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Organic Farming as a European Innovation System

Susanne Padel, ORC

Principal researcher and team leader socio-economics and policy

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Introduction

- Farmers have continuously adapted and innovated
- Today new focus on innovation as the primary instrument for overcoming the future challenges for agriculture of food security, climate change and the conservation of natural resources.
- How does this fit with organic farming?
  - Two different perspectives on innovation
  - Do organic rules and systems foster innovation?

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What is innovation?

- **OECD defines it as the implementation of a new or significantly improved product (good or service), a new marketing method or a new organisational method in business practise, workplace organisation or external relations (EC SCAR 2012).**

1. ***new or significantly improved product (good or service)*** **and**
2. ***implementation***

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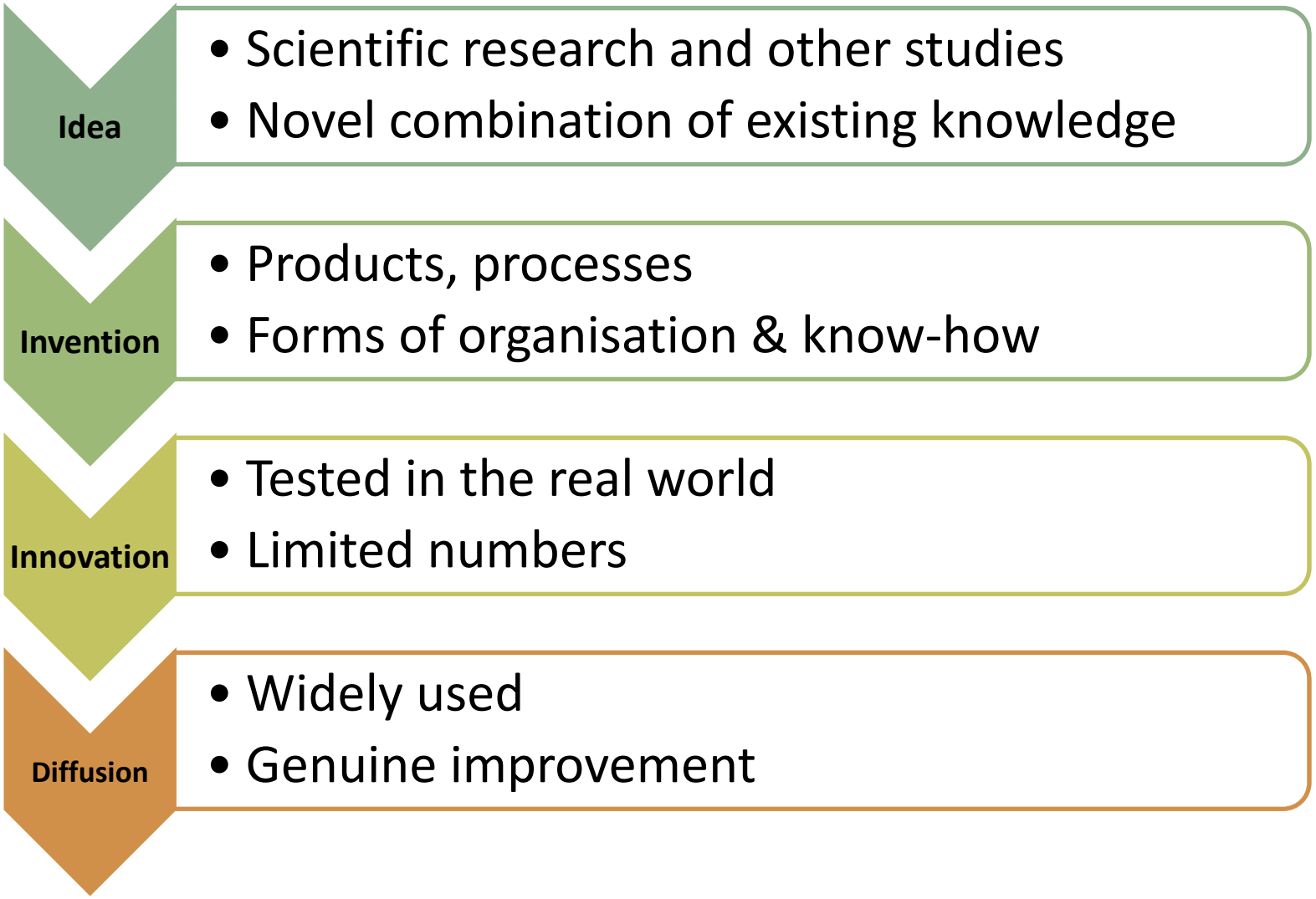
From idea to improvement



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Adoption/diffusion model has some relevance to the organic sector

(Rogers & Shoemaker)

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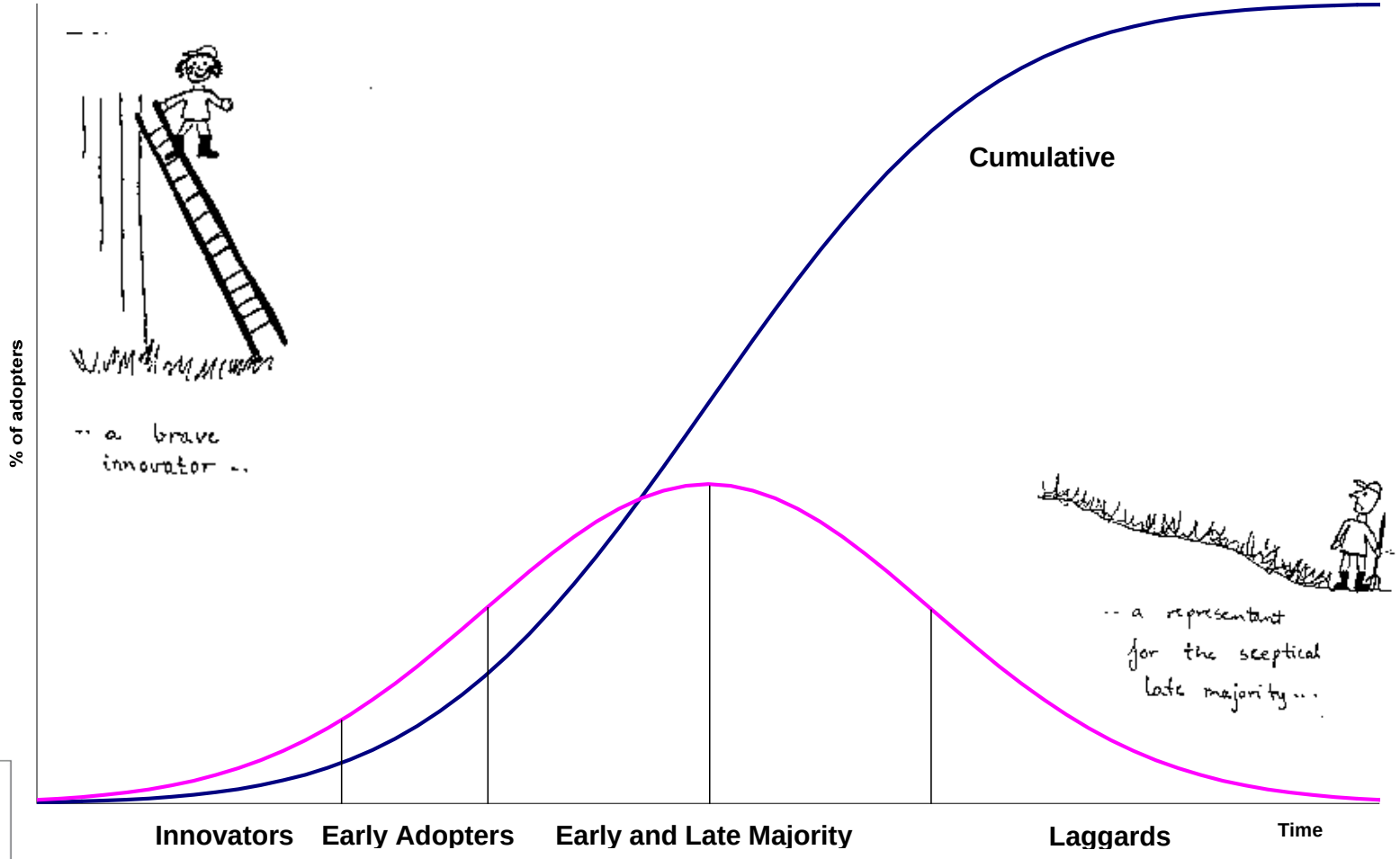

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Two different perspectives of looking at innovation

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Technology push	Innovation system
• Widespread in agricultural sciences • Investment of input companies • Social/societal innovations ignored • Focus on invention and innovator	• Process oriented • Application of knowledge (of all types) to achieve desired social and/or economic outcomes • Focus on enabling interaction among stakeholders

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" During my long career I have never stopped wondering how intelligent* [agricultural] *scientists could in such large number continue to cling to the technology supply push model".

Source: Niels Röling 2009

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European Innovation Partnership (EIP)

The EIP adheres to the "interactive innovation model" which focuses on forming partnerships - using bottom-up approaches and linking farmers, advisors, researchers, businesses, and other actors in Operational Groups. This will generate new insights and ideas and mould existing tacit knowledge into focused solutions.

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Organic rules foster innovation

"Organic farming with its stringent rules on external input use has to be even more innovative to solve production problems, sometimes opening up new avenues"

Source: IAASTD (2009). Agriculture at a Crossroads: *Global Report, p. 384*.

Organic farms and food businesses have become creative living laboratories for smart and green innovations

Source: TPorganics (2011)

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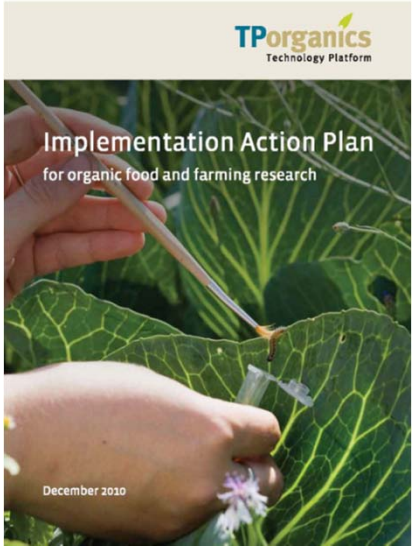
Organic farming fosters innovation

- **Severe restriction on the use of many inputs**
  - Encourages new ways of working with agro-ecology
- **Develop own markets**

  Consumer and supply chain relationships
- **Long-standing recognition of the importance of knowledge**
  - Replacing inputs with knowledge
  - **Know-how innovations**
  - Supporting the innovation system



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Exploiting know-how about parasite life cycles to control them

- Pasture ecology
- Novel forages

Widely implemented on organic farms?

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Innovation through participatory research in SOLID (266367)

- Involving farmers in developing new management practices for low-input organic milk production
- Identifying important problems in the context of the specific farming system

Two examples of research priorties identified

Coding for following slides

A question or problem

Suggestion definitely needing research

Suggestion with some existing knowledge or on-going research but scope for more research

Suggestion where knowledge exists and dissemination is needed

Maximising use of home grown feed and forage (quality/ quantity)

Driven by price (Low Input, RO, ES) and supply and/or market(ing) concerns (organic)

Incorporating higher protein components, or other broad leaved species in pastures (IT, BE, UK)

New feeds and forages – grown on farm or by-products (ES, RO) (WP 3)

Management of grazing for goats in mountainous areas (GR)

On-farm protein production/alternatives to soya - ALL

Lack of confidence in protein crops in more Northern countries

Husbandry of lucerne, lupin, legume/cereal mixtures BE, DK (UK)

Improving quality of hay (AT & ES)

Improving quality of grass-clover silage in general (FI)

Forage production (quantity/quality)

Coping with extremes of wet or dry conditions (RO, IT, UK)

Maintaining pasture productivity – decline over the years in organic systems (UK, FI, DK)

Varieties of grass and clover for organic/LI systems (UK, DK)
Variety choices – on farm research
New varieties – long term research

Protein-rich forages – **husbandry** in northern regions (BE, DK, FI, UK)

Management/varieties to achieve earlier and more persistent clover (UK, FI,)

Productivity/ benefits of herb-rich pastures (including marketing, soil improvement, animal health; AU, UK, BE, IT, DK, GR)

Soil/nutrient management

"We want to understand more about the soil"

Concerns about the limitations to importing nutrients in organic systems, or mineral supply from soil

How to cope with the depletion of soil minerals, especially P (UK, BE)

Understanding what affects soil nutrient availability (BE)

Ways of increasing soil organic carbon (UK, BE)

Understanding more about soil biology (UK)

Exploring relationships between sward diversity, mineral availability and animal health (BE, AT, UK)

Optimum use of manures – storage, timing of application UK, AT, BE..

Protein supply: cereal/grain legume intercropping

OLK5-CT-2002-02352

www.intercrop.dk

- How can we increase Europe's production of protein feed?
- Increase knowledge of multifunctional role of intercropping
  - Design new methods
  - Carry out demonstration
- *Why are the results not more widely used?*

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Challenges related to embedding innovation in the organic sector

- Diversity
  - *Soils and climate*
  - *Access to markets and inputs*
  - *People diversity* (goals, cultures, traditions)
- Knowledge systems
  - Codified *versus* tacid knowledge
    - "Does not understand farming! " (Lay-expert gap)
  - Public *versus* private benefit
  - Learning *versus* blue-print solution
  - Open access *versus* intellectual property

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Summary and conclusions

- Innovation is always embedded in social/ learning process
- Different actors/ different tasks in various phases of the innovation process.
- Different actors and different roles: knowledge producers, knowledge users, knowledge brokers and political decision-makers.
- Policy support should not focus on innovation as such, but application of innovation which makes life better for individuals and society at large.
- Not restricted to major inventions but small changes can generate innovation if they can be embedded successfully in a larger community.

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Concluding questions

- How can the innovation system be supported?
  - Recognising knowledge networks and social learning
  - Combining effectively scientific and experimental knowledge
  - Contribution of new media and technology
  - What role for research?
  - Asking the right question?
- How will this be funded?
  - Open access *versus* competitive knowledge and technology
  - What implication for a career in research?

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