

Characterization of Segureña sheep production systems in the area of "Sierra del Segura y la Sagra", Spain

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Abstract. The aim of this study is to present the basic characteristics which define the sheep systems in some zones of the PGI "Cordero de Segura y la Sagra" protected area, in order to bring about actions to improve the competitiveness of such systems. A survey has been conducted among 93 farm owners. The questionnaire included questions regarding herd characteristics, age, educational level, workers, and continuity of the farm activity. The average herd size is 378 animals and the Segureña breed sheep is predominant (99%). In 93.5% of cases the owner works full time on the farm and the main economic benefit is the sale of lambs for meat, but only 9.7% of farmers belong to some kind of marketing cooperative. The average farmer's age is 50 years old and a high percentage (87.1%) has no education or a very basic one. The year work unit (YWU) is 1.31 and the work is mainly of family type. In only 12% of the cases the continuity of the activity is assured. The above analysed aspects show that it is necessary to achieve better socioeconomic conditions of farms. The PGI "Cordero de Segura y la Sagra" could be useful to improve these aspects. Therefore we suggest that the PGI must be promoted among farmers, especially among young people.

Keywords. Characterization – Lamb – Quality products – PGI.

Caractérisation des systèmes de production ovine dans la zone de "Sierra del Segura y la Sagra", Espagne

Résumé. Le présent article se propose d'analyser les caractéristiques les plus saillantes du secteur ovin dans une partie de la zone géographique sous Indication Géographique Protégée (IGP) "Cordero de Segura y la Sagra". Une enquête a été menée sur 93 propriétaires d'élevages, dans l'objectif de connaître la situation du secteur dans cette zone. Les questions concernaient les sujets suivants: caractéristiques du troupeau, âge, niveau d'études, ouvriers à la ferme, continuité des activités de la ferme. La taille moyenne du troupeau est de 378 animaux et la race "Segureña" est prédominante (99%). Dans 93,4% des cas l'éleveur travaille à temps plein dans l'exploitation et le revenu principal est la vente d'agneaux pour la viande, mais seulement 9,7% des éleveurs font partie d'une coopérative pour la commercialisation. L'âge moyen du fermier est de 50 ans et 87,1% des éleveurs n'ont pas d'études ou de faible niveau. La moyenne du travail employé est de 1,31 UTA, essentiellement de type familial. Seulement dans 12% des cas il existe une sécurité de la continuité de l'activité. Les résultats obtenus montrent qu'il est nécessaire de parvenir à de meilleures conditions socioéconomiques pour les exploitations dans la zone étudiée. L'IGP "Cordero de Segura y la Sagra" pourrait être utile pour améliorer ces aspects.

Mots-clés. Caractérisation – Agneau – Produits de qualité – IGP.

I – Introduction

One of the initiatives that Spain has chosen to deal with the fall in profitability of the sheep meat sector, is to establish the community certificate of Protected Geographical Indication (PGI) for mutton. The PGI is a tool to improve product quality and achieve differentiation through a quality

label (Martínez and Jiménez, 2006). Since 2000 has been developing the PGI "Cordero de Segura y la Sagra" (Mutton from Segura and la Sagra) in some areas of Andalusia and Murcia (Southern Spain). This effort was consolidated in 2008 with the approval of the regulation in Spain of that PGI, which protect the name of the mutton which come from Segureña breed lambs which were born, raised and slaughtered in the protected area. Also, the PGI highlights the existence of the Segureño Mutton Breeder Association (ANCOS), whose main activity focuses on the registration and control of the genealogical data of the breed.

It is well known that prior to promotion, it is necessary to get good technical and economic structural conditions. Thus before any action to promote a local product it should be conducted a prior diagnosis of the situation of the sector (Dubeuf *et al.*, 2010). This and the fact that there are not any characterisation study of the ovine systems that could be benefited by the label quality PGI "Cordero de Segura y la Sagra", is why it is of great interest to carry out a research to diagnose the present situation of this production sector.

The aim of this study is to present the basic technical and socioeconomic characteristics which define the system for sheep production in some zones of the protected area covered by the PGI "Cordero de Segura y la Sagra". The objective is to make a diagnosis of the present situation of farms in order to bring actions that result in an improved performance and competitiveness of livestock production, such as the registration as PGI producers.

II – Methodology

Ninety-three surveys were conducted in 2007 to sheep meat farmers. The surveys were distributed into two groups. The first group included four herd sizes: 100-299, 300-499, 500-1000 and >1000 adult ewes. The second group differentiated four areas attached to the PGI "Cordero del Segura y la Sagra": Huéscar (Granada), Los Vélez (Almería), Noroeste (Murcia) y Sierra de Segura (Jaén). The samples followed a proportional stratified random criteria (Aparicio, 1991) and accounted for 10.68% of total number of sheep farmers from the four areas considered.

The questionnaire was based on the methodology of the Community Program for "surveys on the structure of agricultural farms" from the Instituto Nacional de Estadística (The National Institute of Statistics) (INE, 2009). Likewise, the guidelines of questionnaires published in articles with similar objectives were also followed and considered of interest (Vacas, 2003; Navarro, 2005; Avellanet, 2006).

To characterize the present situation of the sector in a first approach, a series of the most important structural variable types were chosen: herd and breed characteristics, labor force, farmer's age, continuity of the activity, farmer's education, farmer's association. All the data were analysed with SPSS (14.0) statistics package through descriptive statistics.

III – Results and discussion

1. Herd characteristics and breed

The average herd size is 377.7 present ewes and 10.7 males. The standard deviation in both cases is high, which indicates a great variability (Table 1). However, it is interesting to note that removing the farmer of 2000 females from the analysis, the average number of females per farm becomes 360.1 and standard deviation drops to 262.5, indicating the distortion that exercises this extreme value on the total deviation.

The average flock size is quite similar to those obtained by Alonso *et al.* (2001) in a study done on the semi-extensive Castellana breed sheep mainly oriented towards milk production (350 females). In another study by Salcedo and García (2005), the average size in the province of

Granada was 449 sheep and 13 adult males. In the last 20 years the size of herds has risen. According to Poto *et al.* (2000), the average size of Segureña sheep herds in the province of Murcia was 190 heads in 1991. One of the causes of this is that many small and more or less marginal sheep farms have disappeared, because of retirement or sale. According to the Survey of Structures (INE, 2009) between 1997 and 2007 the number of farms in Spain as a whole has fallen from 102,832 to 85,247 (over 17%).

Table 1. Herd size and replacement rate

	N	Mean	SD [†]	Interval
Ewes	93	377.7	312	100 - 2000
Males	93	10.7	8.7	1 - 48
Ewes/male	93	37.9	12.9	20 - 100
Replacement rate	93	14.01	4.96	0 - 26.7

[†]Standard deviation.

The average reproductive ratio is of 37.9 ± 12.9 females/male (Table 1), still reasonable if we consider that the recommended reproductive ratio is around 30-40 females per male (Daza, 2002). This value is smaller than that of 43 females per male obtained by Salcedo and García (2005), but is still far from 20 goats per buck obtained by Ruiz *et al.* (2008) in dairy goat systems in Andalusia.

The average annual replacement rate is 14.01% (Table 1), a rate that contrasts with that found by García *et al.* (2005) and Ruiz *et al.* (2008), where the average replacement rate becomes 20-21%. The average lifetime is of 7.13 years, which is very different to that obtained by Daza (2002) who reported that the most common average lifetime of Spanish sheep is between 5-6 years. This elevated average lifetime obtained could be due to the fact that many farmers have stabilized their herds and many are reducing the total number, grouping both accounting for 74.2%. Only 25.8% said that they were expanding their herds (Table 2).

Table 2. Evolution of herd size during the last 5 years.

	N	Frequency	%	Cumulated %
Expanding herds	93	24	25.8	25.8
Stable herds	93	53	57	82.8
Declining herds	93	16	17.2	100

Only 15.1% of herds are monospecific, i.e., they have no goats on their farms. Remaining 84.9% have goats in their herds, but only 20.4% of them have more than 25 goats on their farms, in which case they must be considered like specialized in the goat sector (Navarro, 2005). Sheep farmers who have less than 25 goats in his flock are considered specialized in sheep production and have goats as a resource to serve the main herd, to feed those lambs who can not be breastfed by their mothers and to guide the flock in mountain pastures.

The Segureña breed sheep, with varying degrees of breed purity, is predominant (99%) in the studied area. The 24.7% of the surveyed farmers belongs to Asociación Nacional de Criadores de Ovino Segureño (ANCOS), that is the institution that guaranties Segureña breed, so we can ensure racial purity of a quarter of farms.

2. Socioeconomic aspects

The main economic benefit of all farmers surveyed is the sale of lambs for meat, but only 9.7%

of farmers belong to some kind of cooperative marketing. This finding is not surprising because it is known that sheep cooperative association in Andalusia is only 8.33%, while in other regions such as Aragón and Castilla-León over 80% of the farmers are part of some type of cooperative (Sierra, 2003). This lack of association tradition can be a major weakness when trying to promote the association to the quality label of PGI "Cordero de Segura and La Sagra".

Owners average age is 50 years old, similar to that reported by Gallego (2002) on sheep farmers in Castilla-La Mancha (51 years), higher to the mean age of 47 years of sheep farmers in Granada (Salcedo and García, 2005) and smaller than that observed by Avellanet (2006) for Xisqueta sheep farmers in Huesca and LLeida (54 years).

In the opinion of 12% of the farmers the continuity of the activity is assured, but up to 32% of the sampled consider that nobody will continue with the flock. This finding together with the elevated mean age of farmers are consistent with the conclusion done by Avellanet (2006), who says that in less than five years 26.7% of farms with no generational replacement could disappear.

The average number of workers per farm is 1.31 YWU (year work unit), the lowest is 0.41 and the highest 3.11 YWU (Table 3). This result is quite similar to that obtained by Vacas (2003) about goat farms in the Region of Murcia (1.47 YWU) and smaller than that obtained by Milán (1997) with 1.9 YWU. The average ratio between the number of sheep and total YWU in our work is 287.1 sheep/YWU, with a considerable standard deviation indicating a marked heterogeneity. The average is slightly higher than that obtained by De Rancourt *et al.* (2006) in its economic analysis of sheep and goat farms in the countries of Mediterranean Europe, where the average in Spain is 206 sheep/YWU.

Table 3. Workforce

	N	Minimum-Maximum	Mean ± SD†
Total YWU	93	0.41-3.11	1.31± 0.53
Family YWU	93	0-3	1.18 ± 0.43
Full time salaried (YWU)	93	0-2	0.11 ± 0.34
Temporary employees (YWU)	93	0-0,41	0.04 ± 0.09
Nº sheeps / total YWU	93	67-973	287.1 ±167.4

†Standard deviation.

Many surveyed farmers (75.3%) do not use any type of contracted labor, while 9.7% of respondents have permanent employees and 15.1% have wage labor hired occasionally. Regarding of their own labor, 94.6% are family businesses, of which 10.8% are two partners working on the farm in equal shares, 52.7% is only the owner who handles all activity, in 10.8% of the cases is the owner and his descendants and at 9.7% is the owner and the father engaged in farming. In 17 cases (18.4%) women work full time on the farm as a spouse of the owner or as an owner. All these information indicates that this industry still remains largely an economic activity with a marked family character, like it is also observed in the case of dairy goat systems in Andalusia (Castel *et al.*, 2003; Ruiz *et al.*, 2008).

In most cases (93.5%) the owner works full time on the farm, the rest develop a lucrative business out of farming. In 76.3% of cases, in addition to revenues generated by the livestock, the owners work and receive income related to the agricultural sector, cereal plantations being the primary source of agricultural income.

In relation with the educational level of the owners surveyed, a high percentage (87.1%) has no education or a very basic one. This is consistent with the case of semi-extensive goat systems in southern Spain (Castel *et al.*, 2003). This lack of training of those responsible in front of

sheep farms is one of the main problems being faced by the sheep industry in general, because the lack of qualifications makes it difficult to manage farms from a business perspective and therefore affects the chances of progress.

IV – Conclusions

The flock size and structure as well as the breeding standards of the farms in the studied area are quite good. The sector is quite professionalized because many owners work full-time on the farm and the main economic benefit of most of them is the sale of lambs for meat. Thus, the flocks in the studied area have good enough basic conditions to be considered as a good starting point for implementing improvement initiatives, such as a PGI for the product.

However, the production system is based on traditional structures with a strong family character, the farmers having lack of education and training, and there is a weak cooperative association tradition. All this makes it difficult to manage farms from a business point of view and therefore affects the chances of progress. Additionally, farmer's average age is 50 years old and the continuity of farming activities is not assured in most of cases, what constitutes a serious risk for the evolution of this sector.

The above aspects show that it is necessary to get better socioeconomic conditions of farms in the studied area. The PGI "Cordero de Segura y la Sagra" could be useful to improve this aspects and get it. So that we suggest that the PGI must be promoted among farmers, specially among young people.

References

- Alonso E., González M.C. and Redondo P.A., 2001.** Análisis del manejo de la oveja de raza Castellana. In: *Archivos de Zootecnia*, 50, pp. 375-378.
- Aparicio F., 1991.** Tratamiento informático de encuestas. Ed. RA-MA, pp. 314.
- Avellanet R., 2006.** Conservación de recursos genéticos ovinos en la raza Xisqueta: Caracterización estructural, racial y gestión de la diversidad en programas in situ. Tesis Doctoral Universidad Autónoma de Barcelona (UAB). 282 pp.
- Castel J.M., Mena Y., Delgado-Pertíñez M., Camúñez J., Basulto J., Caravaca F., Guzmán-Guerrero J.L. and Alcalde M.J. 2003.** Characterization of semi-extensive goat production systems in southern Spain. In: *Small Ruminant Research*, 47, p. 133-143.
- Daza A., 2002.** Mejora de la productividad y planificación de explotaciones ovinas. Editorial Agrícola Española, pp. 202.
- De Rancourt M., Foïs N., Lavín M.P., Tchakérian E. and Vallerand F., 2006.** Mediterranean sheep and goats production: An uncertain future. In: *Small Ruminant Research*, 62, pp. 167-179.
- Dubeuf J.P., Ruiz Morales F.A., Castel Genis J.M., 2010.** Initiatives and projects to promote the Mediterranean local cheeses and their relations to the development of livestock systems and activities. In: *Small Ruminant Research*, 93, pp. 67-75.
- Gallego R., 2002.** Análisis de estructuras y sistemas de producción en el sector del ganado ovino manchego. Libro Blanco de la Agricultura y Desarrollo Rural. Jornada Autonómica de la Comunidad de Castilla-La Mancha, Madrid, pp. 27.
- García J., Rouco A. and Correal E., 2005.** Análisis económico de las explotaciones de ganado ovino y caprino en la Región de Murcia. In: *Anales de Veterinaria*, 21, pp. 109-120.
- Instituto Nacional de Estadística (INE) 2009.** Encuesta sobre la Estructura de las Explotaciones Agrícolas 2007. CD-Rom INEbase. Febrero 09. Instituto Nacional de Estadística.
- Martínez M.P. and Jiménez A.I., 2006.** La potenciación del origen en las estrategias de marketing de productos agroalimentarios. In: *Boletín Económico del ICE* No. 2880, 5-18 June 2006, pp. 13-29.
- Milán M.J., 1997.** Las explotaciones ovinas de raza Ripollesa en Cataluña. Caracterización y establecimiento de tipologías. Tesis doctoral. Universidad Politécnica de Valencia, pp. 290.
- Navarro M.J., 2005.** Caracterización socio-económica de los sistemas de producción de caprino en la Comunidad Autónoma de Murcia. Tesis doctoral Universidad Miguel Hernández, pp. 195.
- Poto A., Lobera J.B. and Peinado B., 2000.** Razas autóctonas de Murcia. Estimación del censo y aptitudes. In: *Archivos de Zootecnia*, 49, pp. 107-114.

- Ruiz F.A., Castel J.M., Mena Y., Camúñez J. and González-Redondo P., 2008.** Application of the technico-economic analysis for characterizing, making diagnoses and improving pastoral dairy goat systems in Andalusia (Spain). In: *Small Ruminant Research*, 77, pp. 208-220.
- Salcedo A. and García R., 2005.** Sheep production systems in the north of Granada province. Case studies. In: *Options Méditerranéennes*, Série 70, pp. 101-109.
- Sierra I., 2003.** Evolución y cambio en el sector ovino-caprino en España durante la última década. Ed. Ministerio de Agricultura, Pesca y Alimentación, Madrid, pp. 165.
- Vacas C., 2003.** Evolución del sector caprino en la Región de Murcia y su caracterización productiva a final del milenio. Tesis Doctoral Universidad de Murcia (UM), pp. 288.