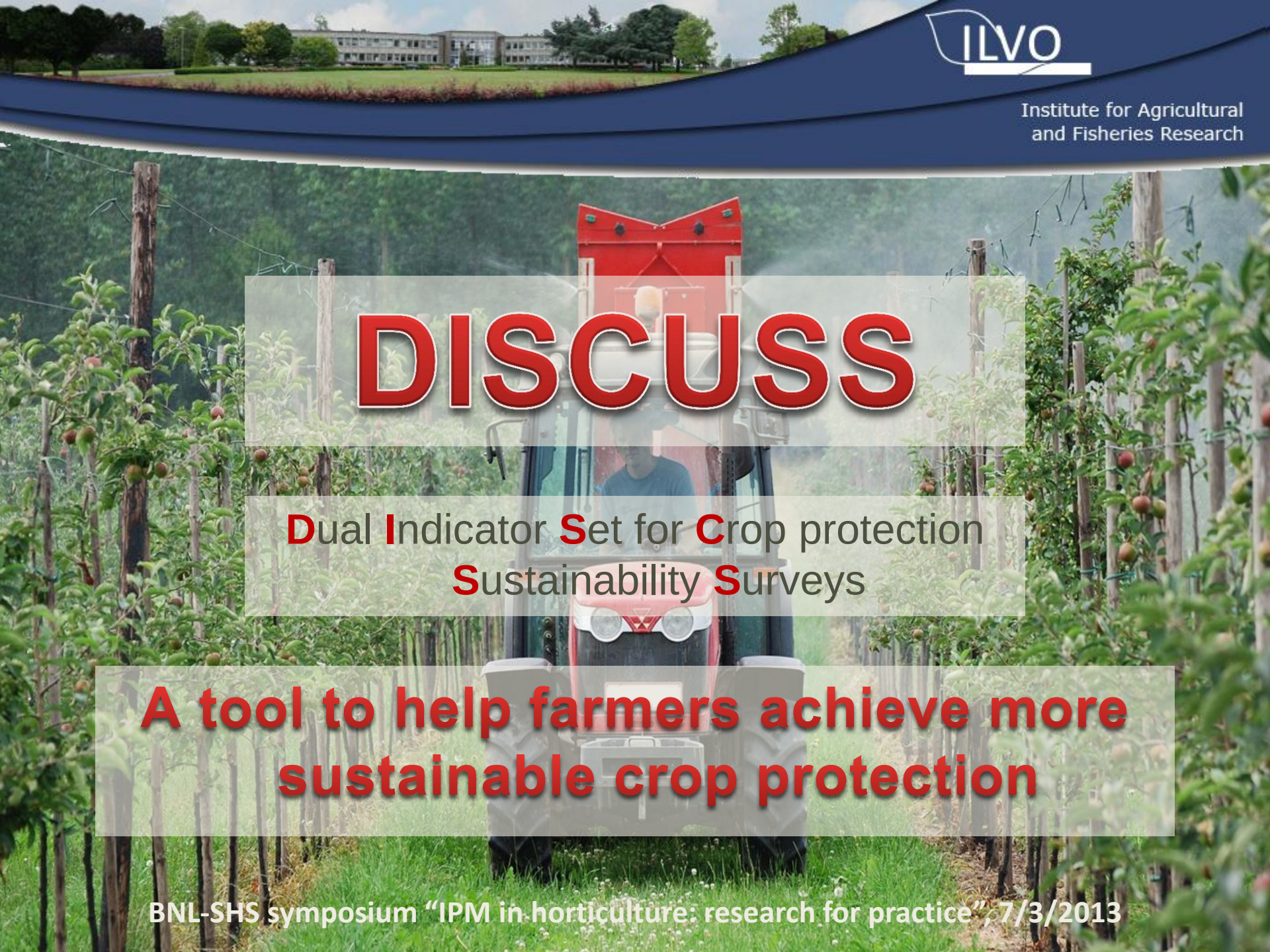
ILVO
Institute for Agricultural
and Fisheries Research
DISCUSS
Dual Indicator Set for Crop protection
Sustainability Surveys
A tool to help farmers achieve more sustainable crop protection
BNL-SHS symposium "IPM in horticulture: research for practice", 7/3/2013

Dual indicator set

PRESENTATION OUTLINE

1. **Indicator development**
2. **Preconditions for implementation**

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Institute for Agricultural and Fisheries Research — **Ghent University Fac. Bioscience Eng.** — **PCFruit – Res. Station for Fruit Growing**

Social Sciences Unit — **Dept. Crop Protection** — **Services for Growers**

❶ Indicator development

GOALS

Farm level instrument for

1. **Monitoring**
   & decision support

2. **Social learning:**
   use the indicator results as a starting point for discussion in farmer groups coached by an advisor

1.1. Methodology

- Sustainable crop protection
- Available indicators
- Criteria indicators

Desk-top research Literature review

Individual expert consultation

- Definition
- Requirements
- Indicators
- Inquiry themes

- Conceptual framework
- POCER setup
- 1st version inquiry

Desk-top research Indicator selection

Focus group with experts

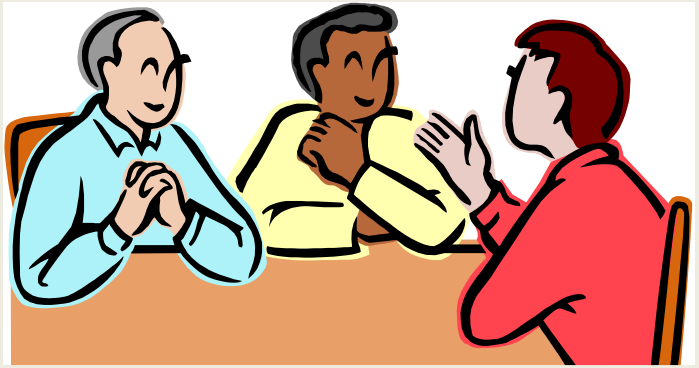
- Validation results
- Discussion indicator content
- Prioritise inquiry

- Indicator refining
- 2nd version inquiry
- Implementation tiers indicator set

Desk-top research Ind. development

Participatory ⇨ expert driven !

Individual interviews



Focus group

ILVO Instituut voor Landbouw- en Visserijonderzoek

1.2. Conceptual framework

- **Definition**

A sustainable crop protection minimises the effect on non-target biota. It has no unacceptable impact on human health nor the environment.

- **Requirements at farm level**

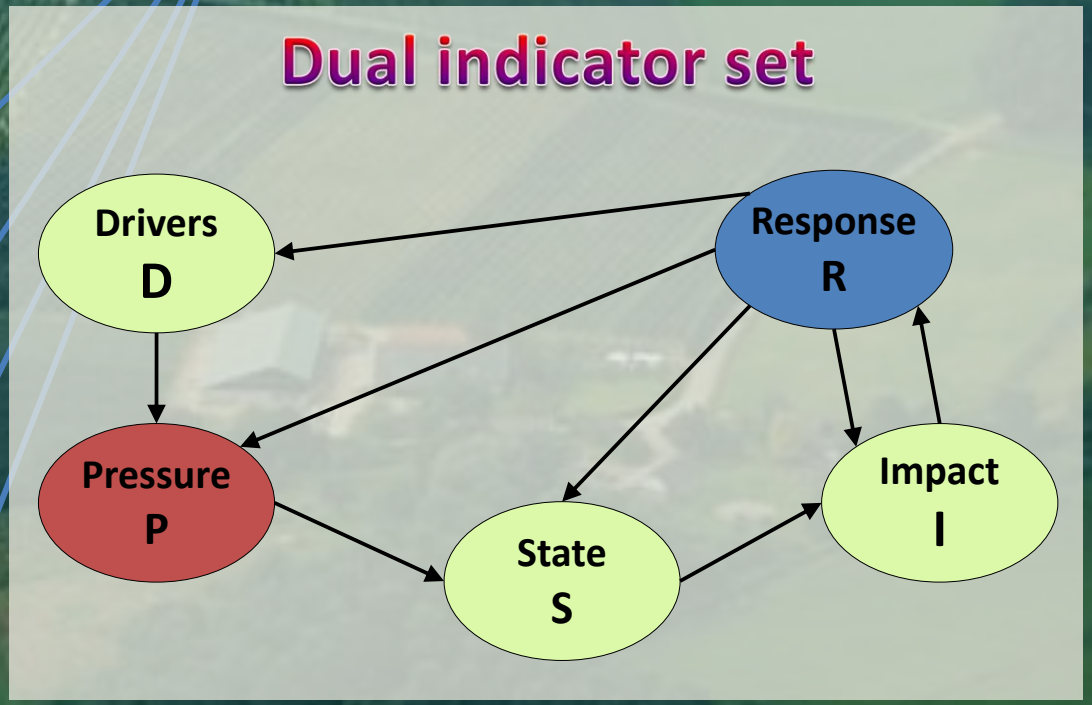
  - Avoid chemical crop protection (prevention, alternative protection,…)
  - If chemical treatment is inevitable, choose the least harmful PPPs
  - Comply with PPP legislation
  - Avoid PPP resistance
  - Take safety precautions: operator + third-parties
  - Avoid point pollution
  - Avoid diffuse pollution

1.3. Indicator types

- Avoid chemical crop protection
- Choose the least harmful PPPs
- Comply with PPP legislation
- Avoid PPP resistance
- Take safety precautions
- Avoid point pollution
- Avoid diffuse pollution

PIAS → **POCER**

Inquiry



1.4. Dual indicator set

POCER (Pressure)		INQUIRY (Respons)	
HUMAN HEALTH	Operator	Knowledge & info acquirement	
	Worker	Awareness environmental effects	K-A-A
	Bystander	Attitude towards pollution paths	
	Consumer	Prevention diseases/pests/weeds	
ENVIRON-MENT	Persistence	Monitoring & risk-evaluation	
	Groundwater	Alternative crop protection	IPM
	Aquatic organisms	Choice of chemical pesticides	
	Earthworms	Resistance management	
	Bees	Safety of operator & others	HUMANS
	Beneficial arthropods	Infrastructure & equipment	ENVI-RON-MENT
	Birds	Point pollution prevention	
	Mammals	Diffuse pollution prevention	

1.6. Additional information

Paper:

A dual indicator set to help farms achieve more sustainable crop protection

Pest Management Science
68 (8): 1130 - 1140

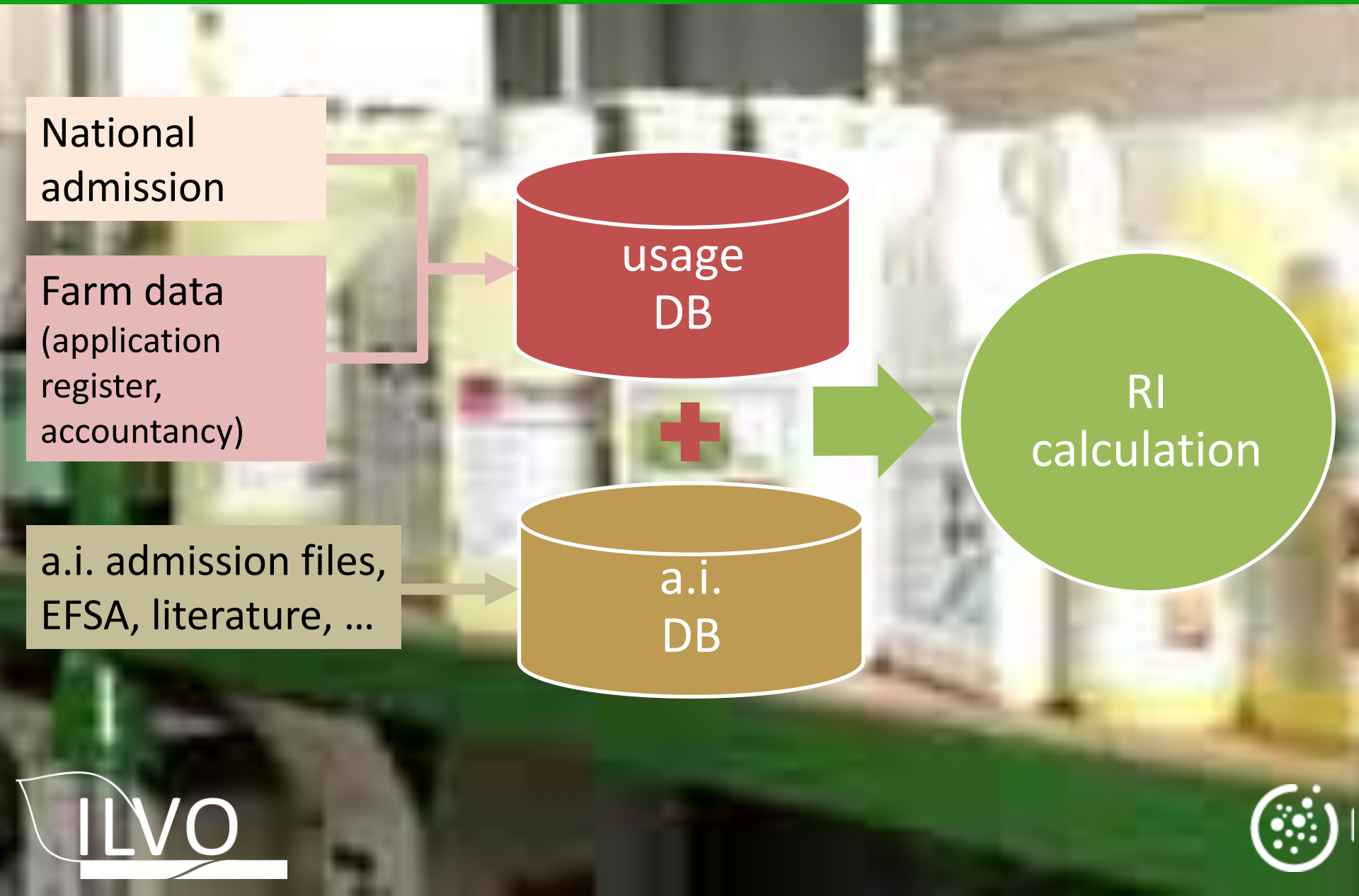
doi: 10.1002/ps.3332

❷ Preconditions for implementation

… into practice !

off the design table…

2.1 Database for POCER calculation



2.2. Inquiry pre-testing

The world is full of well-meaning people who believe
that anyone who can write plain English
and has a modicum of common sense
can produce a good questionnaire.

A.N. Oppenheim (1966)

Pre-testing: cognitive interviews with farmers

- ⇨ Unambiguous questions / instructions
- ⇨ Clarity / wording
- ⇨ Recollection
- ⇨ Response categories
- ⇨ Sensitivity
- ⇨ ... & technical issues

Willis (1999 & 2005)

2.3. Inquiry length

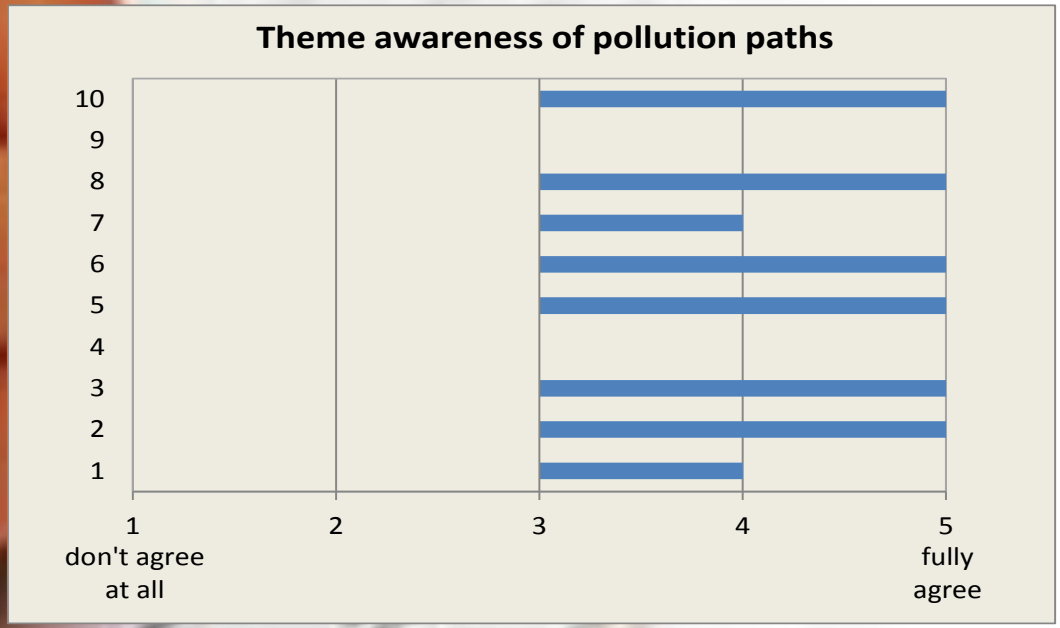
- 12 themes, subthemes, several questions/statements per theme
  - ⇨ very long questionnaire
  - ⇨ Can we reduce it?

- Test with PCFruit growers
  - ⇨ internal consistency
  - ⇨ correlations between themes/questions?
  - ⇨ min. 30 responses for significant statistics

2.3. Inquiry length: example 1

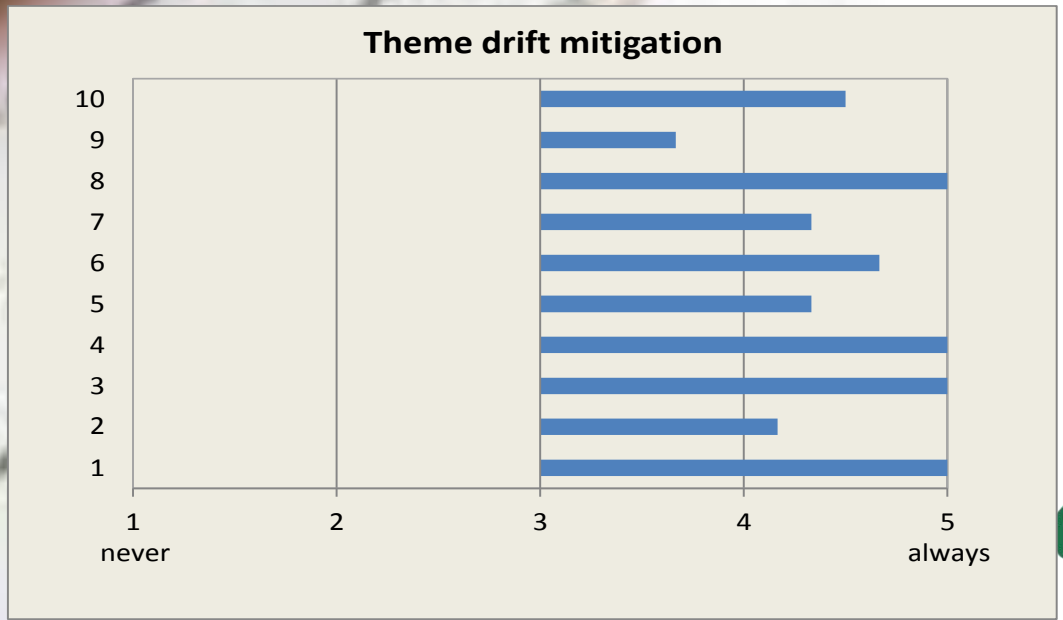
Theme awareness of pollution paths

S2: PPPs can get into the air through spray drift



Theme drift mitigation

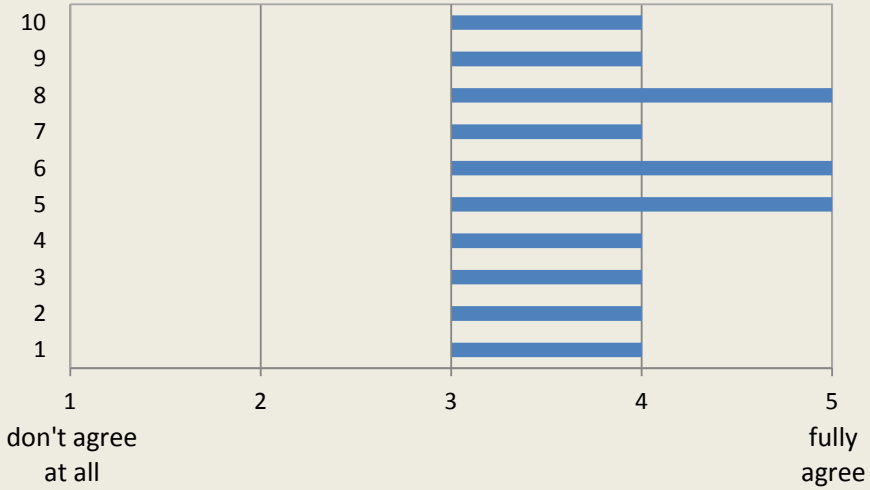
Q2: Actions for drift mitigation at plot borders and neighbouring elements (average of 6)



2.3. Inquiry length: example 2

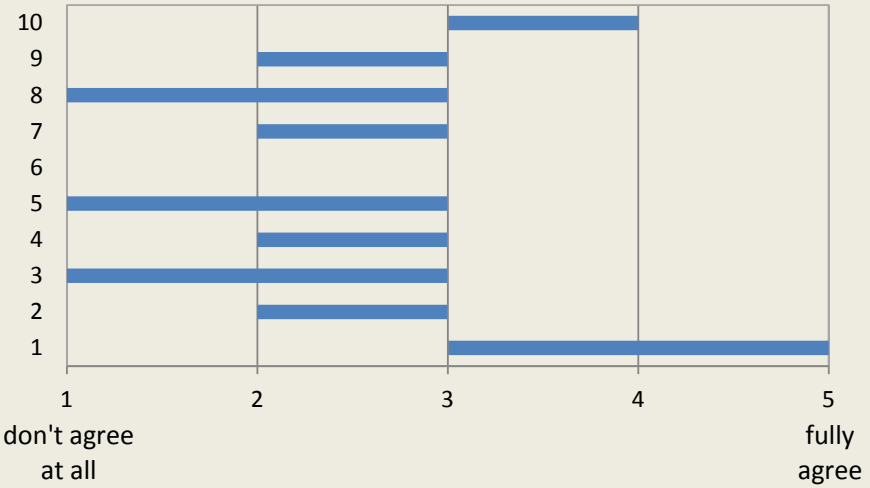
Theme awareness of pollution paths

S9: Spillage upon spray tank filling can be an important source of point pollution



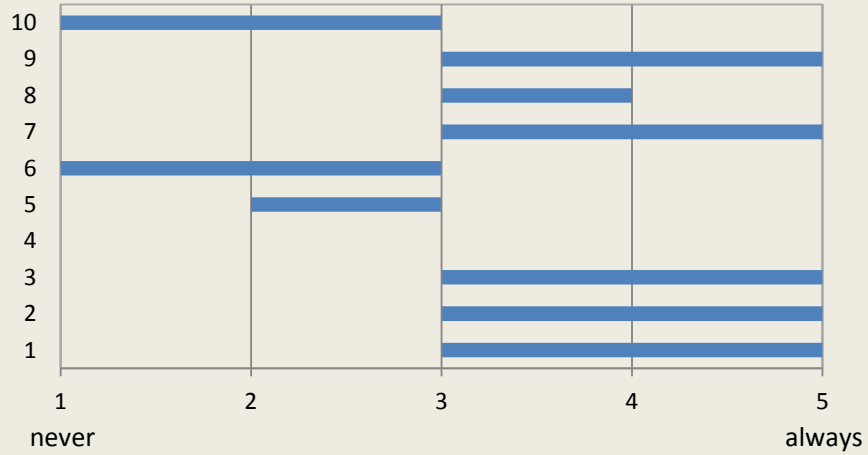
Theme awareness of pollution paths

S10: Somme drops of pure PPP don't make a difference in an entire brook or pond



Theme avoidance of point pollution

Q5: Is the spray tank filled in a place where spillage is collected (averadge of 3 possibilities) ?



2.4 Frame in whole farm sustainability

Crop protection is only one aspect of farm sustainability !

Integrated farm sustainability assessment

Environment	Crop protection
	Energy
	Water
	Biodiversity
	Waste
	Nutrients
	Soil quality
Economy	Productivity
	Rentability
	Price
	Stability
	Risk
Social aspects	Landscape
	Image
	Work
	Collaboration
	Entrepreneurship

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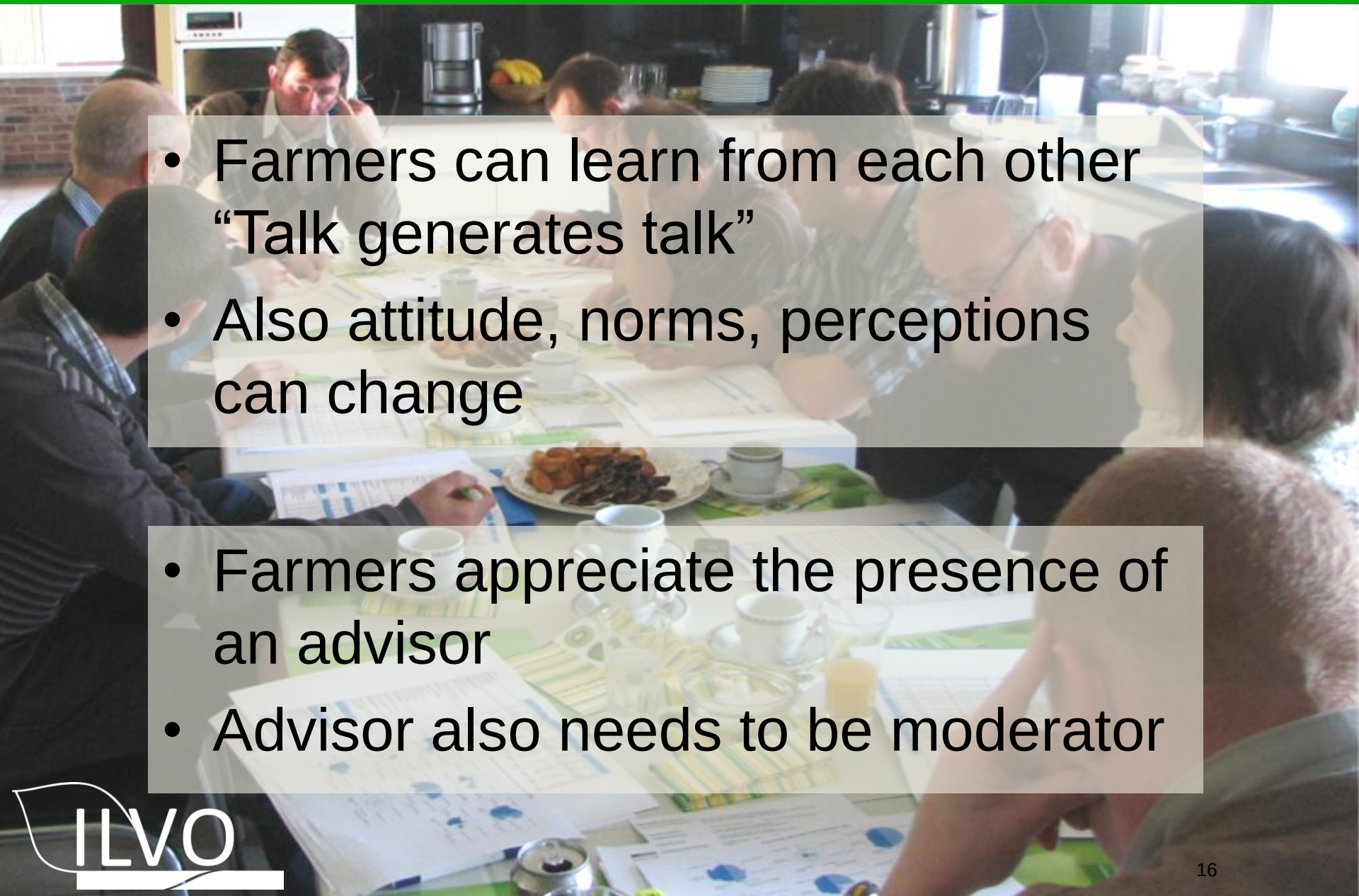
2.5 Implementation in discussion groups



- Farmers can learn from each other "Talk generates talk"
- Also attitude, norms, perceptions can change

- Farmers appreciate the presence of an advisor
- Advisor also needs to be moderator

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Thank you for your attention !

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