The role of livestock in eco-functional intensification of organic agriculture

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This presentation

- Eco-functional intensification?
- Which challenges does current organic agriculture with livestock face?
  - In the global north and south
- The roles of animals in eco-intense agriculture
- Steps towards intensification?

Photo Sten Dissing
Eco-functionally intensified agriculture – what is that?

- Building on multifunctional systems
- Intense ressource utilisation and optimal processes, primarily by ...
- ... creating synergies
  - between components within agricultural systems
  - in harmony with the surroundings ...
Eco-functionally intensified agriculture – what is that?

- Rethinking the notion of ‘performance’:
  - High and diverse production of food and other goods for humans
  - AND going beyond the food systems: production of clean water and air, biodiversity, eco-system services ...

- Enhancing rather than exhausting
Building resilient systems: combine eco-, agricultural -, food -, and social systems

- Application of ecological principles in agricultural systems
- Robustness
- Synergy
- ‘Buffer capacity’
- Integration of multiple elements
- Knowledge intensive and collaborative
Animals’ role in an ecological/eco-intensified farm: Be a part of the system, the nutrient cycle, and being a ressource
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Photo Sten Dissing
Which challenges do organic agriculture with livestock face in the global north?

- A livestock industry - organic and non-organic –
  - relying on multiple inputs and heavy resource use – e.g. water
  - In many places and to a large extent mono-cultural and commodity oriented

- A livestock industry contributing to
  - Unsustainable consumption patterns
  - Unfair food systems
  - Environmental degradation & threspassing planetary boundaries
Which inputs does large parts of the current global north livestock production systems rely on?

(Organic and non-organic)
Reliance on imported feed
Reliance on fossil fuels

USDA to Allow Chickens From U.S. to Be Shipped to China for Processing and Back to U.S. for Consumption, Just Like Seafood

John Deike | March 5, 2014 9:03 am | Comments

Scores of Americans are in an uproar since Food Safety News revealed the U.S. Department of Agriculture (USDA) will soon allow U.S. chickens to be sent to China for processing before being shipped back to the states for human consumption.
Reliance on antibiotics
(– not USA organic agriculture)

... 1928: life saving
... 1951: systematic use

... where are we going ...?
Reliance on few ‘designed breeds’

- Dramatic decrease in genetic diversity
- ‘Designed breeds’ for specialised purposes
- Breeding goals not robustness focused
Contributing to food systems in which food should be produced so cheaply that we can afford to waste it ...
Reliance on an industrial model

‘Shared suffering’

Photos from internet
Which challenges does current organic agriculture with livestock face in the global south?

Almost non-existing
Challenge:

Giving animals access to meet natural needs versus Utilising animal manure more efficiently
Challenges in tropical livestock production

- Endemic diseases,
- Increasing scarcities
  - land,
  - water,
  - resources,
  - feed
- Multiple agendas in globalised agriculture and food systems challenging land use, genetic variation, changing food cultures, migration for labor ...
Livestocks’ common global challenge:
They are animals
ANIMALS

Our partners:
- Work partners
- Animal products
- Cultural meaning
- ‘Systems partners’: manure, nutrient, nature interactors ...

Living sentient beings
The alliance between humans and animals

The ethical contract

Photo Ann Bargsten
Sustainable animal husbandry

‘A collaborative approach to humane sustainable agriculture will benefit animals, people and the environment’
‘Animal agricultural systems’

From ‘livestock production’

To ‘animal agricultural systems’

Photo from internet

Photo Monique Bestman
FAO / OIE etc: Livestock = all domesticated animals

Merriam-Webster Dictionary:

Livestock noun (Concise Encyclopedia)

Farm animals, with the exception of poultry. In Western countries the category encompasses primarily CATTLE, SHEEP, PIGS, GOATS, HORSES, DONKEYS, and MULES; other animals (e.g., BUFFALO, OXEN, or CAMELS) may predominate in other areas. See also ASS, COW, DAIRY FARMING.
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Animals are integrated into diversified systems...
‘Waste’ and ‘Pollution’ versus ‘Manure is gold’
Which role can animals have in an eco-functionally intense system?

- Be integrated part => synergy and cycles --- e.g. nutrient
- Good use of marginal areas
- Enhance resilience
- Pollinate
- Work with and in the surroundings: root, step, drop manure, eat various parts of the vegetation, transport seeds, keep cycles going...
- Provide animal products
Eco-functional intensification = integration

- Mixed: ‘co-existence’ in the same system
- Integrated: inter-action and inter-dependency which benefits all involved
- Integration on more levels: complementary, local & territorial synergy (Moraine et al., ANIMAL, 2014)
Grassland and ruminants a ‘perfect match’

(Idel & Reichert, 2014; UNCTAD, 138-153)
Agroforestry systems

Eco-functional intensification including animals

Photo Monique Bestman
Animal – land – human synergies
Include protein sources in nutrient cycles

... and herbs as part of the pasture ...

Acta Agriculturae Scandinavica, Section A - Animal Science

Free-range pigs foraging on Jerusalem artichokes (Helianthus tuberosus L.) - Effect of feeding strategy on growth, feed conversion and animal behaviour

A. G. Kongsted a, K. Horsted a & J. E. Hermansen a

a Department of Agroecology, Faculty of Science and Technology, Aarhus University, Tjele, Denmark

‘Can together’ EU-FP7-project

‘... ecological modernisation...
...participatory design
...local context...’

Farming system design for innovative crop-livestock integration in Europe

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Photo Sten Dissing
Drivers of transition

- Context specific knowledge generation and collaboration
  - Action through interaction, common learning, community building and research
  - Awareness of ressources and consumption patterns
- Governance of ...
  - agricultural and natural systems
  - food systems; consumption patterns

Photo Sten Dissing
Complex integrated animal farming systems requires complex and context specific knowledge.

The power and potential of farmer groups for exchange & development.
Transition: changing attitudes

Away from ‘control and command pathology’ of industrial systems

Away from thinking of ecological farming as ‘old-fashioned’ and ‘traditional’
... and learning to work with systems under challenged conditions
Visions for the future...

- ‘The need for a new agricultural paradigm’
- ‘Sustainability requires a new definition of the terms productivity and growth’
Policies which support agriculture and food systems that protect the ‘actors without a voice’
Research agenda

- 'Managing for resilience’
- ‘Robustness’
- ‘Adapting to climate change’
- ‘Principles for system design’
- ‘Valuing interactions among systems components’
- ‘High degree of collective action ... ‘

Forty research issues for the redesign of animal production systems in the 21st century

B. Dumont¹, E. González-García², M. Thomas³, L. Fortun-Lamothe⁴, C. Ducrot⁵, J. Y. Dourmad⁶ and M. Tichit⁷
Thank you for your attention
Land system change: estimated that no more than 15% of the global ice-free land surface should be converted to cropland.

Livestock graze on about 26% and consume about 33% of cropland as feed.