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Goat systems of Villuercas-Ibores area in SW Spain: Problems and perspectives of traditional farming systems

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ABSTRACT

A study of dairy goat systems was carried out in the "Villuercas-Ibores" region, a mountainous area located in the south-west of the Iberian Peninsula (Cáceres, Spain). This territory is characterized by difficult orography and a fairly harsh climate, and has low indices of income and population density. Goat production in the area has contributed notably to its economic and social development historically, but there has been a marked recession in goat-based activities in recent decades, leading to changes in the type and intensity of land use. The purpose of the study is to analyze the main characteristics of the current goat farming systems in a zone in which goat milk production is possible under a Protected Designation of Origin (PDO) brand "Ibores Cheese", and to establish a farm classification that will allow groups of holdings with common characteristics to be identified, so that they can be compared and their performance evaluated. The data were obtained through direct interviews to goat farmers ($n = 61$) within the geographical area of the PDO "Ibores Cheese". Specific information on management was collected, together with data on family characteristics, labour, livestock numbers, land use, installations, continuity, recent changes in farming, and the farmer's opinions. A principal component analysis (PCA) was used to examine the relationships among the quantitative variables, then a two-step cluster analysis was applied using the factors obtained in the PCA and categorical variables. This resulted in a farm typology of three groups distinguished by their land use, goat breed, and PDO membership. The best management practices and productivity results were obtained by the farms furthest removed from the traditional systems. The first group of farms is characterized by small size flocks. Many of these farms do not belong to the PDO and therefore they have chosen breeds that are not allowed by the PDO regulations. Most of them are semi-intensive or intensive farms. The second group consist of extensive farms with large size flocks of goats complemented with sheep farming and, occasionally, with beef cattle or Iberian pig. They have got technically suitable milking rooms, although the availability of other infrastructure is poor. Finally, the third group identified includes extensive farms whose goat flock size is very similar to that of group 1, but in 70% of the cases they are mixed farms, mainly combining goat with sheep flocks. Most of them are producing milk that is sold to firms producing PDO cheese. It is the group closest to the traditional farming system and the farms have small flocks of low productivity per goat, raising autochthonous breeds and their crossbreeds.

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1. Introduction

Historically, goat production has been linked to self-sufficiency (Morand-Fehr et al., 2004), and it has contributed to the economic and social development of poor rural areas and developing countries in which most of the world's goat population is concentrated. The versatility of the species, highly adapted to less-favoured areas, and the diversity of its production systems explain the continuing growth of the sector worldwide, with a 19% increase in the number of animals in the last decade (FAO, 2010).

Europe has not followed this growing trend, as its goat population has decreased by 5.5% over the same period (FAO, 2010). This reduction has mainly been linked to the continued decline of rural areas. Even so, goat production in Europe is one of the livestock sectors with good economic prospects, as it is viewed as compatible with the sustainable development and nature conservation promoted by the new Common Agricultural Policy (CAP). Moreover, it is a sector that helps to fix rural population, reducing the risk of depopulation of marginal or less-favoured areas (Boyazoglu et al., 2005; Canali, 2006; De Rancourt et al., 2006) and contributing to the maintenance of good agri-environmental practices (MARM, 2008).

Spain, with 22% of the total EU goat census (13.5 million animals), occupies second position just after Greece (39.8%), according to data from 2007. Both countries have been losing relative importance within the EU due to new countries joining the EU in the last few years. The main raised breeds are autochthonous, including Murciano-Granadina, Majorera and Malagueña.

The number of farms amounts to 74,300, with an average of 40 animals per farm, and a significant increase in farms devoted to dairy production (+7.1%). In 2009, provisional data show a slight decrease (1.8%) of the Spanish census, with a total of 2,906,517 goats. The evolution of the goat population has experienced significant changes as a result of goat milk price fluctuations (MARM, 2009).

The main goat producing areas in Spain are located in the southern half of the Iberian Peninsula and in the Canary Islands. When analyzing the production systems, we can find two different productive orientations: on the one hand the intensive farms that predominate in Andalusia and the Canary Islands; they raise dairy type breeds such as Murciano-Granadina, Majorera and Malagueña, and the animals are permanently confined. On the other hand we find other "more extensive" farms, using dual purpose breeds for meat-milk production. Among these systems there are farms on which goats graze year-round, especially in mountainous areas, and others on which goats graze only when forage is abundant (Castel et al., 2010).

A literature review showed several recent systemic analyses of goat production from different perspectives. Some of the most noteworthy are the following. Paz et al. (2008) study the diversity of traditional goat systems. Castel et al. (2003) and Ruiz et al. (2008) characterize goat farms in southern Spain using multivariate statistical methods. Usai et al. (2006) characterize Sardinian goat farming systems, also using multivariate analysis, and taking into account productive and breeding aspects of the farms. Goat production has also been studied from other perspectives, such as the influence of diet on production (milk or meat) (Ben Salem and Smith, 2008; Fedele et al., 2005; Galina et al., 2007; Morand-Fehr et al., 2007), and breeding management (Zarazaga et al., 2005).

One example of traditional goat farming systems is represented by those located in a mountainous region of SW (SouthWest) Spain denominated "Villuercas-Ibores" (Fig. 1). This territory has low income indices and a very low population density, both of which are linked to the difficult orography which allows the use of modern agricultural and husbandry techniques in only a few specific areas. Nevertheless, it has a major diverse environmental richness, with several Natural Areas protected under European Union regulations. Historically, goat production has contributed remarkably to the economic and social development of this rural region, but there has been a marked recession in the sector during the last two decades which has given rise to changes in the type and intensity of land use. There is a Protected Designation of Origin (PDO) for the cheeses produced in this area, "PDO Ibores Cheese", which was aimed at supporting the goat sector and improving farm revenues.

Protected Designation of Origin (PDO) is one of the most important programmes designed by the European Union to promote and protect the names of regional foods. These programmes encourage varied agricultural production, protect the trademark of the PDOs and help consumers by giving them information concerning specific product characteristics. Specifically, PDO covers agricultural products and foodstuffs which are produced, processed and prepared in a given geographical area. Such is the case of the Ibores Cheese PDO, that was created in 2005. The cheese produced under this PDO is a fatty cheese, made exclusively from raw goat milk from the breeds Serrana, Verata, Retinta and their crossbreeds. Cheese ripening lasts at least 60 days, and after the ripening the cheese must have a cylindrical shape, ivory color and semi-soft texture and aroma. DOP rules state that cheese must contain a minimum of 45% fat and 30% protein on dry matter, a pH of 5.0–5.5, and 4% NaCl or less. According to data from the PDO Regulatory Council, 2007 production was 150,000 kg of cheese, that accounted for a turnover of €1,560,000.

The "Villuercas-Ibores" goat sector has an interesting future due to the increasing demand for traditional and natural products, and since its successful continuation goes hand-in-hand with the conservation of a highly-valued natural environment. This aspect is specifically supported by the European Union's new policies. The PDO and regional foods have the potential to leverage wider social and economic benefits (Ventura and Milone, 2000), as they represent potentially fruitful resources for development (Marsden et al., 2000). They can also confer marketing benefits and can contribute to the socio-economic well-being of rural areas (Tregear et al., 2007) as they have the ability to attract consumers (Marescotti, 2003). Nevertheless, and to reach these benefits, it is also necessary to improve consumer information (Mesias et al., 2003).

Given this context, and based on knowledge of the main features of traditional goat systems in "Villuercas-