

## Research in Angora goats under the LEADER II in Portugal

L.Pinto de Andrade & J. Várzea Rodrigues

Escola Superior Agrária de Castelo Branco  
Quinta da Sr<sup>a</sup> de Mércules, 6000 Castelo Branco, Portugal

### SUMMARY

*A new LEADER II project will establish Angora goat enterprises on existing farming units in a marginal area of Portugal that do not at present have any goats. As mohair production in Portugal becomes established the fibre will contribute significantly to the rural economy of the region. The present project will be innovative in Portugal, in terms of its organisation and objectives, and aims to offset the current problems facing these areas, such as the abandonment of existing farming units, which is leading to desertification in certain rural areas in Portugal.*

*The introduction of Angora goats to the Cova da Beira region will contribute to the diversification of livestock at the regional and national level. This will increase the national production of mohair fibre, in which both Portugal and the EU as a whole are deficient.*

*A group of ten breeders, each starting with twenty females and two males will be formed. The breeders will be linked in a co-operative, which will buy and transform all the mohair fibre produced. To achieve this, the co-operative will subcontract work to textile factories in the region. As the breeders are associated together, they are able to retain complete control of the purchase and transformation of raw material, as well as the commercialisation of the various products, thus benefiting from the added value of the processing stages. This will make a significant contribution to the economic profitability and technical sustainability of their agricultural activities.*

*The project is firmly based on the concept of integration. The encouragement of co-operation, with the use of common facilities (e.g. shearing, technical assistance, etc.) and the synergy of the cooperative will create the necessary economic balance of the farming units and support the systematic and continuous development of quality and efficiency to suit the requirements of the market.*

## INTRODUCTION

One of the central elements of the EU's agricultural policy is the encouragement of diversification. This applies particularly to the Less Favoured Areas (LFAs), in which are included large areas of Portugal, and to the production of non-food commodities. The policy also seeks to encourage the production of commodities for which there are strong EU market demands and those which will provide employment in rural areas.

This paper describes a new LEADER II project in Portugal which aims to introduce Angora goats on farming units that are not at present engaged in goat production. The units will contribute to the maintenance of the regional agricultural economy and help to offset, as far as possible, the abandonment of land which is leading to desertification. Since the EU is deficient in fine fibres, the increase in mohair production in Portugal, which has low costs of production and is near to the biggest importer countries for mohair products (Italy, France and UK) will put Portugal in a good position to exploit this quality market.

The mohair produced in Cova de Beira will be processed under contract. Textile factories in the region will collaborate in the project, for example by providing technical support for grading. Finished garments will be retailed under structures controlled by breeders associations, and thus allow producers to share in the added value of the processing stages. This will make a significant contribution to the economic profitability and technical sustainability of their agricultural activities.

The change from traditional animal enterprises (sheep and goat production) to animal fibre production will not require the development of new systems of management, since most fine fibre production is well suited to extensive systems based on the poorer land resources prevailing in the region. However, in order to generate knowledge and experience of keeping fine fibre animals (including Angora goats) in extensive animal production systems, a programme of research will be undertaken by the School of Agriculture of Castelo Branco.

Performance characteristics will be recorded in order to establish a breeding strategy based on evaluation of the genetic merit of does and bucks for fibre quality and quantity.

The final objective of the project is to test the economic viability of the introduction of Angora goats in Portugal and its potential to supply an alternative or complementary income to rural population using traditional extensive animal production systems.

## GENERAL CHARACTERIZATION OF THE REGION

The central Cordillera impedes the oceanic influence on the climate of the Castelo Branco area, which is thus extremely arid. The bioclimatic map produced by FAO characterizes its climate as “Termomediterrânico” or “Rainy sub-moist”, with big deficiency of water in the summer, “Mesotérmico”, with restrained summer concentration of thermic efficiency, according to the Thornthwaite-Mather Classification (Horta and Gomes, 1984).

The soils, mainly from schists, granites and sandstones, are thin and acid, with low organic matter content and have low levels of plant nutrients (mainly nitrogen and phosphorus)(Alves, 1989). With these characteristics, the soils are not suitable for cropping.

The scarcity of water in summer leads to farming systems which involve activities not very demanding or that are well adapted to local climatic and edaphic conditions. A wide range of microclimates, soils and productive structures, produce a considerable variation in grassland types.

Pastures, mainly natural and formed of annual species occupy a significant area and generally return a low yield of poor quality herbage. Grass production varies greatly during the year and between years, suffering in this way the effects of the irregular distribution and variation of rainfall.

The presence of shrubs is characteristic of large areas of the Beira Interior and is the consequence of the abandonment of farming areas. Shrubs grow reasonably well in acid soils and show a good adaptation to the prevailing environmental conditions, resisting well the grazing pressure of local breeds of goats.

In Portugal there are around 840, 000 goats (Anuário Pecuário, 1994). In Beira Interior region we found 21% of the total of reproductive females and 25 % of goats enterprises (related to the global national numbers). Mostly, goats are managed in extensive grazing systems, which is characterized by a very low number of animals per hectare, often associated with sheep and sometimes with cattle.

The fibre goat may find a place in areas of Beira Baixa, and can be integrated in regimes that involve forestry-pasture-goats (range management), with a wide variety of plant material as feedstuffs. Increased goat grazing can also reduce the risk of fire in many rural areas, where farming activities have decreased and the biomass of shrubs and weeds is increasing.

Angora goats were chosen because the breed is adaptable to a moderately wide range of climatic conditions and is not limited by specific temperature, altitude or geographical requirements.

#### *A- Reproductive parameters and technology*

In order to characterize the reproductive performances of the angora goats under traditional extensive systems in Portugal, the following parameters will be measured:

- Fertility (Conception rate);
- Prolificacy (Litter size);
- Fecundity (Kidding percentage);
- Mortality;
- Marking.

Fertility might not be of central importance for mohair production, however, this trait may have an increasing economic significance in periods of low mohair price, because meat production from yearlings after shearing becomes economically more important. (Horst & Zarate, 1993). During the implementation of the project, fertility is an important parameter in order to increase animal numbers.

Research in reproduction has three major elements:

- Ovarian activity will be evaluated by determining plasma progesterone concentrations in blood samples collected three times weekly in specific seasons.
- The need and opportunity for hormonal manipulation of ovarian activity (induction treatment and oestrous synchronization) will be identified.
- Pregnancy diagnosis will be made using real-time ultrasonography and/or by the determinations of plasma progesterone concentrations.

A further area of research concerns the development of the technology required for efficient artificial insemination (including studies on endoscopic

artificial insemination, using fresh semen, in females in which ovulation has been induced).

### *B- Productive parameters*

Production data will be obtained from both sexes (in adult and young animals).

#### *Liveweight:*

- The adult animals will be weighed monthly, after their arrival to Portugal and at subsequent shearings as an indirect indication of their adaptation to the new environment.
- The kids born will be weighed fortnightly.

#### *Body condition:*

- Adult animals will be scored throughout the year and it will be particularly useful as an aid to herd management at particular times, (at mating and during the period of pre-kidding feeding) as an indicator of the nutritional level of the animals.

#### *Fibre quality:*

- The fleece of the Angora is composed of long silky-white fibres and contains a small proportion of medullated fibres and kemp (Russel, 1991). The presence of medullated (including kemp) fibres in mohair reduces the value of the fleece. The major factors influencing the proportion of medullated fibres are genetics and age (Lupton *et al*, 1991). Because many of the secondary follicles that produces mohair fibre are not mature at birth, the fleeces of young Angora goats contain a higher proportion of kemp, and mohair production should be selected against in breeding.
- Fleece samples taken from each animal at their shearing will be send to the laboratory, CITEVE (Portuguese Textile and Clothing Industries Technological Center), where various analyses will be carried out to determine the fibre diameter, the yield and the kemp.
- Fibre quality will be evaluated and correlated with changes in body condition and liveweight throughout the year (as a result of the traditional extensive feeding conditions).
- After the identification of quality deficiencies of fiber and the critical season of the year in feed availability, the needs of feed supplementation will be assessed, in order to restore or improve the fibre quality (Russel. 1995).

At the producer level (initially ten producers, with twenty females and two males each), a performance recording system will be implemented which includes the following registration and measurements:

- 1- Identification: all animals receive an ear-tag identification (with a national and individual registration number);
- 2- Reproduction: date of mating, date of kidding, number of dam, litter size at birth, date of weaning, marking and mortality.
- 3- Fibre quantity: date of shearing (at about 6-month interval) and yield.

All these performance records will be managed in a national database and the results will be an indispensable tool at several levels:

- For each breed owner in order to know his animal's performance (e.g. fibre quality and quantity) and set up his own breeding programme;
- In order to create a national database with livestock census, and performance levels;
- In order to set up an Angora goat genetic improvement programme.

## CONCLUSIONS

With the establishment of these Angora pilot herds in Portugal under LEADER II, it will be possible to assess the value to farmers of the introduction of this new goat breed and supply concrete information on production parameters and appropriate management techniques not only at a regional level but also nationally.

There has been a good acceptance from the farmers to the planned introduction of fine fibre production animals. The implementation and the success of the present project will stimulate interest for this type of production, both at regional and national levels.

We believe that exists a real opportunity to establish a framework for genetic parameters recording at a European level for Angora goats. However, in order to develop this idea an agreement and adoption of standard genetic parameters and recording techniques should be implemented through the different countries in Europe with appropriate adjustment procedures for known environmental factors.

## REFERENCES

- Alves, J.C. (1989). *Fertilidade de Alguns Solos e Problemas dele Decorrentes*. I.N.I.A., Lisboa.
- Anuário Pecuário (1994). In: Instituto dos Mercados Agrícolas e da Indústria Agro-Alimentar. Ministério da Agricultura. Lisboa.
- Horst, P. & Zarate, A.V. (1994). *Comparison of the Genetic Potential of Turkish and American Angora Goats under Turkish Conditions by reciprocal Backcrossing*. In: Genetic Improvement of Fine Fibre producing Animals. (Eds. J.P. Laker & A.J.F. Russel). European Fine Fibre Network, Occasional Publication, N° 1, MLURI, Scotland, pp. 73-87.
- Horta, M.C.S.M. & Gomes, M.F.N. (1984). *Caracterização Climática de Castelo Branco*. Escola Superior Agrária de Castelo Branco.
- Lupton, C.J., Pfeiffer, F.A. & Blakeman, N.E. (1991). *Medullation in Mohair*. Small Ruminant Research **5**: 357.
- Russel, A.J.F. (1991). *Goats for Fibre Production*. In: Sheep and Goat Practice. (Ed. E. Bowden). Baillière Tindall. London
- Russel, A.J.F. (1993). *Development of Management Systems*. In: *Alternative Animals for Fibre production* (Ed. A.J.F. Russel). Commission of the European Communities, Brussels, pp. 83-89.
- Russel, A.J.F. (1995). Current knowledge on the Effects of nutrition on Fibre production. In: *The Nutrition and Grazing Ecology of Speciality Fibre Producing Animals*. , N°3., MLURI, Scotland, pp 3-21.

