Agroecology: a new path for European agriculture

Alain PEETERS
Secretary general of Agroecology Europe
8 October 2020
Ecological strategy of agroecology

- Replacing fossil fuels by ecosystem services provided by biodiversity
- Investing in biodiversity at all levels
Ecosystem services provided by biodiversity

- **crop disease management** ➔ living soil (reduced tillage techniques, high carbon input), stopping the use of soluble fertilisers

- **crop pests management** by a well-designed ecological infrastructure ➔ populations of natural enemies

- **weeds management** ➔ legume-based temporary grasslands, complex mixtures of green manures, aggressive crop cultivars and species, long and diverse crop rotations,…

- **nitrogen fixation** ➔ perennial and annual legumes. N partly available for the non-legume annual crops of the crop rotation ➔ interesting yields
Economic strategy of agroecology

Value Added

- Costs
- Revenue

Conventional farm
Economic strategy of agroecology

Value Added

Costs
Revenue
Conventional farm

Decreasing costs

Costs
Agroecological farm
Economic strategy of agroecology

Value Added

Costs | Revenue
---|---
Conventional farm |  
  
Costs | Revenue
---|---
Agroecological farm | Increasing revenue

Decreasing costs

Decreasing costs
Economic strategy of agroecology

- Decreasing costs
- Increasing revenue

Value Added

Costs | Revenue
--- | ---
Conventional farm | 
Agroecological farm | 

Value Added

- Decreasing costs
- Increasing revenue

Value Added

Costs | Revenue
--- | ---
Conventional farm | 
Agroecological farm | 

Value Added

Costs | Revenue
--- | ---
Conventional farm | 
Agroecological farm |
Ecological infrastructures

Herbaceous strips → natural enemies of crop pests
Ecological infrastructures
Herbaceous strips → natural enemies of crop pests

Overfly, larva and adult

Carabid beetle, adult and larva
Designing crop rotation and restoring soils

Legume-based temporary grasslands:
One of the system pillar

• Sequester carbon
• Restore soil fertility, structure and life
• Fix important nitrogen amount
• Control perennial and annual weeds
Biomax = complex mixture of green manure

Rolling biomax and sowing crop in one single operation
Triticale sown in a white clover sward = perennial soil cover
Triticale sown in a white clover sward
Reduced and shallow soil tillage
Carbon sequestration and reduction of GHG emissions

Annual sequestration of about 1 t Carbon/ha

Quantities of GHG emitted by synthetic nitrogen fertilization according to a life cycle analysis:
150 kg of nitrogen per ha on a crop generates:
- an emission of approximately 1,350 kg of CO₂ equivalent per ha
- or about 370 kg of Carbon equivalent per ha
Restoration of biodiversity

Henneron et al. 2014
## Economic performance

<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>
</tr>
<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>
</tr>
<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>
</tbody>
</table>

van der Ploeg et al. 2019
Grassland-based systems are more agroecological than intensive systems based on maize, soybean, fertilizer, pesticide,…

‘With less land, fewer animals and lower investment, grassland-based systems:

• generate more income,
• create more jobs,
• protect better the environment,
• are more resilient to economic stress.’
THANK YOU

www.agroecology-europe.org