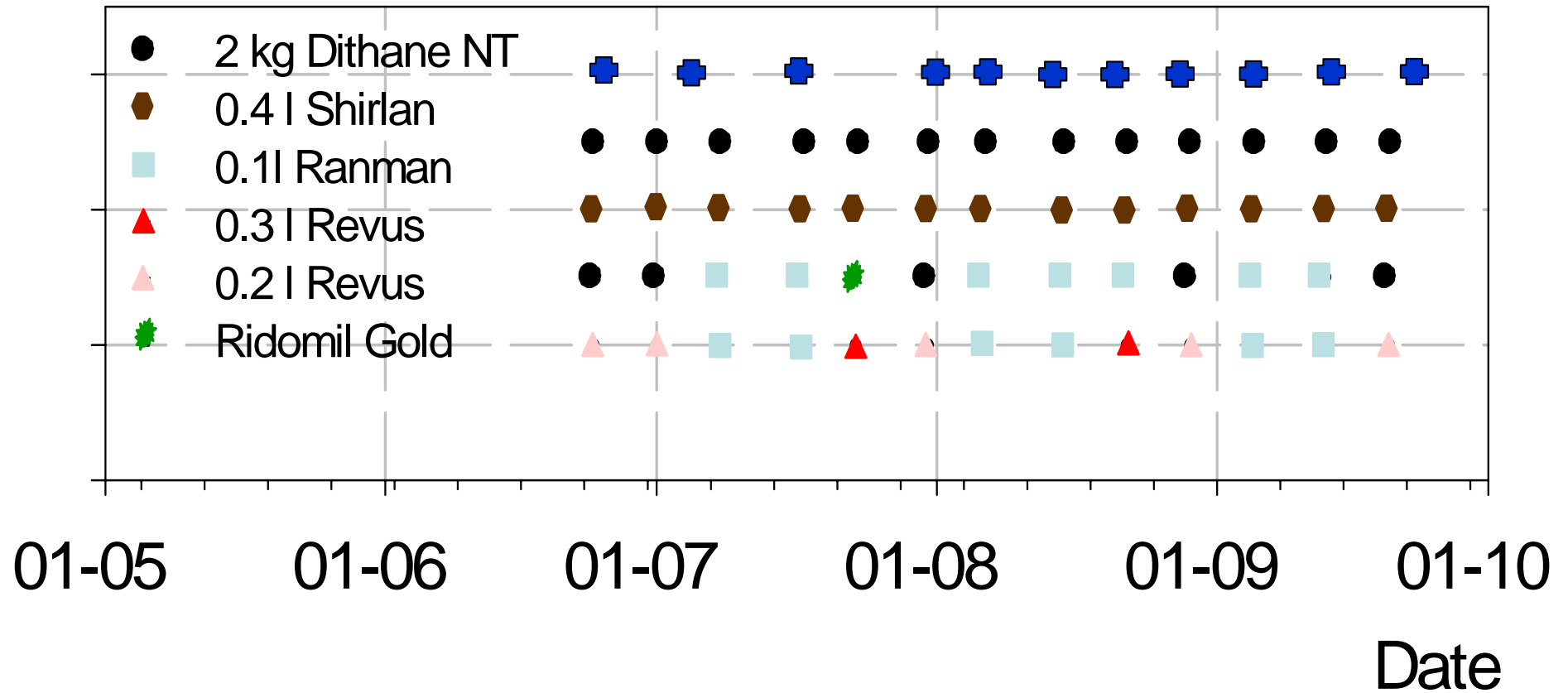
13
 13
 10,7
 5,5



Test of control strategies, Tylstrup, 2008



☒ = recommended by ProPhy Thanks to Wim Nugteren



Use of DSSs

Belgium	Warning based on Guntz-Divoux
Czech Republic	Negative prognosis
Denmark	PlanteInfo
UK	Blight-Watch and Plant Plus
Estonia	Jögeva PBI web system
France	Mileos (MilPV + MildiLIS)
Germany	PhytophthoraModel Weihenstephan, ISIP
Netherlands	ProPhy and Plant Plus
N. Ireland	DARD Blight-Net
Norway	VIPS
Russia	Plant Plus, VNIIF-3 and SimCast+VNIIF-3
Sweden	(Plant Plus)
Switzerland	PhytoPRE+2000



Thank you for your attention!



EuroBlight

EU.NET.ICP & EUCABLIGHT
Potato Late Blight Network For Europe



Precipitation 2006-2008

Precipitation at stations in DK, UK and NL

