EAAP – Session 72:
Agroecological approaches in livestock farming systems

Understanding the role of livestock farming systems in agroecological transitions

R. Ripoll-Bosch and B. Dumont

WAGENINGEN
UNIVERSITY & RESEARCH

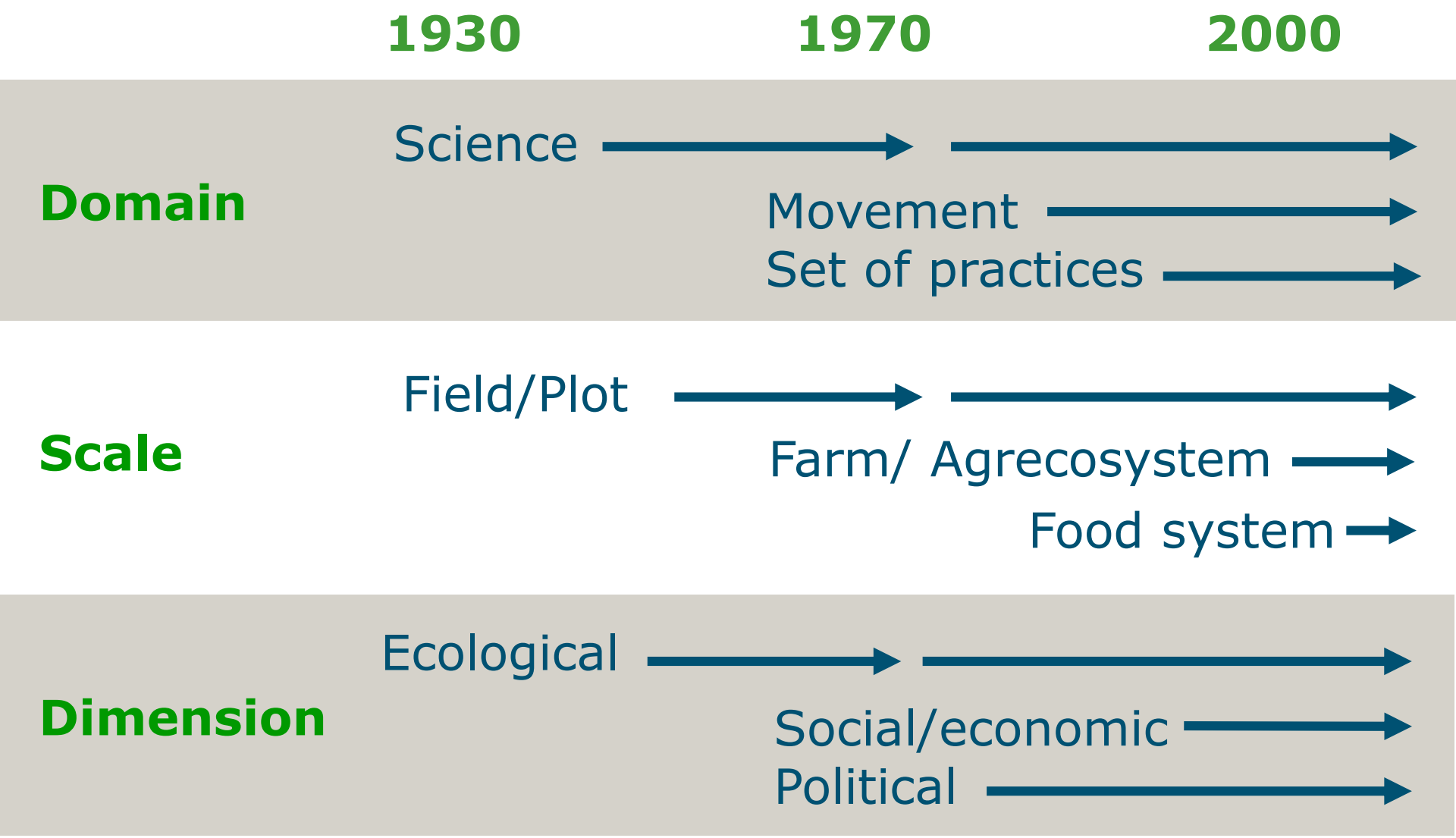
INRA
SCIENCE & IMPACT

Why this session?

- "Most food production has been based on high-input and resource-intensive farming systems"
- "However, at high cost to the environment: soil, forests, water, air quality and biodiversity continue to degrade"
- "We need to promote a transformative change in the way that we produce and consume food. We need to put forward sustainable food systems"
- "Agroecology can offer several contributions to this process"

FAO Director-General José Graziano da Silva (2018)

Agroecology: historical perspective



Agroecology: definition(s)

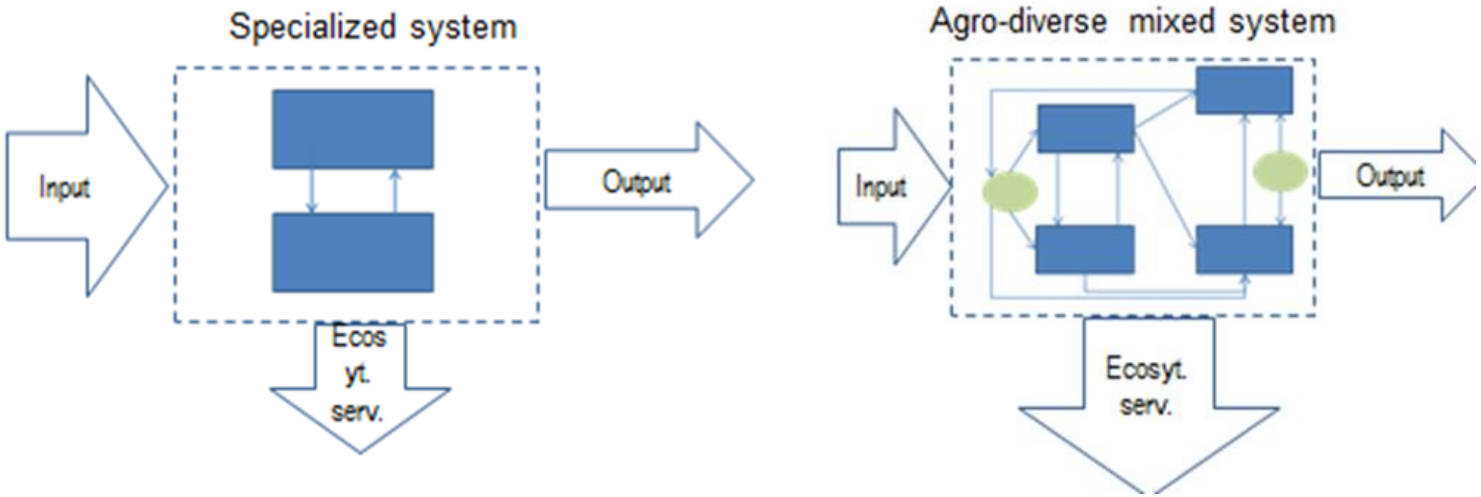
"Study of **ecological** phenomena **within the crop field**; **environmentally and socially** sensitive approach to agriculture; focuses not only on production"	Altieri, 1995
"Integrative study of the ecology of the **entire food system** encompassing ecological, social and economic dimensions"	Francis *et al*., 2003
"Agroecology as a **science**, **movement** or agricultural **practices**; term used with quite different meanings"	Wezel *et al*., 2009
"Grounded in **ecological thinking** where **holistic**, systems-level understanding of food system is required; brings sustainability to food systems; **transdisciplinary, participatory, integration, action-oriented**"	Gliessmann, 2018

Agroecology (AE): into practice

Source: FAO

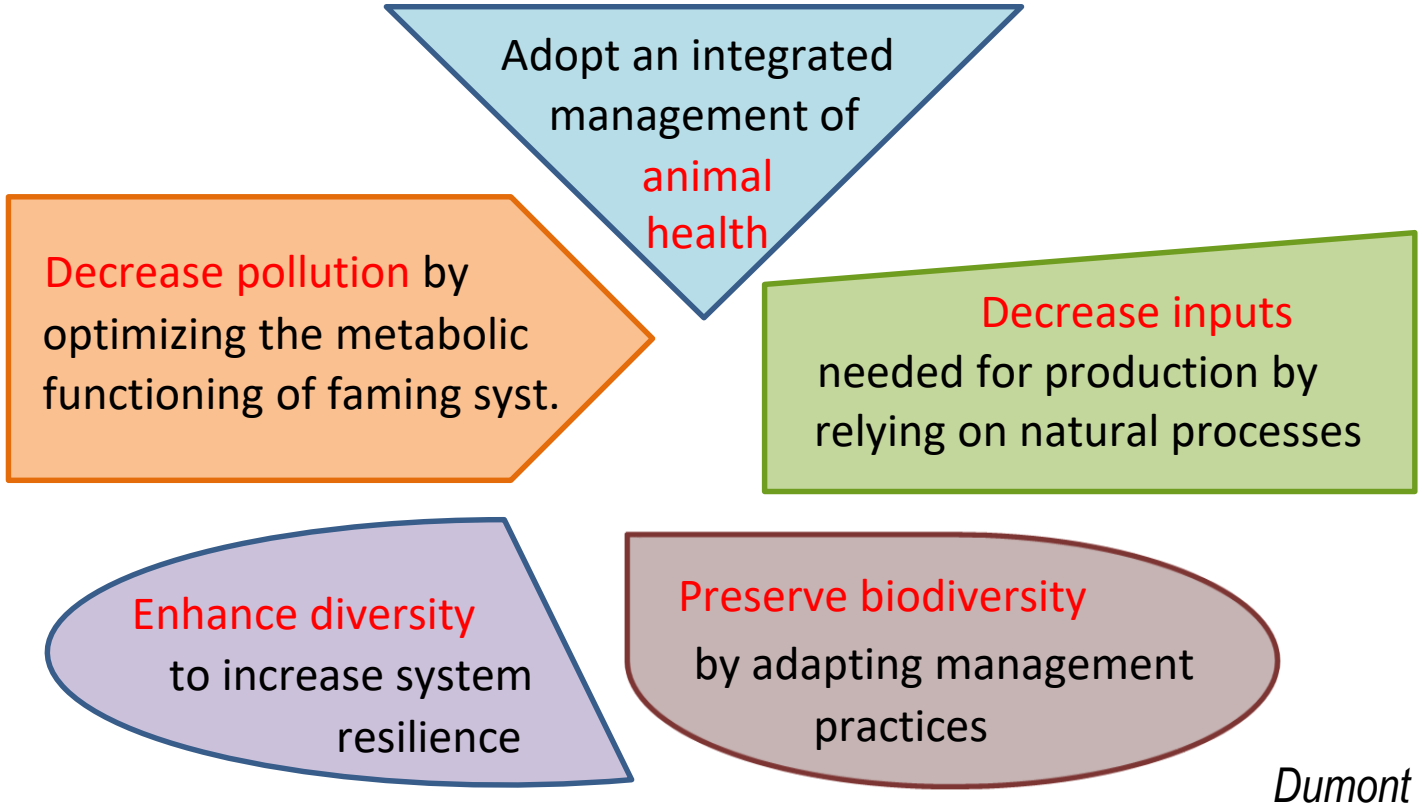
AE as scientific domain at system scale

- Stimulate natural processes to (re)design agricultural systems to use on-farm resources, reduce dependence on inputs and be more resilient



- (Bio)diversity is a key to strengthen the adaptive capacity and resilience of LFS

AE for animal production systems



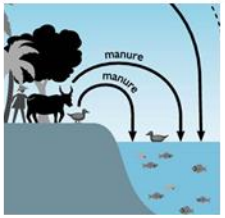
Dumont et al. 2013

6 case-studies

Dumont et al. 2013 *Murgeitio et al. 2011*

5 principes







Integrated health managmt				**	*	
↓ inputs	**	***	***	***	***	***
↓ pollution	*	***	**		***	*
Diversity to ↑ résilience	***	**	**	**	*	***
Preserve biodiversity	**	*		*		**

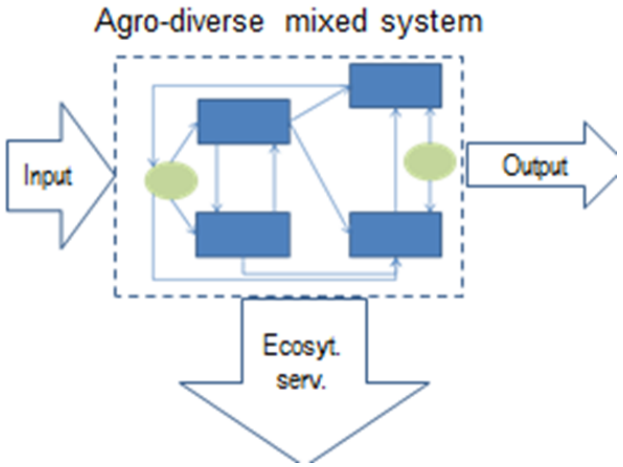
Same principles apply in different ecoregions and farming systems

Several principles apply in each system ➔ Redesign

Joint quantification of productive & environmental performances

(Re)design of animal production systems

- Agroecology changes the position adopted by researchers
  ➔ Co-designing of innovation by scientists & farmers



- Principles as a guideline to implement combinations of agroecological practices adapted to local conditions

- Farmer labour is also qualitatively different than in specialized systems

- Complexity of systems requires additional time for adapting and monitoring the system

Challenges ahead in AE transitions:

- Concept of agroecology: more rigorous use of the term, evolution, and avoid being marginalised "as too vague"
- Gain knowledge on the relationships between components of the farms and beyond farm
  → from all disciplines and sources of knowledge
- Involvement of all parties in the food chain
  → participatory
- Joint evaluations of multiple performance(s) of farming systems
- Find the combinations of principles and agroecological practices adapted to local conditions → (re)design

This session:

A compendium of different studies to broaden our perspective on livestock farming systems and agroecology:

Species	Rabbits, dairy cattle, beef cattle, sheep, dairy sheep, multispecies (within farm)
Environments	Different ecoregions within EU (temperate, Mediterranean, alpine) and tropical farming
Farming systems	Mixed systems (crop-livestock; mixed livestock); organic and conventional; pastoral; mountain/alpine; tropical
Topic/ scope/ challenges	• **Worldviews**: different values & perspectives • **New development**: systems; methods and techniques for analysis; • **Integrated** animal health management; • **Performance** and comparisons of farming systems • **Interactions**: different components of the farm; breed-environment-performance; farming-soil-biodiversity;

Thank you for your attention!

R. Ripoll-Bosch and B. Dumont

Agroecological approaches in livestock farming systems

WAGENINGEN
UNIVERSITY & RESEARCH