Organic livestock farming systems in the Central France

Evolution of the performances (2008-2011) and drivers

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INTRODUCTION, AIMS

• The “Organic System” project
  – A multi-collaborators project
    • Professional organisations
    • Research
    • Agricultural Extension & Development Services
    • Higher education

  – 4 objectives:
    – Know the organic livestock farming systems in “Massif Central”
    – Enhance the technical and economic references
    – Improve the advising tools
    – Circulate information and knowledge

  – 4 productions
    • Bovine: beef and milk production
    • Sheep: meat and dairy production

  – Three types of monitoring at the farm scale:
    – Annual: a techno-economic appraisal/farm/year
    – Multi-year: each farm tracked over 4 years (2008-2011)
    – Thematic: feeding system, work management, sustainability
56 farms 2008-2011, constant sample

- **56 farms**
  - 23 suckler cattle (SC)
  - 14 dairy cattle (DC)
  - 14 dairy sheep (DS)
  - 5 meat sheep (MS)

- **Organic certification > 5 years**
  - 80% certified for more than 10 years

- **% of total organic certified animals in MC**
  - 590 dairy cows → 8 %
  - 1 430 suckler cows → 7 %
  - 1 440 suckling ewes → 4 %
  - 8 100 dairy ewes → 20 %
Method: data analysis

• Multi-year evolution
  – Assessment of the 4 productions as an unique one
  – Descriptive analysis: 56 farms, annual average
  – Variables with specific dimension according to the production (eg animal productivity): relative values, base 100 in 2008
  – Economic variables: constant euros 2011

• Global variability: Principal Component Analysis
  – 56 farms * 4 years = 224 observations
  – Standardised centred variables/production/year: to eliminate the “production” and year effects
  – Weighting of the farms: same weight for each production

• Determinants of the economic performances
  – Sort variable: income / worker
  – Ranking of the farm each year, total of the ranks (score) for each farm
  – Ranking according to the total score
Structures
Size, area, herd and cropping plan

- Enlargement of the farms

**UAA**
- 2008: 103 ha
- 2011: 109 ha
- **+ 5%**

**LUs**
- 2008: 84.8
- 2011: 88.3
- **+ 4%**

**Stocking rate = 0.97 LUs/ha MFA**

**Cropping plan stable 2008-2011**

- Permanent pastures: 44%
- Temporary pastures: 42%
- Forage maize: 13%
- Annual crops: 1%

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EAAP, Copenhagen, 26 / 08 / 2014
Structures

Workforce and labour productivity

Workforce: evolution and composition

Annual Work Unit (AWU)

UMOs
UMOb
UMOe

59 ha UAA / AWU
48 LUs / AWU

Labour Productivity
Quantity of agricultural products sold / AWU

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Animal productivity and feeding

- A better animal productivity, but a lower feed self-sufficiency

![Animal productivity chart]

- DC: l milk / cow
- SC: kg live-weight / LUs
- DS: l milk / ewe
- MS: lamb / ewe

![Concentrates consumption and feed self-sufficiency chart]

- Concentrates kg/LUs
- 2008-2011
- +22% self-sufficiency
- Purchased concentrates
- On-farm produced concentrates
- Feed self-sufficiency (energy)
Economic results / worker

Milk and meat prices ≈

Gross product/worker

+12 k€ (+15%)

2010: CAP health check

→ aids: +10 k€, + 25%

2011: drought →

Operational costs +25%

Farm income/worker

+7 k€ (+45%)

Gross product without aids

Total costs

Farm income
Variability: Principal Component Analysis

• 3 components explain 52% of the variability
  1. Size, annual crops area, concentrates self-sufficiency (19.5%)
  2. Intensification, productivity per ha (18.8%)
  3. Labour productivity (14.2%)

• Correlations: PCA components and economic results
  – Farm income/worker: size, concentrates self-sufficiency (+), productivity/ha (-)

Large mixed-crop livestock farms, concentrates self-sufficient => farm income +++

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### Highest & lowest farm income / worker

<table>
<thead>
<tr>
<th></th>
<th>Highest farm income/worker</th>
<th>Lowest farm income/worker</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nb of farms</td>
<td>13</td>
<td>12</td>
</tr>
<tr>
<td>incl. dairy cattle</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Incl. beef cattle</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Incl. dairy sheep</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Incl. meat sheep</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Farm income €/worker</td>
<td><strong>45 280</strong></td>
<td><strong>9 729</strong></td>
</tr>
</tbody>
</table>

- Each production can be profitable
- Highest farm income / worker: 4x higher than the lowest!
### Highest & lowest farm income / worker

#### Structure

<table>
<thead>
<tr>
<th></th>
<th>Highest farm income/worker</th>
<th>Lowest farm income/worker</th>
<th>signif.</th>
</tr>
</thead>
<tbody>
<tr>
<td>UAA (ha)</td>
<td>127</td>
<td>102</td>
<td>*</td>
</tr>
<tr>
<td>Cropland % UAA</td>
<td>17</td>
<td>11</td>
<td>***</td>
</tr>
<tr>
<td>Livestock Units</td>
<td>100</td>
<td>89</td>
<td>.</td>
</tr>
<tr>
<td>Stocking rate (LUs/ha MFA)</td>
<td>0,98</td>
<td>1,00</td>
<td>0</td>
</tr>
<tr>
<td>Annual Work Units</td>
<td>2,42</td>
<td>1,82</td>
<td>***</td>
</tr>
<tr>
<td>UAA ha/AWU</td>
<td>54</td>
<td>62</td>
<td>0</td>
</tr>
<tr>
<td>LUs/AWU</td>
<td>42</td>
<td>53</td>
<td>**</td>
</tr>
</tbody>
</table>

- Highest income group:
  - larger farms with more cereal crops
  - More annual work units
  - Lower labour productivity
### Highest & lowest farm income / worker
Animal productivity and feeding

<table>
<thead>
<tr>
<th>Animal Productivity</th>
<th>Highest farm income/worker</th>
<th>Lowest farm income/worker</th>
<th>signif.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index 100: average of the sample</td>
<td>111</td>
<td>91</td>
<td>***</td>
</tr>
<tr>
<td>Concentrates self-sufficiency %</td>
<td>54</td>
<td>42</td>
<td>.</td>
</tr>
<tr>
<td>Forage self-sufficiency %</td>
<td>96</td>
<td>89</td>
<td></td>
</tr>
<tr>
<td>Feed self-sufficiency % (energy)</td>
<td>91</td>
<td>86</td>
<td></td>
</tr>
</tbody>
</table>

#### Animal Productivity
**AND** feed self-sufficiency
### Highest & lowest farm income / worker

#### Economic results

<table>
<thead>
<tr>
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<th>Highest farm income/worker</th>
<th>Lowest farm income/worker</th>
<th>signif.</th>
</tr>
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<tbody>
<tr>
<td>Gross farm product (GFP) €/ha UAA</td>
<td>1 930</td>
<td>1 527</td>
<td>***</td>
</tr>
<tr>
<td>Aids &amp; subsidies % GFP</td>
<td>25</td>
<td>35</td>
<td>***</td>
</tr>
<tr>
<td>Operational costs % GFP</td>
<td>25</td>
<td>29</td>
<td>**</td>
</tr>
<tr>
<td>Fixed costs % GFP</td>
<td>48</td>
<td>60</td>
<td>***</td>
</tr>
</tbody>
</table>

A good gross farm product **AND** a good control of costs
CONCLUSIONS

• From 2008 to 2011:
  - Enlargement of the farms. Same rate than French livestock farms
  - Improvement of the animal productivity
  - Decrease of the feed self-sufficiency
  - Improvement of the techno-economic results
  - Sensitivity to exogenous factors (CAP, climatic hazard)

• Main determinants of techno-economic performances:
  - Animal productivity
  - Feed self-sufficiency
  - Control costs / gross farm product

✅ Techno-economic performances are more dependent on the efficiency of the production system than on the labour productivity
Documents résultats technico-économiques / production / an + autonomie alimentaire + ressenti du travail téléchargeables

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