

Future research in Angora goats under the LEADER II in Portugal

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Introduction

One of the EU's agricultural policy is the encouragement of diversification. This applies particularly to the Less Favoured Areas (LFAs) where large areas of Portugal are included and to the production of non-food commodities which at present are in oversupply in the EU. The policy also seeks to encourage the production of commodities for which there are strong market demands and which will provide employment in rural areas (Russel, 1993).

With the present project, Angora goats will be introduced in farming units, that do not have any other goat breeds, so that it may contribute to the maintenance of the agricultural enterprises of the region, avoiding in this way, as far as possible, the abandonment of the existing farming units which therefore, lead to the desertification of the rural areas. Since the EU is deficient in fine fibres, the increase in Mohair production in Portugal, with low costs of production and near to the biggest importer countries in the world (Italy, France and UK) can be an advantage to export to these countries.

Angora goat breeding in Portugal will be concentrated in the way of marketing adopted by breeders as all the production is graded, proceeding with the help of the textile factories in the region (Cova da Beira region), and sold directly to consumers as a final product under structures controlled by breeders associations, 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 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 fine fibre animals (Angora goats) that are the most appropriate to 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 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 occurrence of the oceanic influence in the Castelo Branco area, which is a very arid region. The Bioclimatic map of FAO characterizes its clima as "Termomediterrânico" or "Rainy sub-moist", with big defficiency of water in the summer, "Mesotérmico", with restraint summer concentration of thermic efficiency, according with the Thornthwaite-Mather Classification (Horta and Gomes, 1984)

The soils, mainly from schists, granites and sandstones, are thin, acids, with low content of organic matter and have a low plant nutrients level (mainly nitrogen and phosphorus)(Alves, 1989). With this characteristics the soils are not suitable for agricultural purposes.

The soils are mainly poor. The scarcity of water in Summer leads to farming systems which involves activities not very demanding or well adapted to climatic and soils conditions. A wide range of climates, soils and produtives structures, produce a considerable variation in types of grass (shrubs and trees).

Pastures, mainly natural and formed by anual species in dry farming conditions, took important areas and generally, give a low yield of poor quality herbage. Grass production varies greatly during the year

and between years, suffering in this way the effects of distribution and variation of rain which leads of very short periods of grass growth.

The presence of shrubs is characteristic of large areas of Beira Interior and is the result of the abandonment of farming areas. It grows reasonably well in acid soils and shows a very good adaptation to the prevailing environmental conditions, resisting to the grazing pressure done by local breeds of goats.

In Portugal there are around 840 thousand 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, 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. It 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, we should be aware that 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 the reproductive area involves:

- Ovarian activity will be evaluated by determining plasma progesterone concentrations in blood samples collected three times weekly in specific seasons.
- The need and opportunity of 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.

The other 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 sex (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:

- Will be done in adult animals 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 fibres (both kemp and med) in mohair reduces the value of the fleece and 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 defficiencies 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 breeders level (initially ten, with twenty females and two males each one), can be implemented a performance recording system which includes the following registration and measurements:

- 1- Identification: all animals receives an ear-tag identification (with a national and individual registration number;
- 2- Reproduction: date of mating, date of kiding, 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 animals performances (such as: 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.

Final considerations

With the establishment of these Angora pilot herds in Portugal under the 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 regional level but also at national level.

It exists a good acceptance from the farmers to the introduction of fine fibre production animals. The implementation and the success of the present project could lead to an increase in interest for this type of animals, both at regional and national level.

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.

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