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La Sostenibilidad
Agro-territorial desde
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TOWARDS A SUSTAINABLE SHEEP PRODUCTION IN MOUNTAIN TERRITORIES: VALUE-ADDED PRODUCTS

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Abstract

For the coexistence of different ruralities and specificities in the social space of mountain still prevails the production of traditional food-products from native breeds. Effective strategies for the valorisation of these productions are crucial for promotion of sustainable employment as a solution for inner regions desertification. This study is part of Open2Preserve project and aims to boost sheep production, as a tool for sustainability of open mountain areas of high environmental value. It analysis the strategies for adding value to the local sheep production on a low-density territory in northern Portugal. Results show that organic and quality-labelled products production is below their potential mainly due to productive and structural factors. New products are emerging, promoting added-value through the use and valuation of raw materials from native breeds. Its market success is limited by restrictions in production capability, mostly due to sheep herds declining.

Key-words: Sheep, Local breed, Sustainability, Added value, Low-density territory

1. Introduction

Pastoral systems play a key role in landscape shaping and ecosystem conservation, giving rise to open spaces of great biodiversity. Population exodus and aging are marking inner regions of Portugal. For the coexistence of the different ruralities and specificities in the social space of mountain, still prevails the artisan manufacture of agro-alimentary products, from native breeds. However, several factors threaten the future of the activity, especially the issues related to the socio-economic context and climate change. The implementation of effective strategies for the valorisation of these productions is crucial for the promotion of sustainable employment as a solution for the inner regions desertification.

Historically, sheep farming is a relevant economic activity, especially in mountainous, marginal and remote territories, such as the interior of Portugal. For small and micro-enterprises that make up the majority of the national agricultural sector, success in a competitive environment dominated by large international companies often requires the search for a competitive advantage for product differentiation and quality. This is particularly crucial in regions whose natural features limit the exploitation of economies of scale and the competitiveness of farms whose business model is cost-based. The commitment to the provision of superior value for the consumer, aiming at market niches willing to pay higher prices, appears as an enabler of creating and retaining value in the region, promoting sustainable rural development and a more cohesive and competitive country.

2. Objectives

This study aims to contribute to the sustainable production of sheep, as a tool for the sustainability of the open spaces of mountain of high environmental value. To this end, it was made a survey on strategies for adding value to the local sheep production on a low-density territory in northern Portugal. The study includes an analysis of the production and marketing of products with organic and quality labels from native sheep breeds, and a survey on new products and marketing strategies used to promote added-value to local sheep products.

3. Methodology

A quantitative, descriptive and longitudinal (2008-2017) research methodology was adopted, based on multiple documentary sources, with emphasis on information on organic farming and quality-labelled (*Protected Designation of Origin – PDO*, and *Protected Geographical Indication – PGI*, from *European Union – EU*), published by the *Direção Geral de Agricultura e Desenvolvimento Rural (DGADR, 2019)*, and agricultural statistics of the *Instituto Nacional de Estatística (INE, 2009 to 2018)* complemented with information obtained from industry stakeholders.

4. Results

Portuguese sheep livestock in 2017 was comprised by 2,225 heads, following a 3-year upward trend. The herd decreased, from 2006 to 2015, mostly due to legal requirements (e.g., regarding sheep movements and identification) and subventions penalties, along with, bluetongue outbreaks and food shortages due to drought occurrence, causing production losses and increased costs. Plus, sheep meat consumption decline was intensified by the economic crisis. The year 2015 was a turning point for the sector, driven by the country's economic recovery and 2014-2020 Common Agricultural Policy.

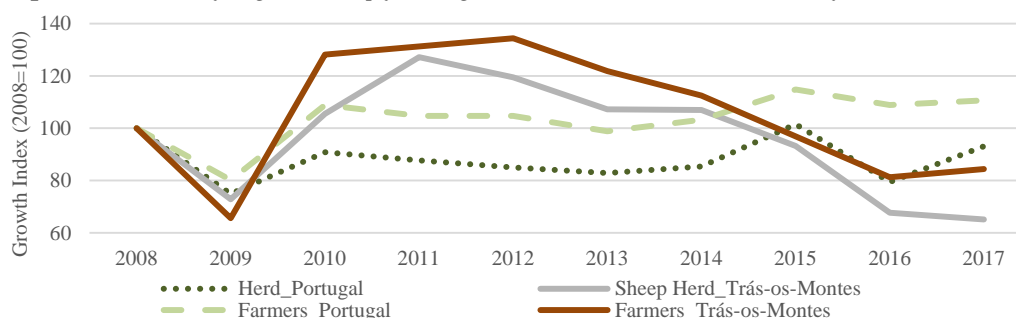
Sheep farming covers all Portuguese territory, with regional concentration and different production systems: close to 60% of the herd is located in Alentejo, in only 20% of productive units. Mountain regions of Beira Interior and Trás-os-Montes have relevant herds, but average herd size is only around 60 ewes per farm, half of the Alentejo average herd (135 ewes per farm). Most sheep production is based on extensive systems in marginal lands and for meat production (80%), in Alentejo and North of Trás-os-Montes, other herds aim milk production, mostly for cheesemaking, in Beira Interior.

Sheep farming main outputs include 17 tonnes of meat, 71 thousand litters of milk, 12 tonnes of sheep cheese, and 6 tonnes of wool, 2015-2017 annual average.

4.1 Organic sheep farming

In 2017, organic sheep farming had around 99.3 hundred heads, mostly in Alentejo (64%). Despite Trás-os-Montes's high potential to organic production, due to more rustic ecosystems typical of mountain environments, the region's organic herd is declining (Graph 1). Organic production is closely linked to the support programs' features. After a notable increase in sheep livestock prior to 2007, organic farming declined, in 2007-2009, due to the transition process between support programs. Overall numbers improved after 2009. Still, Trás-os-Montes herd and producers began falling two years later. In 2017, Trás-os-Montes herd is close to 3% of organic's sheep herd (3.2 thousand animals), a decrease from the 5%, in 2008.

Graph 1. Evolution of organic sheep farming in Trás-os-Montes, livestock and farmers, 2008-2017



The lack of local slaughter and processing facilities approved for organic production constrains the growth in organic farming and makes costly production.

4.2 Quality-labelled products

Today, the 16 Portuguese native breeds account for 120 thousand heads, spread by 1.1 thousand farmers. Trás-os-Montes native breeds (Table 1) are associated to 4 products with EU quality labels.

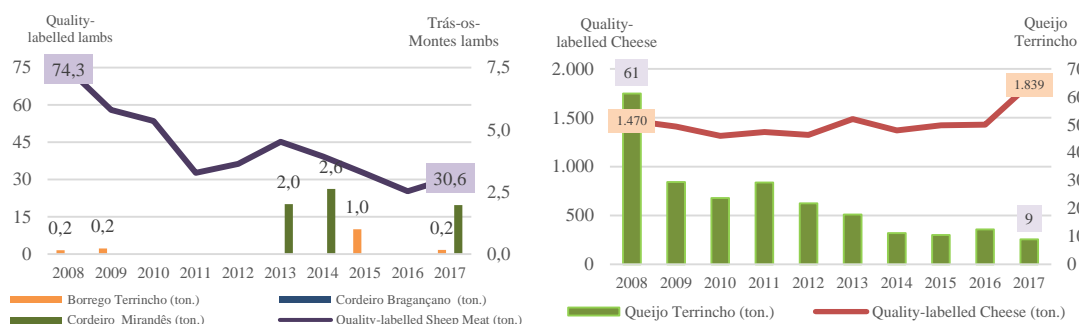
Table 1. Native Sheep Breeds in Trás-os-Montes region, Herds and Quality-labelled Products, 2019

Native Sheep Breed	Herd (# heads)	Average Herd Size (# heads)	Quality-labelled Product	Quality scheme	Date of register
<i>Churra da Terra Quente</i>	14 750	130.5	Queijo Terrincho	PDO	1996
			Borrego Terrincho	PDO	1996
<i>Churra Galega Mirandesa</i>	6 647 *	65.8 *	Cordeiro or Canhono Mirandês	PDO	2012
<i>Churra Galega Bragançana Branca</i>	12 414	110.8	Cordeiro Bragançano**	PGI	1996
<i>Churra Galega Bragançana Branca</i>	2 803	34.2			

Notes: * Data for the 2017 year; ** Without any quality-labelled production marketed until 2019.

The market for quality-labelled lamb is undersized (0,19% of sheep meat market) and declining. Specifically, the annual production of lambs of Trás-os-Montes is residual and volatile (Graph 2). Sold on local markets, by producers' associations, mainly to restaurants and local butcheries, this lambs enjoy of higher producer' prices than the average of quality-labelled lambs segment and are more abler to exploit the added value of the quality label, reporting a price difference to the similar product over 50%, on average.

Graph 2. Production of quality-labelled lamb and cheese from Trás-os-Montes, in tonnes, 2008-2017



While quality-labelled cheese market segment shows an upward trend in production and market share (from 1.2%, in 2008, to 2.2%; in 2017), Terrincho cheese is in a declining trend. Last years' average production is less than 11 tonnes. The value added by the quality label of Terrincho cheese, in the production market, is also decreasing, from 13%, in 2008, to 5% in 2017. Terrincho cheese exhibits the smaller producer prices, among quality-labelled sheep cheeses, and is the less able to exploit the advantage of the EU quality label. Therrincho cheese is sold by producers' association (45%), other entity (40%) and producers (15%), to national (85%) and local markets, mainly through intermediaries (40%), traditional stores (25%), directly to consumers (25%), and residually, to restaurants and in fairs.

4.3 New products and marketing innovations

The sheep dairy sector is mainly made up of micro and small companies focused on cheese making. Traditionally, the whey resulting from cheese production was used to the production of almece/travia, cottage cheese, and butter, but its economic importance is rather modest. Today, cheese industry bets on quality products adapted to new market segments alongside classic cheeses (with more or less cure), e.g., the called “fantasy” cheeses, particularly, cheeses with red fruits, spices, and herbs; and the healthy cheeses, with low fat, lactose-free or natural additives (Carocho et al., 2017). The production of sheep milk yogurt in Portugal is almost inexistent, mostly restricted to Beira Interior, by the cheese producers' association of Serra da Estrela. However, losses of livestock (5 thousand ewes) resulting from the 2017 fires, endangered production.

In the meat sector, local producers try to reach new markets thru product development, e.g. sausages, pâtés, and mantas (sheep meat cured product) made from meat of native sheep out of quality label (Paulos et al., 2015; Oliveira et al., 2014; Rodrigues et al., 2019). These products showed good market acceptance, however, success was constrained by the company's low production capacity.

The wool is also the target of entrepreneurial interest, exploring the emerging market for natural, local heritage, products. Trás-os-Montes native breeds fiber was considered valueless due to its low potential for wool typical uses. The *Lhana project* came up with the purpose of making use of the wool of native Portuguese sheep breeds, paying a fair price for wool from local herds. Among other value-added products, this company offers an exfoliating soap wrapped on the wool of Churra Galega Mirandesa. Other products were developed in partnership with companies recognized in the cosmetic products, the *Bio4Natural*, a brand of organic cosmetics, 100% made in Portugal, and *Tomelo, Eco Desenvolvimento* in its line of cosmetic with milk from an endangered native donkey breed.

5. Conclusions

This study presents a set of strategies for adding value to the native sheep breeds on the Trás-os-Montes region, a low-density territory in northern Portugal. The strategies to increase value added by means of qualification systems linked to the origin and sustainable modes of production show results that are below their potential due to productive and structural factors, such as the size of farms and herds, and insufficiency of marketing and transformation structures. The pursue of marketing advantage stimulated

innovation and the supply of new products in the market, driven by collaboration between educational and research institutions, associations of producers and companies. Today, new products are emerging in an out-of-the-box thinking rural environment, promoting added-value through the use and valuation of raw materials from native breeds, exploring an emerging market for natural, local heritage, products. However, these products market success is limited by restrictions in production capability, mostly due to the declining of sheep herds.

6. Bibliography

- Carocho, M., Bento, A., Morales, P. and Ferreira, I. C.F.R. (2017). “Utilização de plantas como ingredientes bioativos e aditivos naturais em queijo de ovelha”. *Rev. de Ciências Agrárias* (online). 2017, vol.40, n.spe:411-420.
- DGADR (2019). Modos de produção sustentável e Valorização da qualidade. Direção Geral de Agricultura e Desenvolvimento Rural. Available in <http://www.dgadr.mamaot.pt/sustentavel>
- INE (2009 to 2018). Estatísticas Agrícolas (2008-1017). Instituto Nacional de Estatística, Lisboa.
- Oliveira, A. F., Rodrigues, S., Leite, A., Paulos, K., Pereira, E. and Teixeira, A. (2014). “Quality of ewe and goat meat cured product mantas. An approach to provide value added to culled animals”. *Canadian Journal of Animal Science*, 94(3): 459-462.
- Paulos K., Rodrigues, S., Oliveira, A.F., Leite, A., Pereira, E. and Teixeira, A. (2015). “Sensory Characterization and Consumer Preference Mapping of Fresh Sausages Manufactured with Goat and Sheep Meat”. *Journal of Food Science*, 80(7): S1568-73.
- Rodrigues, S., Almeida, S., Pereira, E. and Teixeira, A. (2019). “How does the added fat source affect sensory quality of sheep and goat pâtés?”. *Ciência Rural*, 49(5), e20190029. Epub April 25, 2019.

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