Grassland use in South America and Cow-calf system under pastoral conditions in Uruguay as a case

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Grassland/steppe
Bioma pampa: 70 million of hectares
(Soriano et al. 1991)
Bioma Pampa
(Carvalho et al., 2011)

- 450 grasses
- 150 legumes
- 385 species of birds

- Ecosystem degradation
- Loss of biodiversity
- Soil erosion
- Water pollution

EXPANSION OF AGRICULTURAL BORDER (soybean and forestry)
South America
Uruguay

Total Area: 17.6 million ha
Latitude: 30 - 35º South
Annual Rainfall: 1.175 mm ± 500
Temperatures: Max. 28-33º
Min. 6-9
Frost Nº: 10-50
Frost average/yr 21
Uruguay: some general figures

- Stock: 11 million of cattle (4.2 million of cows)
- Cattle with whole tracking (allows to identify the origin of the product at any time during the process)
Uruguay: some general figures

- No hormones used (by law since 1978)
- Without animal protein in feed (by Law since 1996).
- Country free of BSE, Scrapie and Maedi-Visna.
- Uruguay is the 7th (beef) and 3rd (sheep meat)

Montossi, 2012
Uruguay: some general figures

- Beef represents 30% of the total exportations of the country.
- 80% of the beef produced is exported.
- Livestock production takes 87% of the total area of Uruguay.
- Beef consumption: 61 kg beef meet/hab/year

Montossi, 2012
How many farms?

<table>
<thead>
<tr>
<th>Farms</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>47899</td>
<td>100</td>
</tr>
<tr>
<td>Cow-calf system</td>
<td>25878</td>
<td>54</td>
</tr>
<tr>
<td>Cow-calf + fattening</td>
<td>9177</td>
<td>19</td>
</tr>
<tr>
<td>Fattening</td>
<td>5790</td>
<td>12</td>
</tr>
<tr>
<td>Only sheep</td>
<td>1105</td>
<td>2</td>
</tr>
<tr>
<td>Without animals</td>
<td>5949</td>
<td>12</td>
</tr>
</tbody>
</table>
## Number and percentage of beef operations by size

<table>
<thead>
<tr>
<th>Total area (ha)</th>
<th>Farms (n)</th>
<th>Farms (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 50</td>
<td>17570</td>
<td>42.7</td>
</tr>
<tr>
<td>50-100</td>
<td>5359</td>
<td>13.0</td>
</tr>
<tr>
<td>100-200</td>
<td>5474</td>
<td>13.3</td>
</tr>
<tr>
<td>200-500</td>
<td>6397</td>
<td>15.5</td>
</tr>
<tr>
<td>500-1000</td>
<td>3440</td>
<td>8.4</td>
</tr>
<tr>
<td>1000-3000</td>
<td>2400</td>
<td>5.8</td>
</tr>
<tr>
<td>3000-5000</td>
<td>354</td>
<td>0.9</td>
</tr>
<tr>
<td>&gt; 5000</td>
<td>142</td>
<td>0.3</td>
</tr>
</tbody>
</table>

69% < 200 has

*DIEA 2011*
Unsubsidized production systems
Main resource of food for cows and calves: NATIVE PASTURES
Characteristics of native pastures in Uruguay

• Crude Protein: 7-11%

• Energy: 1.8 – 2.0 Mcal/kg DM (7.5 - 8.4 MJ/kg DM)

• Digestibility of DM: 40-50 %
Open sky: weather dependent
Daily growing rate of native pastures

<table>
<thead>
<tr>
<th>Months</th>
<th>AUTUMN</th>
<th>WINTER</th>
<th>SPRING</th>
<th>SUMMER</th>
<th>TOTAL PRODUCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>23.40%</td>
<td>9.70%</td>
<td>28.90%</td>
<td>38%</td>
<td>3626 DM (kg/ha/d)</td>
</tr>
</tbody>
</table>

Ayala y Bermudez, 2005
In summer: highly dependent on rainfall
Some strategies developed to manage cows/calves on these pastoral conditions

• Adequate stocking density or management to avoid overgrazing (sward structure, height and species)

• Improved pastures

• Strategic supplementation
Improved pastures

10% of the area

In general: Seed Lotus + Phosphorus = native pastures with legumme in equilibrium

General use: postpartum of first calving cows

CP: 12-16%
Digestibility: 55-60%
Strategic supplementation

• Early weaning when cows are in very low BCS or in primiparous cows in a not adequate BCS
• Calves weaned with at least 60 days of age and 70 kg of LW
Strategic supplementation

• First winter of the female calf (after weaning)

• 90 days of a concentrate to avoid live weight looseness
Other technological strategies to improve productivity in beef cow-calf systems
Interaction between researchers, extensionists and farmers = sharing the knowledge
Some challenges in the management of cow-calf systems

• Work with “more grass” (adequate stocking rate)
• Increase national weaning rate
<table>
<thead>
<tr>
<th>Province</th>
<th>Total Cows</th>
<th>Pregnant cows</th>
<th>% Pregnancy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treinta y Tres</td>
<td>54147</td>
<td>40101</td>
<td>74</td>
</tr>
<tr>
<td>Cerro Largo</td>
<td>47049</td>
<td>33959</td>
<td>72</td>
</tr>
<tr>
<td>Lavalleja y otros</td>
<td>80389</td>
<td>61184</td>
<td>76</td>
</tr>
<tr>
<td>Centro (Durazno y otros)</td>
<td>83609</td>
<td>60700</td>
<td>73</td>
</tr>
<tr>
<td>Salto-Artigas y otros</td>
<td>17470</td>
<td>14850</td>
<td>85</td>
</tr>
<tr>
<td>Rocha</td>
<td>10625</td>
<td>8681</td>
<td>82</td>
</tr>
<tr>
<td>Soriano-Colonia Florida y otros</td>
<td>36982</td>
<td>28937</td>
<td>78</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>330271</strong></td>
<td><strong>248412</strong></td>
<td><strong>75.2</strong></td>
</tr>
</tbody>
</table>
Some challenges in the management of cow-calf systems

- Work with “more grass” (adequate stocking rate)
- Increase national weaning rate
Some challenges in the management of cow-calf systems

• Work with “more grass” (adequate stocking rate)
• Increase national weaning rate
• Keep on selecting adequate cow biotype /frame for our own conditions
Some challenges in the management of cow-calf systems

- Work with “more grass” (adequate stocking rate)
- Increase national weaning rate
- Keep on selecting adequate cow biotype/frame for our own conditions
- Increase livestock production in marginal and fragile lands (expansion of agricultural border)
Maintaining the native pastures healthy, productive and sustainable
Thanks to

- Daniel Formoso (INIA-Uruguay)
- Pablo Soca (Facultad de Agronomía-Uruguay)
- Daniel Jimenez (CIAT-Colombia)
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Thanks!

TAK!