



# *The use of hazardous pesticides for crop pests & diseases*

***ELO Conference 'Towards a resource efficient agriculture in Europe:  
the role of research and technology for safe and healthy food'  
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# Presentation Outline

- PAN Europe: who and what
- Estimated costs of pesticides
- Techniques which in combination can reduce pesticides
- IPM mainstream in certain sectors but absent in others
- The ways forward



# PAN Europe: who and what ?

- PAN Europe is one of the 5 centers of PAN International
- 23 not-for-profit members in 17 European countries
- Bring together health, environmental & women associations
- Working to replace use of hazardous pesticides with ecologically sound alternatives
- Brussels based with 4 part time employees

Estimated annual economic and environmental losses due to the application of pesticides **in the USA** (Pimentel 2009):

- public health, \$1.1 billion/year
- pesticide resistance in pests, \$1.5 billion;
- crop losses caused by pesticides, \$1.1 billion;
- bird losses due to pesticides, \$2.2 billion; and
- ground water contamination, \$2.0 billion.

# Estimated annual economic loss caused by pesticide **in the EU:**

- Studies in the UK and Germany US\$257m and \$166m, respectively, paid by sufferers of pesticide-related poor health, the environment and citizens (Pretty & Waibel, 2005).
- UK water companies spent £189 million removing nitrates and £92 million removing pesticides from their water supplies between 2004-2005 and 2008-2009 (National Audit Service, 2010) (+/- 350 M €)

# Other problems with pesticides

- Consumers do not want it (Eurobarometer 354, November 2010)
- Can create resistance
- Energy and carbon footprint associated with the manufacture, transport and application of pesticides (ADAS/DEFRA stats from 2000 show that the energy use associated with pesticide manufacture can be as high as that associated with mineral fertiliser use)

# Is pesticides fit for the debate on resource efficiency?



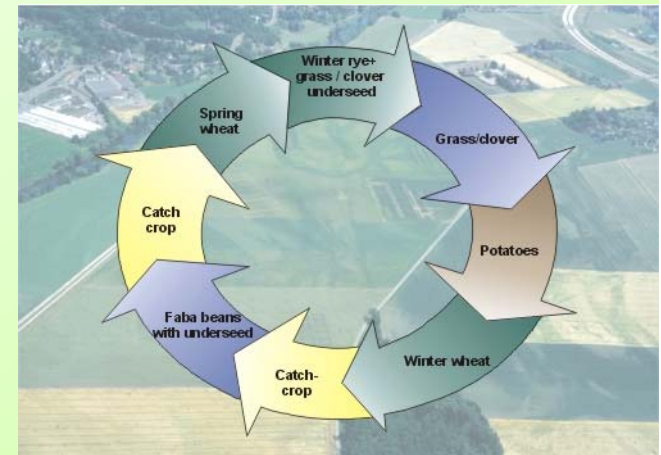
Resource efficiency means using the Earth's limited resources in a sustainable manner while minimising impacts on the environment.

It allows us to create more with less and to deliver greater value with less input.

([http://ec.europa.eu/environment/resource\\_efficiency/](http://ec.europa.eu/environment/resource_efficiency/))

# Techniques which in combination can reduce pesticide dependency:

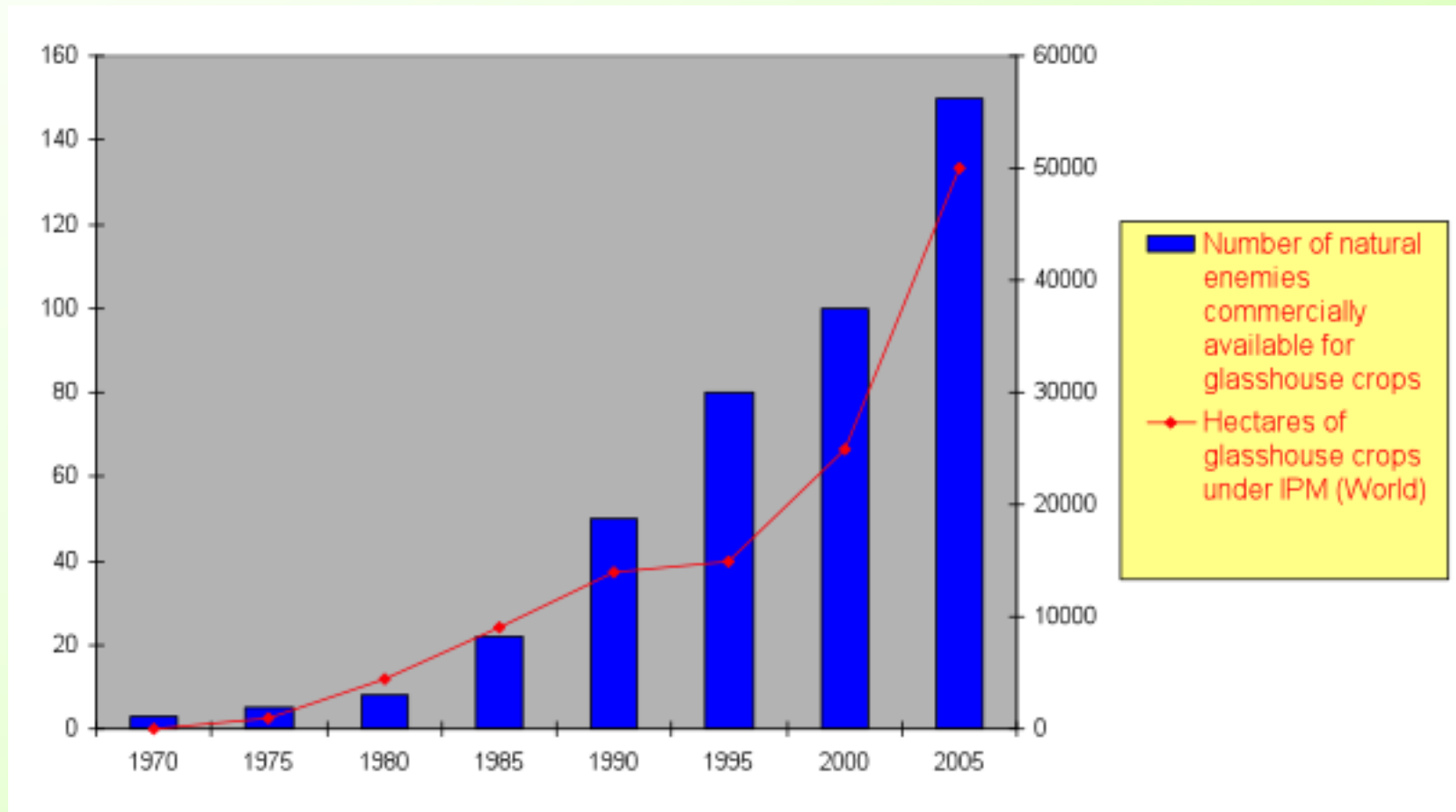
- Cultivation means (crop rotation, cover crops, timing, choose of resistant varieties,..)
- Conservation biocontrol (habitat protection, buffer strips, buffer zones..)
- Soil management (reduced tillage, organic manure..)
- Integrated nutrient management
- Careful monitoring



*(RELU policy note 10, October 2009)*



# IPM in glass houses, already mainstream



(Van Lenteren, 2006)

# IPM in open fields, still a long way to go

Used by 50% or more farmers	Used by 20-35%	Used by less than 10%
Crop rotation	Some element of mechanical weed control	Using pheromones to monitor pest levels
Improved field margins	Flower strips to encourage natural enemies	Sowing a mixture of crop cultivars in the same field
Timing field operations to reduce risk of pest, disease or weed problems	Beetle bank strips in large fields to shelter ground predators for aphid control	Introducing predators for pest control
Sowing disease or insect resistant varieties		Using pheromone traps to control pests
Hand pulling problem weeds		Using trap crops to attract pests away from the cereal crop
Sowing different cereal varieties in different fields		
Spot spraying		

Source: Overcoming market and technical obstacles to alternative pest management in arable systems. Rural Economy & Land Use Programme Policy Note 10. Oct 2009 ([www.relu.ac.uk](http://www.relu.ac.uk))

# Rachel Carson Symposium in Brussels made it cristal clear that:

- there are « standard principles” of IPM in open fields based on work of IOBC
- there are more and more alternative products available on the market in open fields, and
- There is still a lot of sectors where pesticide dependency reductions are possible and needed to deliver on resource efficiency.



Biological Control of the  
**ROOT CORN BORER**  
(*Diabrotica virgifera virgifera*)  
WITH ENTOMOPATHOGENIC NEMATODES



# How to get tools and results transferred to the farmers?



Some by stick some by carrot..

## Smart policies to improve resource efficiency, includes for instance:

- Tackling **input reductions** in sectors which are resource intensive, but also inefficient: food, construction, transport.
- Shifting **taxes** from labour to resource consumption and pollution, either by introduction of environmental taxes or by removing environmentally harmful subsidies

([http://ec.europa.eu/environment/resource\\_efficiency/](http://ec.europa.eu/environment/resource_efficiency/))

# The Sustainable Use Directive (SUD) could be a smart policy, delivering on resource efficiency:

*"Member states **shall***

- adopt National Action Plans to set up their quantitative objectives, targets, measures and*
- encourage the development and introduction of integrated pest management and of alternative approaches and techniques in order to reduce dependency on the use of pesticides".*

# SUD explains clearly what MS have to do:

*"Member states shall take all necessary measures to promote low pesticide-input pest management and organic farming, giving wherever possible priority to non-chemical methods".*

Provide information and tools for **pest monitoring and decision-making**, as well as **advisory services on integrated pest management.**" (Article 14(2))

Establish **appropriate incentives** to encourage professional users to implement **crop and sector-specific** guidelines for integrated pest management on a voluntary basis."  
Article 14.5)

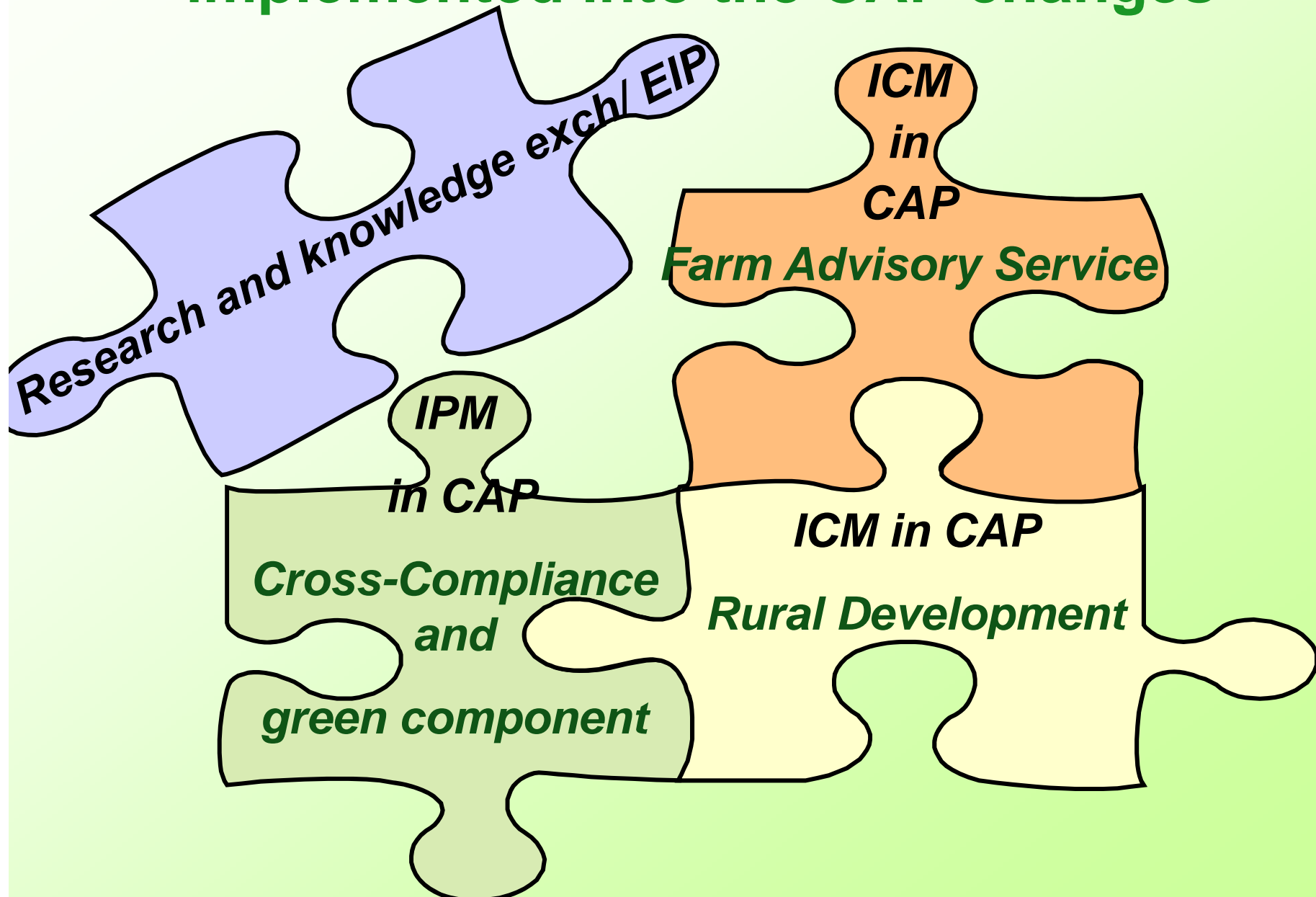
# **SUD explains clearly what farmers have to do as from 2014:**

***”professional users of pesticides switch to practices and products with the lowest risk to human health and the environment among those available for the same pest problem***

- **Crop rotation**
- Use of **adequate cultivation techniques**
- Use, where appropriate, of resistant/tolerant cultivar and standard/certified seed and planting material
- Use of balanced fertilisation, liming and irrigation/drainage practices
- Preventing the spreading of harmful organisms by hygiene measures
- Protection and enhancing of important beneficial organisms



**Especially smart, if the SUD is fully implemented into the CAP changes**



# But..



**MS** focus on easy measures ('Preventing the spreading of harmful organisms by hygiene measures' as machinery checks), rather than on agronomic practices (crop rotation, protecting beneficial insects..)

Completely setting aside the fact that **business as usual comes with a huge cost**

**Many actors** sell resource efficiency as an ad hoc and simple change, while in reality resource efficiency means **continuous changes**, delivering a **combination of measures**

Completely setting aside that resource efficiency means **holistic approaches and an increasing baseline**

# **Good there are smart farmer, smart researchers, and some smart retailers**

- Long term field experiments confirming that solid agricultural practices delivers on productivity (ECOSTAC, 50-100 years studies in Moldavia, UK, US...)
- Case studies showing that producing different can be the way to survive (Rauq (BE), Hall (UK),...)
- Commercial companies advising farmers to use good agricultural practices (certain supermarkets Marks and Spencer, certain

# So on resource efficiency:

The **motto** must be:

"We can't solve problems by using the same kind of thinking we used when we created them."  
(Albert Einstein)

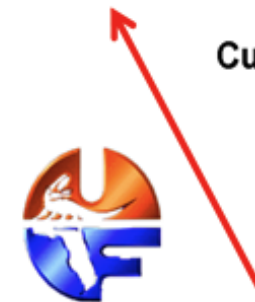
The **keywords** must be:

**holistic and integrated approaches, use of alternative techniques (integrating nature), dynamic baseline**

**Reality** is:

It is time for a paradigm change in European agriculture

**Sustainability**



Cultural Practices  
Biological Control  
Chemical Control



It doesn't matter how much you want. What really matters is how much you want it. The extent and complexity of the problem does not matter as much as does the willingness to solve it.

**Ralph Marston**

Thank you for your attention