Agroecology: a system based on biodiversity and ecosystem services for better profit and quality of life

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Secretary of Agroecology Europe
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Evolution of the number of farmers in France between 1970 and 2013

3/4 disappeared in 45 years
Another way is possible:

Agroecological systems
The ‘Agroecological Alternative’ project
Ecological strategy of agroecology

- Replacing fossil fuels by ecosystem services provided by biodiversity
- Investing in biodiversity at all levels
Ecological strategy of agroecology

• Relying on local resources
  • = endogenous soil fertility
  • ≠ massive use of commercial inputs
• Intensive in observations, thinking and knowledge
Economic strategy of agroecology

Benefits

Costs  Revenue
Economic strategy of agroecology

Benefits

Costs  Revenue

Decreasing costs
Economic strategy of agroecology

Benefits

Costs  Revenue

Decreasing costs

Increasing revenue

Shoot for the moon. Even if you miss, you'll land among the stars! Oscar Wilde
Economic strategy of agroecology

Benefits

Costs  Revenue

Decreasing costs

Increasing revenue
Developing the ecological network
Pest suppressive ecological infrastructures

Role of herbaceous strips

↗ Natural enemies of crop pests
and wildlife habitat
Pest suppressive ecological infrastructures

3 mixtures for increasing populations of natural enemies

Micro-hymenoptera
Overfly, larvae

Carabid beetles
Long crop rotation:
Succession of legume and non-legume crops
Crop – livestock integration: mixed systems

but also specialized arable systems
Agroecological techniques

Organic non-inversion tillage system, superficial soil work only

- Annual soil cover: Biomax between two main crops

- Permanent soil cover: clover in intercropping or temporary grasslands
Biomax = Maximum biomass and biodiversity
Rolling biomax and sowing crop in one single operation
A high biomass in October + weed control
Biomax mulch on the ground in October
Biodiversity at soil level
Triticale sown in a white clover sward
Triticale sown in a white clover sward
Increasing soil life for healthier plants
A well-developed rhizosphere that controls pathogenic microorganisms is the basis of the whole food chain.
Other tools for increasing soil biodiversity and improving plant health and vigour

Compost tea

Plant ferments

Strategic application of amino acids....
## Economic performances

<table>
<thead>
<tr>
<th>Case</th>
<th>Criteria</th>
<th>AE compared to average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Netherlands, ‘farming economically’</td>
<td>Labour income/100 kg of milk</td>
<td>+ 110%</td>
</tr>
<tr>
<td>Netherlands Centre for Research in Dairy Farming (PR)</td>
<td>Employment generated at volume of production of 800,000 kg of milk</td>
<td>+ 100%</td>
</tr>
<tr>
<td>France, grassland-based farming</td>
<td>Family income/family worker</td>
<td>+ 73%</td>
</tr>
<tr>
<td>Germany, low concentrate feeding</td>
<td>Income per dairy cow</td>
<td>+ 60%</td>
</tr>
<tr>
<td>Italy, Rossa reggiana</td>
<td>Income per hour</td>
<td>+ 15%</td>
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<tr>
<td>Poland, dairy farming</td>
<td>Income according to level of self-provisioning for feed and fodder (0 compared to 51-99)</td>
<td>+ 53%</td>
</tr>
<tr>
<td>Ireland, beef and milk</td>
<td>Gross margin per hectare</td>
<td>&gt; in the order of 75-80% in a 3-4 year period</td>
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<tr>
<td>UK, sheep farming</td>
<td>Gross Value Added/ewe</td>
<td>+ 10%</td>
</tr>
<tr>
<td>Spain, Mediterranean crops</td>
<td>Gross Value Added</td>
<td>+ 35%</td>
</tr>
<tr>
<td>Portugal, vine growing</td>
<td>Fossil energy consumption/ha</td>
<td>- 30%</td>
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</tbody>
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van der Ploeg et al. in preparation
Thank you
Agroecology Europe

www.agroecology-europe.org

2nd Forum in Heraklion, Crete, 26-28 September 2019
Comparison between agroecology, conservation and conventional agriculture

Number of carabid beetle individuals

- April
- May

Number of slug individuals

- Agroecology
- Conservation
- Conventional
Increase of plant diversity after conversion to agroecology

Number of main and cover crop families

- **Conventional**
- **Agroecology**

<table>
<thead>
<tr>
<th>Farm</th>
<th>Conventional</th>
<th>Agroecology</th>
</tr>
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<tbody>
<tr>
<td>Farm 1</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Farm 2</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Farm 3</td>
<td>3</td>
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<td>Farm 4</td>
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<tr>
<td>Farm 6</td>
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<td>6</td>
</tr>
<tr>
<td>Farm 7</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td><strong>AVERAGE</strong></td>
<td><strong>3.5</strong></td>
<td><strong>6.5</strong></td>
</tr>
</tbody>
</table>