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Implementation of a pilot project for guidance on goat diets in Murcia (Spain)

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SUMMARY - A total of 22 surveys reveals that the diets of goat flocks in the Murcia Region (Spain) are imbalance and vary greatly from one farm to another. In order to calculate the optimum diets (balanced and least expensive), the CIDA (Agro-Food Research and Development Centre) in La Alberca, Murcia, is implementing a Guidance Project, which consists in the periodic adjustment of rations. In all farms, animals graze on a dairy bases, 72% of farmers grow fodder crops for the goats, in rainfed systems (cereals) and under irrigation (sorghum, rye-grass), and the most commonly purchased products are cereals, feeds, sunflower, barley straw and lucerne hay.

Key words: Dairy goat, rationing, food complement, Murcia region, extension action.

RESUME - "Mise en place d'un projet pilote d'orientation pour un régime alimentaire pour chèvres à Murcie (Espagne)". Un total de 22 enquêtes ont mis en évidence le fait que l'alimentation des troupeaux caprins dans la Région de Murcie (Espagne) s'avère être déséquilibrée et diffère très peu d'un élevage à l'autre. Afin de calculer le régime alimentaire idéal (équilibré et peu coûteux), le CIDA de La Alberca (Murcia) a mis en route un Plan d'Orientation qui consiste en un ajustement périodique des rations alimentaires. Tous les éleveurs pratiquent le pâturage quotidien, 72% d'entre eux exploitent des cultures destinées aux chèvres, aussi bien en champs de culture sèche (céréales) qu'en terrain d'irrigation (Sorgho, Ray-Grass) et les produits qu'ils acquièrent et qu'ils utilisent le plus sont les céréales, les aliments composés, le tournesol, la paille d'orge et le foin de luzerne.

Mots-clés : Chèvre laitière, rationnement, complémentation alimentaire, Région de Murcie, action de développement.

Introduction

The technical progress of goat farms has not been as positive as other types of animal farm (poultry or pigs), which is why we still find a major lack of knowledge on how to feed the animals correctly.

The main problems encountered in the practical rationing of the Murcian goat can be summarized in the following points: (i) the availability of natural resources is greatly varied; (ii) the high production rates of the Murciano-Granadina breed imply major nutritional needs; and (iii) farmers' lack of knowledge with regard to rationing.

The aim of this guidance project is: (i) to contribute to the development of goat diets; and (ii) to provide a back-up and education programme for farmers.

Work done

Previous work

In order to design a work methodology and test the applicability of calculated theoretical rations, we established a preliminary test with 5 farms in the years 1995 and 1996, taking in the production cycle which began in September 1995 (kidding period) and ended with the following kidding period in September 1996.

This preliminary test consisted in conducting a survey on 10 farmers (half of whom were selected to monitor the actual diets) in order to learn the feeding treatment followed for each farm (Appendix: summary of the survey model).

Once the products, pasturage times and most common diets had been noted, the tentative imbalances were able to be detected.

Subsequently, just at the time of kidding and after discussion with the farmer, the optimum (i.e., balanced and cheapest) diets were calculated periodically for the whole production cycle.

The adjustment of the calculated diets to reality was perfect, the financial saving in food was highly significant, and kidding-related problems were inexistent, with the farmers revealing that the general status of the herd had improved.

Future proposal

Owing to the success which on principle had been achieved with the preliminary test, numerous requests were received from new farmers wishing to join the Project. We selected a total of 20 farms that fulfilled the following requirements: (i) their herd presented a good health status, was treated against Brucellosis and Tuberculosis and was vaccinated against Paratuberculosis; (ii) they belonged to an Official Dairy Control Centre; (iii) they managed their animals correctly by grouping them into production lots; (iv) they had a store for food and a minimum of facilities for the management of lots; (v) they could be reached by telephone; and (vi) they supplied information on food purchase prices and feeding expenses.

In June and July 1997 a survey was conducted on 15 new farmers that had joined the Project.

Material and methods

The survey data give us information on the diet management of the herd and enable us to check the different rations the farmer was using at the time of the visit. Other works about the study of the goats alimentation using surveys as a correct method (Falagán, 1988; Sánchez, 1989; Univ. de Córdoba, 1989; González, 1990; Herrera, 1991; Rousselot, 1996).

The guidance work is started at the beginning of lactation, once the kidding period is over. The initiative of the Project consists of a periodical adjustment of rations according to four factors: (i) availability of grazing resources; (ii) food used in the complementary ration; (iii) solution of diet-related problems; and (iv) variations in the animals' nutritional needs. We have notice about other work that try to design a feed strategy for sheep and goat explotations in Spain (Rigalt, 1989).

The work include periodical visits of the alimentation technic at the goat explotation. There, the rations are calculated and gave to the farmer. Afterwards, the rations calculated are examined with other researcher collaboration again.

It is very important that the farmer be actively involved to create a rapid flow of data should any variation arise in the first three factors. If there are no variations in these parameters, the rations will be modified as often as dictated by the normal evolution of the animals' nutritional needs. The times chosen for readjusting the rations are as follows: (i) first-second and fifth month of lactation; (ii) dry-up; (iii) fourth month of gestation; and (iv) fifth month of gestation.

The nutritional needs at each of these times are determined according to: (i) mean weight of the lot (in kg); (ii) production (in kg) and fat content of the milk (g/l), from Official Dairy Control figures; (iii) month of lactation; (iv) growth of the suckling kids (g/d); (v) reproduction parameters of the herd (month of gestation or lactation, mean prolificity; (vi) physical condition of a significant sample of each lot of goats; (vii) the animal's expected variation in weight (\pm kg/month); (viii) type of pasturage (none, field, pasture-land, extreme conditions); and (ix) quality of available fodder (scored subjectively from 1 to 5).

In brief, we begin by calculating a balanced ration as close as possible to that as used by the farmer. When it is not possible to adjust a farm's rations, new food is incorporated, with the farmer requested to select the feed-stuff(s) to make good the deficiencies. Once the initial ration is established, an attempt is made to move towards the least expensive, although as few subsequent modifications are made as possible.

A portable computer is used to calculate the rations on the farms. Doubts arising with regard to the quality or nutritional value of the food are solved with the collaboration of the Regional Agriculture Laboratory. The evolution of the market prices of the most commonly used feed-stuffs was monitored.

Survey results

Type of pasturage and exploitation (10 surveys)

Practically all the farmers graze their animals daily, mainly on cereal stubble, vineyards, abandoned cultivation land, marginal areas and scrubland.

Times range from two to four hours in most cases, and the distances covered range from the five kilometres of the farmer that moved furthest away to the 100-200 metres of those that simply take the animals out for a little exercise.

Fodder crops (22 surveys)

Seventy-two percent of the farmers grow some sort of product for their goats. Forty percent of them resort to dry farming, especially cereals: oats 36%, barley 18% (in years of low rainfall the crops remain uncut and are consumed "al dente"). In some cases mixtures of cereals are sown (oats-barley), or a mixture of cereals with leguminous plants (oats-vetch), to have food available for late winter and the spring.

Fifty percent of the farmers also have irrigated land, on which fodder crops are directly available to the animals. The predominant crop is field sorghum, with 31%, followed by rye-grass and vetch, with 18% each. In no case is production of these fodder plants sufficient, due to three types of limitation: (i) lack of cultivation space; (ii) variations in the availability of water; and (iii) adverse weather conditions at certain times of the year.

Food most commonly used in the rations (22 surveys, in % of farms)

Energy foods:

- Barley: 79%
- Oats: 79%
- Maize: 66%
- Dehydrated beet pulp: 41%

Protein foods:

- Wholemeal sunflower oilcake: 70%
- Granulated dehydrated lucerne: 54%
- Field beans: 54%
- Lupin: 50%
- Soya oilcake: 37%

Mixed feeds:

- Kid fattening feed: 83%
- Kid starting feed: 79%
- Lactation goat feed: 54%

Fibre foods:

- Barley straw: 95%
- Lucerne hay: 70%

By-products:

- Almond husk: 58%
- Olive branch: 33%
- Citrus pulp: 29%

Mineral correctors:

- Mineral blocks: 89%
- Salt stones: 64%

Quantity of cereals in the complementary rations (3 farms)

The rations calculated and implemented in the farms in the previous period enable us, after follow-up, to confirm the amounts of various added products, with cereals being the most important.

The maximum quantity of cereals corresponded to the rations in the 2nd month of lactation, with some 1,000 g/animal/day, and the minimum quantity was 300-400 g in the dry-up rations. In the last two months of gestation a maximum of 550 g was used.

Final consideration

The present study is fundamental for the development of certain feeding regimes on goat farms in the Murcia Region that can serve as a reference for the rest of the sector.

The method used, which is based, on the one hand, on a software application adapted to the production systems and needs of goats in southern Spain and, on the other, on continuous monitoring of the effect of the calculated rations, enables us to correct and guarantee optimum rations on each farm at any time.

In a next future, we are designing a web page about goat alimentation. This page web birth with the aim to transfer our experience towards the professional associations (Syndicates), and the Agricultural Extension Services (Murcia administration).

Furthermore, we are trying to make farmers aware of the importance of correct rationing and of including other products and by-products to make rations cheaper but maintain production levels.

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Appendix

Summary of survey model

Background

1. Age of the farm
2. No. of goats and adult males
3. How have the numbers of your herd progressed in the last 5 years?

Reproduction management

4. Dates of the principal yearly kidding periods and proportion of animals from each:
5. What period are the males kept apart from the herd?
6. Criterion followed in the mating of breeding goats:
7. When do the breeding goats join the rest of the herd?

Diet

8. What made you interested in the goat diet project?
9. Do you grow anything for the goats to graze on?
10. Periods of pasturage (/year)
11. Lots that are put out to graze
12. Types of grazing: spring-summer, autumn-winter
13. Has you herd had any problem that you attribute to an inadequate diet?
14. Indicate the composition of the different lots and the dynamics among the animals.
15. Do you perform artificial lactation?
16. What diet are the kids given until weaning?
17. What diet are the replacement kids given after weaning and before joining the adult goats?
18. Type, origin and use of the products you use to supplement the diets.
19. Ration given to the different lots on the day of the survey.