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Data collection system in Latxa and Carranzana sheep breeding programme

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SUMMARY - The milk recording and selection programmes, developed in the Latxa and Carranzana breeds in the Basque Country and Navarre, in 1996 concerned 264 flocks with 85,692 ewes under milk recording, with 57 rams progeny tested and 11,728 Artificial Inseminations. Ewe and ram lambs selected for replacement are marked with a permanent non-electronic, plastic or metal, ear-tag and a tattoo. Data collection for reproductive performance and for milk recording is computerised in 57 per cent of the flocks, using programmed portable terminals. In the rest of the flocks, data collection is done by hand using forms printed on paper. A special computer programme has been developed in order to perform data collection for semen production and quality of rams of the Artificial Insemination Centre and to design the matings in order to reduce inbreeding and to optimize expected genetic gain.

Key words: Data collection, milk recording, selection, sheep, Latxa, Carranzana.

RESUME - *"Système de collecte de données dans le cadre du programme de sélection des ovins Latxa et Carranzana". Les programmes de contrôle laitier et de sélection développés pour les races Latxa et Carranzana dans le Pays Basque et Navarre ont été appliqués en 1996 à 264 troupeaux, avec 85 692 brebis sous contrôle laitier, 57 béliers testés sur descendance, et 11 728 inséminations artificielles. Les agnelles et agneaux sélectionnés pour le renouvellement sont marqués à l'aide d'une plaque d'identification à l'oreille, permanente et non électronique, en plastique ou métal, ainsi qu'un tatouage. L'enregistrement des données concernant les performances reproductives et le contrôle laitier est effectué sur ordinateur pour 57% des troupeaux, en utilisant des terminaux portables programmés. Dans les autres troupeaux, les données sont enregistrées par écrit sur papier. Un logiciel spécial a été mis au point pour saisir les données concernant la production de sperme et la qualité des béliers du Centre d'Insémination Artificielle, et pour programmer les accouplements afin de réduire la consanguinité et d'optimiser le progrès génétique.*

Mots-clés : *Collecte de données, contrôle laitier, sélection, ovins, Latxa, Carranzana.*

Introduction

A milk recording programme and a selection scheme have been developed in the Latxa and Carranzana breeds in the Basque Country and Navarre since the beginning of the eighties (Ugarte *et al.*, 1995). A total of 264 flocks with 85,692 ewes under quantitative milk recording (alternative a.m.-p.m. AT recording; Gabiña *et al.*, 1986), 57 rams progeny tested and 11,728 AI (Artificial Inseminations) were the most relevant figures in these programmes for 1996.

The calculations of the different criteria to measure the milk yields per ewe, the estimation of breeding values of ewes and rams following Animal Model methodologies, the design of matings in AI in order to reduce inbreeding and to optimize genetic gain and the technical indexes at the flock, region or breed level are obtained using different computing facilities.

In this paper, the different aspects of the data collection from the flocks or the AI centre are described, indicating the level of automation of each of the different operations involved and the prospects for an evolution in that sense.

Identification of the animals

All lambs born are identified with a plastic ear-tag. Ewe and ram lambs selected for replacement are marked with a permanent, plastic or metal, ear-tag and a tattoo.

Electronic identification would globally be useful and moreover when automatic data collection is generalized (see below). No accurate estimations have been made on the price threshold for electronic tags to be advantageous when compared with the ear-tags already used (from 0.40 to 0.70 US$ per adult animal), but this matter is being followed up closely.

Data collection at the flock level and transmission to the computer

Two different modalities of data collection at the flock level are currently used. Data collection by hand is made in 43 percent of the flocks (29 percent in the Basque Country). Data collection by hand for reproductive performance is made by farmers copying into a lambing book, for all ewes lambing, the lambing dates, litter size, lamb mortality and lamb identification numbers. This data is written by the recording officers in a form printed on paper, produced by the computer in which all information of the flock is stored, that contains the identification number of all the present ewes of the flock. Subsequently, these forms are taken to where the central computer is based and introduced on line.

Data collection by hand for milk recording is also helped by a form printed on paper. This form contains the identification number of all the present ewes of the flock with their lambing dates in the case that they have been previously registered. The recording officer fills out this form, both for reproductive data that is not registered in the form and for the milk yields for each ewe which he himself measures and after reading the ear-tag number. This last measurement is taken by taking the readings of the milk meters (fixed or portable) in the flocks with a milking machine or in a graduated jar when milking is done by hand. The recording officer has to carry these forms to where the central computer is based.

The computerized data collection at the flock level is carried out by portable terminals in the rest of the flocks. The portable terminals are INFO-DRACO with 1 Mb of RAM, dimensions of 19.8 cm x 11.8 cm x 41 cm without printer (25.4 x 11.8 x 4.1 with ticket printer), a weight of 0.7 kg and a price of 1,884 US$ per unit. The recording officer types in the same data described before for data collection by hand, both for reproductive performances and for milk recording, and also helped by computerised forms for data entry.

The transmissions of data between the portable terminals to the central computer and vice versa can be done through a modem or by direct connection with the HIDRA protocol.

Computerised data collection is advantageous because it avoids one step of data handling and also gives the possibility of producing lists with technical indexes that inform the farmer about the evolution of the production in the flock.

On the other hand, the adoption of more integrated data collection systems, such as those that are being designed and tested by our French colleagues is not obvious in our situation, where only 33 percent of the flocks have milking machines.

Data collection at the AI centre. Connection with the production data bases

A special computer programme has been developed by ARDIEKIN, the society responsible for the Latxa and Carranzana AI Centre and Selection Programme. This programme, written in FORTRAN, running on a PC, (minimum requirements 80486, 4 Mb of Ram, 500 Mb of Hard Disk) allows data collection for semen production and quality of rams of the AI Centre and designs the AI matings in order to reduce inbreeding, avoiding common ancestors for ewes and rams in two generations, and to optimize expected genetic gain, mating proven rams with the best ewes in each flock (the best 10 percent for estimated breeding value for milk yield). The output of the programme, the recommended mating for the ewes of a flock to be inseminated with the semen of the available rams on this particular day, is given on a paper print-out to the persons in charge of the AI. Once the AI has been performed, these officers return these print-outs to the AI Centre, indicating the incidences.

The connection between the PC of the AI Centre and the main computer where all production and genealogies records are stored is made via diskette.

Other comments on data collection and subsequent implications

We have mentioned that milk recording is only performed for milk yield and not for milk composition. In fact an experimental and simplified milk recording for milk composition was started in 1989 and continued for three years. Once the results were analysed (7,825 samples collected in 103 flocks) it was shown that sample collection was not made with the required accuracy as the estimated heritability for fat content of the milk was near zero while the estimated heritabilities in the same data for milk yield or protein content were 0.34 and 0.28 respectively. The interpretation of these results was that the collection of milk samples was not performed properly, probably due to the difficulty of producing a good homogenization of the fat in small volumes of milk (Gabiña *et al.*, 1993). As a consequence, if qualitative milk recording is restarted in the Latxa breed, special attention should be paid to the collection of milk samples; and should the quality of the fat content samples not be adequate, the selection for milk composition should focus on protein content.

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