



Sustainable Organic and Low Input Dairying (SOLID)

Werner Zollitsch



University of Natural Resources and Life Sciences, Vienna



SOLID

- 5 years (2011 – 2016)
- 24 partners (10 SMEs)
- 10 countries
- Total budget ~ 6 million euros
- Coordinator: N. Scollan, Aberystwyth University (UK)



Context

- Knowledge based, competitive, profitable, environmentally sustainable and energy efficient farming systems (SCAR, 2008)
- Multi-functional potential of farm systems important
- Productivity, environmental, animal welfare, nutritional and profitability functions of low-input and organic farming increasingly recognised
- Constraints of these systems which limit potential



Known constraints

- Organic and low input farming include lack of knowledge about
 - appropriate adapted breeds
 - forage utilisation to maximise physical (health and milk quality/quantity)
 - financial and environmental efficiency
 - volatile markets
 - poor supply chain relationships and
 - lack of appropriate decision support tools



SOLID Objectives

- **Actively involve stakeholders** (organic and low input dairy farmers, farmer groups, advisors, processors) in a co-ordinated approach – a participatory approach
- **Quantify advantages of genotypes** “adapted to organic and low input dairy production systems”
- **Novel and sustainable feed resources and decision support model** to optimise management of on-farm feed
- **A knowledge platform to access environmental sustainability**



SOLID objectives (contd.)

- **Identify** the broad range of **expectations** towards low-input and organic dairy farming and food systems
- **Evaluate** the **competitiveness** of existing organic and low input dairy farms and novel strategies developed
- **Disseminate knowledge to key stakeholders** through a participatory framework



Structure

- **WP1** – Innovation through stakeholder engagement and participatory research (S. Padel, ORC, UK)
- **WP2** – Adapted breeds (W. Zollitsch, BOKU, AUT)
- **WP3** – Novel feeds and decision support models (M. Rinne, Luke, FI)
- **WP4** – Environmental assessment (J. Hermansen, AU, DK)
- **WP5** – Supply chain and consumer analysis (R. Zanolini, UNIVPM, IT)
- **WP6** – Socio-economic evaluation (W. Verbeke, UGENT, BE)
- **WP7** – Knowledge exchange, training and innovation (N. Halberg, AU, DK and C. Thomas, S-ICAR, IT)



WP1 Participatory research

- Utilise the knowledge and experience of farmers (and other stakeholders)
- Work with their willingness to identify and experiment with novel strategies and approaches
- To deal with constraints of low-input and organic dairy systems



Participatory projects – for example biodiversity in Austria



Typical landscape of farm location



Farmers' field lab - plant biodiversity





Food and Agriculture
Organization of the
United Nations

for a world without hunger

Sustainability of organic grassland-based dairy production in Tyrol, Austria



Name of sustainable practice or practices
Sustainability of organic grassland-based dairy production in Tyrol, Austria

Name of main actor
Organic Alpine dairy farmers, the Cooperative Organic Dairy Hatzenstädt

Type of actors involved
Family farmers, Research institutions

Livestock Species
Cattle

Livestock breed
Brown Swiss, Simmental, Jersey, and Pinzgauer cattle

Country
Austria

Agro-ecological region
Mountain

Main feature of best practice
Improving

environmental sustainability including biodiversity conservation, Furthering grain-free strategies in animal feed

<http://www.fao.org/nr/sustainability/sustainability-and-livestock/database/projects-detail/en/c/269823/>

WP2 Adapted Breeds

- Contribution to a better understanding of adaptation of breeds identified by producers
 - Background: information about production, milk quality, fertility, etc.
 - Physiological level: biomarkers
 - Energetic level: energy efficiency
- Assessing animal health & welfare under conditions typical for European OLIDS



Country	Austria (BOKU)		Northern Ireland (AFBI)		Finland (Luke)	
Region	Alpine		Western European Grassland		North European Grassland (confined)	
Genotype	Conventional	"Adapted"	Conventional	"Adapted"	Conventional	"Adapted"
	Brown Swiss (n = 21)	Local HF (n = 29)	HF (n = 34)	(SR x J x HF) (n = 34)	HF (n = 32)	Nordic Red (n = 14)
Systems examined	Low vs. moderate input 280 vs. 620 kg conc. DM		Low vs. moderate input 740 vs. 1,840 kg conc. DM		Moderate vs. high input 1,250 vs. 3,020 kg conc. DM	

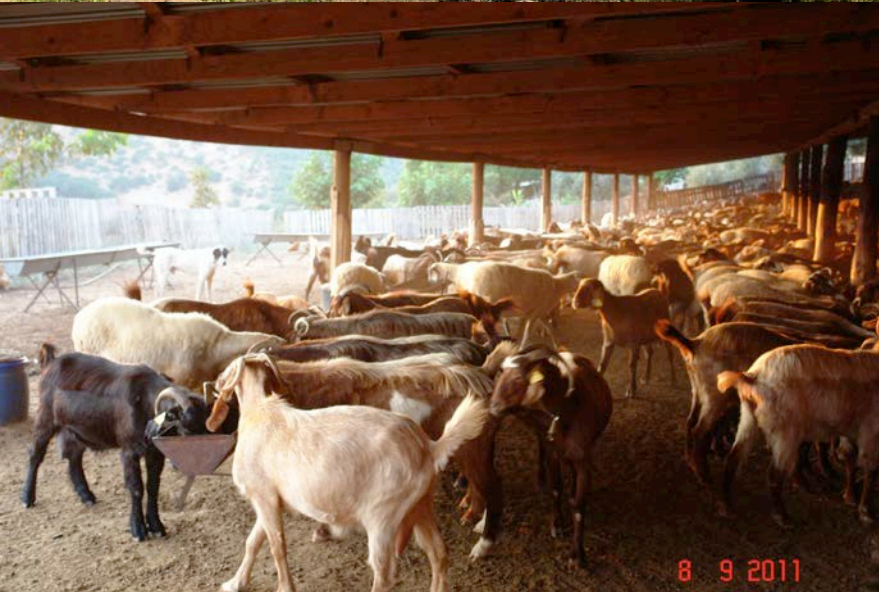


Conclusions

- ◆ **Adapted** breeds **mostly** had **higher milk solid** content, which (partially) compensated for lower milk quantity
- ◆ **No general trend** could be observed across systems and breeds concerning **body weight, BCS** and their **changes**: Breed-specific response patterns to specific feeding system
- ◆ Inconsistent **advantages** for **adapted breeds** in **fertility** and certain **health** traits address key success factors for organic & low input systems
- ◆ Blood & milk **biomarkers** point at certain **differences** in breed **response** at the metabolic level



Super-low input dairy goat production



WP3 Novel Feeds

- To improve the competitiveness of organic and low input dairy production systems through improving the feed supply
 - Improving the supply of nutrients from forages and by-products through the use of novel feeds
 - Understanding the efficiency with which high forage diets are utilized by dairy cattle
 - Reducing risk and the provision of decision support systems for forage management and feeding



WP4 Environmental assessment

- Build up knowledge platform for assessing environmental sustainability for European organic and low input dairy chains
 - To develop and apply LCA based tools for producing conventional and novel environmental indicators in multifunctional dairy systems
 - To identify the sustainability hotspots in low input and organic dairy chains
 - To integrate the LCA approach with other sustainability indicators
 - To analyse the eco-efficiency and sustainability gains from innovations



Environmental impacts of milk ?

Global warming



Nutrient enrichment



Carbon sequestration / soil fertility

Biodiversity



WP5 Supply Chains

- Identify the broad range of expectations for innovation in management practices and adapted breeds along the whole supply chain (fork to farm)
- Assess the acceptability of novel strategies
- Optimal strategies to enhance collaborative behaviours in order to introduce acceptable innovations enhancing competitiveness and sustainability along the whole supply chain.



WP 6 Competitiveness: Economic impact

- Organic is clearly defined, low-input not
 - Challenge for comparative analysis
- Organic and low-input dairy farming across the EU is very diverse
- Such farms appear more resilient to input price increases and volatile market prices



WP 7 Dissemination: e.g. SOLID e-learning

Suitable genotypes for low-input and organic dairy systems

Authors:

Authors: Marco Horn¹, Werner Zollitsch¹, Lisa Baldinger¹, Conrad Ferris²,
Auvo Sairanen³, Mark Measures⁴

¹University of Natural Resources and Life Sciences (BOKU), Vienna, Austria
e-mail: werner.zollitsch@boku.ac.at

²Agri-Food and Biosciences Institute (AFBI), Belfast, United Kingdom

³MTT Agrifood Research Finland, Maaninka, Finland

⁴The Organic Research Centre, Hamstead Marshall, United Kingdom

Learning design consultancy and software realisation by Julian Cook, Bristol, UK
e-mail: julian.cook@hotmail.co.uk



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SOLID Workshop: “Organic and low-input dairying”

Posted on [24. November 2015](#) by [SOLID](#)



The SOLID Workshop “Organic and low-input dairying” – an option to Northern European Dairy Sector?” was held in Helsinki, Finland on 27-28 October 2015.

Majority of the participants represented various Finnish stakeholder groups with delegates from other Nordic countries and the Baltic countries as well.

The presentations covered findings from all work packages of the project. Additional

ABOUT SOLID

SOLID is a European project on Sustainable Organic and Low Input Dairying financed by the European Union. The project runs from 2011-2016. 25 partners from 10 European countries participate in the project.

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