EcoProtein, local and organic feed production in Denmark

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The EcoProtein project

EcoProtein is a four-year project (2012-2015) which lays the groundwork for the feeding of Danish organic farm animals with a Danish organic protein feed.
The EcoProtein project group

- Knowledge Centre for Agriculture
- Faculty of Science and Technology at Aarhus Uni.
- The organic dairy “Naturmælk”
- Fermentationexperts A/S
- 5 organic farms and 50 organic fields.
The EcoProtein project – the innovative idea

To day
Low local production of grain legumes

Extensive import of soybeans
The EcoProtein project – the innovative idea

Barriers

- Low and unstable yields
- Anti nutritional factors (ANF)
- Low content of metheonine (monogastric animals)
- High protein digestability in the rumen (ruminants)
The EcoProtein project – the innovative idea

Alternative varieties

Toastning
Fermentation
Dehulling
Feeding toasted faba beans to dairy cows

Demonstration at two organic farms (270 and 115 dairy cows) showed that toasted faba beans have good potential for replacing soybeans.

However, with a high milk production (~10,000 kg ECM per cow) a fat-containing concentrate supply is necessary.

Responsible:
Specialist Kirstine F. Jørgensen, Knowledge Centre for Agriculture
kfj@vfl.dk
Transportable Bulldog toaster from Mecmar, Italy
Feeding faba beans to egg laying hens

Fermentation with lactic acid is expected to increase the digestability and reduce the amount of ANF (Fermentationexperts)

Treatments:

1. Control without faba beans
2. Fermented Fuego faba bean
3. Untreated Fuego faba bean
4. Untreated Divine faba bean

Responsible:
Senior scientist Sanna Stenfeldt
Aarhus University
Sanna.stenfeldt@agrsci.dk
Feeding faba beans to slaughter pigs

Treatments:
1. Control without faba beans
2. Fermented Fuego faba bean
3. Untreated Fuego faba bean

Responsible:
National advisor Tove Serup,
Knowledge Centre for Agriculture
tos@vfl.dk

This demonstration is carried out on a specialised organic farm
Laboratory analyses of feed quality parameters including selected amino acids and ANF

Species and varieties:
Faba bean (Fuego, Divine, Columbo)
Lupin (Iris, Azuro)

Treatments:
Untreated
Fermented
De-hulled

All feedstuff in the feed tests

Responsible:
Advisor Lars E. Olsen
Knowledge Centre for Agriculture
leo@vfl.dk
Pushing the field production forward:

Better management:
Advices to the farmers about sowing time, sowing depth, water supply, intercropping etc.

Need for breeding:
Report from an European workshop organized by the project last year: Pedersen et al., 2013. *Grain legumes for organic agriculture. Towards better varieties in Faba bean, Lupin and Field peas* : [http://orgprints.org/id/saved_search/1539](http://orgprints.org/id/saved_search/1539)

Responsible for field trials:
Chief advisor Inger Bertelsen, Knowledge Centre for Agriculture
inb@vfl.dk
The next steps:

The organic arable farmers must integrate faba beans or lupins in their crop rotations?

The feeding advisors must be convinced that toasted faba beans – or lupins – can replace soybeans on dairy farms.

The price on locally produced protein crops must be competitive with the price on imported soya.
Thank you for your attention
Organic farming in Denmark compared with conventional (2013)

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<tr>
<th></th>
<th>Organic</th>
<th>Total</th>
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<tbody>
<tr>
<td></td>
<td>Total</td>
<td>% of total Danish agriculture</td>
</tr>
<tr>
<td>Number of farms</td>
<td>2627</td>
<td>6,8</td>
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<tr>
<td>Production area, ha</td>
<td>181,717</td>
<td>6,9</td>
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<td>Average ha pr. farm</td>
<td>71.7</td>
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Organic farming in Denmark - development

An Action Plan for Organic Production towards 2020, launched in 2012, intends to achieve the government’s objective of doubling the organic area in Denmark to around 350,000 ha by 2020.
Organic grain legumes - development

- Pea
- Faba bean
- Lupin

Hectare

1995 2000 2005 2010

Hectare

0 500 1000 1500 2000 2500 3000 3500

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