

Socioeconomics of adopting IPM strategies by oilseed rape farmers

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Background

- The concept of IPM started to evolve in the 1960s
- Widely accepted as the only reasonable and sustainable alternative to straightforward reliance on chemical pesticides
- The adoption rate has been disappointingly low in most large-scale field crops – spectacular acceptance and success in protected crops
- Over-riding factor for growers in deciding which pest management approach to use is the net economic benefit, combined with perceived reliability of the method
- In theory many alternatives exist, but in practise micro-level considerations lead to straightforward use of chemical pesticides
- Fine-tuning comes from choosing the active ingredient, and when, how, and how many times to spray
- OSR is a very large and plant protection intensive crop in the EU - to help in designing improved IPM for the crop, we decided in the MASTER-project to analyze growers' knowledge and attitudes relating to IPM – **NOTE: this survey was conducted before the EU 'IPM Directive', which requires all farmers to follow IPM starting from 2014. This gives a starting point to understanding farmers' attitudes and behaviour concerning IPM.**

Farmer Survey

A questionnaire was produced and disseminated with 24 questions concerning OSR growers' practices, knowledge of and attitudes towards IPM, and willingness to change farming methods

In total, 1005 replies were obtained for analysis

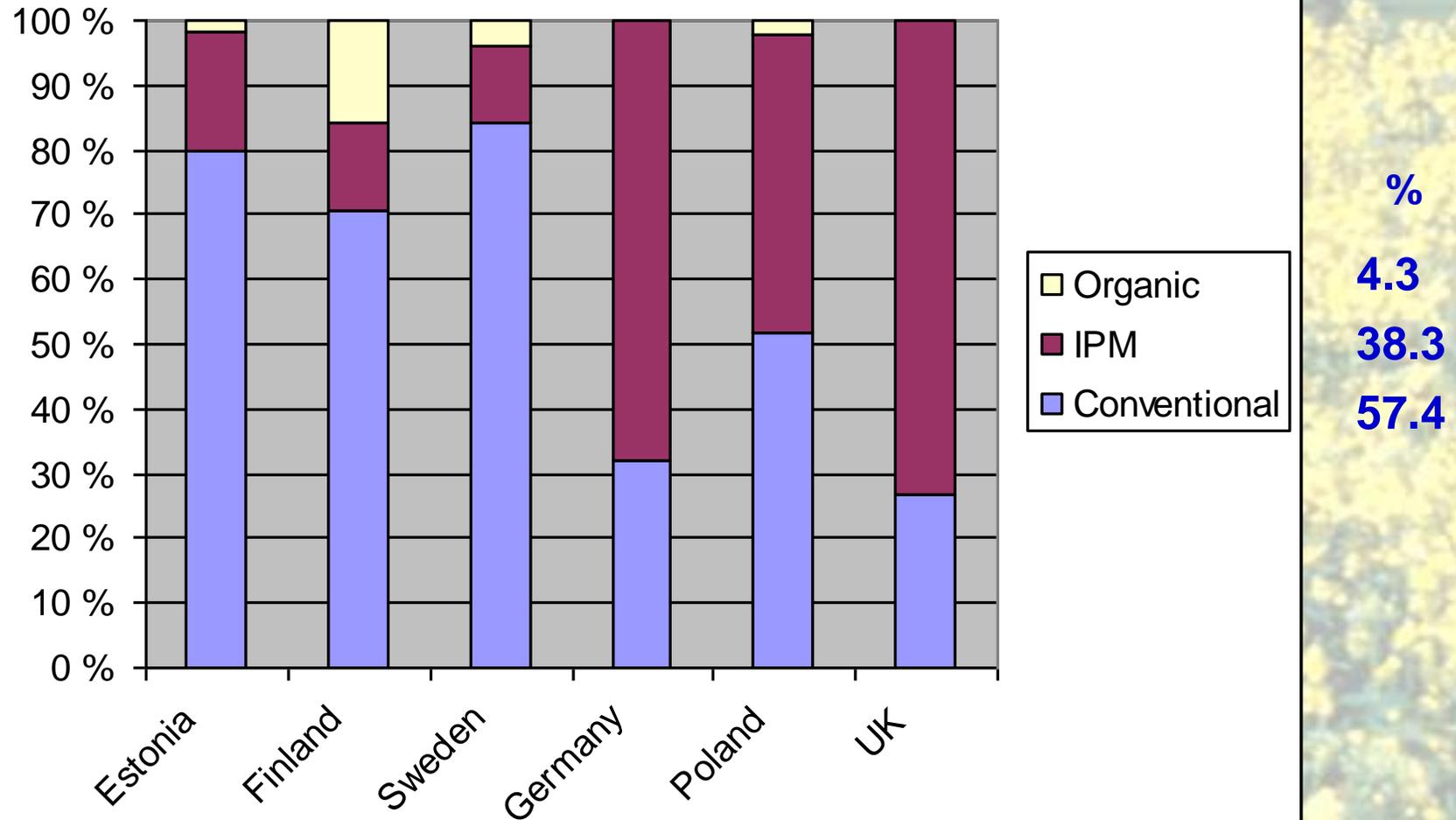
- **965 responses came from the main survey:**
 - 216 from Germany,**
 - 179 from Finland,**
 - 165 from Estonia,**
 - 154 from Poland,**
 - 136 from Sweden, and**
 - 115 from the UK**
- **Additional 40 replies were obtained from the pilot studies in Finland and Estonia**
- **Random postal surveys to OSR farmers (Finland, Estonia, UK partly) produced return rates from 25 % (UK) to 46 % (Estonia)**
- **Targeted surveys provided much higher percentages: 61 % for Germany, 65 % for Sweden, and 'over 90%' for Poland**

RESULTS

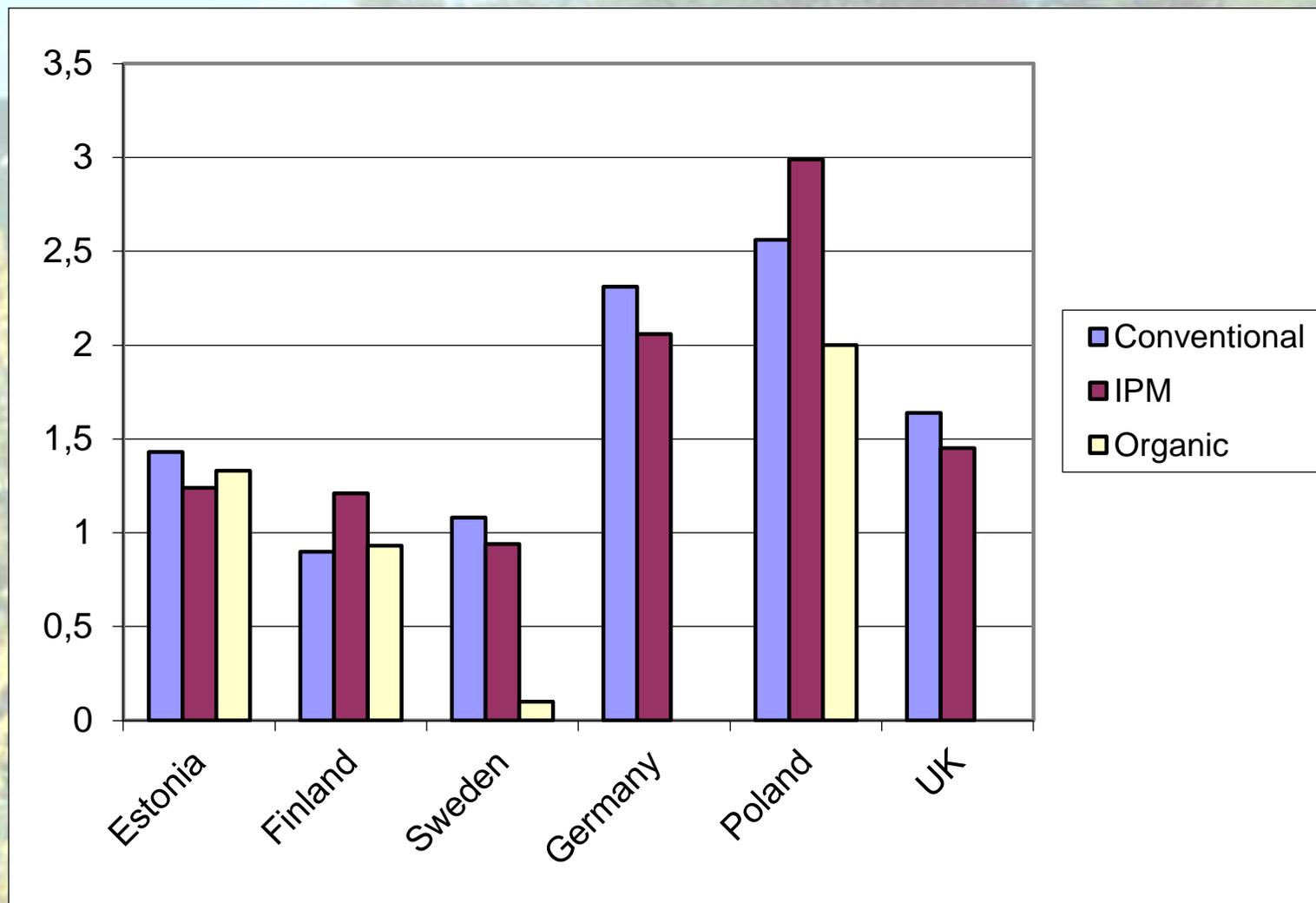
Farmers' practices in 2003-2004 relating to IPM, quick overview

- **growing method used** (conventional-IPM-organic)
- **insecticide use patterns**
- **tillage practices**

OSR farmers' own perception of the farming method which they use



Number of insecticide sprays by farming type



Mean:

1.65

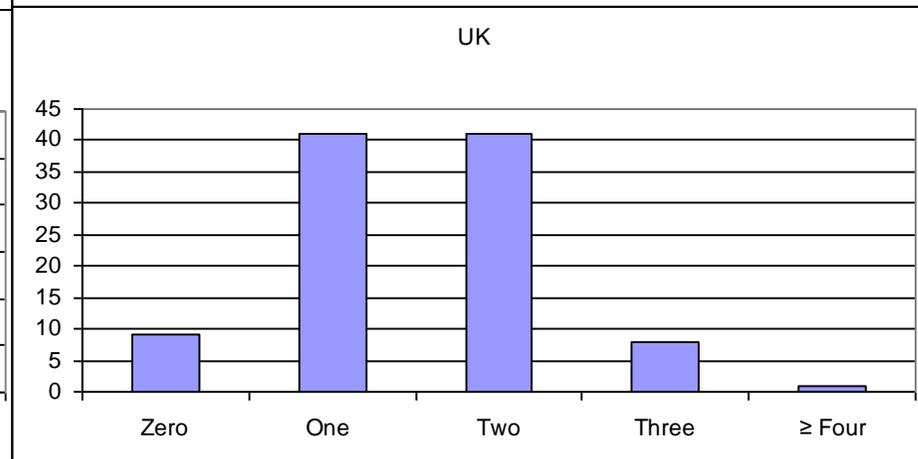
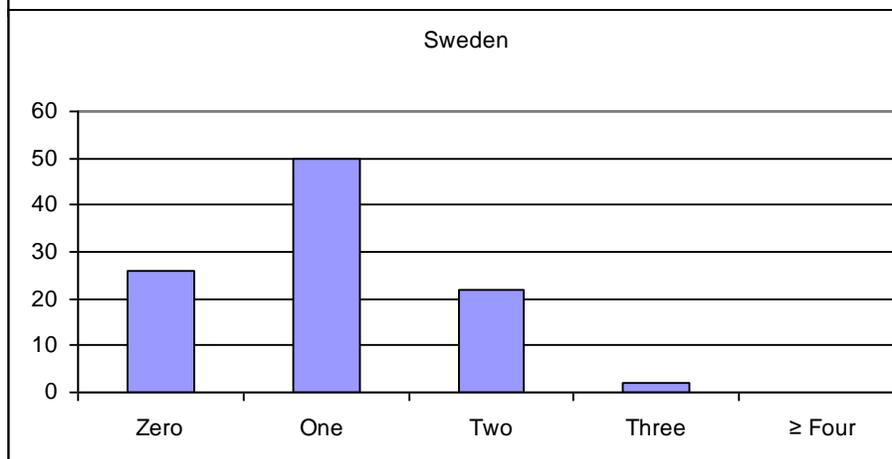
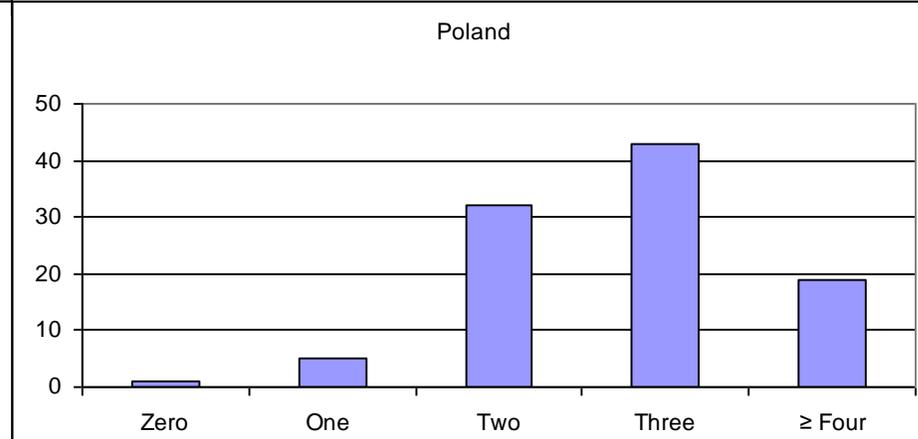
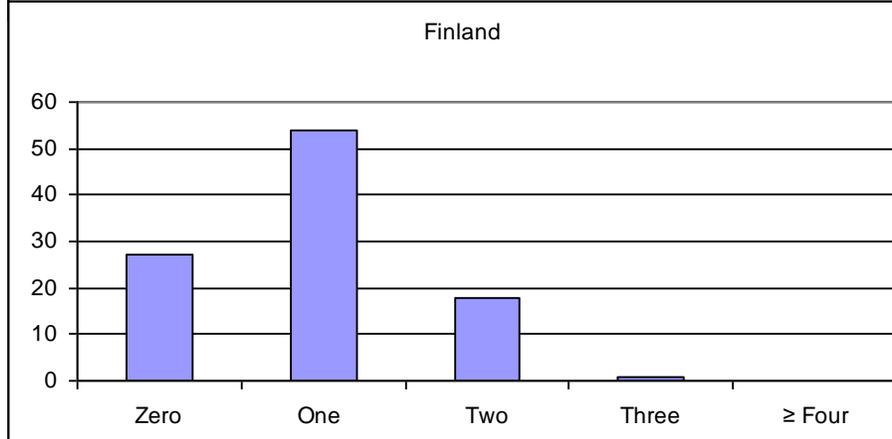
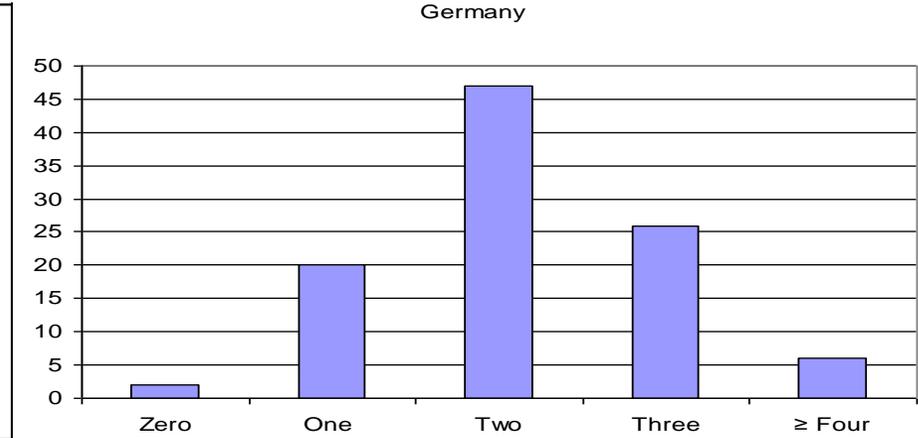
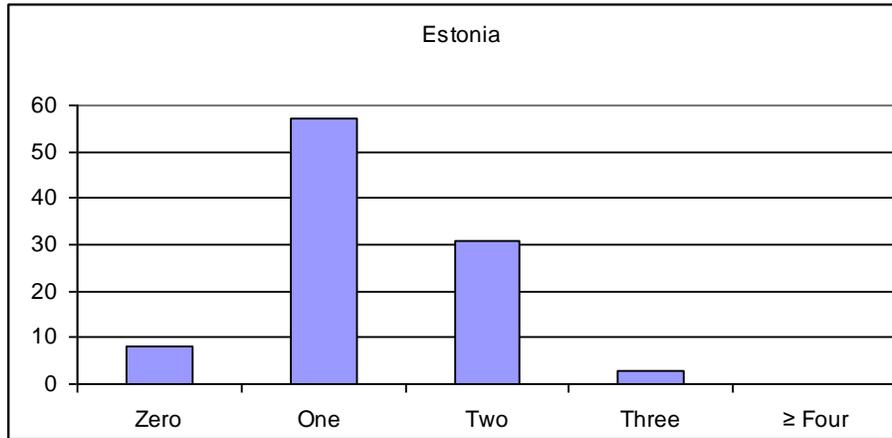
1.65

1.07

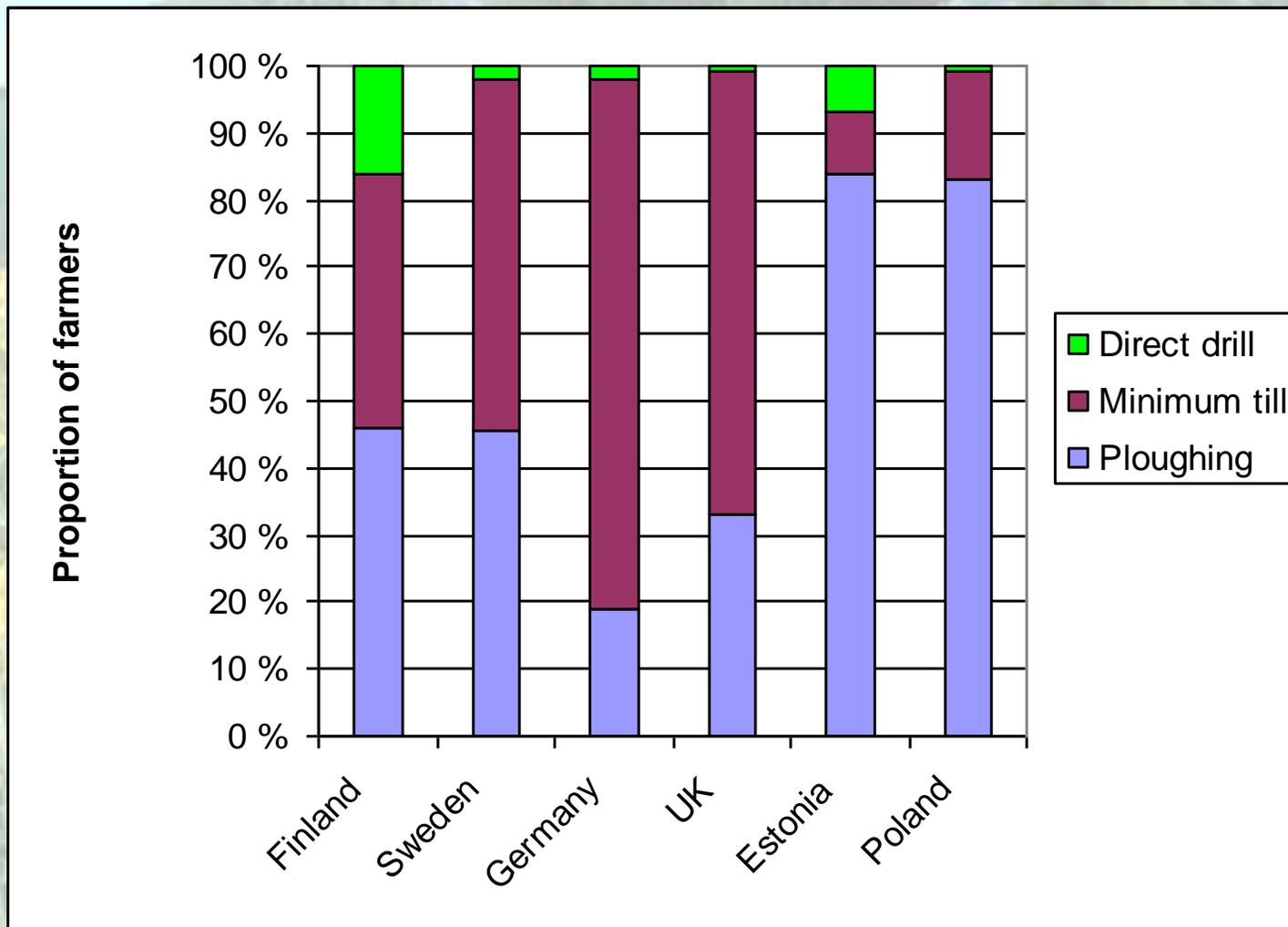
No difference in spraying! In Finland and Poland IPM farmers spray more than conventional farmers ... Countries with the highest proportion of (so-called) IPM, farmers spray the most (Germany, Poland, UK) !!!?

Number of insecticide sprays against OSR pests, by country

Proportion (%) of farmers



Soil tillage patterns differ in Partner countries



The reasons for using minimum tillage or direct drilling instead of ploughing differ in some Partner countries

Most important reasons overall:

- Less work
- Increased income
- Improving soil structure
- Conservation of moisture
- Organization of work
- Conservation of earthworms
- Erosion control
- Conservation of natural enemies
- Shortage of labour

Most important for Finnish farmers:

- Improving soil structure
- Less work
- Conservation of earthworms
- Increased income
- Conservation of moisture
- Organization of work
- Erosion control
- Conservation of natural enemies
- Shortage of labour



**Implementation of IPM strategies:
constraints and motivations to change
farming practices**

RESULTS: Willingness to change

Question: Would you change your pest management if:

(i) this gave you a higher market value for your product?

Proportion (%) of replies (by conventional growers)

	YES	MAYBE	NO
Estonia	64	35	1
Finland	38	49	14
Germany	88	7	4
Poland	80	16	4
Sweden	56	38	7
United Kingdom	63	33	3

Willingness to change

Question: Would you change your pest management if:

(ii) **crop inspection increased but costs remained the same?**

Proportion (%) of replies (by conventional growers)

	YES	MAYBE	NO
Estonia	22	65	12
Finland	26	53	21
Germany	17	55	29
Poland	64	33	3
Sweden	38	49	14
United Kingdom	36	50	14

Willingness to change

Question: Would you change your pest management if:

(iii) **you had to count insects in traps once or twice?**

Proportion (%) of replies (by conventional growers)

	YES	MAYBE	NO
Estonia	17	55	28
Finland	20	57	23
Germany	46	34	19
Poland	43	40	17
Sweden	36	40	24
United Kingdom	39	50	11

Willingness to change

Question: Would you change your pest management if:

(iv) **you had a reliable computer decision support system?**

Proportion (%) of replies (by conventional growers)

	YES	MAYBE	NO
Estonia	21	59	20
Finland	22	51	27
Germany	36	45	19
Poland	46	38	16
Sweden	24	48	28
United Kingdom	32	43	25

Carrot or stick –approach?

OSR growers were also asked whether certain policy- or market mechanisms would encourage them to change to IPM.

The clear favourite in replies from all countries was a **higher price for the products**.

Second most favoured measure was special **economic support to the IPM production method**; in Germany, however, this was nowhere as favoured as the first option, while in other countries these two were almost equally desirable.

The stick-approach included **increased prices for insecticides**, as well as **banning of broad-spectrum pesticides**. It appeared that this approach would work better in Poland and Estonia, than in Germany or Finland.

Maybe surprisingly, the **attitude responses were almost never affected by variables such as the age group of the farmer, or by the size of the farm.** The only exception appeared to be among Estonian farmers: older farmers were less willing to change their practices than young farmers – in other countries there was no difference at all based on the age group.

Quite surprisingly, in all countries, a group of 10-20% of farmers seem to refuse considering to use IPM, **even when it would improve their profits and would not cause any more work than their current conventional practise, BUT if at the same time on the crop there would be a higher number of pests than before.**

Conclusions

- **Many OSR growers claim to follow IPM. This may be stretching the definition, but at least their attitude is positive**
- **Advances towards IPM-friendly practices tend to be driven by factors other than those relating to pest management (e.g., tillage practices)**
- **Growers' awareness of ecological factors important to IPM varied widely. In general, the Estonian and Polish growers were in best agreement with the experts, while Finnish growers differed the most**
- **The importance of soil tillage practices for IPM is not clear to growers**
- **Growers readily acknowledged lack of knowledge concerning the possible role of natural enemies in IPM. This may remain as one of the biggest challenges in implementing the MASTER results**

Addendum:

IPM4Meligethes: WP on entomovectoring Where to find a definition?

Wikipedia: currently the entry to entomovectoring starts with the year 2012
We have to expand the current contents – the concept was defined in a publication in 2007 by Hokkanen & Menzler-Hokkanen.

A new, rather practical chapter on entomovectoring was invited and is available in:

Menzler-Hokkanen, Ingeborg and Hokkanen, Heikki (2017):
Entomovectoring: An Agroecological Practice of Using Bees for Biocontrol.
In Wetzel , Alexander (2017): Agroecological Practices for Sustainable
Agriculture. pp 183-199

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