



APPLIED PLANT RESEARCH

Networks and Innovation in Agriculture

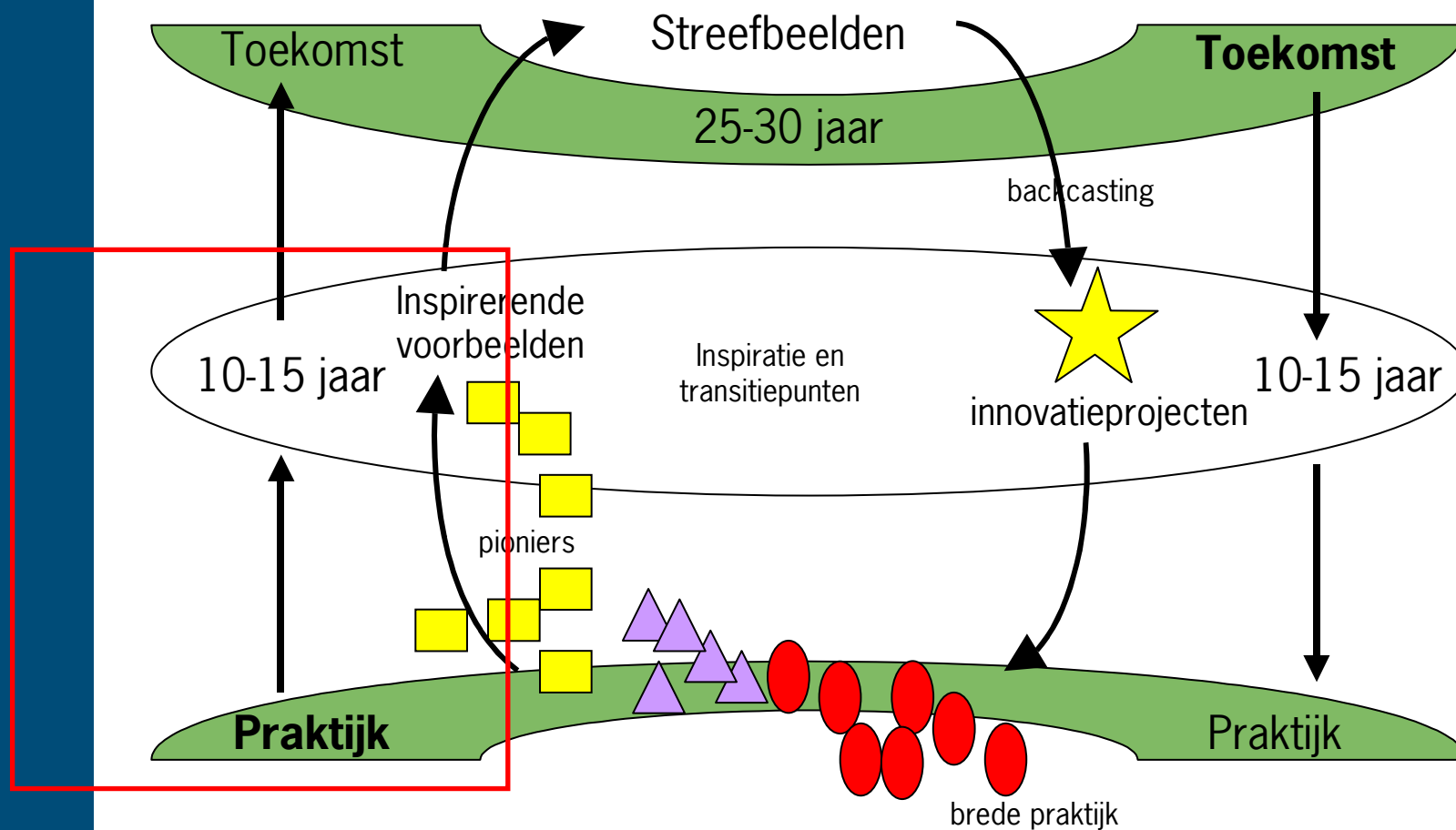
W. Sukkel,
Uruguay delegation
01-09-2008



Personal introduction

- Wijnand Sukkel
- Agronomist Specialist organic plant production
 - Research Coördinator: Organic open field production
 - RC: Energy use and ghg emissions in organic agric.

Team Farming Systems Research
Applied Plant Research (PPO)
Wageningen University and Research Centre (WUR),





The Agricultural Treadmill (Cochrane)

- Many farms all produce the same product
- None can influence price so everybody produces as much as possible for the going price
- New technology gives innovators windfall profits
- After some time others follow
- Increase of production and efficiency and decrease of price
- Who hasn't yet adopted the new technology has to follow otherwise he loses income
- Who cannot follow will stop. Their resources are absorbed by the innovators, scale enlargement



New coordination mechanisms (2)

	HIERARCHIE	MARKET	NETWORK
<i>Driving force</i>	Power	Rational choice	Agreement
<i>Means</i>	Regulation Intervention	Supply/demand	Collective action
<i>Enhanced by</i>	Strengthen intervention power	Liberalise market	Facilitate Participate
<i>Pre condition</i>	Obedience	Driven by preferences	Inter-dependance

Courtesy: Niels Röhling



New coordination mechanisms (1)

- We deal with production, consumption, and everything in between
- Not only productivity, but also ecology, employment, social justice,
- Stakeholders not only farmers but also consumers, transporters, retail, environmental organisations, policy makers, etc.



Conflicts

Ecology



Economy

Diversity



Homogeneity

Need for:

- Farming systems and methods designed to overcome these conflicts
- Social and political solutions

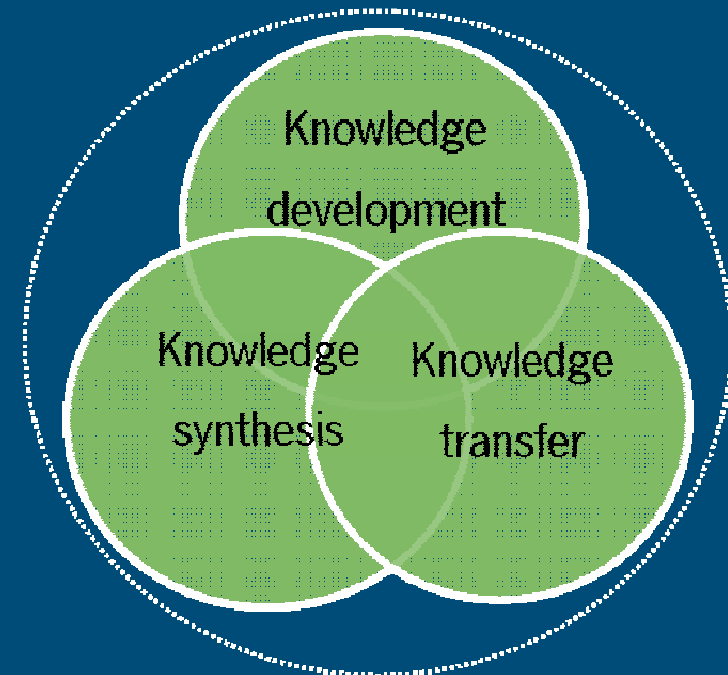
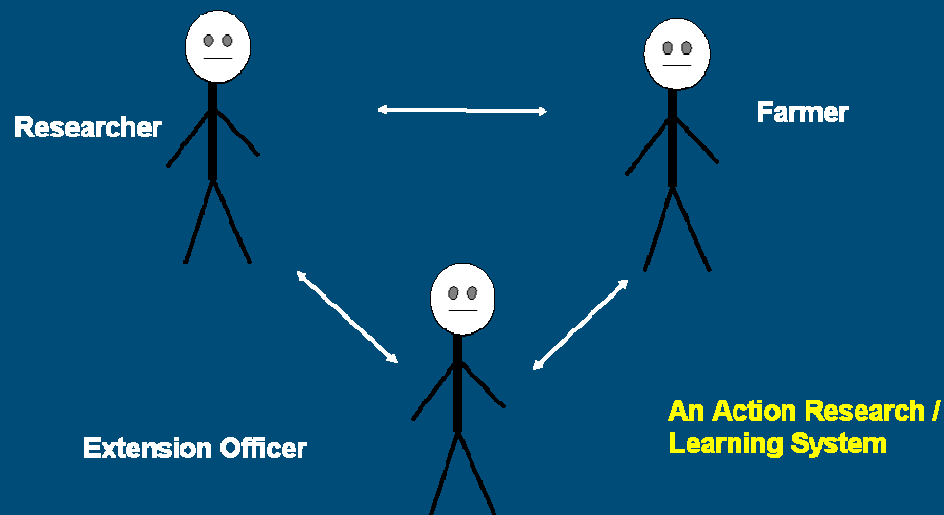


Conventional	Organic
Uniformity	Diversity
Recipy	Concept
Reductionism	Holism
General	Situational
Control	Cooperation
Specialist	Universalist
Reaction	Precaution
Economy	Ecology
Global	Regional



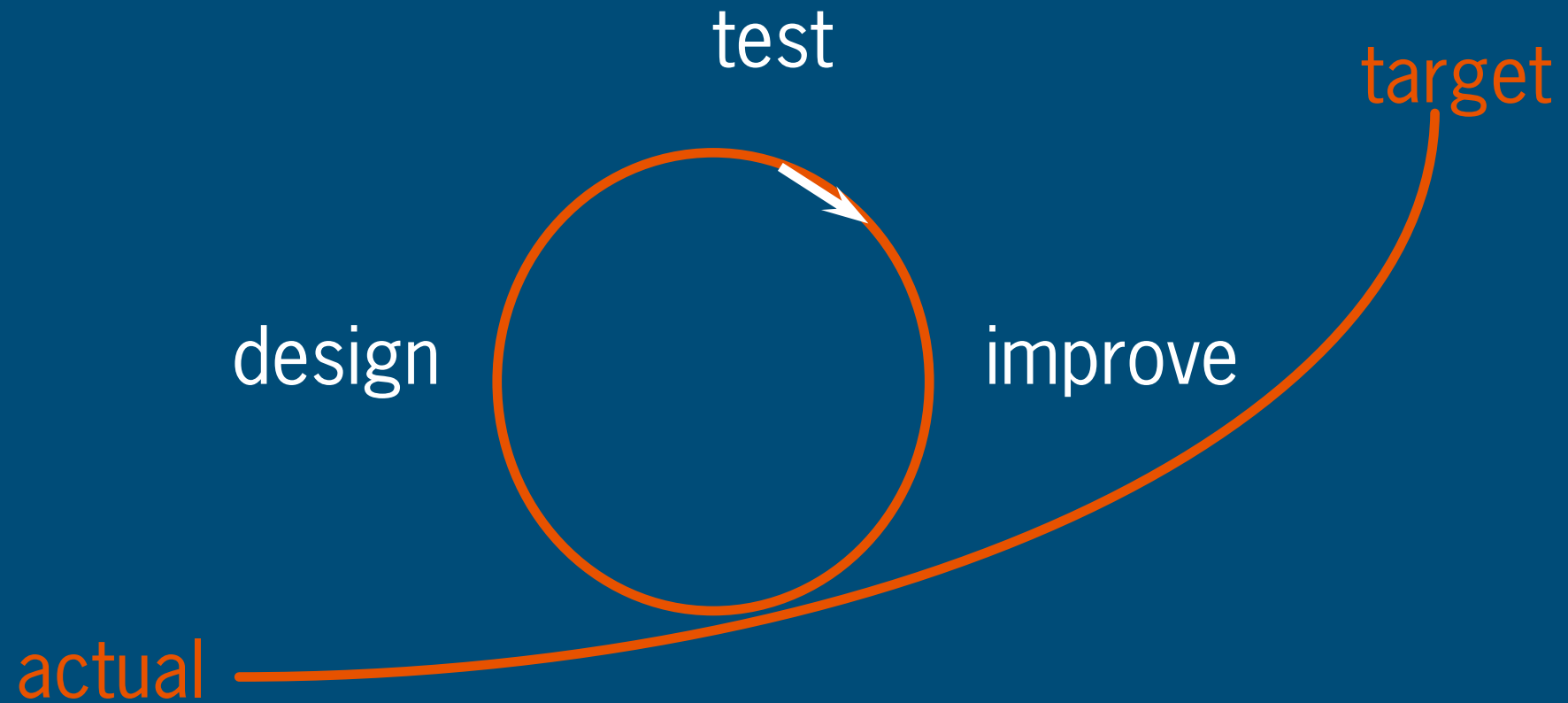
Vision on research and knowledge

- Integration of knowledge development, synthesis and transfer
- Participatory approaches (networks)
- System/holistic approaches





Testing and improving



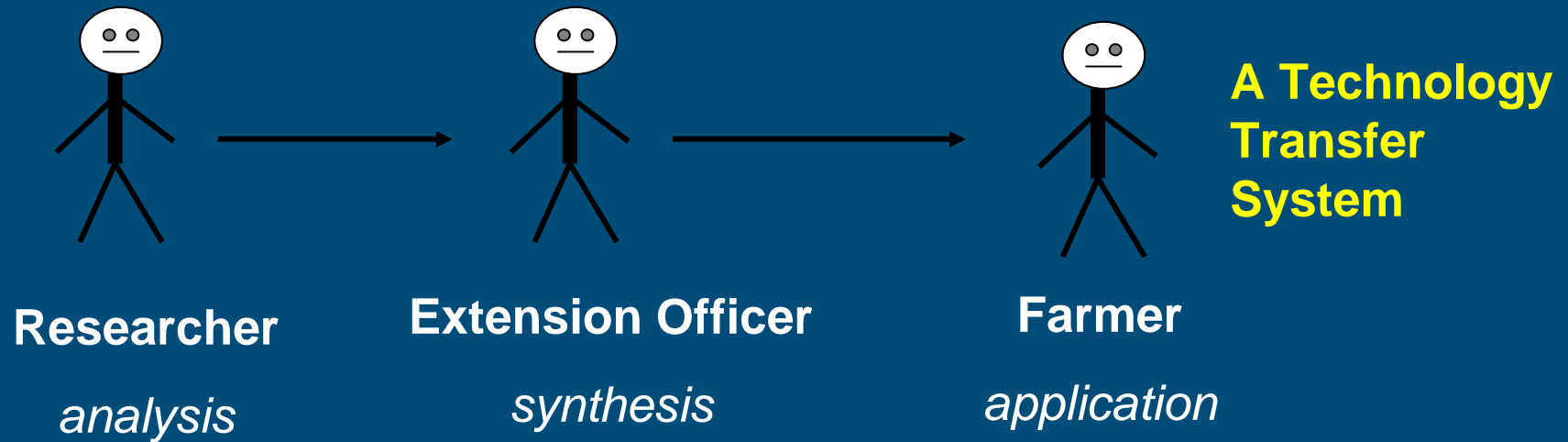


Organic Agriculture needs
a specific approach in (applied) research and
knowledge transfer

The linear knowledge model does not work for
the development of organic farming systems



Linear Model



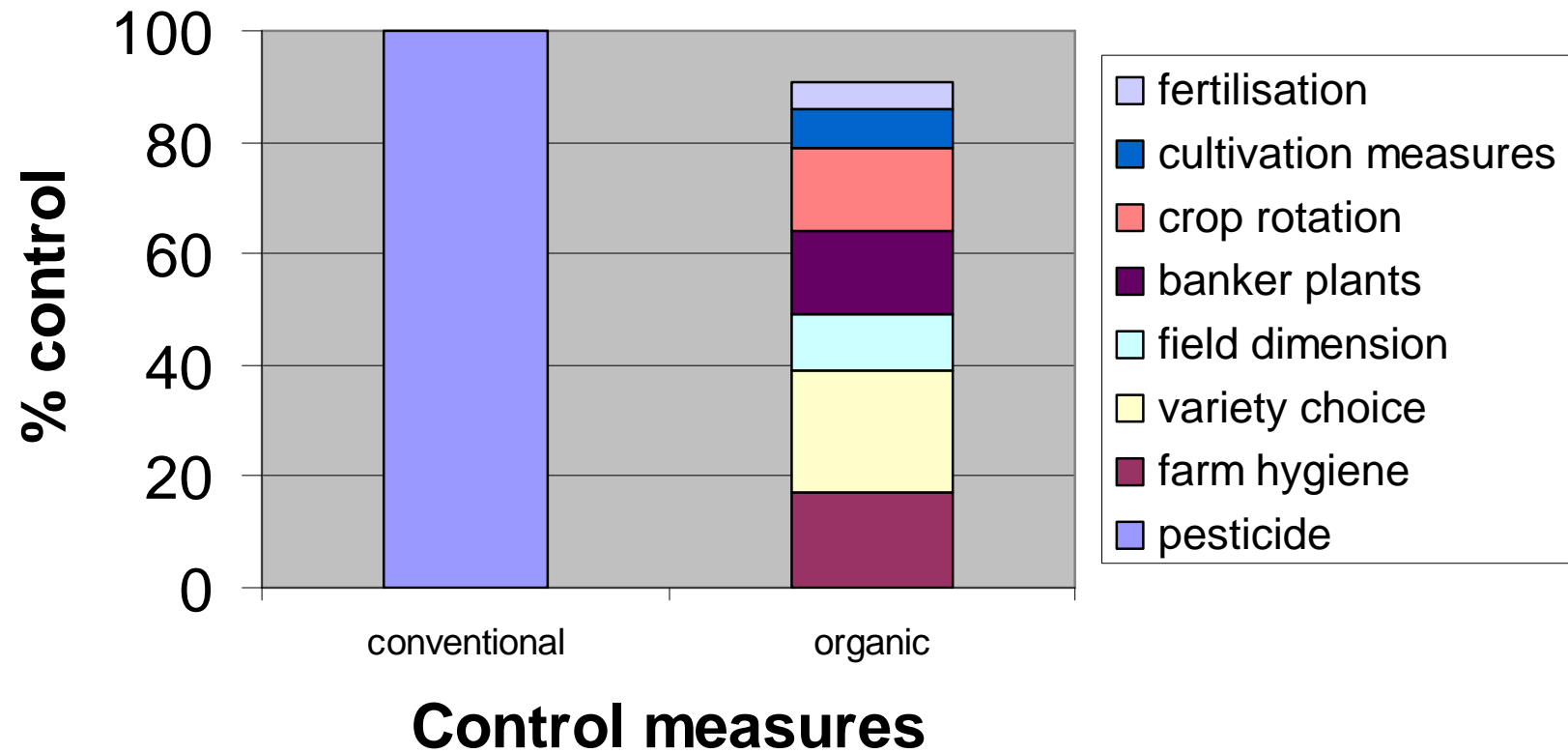


Consequences values and intentions organic

- Few monofactorial instruments
- Available methods and techniques have complex effects on farm performance
- Application of methods and techniques is situational

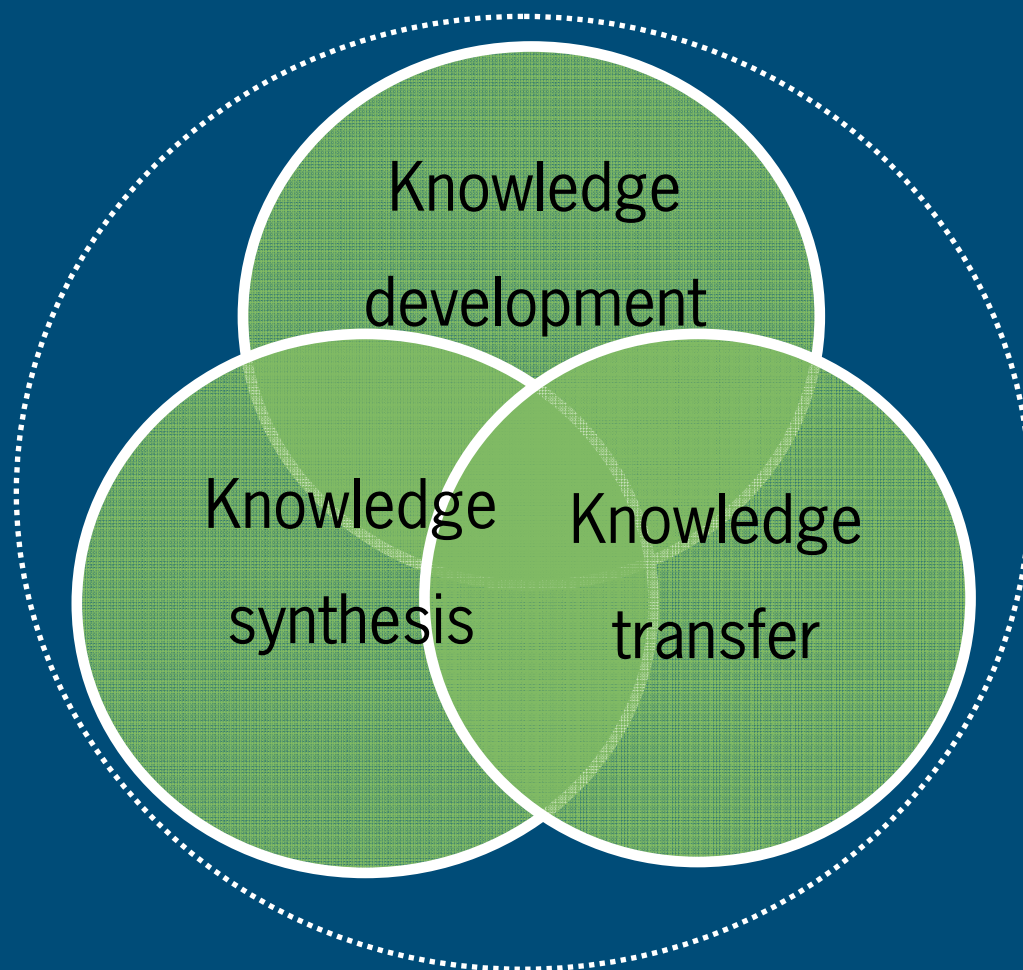


Control pest x



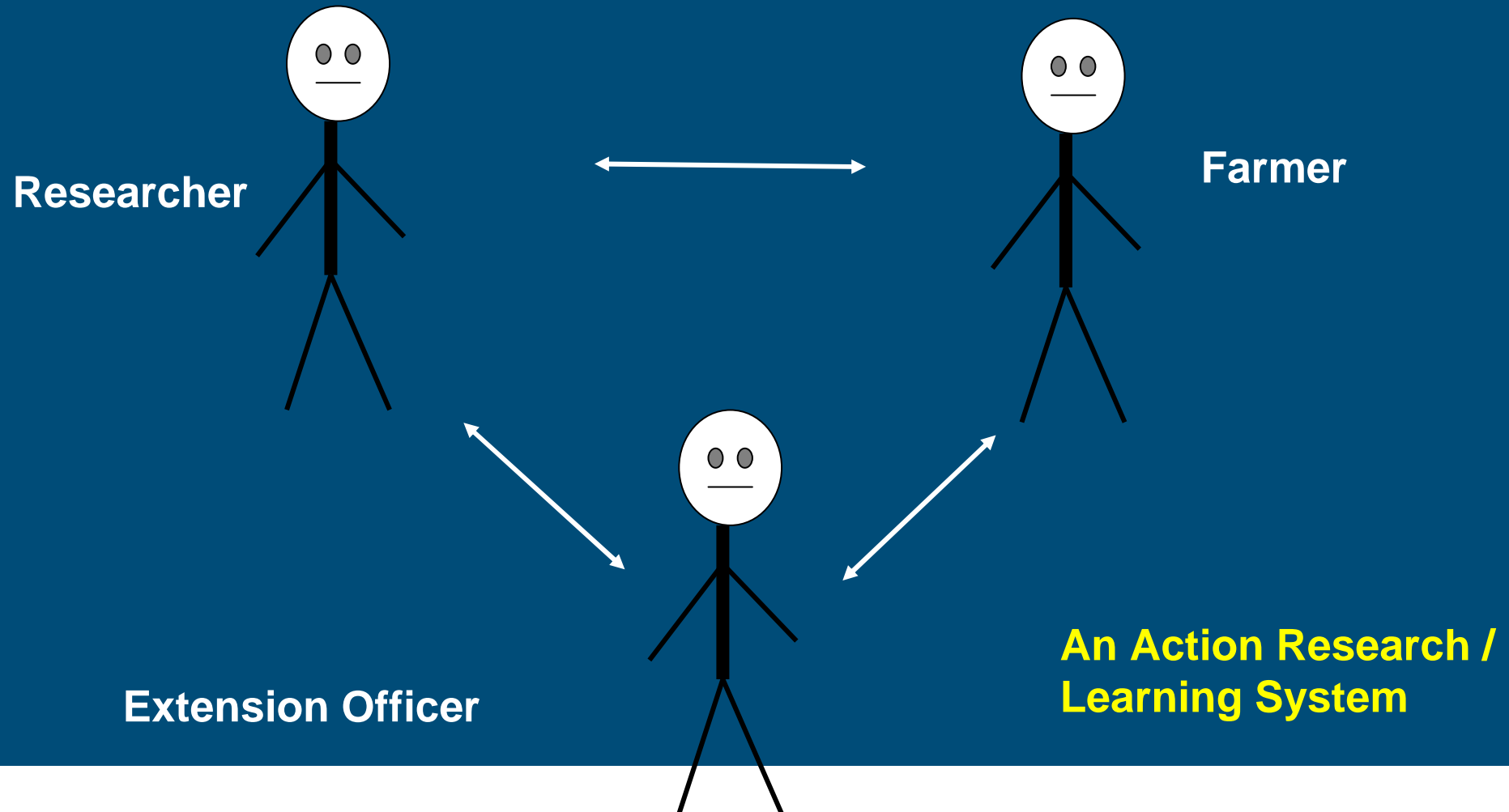


Integrate development, synthesis and transfer





Participatory Approach





Partners in knowledge network

- Farmer: craftsmanship, experience knowledge
 - Integrated methods and strategies instead of recipes
- Advisor: integrated practical knowledge
 - Application of methods under different circumstances
- Researcher: Formal knowledge, concepts
 - processes and systems, integration of disciplines
- Changing roles and skills of partners in network
- Basic information through internet

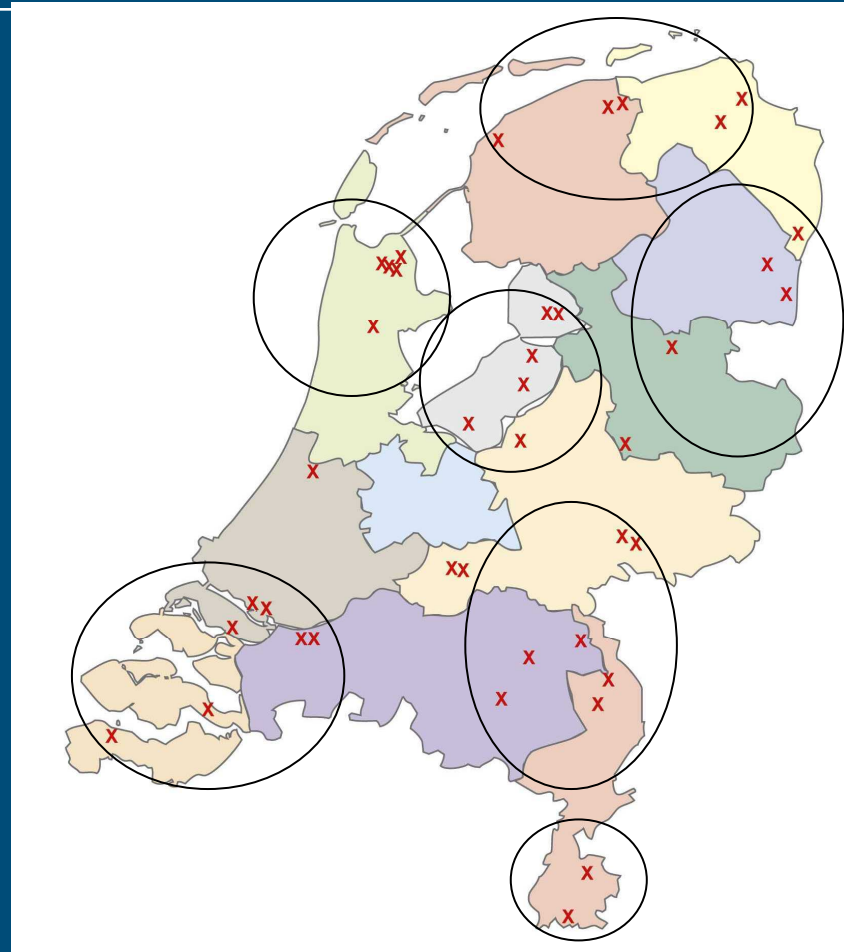


APR Farmers networks in the Netherlands

- Farmers networks since 1990
- Momentarily two main projects in plant production
 - BIOM (organic), 50 farmers
 - Farming with Future (integrated), 350 farmers
- Regional and sector groups of 5-15 persons
- Objectives:
 - Farming with Future: Implementation/support of policy (pesticide and nutrient emission)
 - BIOM: development organic farming

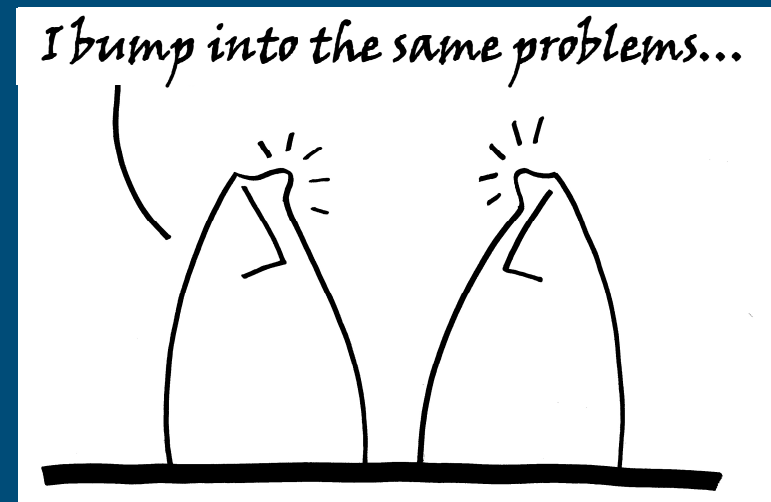


BIOM network
40 farmers,
7 regional groups,
arable and
vegetable crops



Main Principles

- Development, synthesis and transfer of knowledge is integrated
- System approach
- Learning by doing and seeing
- Knowledge input of partners is valued equal
- Learning from colleagues, advisors, researchers





Research Arable and Vegetable crops

- Experimental systems
 - Nutrients Waterproof (organic matter, nutrient management)
 - Taste of Tomorrow (pests, diseases, weeds, soil)
- Thematic projects (soil, pest/weeds/diseases, nutrients, ghg emissions, product quality)
- Thematic innovation groups



Innovation groups

- Thematic group of innovative farmers
 - Weed control
 - Pests and diseases
 - Soil and mechanization
 - Soil and fertilisation
 - Product quality
 - Market and entrepreneurship
 - Small farm holdings
 - Energy use and ggh emissions



Innovation groups

Source of inspiration and innovation

Brings together inventors, innovators, researchers etc.

Support and facilitate initiatives

Ownerships by the farmers!!!



How do you get new ideas???

- Bring different knowledge sources together! practical knowledge, craftsmanship, formal knowledge,
- Exchange knowledge and experience: colleague's, researchers, advisors, suppliers, chainparties,
- Take notice of new developments,



Functions innovation groups

- Guiding research projects
- Preparing research proposals
- Testing and improving innovations on farm
- Expert group for sector and policy makers
- Signaling: problems, developments, chances
- Vision development for organic agriculture
- Knowledge transfer



Ingredients

- Regional and/or thematic farmers groups
- Research is demand driven
- Farm visits, meetings, excursions, demonstrations
- Involvement various stakeholders
- Farm Registration
- On farm research





Objectives and functions

- Farm development (People, Planet, Profit)
- Support and stimulation of innovation
- Identification bottlenecks (research, policy)
- Input for setting organic research agenda



Functions developed during project

- Provide policy information, statistics
- Lobby, interest care
- Platform for cooperation
- Testing and improving methods
- Research facilities for on farm research



Demand driven agenda

- Farm continuity and basic income
 - Added value and cost reduction
 - Entrepreneur skills

- All within the framework of:
 - sustainable development
 - intentions of organic agriculture



Results general (organic farmers networks 1997 – 2003)

- Fast knowledge circulation
- Improved cooperation
 - Studygroups, price information system, trade, po's, ..
- Improved insight in bottlenecks and performance
- Improved research agenda
- Higher awareness of environmental effects
- New market initiatives
- Higher performance participating farms
- Innovated farming methods

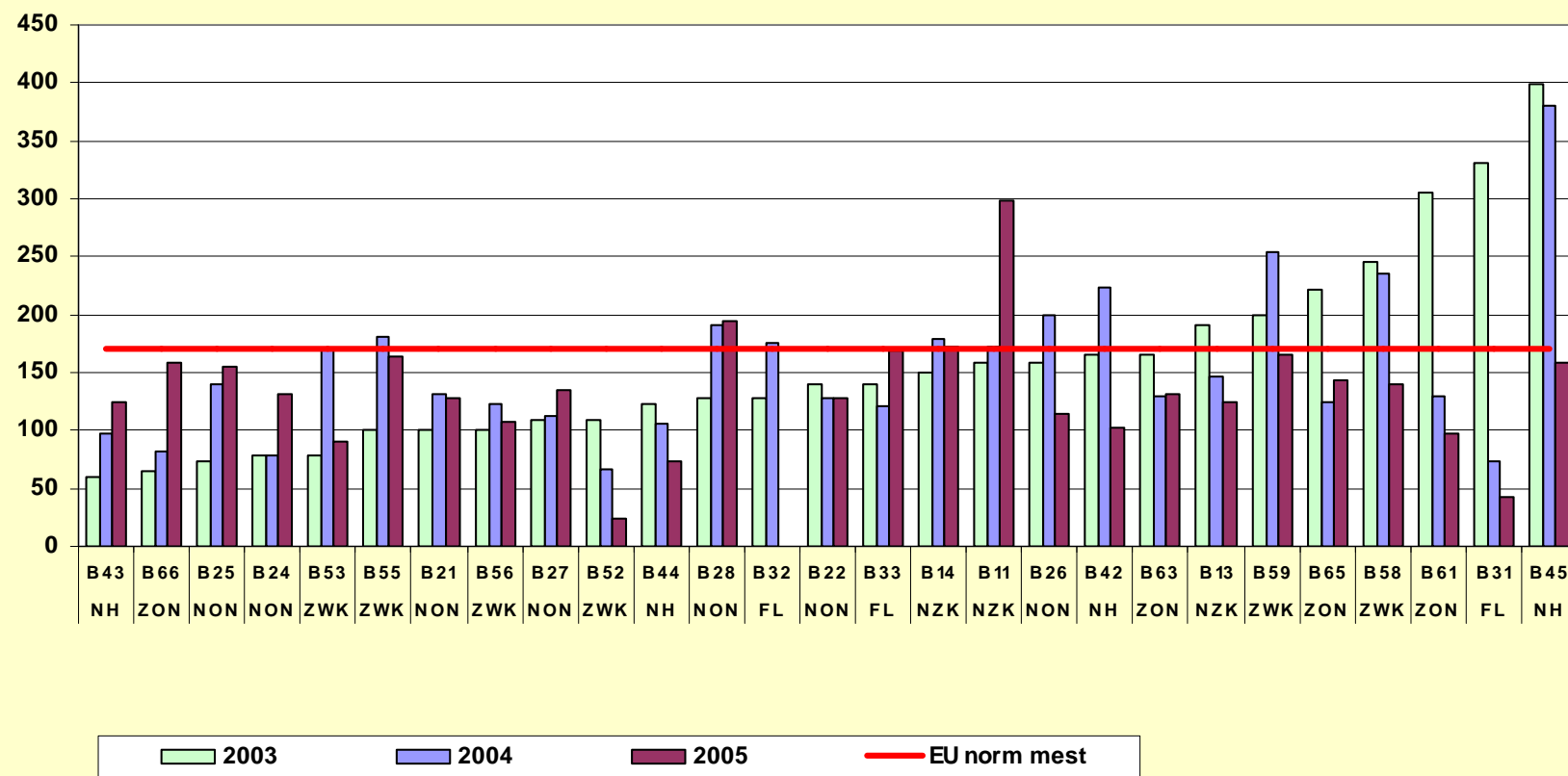


Results agronomic

- Reduction hours handweeding
- Leveled of extremes nutrient inputs
- Improved yields
- New techniques developed

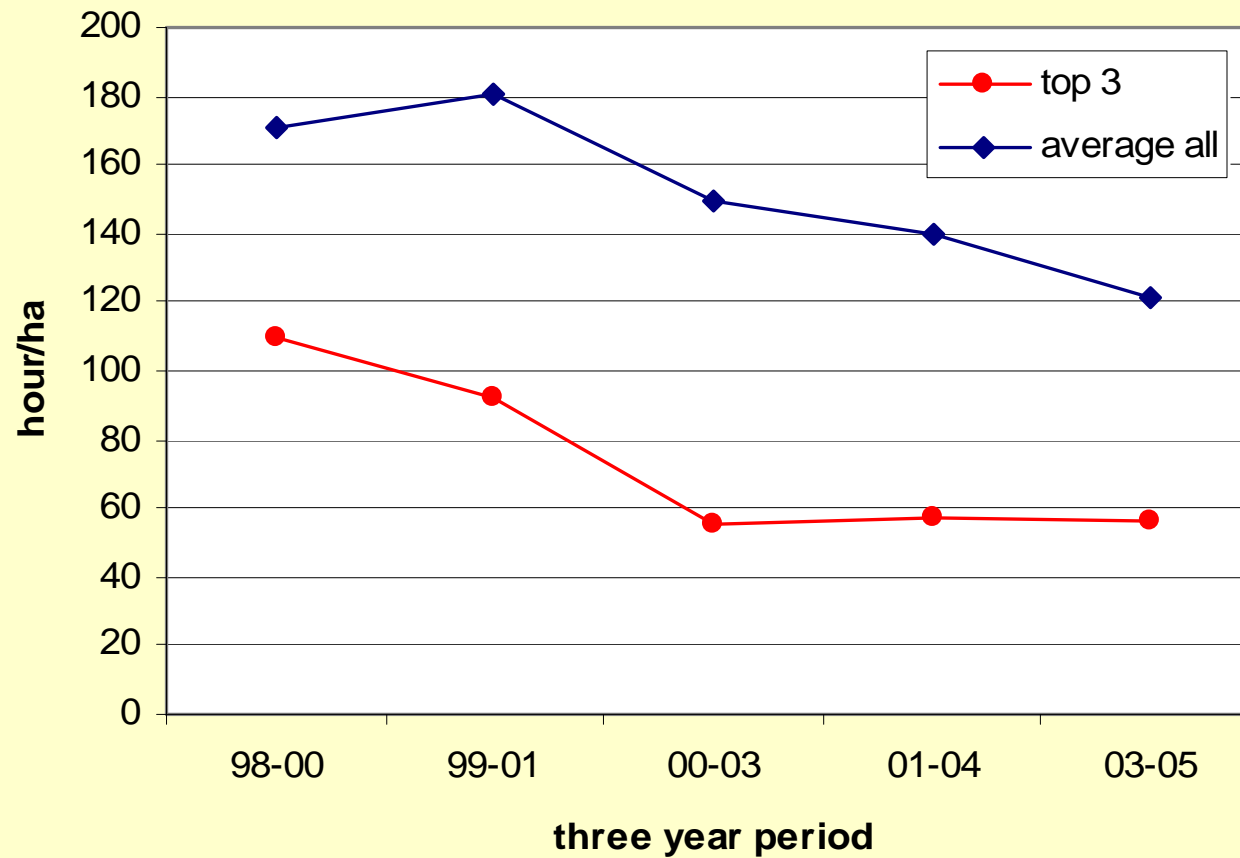


N input animal manure (kg/ha)



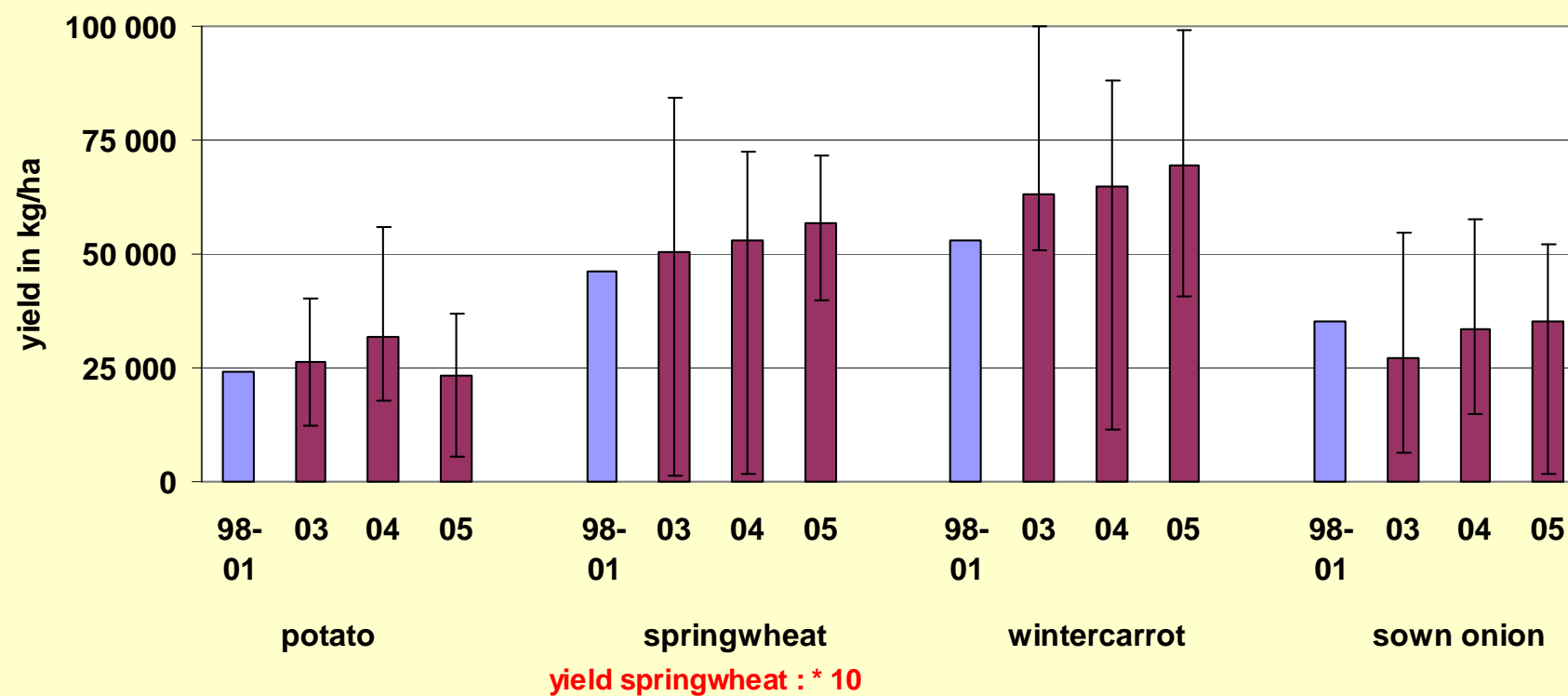


Hours of handweeding in wintercarrots

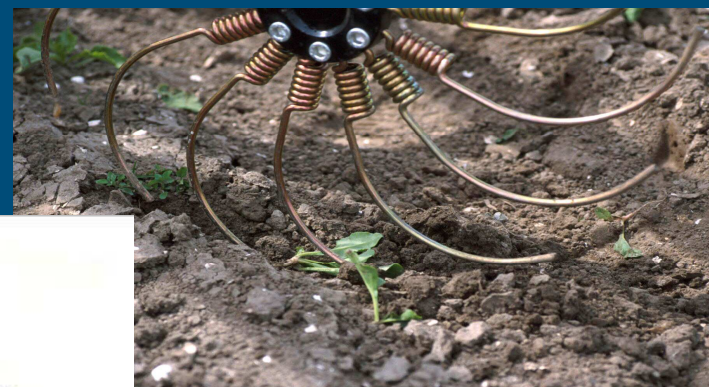
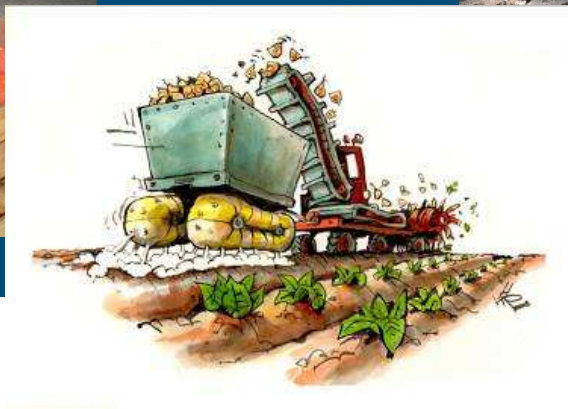




Gros yield

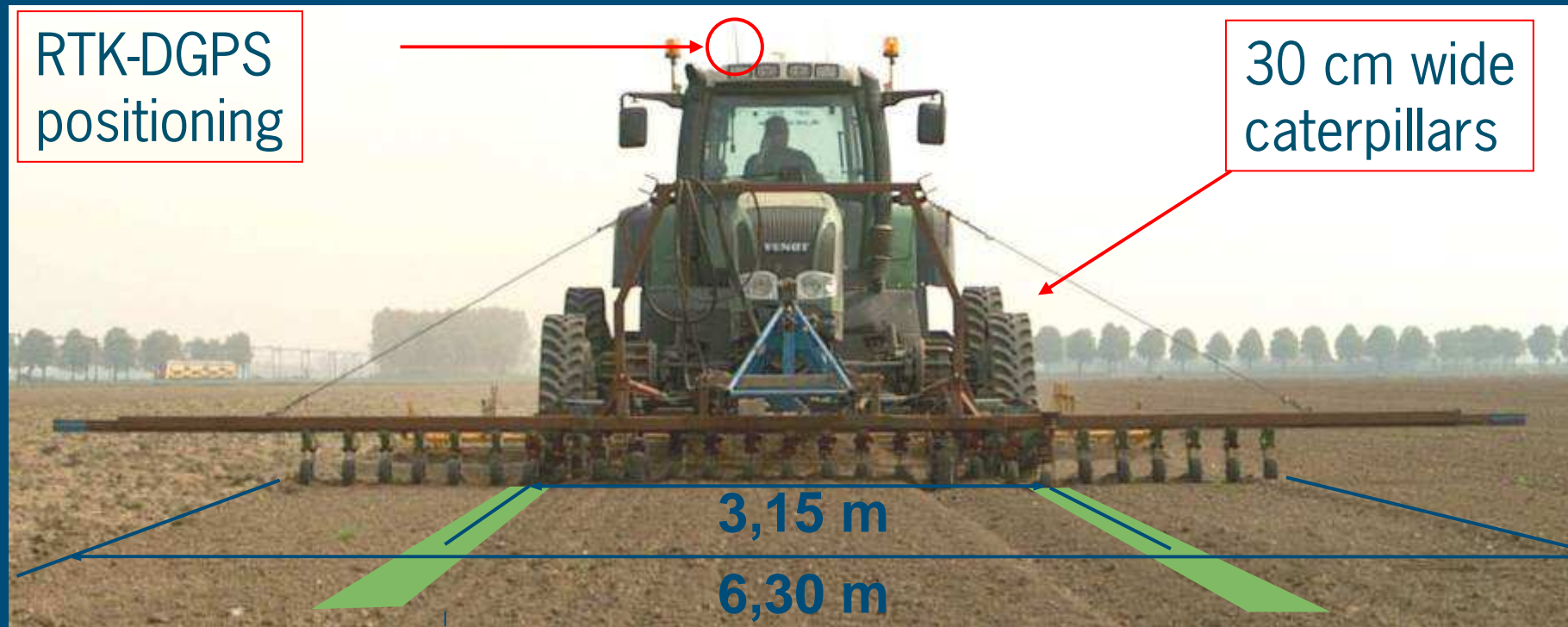


Innovative techniques





Fixed track system





Group pests and diseases

- UV light and ozone
- Sprinkling for control of downy mildew
- Onion oil against carrot fly
- Beetle eater
- Natural enemies against pea aphids
- Functional biodiversity





Group soil and mechanisation

- Zero tillage techniques
- Fixed track systems
- Ridge tillage
- Minimal soil compaction





Groups market and product quality

- Honest food
- Marketing of tasteful potatoes
- Export of organic produce
- Taste of carrots and red beet
- New vegetable products
- New pumpkin varieties
- Pumpkin storage





Monitoring and evaluation

- Accountability
 - Output
 - Outcome
 - Impact
- Learning process



Monitoring and evaluation, indicators

- Direct application
- Strategy effect
- Research effect
- Policy effects
- Attitude effect
- Learning effect
- Network learning effect
- Network effect



Shortfall

- Input and dependance of animal manure
- Accumulation and losses of nutrients
- Product quality
- Yield stability
- Nature, landscape, biodiversity



Critical succes factors

- Skills of workers
- Selection of participants
- Objectives and targets supported by participants
- Involvement of right stakeholders
- Win-Win situation for all involved
- Take care of hardware, software and orgware



Critical success factors

- For a successful application in practice (farmers point of view), the farmer has to
 - Know (knowledge of techniques and methods),
 - Be able (in technical and economical terms, labour, risks, costs etc.)
 - Have the will (vision and motivation) and
 - Be allowed to do so (“socially desired” behaviour, acceptance in network)
- All these issues have to be taken care of



Questions?

