EU-China experts' seminar on
developing a joint initiative for cooperation in research and innovation on food, agriculture and biotechnologies (FAB),
Beijing, 10-11 October 2013

Frame conditions for IPM & organic/low input farming

Niels Halberg
Icrofs

ICROFS

International Centre for Research in Organic Food Systems (ICROFS)

- Centre without walls
- Seeking to enhance volume and quality of organic research world wide
- Coordinator of research programmes;

  Denmark since 1996;

  European since 2005 (ERA net Core Organic w. 22 countries);

  East Africa from 2011
- Disseminating organic research results and knowledge:
  - *projects, programs,*
  - *Organic E-prints*

Organic eprints

- International board (Europe, China, Africa, America, Ifoam)

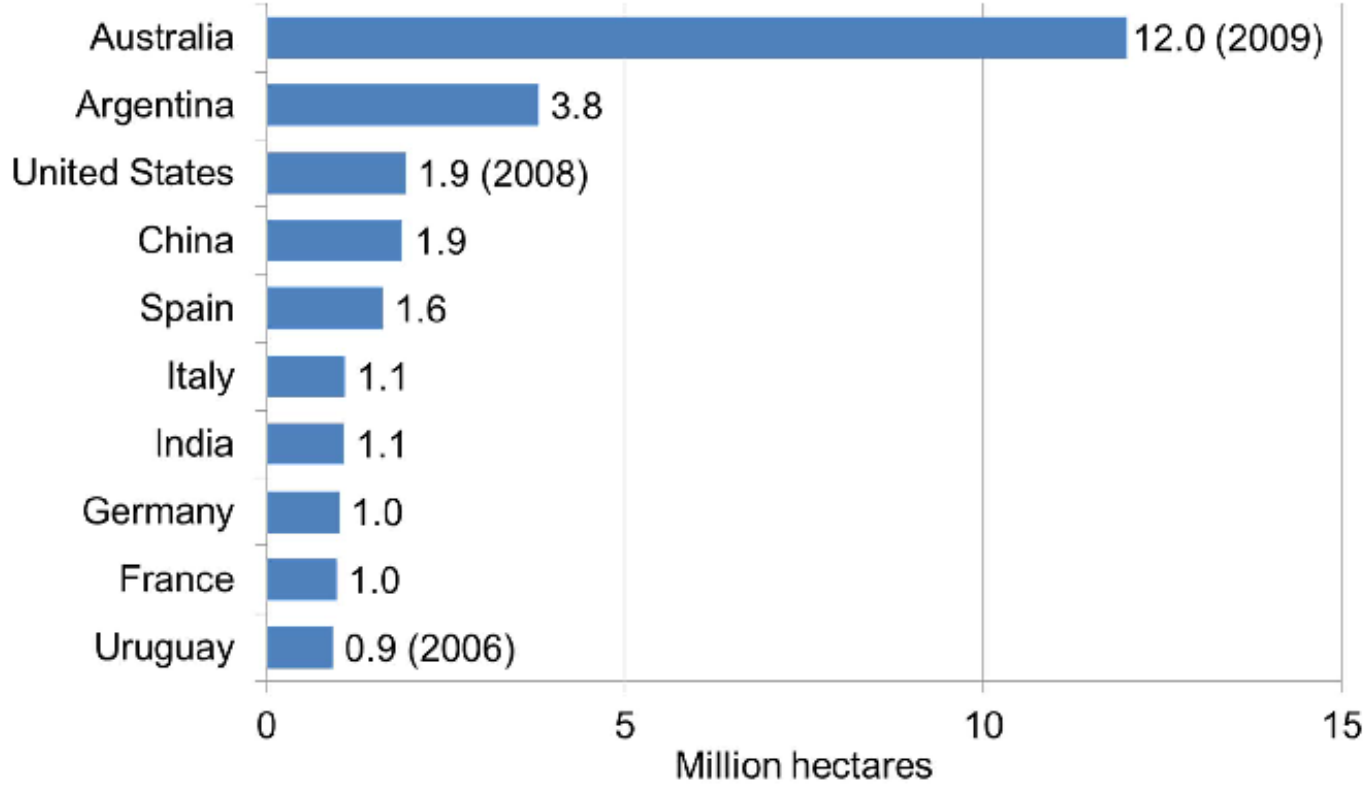
www.icrofs.org

www.orgprints.org

ICROFS

The ten countries with the largest organic agricultural land 2011

Source: FiBL-IFOAM survey 2013



FiBL www.fibl.org IFOAM

Source: FiBL & IFOAM 2013, based on national data sources and data from certifiers.

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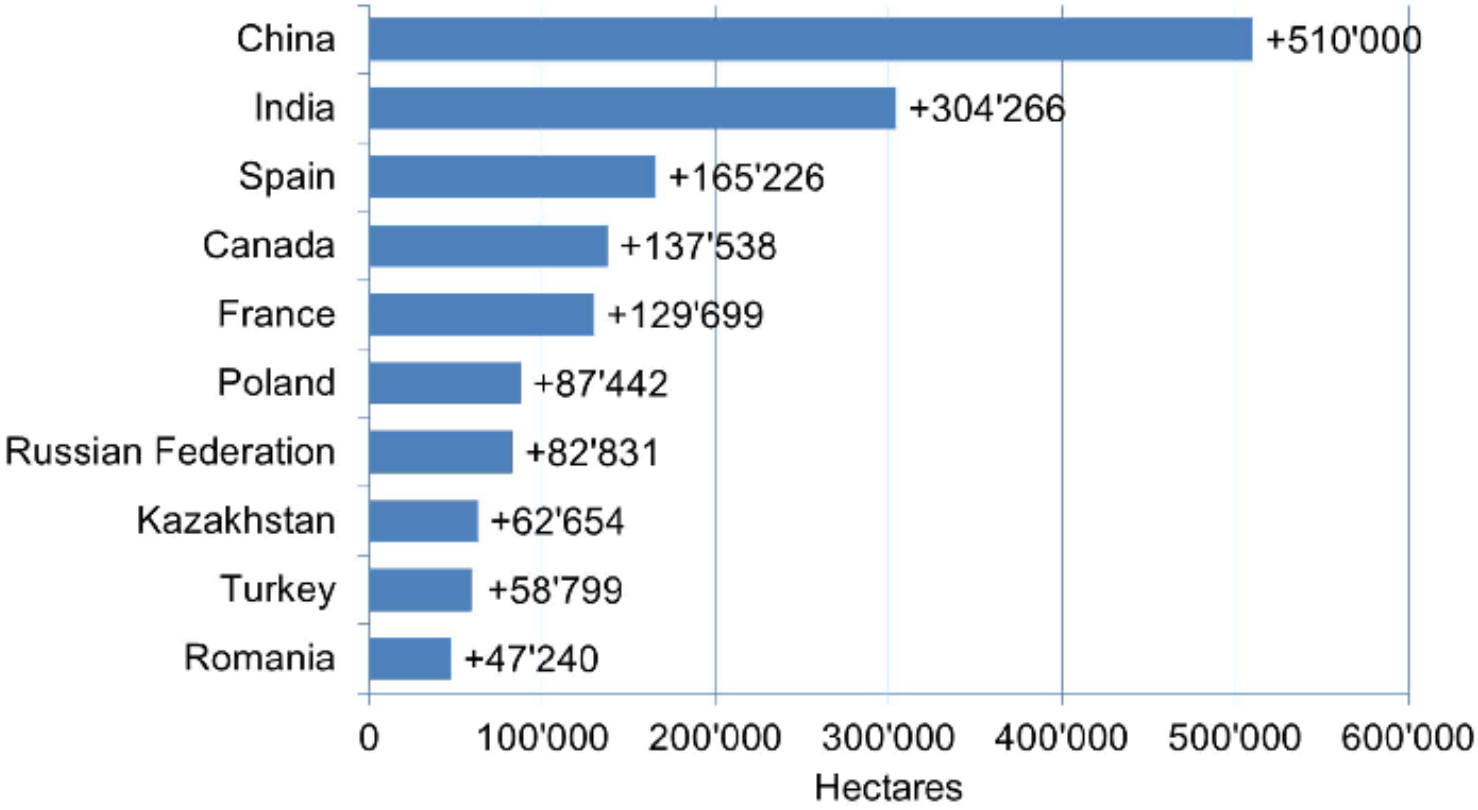
The ten countries with the highest increase of organic agricultural land 2010-2011 (in hectares)



FiBL www.fibl.org IFOAM

Source: FiBL-IFOAM survey 2013, based on national data sources

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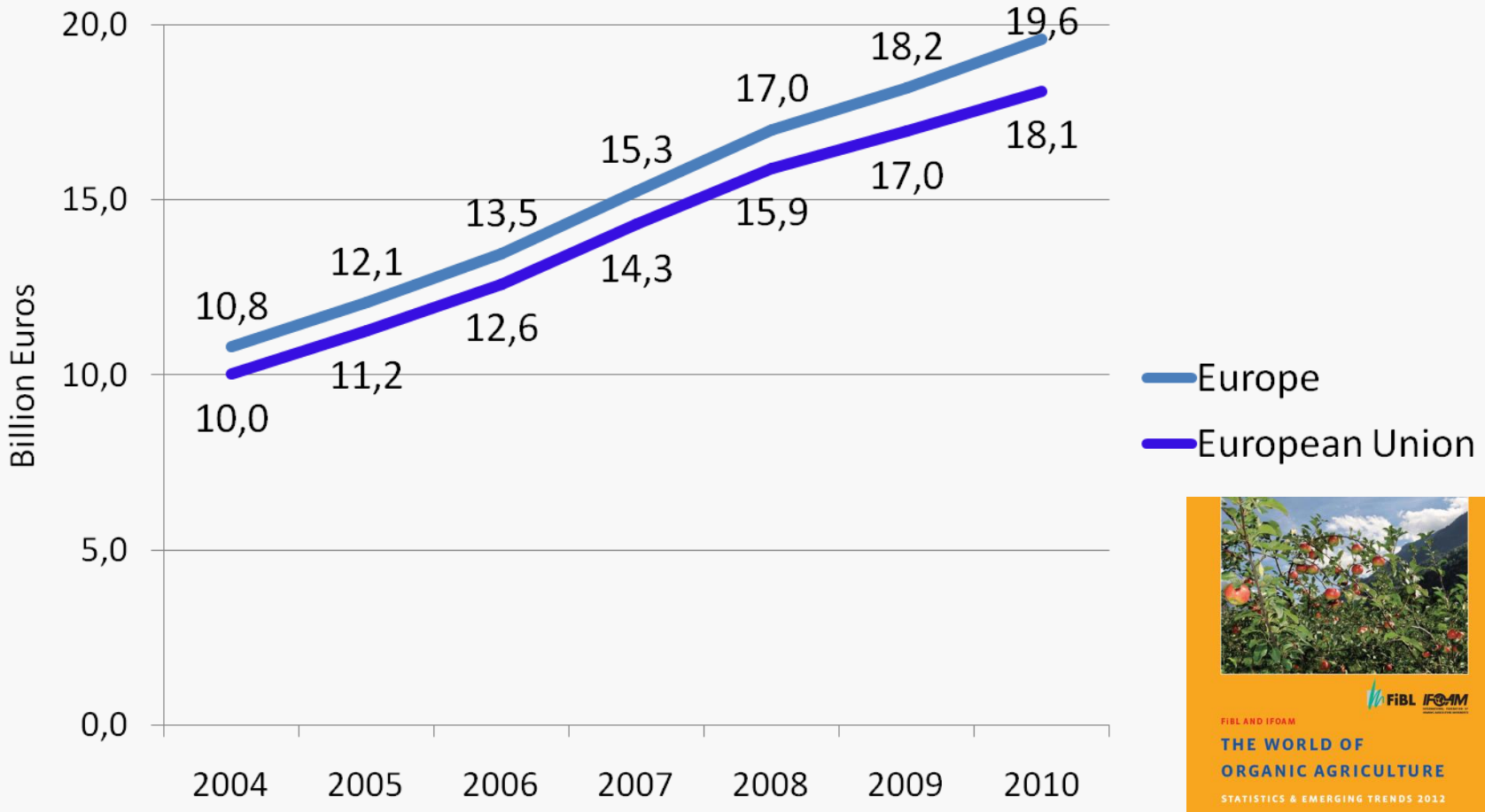
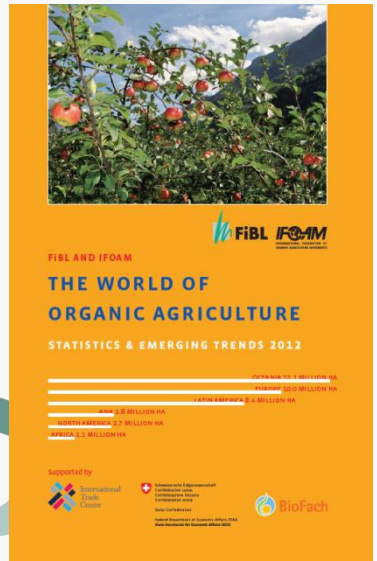
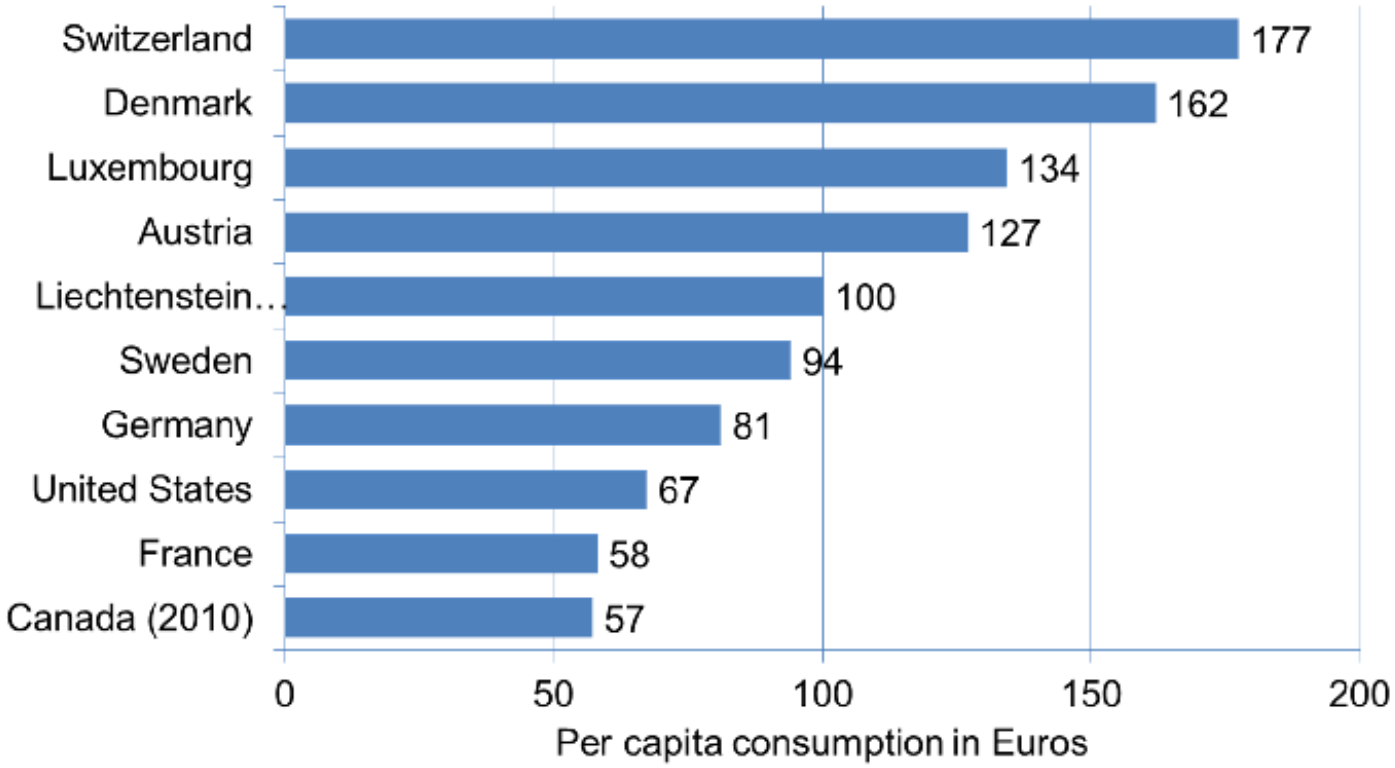
Europe: Growth of the Organic Market 2004-2010





Source: FiBL & IFOAM, 2012

The countries with the highest per capita consumption 2011



FiBL www.fibl.org IFOAM

Source: FiBL-AMI-IFOAM 2013, based on national data sources

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Research project funded by ADBI, 2005 - 2008
The impact of OA on MDGs in Asia

University Aarhus, CAU, Helvetas,

- **Case Studies in Jiangxi, China** and Kandy, Sri Lanka
- **Xitou organic tea**: Company lead, only tea is organic and fair trade (certified),
- **Jiaohu organic project: village focus**, ginger, bamboo, soy beans, etc. certified, all land organic,
- Kandy organic tea: both company lead certified tea and community approach by NGO. Tea and spices sold certified organic and – Fair trade

- Survey of 100 Organic and 100 conventional HHs per case area
- Focus on agro-ecology, economy, livelihood, family health and women empowerment

Organic Agriculture and Value Chains

Making diverse use of the certified organic land in a Chinese village

- attracting new market players

Transplanting strawberries in paddy fields for export of freeze dried berries to the US and EU market

Understand the market:
Overall motives for buying Organic food?

Niklas Luhman (1979): Trust is a mechanism of reducing complexity

My sustainable diet??

Safe & Healthy food
Climate
Biodiversity
Environment
Animal Welfare
small farmers livelihoods……
….

Organic agriculture needs to preserve its Integrity and improve praxis in relation to the principles

Article 6: Specific principles applicable to processing of organic food

In addition to overall principles set out in Article 4, the production of processed organic food shal be based on the following specific principles:

a) The production of organic food from **organic agricultural ingredients**, except where an ingredient is not available on the market in organic form

b) The restriction of the use of food additives of non organic ingredients with mainly technological and sensory functions and of micronutrients and processing aids, so that they are used to a minimum extent and only in case of essential technological need or for particular nutritional purposes

c) The exclusion of substances and processing methods that might be misleading regarding the true nature of the product

d) The processing of food with care, preferably with the use of biological, mechanical and physical methods

EU regulation (EEC) No 2092/91 of 28.06. 2007

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European Commission

EU organic farming policy

- *Part of Common Agriculture policy*
- *Action plan 2004*
- *Financial support for its contribution to public goods, research programme*
- *Harmonized rules, no more national standard since 2009*
- *EU logo*

Council regulation (EC, 834, 2007)

Organic production shall pursue the following general objectives:

(a) Establish a sustainable management system for agriculture that:

(i) respects nature's systems and cycles and sustains and enhances the health of soil, water, plants and animals and the balance between them;

(ii) contributes to a high level of biological diversity;

(iii) Makes responsible use of energy and the natural resources, such as water, soil, organic matter and air;

(iv) Respects high animal welfare standards and in particular meets animals' species-specific behavioural needs;

(b) Aim at producing products of high quality

Council Regulation (EC) No 834/2007 of 28 June 2007

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Specific principles applicable to farming

- the **maintenance and enhancement of soil life and natural soil fertility**, soil stability and soil biodiversity,
- *the nourishing of plants primarily through the soil* ecosystem

- the maintenance of plant health by *preventative measures*

- the maintenance of animal health by encouraging the *natural immunological defence of the animal*

Council Regulation (EC) No 834/2007 of 28 June 2007

ICROFS

CORE Organic:
European Research Area; Organic Agriculture and Food

2004-2013 CORE Organic ERA-NET

21 countries/25 partners

Joint funding of +20 research and development projects, Total budget > 20 mio Euros

Next: Core Plus: 10 mio Euros incl 3 mio Euros from EC

CORE organic

endure®
diversifying crop protection

EU policy on IPM:

- **ensure the protection of human health and the environment without compromising food production and competitiveness of the agricultural sector.**
- Directive 2009/128/EC : A new framework to

"*achieve a sustainable use of pesticides by promoting the use of **integrated pest management** and of alternative approaches or techniques such as **non-chemical alternatives***"

- **EU Member States : 2012 National Action Plans**
- **January 2014, Member States are required to show how the principles of IPM are implemented**
- **European Innovation Partnership program on IPM**

endure®
diversifying crop protection

Providing information, tools and services to scientists, policy and farm advisers, and trainers concerned with IPM

Research

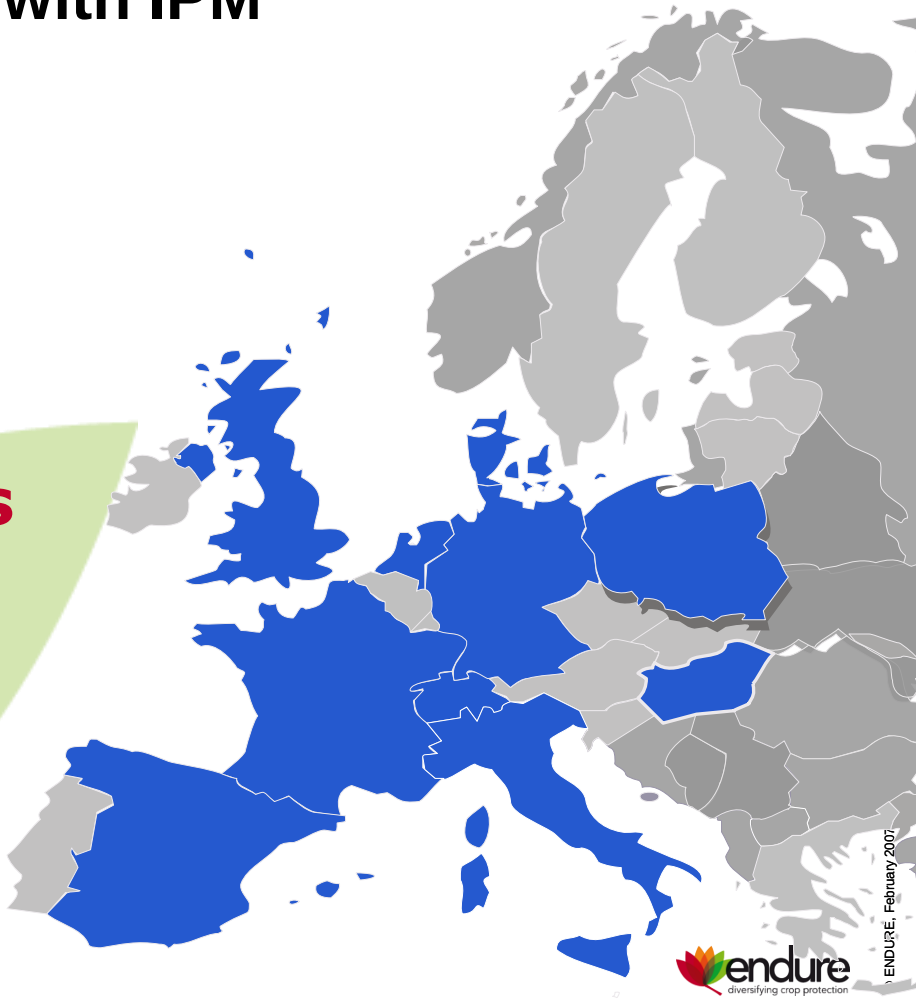
- INRA - FR
- DLO - NL
- JKI - DE
- RRes - UK
- JHI - UK
- CNR - IT
- Agros. ACW - CH
- IHAR - PL
- CIRAD - FR

Extension

- VFL - DK
- ACTA - FR

Universities

- AU - DK
- SSSA - IT
- SZIE - HU
- UdL - ES



What we do

- **Support to farm advisers – We provide practical information and training material to extension services and facilitate knowledge-sharing on IPM**
- **Sharing science – We pool research resources and contribute to higher education in IPM**
- **Meeting future needs – We identify research and extension priorities through dialogue with scientists, advisers and other stakeholders**
- **Science-based decisions – We support policy stakeholders with scientific expertise on IPM**
- **Input into new ERA-NET "C-IPM"**

www.endure-network.eu

endure
diversifying crop protection

EU-China experts' seminar on developing a joint initiative for cooperation in research and innovation on food, agriculture and biotechnologies (FAB), Beijing, 10-11 October 2013

European Strategic research agendas for the areas of IPM, organic/low input farming

Niels Halberg

Icrofs

ICROFS

TPorganics
Technology Platform

Technology Platform for organic food and farming

Eduardo Cuoco
TP Organics Coordinator

Partners of TP Organics:

- 20 EU partner organisations (NGOs – SME's associations)
- Network of scientists
- Actively contributing companies
- Cooperation with national TPs in CZ/IT/HU and national partner in several EU and EFTA countries
- Observers from Core Organic
- Involvment of civil society organisations

Cooperation with the Agri Food sector group of the Enterprises Europe Network in terms of knowledge management and technology transfer.

Organic creates 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: IASTAD (2009). Agriculture at a Crossroads: *Global Report, p. 384*.

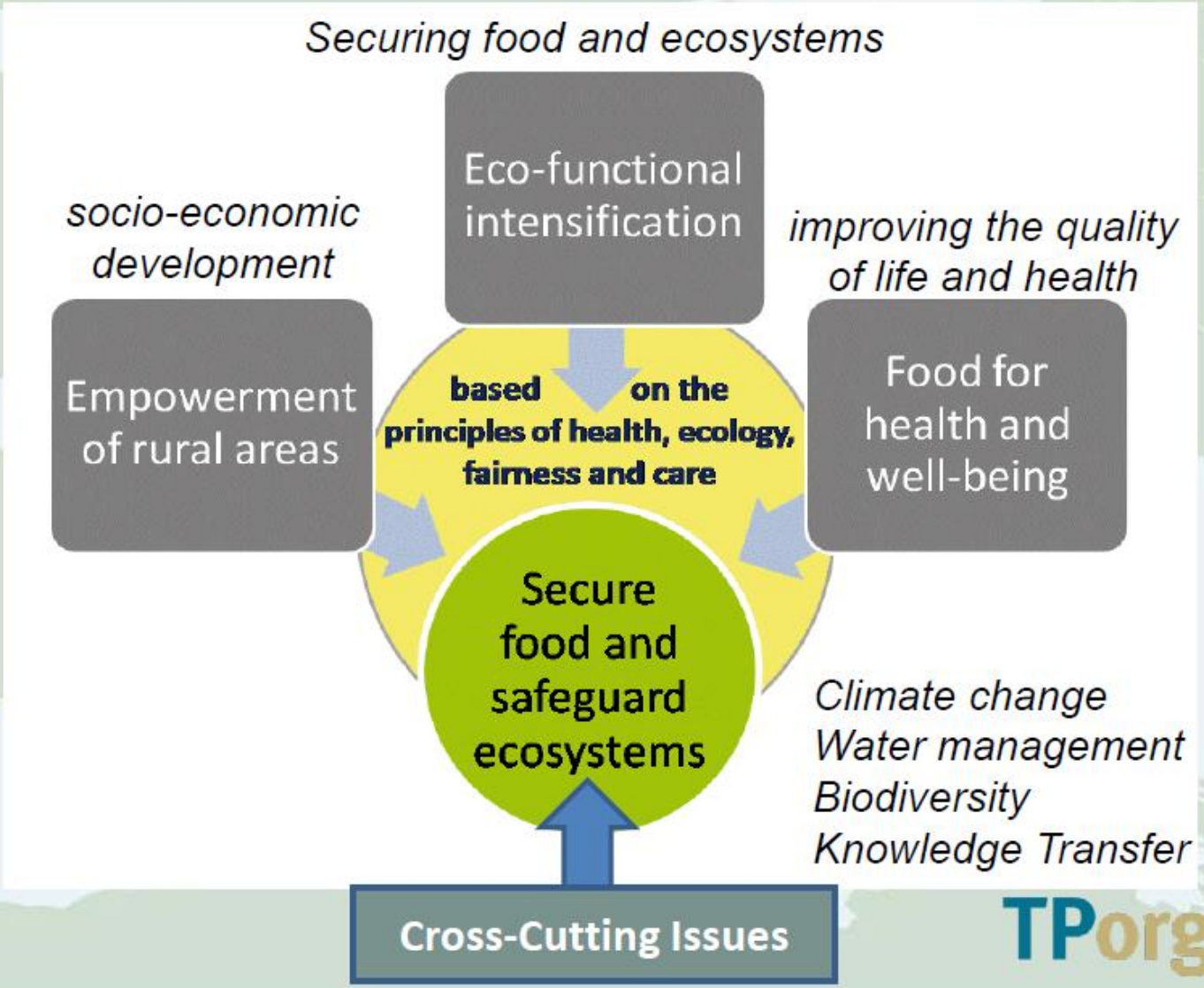
Organic farms and food businesses have become creative living laboratories for smart and green innovations

TPorganics
Technology Platform

‘Herbal milk’: product innovation based on R+D results in primary production

- *Research focus*: the challenges were 100% organic feed with healthy animals and a good nutrition
- *Experiments*: integrate herbs in the grass-clover mixture
- *Results*:
  - Better vitamin supply
  - High proportion of healthy fatty acids in milk
- *Product innovation*: cheese, butter, milk
- From "low fat" to "good fat"

Vision - Structure:



TPorganics
Technology Platform

An overall objective:
Eco-functional intensification

Intensification of land use and agriculture by means of

- *improved knowledge and application of biological principles and agro-ecological methods*
- *increased cooperation and synergy between different components of agro-eco systems and food systems,*

with the aim of enhancing the health and productivity, adaptability and resilience of all its components.

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Eco Functional Intensification

More research, innovation, adaptation of multifunctionality and agro-ecological methods needed to obtain the full potential of OA

- Improved ecological support functions
- Modern mixed farming via collaboration
- Appropriate and robust livestock production
- Green improvement of genetic resources
- Development and adaptation of novel technology
- *Organic agriculture and climate change*

ICROFS

CORE organic

CORE Organic:

Strategic research objectives in crop production

- **Plant/Soil interaction in organic crop production**
  - interaction between soil, plant and microbiota under different organic farming systems and management practices
  - decrease of nutrient losses, GHG-emissions and the improvement of energy efficiency at soil, field and landscape levels
  - Development of improved practice strategies for soil and resource management
- **Functional biodiversity to improve management of pests, diseases and weeds**
  - Enhance the performance of natural enemies
  - Design more resilient agro ecosystems that are both economically viable and maximise the use of ecologically-based solutions to reduce pests
- **Ensuring quality and safety of organic food along the processing chain**

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Meeting future needs

- Foresight study "European Crop Protection in 2030"
- Thematic workshop on robust cropping systems in the face of climate change, invasive and quickly evolving pest species, Brussels Nov. 2011
- Planning seminar & workshop on co-innovation (Wageningen Oct. 29-30, Brussels Nov. 27-28, 2013)
- Input into SCAR Collaborative Working Group on IPM
  - Develop relevant and science-based indicators
  - Optimise pest monitoring systems and decision support
  - Design cropping system that prevent or minimise pest pressure
  - Diversify direct control methods
  - Manage pest evolution
  - Social aspects, economics and assessment
  - Facilitate extension for IPM
- Input into new ERA-NET "C-IPM"

Meeting future needs
priorities identified in the SCAR CWG on IPM

1. Developing relevant and science-based indicators

   - ***Practices and their environmental impacts and benefits***

2. Optimising pest monitoring systems and decision support

   - ***Characterisation, detection and identification of harmful and beneficial organisms for crop health***
   - ***Pest monitoring systems and predictive models to inform both strategic and tactical decisions***

3. Designing cropping systems that prevent or minimise pest pressure

   - ***Landscape level research to minimise pest pressure***
   - ***Integrated Weed Management in arable cropping systems***
   - ***Network of IPM experiments***

4. Diversifying direct control methods

   - ***Reliable bio-control methods integrated into IPM strategies***

Meeting future needs
priorities identified in the SCAR CWG on IPM

5. Managing pest evolution

- ***Robust IPM systems against new and quickly evolving pests***
- ***Deployment of crop health strategies based on plant genetic resistance and prevention of resistance to pesticides***

6. Social aspects, economics and assessment

- ***IPM labels, standards and guidelines, and the role of supermarkets***
- ***Economic and social barriers to and opportunities for IPM***

7. Facilitating extension for IPM

- ***Formal and informal agricultural knowledge systems and new collaborative approaches***
- ***Demonstration farm networks***

Research topics of mutual interest and priority between China and Denmark within the field of non-chemical systemic approaches to pest management

- Increase the knowledge on how to best exploit multi-functional plants (including crops) in pest management tactics
- Designing and managing eco-functional vegetable cropping systems at field and landscape level for management of pests
- Could diversification help us to create a more healthy and productive fruit system?
- Research should focus on approaches for farming systems with no pesticide input, but considerations should be given to application and applicability in conventional systems
- Collaboration should be initiated within the field of 'High value crops' such as vegetable, fruit and berries

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ICROFS Big Hairy Audacious Goal:

The principles of organic agriculture become a global reference for sustainability in agriculture and food systems due to evidence based on research and adaptive management

Organic eprints

www.orgprints.org

More on CORE Organic pilot projects:

www.coreorganic.org/research

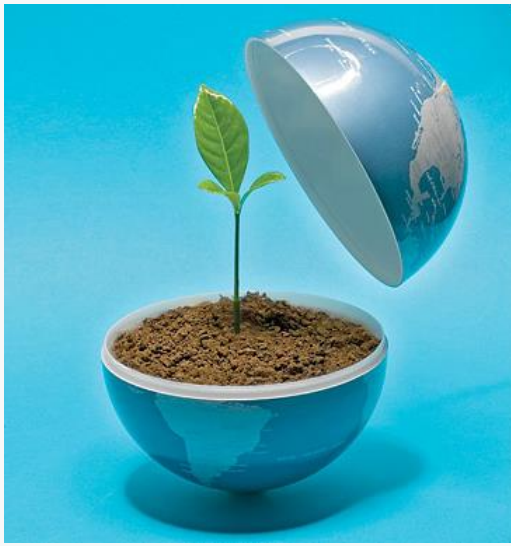
Thank you!

CORE organic

ICROFS

CORE Organic:

European Research Area (ERA-net)
Organic Agriculture and Food systems



….a strategic objective for transnational coordination

"To enhance the quality,
relevance and utilisation of
resources in research in organic farming and food systems and its contribution to the development and integrity of the organic sector "

CORE organic

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Sharing science

- **Networked cropping system experiments**
  - Connect existing long-term and systems experiments
- **Maintain and update platforms**
  - http://www.eurowheat.org on wheat cultivars and diseases
  - quantipest.endure-network.eu on protocols to ID and characterise pests, pest pressure and injury
  - http://www.euroblight.net on potato diseases
- **ENDURE Summer Schools**
  - 2007 - Biodiversity for crop protection
  - 2009 - Modelling approaches to support IPM
  - 2010 - New and emerging pests, diseases and weeds
  - 2012 - Agroecological engineering for crop protection