



Sveriges lantbruksuniversitet
Swedish University of Agricultural Sciences

Tuning up sustainable organic animal production

Lotta Rydhmer and Margot Slagboom

Dept of Animal Breeding and Genetics
Swedish University of Agricultural Sciences

Dept of Molecular Biology and Genetics, Aarhus
University, Denmark

Tuning up?



What is “most efficient” ?

Many sustainability aspects

Goal conflicts

Working environment vs Production costs

Climate impact vs Animal welfare

Toxic substances vs Yield

1. Admit the goal conflicts

1. Admit the goal conflicts
2. Accept some goal conflicts cannot be solved scientifically

Breeding

=> more efficient animals

=> less negative climate impact

More milk from less cows

Less cows = less meat

Need more meat from beef cows?

Meat from beef cows => more
negative climate impact

Study whole production systems

Production and Consumption



Which goals are fulfilled thanks to organic agriculture?

Organic production = low yield?

Journal of Cleaner Production 73 (2014) 10–18



ELSEVIER

Contents lists available at ScienceDirect

Journal of Cleaner Production

journal homepage: www.elsevier.com/locate/jclepro



Three perspectives on sustainable food security: efficiency, demand restraint, food system transformation. What role for life cycle assessment?

Tara Garnett

Food Climate Research Network, Environmental Change Institute, University of Oxford, United Kingdom



Garnett, 2014

- Efficiency oriented
- Demand restraint
- Food system transformation

“Everybody wants ‘sustainability’ and an end to hunger – but not everyone has the same vision of what the solution - the good life - might look like.”

Tools for sustainability assessment

- IDEA Indicateurs de Durabilité des Exploitations Agricoles
- RISE Response-Induced Sustainability Evaluation
- SAFA Sustainability Assessment of Food and Agricultural systems

Slätmo et al, 2017

The framing of sustainability in sustainability assessment frameworks...

- Social aspects
- Use of farmers' knowledge and experience
- Aspects chosen based on values

New EU project within SusAn:
Sustainability of pig production
through improved feed efficiency,
SusPig

Coordinator: W Rauw

Environmental and Social LCA

Breeding

=> animals that are specialists
in the given environment

Egg or Chicken meat

Milk or Beef

Low economic value => Low welfare

“combined milk and beef production would likely be the most viable and sustainable way to achieve self-sufficiency in beef while maintaining sufficient milk production in Finland”

Kokko, 2017

Dutch Organisation for Organic Animal Breeding

Organic Selective Animal Breeding

[HOME](#) / [NEWS](#) / [CATTLE](#) ▾ / [CHICKENS](#) / [PIGS](#) / [GOATS](#) / [LINKS](#) / [ABOUT THE FOUNDATION](#) ▾ /  



Dutch Organisation for Organic Animal Breeding

JOIN IN with the campaign 'ADOPT a BULL'

Stichting
BioVee
door de boer
voor de boer
Verbetering

Adopteer
een
Stier!

Dual-purpose breeds in organic production

Core Organic-project Organic Dairy Health

Huge diversity in European organic
dairy production systems

Wallenbeck et al

How much organic diversity can we
handle?



Reasons for specific breeding programs for organic production

- Market
- Genotype x Environment-
interactions

Slagboom et al, 2016

Preference study

4 clusters of farmers:

- Health and Fertility
- Production and Udder Health 
- Survival
- Fertility and Production 

“Here and Now”

Wallenbeck et al, 2016
Interactive web questionnaire
showing side effects of selection

Farmers with organic production
found health traits more important

Reasons for specific breeding programs for organic production

- Market
- Genotype x Environment-
interactions
- **Organic principles**

The organic principles

- Health
- Ecology
- Fairness
- Care

What breeding goal do they give us?

The organic principles

- Health: disease and mortality traits
- Ecology: roughage consumption and feed efficiency
- Fairness: mortality traits
- Care: disease and mortality traits

Reasons for **no**
specific breeding programs for
organic production...

Small scale animal breeding is
almost impossible

Reasons for **no**
specific breeding programs for
organic production...

Small scale animal breeding is
almost impossible

Alternative: Select among the
selected conventional

“organic agriculture is a production system that ... relies on ecological processes, biodiversity and cycles adapted to **local** conditions”

IFOAM

Tuning up in which way?

Exclusive niche production

More common, “more Agenda2030”

To discuss

Goal conflicts

Production system perspective

Sustainability assessment tools

How many different systems

The importance of “local”

The meaning of the 4 principles

Exclusive niche production

Should all farmers become organic

...