Knowledge transfer and the development of organic farming

Helga Willer, FiBL
Bologna, September 7, 2006
Overview

- In Europe and worldwide the organic agricultural land continues to expand.
- Growth of land and of numbers of farms is accompanied by better policy support, a growing market and increasing research activities.
- The transfer of knowledge plays an important role for the future development of this sector.
Organic Land as of 2005/2006

- North America: 1.4 mio ha
- Latin America: 6.4 mio ha
- Europe: 6.5 mio ha
- Asia: 4.1 mio ha
- Australia/Oceania: 12.2 mio ha

Source: FiBL Survey 2005/2006
Growth of Organic Land World-Wide

2000-2006: + 198 %
Area under Organic Management – Share per Continent

- Australia / Oceania: 39.0%
- Europe: 21.0%
- Latin America: 20.0%
- Asia: 13.0%
- North America: 4.0%
- Africa: 3.0%
Organic farming world-wide: Current status

More than 31 million hectares are currently managed organically world-wide.

Highest organic areas:
- Australia (12.1 million hectares)
- China (3.5 million hectares)
- Argentina (2.8 million hectares)
- and Italy with more than one million hectares.

Highest shares of organic land are in Europe.
The 10 countries with the largest area under organic management

Hectares

<table>
<thead>
<tr>
<th>Country</th>
<th>Hectares</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>12'126'633</td>
</tr>
<tr>
<td>China</td>
<td>3'466'570</td>
</tr>
<tr>
<td>Argentina</td>
<td>2'800'000</td>
</tr>
<tr>
<td>Italy</td>
<td>954'361</td>
</tr>
<tr>
<td>USA</td>
<td>88'904'8</td>
</tr>
<tr>
<td>Brazil</td>
<td>88'763'7</td>
</tr>
<tr>
<td>Germany</td>
<td>76'789'1</td>
</tr>
<tr>
<td>Uruguay</td>
<td>75'000</td>
</tr>
<tr>
<td>Spain</td>
<td>73'318'2</td>
</tr>
<tr>
<td>UK</td>
<td>69'027'0</td>
</tr>
<tr>
<td>Chile</td>
<td>63'920'0</td>
</tr>
</tbody>
</table>
The 10 countries with the highest percentage of organic land

<table>
<thead>
<tr>
<th>Country</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liechtenstein</td>
<td>26.4%</td>
</tr>
<tr>
<td>Austria</td>
<td>13.5%</td>
</tr>
<tr>
<td>Switzerland</td>
<td>11.3%</td>
</tr>
<tr>
<td>Finland</td>
<td>7.3%</td>
</tr>
<tr>
<td>Sweden</td>
<td>6.8%</td>
</tr>
<tr>
<td>Italy</td>
<td>6.2%</td>
</tr>
<tr>
<td>Czech Rep.</td>
<td>6.1%</td>
</tr>
<tr>
<td>Denmark</td>
<td>5.8%</td>
</tr>
<tr>
<td>Portugal</td>
<td>5.4%</td>
</tr>
<tr>
<td>Estonia</td>
<td>5.2%</td>
</tr>
</tbody>
</table>
Europe 2005

> EU
ca. 6.2 million hectares, ca. 151’00 farms,
ca. 3.7 % of the agr. land,
increase of 9 % from 2004 to 2005

> Europe
6.8 million hectares, almost 180’000 farms,
ca. 2.3 % of the agr. land,
increase from 2004 to 2005: 7 %

> Austria 14% of agr. land is organic
Switzerland: 11%
Estonia: 6.5 %
Growth of organic land in Europe

2000-2006: +81%
The Global Market for Organic Food

- Market Growth 2003 – 2004 ≈ 9%
- Leading Regions
  - Europe (49%)
  - North America (47%)
- Country Markets
  - USA: EUR 9.5 billion
  - Germany: EUR 3.3 billion
  - Italy: EUR 1.7 billion

Sahota, 2006
Global Market for Organic Food: Revenue Breakdown 2004

North America 47%

Europe 49%

Others 4%

Sahota, 2006
Market Outlook

> North America to comprise majority global revenue
> Supply-demand imbalances to continue
> Decreasing sales concentration due to high growth in other regions
> Demand for certified organic products linked to economic development and education
The regulated organic world

- US-NOP
- EU-Reg. ISO 65
- JAS
- IFOAM Accr.
- National Requirements
Organic Regulations in the World

- Europe: 100%
- America and Caribbean: 28%
- Asia and Pacific: 20%
- Africa: 3%
Other Government Support

- Direct payments for farmers, other rural support schemes, including training and advice (Europe)
- Action plans (Europe)
- Export / marketing support (Europe, Asia, Latin America, Africa)
- Development aid for countries in the South (Europe, North America, Australia)
Development of organic farming research

FiBL
Rodale Institute (USA)
Louis Bolk Instituut (NL)
Biodynamic Institut
Elm Farm Research Center (UK)
NORSØK (NO)
ITAB (FR)

Organic
Biodynamic
Biodynamic Institute
Private Research Institutes
University Chairs
EU projects
State Research Centers
Annual Expenditure for Organic Farming Research

Total in these countries 80 Million Euros annually
Research needs

> Crop protection in fruit, grapes and vegetables
> Animal health
> Seed production
> Health
> Food Quality
Self regulation
Technical solutions: Physical barriers

- Carrot fly
- Cabbage fly
Induced Resistance

Control  PEN
Regulation of cherry fly

Natural Insecticides

Traps

Repellents

Nets

Biocontrol - Fungi

Biocontrol - Fungi

Nematodes

27.01.06
Knowledge Transfer in Organic Farming

> Knowledge is an important prerequisite for economical success and quality assurance in organic farming, and thus plays a pivotal role in its further development.
Knowledge Transfer – a challenge

> Often basic knowledge on organic farming is not available to farmers or not adapted to specific situations
> Advisors: major effort to keep themselves informed about current research results (scientific jargon, accessibility)
> Research institutions very often do not consider the transfer of knowledge to agricultural practice as their task
> Stakeholders are not always involved in priority setting of research and dissemination
> The importance of knowledge transfer and the efforts it takes for its implementation is often not realized
More and more „knowledge providers“
Growth of organic land in Africa

2000-2006: + 4'900 %
Uganda: The importance of knowledge transfer

- Uganda: Currently 185‘000 hectares under organic management; ca. 1.5 % of agricultural land
- Most of the products are for export
- With NOGAMU, the National Organic Agriculture Movement of Organic Agriculture there is a good representation of the organic sector
Uganda: Current Challenges

- Credibility of organic certification is at stake because of the lack of compliance to organic standards
- Non-use of chemical inputs as the only organic practice due to lack of practical knowledge
- Often no crop rotations, use of treated seeds, poor post harvest handling
- Farmers have little knowledge / access to knowledge
Uganda: Suggested measures (examples)

- Train farmers in the basic principles of organic farming
- Train farmers in appropriate agronomic practices
- Train company staff and inspectors in standards and certification
European Action Plan for Organic Food and Farming

- Organic farmers: Participate in advisory or extension services (open farms, share experience)
- Set-up of advisory structures particularly in the new Member States
- Develop research and technical support
- Extension services should ideally be the link between practice and research.
- Include information on organic farming/products in vocational training, offer specific training courses.
European Organic Action Plan
Action No. 6

> The Commission strongly recommends Member States to make full use within their rural development programmes of the instruments available to:

> ....

> support to extension services;

> training and education for all operators in organic farming, covering production, processing and marketing.
Switzerland as an Example

- High share of land under organic management (10 %)
- Highest per capita consumption of organic products: 100 Euro per year
- Factors for the success of Swiss organic farming are
  - a positive agripolicy environment,
  - a major involvement of the Swiss supermarket chains Coop and Migros,
  - a united organic sector
  - activities of the Research Institute of Organic Agriculture which unites organic farming research with a range of knowledge transfer activities.
Switzerland – History

> Until the 1970s: Pioneers organised themselves and exchanged their knowledge in regional groups
> 1973: Research Institute of Organic Agriculture FiBL founded, in order to provide research and advice
> Since the 1990s: Federal research stations, general advisory service became active.
> FiBL is still the key institution, due to the fact that research, knowledge transfer with various tools are all under one roof.
Frequency and quality of different sources used by Swiss organic farmers (Interface 2002)

- Journals (N=1649)
- Colleagues (N=1649)
- Technical leaflets (N=1543)
- Reports/books (N=1494)
- Telephone (N=1609)
- Farm/field visits (N=1571)
- Further education courses (N=1528)
- Personal advisory (N=1525)
- Group advisory (N=1517)
- Internet (N=1474)

3. 1. 7. 6. 9. 2. 4. 5. 8. 10.

quality

0 20 40 60 80 100 percent
## Information providers in Switzerland 2003

<table>
<thead>
<tr>
<th>Service</th>
<th>FiBL</th>
<th>Bio Suisse</th>
<th>Inspection bodies</th>
<th>Conventional Advice</th>
<th>„Conventional knowledge transfer“</th>
<th>State research stations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual Advice</td>
<td>XXX</td>
<td>X</td>
<td>X</td>
<td>XXX</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group Advice</td>
<td>XXX</td>
<td></td>
<td></td>
<td>XXX</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Telephone Helpline</td>
<td>XXX</td>
<td>XXX</td>
<td>XX</td>
<td>XX</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Coursea</td>
<td>XXX</td>
<td>X</td>
<td>X</td>
<td>XXX</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Leaflets</td>
<td>XXX</td>
<td>X</td>
<td></td>
<td></td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Magazines</td>
<td>XXX</td>
<td>XX</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Internet</td>
<td>XX</td>
<td>XXX</td>
<td>XX</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Example: Apple research at FiBL

Research
- Variety trial
- Quality research
- Production technique

Knowledge transfer
- FiBL and regional advisory services
- Technical leaflets, courses

Marketing
- Consumer information
Knowledge exchange: FiBL’s activities

- Individual and group advisory
- Further education courses
- Phone and e-mail
- Technical leaflets
- Handbooks and dossiers
- Teaching material for advisors
- The journal „Bio aktuell“ (feedback from farmers)
- Weekly articles by FiBL- advisors in farmers’ journals
- Internet sites
Production of information material at FiBL
Technical Leaflet Bushberries

Raspberries
Cultivation Calendar

<table>
<thead>
<tr>
<th>Planting</th>
<th>Development Phase</th>
<th>Full Harvest Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground level</td>
<td>Full season</td>
<td>2 years after planting</td>
</tr>
<tr>
<td><strong>Firstink</strong></td>
<td><strong>Full season</strong></td>
<td><strong>Harvest</strong></td>
</tr>
<tr>
<td><strong>2 years</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>1 year</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2 years</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **You can eat the canes**
  - Thinning the young canes to a total of 10-15 per bush (six medium canes thick) and leave one to two canes.
  - If there are many young canes, each year at a rate of 15-20% on a 5-year rotation. Allow young canes to grow for approx. 3 years if in length until the beginning of June. If your bush is a semi-shrub, it is growing from the edges of a large bush where it is divided into a lot of bushes.
  - Winding the canes of bushes.
  - Mulching the plant’s parts.
  - Cutting off branches canes and removing them from the orchard.
  - In the case of hedge or bush: Tie up the young canes.
  - In the case of pole-based cultivation: Tie the young canes very tightly to the poles. If required, tie the canes together, and bind to the canes; the canes fall off and/or the canes are lighted.
  - Reducing the number of new canes and shrub thickness.
  - 15-25 canes per tree.

- **Cultivating off all chosen aug, by using a power compactor and removing them from the orchard.**

Raining systems

- **Hedge**
  - **Advantage**
    - Proven ground
  - **Disadvantage**
    - Harvesting canes is not as efficient.
  - **Tips**
    - The main canes can be pruned with a sharp knife.
    - Harvesting canes with decomposable binding material (to keep the fruit from falling through the plants) or with sticks that are plastic binding.

- **Pole Cultivation**
  - **Advantage**
    - Harvesting canes is not as efficient.

Shrub Row System

- **Steam**
  - **Advantages**
    - Reduces evaporation of water (up to 30%).
    - **How do you create this system?**
      1. See page 1 for general soil preparations.
      2. Spread 10-20cm soil and lay out the pole-based canes per row and bind the canes together with plastic.
      3. Check the steam by using a special device, enough to support your hands.
      4. Insert a 10 cm irrigation tube on the dam.
      5. Cover the dam with black, impermeable sheet (sheet dam), which covers the steam and keeps the steams dry to the top after the frost.
      6. Running: Drill additional holes into the steam if steam is not enough in rows chosen on the steam.

- **Spread out 5-20 cm of compost per row each year depending on your soil analysis results.”**

- **On distant areas, it’s possible to grow plants on the upper ground inside of the dam.**

**Note:** Organic cultivation of Bush Berries 2018© FiBL / www.fibl.org
Publishing technical leaflets: Challenges

- Inputs from experts
- Appropriate content
- Specifically organic
- Attractive presentation
- Feedback from users
- Costs
- Updates
Conclusion

> Take the issue of knowledge transfer serious
> Use European action plan and available policy instruments for knowledge transfer
> Improve stakeholder involvement into research priority setting
> Include knowledge transfer activities into the research projects
> Adapt existing material to specific situations
> Extend range of available material
Growth of organic Land in Asia

2000-2006: + 10‘150 %
Growth of organic land in Latin America

2000-2006: + 1'1180 %