Collective summer mountain pastures: A source of flexibility for livestock farms faced with climate variability

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In mountain grassland areas

• Livestock Farming Systems (LFS) are sensitive to climate variability *(Baumont, 2008, Bernues 2011)*

• Droughts expected to increase in frequency and intensity due to climate change *(IPCC, 2007)*

• The ability of LFS to respond is referred as flexibility *(Dedieu et al., 2009, Darnhofer et al., 2012)*
Summer Mountain Pastures (SMP)

• High altitude areas dedicated to summer grazing of the herd \textit{(Flament et al., 1999)}
  → Exposed to a fresher and rainier climate
  → Individual or collective

• Individual SMP can contribute to the flexibility of LFS \textit{(Martin et al., 2009)}
Contribution of collective SMPs to the flexibility of LFS

• In the long run, how the evolution of animal numbers is it related to droughts?
• How beginning and ending dates, and animal flows between, can they be adjusted to cope with forage availability on farms and the SMP?

➔ Effects of collective rules and organisation?
A survey in Auvergne in 2012

Regional statistics and technico-economic reports

Semi directive interviews

7 collective SMPs managers

1

3

3

15 users (6 cattle/9 sheep farmers)

Detailed analysis of a shepherd record
Drought: a factor of SMP evolution interacting with many drivers
Farmer’s demography, land availability, new environmental policy... (Mottet et al., 2006)

SMP attendance (LU/year) in the large cattle unit
Drought: a factor of SMP evolution +/- interacting with trajectory of use

SMP attendance (LU/year) in the large cattle unit

- Increase of demands
- Maintaining attendance
- Drought: a factor of SMP evolution +/- interacting with trajectory of use

Farmer A
Farmer B
Link between the beginning and ending of SMP season and forage availability

- Room for manoeuvre in autumn (not in spring due to grass growth dynamic)
- Different ways to exploit room for manoeuvre

Two ending dates:
- The main decided in March
- The leaving of animal keepers

One date collectively negotiated, taking into account forage availability
Animal flows during the SMP season

Narrow

Important

Stocking rate in the SMP

May Jun Jul Aug Sep Oct Nov

May Jun Jul Aug Sep Oct Nov

May Jun Jul Aug Sep Oct Nov
Individual uses of a same collective unit are contrasted

Stocking rate in the SMP

Individual contributions

Farmer A

... Farmer B

Farmer C
Profiles of SMPs’ contribution to the flexibility of LFS

Number of animals sent by one farmer to SMP

No adjustment

Annual adjustments

Seasonal adjustments

Annual and seasonal adjustments

Year 1  Year 2  Year 3  Year 4  Year 5
Implications

• Trade-offs between flexibility and performances (Astigarraga and Ingrand, 2011)

• Quality of trade-offs depends on key factors:
  – Animal keeper skills
  – Collective management rules
  – Networking

➞ Understanding of farmer’s strategies
Thanks: Farmers, Experts (Inra, PNR VA, CA, DDT)

Thank you
Questions?
<table>
<thead>
<tr>
<th>SMP type</th>
<th>Large cattle unit</th>
<th>Small cattle unit</th>
<th>Sheep unit</th>
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<tbody>
<tr>
<td>Identification</td>
<td>COP</td>
<td>Mur</td>
<td>Bre</td>
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<tr>
<td>SMP area (ha)</td>
<td>2000</td>
<td>60</td>
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<tr>
<td>Average altitude of</td>
<td>1350</td>
<td>1200</td>
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<tr>
<td>Number of farmers</td>
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<td>7</td>
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<tr>
<td>Number of animals in</td>
<td>3000</td>
<td>50</td>
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