Farm resilience: a farmers’ perception case study

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Introduction

The number of mountain farms is decreasing

Internal factors

External factors

Use of natural resources, farmers’ age

Agricultural policy, environmental conditions, market dynamics

Increasing risk of droughts

Higher prices of inputs
Objectives

• The aim of this work was to analyze:

i) Farmers’ perception about strategies to face a situation of climate and market change and,

ii) the influence of farms and farmers’ characteristics on those strategies
Methodology

• Data collection

Survey on 54 beef farmers

Farmers’ perception

Farm structure, management and economic performance

2-year-long drought

Rise of input prices
In these situations, would any of these measures improve the continuation of your farm and how important would they be?

<table>
<thead>
<tr>
<th>Reproduction</th>
<th>Sanitary management</th>
<th>Feeding</th>
<th>General management</th>
<th>Commercialization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group births in specific periods</td>
<td>Intensify disease prevention and control programs</td>
<td>Extend the grazing season</td>
<td>Modify herd size</td>
<td>Change the type of product</td>
</tr>
<tr>
<td>Incorporate reproductive technology</td>
<td>Eliminate the worst adapted animals</td>
<td>New grassland areas</td>
<td>Introduction of new breeds</td>
<td>Produce under some quality brand</td>
</tr>
<tr>
<td>Follow a specific management program for heifers</td>
<td></td>
<td>Modify barn diets</td>
<td>Modernize machinery and facilities</td>
<td>Collectively market</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Seek self-sufficiency (self-produced food)</td>
<td>Seek technical advice</td>
<td>Diversify the activity within agriculture</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Diversify off-farm activity</td>
</tr>
</tbody>
</table>
Methodology

- Data processing and analysis
  - Likert scale and ANOVA
  - Standardization

Likert scale

Most valued actions

Less valued actions

ANOVA

Farm and Farmer characteristics influence in farmers’ views

[Graph showing Likert scale and standardized Likert scale]
Results: Drought
Results: Inputs prices

Relevance of farm actions for adaptation to the increase in input prices

- Extending grazing
- New pastures
- Self-sufficiency
- Diversity out of farm
- Herd size
- Barn diet
- Group births
- Collectively market
- Disease prevention
- Quality brand
- Technical advice
- Heifers management
- Reproductive technology
- Diversity in farm
- New machinery
- Change product
- New breeds
## Results: Farms and farmer characteristics

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Variable</th>
<th>a</th>
<th>b</th>
<th>ANOVA</th>
<th>Pair-Wise test</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>Young (&lt;51)</td>
<td>0.493</td>
<td>1.126</td>
<td>5.621</td>
<td>0.0251 *</td>
</tr>
<tr>
<td>Increase prices</td>
<td>New pastures</td>
<td>1.08</td>
<td>0.389</td>
<td>6.482</td>
<td>0.0167 *</td>
</tr>
<tr>
<td></td>
<td>New machinery</td>
<td>-0.844</td>
<td>-0.248</td>
<td>4.607</td>
<td>0.04 *</td>
</tr>
<tr>
<td></td>
<td>Drought period</td>
<td>-0.87</td>
<td>-0.173</td>
<td>6.685</td>
<td>0.0135 *</td>
</tr>
<tr>
<td><strong>Land Area</strong></td>
<td>Big (&gt;77 ha)</td>
<td>1.104</td>
<td>0.166</td>
<td>8.211</td>
<td>0.00654 **</td>
</tr>
<tr>
<td>Drought period</td>
<td>Barn diets</td>
<td>1.104</td>
<td>0.166</td>
<td>8.211</td>
<td>0.00024</td>
</tr>
</tbody>
</table>
Final remarks

1. Farmers considered eliminating worst adapted animals, diversifying activity out agriculture and seeking for new pastures and self-sufficiency as some key strategies for both, increase in inputs prices and a period of droughts scenarios.

2. In a 2-year-drought scenario farmers considered modifying barn diet as one relevant action, while this wasn’t too relevant in an increase in inputs prices scenario.

3. Farm and farmers’ characteristics such as farmer age, size of agricultural area and whether they fatten in farm or not were relevant to identify how farmers face these challenges.
Final remarks

4. Some of the most relevant actions that are usually pointed out when analyzing farming at a systemic level such as introducing more adapted breeds, diversifying farm activity, seeking for external advice or modernizing farm technologies, were considered by farmers as having low importance.

5. And as a final remark, note that this study focused on how farmers would adapt to short term scenarios, and that their strategies to adapt to mid or long-term perturbations might be different.
Thank you for your attention
Farm resilience: a farmers’ perception case study
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In Europe, the number of mountain farms is decreasing due to various socioeconomic drivers. Although mountain livestock farming systems are generally considered as extensive, they are actually very diverse, influenced by both internal (use of natural resources, purchased feedstuffs, farmer’s age, etc.) and external factors (agricultural policy, socioeconomic context, environmental conditions, etc.). In addition, farmers need to adapt to crucial challenges that affect agriculture globally, e.g. increasing risk of droughts due to climate change and higher prices of inputs due to market dynamics. Understanding farmers’ views on the relevance of actions and strategies to face these challenges is key to study mountain farming resilience. The aim of this work was to analyse: (1) farm resilience strategies according to farmer response to climate and market changes; and (2) the influence of farms and farmer characteristics on those strategies. We carried out a survey on 54 beef farmers in the central Pyrenees (Spain), gathering information about farm structure, management and economic performance. We also measured farmers’ perception on the importance of different actions to deal with: (1) 2-year-long drought; and (2) rise of input prices, using a Likert scale from 1 (not important) to 5 (extremely important). Specifically, we considered actions related to pastures and feed management, reproductive management, herd size, external advice, development of quality brands, diversifying farm activity or seeking for other sources of income outside farming. According to farmers, the most relevant actions to face droughts were using new areas of pasture and reducing herd size, while seeking for external advice was the least important. Regarding the increase of inputs’ price, the highest importance was given to extending the grazing season, as opposed to developing a quality brand and seeking for external advice that had the lowest importance. Several farm and farmer profile characteristics influenced their views on the relative importance of actions to face these challenges; e.g. farmer age, size of utilized agricultural area, or farm type (fattening on-farm or not).
Assessing pubertal age through testicular and epididymal histology in Bísaro pig
G. Paixão, A. Esteves, N. Carolino, M. Pires and R. Payan-Carreira

Genetic parameters of feeding behaviour traits in Finnish pig breeds including social effects
A.T. Kavlak and P. Uimari

Economic optimization of feeding strategy in pig-fattening units with an individual-based model
M. Davoudkhani, F. Mahé, J.Y. Dourmad, E. Darrigrand, A. Gohin and F. Garcia-Launay

**Session 41. Resilient livestock farming systems in the context of climate and market uncertainties**

Date: Wednesday 28 August 2019; 8.30 – 12.30
Chair: Lee

**Theatre Session 41**

Resilience of livestock farming systems: concepts, methods and insights from case studies on organic
G. Martin, M. Bouttes and A. Perrin

How much is enough – the effect of nutrient profiling on carbon footprints of 14 common food products
G.A. McAuliffe, T. Takahashi and M.R.F. Lee

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Resilience of yak farming in Bhutan
N. Dorji, M. Derks, P. Dorji, P.W.G.G. Koerkamp and E.A.M. Bokkers

Measurement enhanced the operationalization of resilience concept applied to livestock farms
M.O. Nozières-Petit, E. Sodre, A. Vidal, S. De Tourdonnet and C.H. Moulin

Environmental footprint and efficiency of mountain dairy farms
M. Berton, S. Bovolenta, M. Corazzin, L. Gallo, S. Pinterits, M. Ramanzin, W. Ressi, C. Spigarelli, A. Zuliani and E. Sturaro

Enhancing resilience of EU livestock systems; what is the role of actors beyond the farm?
M. Meuwissen, W. Paas, G. Taveska, E. Wauters, F. Accatino, B. Soriano, M. Tudor, F. Appel and P. Reidsma

Organization of an alfalfa hay sector between cereal farms, livestock farms and a local cooperative
E. Thiery, G. Brunschwig, P. Veyset and C. Mosnier

Performance, longevity and financial impacts of removing productive ewes early from mountain flocks
H. Wishart, C. Morgan-Davies, A. Waterhouse and D. McCracken

How can we better support the future in dairy farmers from the point of view of the stakeholders?
A.-L. Jacquot, F. Kling-Eveillard and C. Disenhaus

How agro–ecological transition could sustain goat keeping in nomadic systems of Iran
F. Mirzaei

**Poster Session 41**

Italian ryegrass yield prediction for forage supply to ruminant livestock farming in South Korea
J.L. Peng and L.R. Guan