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DANISH INTEGRATED PEST MANAGEMENT STRATEGIES IN OILSEED RAPE

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GHITA SENDS HER REGARDS…

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MOTTO FOR CROP PROTECTION IN DENMARK

As little as possible,
but as much as necessary!

MECHANICAL WEED CONTROL IN WINTER OSR

24 September 2013

7 April 2014

IPM ON THE WEB WWW.DANSK-IPM.DK

Planteavl

- Afgrøder
- Biavl
- Dræning
- Gødskning
- Havebrug
- Jordbearbejdning
- Jordbund
- Konsulentsiden
- Landsforsøg og resultater
- Miljø
- Ny udbyttefremgang
- Plantekongres
- **Planteværn**
  - Behandlingsindeks
  - Bekæmpelsesmidler
  - **Integreret plantebeskyttelse - IPM**
    - IPM - Demobrug
  - Nedsæt pesticidforbruget i gartneri og frugtavl
  - Opfølgningskursus til sprøjtebevis/-certifikat
  - Pesticidhåndtering
  - Pesticidplan
  - Plantesygdomme

Integreret plantebeskyttelse - IPM

IPM handler især om at opnå tre ting.

- At forebygge problemer med ukrudt, sygdomme og skadedyr
- At sprøjte efter behov
- At få bedre økonomi - ikke mindst på sigt

Vigtige IPM-redskaber er bl.a. et godt sædskifte, resistente sorter, varslinger, opsyn i marken, nedsatte doseringer, radrensning og at undgå resistens over for midlerne.

Bliv et hak bedre til IPM, når du dyrker meget vintersæd

Inspirationsark: Fordele og ulemper ved tidlig såning af vintersæd

Video: Hellere høste gode penge end højt udbytte

Inspirationsark: Forebyg resistens mod ukrudtsmidler

Artikel: IPM i vintersædsbaserede sædskifter

Inspirationsark: Lav dine egne sortsblandinger

Inspirationsark: Hvilke sprøjtninger er mest rentable?

Nyheder

Nye videoer:

- Ned med afdriften - konventionel marksprøjte
- Undgå afdrift fra Danroil-sprøjten
- Brug spaden og tjek rødderne
- Væselhale - lusket og eksplosiv
- Hvordan stopper vi ukrudtsgræsserne?
- Hellere høste gode penge end højt udbytte
- Hvordan takler du Septoria i år?

Vil bruge programmet Skimmelstyring på 500 ha kartofler
Jørn Willumsen er i sine fem år som IPM-vært blevet dus med programmet

Tilmeld nyhedsbrev

Undgå afdrift

fra Danfoil-sprøjten
Se video

- konventionel marksprøjte
Se video

Ny pjece om IPM

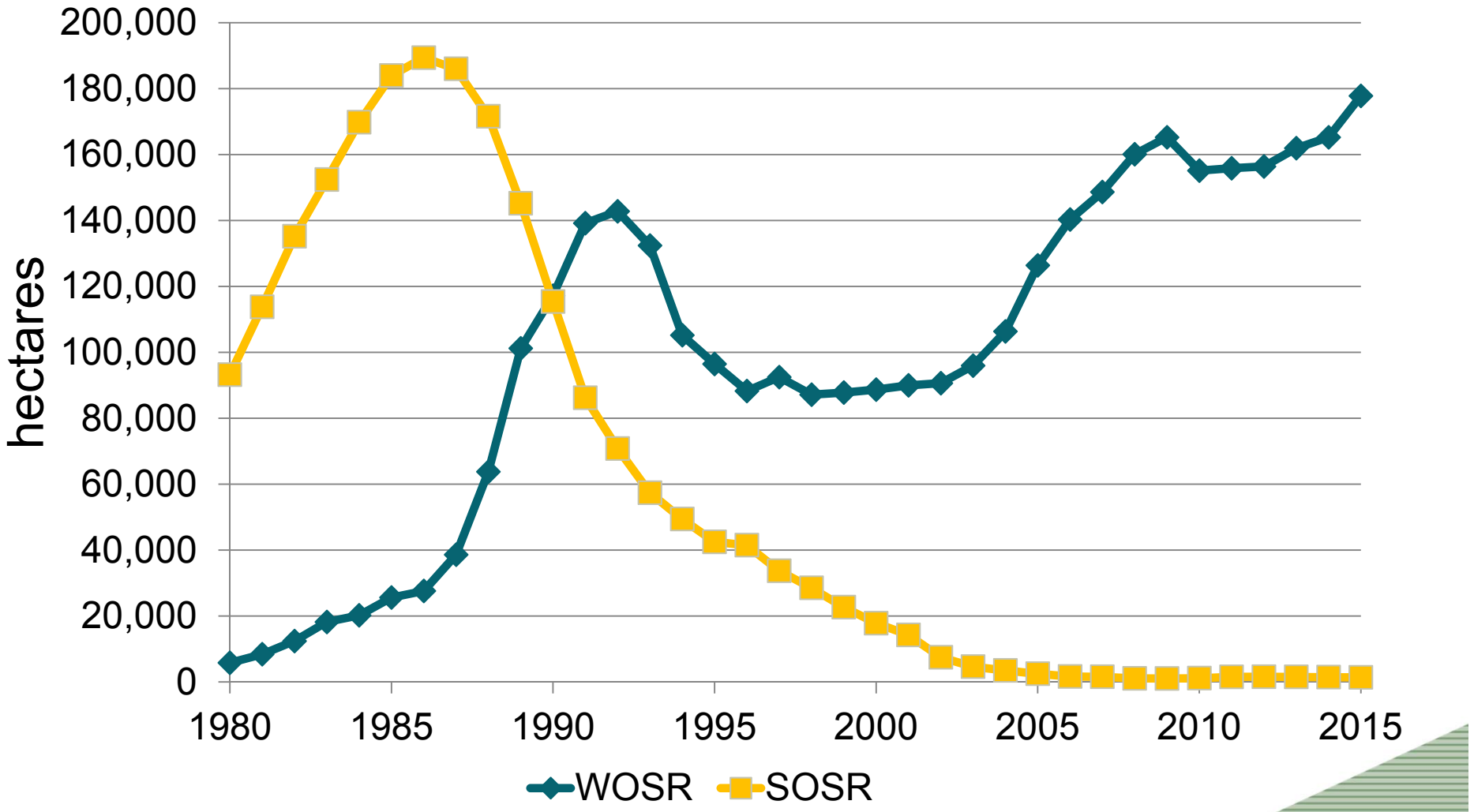
Læs, hvordan landmænd og rådgivere kobler IPM med praktiske muligheder og god økonomi. Tjek dit eget IPM-niveau.

Download pjecen eller bestil den i Nethutikken

IPM INSPIRATION SHEETS

DANISH OILSEED RAPE AREAS 1980-2015

5-YEAR MOVING AVERAGES



Source: Danish AgriFish Agency

OILSEED RAPE PEST RANKING IN DENMARK

Pest Common name (*Scientific name*) Danish name	Ranking in DK 1-5 stars	Pct. profitable sprays
Slugs Agersnegl / iberisk skovsnegl	****	0-100
Cabbage root fly (*Delia radicum*) Kålflue	*	No registered products
Peach-potato aphid (*Myzus persicae*) Ferskenbladlus	*	No registered products
Cabbage stem flea beetle (*Psylliodes chrysocephala*) Rapsjordloppe	*****	20-80
Pollen beetle (*Meligethes aeneus*) Glimmerbøsse	***	50
Cabbage seed weevil (*Ceutorhynchus assimilis*) Skulpesnudebille	**	Rarely a problem
Brassica pod midge (*Dasineura brassicae*) Skulpegalmyg	**	Rarely a problem

OSR INSECTICIDES REGISTERED IN DK

Active ingredient Example product name	Registered against	Tax / ha GBP*	Farmer cost / ha GBP*
lambda-cyhalothrin Karate 2,5 WG	CSFB, (PB), CSW, BPM	6,7-10	10-15
tau-fluvalinate Mavrik 2F	CSFB, PB, CSW, BPM	6,6	12
alpha-cypermethrin Fastac 50	(PB), CSW, BPM	9,0	10
thiacloprid Biscaya OD 240	PB, CSW	3,8	15
indoxacarb Avaunt	PB	6,7	17
pymetrozin Plenum 50 WG	PB	1,0	12

*) Based on use of labelled dosages against relevant pests in OSR
(PB): Resistance in pollen beetles common in Denmark

Source: Danish EPA and www.middeldatabasen.dk

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NEONICOTINOID DEROGATION DK 2015

- SEGES applied for derogation in March 2015 on behalf of Danish farmers
  - Main justifications:
    - Prevention/delay of pyrethroid resistance – no alternatives to pyrethroids against CSFB
    - Economic losses for farmers if unsatisfactory control
- Danish EPA decision in April 2015
  - Two products:
    - Cruiser Raps (thiamethoxam) – 2.1 g a.i. per kg seed
    - Modesto FS 480 (clothianidin+beta-cyfluthrin) – 5 g clothianidin per kg seed
  - 120 day rule derogation for treatment 1 June to 15 September
- Estimated 95 per cent of OSR seed was treated
- SEGES has applied again in January 2016

CABBAGE ROOT FLY (*DELIA RADICUM*)

- An increasing problem in Denmark
- Three generations per year
- Third generation in Sept-Oct can attack OSR

Photos: Ghita Cordsen Nielsen

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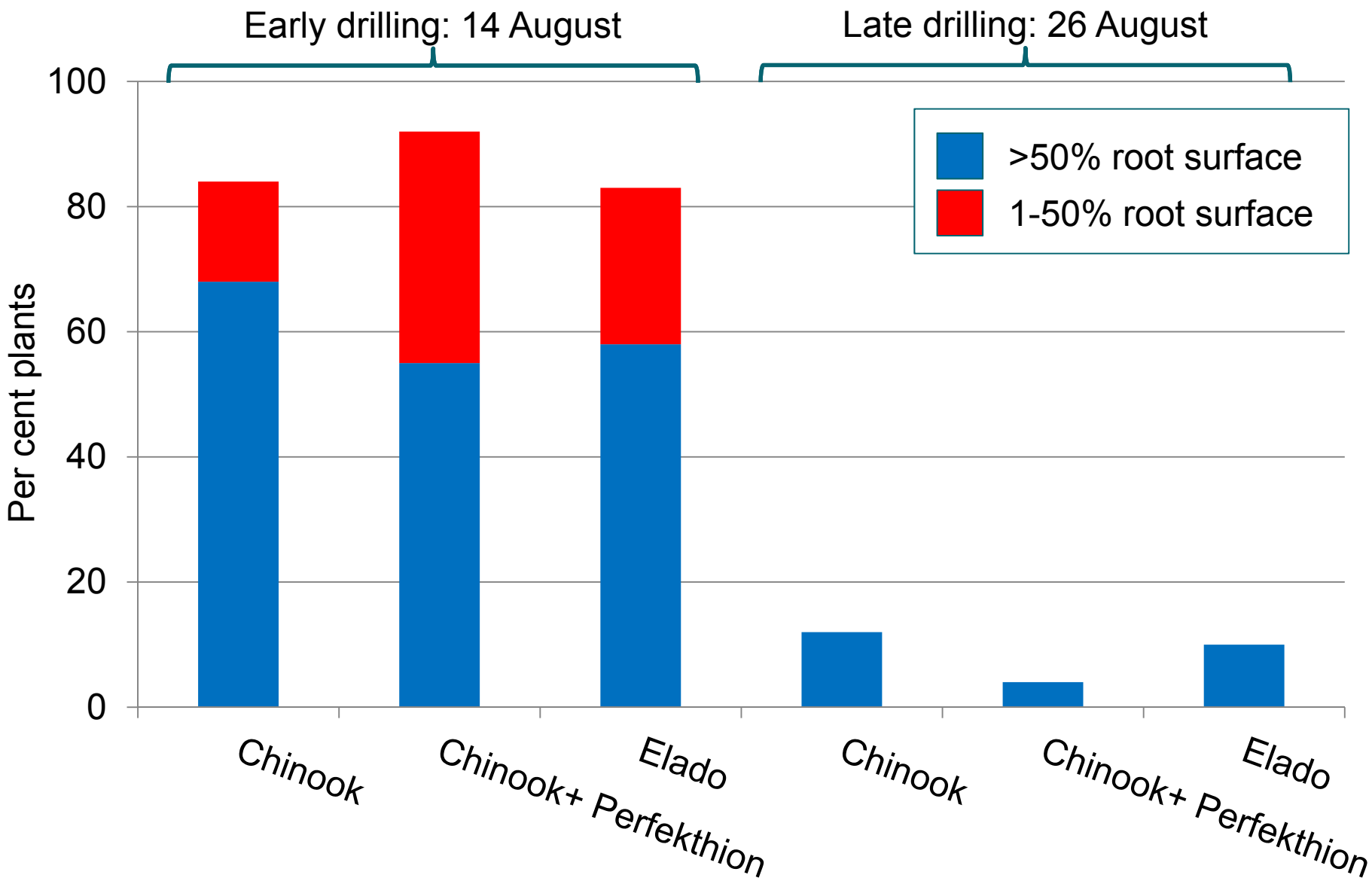
Cabbage root fly larvae
Photo 25-09-2014, Jacob Møller, Landbonord

‘Carryover’ effects from autumn attacks of cabbage root fly, spring 2015

Photo: Ghita C. Nielsen

CABBAGE ROOT FLY – NEONICOTINOID TRMT



Source: Abteilung Agrarentomologie Uni Göttingen / LWK Niedersachsen

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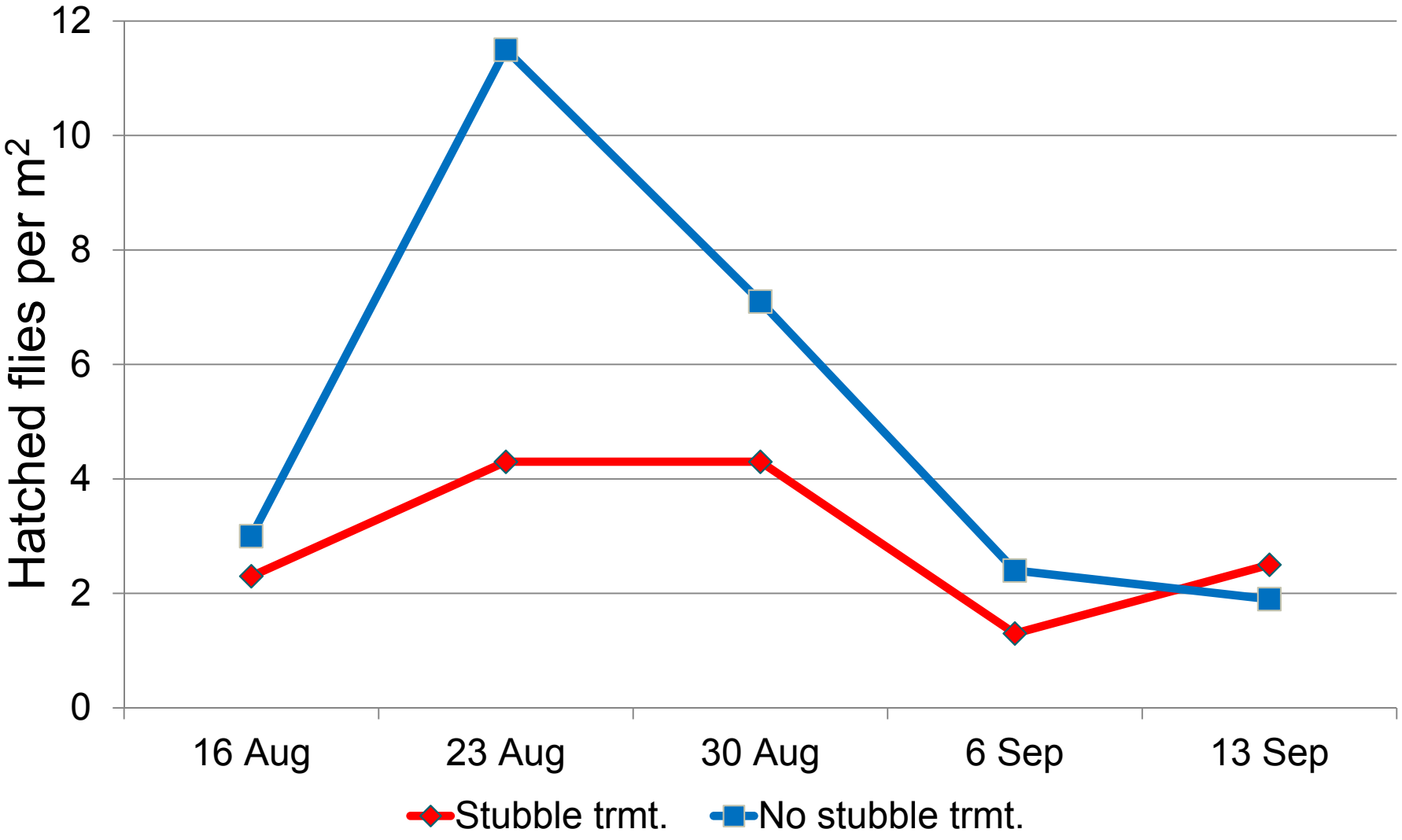
CABBAGE ROOT FLY – STUBBLE CULTIVATION



Source: Abteilung Agrarentomologie Uni Göttingen

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CABBAGE ROOT FLY

- Favoured by early drilling – flies can more easily locate bigger plants
- Ploughing favours attack. Flies prefer laying eggs in ‘clean soil’ without plant residue
- Stubble cultivation suppresses hatching – may affect neighboring fields
- Seed dressing with neonicotinoids has only small effect
- Spraying against adults has no effect – more harm to beneficials than on CRF
- We might face a bigger problem in the future

PEACH-POTATO APHID (*MYZUS PERSICAE*)

- Not problematic in itself
- Transfers Turnip Yellows Virus (TuYV)
- Monitoring shows that TuYV is common in DK

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TURNIP YELLOWS VIRUS IN DANISH OSR

Year	No. of fields	Per cent plants with TuYV	
		Unsprayed	Sprayed*
2011	14	12 (2-34)	3 (0-12)
2012	20	44 (3-94)	51(23-100)
2013	22	9 (0-49)	12 (0-35)

*) Pyrethroid spray directed towards CSFB
( ) = variation in attack
No yield loss data available

Source: Danish monitoring network

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CONTROL OF TUYV

- Spraying with pyrethroids directed towards CSFB not effective
- Pyrethroid resistance in peach potato aphid
- No other chemical registrations in sight
- Seed treatment with neonicotinoids has effect
- Can we breed for resistant/tolerant varieties?

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NATIONAL FIELD TRIALS 2013
SEED TREATMENT AGAINST TUYV, 2 TRIALS

Treatment	Dose ml/kg	Per cent plants with TuYV	OSR yield, tonnes/ha
Untreated		23	4,97
Elado Plus	25,0	9	0,01
Elado Plus	12,5	16	0,04
Cruiser OSR	15,0	30	0,08
LSD		*ns*	*ns*

Source: Danish National Field Trials, 2013

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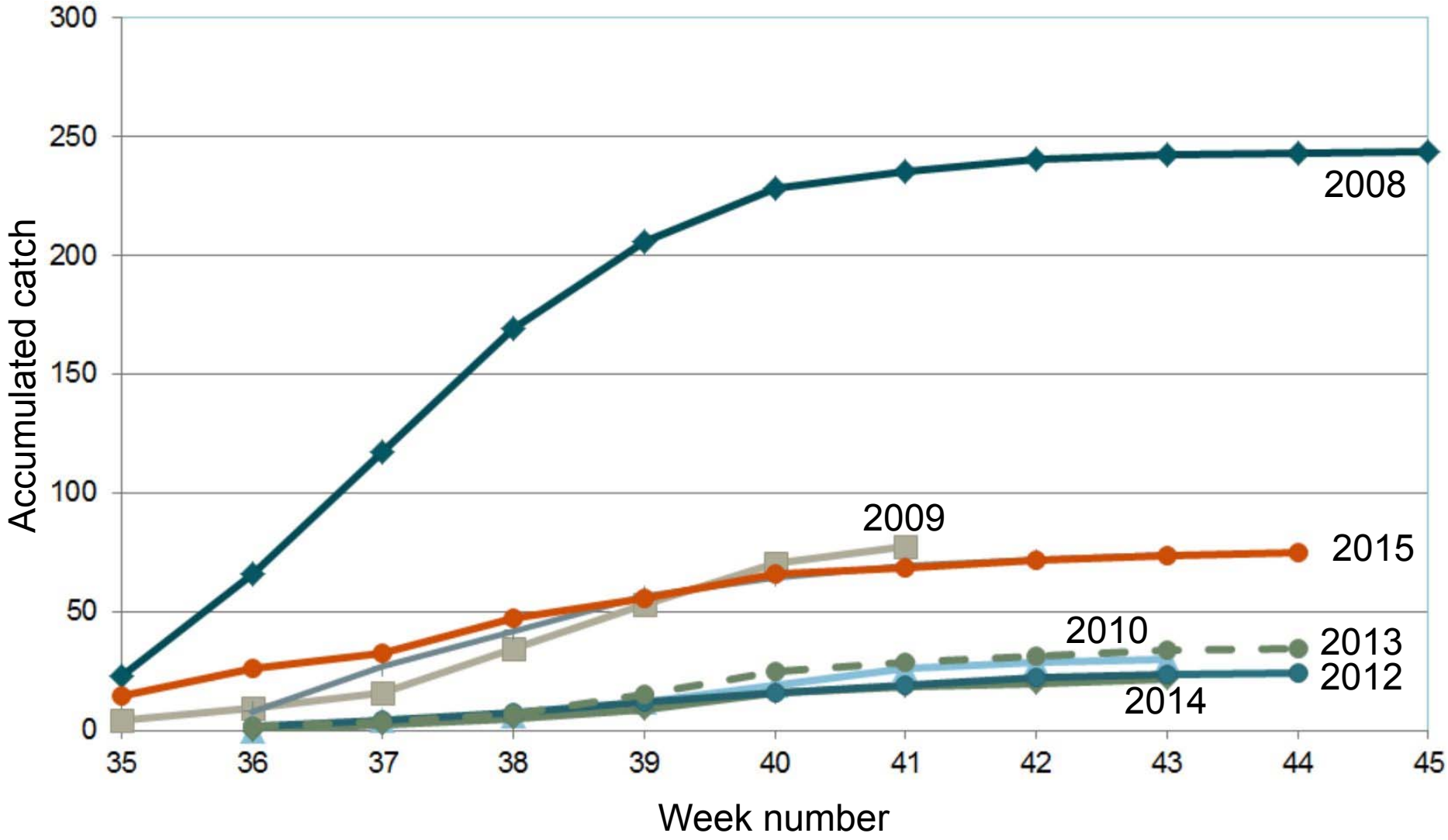
CABBAGE STEM FLEA BEETLE (*PSYLLIODES CHRYSOCEPHALA*)

Photos: Ghita C. Nielsen & Erik Pedersen (top right)

CABBAGE STEM FLEA BEETLE IN SPRING

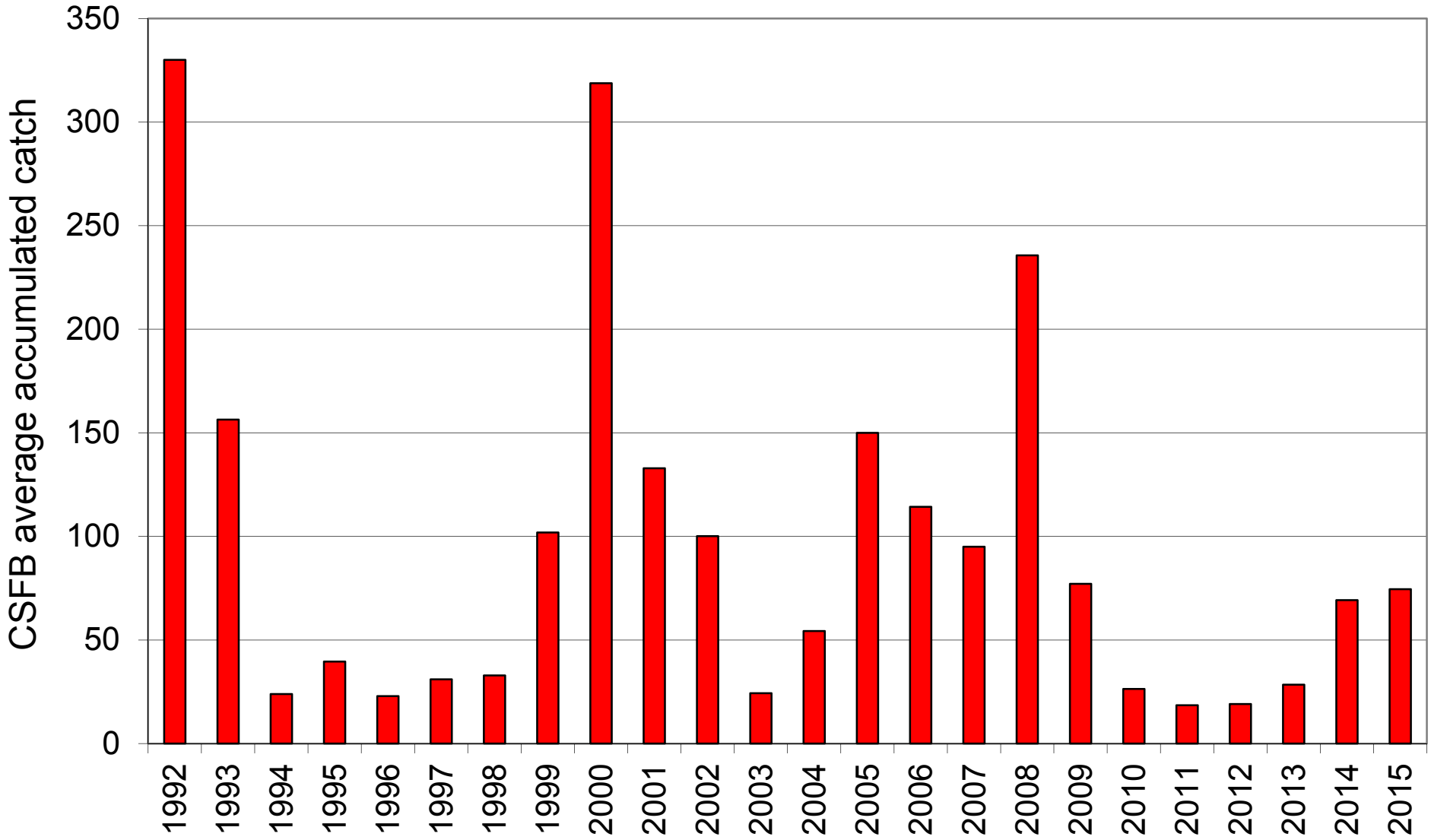

Thresholds:
Adult: 10 per cent leaf area eaten until GS14
Larvae: 25 beetles caught in small trays (380 cm^2)
or 50 beetles caught in larger trays (760 cm^2)
Follow the catch in approx. 75 fields on
www.landbrugsinfo.dk/regnet

CABBAGE STEM FLEA BEETLE MONITORING



Source: www.landbrugsinfo.dk/regnet

CABBAGE STEM FLEA BEETLES 1992-2015



Source: www.landbrugsinfo.dk/regnet

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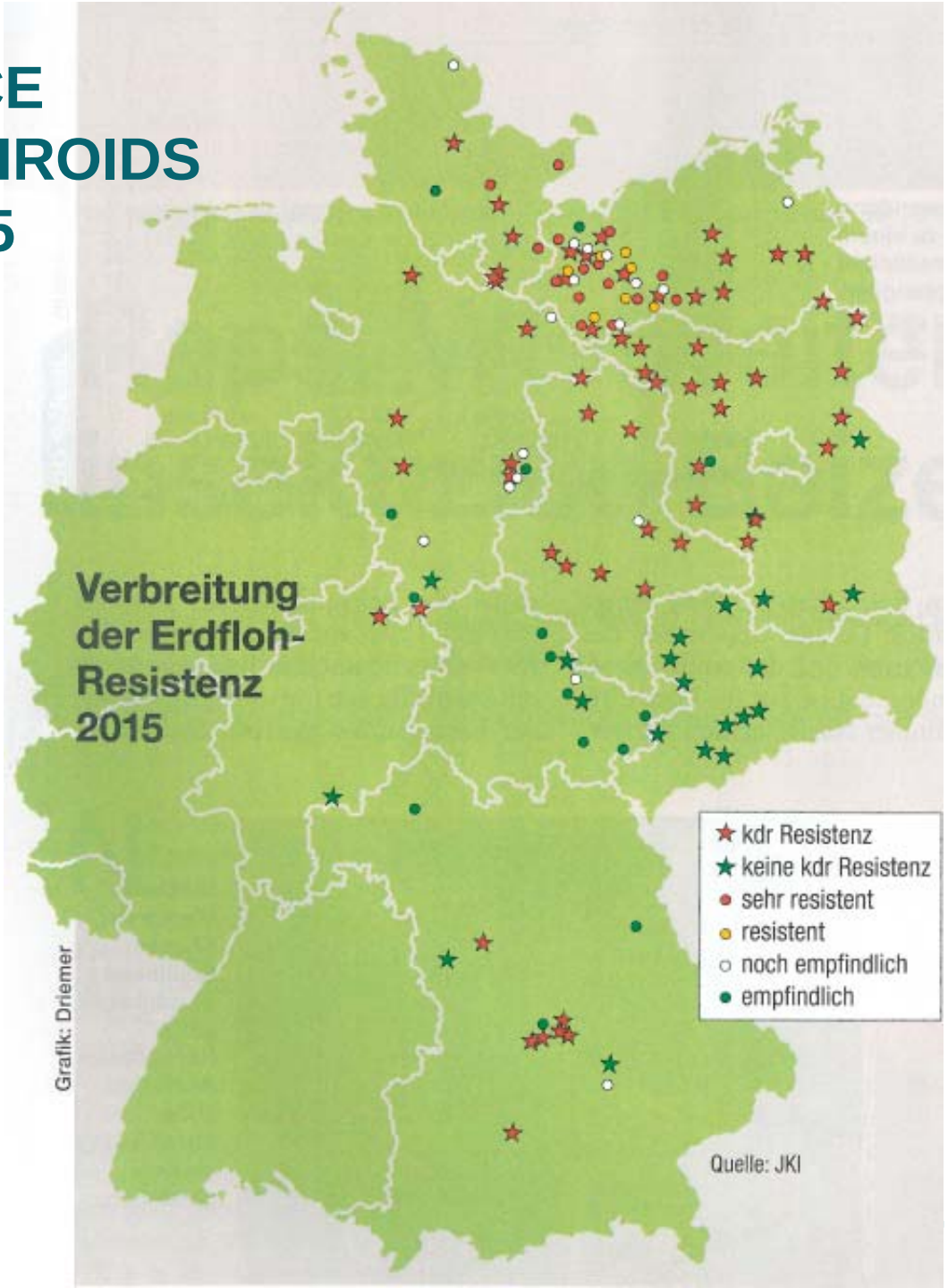
CSFB RESISTANCE AGAINST PYRETHROIDS IN GERMANY 2015

- kdr resistance
- No kdr resistance
- Highly resistant
- Resistant
- Still sensitive
- Sensitive

A few cases of kdr resistance found in Denmark



Source: Julius-Kühn Institut

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POLLEN BEETLES (*MELIGETHES AENEUS*)

Photos: Lars Møller Christensen

- Pyrethroid resistance common in pollen beetles in DK
- tau-fluvalinate still effective
- Need to limit number of sprayings

Photo: Erik Pedersen

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POLLEN BEETLES – NEW DK THRESHOLDS

BEETLES PER PLANT

Plants per m^2	Threshold until 2015	Threshold 2016
WOSR early bud stages		
30-50	3	8
50-70	3	6
WOSR late bud stages		
30-50	5-6	10
50-70	5-6	8
Spring OSR		
Early bud stages	1	2
Late bud stages	3	6

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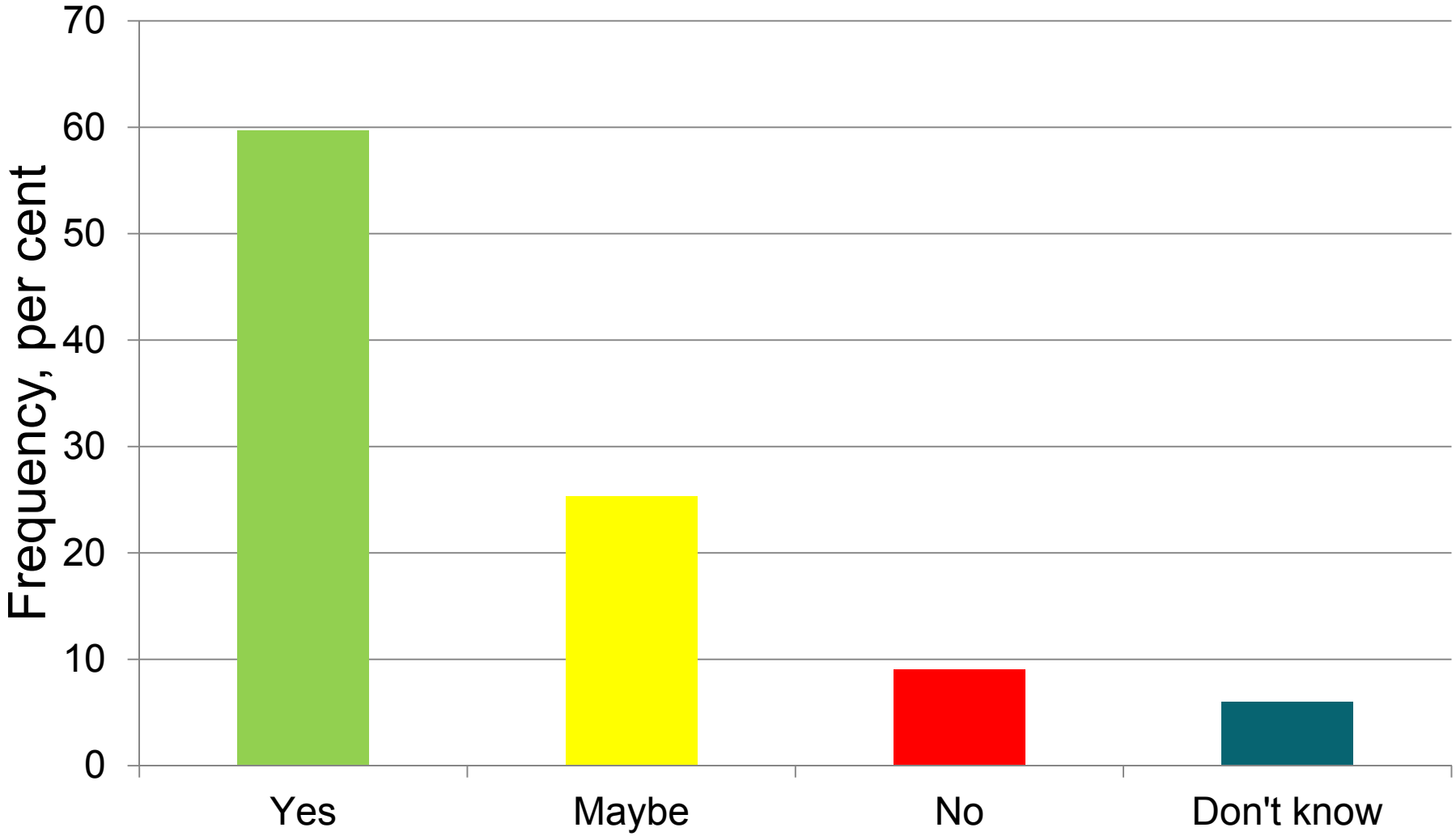
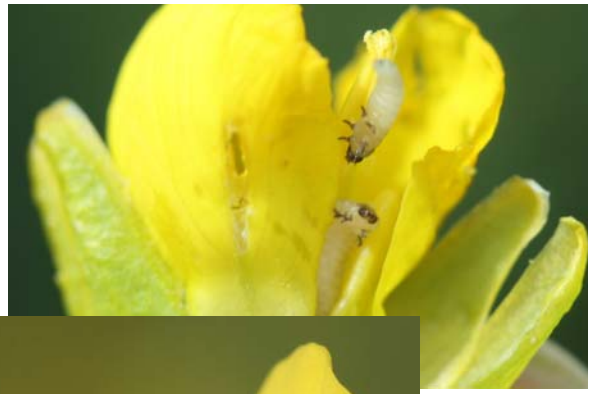
WILL YOU USE THE NEW THRESHOLDS FOR POLLEN BEETLES IN OILSEED RAPE?



Source: 'Seminars on Crop Protection 2016', 170 respondents (advisers)

POLLEN BEETLES – IPM



- Avoid late sprayings against PB to protect natural enemies in field
- Parasitoids like e.g. *Tersilochus heterocerus* attack pollen beetle larvae

- ‘Bright idea’
- Danish breeder has created white flowered OSR
- Late effect on PB, but some effect on CSW

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CABBAGE SEED WEEVIL (*CEUTORHYNCHUS ASSIMILIS*)

- DK threshold 6 weevils per plant from GS 60 – based on studies from Aarhus University

- High incidence in 2015

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CABBAGE SEED WEEVIL – YIELD LOSS?

- One larva destroys 3-6 seeds
- If 16 seeds per pod (variation 7-27) and 4 destroyed seeds, then 25 per cent loss on attacked pods
- If 20 per cent attacked pods, then 5 per cent yield loss
- If concurrent attack of brassica pod midge, then higher losses

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BRASSICA POD MIDGE (*DASINEURA BRASSICAE*)

- Rarely a problem in Denmark
- Only pyrethroids registered
- Warning system based on degree day models
- Monitoring in yellow trays with water – sent to SEGES
- Treating field margin often enough

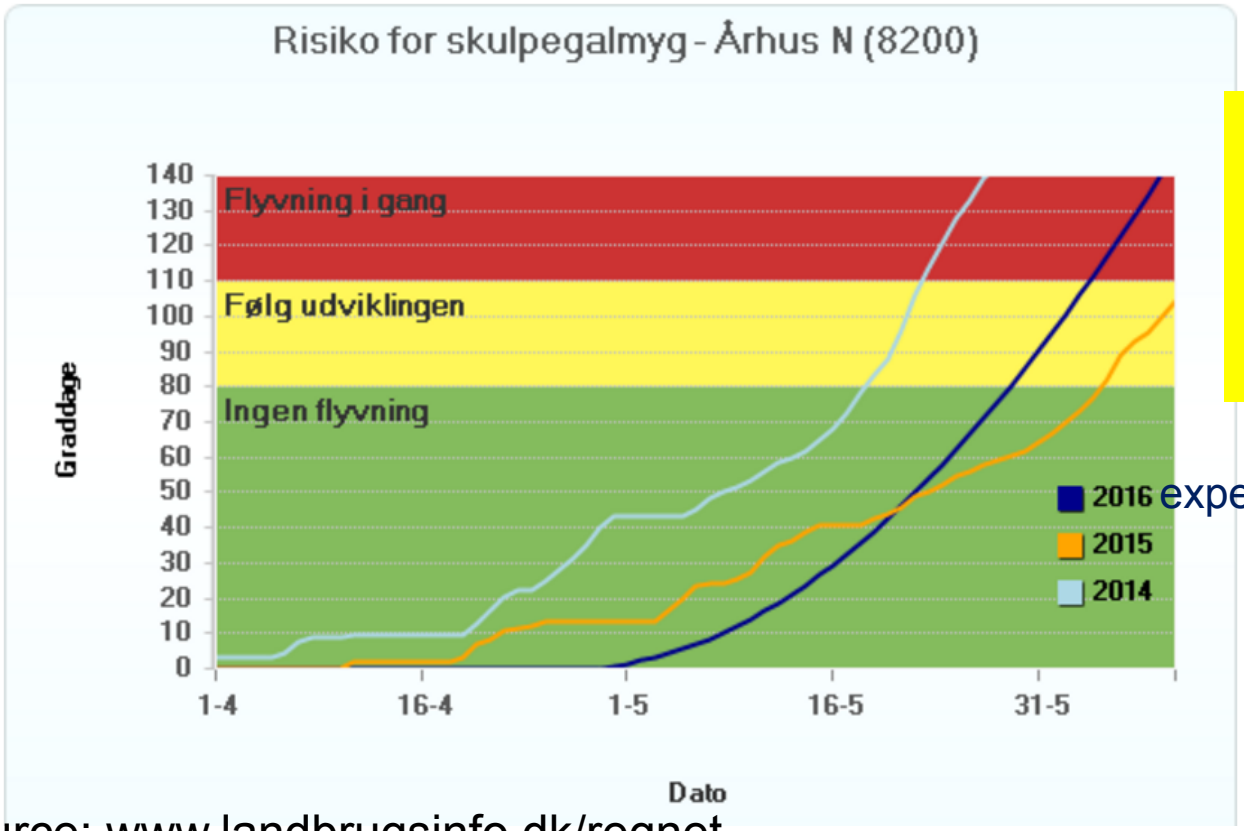
BRASSICA POD MIDGE WARNING SYSTEM

Skulpegalmyg - risikovurdering

Aktuel risikovurdering for angreb af skulpegalmyg i vinterraps baseret på temperaturen i år.

Du kan se risikovurderingen for dit eget område ved at vælge postnr. under figuren.

Udskrivning:
Hvis du kun ønsker figuren udskrevet, så klik på figuren og tryk derefter Ctrl og P samtidigt.
Hvis du vil udskrive hele siden, så klik et andet sted på siden og tryk derefter Ctrl og P samtidigt.



- Base temperature 8 °C
- Threshold 110 degree days from 1 April
- Certain risk from 80 degree days

2016 expected, based on 'normal' year

Source: www.landbrugsinfo.dk/regnet

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IMPLEMENTATION OF IPM – RESEARCH AND COMMUNICATION

- EU and DK: Goal to become less dependent on pesticides
- We are not there yet for OSR pests in Denmark!
- Thresholds crucial for limiting sprayings
- Are thresholds always scientifically sound?
- Do advisers and growers always trust the thresholds?
- Education and raising awareness is important
- Great need for basic biology research for major pests

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THANK YOU FOR YOUR ATTENTION!

Ministeriet for Fødevarer, Landbrug og Fiskeri

Den Europæiske Landbrugsfond for Udvikling af Landdistrikterne

Naturerhverv.dk

Danmark og Europa investerer i landdistrikterne

Se 'European Agricultural Fund for Rural Development' (EAFRD)