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Ongoing work in Sweden Klara Löfkvist HIR Skåne





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What we have done in Sweden

- Risk assessment were made in 2007

Measurements in 2008

- Several projects were initiated
 - analysis of greenhouse grounds
 - more samples in waters
 - structured analyses of handling routines
- Courses at several places in Sweden
- Technical solutions
 - filter tests
 - inspiration internationally



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LANDSKAP TRÄDGÅRD JORDBRUK
Rapportserie



Säkrare hantering av
bekämpningsmedel i växthus

Safer handling of pesticides in greenhouses

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1) Område Jordbruk - odlingssystem, teknik och produktkvalitet, SLU Alnarp

2) LRF Konsult, Malmö

Rapport 2007:3
ISSN 1654-5427
Alnarp 2007



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Ongoing work in Sweden

Measurements in 2017-2018

- Greenhouse meetings
- Individual advice for growers, financed by (SBA*)
- Measurements in greenhouse water inside greenhouses
- Updated information material for growers
- Leakages is included at mandatory education for spray operators (5 years)
- Projects regarding organic waste material

*) Swedish Board of Agriculture



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Swedish University of Agricultural Sciences

Kompetenscentrum för kemiska
bekämpningsmedel (CKB)

Jenny Kreuger, Ove Jonsson, Klara Löfkvist, Torbjörn Hansson, Gustaf Boström, Carola Gutfreund, Bodil Lindström och Mikaela Gönczi

**Screening av växtskyddsmedel i vattendrag
som avvattnar växthusområden i södra
Sverige 2017-2018**



CKB rapport 2019:1

Uppsala 2019

Kompetenscentrum för kemiska bekämpningsmedel
Sveriges lantbruksuniversitet

Centre for Chemical Pesticides
Swedish University of Agricultural Science

KompetensCentrum för Kemiska Bekämpningsmedel

CKB

Legislation in Sverige

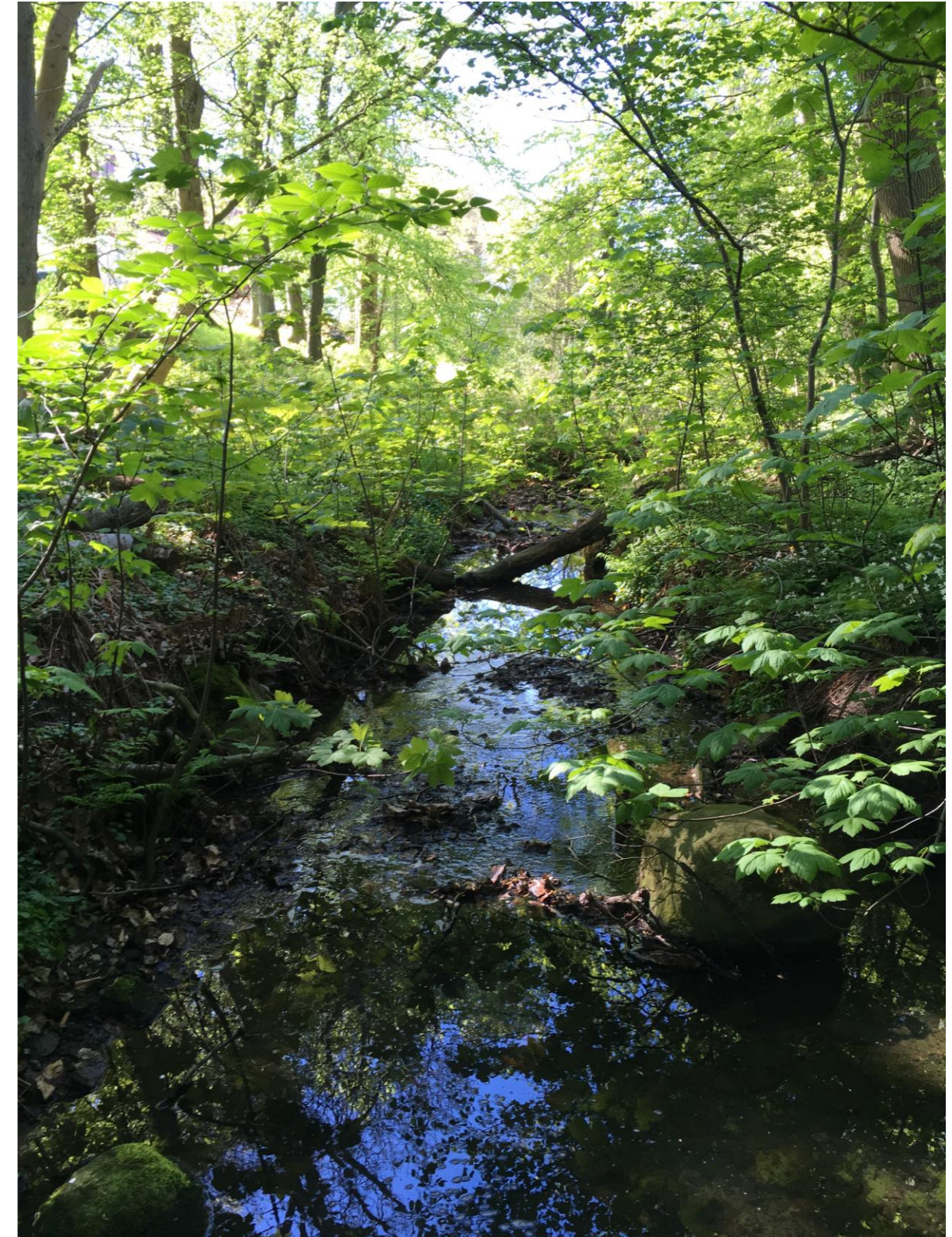
- Environmental law in Sweden is based on goals (Miljöbalken 1998:808)
- Responsibility of your own
- Possibility to focus on what is most important in every region
- Several laws and regulations (SBA, SEPA, SWEA, KemI) regarding handling of pesticides
- Municipality authority responsible for surveillance
- Conditions of how to use the different pesticides



Regulation for waters

- According to EU Directive 98/83/EC quality of water intended for human consumption.
- 0,1 $\mu\text{g/l}$ pesticide
- 0,5 $\mu\text{g/l}$ all pesticides in total

- Surface waters individual guidelines for each chemical
- Some substances have binding





Examples

Substance	Value (µg/l)	Examples of products
abamektin	0,001	Vertimec
acetamiprid	0,1	Mospilan
azoxystrobin	0,9	Amistar
boscalid	13	Signum
cyprodinil	0,2	Switch
fludioxonil	0,5	Switch
hexythiasox	0,1	Nissorun
imazalil	5	Fungazil
imidacloprid	0,005	Confidor,
paclobutrazol	0,82	Bonzi
pirimicarb	0,09	Pirimor
propamocarb	90	Previcur
propiconazole	7	Tilt
pymetrozine	3	Plenum
pyraclostrobin	0,01	Signum
pyrimethanil	30	Scala
pyriproxyfen	0,002	Admiral
Thiophanate-metyl	10	Topsin

Human consumption:
0,1 µg/l

8 -20 places in several companies
3 depth 0-10 cm, 10-20 cm, 20-30 cm
1 litre/ place

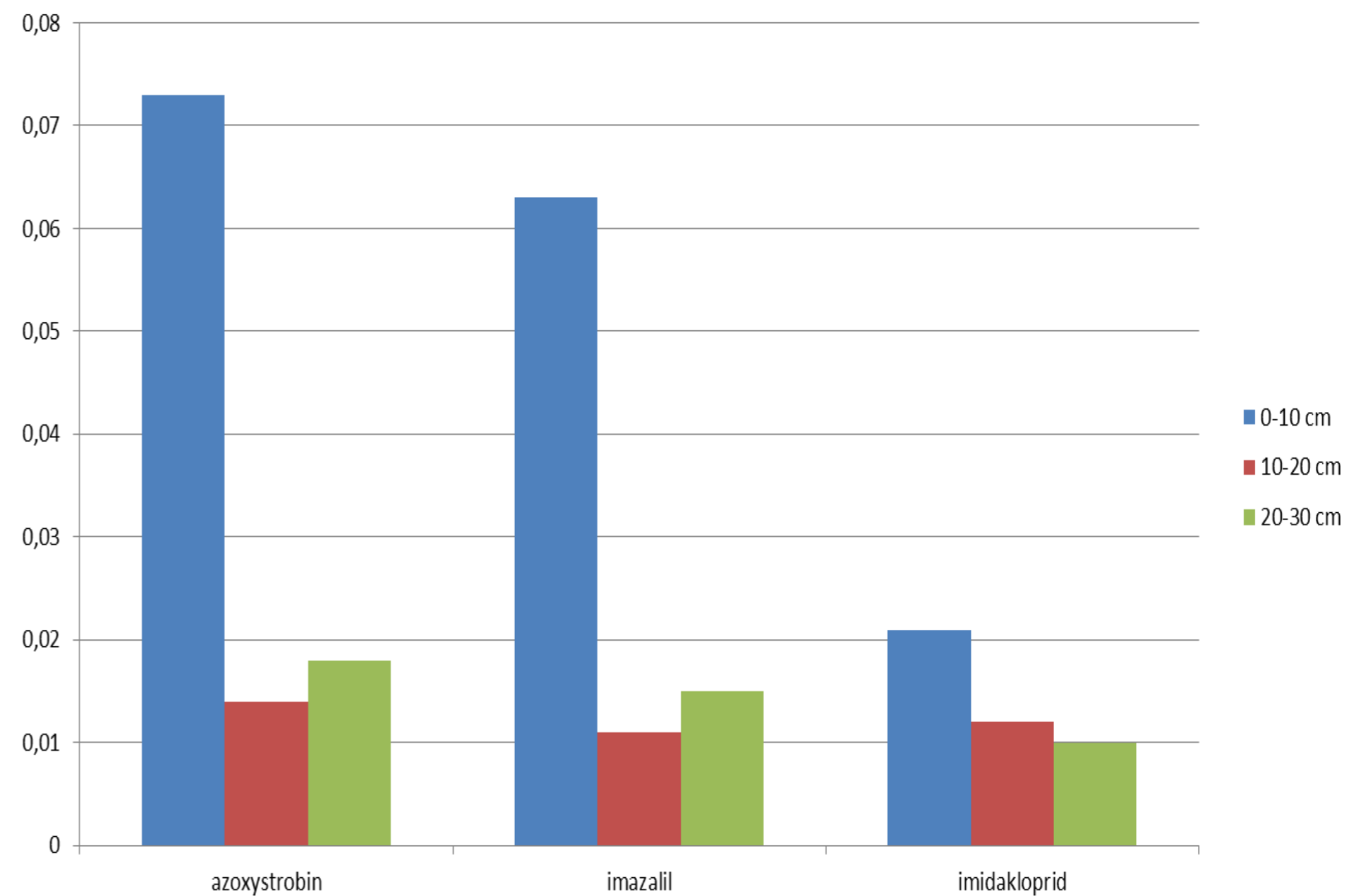
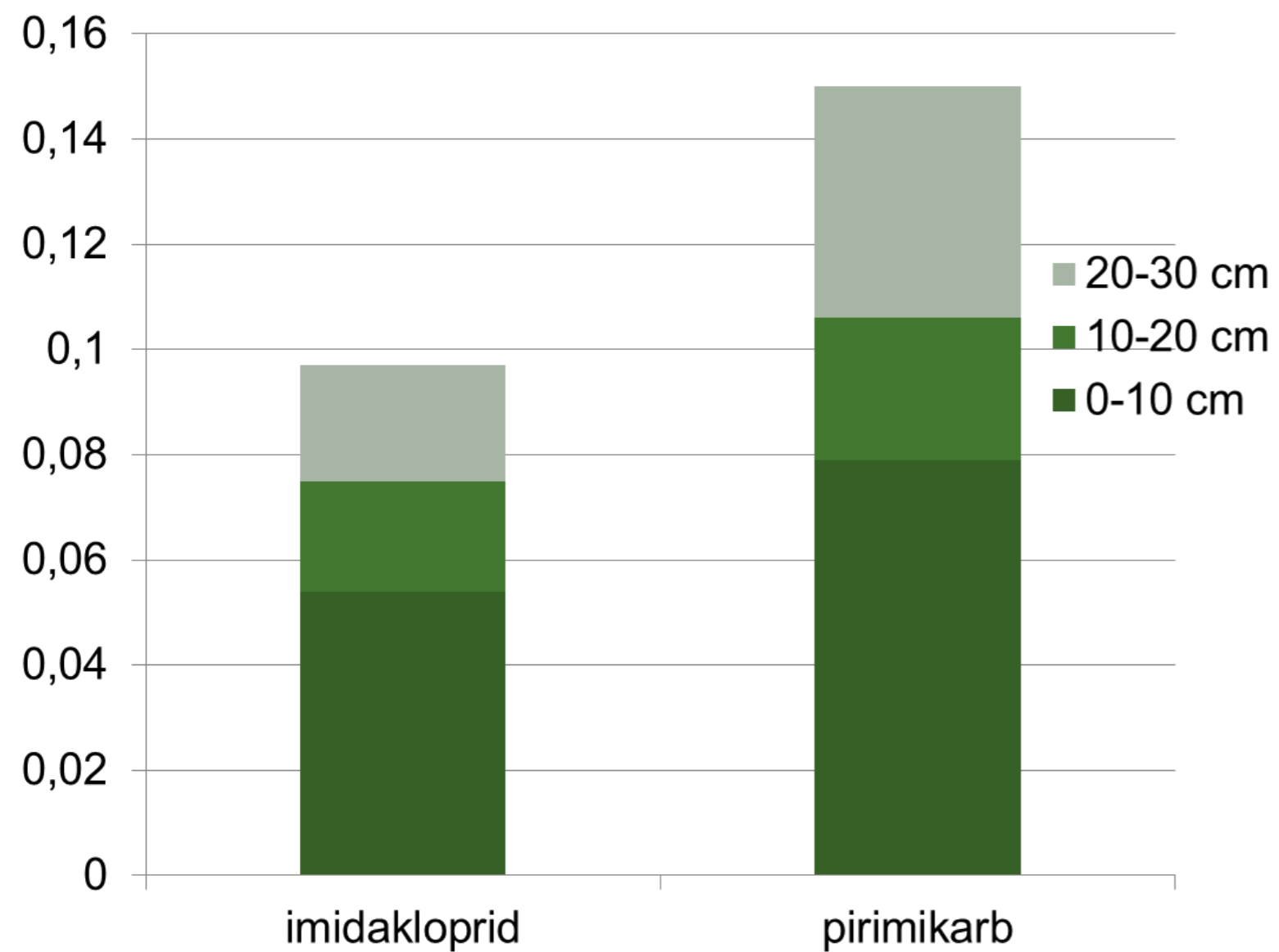


5-12 places at each company
1 depth; 0-10 cm, 1 liter /company
3 different hot spots.
Normal waterspots and fillingplaces
Collection samples 3/greenhouse company



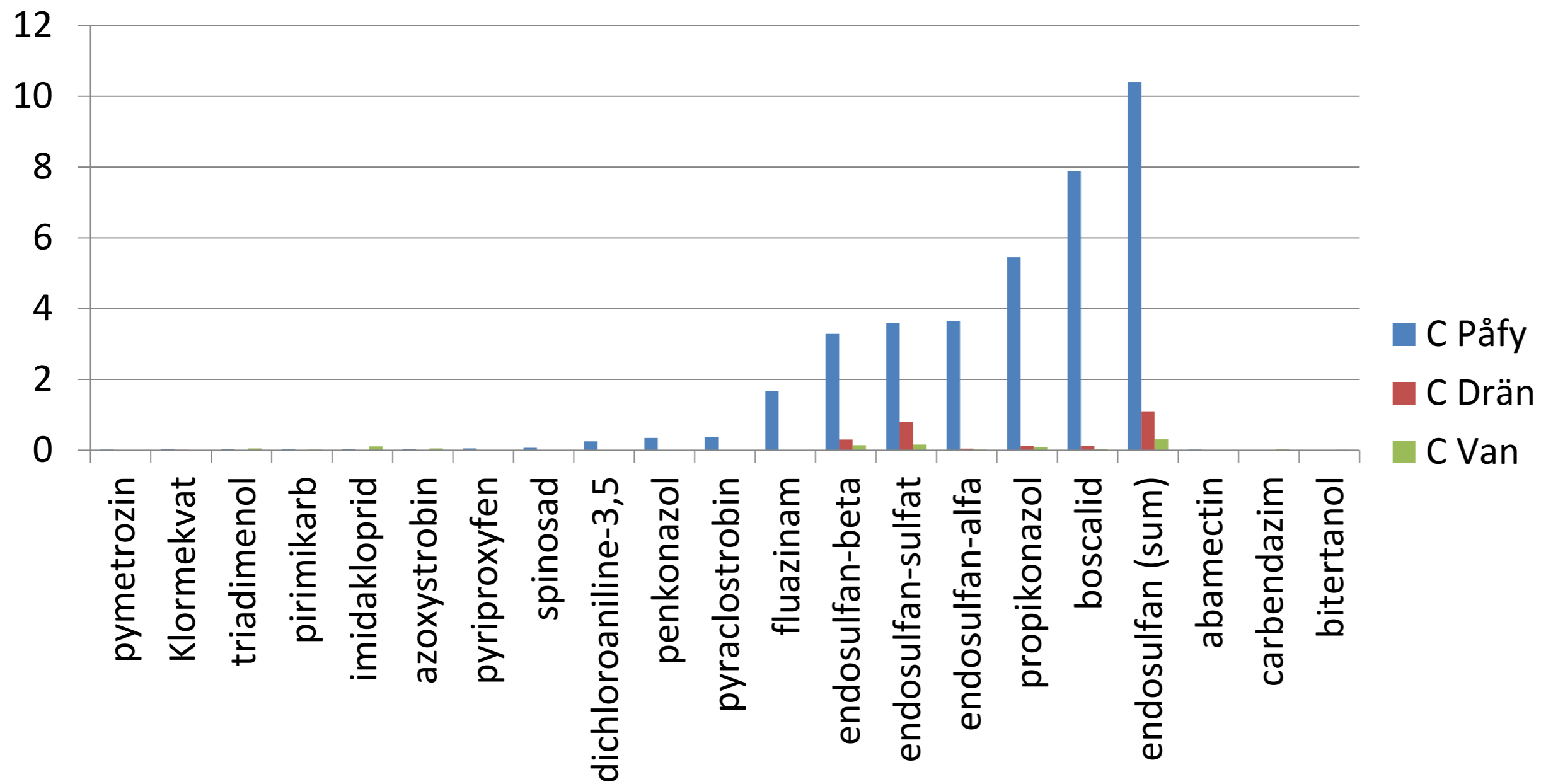


Distribution between depth





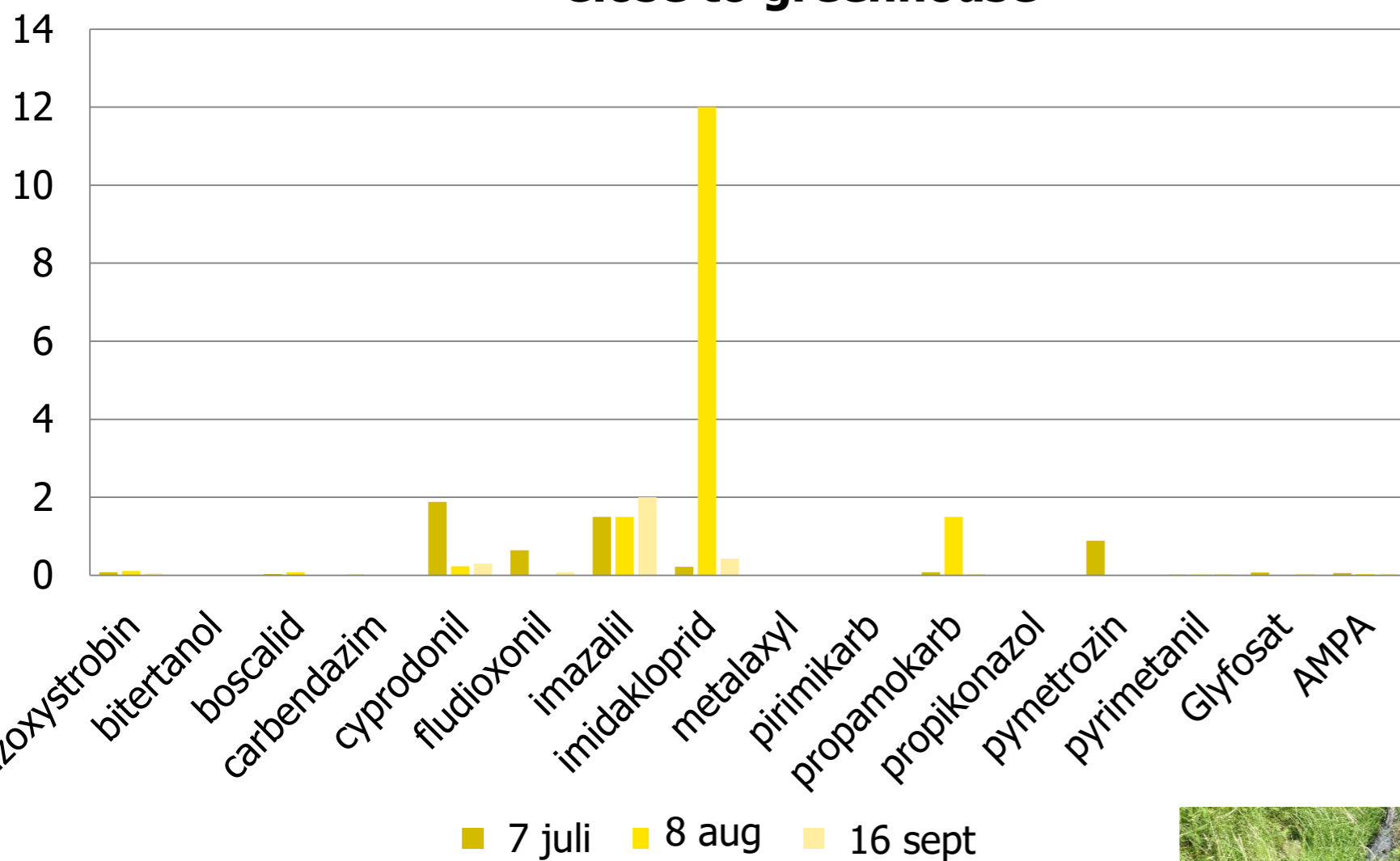
Distribution between different places



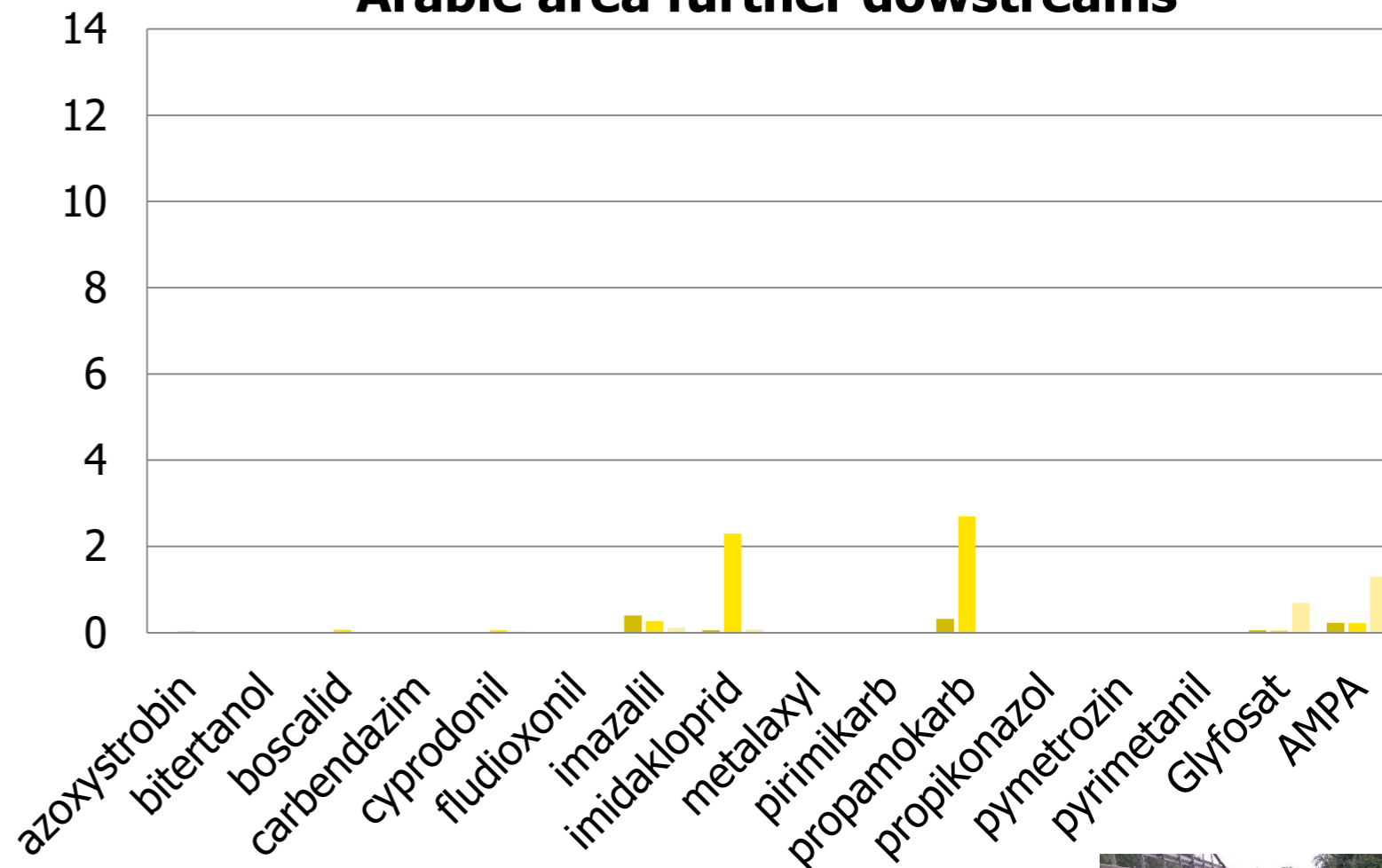


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Close to greenhouse



Arable area further downstream





Solutions and precautions

- Filling place for the sprayer
- Condensation water – recirculation or rain water basins
- Cleaning of filters in the greenhouse
- Recirculation and closing the greenhouses
- Organic waste material



Future

- More biological products available
- All areas where chemicals are used - recirculated
- More knowledge
 - cleaning water
 - organic waste material
 - content of waterflows inside greenhouses
- More practical solutions
 - organic waste water and material
 - cleaning waters from greenhouses



Preconditions to succeed

- Surveillance of water flows that give feed-back
- Visits to growers
- Continuous financing of these questions
- Joint international projects





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Questions?





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Discussion





Regulations

- What kind of specific regulations or conditions to reduce the risk of leakage from greenhouses seems to work well / not so well? Has the implementation worked? Why? / Why not?
- Are there any specific regulations concerning measures to reduce the risk of leakage from greenhouses?
- Are there conditions of how to use the different pesticides allowed in each country?
- Is there a possibility for financial compensation for investments / measures?
- How do the greenhouse operators react to the regulations / implementation?



Precautions

- What measures taken have worked well? What have been the challenges and are there any problems that are still not solved? Practical challenges?
- How is the condense water handled?
- Where does the water from cleaning of the filters, water tanks and basins go?
- Where does the water from cleaning the greenhouse go? What does it contain and is it collected?
- Handling of the compost material
- Safe location for filling the sprayer
- Characterization of the greenhouse industry in each country (greenhouse types, number, size, age, recycling etc.)?
- Organic waste how to handle both placement and end-product use



Surveillance

- How important is it to do water measurements outside greenhouses to drive the work forward? How should the sampling programs be designed? How is inspection and other follow up used?
- Are measurements outside the greenhouses made, to follow the measures?
- Are inspections from authorities being carried out in the greenhouses? How frequently?
- Have you succeeded in reducing the levels in your surface waters?



To be continued

- Is there an interest of more contact in the future?
- More workshops?
- Specific questions?
- Collaboration projects, research?