Typology of sheep farming systems in different zones from Galicia

Iglesias A., Otero V., Romero J.M., Cabana A., Cantalapiedra J.

in

Typology of sheep farming systems in different zones from Galicia

A. Iglesias*, V. Otero **, J.M. Romero**, A. Cabana** and J. Cantalapiedra*

**Dpto. Anatomía y Producción Animal, Facultad de Veterinaria, 27002 Lugo
Universidad de Santiago de Compostela (Spain)
**Asociación de Criadores de Ovino y Caprino de Galicia (OVICA) (Spain)*

Abstract. The main objective of this study was to describe diversity in sheep farming practices in Galicia (Northwest Spain), through the analysis of the data registered of 25 farms during the years 2001 to 2005, in order to plan further development efforts, to enhance sheep productivity. The evolution of the gross margin per sheep is positive in the last years although the profitability of livestock is determined by community assistance. With regard to productive yields, a tendency to increase both fertility and numerical productivity is detected; furthermore, the expenses in feed concentrated for the lambs are increasingly high. Four groups of sheep farm were then distinguished based upon multivariate statistical analysis (principal components). The most influential variables in the classification were the economic results, reproductive parameters and surface of grass. The diversity of these systems of production must be taken into account for purposes of sheep development, in order to guarantee its sustainability.

Keywords. Sheep – Livestock farming systems – Principal components analysis – Northwest Spain.

Typologie des systèmes de production ovine dans différentes zones de Galice

Résumé. L'objectif principal de cette étude était de décrire la diversité des pratiques d'élevage ovin en Galice (nord-ouest de l'Espagne), pour organiser les actions de développement de cet élevage. Les données sont issues de 25 fermes et concernent les années 2001 à 2005. L'évolution de la marge brute par brebis est positive, bien que le revenu soit déterminé par les aides de l'Union Européenne. À l'égard des productions, une tendance à l'augmentation de la fertilité et de la productivité numérique est signalée. Les frais des concentrés pour les agneaux sont de plus en plus élevés. Quatre groupes d'exploitations ovines ont été différenciés à travers une analyse multivariée (analyse en composantes principales). Les variables les plus influentes dans la classification étaient les résultats économiques, les paramètres reproductifs et la surface en herbe. La diversité de ces systèmes de production doit être prise en compte dans le développement de cet élevage, afin de garantir sa durabilité.

Mots-clés. Ovin – Systèmes d'élevage – Analyse en composantes principales – Nord-ouest de l'Espagne.

Introduction

Sheep in Galicia is fundamentally exploited in extensive systems basing on shepherding in small groups of animals in areas of agrarian smallholder or in communal flocks in big surfaces of pasture. The current planning together with the application of the new technologies in the animal production provokes that this sector is in continuous evolution. In this context a correct classification of the development becomes necessary and, when it has already analyzed, it allows adapting the most specific technological development for each of them.

Material and methods

This work has been carried out in the Galician (Northwest Spain). A representative sample of 25 sheep farms of different areas was chosen from which data of years 2001 to the 2005, were used with the approval of the breeder sheep association of Galicia (OVICA), which has been doing an issue of rural development initiatives working in the revitalization of the ovine meat. Of

Options Méditerranéennes, A no. 91, 2009 – Changes in sheep and goat farming systems at the beginning of the 21st century

87

the total items, only 15 were used; the selection was made taking into account previous works (Flores 1992; Sánchez *et al.*, 2000) and removing variables from which there wasn't information in all cases, and those not supplying relevant zootechnical information.

The observations were divided into three main parts. The first one covered sheep farms structural parameters (herd, agricultural surface), while the second dealt with sheep reproduction and feeding. The third part investigated into economic results of meat herds, after the analysis of global animal sales and total inputs. The field data were introduced into an Excel matrix after checking for missing and abnormal data. A multivariate analysis (principal components) was made to elaborate a final distribution of farms into homogenous groups. To achieve this, both were used the software package JMP-SAS Ver. 5.1.

Results an discussion

Average parameters describing the sheep farms sampled are summarised in Table 1. All together, there were important variations takes place in economic results (variable gross margin farm with direct support payments). The evolution of the gross margin per sheep is also positive in the last years, although the communitarian aids in the maintenance and sustainability of these systems are determinates. The analysis of sheep feeding showed that forages represent the main feed ingested by the animals, but a tendency of the increase of the feeding costs is observed, based on the greater use of concentrated consumed by the lambs and on the increase of their price. Reproduction performances, as there was an important lack of information on reproduction data in farms, detecting in general a favourable evolution mainly in parameters like the fecundity.

Table1. **Sheep farm characteristics in different zones from Galicia (N= 25 farms) (average±standard deviation)**

Parameters	2001	2002	2003	2004	2005
Sheep number/farm	283±80.0	274±92.2	285±99.1	291±98.8	306±93.1
Hectares of pasture/farm	25.0±19.3	22.9±18.9	22.9±18.9	22.9±18.9	18.0±14.3
Hectares low mountain	28.3±97.8	28.4±97.8	28.3±97.8	28.3±97.8	29.9±99.7
Number lambs/lambing	1.50±0.33	1.43±0.31	1.49±0.33	1.67±0.57	1.53±0.30
% Fecundity	127±36.4	125±27.8	131±42.2	139±29.0	137±36.6
% Replacement sheep	15.8±8.42	12.1±7.65	11.8±5.72	11.9±5.05	13.0±4.07
Weaned lambs	1.2±0.29	1.1±0,26	1.2±0.40	1.3±0.25	1.3±0.36
Concentrates-feed/ewe (kg)	25.0±36.2	12.7±16.7	15.2±15.5	25.4±24.7	21.8±19.9
Concentrates feed lamb/ewe (kg)	7.24±7.59	9.35±19.4	10,28±10.8	9.55±11.6	12.2±10.2
Feed cost/ewe (€)	9.73±9.84	9.24±8.04	12.5±9.49	13.1±12.9	13.9±9.08
Feed cost/lamb (€)	19.7±19.0	9.24±8.04	11.9±9.17	11.5±8.39	11.6±6.22
Number of sold lambs/farm	307±175.2	277±176.1	307±136.5	332±146.1	318±198.8
Income in sale of lambs/ewe	59.5±22.2	54.9±17.5	56.9±14.6	61.1±19.2	64.1±29.3
Gross margin farm/ ewe (€)	50.8±23.7	46.2±21.1	47.3±26.1	48.9±23.1	52.8±20.0
Gross margin farm with community assistance/ ewe (€)	57.7±16.5	78.0±15.4	77.5±24.0	79.9±35.2	82.3±25.9

Four groups were finally selected using a principal components analysis (Fig. 1). Group 1 constituted by 16 farms can be considered as a semi extensive system in which all of animals

are fed with pasture of quality supplemented most of them with cereals. The lambs are fed with the milk of the mother. Another common characteristic in these farms is presenting the greater expenses in concentrates. The Group 2 (5 farms), is representative of a communal form of land tenure typical of Galicia and particular in Europe (*Montes Veciñais en Man Común*). The most obvious characteristic in these farms is that they are conceived like a complementary system to other agricultural and sheep activities. This forestry system is essential for the conservation of the forest and Galician mounts and its sustainability. Group 3 (2 farms), has characteristics very similar to the previous one with the particularity to be located to great altitude (1500 m). The group 4 this represented by two farms that have few hectares of grass and a high sheep use, using an abundant additional feeding.
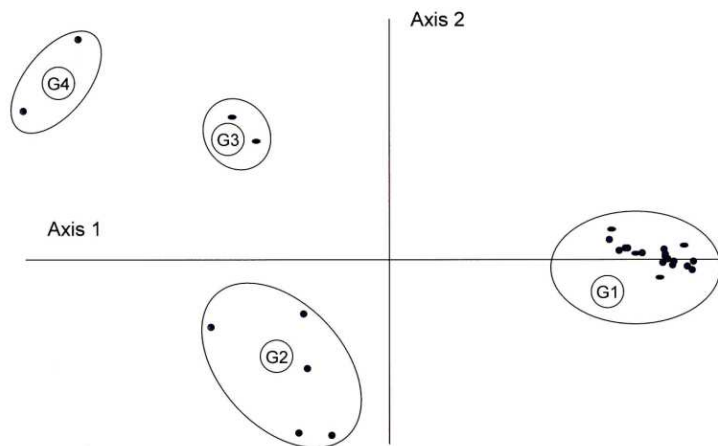

Fig. 1. Spatial localization of the farms according to the two principal components obtained from the multivariate analysis.

In general, an improvement of the profitability in all the groups of classification is detected both in the gross margin without community bonus and in the net margin. This situation is more evident in the group 1, where a progression in the structural and reproductive parameters is observed, with annual increases of the number of animals, due to the controls on the sheep load and the quality of the surface of shepherding. The limit of the profitability of these developments is determined principally by the consumption of cereals used as nourishing complement of sheep and lambs.

The groups 2 and 3 complement other agricultural and sheep activities (1) basing on the utilization of the silvopastoralism and in order to obtain ecological products of bigger added value. This type of developments might be to a point comparable to some systems of mountain of the north of Portugal (Graça and Carvalho, 2000; Araújo *et al.*, 2004).

The developments of the group 4 have a lot of aspects in common with those of the type 1 both in infrastructures and in the managing of the animals, but they are influenced by the excessive sheep load that reduces the economic margins.

Diversity in farm sheep systems should be taken into account for development purposes. Specific measures need to be applied to each one of the livestock systems identified, as much to harness those operations with greater economic viability like assuring the sustainability the production systems in the groups in which this activity, although secondary, allows the advantage of the natural resources of the zone.

References

Araújo M., Pires J.M., Iglesias A., Cantalapiedra J. and Araújo J.P., 2004. The role of small ruminants in the Fafe mountains range. *Silvopastoralism and Sustainable Management. Book of Abstracts*. Universidad de Santiago de Compostela. Spain. pp 161.

Flores, G. 1992. Posibilidades e perspectivas do ovino e caprino en Galicia. In: *Análise empresarial: revista trimestral de información económica,* 15, p. 69-76.

Graça L.L., Carvalho A., 2000. Investigação participativa e desenvolvimento rural. In: Graça L.L., Santos H. (eds). *Cadernos da Montanha, Peda – 1 DRAEDM*, Braga, Portugal, p. 8-17.

Sánchez L., Fernández B., López M., Sánchez B., 2000. Caracterización racial y orientaciones productivas de la raza ovina gallega. In: *Arch. Zootec.* 49, p. 167-174.