Farm buildings and working conditions in goat farms: actual situation in Trás-os-Montes (Portugal) and future developments

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Introduction

- Trás-os-Montes
  - mountainous region
    - several plateaus above 700 m
    - peaks between 1000-1500 m
  - One of the most least-favored Portuguese regions
  - Depopulated area (exodus from the rural areas to urban centers)

- Alternative economic activities are scarce (local or regional level)

- Small ruminants (goat and sheep) have had a great socio-economic importance throughout time

- Flocks are small (mainly from local breeds)
  - between 80 and 120 goats
  - between 100 and 200 sheep

- Goats are raised in extensive systems (scarce use of farm buildings)
Introduction

- Dairy goats are mainly from Serrana breed
  - Protected Designation of Origin:
    - Transmontano goat cheese
    - Transmontano kid (young goat)

- ANCRAS (breeders’ association) intend to improve milk production and milk quality for cheese

Introduction

- We have been studying farm goat buildings in order:
  - To identify the constraints and deficiencies in farm goat buildings
  - To study the building plan and inside arrangement
  - To identify the work and tasks performed by breeders inside buildings

- The general aim is to improve and to develop goat raising in this region, bearing in mind the specific conditions of these breeders
Goat raising in Trás-os-Montes

- To develop goat raising in the region it is necessary:
  - To improve the working conditions on farms
    - Reducing time spent in work
    - Eliminating arduous and heavy work
  - To introduce changes in the housing and equipment that are presently used by breeders

- Development of goat raising may contribute to
  - Prevent the population from leaving rural areas
  - Increase the rural populations’ income
  - Increase the quality of regional products (cheese and goat kids)
Goat raising in Trás-os-Montes

- It is important to propose models and solutions that fit the regional goat farming system
- the solutions can be afforded by the region’s breeders

Farm buildings in goat farms from Trás-os-Montes

- 74 goat farms were selected to collect data
- Eleven variables (related with: layout plan; function; and materials)
  - all were established as categorical variables
- Concerning the functionality, there are four variables
  - building plan
  - inside arrangement
  - width of the entrance
  - height of the walls
- Using a fifth variable (age of the building) allows us to notice improvements in building construction throughout the time
Farm buildings in goat farms from Trás-os-Montes

<table>
<thead>
<tr>
<th>Building Plan</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosed building</td>
<td>41</td>
<td>55</td>
</tr>
<tr>
<td>Open-front building</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Enclosed building with park</td>
<td>31</td>
<td>42</td>
</tr>
</tbody>
</table>

• the majority are enclosed buildings
• a large number have a park outside, attached to the building
Farm buildings in goat farms from Trás-os-Montes

<table>
<thead>
<tr>
<th>Inside Arrangement</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single space</td>
<td>28</td>
<td>38</td>
</tr>
<tr>
<td>Pen layout</td>
<td>46</td>
<td>62</td>
</tr>
</tbody>
</table>

- Many buildings with a single space inside, without any division, pen or fencing
  - Goats with different age, growth, sex and production, stay in the same area
  - This arrangement does not allow suitable supervision, organization or efficiency to perform the work

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Farm buildings in goat farms from Trás-os-Montes

<table>
<thead>
<tr>
<th>Width of the Entrance</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width under 2 m</td>
<td>31</td>
<td>42</td>
</tr>
<tr>
<td>Width over 2 m</td>
<td>43</td>
<td>58</td>
</tr>
</tbody>
</table>

- Door dimensions can pose some constraints
- Many buildings have an entrance under 2 m wide
  - Insufficient for the transit of equipment or farm machinery
Farm buildings in goat farms from Trás-os-Montes

- Low walls (under 2 m) cause difficulties to the circulation of farm machinery
- Low walls reduce the capacity for storage of hay, straw or other supplies

<table>
<thead>
<tr>
<th>Height of the Walls</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height under 2.0 m</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Height between 2.0 m and 3.0 m</td>
<td>46</td>
<td>62</td>
</tr>
<tr>
<td>Height above 3.0 m</td>
<td>23</td>
<td>31</td>
</tr>
</tbody>
</table>
Farm buildings in goat farms from Trás-os-Montes

<table>
<thead>
<tr>
<th>Age</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Built before 1950</td>
<td>18</td>
<td>24</td>
</tr>
<tr>
<td>Built between 1950 and 1975</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Built after 1975</td>
<td>51</td>
<td>69</td>
</tr>
</tbody>
</table>

- Some buildings used in goat farms were built over fifty years ago
- Generally, old buildings are not suitable for modern breeding techniques
- Generally, old buildings present constraints related to dimensions and materials

Working conditions in goat farm buildings

- Goat breeders from the region consider milking and manure management as the most arduous work
  - generally, these tasks are carried out manually
  - involve prolonged periods of physical effort
Working conditions in goat farm buildings

- **Milking**
  - is a manual task
  - the milker remains in an awkward posture
  - that makes milking a stressful labor
  - goats are hand milked in buildings or shelters where they are housed during the night
  - cleanliness and hygiene conditions are poor

Working conditions in goat farm buildings

- **Manure management**
  - requires manual work in most goat farms
  - In a large number of farms the work is entirely manual (gathered and carried outdoors)
  - a small number have a mechanical system (tractor equipped with a loader on the front)
  - Only a few of the buildings have slatted floor

<table>
<thead>
<tr>
<th>Floor</th>
<th>Manure handling system</th>
<th>nº goat farms</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Straw bedding</td>
<td>entirely hand removal</td>
<td>21</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>hand loaded to a trailer</td>
<td>31</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td>front-loader</td>
<td>19</td>
<td>26</td>
</tr>
<tr>
<td>Slatted floor</td>
<td></td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
Working conditions in goat farm buildings

- Manure management
  - The system and facilities used to manure management have been improving throughout the time
  - Mechanical systems and slats appear in buildings that were built during last decades
  - Entirely hand removal is more frequent in old buildings (perhaps due to the constraints for the entry of trailers, or other equipment)

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</tr>
<tr>
<td></td>
<td>front-loader</td>
<td>0</td>
<td>0</td>
<td>19</td>
</tr>
<tr>
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<td>0</td>
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Final considerations and future developments

According to data collected (and summary presented here)

• Many goat farm buildings have constraints and deficiencies in building features
  – mainly related to dimensions of doors and walls; and inside layout
• The utilization of equipment or machines is scarce
• A large number of buildings lack adequate facilities or equipment in order to perform work
• In many buildings, inside layout is not adequate to perform work

Final considerations and future developments

For goat housing to be built in the future, it is advisable:

• to draw some templates of inside layout planning that may be available to breeders
• to provide technical support about the construction and equipment
• to provide information mainly related with milking, feeding and manure removal systems
• ANCRAS is already providing technical support to their members / breeders
Thanks

Vasco Fitas da Cruz

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