

## On-farm information: a valuable tool for the sustainable management of mountain pastures in protected natural areas

N. Mandaluniz<sup>1</sup>, A. Bernués<sup>2</sup>, A. Igarzabal<sup>1</sup>, I.J.L. Riedel<sup>2</sup>, R. Ruiz<sup>1</sup>, A. Sanz<sup>2</sup>, I. Casasús<sup>2</sup> and L.M. Oregui<sup>1</sup>

<sup>1</sup>NEIKER, Granja Modelo de Arkaute, PB 46, E-01080, Vitoria-Gasteiz, Spain, Email: nmandaluniz@neiker.net,

<sup>2</sup>CITA, Gobierno de Aragón, PB 727, E-50080, Zaragoza, Spain

**Keywords:** mountain pastures, commercial farms, management, land use

**Introduction** Mountain pastures have traditionally been maintained by livestock. The analysis of data concerning farms' characteristics, productive-reproductive management and land use of commercial farms can constitute a real approach to study these systems and the changes that are occurring. This information is necessary to develop new utilisation guidelines, making compatible livestock production and conservation of natural resources. This paper describes a methodological framework to study the issues described above through some examples taken out from a wider research project (Mandaluniz *et al.*, 2003).

**Materials and methods** The study was carried out in 3 Protected Natural Parks located in the north of Spain with different agro-climatic conditions and livestock utilisation regimes (more details in Mandaluniz *et al.*, 2003). The methodology used implied a multidisciplinary approach; this paper is focused in the characterisation of farming systems and grazing management by means of information collected from commercial farms. Farms using pastures within these Natural Areas were selected to carry out the study. A structured questionnaire was designed to determine the main characteristics of farming systems and collect farmers objectives and concerns. Breeding and grazing calendars were distributed to farmers in order to describe the importance of the grazing period in the different production systems, and livestock performance throughout the grazing season was analysed.

**Results and discussion** One of the main characteristics of the farming systems was the large heterogeneity (Mandaluniz *et al.*, 2003). In general, farms are quite extensive in terms of communal pastures utilisation, which cover 40-54% of annual energetic requirements in beef cattle (Casasús *et al.*, 2002; Mandaluniz *et al.*, 2004). Some factors that can reduce rangelands utilisation were pointed out i.e. lack of water, communications, degradation of vegetation, reproductive intensification, etc. The farmers suggested that some of these aspects should be improved by the Administration in order to optimise pasture use. Parturition time occurred mainly indoors and late-pregnant and lactating animals are fed indoors during the winter. Finally, there were differences in animal performance depending on year, grazing area and productive state of animals (Casasús *et al.*, 2002; Mandaluniz *et al.*, 2004).

**Conclusions** Data collected from commercial farms allowed the determination of characteristics and constraints of these systems and the needs and concerns of the farmers. However, it was not always easy to collect reliable information or to find technical solutions to some problems using this methodology. In this sense, it is interesting to make a technical monitoring by case study research to study constraints and concerns identified in these commercial farms. An in-depth dynamic analysis of productive-reproductive results and grazing management will allow evaluation of different productive alternatives (including grazing management, feeding and reproduction) and discuss them with farmers according to their needs.

**Acknowledgement** This work has been financed by project INIA RTA 02-086-C2-2. Authors would like to acknowledge collaborator farmers, associations and the Direction of the respective Parks.

### References

- Casasús, I., A. Sanz, D. Villalba, R. Ferrer & R. Revilla (2002). Factors affecting animal performance during the grazing season in a mountain cattle production system. *Journal of Animal Science*, 80, 1638-1651.
- Mandaluniz N., I. Casasús, A. Bernués, A. Aguirrezabal, J.L. Riedel, A. Sanz & L.M. Oregui (2003). Tools for sustainable management of mountain pastures: application to three Protected Natural Areas in northern Spain. First Joint Seminar of the Sub-Networks FAO-CIHEAM on Sheep and Goat Nutrition and on Mountain and Mediterranean Pastures. Granada.
- Mandaluniz, N., A. Legarra & L.M. Oregui (2004). Mountain pasture utilisation by free-ranging beef-cattle in the Natural Park of Gorbeia (Basque Country). *Proceedings of the Fifty-fifth European Association of Animal Production*, Bled, Slovenia.