The Potential of Organic Farming for Biodiversity

3rd & 4th March 2002,
Zamek Ujazdowski,
Warsaw / Poland
Organic Farming & Biodiversity

Prof. Dr. H. Vogtmann, President of the Federal Agency for Nature Conservation, Germany
The three Pillars of the Convention on Biodiversity (CBD, Rio 1992)

● Conservation of Biological Diversity

● Sustainable use of its components

● Fair and equitable sharing of the benefits
Organic Farming

- Contributes to preservation of biodiversity
- Protects ground water from nitrate and pesticide pollution
- Produces healthy food
- Ensures jobs in agriculture, food processing and marketing
Organic Farming

- Strives for a largely closed farm cycle
- Preserves soil fertility
- Preserves air, soil and energy resources
- Provides for adequate animal housing
Crop Rotation (Years)

Percentage of farms before and after conversion over different years.

Before conversion:
- 1 year: 2%
- 2 years: 4%
- 3 years: 42%
- 4 years: 35%
- 5 years: 13%
- 6 years: 10%
- 7 years: 17%
- 8 years: 17%
- 9 years: 21%
- 10 years and above: 21%

After conversion:
- 1 year: 0%
- 2 years: 0%
- 3 years: 4%
- 4 years: 0%
- 5 years: 5%
- 6 years: 2%
- 7 years: 7%
- 8 years: 15%
- 9 years: 0%
- 10 years and above: 5%

(Vogtmann & Zerger 1999)
Biodiversity in Grain Crops

(Frieben 1997)
Biodiversity in Grass Land

Shannon-Wiener-Index

- Conventional (dry-fresh): 2.4
- Biological (dry-fresh): 2.91
- Conventional (humid): 2.7
- Biological (humid): 3.1

(Frieben 1997)
Number of plant species in grassland in relation to management intensity (after Elsässer 1995 and Briemle 1988)
Guidance for low intensive grassland management

Grassland

- Structure of Landscape
- Pasture management
- Cutting / Grazing
- Stocking Rate
- Fertilization

(Kullmann & Gräbener 2000)
Guidance for low intensive grassland management

Ruminants

- Housing
- Feeding
- Veterinary Management
- Breeding
- Transport / Slaughtering

(Kullmann & Gräbener 2000)
Advantages of herbs in grassland

- High digestibility
- Good consumption by ruminants
- Rich in minerals
- With low fertilization higher yields than grass
- Nutrition base for insects
- Beauty of the landscape

(Elsässer 1995)
### Biodiversity of Birds

Number of bird species nesting on organic and conventional managed arable land

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<thead>
<tr>
<th>year</th>
<th>1992</th>
<th>1993</th>
<th>1994</th>
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<td>19</td>
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<td>organic farming &gt; conventional farming</td>
<td>16</td>
<td>13</td>
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Chamberlain et al. (1996)
In: Vogtmann & Ries (1998)
<table>
<thead>
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<th>year</th>
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<td>early</td>
<td>late</td>
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<tr>
<td>total</td>
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<td>16</td>
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<tr>
<td>conventional farming</td>
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<tr>
<td>organic Farming</td>
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</table>
Agriculture and Biodiversity

Development of the number of species

14th Cent. 16th Cent. 18th Cent. 19th Cent. 20th Cent. 21st Century

New Agricultural Policy
Agriculture and Landscape

(Photo: Riggemann 1999; koebler\3ages)
Which landscape should we afford?

- Large scale agricultural landscape
  - Minor structured/less structured
  - 10 person hours/ha, 300 €/ha support payment ➔ 30 €/ph

- Small scale/structured agricultural landscape
  - 30 person hours/ha, 300 €/ha support payment ➔ 10 €/ph

- Low input pasture landscape

- Woodland (succession)
  - 90 person hours/ha, 450 €/ha support payment ➔ 5 €/ph
  - 0 person hours/ha, 0 €/ha support payment ➔ 0 €/ph
Selected impact categories for LCA of different grassland management systems (intensive, extensive, organic) Haas et al. 2001
Selected impact categories for LCA of different grassland management systems (intensive, extensive, organic) Haas et al. 2001

- Energy use
- Global warming
- Acidification
- Groundwater
- Surface water
- Biodiversity
- Landscape image
- Animal husbandry

Graph showing comparisons between extensive and intensive management systems in terms of the selected impact categories.
Selected impact categories for LCA of different grassland management systems (intensive, extensive, organic) Haas et al. 2001

- Energy use
- Global warming
- Acidification
- Groundwater
- Surface water
- Biodiversity
- Landscape image
- Animal husbandry

Legend:
- Organic
- Extensive
- Intensive
Nature conservation has ...

... besides a lot of other uses of nature and landscape equal spatial rights !
Nature conservation and landscape conservation are becoming serious income sources for farmers – results of a survey (502 representative farms):

Use the chances of common interests

<table>
<thead>
<tr>
<th>„new“ agricultural activities</th>
<th>already active</th>
<th>interested</th>
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<tbody>
<tr>
<td>certified organic farming</td>
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<tr>
<td>on-farm marketing</td>
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<td>21</td>
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<tr>
<td>direct marketing to consumers and local groceries</td>
<td>15</td>
<td>21</td>
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<tr>
<td>production under quality labels</td>
<td>29</td>
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<td>landscape conservation, agri-environmental programs</td>
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<td>49</td>
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<tr>
<td>holidays on the farm, offering leisure time activities</td>
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source: Knickel, Agrar-Europe 13.8.2001
To act in partnership requires the consent in objectives, norms and values.
A new social order needs to guarantee the long term conservation of nature as the basis of life.
What has to be changed?

- Increase sensitivity for ecological relations
- Strengthen acceptance for nature conservation by society
- Adopt a New Policy for Agriculture and Forestry
- Declare sustainability the main principle of policy
- Develop holistic concepts
- Improve life quality
Organic farming
& biodiversity

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