ICOPP: Improved contribution of local feed to support 100% organic feed supply to pigs and poultry

Expected output: New validated systems that are economical viable as well as animal welfare - and environmental friendly and adapted to local agro-ecological conditions.

- Improved knowledge of availability and nutritional value of new organic feed ingredients - focus on local feed resources
- Improved understanding of the possible benefits of roughage inclusion in relation to nutritional and behavioural needs as well as its impact on health and welfare
- Understanding how direct foraging in the outdoor area can contribute to meeting the animals nutritional needs
- Assessing the economic and environmental consequences of increased reliance on local organically produced feed
The detailed activities are in the planning phase now

WP1: Feed resources – Veronika Maurer, FIBL, Switzerland

WP2: Feed evaluation – Kirsi Partanen, MTT, Finland

WP3: Local concentrates and productivity, health, behaviour and welfare – Friedrich Weissmann, vTI, Germany

WP4: Roughage and growth, health and behaviour in pigs and poultry – Herman Vermeer, WUR-LR, NL

WP5: Foraging in the range area – Klaus Horsted, AU, Denmark

WP6: Integrated impact assessment – John E. Hermansen, AU-DJF, Denmark
Feed resources
Veronika Maurer, FIBL, Switzerland

The Problem
What resources are available at a European scale (high quality protein)
What are the possibilities to increase EU self supply with organic protein
What innovative solutions have been used by farmers

Two views: EU-local vs local-local
Combining this overview with the experimental work as described later will allow a good judgement on how to achieve 100% organic feeding with local sources
Feed evaluation
Kirsi Partanen, MTT, Finland

The problem
- Scattered knowledge on feeding value of organic feed stuffs
- Different methods to estimate this, makes it difficult to transfer results from country to country
- Need for in-depth studies of new feeds

Activities
- Set up a database for practical use
- Perform digestibility trials with pigs and poultry of new feeds – focus on amino acids (insects protein, mussel meal, sainfoin, grass pea seed)
- Contribution of amino acids by roughage

Feeding experiments - Local concentrates
Friedrich Weissmann, vTI, Germany

Piglets (Growth and gut health)
- Grass pea seed (Boku)
- Sainfoin (Boku)
- Insects protein (FiBL)
- Home grown mix (vTI)

Finishers (Growth and product quality)
- Mussel meal (SLU)

Sows (Reproductive performance)
- Legumes and rape seed cake in phase feeding strategies (MTT)
Roughage - growth, health and behaviour in pigs and poultry

Herman Vermeer, WUR-LR, NL

The problem

- To what extend can roughage contribute with nutrient
- Can it improve gastro-intestinal health
- Can it improve welfare
- What are implications on product quality

Experiments - roughage

- Grass silage (high quality) for growing pigs (WUR)
  - (focus stomach health)
- Clover grass for finishers (FAI)
  - (focus product quality)
- Grass/chicory for finishers (SLU)
  - Interaction genotype
Foraging in the range area as an integrated approach

Participants:
- Organic Research Centre (ORC), UK
- Food Animal Initiative (FAI), UK
- Institut Technique de l'Agriculture Biologique (ITAB), France
- Aarhus University (AU), Denmark

Foraging in the range area as an integrated approach

Working hypothesis

Foraging in the range area can contribute significantly to the nutritional needs of pigs and poultry.

Differences in breeds exist due to differences in exploring behaviour and growth patterns.

Foraging in the range area may contribute to:

- 100% organic feeding
- Increased use of locally produced feed
- Improved animal health and welfare
- Differentiated products
- Fulfilling the consumers' expectations of organic farming
Experiment with laying hens foraging a sequence of different crops

Første resultat (fra pilotforsøg)

Periode 59-75 kg
Tilskudsfoder 1,8 kg/dag
Tilvækst 800 g/dag
Foderudnyttelse 2,3 kg tilskudsfoder/kg tilvækst

5-6 kg jordskokker om dagen per slagtesvin ~ 35% af behov

Video med frilandsgrise der æder jordskokker og kvikrødder, af Henning C. Thomsen
http://youtu.be/lMqv8KTHc-tw
Approach/methodology

A. Literature review of biodiversity studies of on-farm habitats (cropped and non-cropped including AES options) (UK)
B. Experiments in DK with growing pigs and broilers (2013)
C. Experiments in France broilers, sows, piglets and growing pigs including different genotypes with or without access to forage (2012 and 2013)

Combined pig and energy crop production - a solution?
- The area with energy crops has increased in DK
- Could offer the pig variation and protection from the sun/wind
- Deep root system with high water and nutrient uptakes
- But will the pigs destroy the plants?

Spring 2009
Excretory behaviour, % of observations

<table>
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<tr>
<th>Activity</th>
<th>Willow1</th>
<th>Willow2</th>
<th>Grass1</th>
<th>Grass2</th>
<th>Misc.</th>
<th>Cut Misc.</th>
<th>Total</th>
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<tbody>
<tr>
<td>Feeding</td>
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<td>5%</td>
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<tr>
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<td>5%</td>
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<td>50%</td>
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<tr>
<td>Grass</td>
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<td>35%</td>
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<tr>
<td>Misc.</td>
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<td>50%</td>
</tr>
<tr>
<td>Cut Misc.</td>
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<td>10%</td>
<td>10%</td>
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<td>10%</td>
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</tr>
</tbody>
</table>

Potential N-leaching

| | BV01f dbuf | N|Etholiph-Lh | Gdfjoret | CT-01f dbuf |
|---|---|---|---|---|---|---|
| Small paddocks | 2/a | 41 | 233.381 |
| Large paddocks | 1/b | 5 | 41.96 |

Conclusions

- Combined pig and energy crop production are possible without serious crop damages if the crops are well established.
- At high temperatures the pigs preferred to rest in zones with willow.
- The pigs preferred to deposit the manure in zones with willow.

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Integrated assessment

John E Hermansen

Generic ‘optimized’ systems (economic viability, animal welfare, environmental impact) based on 100% organic feed are produced for different local feed resource availabilities and agro-ecological conditions

Workplan

- Typical systems (pig, egg broiler) across Europe defined in terms of input, land use, and production Months 12-24 (Contribution from WP 1 and all partners)
- Prototypes converted to 100% organic diet (taking into account innovations identified in the other wp’s) through an iterative process and through discussion with relevant stakeholders in different countries Months 25-33
- New systems will be assessed and published to be used as basis for local adaptation of the production system Months 28-35

It was green when I came here!