

The Swedish model and its limitations

Peter Bergkvist
Swedish Chemicals Agency

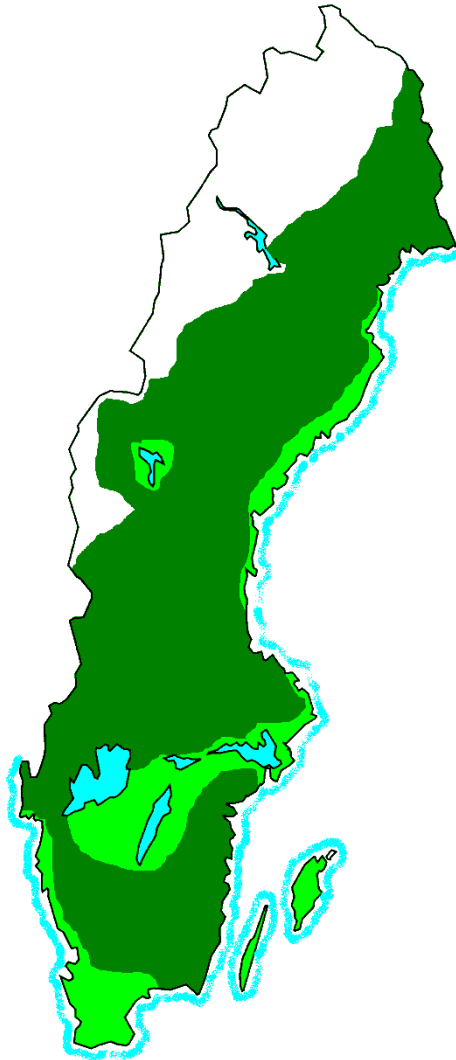


4 September 2009

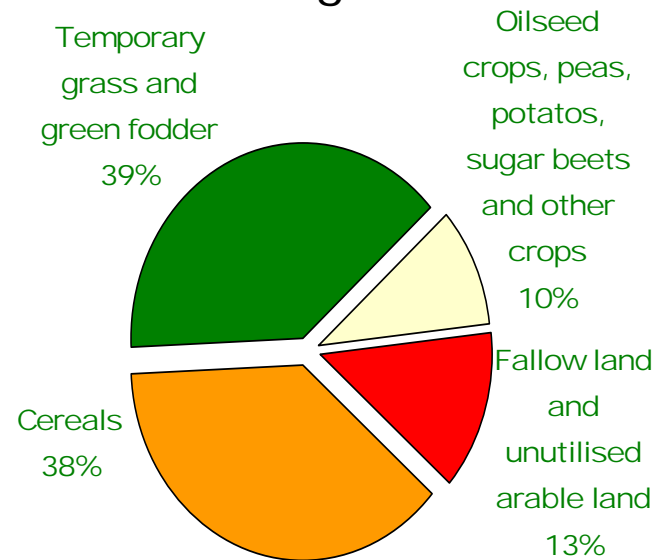
KEMI

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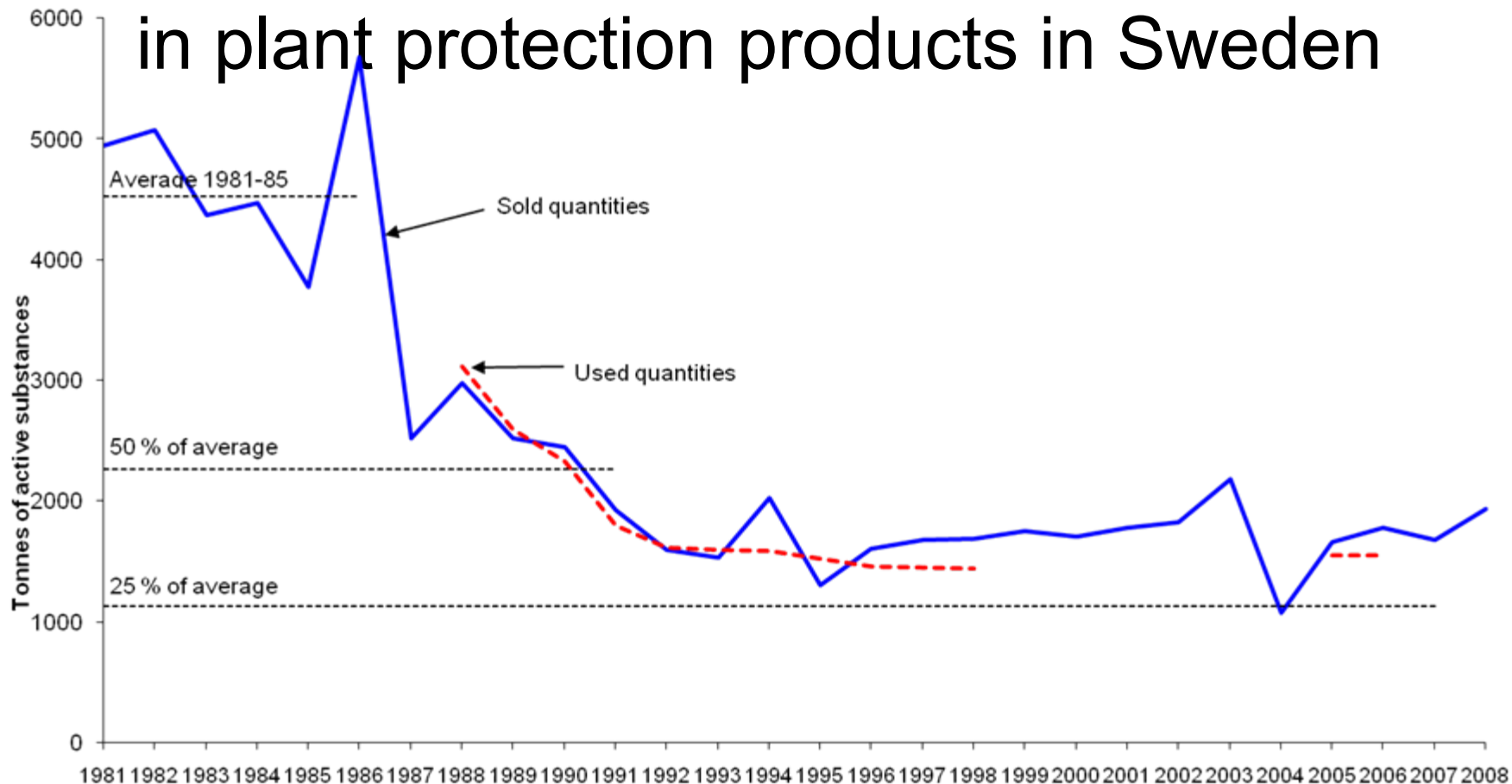
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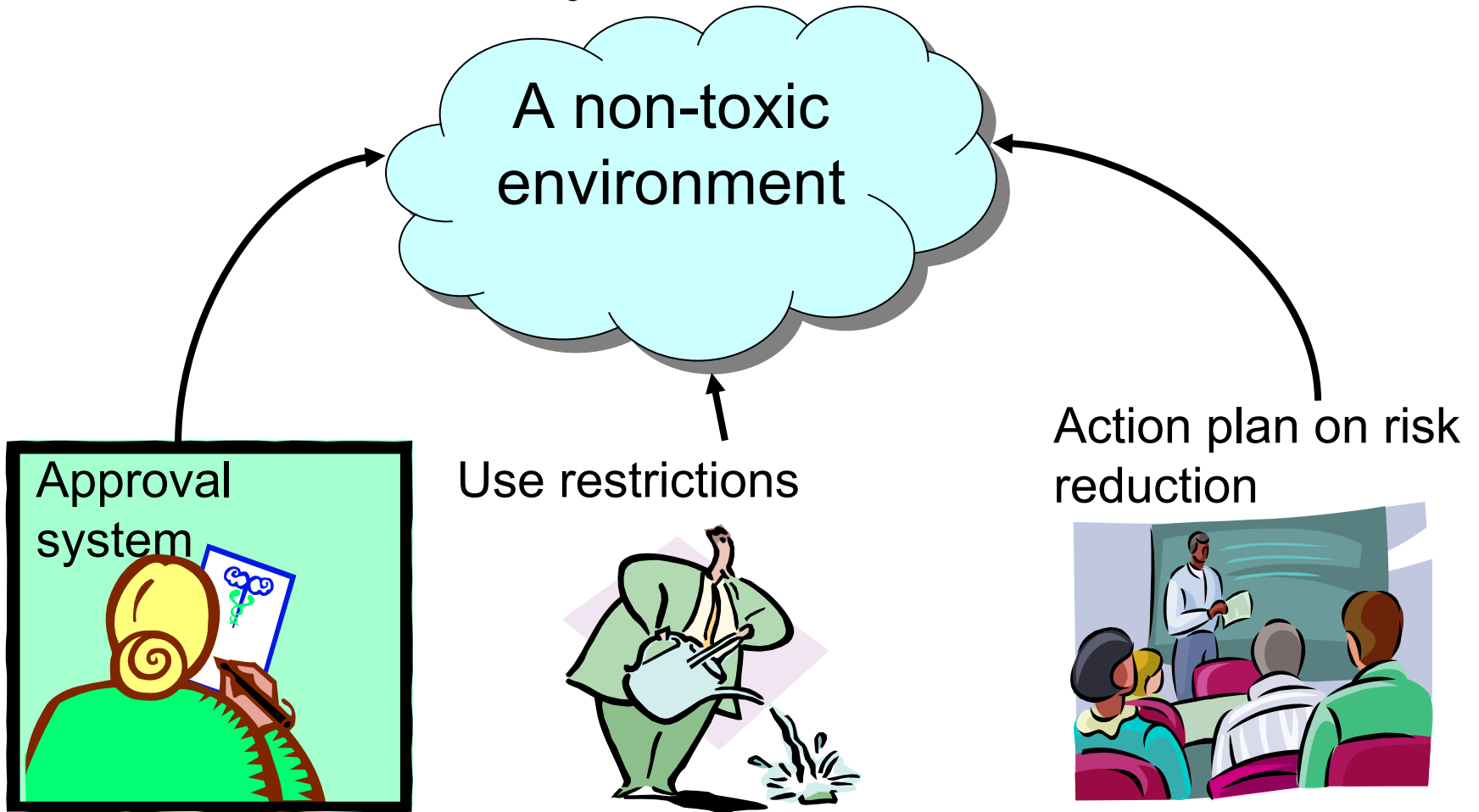
- 450 000 km²
- 7 600 km long coast
- 95 000 lakes > 0.01 km²
- > 150 000 km rivers and water courses
- 65 % forest
- 7 % arable land or about 2.7 million hectare
- 75 000 agricultural holdings

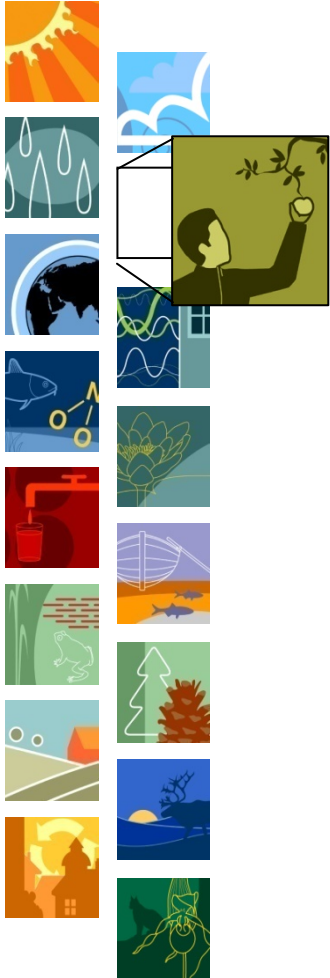


Sold and used quantities of active substances in plant protection products in Sweden



Pesticide Policy Instruments in Sweden





A non-toxic Environment

- One of 16 environmental quality objectives established by the Swedish Government and the Parliament
- Setting the scene for the next generation
- The environment must be free from man-made or extracted compounds and metals that represent a threat to human health or biological diversity.
- Consists of 9 interim targets

Illustrator Tobias Flygar

<http://www.miljomal.nu/english/english.php>

Interim targets of "A Non-toxic Environment"

- 3. Phase-out of substances of very high concern,**
New products will be free from;
 - Persistent and bioaccumulating substances,
 - CMR (Carcinogenic, Mutagenic or Reprotoxic),
 - EDS (Endocrine Disrupting Substances),
 - Highly allergenic substances,
 - Cadmium, lead and mercury,by 2010 at the latest (mercury by 2007).

- 4. Continuous reduction of health and environmental risks of chemicals**
as measured by indicators.

National Action Plan

A joint work between:

- **SBA - Swedish Board of Agriculture**
- **SEPA - Swedish Environmental Protection Agency**
- **KEMI - Swedish Chemicals Agency**

In collaboration with:

- **NFA - National Food Administration**
- **SWEA - Swedish Work Environment Authority**
- **SFA - Swedish Forest Agency**
- **Farmer organisation and industry**

Instruments and activities in the National Action Plan

- Approval provisions, substitution etc (KEMI)
- General use regulations (SEPA)
- Mandatory training of farmers (SBA)
- Advisory service (SBA)
- Research and development (SBA)
- Voluntary testing of spraying equipment (SBA)
- Monitoring of residues in food and water (NFA)
- Environmental levies (Government)
- Phase out activities (joint work)
- Farmer driven information campaign (joint work)

EPA Regulation on the Use of Pesticides

- Requirement to calculate and observe buffer zones 5,6 §§
- Equipment requirement 7,8 §§
- Compulsory book-keeping of pesticide use 9 §
- Requirement of notification and information to local authorities 10-13 §§
- General ban on the use in certain areas without a permission 14 §



The substitution principle

- The substitution principle is one of the basic principles of Swedish chemicals control.
- Most experiences from the beginning of the 90-ties.
- Also after 1995, but only for products with substances not yet on Annex 1.
- Important tool in National Action Plans to reduce risks with plant protection products.

Substitution criteria

Substitution is only possible if

- an existing product or non-chemical method is significantly safer for human/animal health or the environment; **and**
- It presents no significant economic or practical disadvantages; **and**
- the chemical diversity are adequate to minimize the occurrence of resistance.

Substitution example

A chemical versus a non-chemical method

Examples:

Chemical methods	Non-chemical control and prevention methods
Post harvest disease control on fruit and ware table potatoes	Climatic control of storage diseases. ULO (Ultra Low Oxygen) and low temperature in warehouses.
Soil disinfection	Preventive methods such as crop rotation, use of resistant crop varieties and to avoid cultivation of susceptible crops in infected areas.
Aquatic weed control	Mechanical weed control and dredging in ditches and watercourses.

Phase out activities on certain indispensable high risk pesticides

Substances	Uses	Results
benomyl and folpet	Fungicides in pome fruits	Withdrawn in 2000. Alternatives are now available.
EBDCs	Fungicides in potatoes and onions	75 % use reduction achieved, by a step-wise approach.
linuron	Herbicide in vegetable crops	Withdrawn in 1996, but used on dispensation in carrots until 1999.
pendimethalin	Herbicide in cereals and vegetable crops	In 1993 restricted to onions, beans and carrots (85 % use reduction). Withdrawn completely in 2008.
permethrin	Insecticide in nurseries and in new plantations of conifers	Withdrawn in 2003.

Restrictions on the use of plant growth regulators in cereals

- Since 1987, plant growth regulators are not allowed for use in wheat, barley and oat in Sweden.
- The aim has been to promote development and use of short straw varieties.
- This action has prevented an unnecessary increased dietary exposure for consumers.



Critical uses/activities in focus:

- Filling and cleaning of sprayers
- Use in vulnerable areas
- Early and late season use of herbicides
- Use of herbicides in row sown crops on pervious soils
- Repeated applications with fungicides
- Use of fan sprayers in orchard
- Spraying in greenhouses and the following handling of treated plants

Government certification programme of users

- Training required for all professional users of pesticides
- 4 day long course.
- Content:
 - General aspects (legislation etc.)
 - Pesticide risks (environment, operators, food etc)
 - Practical work (plant protection issues)
 - Exercise (mixing and filling of a sprayer)
 - Examination
- The certificate is valid for 5 yrs. 1 day renewal.



KEMI

Plant Protection Centers



Tasks:

- Pest and disease prognoses
- Early warning of pests and diseases
- Diagnoses
- Information
- Development

www.sjv.se/vsc

Advisory services

Local extension officers give advice and information concerning the use of pesticides, and the risks associated with this use

In 2005:

- about 1 400 farmers received individual farm advice
- about 5800 participated in different courses

greppa
växtskyddet



”Grasp the Plant Protection”

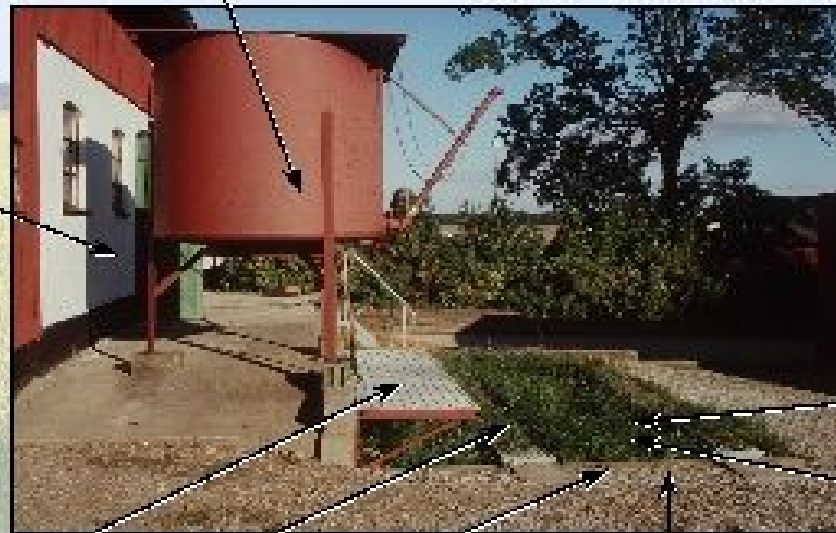
- A joint information campaign between authorities, the farmer organisation and industry.
- Raise awareness of pesticide risks among farmers.
- Main focus on reducing point source pollution.
- A “Helper” to calculate proper buffer zones related to wind drift.
- Promote filling and cleaning of spraying equipment on biological active grounds such as on a “biobed”.

Biobädd

Biobed

Väl tilltagen,
separat vattentank

Låsbart
kennitalk-
förråd
(omavför dörr)



Biobädd
(Längre och bredare
än spanta)

Gräsbevuxen
med tät
trösk

Ramp för lera
arbetsmiljö

Stabil
körstopp

Bottenbjld
med tät
lera

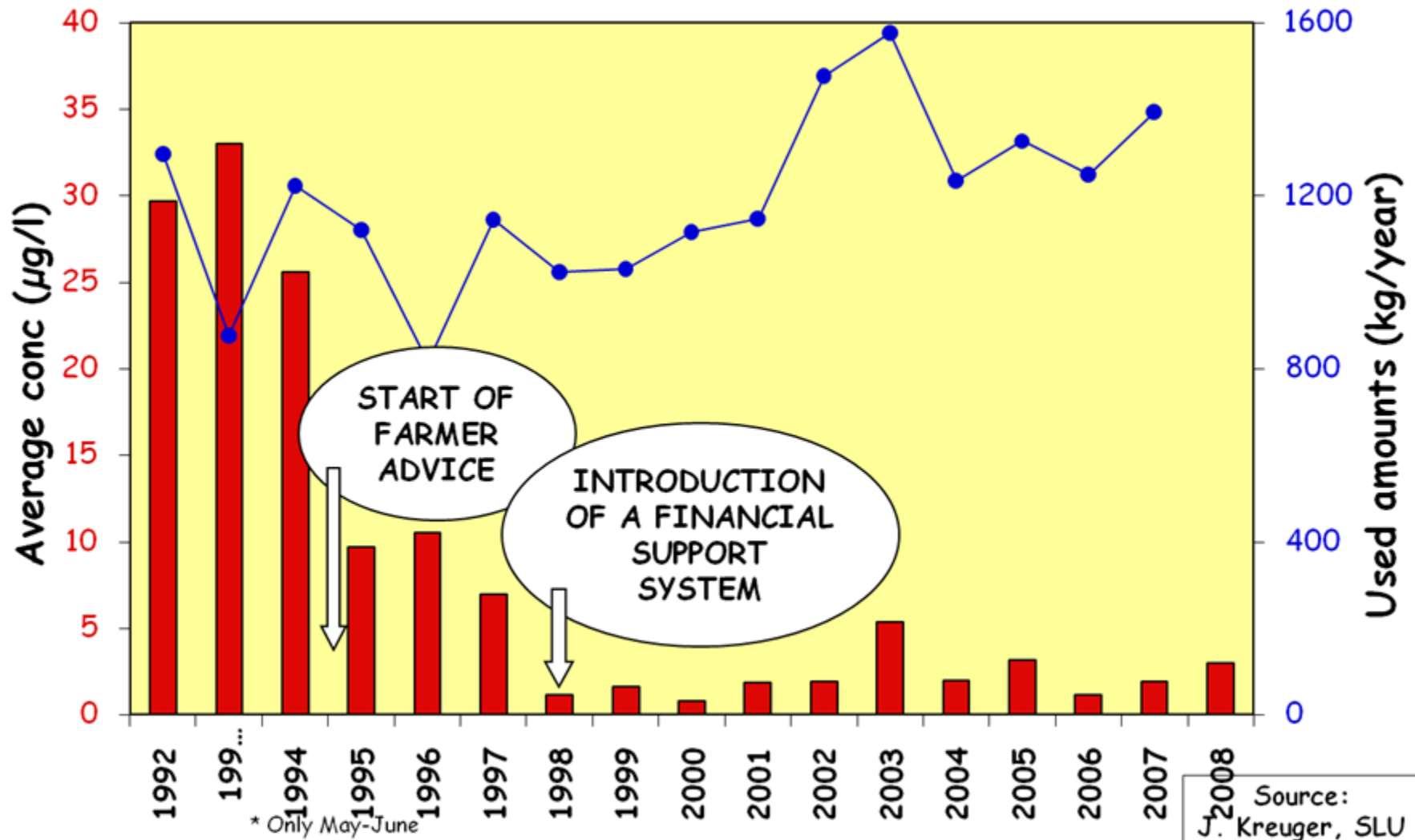
Substrat
(25% torv, 25% matjord,
50% hackad halm)

Foto: Odling i Bland



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Average conc. of pesticide residues in the river of Vemmenhög May-Sept 1992-2008



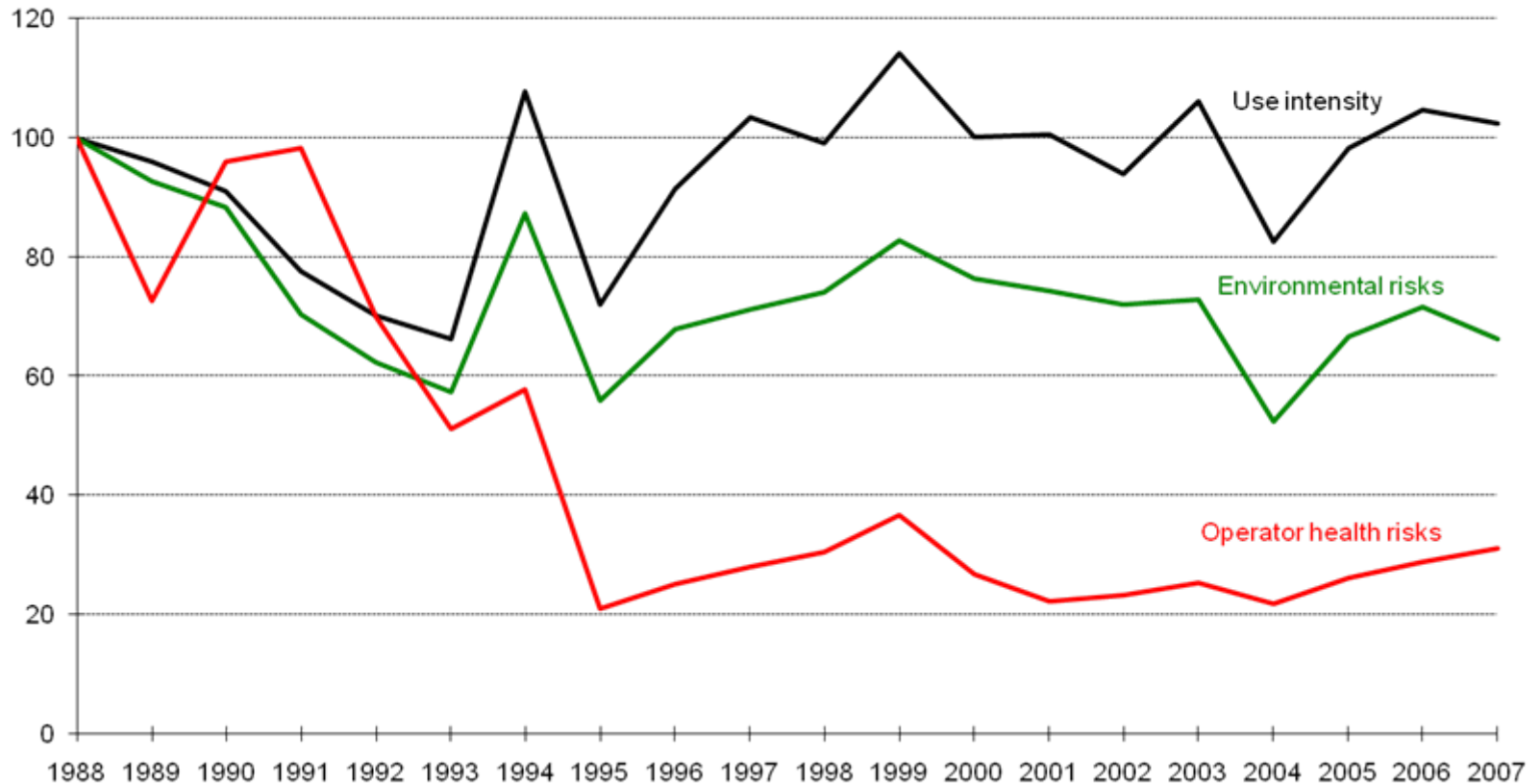
Programme results

Period	Targets (compared with the base period 1981-85).	Results
1987-1990	Target: 50 % use reduction	49 % use reduction achieved.
1991-1996	Target: 75 % use reduction	64 % use reduction achieved.
1997-2001	No use target, but further reduction in risks expressed by indicators	Based on environmental and human health risk indicators, the reduction was 24 and 75 % resp.
2002-2007	No use target, but further reduction in risks expressed by new indicators	Based on environmental and human health risk indicators, the reduction was 31 and 66 % resp.

Pesticide risk indicators

- Two types of indicators; one related to environmental risks and one to operator health risks
- Simple scoring approach, based on (for each active substance):
 - the theoretically maximum number of hectare doses
 - current hazard classification (including also mobility, persistence and bioaccumulation properties)
 - exposure related factors such as formulation type, application method and treatment frequency.

Pesticide Risk Indicators



Proposal for a new NAP 2010-2013

Measures

- Continue the successful parts of the existing program.
- Particular focus on R&D and the practical application of IPM.

Targets

- All farmers shall apply IPM or organic farming in 2014 at the latest.
- Continuous risk reduction as measured by national indicators.

Conclusions 1(2)

What has contributed to the success?

- Balance between mandatory and voluntary elements
- Activities performed at different levels and driven by different stakeholders
- Full support of the programme from the Association of Swedish Farmers
- A joint work between the environmental and agricultural authorities

Conclusions 2(2)

Limitations

- A high dependence on pesticides still exists
- Extensive changes in the present cropping systems is needed to achieve “a non-toxic environment”.
- CAP and 91/414/EEC may constitute a barrier to these changes
- Insufficient financial support from the Government
- A small number of negligent farmers are the main polluters