

Supporting innovation in organic agriculture: A European perspective

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Introduction

- Farmers have continuously adapted and innovated
- Agriculture and the food system faced with major challenges of food security, climate change and the conservation of natural resources
- Renewed focus on innovation as the primary instrument for overcoming these challenges
- How does organic farming contribute to generating innovation?
- How can innovation in the organic sector be supported?

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***

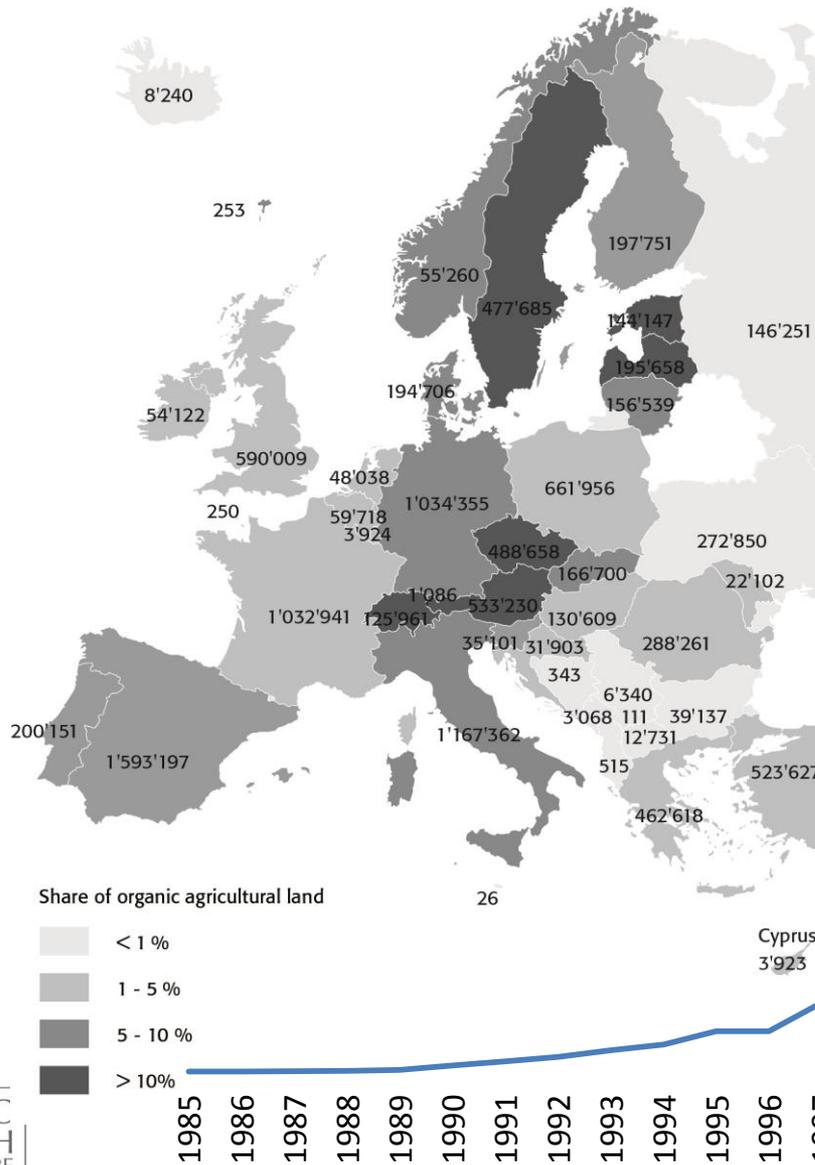
Two different perspectives of looking at innovation

Technology push

- Widespread in agricultural sciences
- Investment of input companies
- Social/societal innovations ignored
- Focus on invention and innovator

Innovation system

- Process oriented
- Application of knowledge (of all types) to achieve desired social and/or economic outcomes
- Focus on enabling interaction among stakeholders

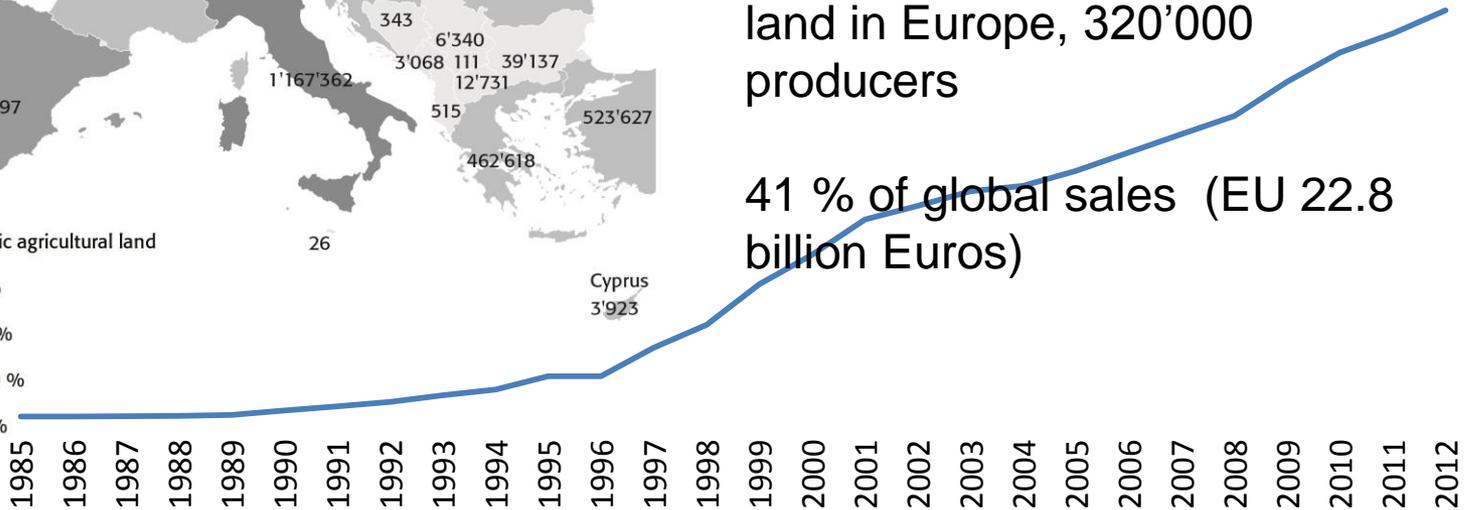


Organic land area development in Europe (2012)

11.2 million hectares of agricultural land are organic (including in conversion areas).

2.3 percent of the agricultural land in Europe, 320'000 producers

41 % of global sales (EU 22.8 billion Euros)

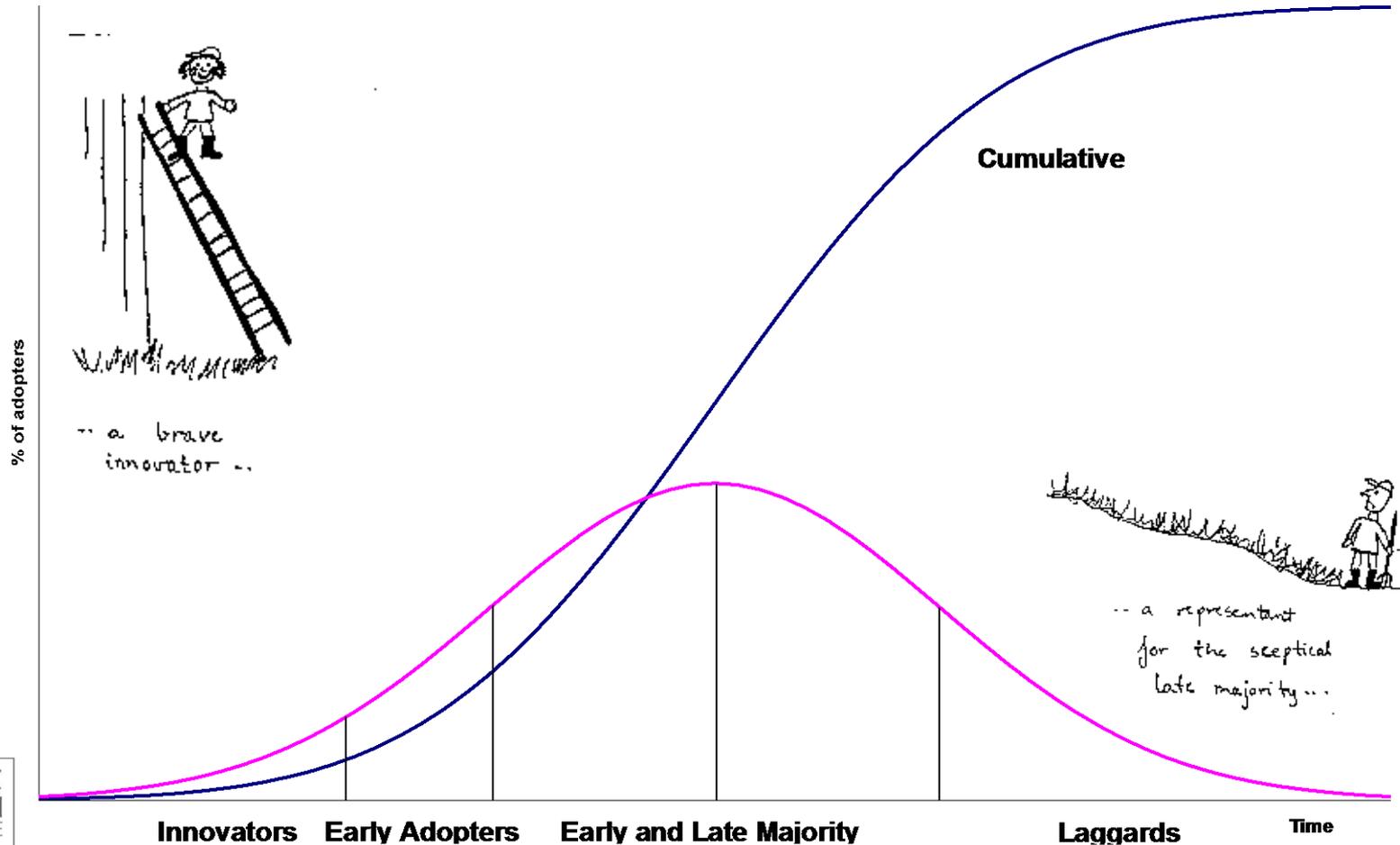


Source:



Adoption/diffusion model has some relevance to the organic sector

(Rogers & Shoemaker)



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.

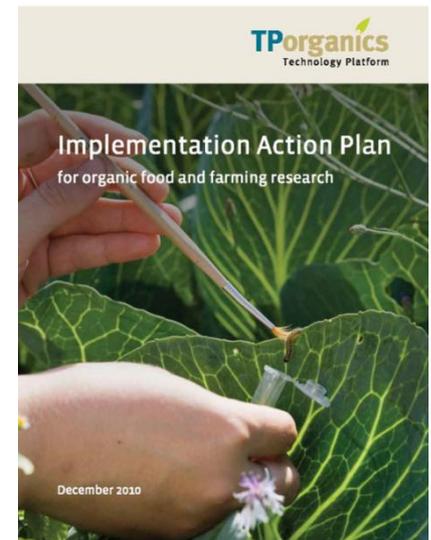
Organic farms and food businesses have become creative living laboratories for smart and green innovations

Source: TPorganics (2011) – Implementation Action Plan for organic food
and farming research

European organic sector as an innovation system

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

Consumer and supply chain relationships
- **Strong tradition of farmers working with researchers**
- **Replacing inputs with knowledge**
 - ◆ “Know-how” innovations exploiting existing knowledge
 - ◆ Supporting the innovation system



Farmers likes and dislikes

Strongly liked

- Develop techniques to improve feed and forage quality and reduce the use of purchased concentrate feed.
- Innovation related to feed efficiency, feed quality and efficiency of production.
- Innovations to improve animal welfare were also important, but less than for consumers.

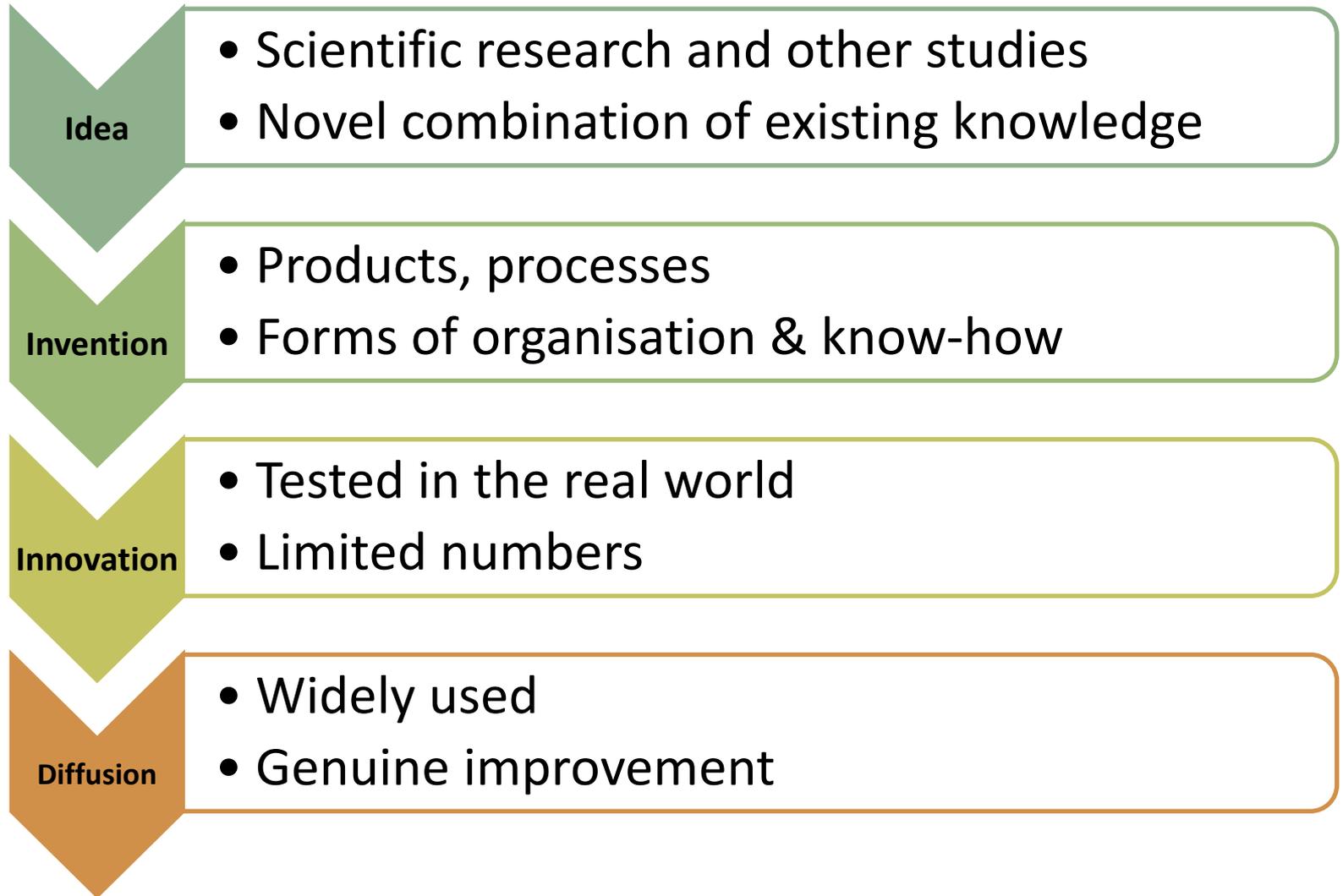
Strongly disliked

- Improve forage quality and yields in low-input dairy systems by GM plant breeding techniques
- Develop designer dairy food from transgenic animals
- Acceleration of genetic selection including recombination in vitro (e.g. semen sexing)
- The strong dislikes for “unnatural” responses were shared by other actors in the supply chain.

Source: [Nicholas et al \(2014\)](#)



From idea to improvement



Using participatory research in developing innovation related to forage production for dairy farms

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



<http://www.solidairy.eu/>



For example “Feeding home-grown protein” on Finish farms



Farmers’ observation:
More grass than clover
in leys early in the
season.

Could topping help?
On farm experiments
focussed on
measuring the
difference between
“early topped” and
control leys



Protein supply: cereal/grain legume intercropping

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
- The Finnish farmers in SOLDI also tried different mixtures of cereals and pulses as a home-grown concentrate



Cleary has potential to increase home grown protein supply on organic farms, but is not yet widely used.

Farmer led trial grazing diverse leys with longer recovery periods



- Limited knowledge on grazing diverse swards
- On farm research following one farmer that changed his system

Over two years no significant difference in DM yield found

Source: [Leach et al 2014](#)



Duchy Originals Future Farming Programme



- Helping farmers improve productivity in an environmentally responsible way
- Farmers and growers test new approaches in **field labs** (share existing best practice, problem-solving skills)
- **Research fund** where farmers can set priorities
- **Innovation Award** celebrating pioneering ideas in farming and growing across the UK



Research and Innovation Challenges in Organic Production in Europe

- Diversity across Europe
 - *Soils and climate*
 - *Access to markets and inputs*
 - *People (goals, cultures, traditions)*
- Organising knowledge systems
 - ◆ Codified *versus* tacit knowledge
 - “Does not understand farming!” (Lay-expert gap)
 - ◆ Public *versus* private benefit
 - ◆ Learning *versus* blue-print solution
 - ◆ Open access *versus* intellectual property

New opportunities with the European Innovation Partnership Agriculture productivity and sustainability (EI-AGRI)



EIP AGRI

- **“Interactive innovation model” focuses on forming partnerships**
- **Using bottom-up approaches and linking farmers, advisors, researchers, businesses, and other actors in Operational Groups**
- **Generating new insights and ideas**
- **Mould existing tacit knowledge into focused solutions.**

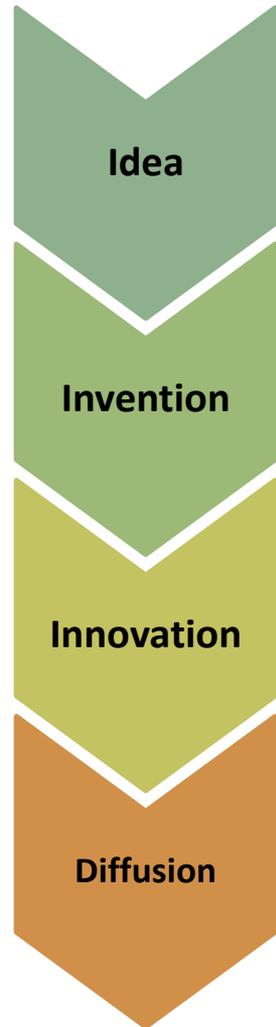
Source: European Commission (2012) European Innovation Partnership (EIP) "Agricultural Productivity and Sustainability".

Supporting innovation in organic agriculture: summary and conclusions

- **Moving away from technology push to broad definition of innovation/ innovation systems**
- **Restrictions of organic standards encourage organic farmers to be innovation producers as well as users**
- **Some specific challenges to the organic sector (diversity, importance of know-how)**
- **Examples show that combining effectively scientific and experimental knowledge with farmers experience can be powerful in fostering innovation**

Supporting innovation in organic agriculture: summary and conclusions (2)

- Embedding innovation is a process that involves trying, adaptation and learning on farms and in research stations/labs
- Interactive model, building partnerships (or operational groups) focus on the whole innovation system
- Potential conflict between open-access and knowledge giving competitive advantages



Acknowledgements

- My thanks to the organizers for the invitation to speak at this conference
- Part of the work for this presentation was undertaken as part of the SOLID Project (Agreement no. 266367 <http://www.solidairy.eu/>), with financial support from the European Community under the 7th Framework Programme. The presentation reflects the views of the author and not those of the European Community, which is not to be held liable for any use that may be made of the information contained.
- My thanks also to the steering committee of TP organics (www.tporganics.eu) with whom many ideas have been shared and discussed.

Thank you for your attention