

EARLY OUTBREAK OF POTATO LATE BLIGHT IN DENMARK 2011

BENT J. NIELSEN, JENS GRØNBECH HANSEN & LARS BØDKER



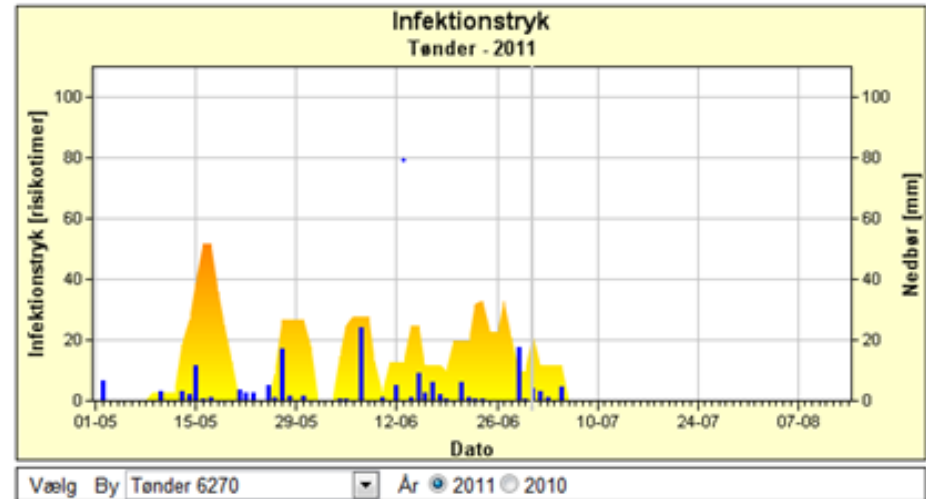
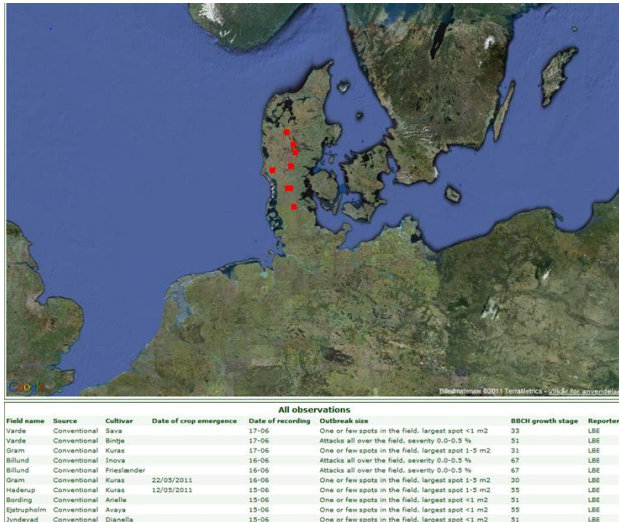
EARLY OUTBREAK IN DENMARK 2011

- Relatively warm/dry April and first half of May
- Many days with rain 2nd half of May
- Early emergence already from mid May

- Periods with high infection pressure May-June

- First outbreak of LB South and Mid Jutland 15 June
- Start of sprayings on established attacks
- LB was finally controlled but with high fungicide input

LB monitoring and warning systems in Denmark

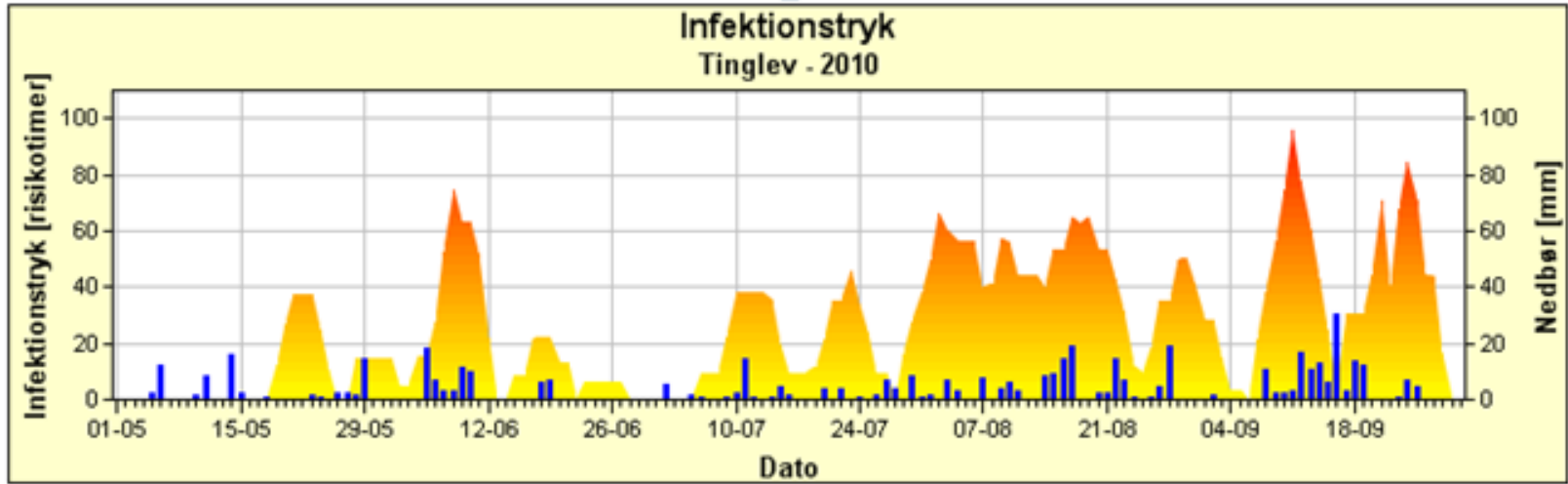


Recording of first attacks
location, source, variety,
date of recording,
outbreak size, BBCH
Verified.

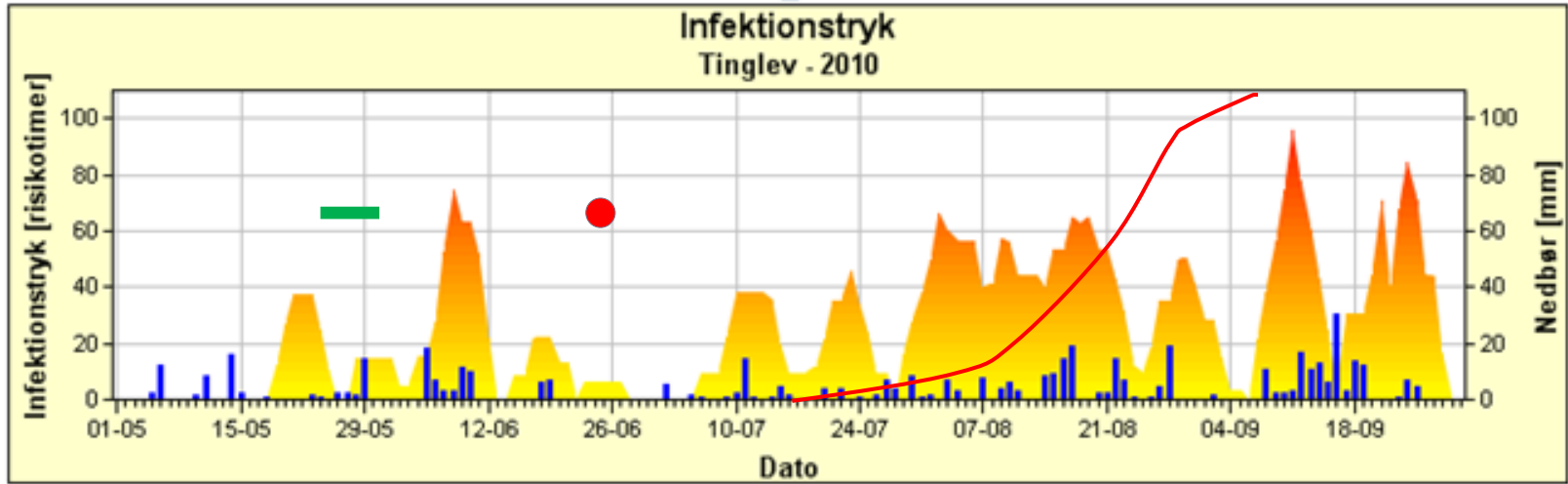
Calculated infection pressure (HSPO):

- Temperature > 10C
- RH > 88 %

Infection pressure Southern DK 2010 and 2011



Infection pressure Southern DK 2010 and 2011

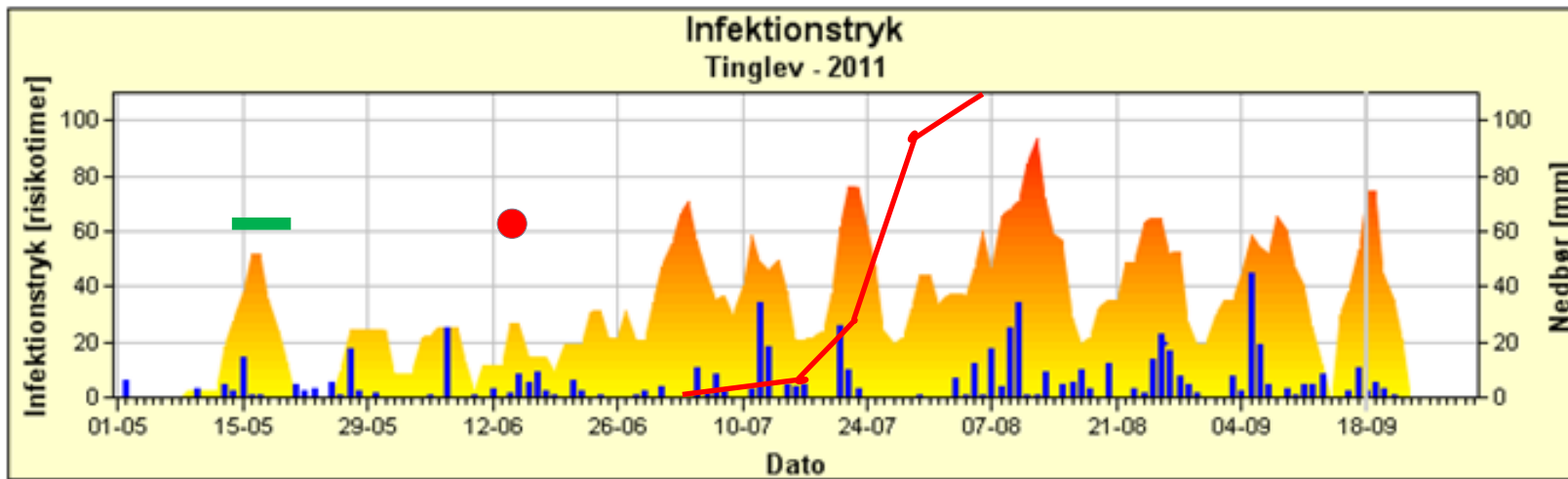
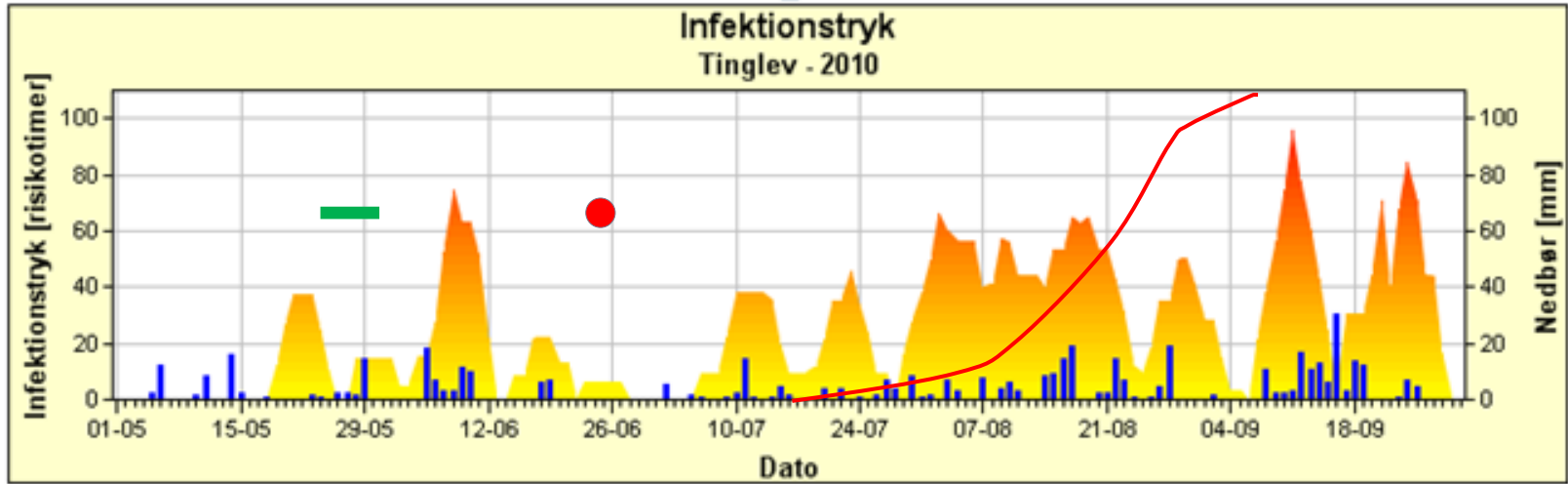


Emergence

1. Outbreak

LB in untreated field plots

Infection pressure Southern DK 2010 and 2011

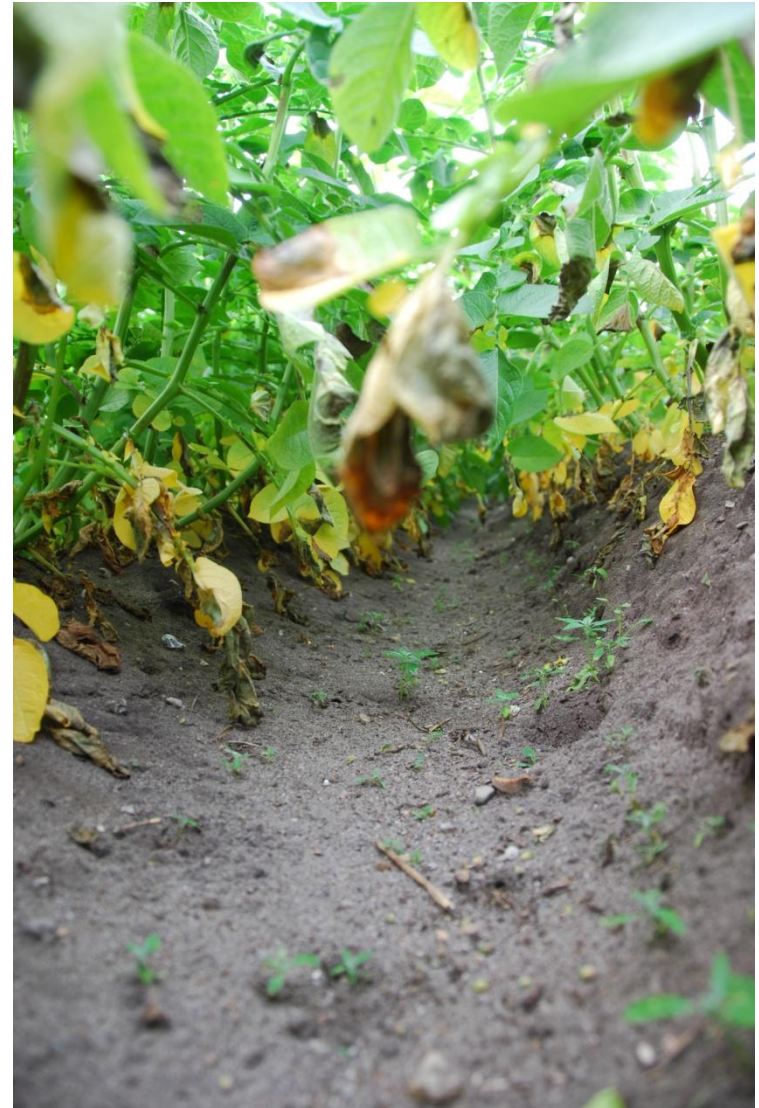


Emergence

1. Outbreak

LB in untreated field plots

South Denmark
15 June 2011
(Jyndevad)

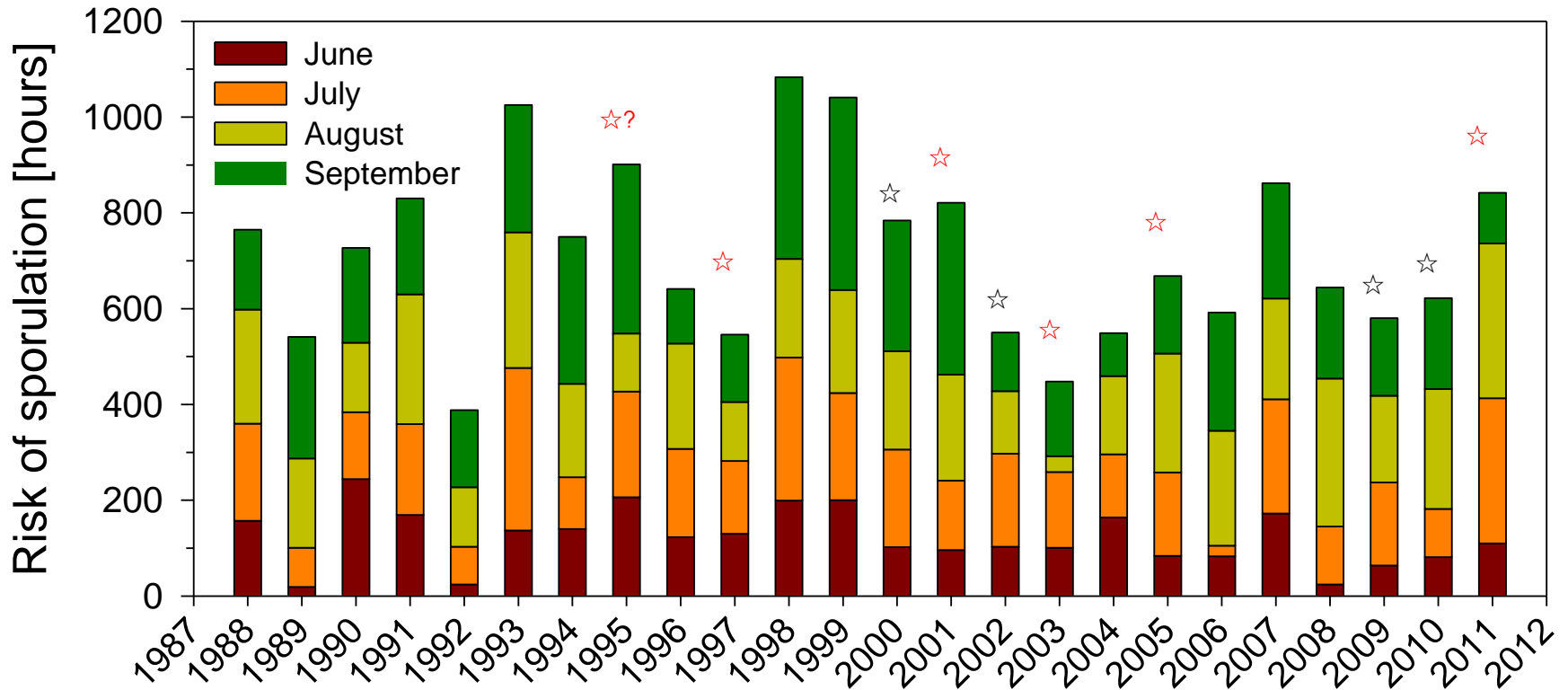


Many lesions on lower leaves
Spread by rain splash



Mid Denmark 15 June 2011,
Kuras (Karup)

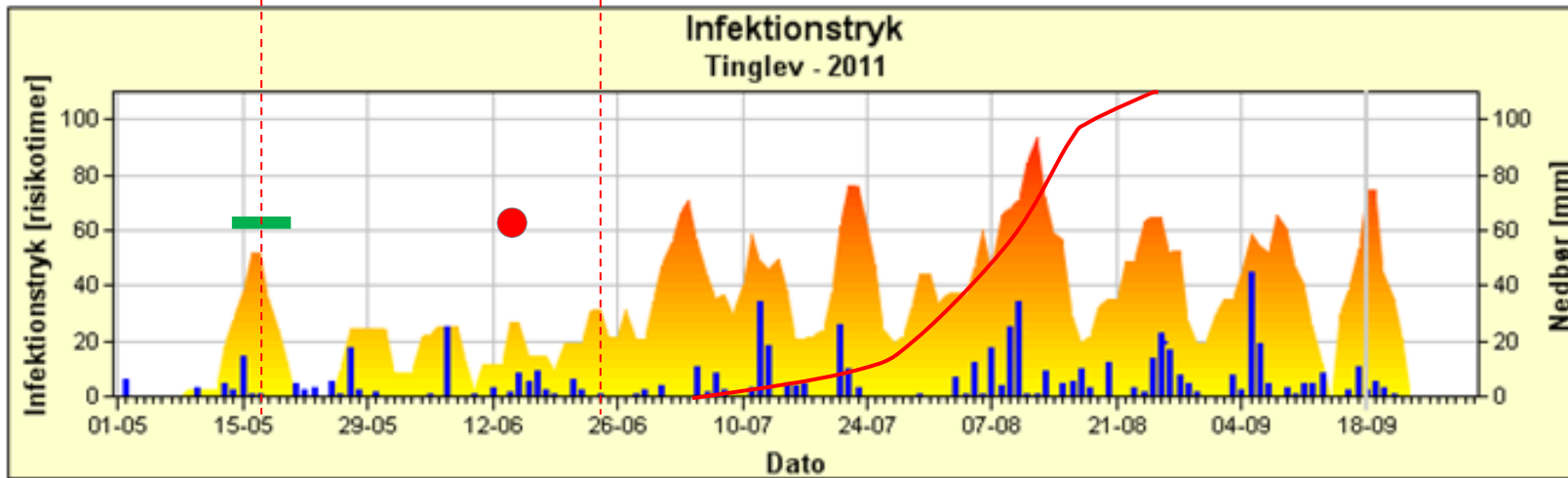
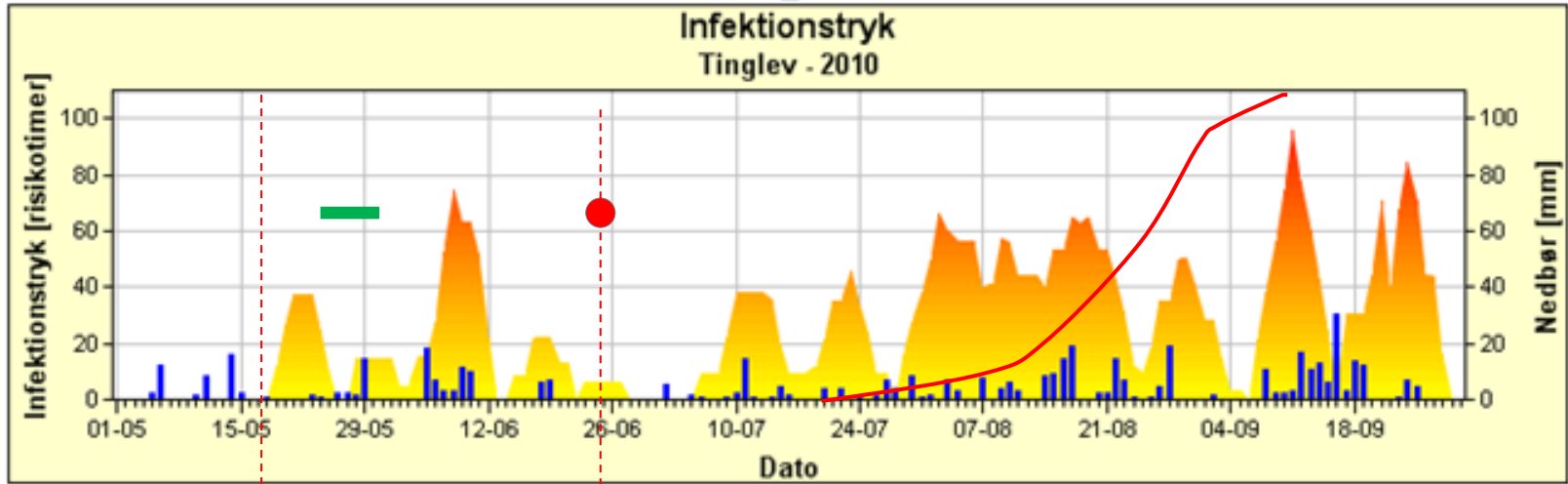
Calculated infection pressure for each month Askov, Denmark



☆ > 3 fields with attacks from Oopores

☆ 1-3 fields with attacks from Oopores

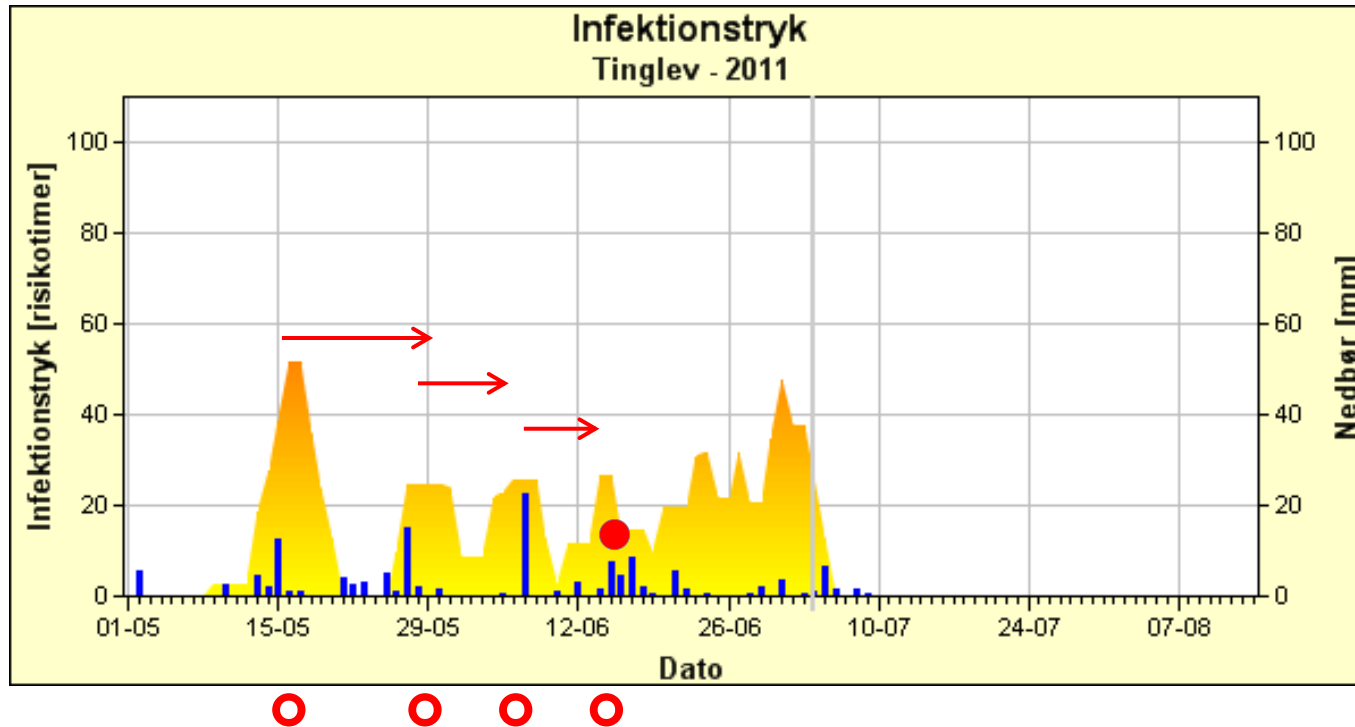
Infection pressure Southern DK 2010 and 2011



Emergence

Favorable conditions late June - July

Possible infections from oospores (o)



Field situation 2011



- Attacks of late blight mid June
- Many fields with attacks mid- late June
- Sprayings 1-2 weeks too late in many fields
- Later LB was controlled with more intensive sprayings

Control of late blight in field trials 2011

	28-jun	05-jul	12-july	19-july	26-july	02-aug	10-aug	17-aug	24-aug	01-sep	09-sep	16-sep	% late blight		
	1	2	3	4	5	6	7	8	9	10	11	12	Flakkebj. 30-aug	Sunds 01-sep	Dr.Lund 01-sep
1	untr	untr	untr	untr	untr	untr	untr	untr	untr	untr	untr	untr	98,8	100,0	86,0
2	Dithane	Dithane	Dithane	Dithane	Dithane	Dithane	Dithane	Dithane	Dithane	Dithane	Dithane	Dithane	26,8	3,0	13,0
3	S	S	0,4Re	0,4Re	0,4Re	0,4Re	0,4Re	0,4Re	S	S	S	S	7,0	0,5	8,0
4	S	S	0,4Re	RIDOMIL	0,4Re	0,4Re	0,4Re	0,4Re	0,4Re	S	S	S	0,9	0,6	10,0
5	S	S	Re	Re	Re	Re	Re	Re	S	S	S	S	4,5	0,5	8,0

Spray date for Flakkebjerg. (The blocks started 8-11 days earlier at Sunds and Dronninglund)

Development of late blight 7-14 days later at Sunds and Dronninglund

Dithane 2,0 Dithane NT

S 0,4 Shirlan

0,4Re 0,4 Revus

Re 0,6 Revus

RIDOMIL 2,0 Ridomil Gold

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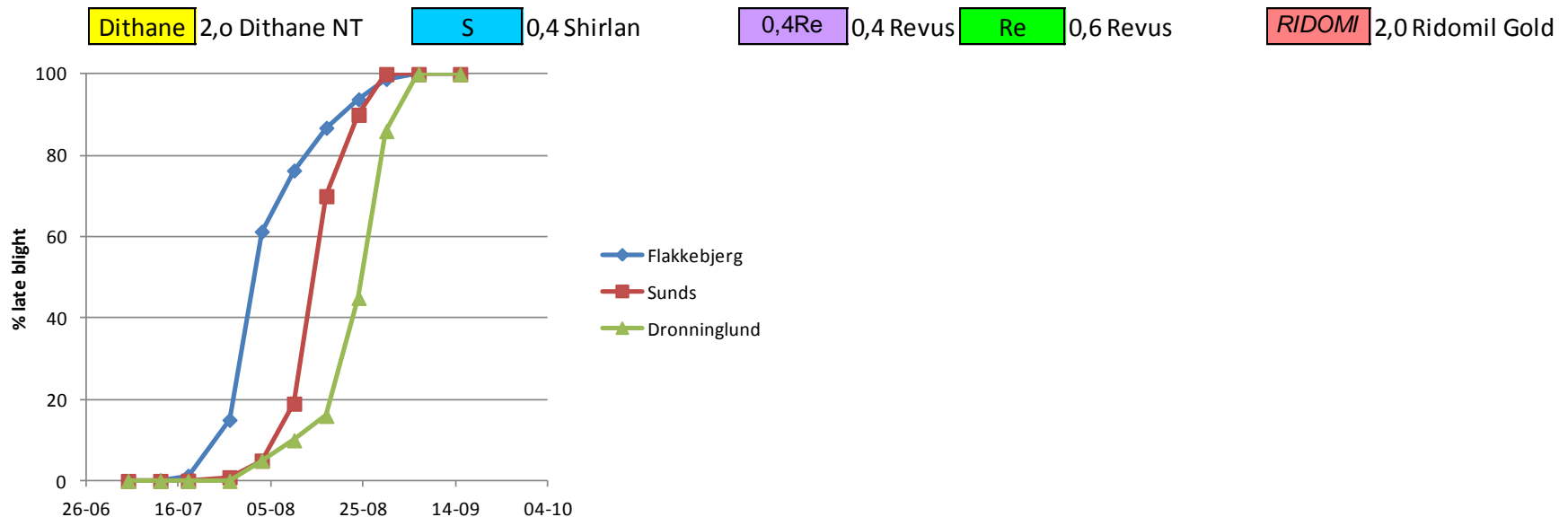
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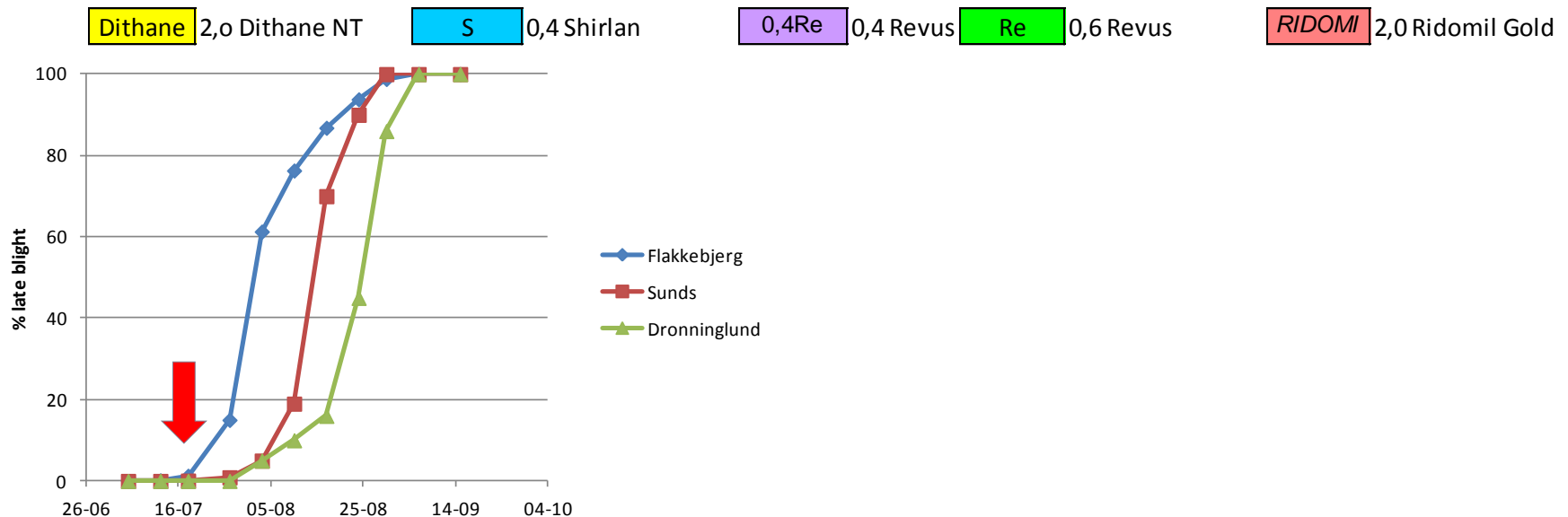


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Development of late blight 7-14 days later at Sunds and Dronninglund



Field trials with different dose models 2011

2011 (Kuras)		Flakkebjerg		Sunds		Dronninglund	
		%St.Dose	% late blight 05-sep	%St.Dose	% late blight 09-sep	%St.Dose	% late blight 01-sep
1	2,0 Dithane NT	100	20	100	3	100	2
2	0,6 Revus/0,2 Ranman	100	3,3	100	0,1	100	1
3	0,3 Revus/0,1 Ranman	50	6	50	1	50	2
4	Dosemodel 1	93	2,3	89	0,1	94	2
5	Dosemodel 2	73	2,8	75	0,2	69	1
6	Dosemodel 3 (+Ridomil)	93	0,8	95	0,1	96	2

Isd(95)

1,3

Dosemodel: dose x interval depends on prescense of blight in the area, infectioin pressure and variety (Arras, 2010)

Recommends lower dose especially in begining of season

Dosemodel 2 reduce dose further

%St.Dose: Fungicide use relative to standard, full dose

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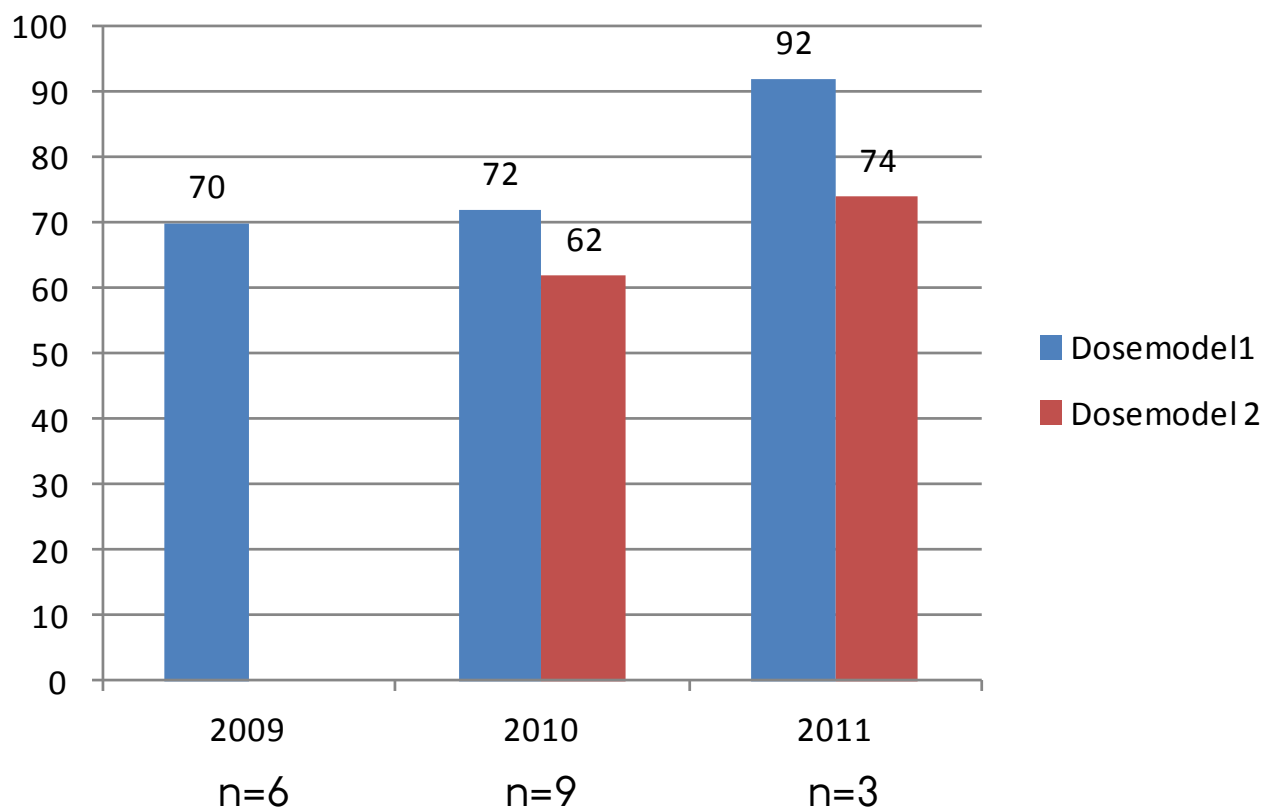
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Isd(95)

1,3

%St.Dose: Fungicide use relative to standard, full dose

Fungicide use in dose models relative to standard, full dose (=100)



Dose models gave same control as standard full dose.
Same economy as standard Dithane (2009-2010)



2011 summary....

- Early emergence under relatively humid conditions
- Infections from oospores/soil:
 - First (few) unnoticed oospore infections mid May
 - Later infections from soil early-mid June
- Secondary infections (2-3 cycles) starting mid May – early June leading to first severe attack 15 June
- Favorable conditions late June- September (!)

2011



- Many farmers started spraying on established infections
- Blight was finally controlled but with high fungicide input (30%-50% more, in some fields 100% more)
- Ridomil was used in many fields (only one application allowed). Still seems to work. But lack of other good curative products.

2012 ?

- Effective strategies under high disease pressure
(dose x interval, curative actions)
- Improvements in the calculated infection pressure
(more operational information, better explanation)
- Analysis of oospore/soil infection/early outbreaks.
(Models/recommendations)
- Analysis of population structure (new genotypes?)

