Several animal species in the same farm: a system from the past or an innovation for the future?

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Several animal species in the same farm: a system from the past or an innovation for the future?

Introduction:

Concepts and problems
Background

Methods:

Materials and methodology

Results:

Main outcomes
Perspective of breeders

Conclusion:

Summary and perspectives
Mixed livestock farming systems:
several species and/or breed in the same farm

Mixed systems:
possible adjustment in the management (resource, allocations) and complementarity in the outputs

Advantages:

- different ways to combining dairy cows and meat sheep systems
- several logical organization and possibility for flexibility
- multi-species systems can provide flexibility
- high complementarity of the two species and their production mode
- ability to adapt to any remarkable situation
**Hazard:**
uncertain phenomenon, mostly unpredictable, most often caused by an unknown or unfamiliar determinism

- **economic**
  - volatility of the prices
  - climatic hazards

- **diversity**
  - crops & grassland species
  - animal diversity: breed or species
organizing  
flexibility  
plasticity of the technical system  

type of operation  

interaction  
response to  
evaluation criteria  

diversity  

response to  
hazard  

mixed herds  
forage resources  
activities  

economic  
climatic
Hazard:
uncertain phenomenon, mostly unpredictable, most often caused by an unknown or unfamiliar determinism

- volatility of the prices
- climatic hazards

Flexibility:
adaptability and ability of the farms to resist

- economic
- diversity

- crops & grassland species
- animal diversity: breed or species
Important elements for adaptation to the hazards

diversity of the animals

heterogeneity of the resources and territories

How did you get in here?
Field: Auvergne (Centre of France)  
Massif Central

The aim of the research:
✓ understanding the functions of the mixed farming livestock systems and explaining how the breeders can reach the flexibility in this region.

The main question:
✓ the temporal organization of breeding activity in mixed systems promotes the flexibility against the climate and economic hazards?

✓ what are the advantages and constraints of the mixed systems against a single farming system?

✓ how the breeders can act to reach the flexibility in their system?
Auvergne: 17000 farms

<table>
<thead>
<tr>
<th>Farms</th>
<th>Number</th>
<th>Total area of agriculture</th>
<th>Number of dairy cows</th>
<th>Number of ewes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dairy cows and meat sheep</td>
<td>550</td>
<td>77 ha</td>
<td>31</td>
<td>150</td>
</tr>
<tr>
<td>Dairy cows</td>
<td>5220</td>
<td>68 ha</td>
<td>36</td>
<td></td>
</tr>
<tr>
<td>Meat sheep</td>
<td>1400</td>
<td>68 ha</td>
<td></td>
<td>323</td>
</tr>
</tbody>
</table>
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preparation

18 surveys
6 individually, 12 collective
137 ha total area
interview guide
2 time scales

field

data

18 boards
55 variables
full transcript of the interviews

analysis
descriptive and multivariate statistical analysis
lexicometric analysis
**Questionnaire: semi-structured interviews**

1) **Historical approach about the mixed system within the farm: when? why? how?**

2) **Graphical methods to collect data about herd and land management**

<table>
<thead>
<tr>
<th></th>
<th>farms dairy cows/meat sheep</th>
</tr>
</thead>
<tbody>
<tr>
<td>total area of agriculture (ha)</td>
<td>137</td>
</tr>
<tr>
<td>number of dairy cows</td>
<td>49 (Montbéliardes)</td>
</tr>
<tr>
<td>milk production (liter)/cow/year</td>
<td>5900</td>
</tr>
<tr>
<td>number of ewes</td>
<td>356 (BMC)</td>
</tr>
<tr>
<td>offspring/ewe/year</td>
<td>1.06</td>
</tr>
</tbody>
</table>
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type of operation

spatial

temporal
Example for one farm area (groups of paddocks), with the different circuits of animals during the grazing period

- **Plots - 10 ha:** renewed hay mown
  - heifers 15/04-01/07
  - 2 years old heifers 01/10-15/12
- **Plots - 15 ha:** grazed and mown
  - heifers closely
  - calving 15/09 - following spring
- **Plots - 7 ha:** heifers with monitoring
  - no hay
- **Plots - 3 ha:** grazing sheep
- 35 ha grassland
  - fragmented plots max. 20 ha
  - no buildings
  - DC: 01/06-01/09
  - depends of the weather
  - move on foot
- **Plots - 60 ha:**
  - DC: 01/09-01/12
  - heifers: 01/07-15/09
  - heifers and youngs 01/09-15/10
  - 1-2 years old heifers 01/05-01/10
- **outdoor building 60 ha DC:**
- **Old buildings**
- **sheepfold**
- **DC: dairy cow**
- **triticale 1,5 ha**

Note: DC refers to Dairy Cow.
Four types for the spatial interaction between cows and sheep

1. separated

2. side by side

3. adjusted

4. overlapped

main area (around barns)
<table>
<thead>
<tr>
<th></th>
<th>spatial adjustments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>separated</strong></td>
<td></td>
</tr>
<tr>
<td>Dairy cattle</td>
<td></td>
</tr>
<tr>
<td>Meat sheep</td>
<td></td>
</tr>
<tr>
<td>priority: the quality of milk and sheep meat</td>
<td>available oversized and additional areas</td>
</tr>
<tr>
<td>large number of the animals</td>
<td>adjustments: rarely</td>
</tr>
<tr>
<td><strong>side by side</strong></td>
<td></td>
</tr>
<tr>
<td>Dairy cattle</td>
<td>Meat sheep</td>
</tr>
<tr>
<td>priority: high level of the productivity</td>
<td>management: complex frequently modified</td>
</tr>
<tr>
<td>system: under pressure</td>
<td>adjustments: rarely, in case of purchasing feed</td>
</tr>
<tr>
<td><strong>adjusted</strong></td>
<td></td>
</tr>
<tr>
<td>Dairy cattle</td>
<td>Meat sheep</td>
</tr>
<tr>
<td>priority: great range of outputs</td>
<td>adjustments: when it need to reduce the area of the sheep for keeping the same amount of feed for dairy cows</td>
</tr>
<tr>
<td><strong>overlapped</strong></td>
<td></td>
</tr>
<tr>
<td>Dairy cattle</td>
<td>Meat sheep</td>
</tr>
<tr>
<td>priority: use self produced feed as much as possible to simplify the management and increase the age of the animals</td>
<td>adjustments: rarely, due to the low animal requirements and to the internal sources</td>
</tr>
</tbody>
</table>
Four types for the temporal (calving/lambing) schedule of the mixed herds

1. expanded and cumulated
2. added
3. separated
4. overlapped

One colour = one species
5 ways to adapt - often combined

- fodder
- winter ration
- sales
- pasture
- reproduction

The most common combinations for the mixed adaptations

40% of the farmers are do not connecting to these mixed types of adaptations
TEMPORAL ANCHORING

breeding system

50% possibilities of plots

20% financial freedom

10% compensate in emergency

20% safety stocks

forage system
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Summary

✓ during two years eighteen inquires of mixed farms (dairy cows and meat sheep) of Massif Central were realized

✓ two different ways of organizations exist in the mixed livestock systems: spatial and temporal

✓ there are different potentials to cope with hazards:

- 4 possibilities for the temporal
- 4 possibilities for the spatial

✓ in the breeding and forage management systems there are different external and internal sources to avoid the risks
Conclusion

There are trends pointing towards the specialization,

BUT it seems mixed farming systems still have a beautiful future ahead and can be keep modern,

because lots of breeders did not think to need to specialize in one or other type of the productions.
Thank you for your attention!

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