How to optimize the carrying capacity of Jura summer pastures?

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Context and objectives

Jura ≠ Alp: more favourable relief and less encroachment.

Jura summer pastures complete forage shortage for dairy farms situated at the foothill and exposed to drought. Woody pastures. High biodiversity. PDO mountain cheese.

Legal limitation for concentrate (< 1 kg/day/LU) and carrying capacity (grazing duration and number of animals vs vegetation potential).

Any modification of the carrying capacity requires a pastoral plan including an actual map of vegetation.

The objectives of this study are to illustrate the range of temporal and spatial variability of grass growth and to discuss the possibilities of adaptive management.
Wooded pastures - pastoral plans

New CAP is making it more difficult for farmers using woody pastures to claim their direct payments (call from Jabier Ruiz, EFNCP).

Jura situation

Typology

Manuel de gestion intégrée des paysages sylvo-pastoraux de l’Arc Jurassien (Barbezat and Boquet, 2008)

Wooded pastures could better resist to climate warming and concomitant summer droughts than open pastures, and thus provide more stable fodder yields along the season (Buttler et al., 2012).
Material and methods

Fenced plots
DM production and grass growth on two plots mown and weighted alternatively every two weeks. Botanical composition and pastoral value (Daget and Poissonet). Grass height → grass density calibration.

Whole pasture surface
Grass height of each paddock of the pastures with a plate pasture meter. Grass cover (available biomass) calculated using grass density
Pasture plans and experimental plots

Plot 1: shallow soil
Plot 2: deep soil

Vegetation
Yield potential

<table>
<thead>
<tr>
<th>t DM/ha</th>
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</thead>
<tbody>
<tr>
<td>0.1</td>
</tr>
<tr>
<td>3.0</td>
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</table>

Mountain Pastures sub-network – Zaragoza 2016
Soil depth

DM-yield

Grass growth

Pastoral value
Climate (interannual variability)

DM-yield

Grass growth

Pastoral value 48.0
### Grazing management

Two neighbour dairy summer pastures

<table>
<thead>
<tr>
<th>Pasture</th>
<th>Duration [days]</th>
<th>Surface [ha]</th>
<th>Dairy cows [nb]</th>
<th>Surface per cow [ha cow⁻¹]</th>
<th>Milk [kg cow⁻¹ day⁻¹]</th>
<th>Concentrate [kg cow⁻¹ day⁻¹]</th>
<th>Hay [kg cow⁻¹ day⁻¹]</th>
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<tbody>
<tr>
<td>P2</td>
<td>111</td>
<td>42.5</td>
<td>28</td>
<td>1.5</td>
<td>16.6</td>
<td>0.9</td>
<td>0.0</td>
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<tr>
<td>P3</td>
<td>100</td>
<td>58.0</td>
<td>75</td>
<td>0.8</td>
<td>18.8</td>
<td>1.6</td>
<td>3.4</td>
</tr>
</tbody>
</table>
Grass utilisation

Grass growth and intake

Grass cover (derived from grass height)
Conclusion

Annual DM yield estimation is good, not its temporal distribution. Grass growth measurement helps to understand the broad variation observed. Search for improvement factors (adjustment of the herd size over the time, assessment of the grass cover) leads to constructive discussions on grazing management.

Optimisation of carrying capacity should not compromise long-term sustainability.

Thank you for your attention!