How Corsican cattle breeders consider the adaptation of their breed

An exploratory approach

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Adaptation of cattle breeds in the Mediterranean area

• Mediterranean area: climate with dry and hot periods.
• Several zones of mountains or desert areas.

• Local breeds mobilized in those harsh environment present adaptation characteristics.

• Stake of adaptation is even more important in a context of climate change
Adaptation of cattle breeds in the mediterranean area
The Galimed project (INRA ACCAF meta-program)

• In a context where adaptive traits will gain importance:
  ✓ Considering cattle breeds populations in the whole Mediterranean area (14 breeds)
  ✓ Combining population genetics and a LFS approach

• Aim to link genetic characterization, LFS approach to identify genomic region underlying adaptation to production systems and environment and to understand better breeders’ points of view and practices.
The Corsican case: understanding the breeders’ views of adaptation

• Corsica: Moutainous mediterranean island
• Corsican cattle:
  ✓ historically used for animal traction in cereals farming areas. Converted to a suckler cow when cereals farming was given up.
  ✓ Small size
  ✓ Diversity of colors
• Collective management of the breed and valorization are difficult (new collective project began recently)
The interviews conducted

• 20 farmers interviewed

• Aim to cover a diversity
  - mountain, hill and plain
  - breeders or not
  - crossbred animals or not
  - belonging to the regional association or not

• Guide for interview: History of the farm/
  Farming system / Adaptation: point of view and
  practices / collective action
The adaptive traits quoted by the breeders

<table>
<thead>
<tr>
<th>Trait</th>
<th>Frequencies of total quotation/Number of total occurrences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feeding autonomy</td>
<td>100% / 283</td>
</tr>
<tr>
<td>Morphology and external aspects</td>
<td>100% /139</td>
</tr>
<tr>
<td>Reproduction</td>
<td>95% /117</td>
</tr>
<tr>
<td>Adaptation to territory</td>
<td>90% /63</td>
</tr>
<tr>
<td>Behaviour</td>
<td>85% / 74</td>
</tr>
<tr>
<td>Resistance</td>
<td>80% / 67</td>
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</table>
Adaptation to territory
Reproduction
Morphology and external aspects
Feeding autonomy
Resistance
Behaviour

Fig: Ranking of the adaptive traits in answer to the part concerning adaptation
Feeding autonomy analysis

→ Ability

- A1 needs of the animal
  Because they are smaller, they content themselves with eating less.

- A2 feeding behaviour
  Her capacity to go in the rocks, see… go where other cows can't go

- A3+/- body condition
  They go up in the montains and when they come down they are not skinny, they are really big

- A4 resources
  For instance you leave her here, she will eat the heather, she will eat everything.
Feeding autonomy analysis

➔ **Ability**
- A1 needs of the animal
- A2 feeding behaviour
- A3+/− body condition
- A4 resources

➔ **Consequences**
- A5 Lower cost
- A6 Easy to manage, less time consuming
- A7 Not in adequation with social expectations

➔ **Causes**
- A8 Morphology explains autonomy
- A9a Autonomy is inborn
- A9b Autonomy can be acquired through a learning process from cow to heifer
- A9c+ Breeder can increase autonomy
- A9c− Breeder can decrease autonomy
Feeding autonomy analysis (4)

(1) Number of occurrences
(2) Number of breeders quoting the item at least once

<table>
<thead>
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<th>A1</th>
<th>A2</th>
<th>A3+</th>
<th>A3-</th>
<th>A4</th>
<th>A5</th>
<th>A6</th>
<th>A7</th>
<th>A8</th>
<th>A9a</th>
<th>A9b</th>
<th>A9c+</th>
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Feeding autonomy for the breeders is mainly associated to the behavior of the animals, the ability to use some natural resources (unknown for cows of other breeds) and the morphology explains to a large extend such ability.
Discussion and conclusion

• Importance of the breeders’ point of views on adaptation AND link with their practices

• Methodology to be tested again on other cases (Italy for instance) with different breeds and farming systems

• Question of the links between adaptation and LFS