Demand driven research in organic food chains

Wijnand Sukkel, Paris March 4, 2010
Organic agriculture in the Netherlands

<table>
<thead>
<tr>
<th></th>
<th>1996</th>
<th>1999</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area organic farming (ha)</td>
<td>12,500</td>
<td>22,997</td>
<td>50,435</td>
</tr>
<tr>
<td>Percentage of total agricultural area</td>
<td>0.7%</td>
<td>1.2%</td>
<td>2.6%</td>
</tr>
<tr>
<td>Number of org. farms</td>
<td>n.d.</td>
<td>1216</td>
<td>1473</td>
</tr>
<tr>
<td>Sales organic food (€ million)</td>
<td>160</td>
<td>235</td>
<td>583</td>
</tr>
<tr>
<td>Share of total consumption</td>
<td>n.d.</td>
<td>1.1%</td>
<td>2.1%</td>
</tr>
</tbody>
</table>

- Import (2007): € 250-300 million
- Export (2007): € 500-550 million. (70% is exported)
Policy priority area’s (2008-2011)

- Stimulation demand en chain connections
- Knowledge and innovation
- No production, area or conversion subsidies for organic

**Total stimulation budget 2008 – 2011: € 49.2 million**
Policy background organic research

- Organic agriculture considered to have high potential for sustainable agriculture

- Inspiration source for conventional agriculture

- 10% of the public research budget for agriculture is to be spent for organic agriculture
  - Organic sector ‘owns’ the research
  - Preferred research suppliers: Wageningen UR (85%) and Louis Bolk Institute (15%)
How to spend the money?

- Organization of a network

The Dutch knowledge network for organic food and farming

- Setting ambition agenda for 2025
- Setting research agenda (short term and long term)
- Organizing ownership and participation
- Organizing communication and knowledge circulation
Important research issues

- Healthy varieties, seeds and propagation material
- Sustainable soil management
- Resilient production systems
- Management of weeds, pests and diseases
- Animal welfare and animal health
- Minimizing emission and accumulation
- Healthy, safe and tasteful food
- Enhancement of Biodiversity, Nature and Landscape
- Connections to consumers and society
Research food chain

- Consumer preferences
- Shelf presentation
- Branding and certification
- Sustainability in the food chain
- Creating new added values
- Cost price reduction
- Contamination risks in the total chain
Robust varieties and vigorous propagation material

- Organic seed production techniques
  - Vigour selection
  - Seed health: Xanthomonas, Alternaria, Silver scarf

- Organic breeding programs
  - Bread wheat
  - Late blight potato
  - Trips in cabbage
  - Downy mildew in onion
  - Nutrient efficiency
  - Root systems and mycorrhiza
Soil and mechanisation

- Minimum tillage techniques
- Controlled Traffic systems GPS
- Ridge tillage
- Minimal soil compaction
- Organic matter and nutrient management
- $\text{N}_2\text{O}$ emissions
Controlled Traffic Systems

RTK-DGPS positioning

30 cm wide caterpillars

3,15 m

6,30 m
Management of pests and diseases (examples)

- Resilience through diversity
- Resistance breeding
- Enhancement natural enemies

- UV light and ozone
- Onion oil against carrot fly
- Physical pest control (Beetle eater)
Weed management
Animal health and welfare (examples)

- Herb therapy
- Fly control
- Worm prevention

Space for natural behaviour, animal friendly stables

Ecology-welfare-economy
Organic vegetable juice from crop residues

- Co-operation between research and Provalor
- Vegetable residues get an added value
- Processing on location, less transport
- Expectation: within a few years 50% of vegetable residues can be processed to vegetable juice
Product development: Organic cucumbers

- Joint R&D of gene bank, cultivation research and Eosta
- How to explore the available genetic diversity
- Successful market introduction
- More forgotten cucumbers coming up (5-10 years)
Organic agriculture and climate change

- Carbon footprints in Dutch agriculture.
  - Plant production: organic/conventional ≈ 1
  - Dairy production: organic/conventional ≈ 0,8
  - Meat production: organic/conventional ≈ 1,2

- In the food chain, the distribution network plays an important role (consumers kilometers caused by ‘food deserts’)

- Sometimes conflicting objectives
  - Low carbon footprint ↑ animal welfare
  - Low carbon footprint ↑ no synthetic pesticides

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<thead>
<tr>
<th>Feed conversion rate pork</th>
<th>Conventional</th>
<th>Organic</th>
</tr>
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<tbody>
<tr>
<td>Netherlands</td>
<td>2.7</td>
<td>3.3</td>
</tr>
<tr>
<td>England</td>
<td>2.6</td>
<td>3.5</td>
</tr>
<tr>
<td>Germany</td>
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For organic primary production two key factors

- **Sustainable Soil Management** (mitigation, adaptation, resilience and long term production capacity)

- **Organic matter cycles and management** (storage, energy production, composting, carbon sequestration etc)
Future challenges for research

- Resilient systems: Soil, Organic matter and (functional) Biodiversity in focus
- Development non chemical weed, pest and disease management
- Staying fore-runners in sustainability
- Developing standards, branding and consumer information (Fair trade, biodiversity, carbon footprint, sustainable soil management, ……)
- Involve mainstream research and practice
- International research agenda and cooperation in research
Thank you very much for your attention!!
Carbon footprint of pork production included processing (excl. LULUC)

**Feed conversion rate**

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