Lessons from LowInputBreeds & ProPIG

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http://www.nefg-organic.org/
• CORE organic II project, 10 European partners
• Hypothesis: environmental impact reduced by healthy, happy, well fed pigs
• Monitoring organic pig farms – assess strengths & weaknesses
• Identify & adopt good practice
• Monitoring improvement in follow-up visit
• Share findings; industry and research community
Feeding organic pigs – the reality

- ProPIG study in 2012; 72 farms in 7 countries
- Questionnaire identifying feeding management – number of differing diets offered
- Not all farms with same stages of production chain
  - Farrowing to finish systems n=52
  - Finishing only n=12
  - Other (part system only) n=6+1+1
- Findings presented by Armelle Prunier, INRA, France at the European Association of Animal Production (EAAP) August 2014
1. Some farms have a unique diet for all stages (4/52)
2. Only a minority have 5 or 6 diets (20/52)
Sow diets

• One diet for pregnant and lactating sows: 24/59 farms
Majority of farms have a single diet for fatteners: 37/65 farms
Adequacy of feeding

Diets classification according to recommendations for growing pigs (IFIP, 2013)
Optimum if 0.9-1.1 [optimum], < deficit, > excess

- Excess Proteins: probably to secure essential amino acid intake
- Digestible Energy: OK
- Digestible lysine: numerous farms with deficit
Conclusions

• **Could do better**
  – Specific diets for various stages
  – Better diet formulation to meet animals’ needs

• **BUT challenges**
  – Availability and cost of organic ingredients, high in essential amino acids (lysine, tryptophan...)

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ProPIG

Nafferton Ecological Farming Group
Developing integrated livestock breeding and management strategies to improve animal health, product quality and performance in European organic and low input milk, meat and egg production (EU grant agreement No 222623)

- Cattle (dairy and beef), sheep (dairy and meat), pigs & poultry

- Coordination: Newcastle University and Research Institute of Organic Agriculture (FiBL)

- Check out the website: www.lowinputbreeds.org
  - Technical notes
  - Newsletters
  - Conference papers
  - Scientific publications
Home

LowInputBreeds - Development of integrated livestock breeding and management strategies to improve animal health, product quality and performance in European organic and 'low input' milk, meat and egg production.

On this website the project results are presented.

News

Final LowInputBreeds Newsletter now online
(26.08.2014) This Newsletter includes an executive summary of project outputs - 5 years' work by the project partners distilled down to 4000 characters - and the abstracts of papers... read more

More LowInputBreeds Technical Notes now online
(16.06.2014) The European LowInputBreeds project is producing a number of Technical Notes. The Technical Notes cover key themes and results from the LowInputBreeds project. read more

Proceedings of the 14th International Seminar of the FAO-CIHEAM Network on Sheep and Goats Sub-Network on Nutrition now available
(15.04.2014) The second LowInputBreeds Symposium took place in the framework of the 14th International Seminar of the FAO-CIHEAM Network on Sheep and Goats Sub-Network on Nutrition... read more
Large Collaborative Project

- 2009 – 2014
- 17 research centres
- 6 industrial partners
- 4 non-European partners
- 17 countries
- 94 person-years of research
- > 60 scientists
- Budget: 8.9 Mi €
- EC contribution: 6 Mi €
Why LIB?

- Animal breeding focus on **intensive production** systems
- Dominated by big business
- Selection on **performance**
- Modern genotypes only successful if supported by **high inputs**
- **Functional traits** low priority
- Organic and low-input systems need **robust** animals
- Diverse & relatively small **market**
Pigs: Project goals

- Suitable breeds for low input systems
- Design breeding systems low input systems
- Breed for heat tolerant sows
- Reduce piglet mortality by breeding & management
- Improve product quality by breed choice & feeding regime
Breed choice?

Literature review and farm surveys to evaluate suitability

**Conventional**
- Often used in commercial organic/low input pig production
- May be less suited for these systems

**Traditional**
- Favoured by organic production standards
- Prolificacy and carcass quality may be less suitable for *commodity* pork market
Traditional vs. Conventional breeds

Litter size

Leenhouwers et al. 2013
Traditional vs. Conventional breeds

Piglet mortality

Leenhouwers et al. 2013
Traditional vs. Conventional breeds

Feed conversion

Leenhouwers et al. 2013
## Breed choice: Conclusions

<table>
<thead>
<tr>
<th>Conventional</th>
<th>Traditional</th>
</tr>
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<tbody>
<tr>
<td>• Large litters</td>
<td>• Smaller litters</td>
</tr>
<tr>
<td>• High mortality</td>
<td>• Low mortality</td>
</tr>
<tr>
<td>• Fast growth, efficient</td>
<td>• Slow growth, less efficient</td>
</tr>
<tr>
<td>• Lean</td>
<td>• Fat (feeding?)</td>
</tr>
<tr>
<td>• Temperate climates</td>
<td></td>
</tr>
<tr>
<td>• Controlled environment</td>
<td>1. <strong>Prolific breeds</strong>  Good</td>
</tr>
<tr>
<td>• Commodity pork</td>
<td>finishing performance, suited</td>
</tr>
<tr>
<td></td>
<td>to <em>commodity pork</em></td>
</tr>
<tr>
<td></td>
<td>2. <strong>Special meat breeds</strong> Less</td>
</tr>
<tr>
<td></td>
<td>prolific and fat  good for</td>
</tr>
<tr>
<td></td>
<td><em>added value</em> products</td>
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</tbody>
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Finisher survival
Finding families that affect finisher Survival (which sires to avoid)
Goals: poultry

1. Develop a participatory breeding system suited to free range and organic systems
2. Management for free range and organic farms to improve diets and reduce feather pecking
3. Scope to extend productive life of laying hens
4. Considering the impact on egg quality
Alternative high protein feeds

- Active research; health, welfare, economic and environmental impact
- Oilseeds: soya? rape or sunflower (hulls?)
- Grain legumes: peas, beans, lupines (hulls?)
- Forage legumes: red clover, lucerne (from range?)
- Aquatic plants: micro algae, seaweed, duck weed
- Extracting protein: potatoes, oats, quinoa
- Invertebrates: mealworms, housefly, earthworms
Hens: summary of findings

- Monitoring farms and producer groups in France, Netherlands and Switzerland; 20 different strains of hen
- Mortality and production worse in organic flocks cf free range
- White hens tended to perform better than brown - silver birds had higher mortality and lower production
- No apparent relationship between production, mortality, feather condition, use of outside run or flock size
- High organic feed costs may favour [robust] smaller hens
- Raising laying cockerels for meat uncompetitive compared with broilers

Leestra et al 2012 & Maurer et al
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