

# **Actions to increase the sustainability of sheep production systems in Mediterranean disadvantaged areas: The case of the Lojeña sheep breed**

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**Abstract:** Many small ruminant breeds are located in the Mediterranean mountain areas and most of them are endangered. These animals are adapted to unfavorable conditions, and have become agents to stimulate the economy, the environment and the population of these areas.

The Lojeña sheep breed is listed as endangered,; it is located in the Penibético system mountain area in Andalusia (Spain). This animal is specialized in meat production of lamb of 15 to 20 kg live weight. Its system is essentially extensive, and based on natural few productive pastures in steep terrain. The preservation and improvement of this breed and its production system is the aim of a breeders' association. This association has undertaken several actions to improve its sustainability and to market its products. These action have enhanced the conversion of breeders to organic farms, and more than half of the farms are now organic. On the other hand in terms of marketing, the two main actions are to use for sale the positive externalities of its production system and search short marketing channels for its limited production.

This paper aims to describe the actions that the association has carried out to improve this sheep breed and to manage and market its products. The results are described in terms of impact).

**Keywords:** organic animal production systems, marketing, environmental externalities

## **Introduction**

The traditional local pastoral livestock systems of several European Mediterranean areas are in a high danger of disappearing. Among the several causes of this threat we could highlight: i) a low and declining profitability, ii) the depopulation of many areas where traditional livestock are located, and iii) a decrease of meat consumption, and particularly the sheep and goat meat. Or the role of pastoral systems is very important for the economic activity of these territories, as for their social sustainability and environmental preservation. In most cases, these traditional livestock systems linked to indigenous breeds are the only way to valorise the local resources of these areas.

The conversion to organic production is one of the strategies undertaken to improve the economic profitability of farms. The conversion to organic farming should be easy for these systems, since

they are low-input systems, with a diet based on grazing and production planning adapted to the resources in the production area, but the conditions do not favour it.

Nowadays the European Union is supporting organic conversion through formulation of specific rules (Regulation (EC) 834/2007 and 889/2008), and by services to market products. But numerous drawbacks are associated with its dispersion in the territory and with its small size (Ruiz et al., 2013).

*Lojeña* is a Spanish autochthonous breed sheep, which is listed as endangered breed. It is mainly located in the “Poniente Granadino” region in Andalusia (Spain), specifically in the mountain area known as “Sierra de Loja”. This breed is specialized in meat production, its typical product is a lamb between 15 and 20 kg live weight. *Lojeña* is a small size breed, totally adapted to the environmental conditions in which lives (FEAGAS, 2013). Its production system is extensive, with few feedstuff supplementations. The *Lojeña* breeders Association (ACROL), is in charge of genetic improvement, but also other activities to promote the breed and performs other support the breeders.

The *Lojeña*’s farmers have the same general problems mentioned above about low favored areas: low profitability, lack of work force, low consumption of their products, etc. It is the reason why five years ago, “ACROL”, has promoted the conversion of their livestock to organic systems in order to differentiate their production and find new markets.

The Agricultural and Fisheries Research and Training Institute of Andalusia (IFAPA), has collaborated with the association ACROL to reach these goals through research and knowledge transfer in the TRANSFORM "Organic Production" project, This paper is the first result of this collaboration, which aims to analyze the problems organic farmers have to face after conversion to organic production systems and strategies proposed to solve them.

## **Methodology**

### **The study area**

The Study area is located in the "Sierra de Loja" or "Sierra Gorda" mountain zone. The area is a part of the mountain system (Penibético) that runs southern Spain from East to West. The surface is 18 000 ha, with 1669 meters of maximum altitude. It is homogenous and formed by limestone materials; Soils are very superficial. The climate is Mediterranean with dry summers and cold winters; the rainy season coincides with fall and spring. Vegetation has few bio mass, and the natural resources available for livestock are scarce (Image 1).

Image 1: The Lojeña breed ecosystem



### **Selection of farms and data collection**

The selected farms are members of the National Association of Lojeña Sheep Breeders. 16 organic farmers were interviewed. A questionnaire was designed and divided into 9 sections: Socio-economics, surface, herd, infrastructure and facilities, feeding, reproduction, health, organic production and marketing, with 75 items. Interviews were conducted individually between June and November 2013.

A brief description of the production systems was undertaken from the collected data. The problems, farmers had to face since their organic conversion and their possible strategies to solve them were identified.

## Results

### Characterization of the Lojeña sheep breed systems

From a socio-economic point of view, family farming is dominant (82.2% of family labour); the farm's heads are 49.5 ( $\pm$  10.1) years; they have a high traditional know how in sheep and; 64.3% of the farmers have spent more than 10 years in these activity. Most of the tenures (71.4% of cases) are owned by the breeders with a widespread use of public forest and pasture areas of forest to pasture.

In addition to the ACROL, association, farmers are members of a cooperative of organic farmers, COVECOL, with two main purposes, managing the purchase of animal food stuffs and organizing the marketing of lambs.

Animals graze throughout the year, except during the lambing period when ewes are enclosed. Crops are very limited due to the soil characteristics. Only 42.8% of farmers produce forage, mainly hay, but their surfaces are small (of 1-7 ha). Ewes are supplemented only during the lambing season with fodder (0.25-1 kg / ewe and day) and concentrate (0.5-1 kg / ewe per day).

The management of reproduction is traditional, generally without lots and only 26% of the farmers share their flocks for reproduction. The main lambing season is spring, for 60% of the flocks, followed by autumn, for 33% of them). The period of reproduction is organized and managed to coincide with the period with most natural resources for grazing.

In general, the facilities are good and 44% of farmers have made major improvements for recent years. The accesses to farms are not easy (75% of cases) and the availability of potable water is not possible in most farms, farmers often storing rainwater for their animals.

To market their lambs, in general, farmers have several buyers (62.5% of cases) and only 37% sell through a fixed buyer. And none of the farmers sell their lambs as organic. On average the number of lambs sold per ewe on the farm is 0.75 ( $\pm$  0.15) lambs / ewe and year.

### Main difficulties for organic production

Conversion to organic systems has been a strategy used by farmers to increase profitability, and so preserve their breed and their traditional production system. The average period since they are in organic production is 4.75 ( $\pm$  1.10) years, most of the farmers having converted their system between 2007 and 2008.

The main problem they have to face is to market their lambs as organic. 70% of the interviewed farmers explained, it is not possible sell their lambs as organic, because specific marketing channels do not exist. The lambs are sold with a live weight of 17 kg at 2 months of life as conventional lambs. The absence of a fixed buyer noted above is another source of uncertainty. Besides the absence of a specific market for organic lamb, there is no certified slaughterhouse for organic production.

We have already observed that this problem is general for all organic livestock meat production in Andalusia (Spain), where the percentage of marketed and labelled organic meat is low (Ruiz et al., 2013).

Actually, feeding of adult sheep is not a problem in ecological farms, unlike what happens with dairy small ruminants, where supply and quality are deficient and with high prices (Mena et al. 2013). In this case study, farmers formed a cooperative to buy organic food directly from farmers in the area and they got better prices and a bid, more or less stable over the years. The main problem reported by some farmers (30% of the answers) is that they do not have optimal feed stuffs for fattening lambs. This fact leads to lower daily growth rates and thus later commercial weights.

Farmers have not detected any problem on conversion to organic at the health level. They have generally quoted some periods of digestive problems for lambs, especially during rainy season, and problems related to external parasites for grazing animals. It also noted that there is not still a significant variety of medications allowed for this type of farming.

From an administrative point of view, the delay to pay the subsidies linked to organic production by the regional government, is a major problem for farmers when planning their campaigns

### **Strategies to improve**

Several strategies have been discussed to solve the marketing, problems, the main ones identified by farmers. The diversification of meat production is one of the main lines initiated by the COVECOL cooperative: for instance to propose organic Halal meat to Muslim consumers, to prepare pre-cooked meat products, to find new external markets for organic meat. COVECOL has also begun to study how to build a slaughterhouse and a cutting plant, adapted to the needs of farmers.

The TRANSFORM "Organic Production" project has performed two complementary actions. On one hand, the project will edit a newsletter with dynamic information about organic livestock systems and to enhance the ecological externalities of organic ruminant livestock systems and the preferences of the consumers. This letter will be attached to each piece of meat sold. On the other hand, a marketing study will be undertaken to detect the difficulties met by distributors to market and deliver organic meats, firstly to their stores, and then for consumers.

Regarding the other feeding and health identified problems, a training course based on agro ecology for farmers and technicians, has been organized; during this course, farmers will discuss with experts and technicians about their technical and economic problems and how to solve them according to the specific conditions of these systems.

### **Conclusions**

The conversion of traditional extensive sheep systems with indigenous local breeds in organic production, does not present many difficulties from a technical point of view. After a transitory period the specific technical problems related to animal feeding and adapted health management could be solved more easily as the number of involved farmers increase. Marketing organic products remains the main issue and transition to organic production has not been a major breakthrough. Low volumes, animals with lower conversion rates, atomization of the sector will keep on being the main problems after the conversion.

A greater differentiation to enhance environmental and social externalities of these systems for consumers, with the development of short marketing channels, should be the basis for establishing a sustainable market for these productions.

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