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Considerations beyond breeding goals in breeding sheep in relation to the environment

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SUMMARY - The black Thibar and the UAE local black are two sheep breeds initially selected for specific purposes. The first breed was created in 1924 by crossing the French Merinos d'Arles and the Algerian Thin Tail in order to produce animals uniformally black resistant to a plant (*Hypericum perfoliatum*). White skin animals are allergic to the latter one. The second breed was traditionally preferred for its small size with a relatively good prolificacy and ewes are capable to breed all year round. Both breeds encountered inbreeding problems and were subject to unwise crossbreeding programs. The lack of adequate knowledge of animal breeding basis and the absence of national breed organizations were real handicaps for a correct management of these animal resources well adapted to their environment.

Key words: Animal breeding, organization, Black Thibar sheep breed, UAE local black sheep breed.

RESUME *- "Considérations au-delà des objectifs de sélection pour sélectionner les ovins en rapport avec l'environnement". La race ovine Noire de Thibar et la race ovine locale de couleur noire des Emirats Arabes Unis ont été sélectionnées pour des milieux bien déterminés. La première a été fixée par le père Novat en 1924 après une période de croisement entre la race ovine française Mérinos d'Arles et la race Queue Fine d'Algérie. L'objectif de sélection était l'obtention d'animaux de couleur noire qui résistent à une mauvaise herbe (*Hypericum perfoliatum*) poussant en association avec les céréales dans la région de Thibar. La deuxième race est très recherchée aux Emirats pour ses agneaux de petite taille. Les deux races ont connu des problèmes importants d'ordre génétique (la consanguinité et le croisement aléatoire). Le manque de connaissance des principes fondamentaux de la génétique et l'absence d'une association d'éleveurs sont vus comme les principales contraintes d'une gestion appropriée de ces ressources animales bien adaptées à leur environnement.*

Mots-clés : *Race ovine Noire de Thibar, génétique, association d'éleveurs.*

Introduction

While sheep and goat breeding strategies are generally well established in developed countries, the situation is completely different in developing countries where the breeding component is still not considered as a priority for animal improvement when compared to nutrition or health components. As a consequence, only a few people, if none, are trained in the field of animal breeding in these countries. The absence of national geneticists and the lack of reliable breeding strategies in these areas of the world have been major limitations for animal improvement, especially for local sheep and goat breeds. The objective of this study was to describe steps needed beyond breeding goals when breeding sheep in relation to the environment. Two case studies were presented.

The Tunisian Black Thibar example

Origin

The black Thibar is a Tunisian sheep breed created in 1924 by a French Monk called Novat. His work started in 1908 by crossing the French Merino d'Arles with the Algerian Thin Tail in Thibar

region, north-west of Tunisia. The crossbreeding program was aimed to produce animals uniformally black. The latter chosen goal of selection was dictated by the presence of a plant *(Hypericum perfoliatum)* that grows in association with cereal crops, mainly, in Thibar. Animals with white skin develop skin reaction and they, sometimes, go blind when their skin is in contact with the indicated plant.

Production and reproductive parameters

Data recorded by the national livestock recording program of the Ministry of Agriculture (MOA) during a period of five years (1989-1993) showed that average live weights were 5, 8, 14 and 17 kg at 10, 30, 70 and 90 d of age, respectively. Average daily gains were 150, 155 and 144 g/d between 10-30 d, 30-70 d and 70-90 d, respectively (Table 1) (Chellah, 1996).

Table 1. Means and standard deviations of weights and gains of the Tunisian Black Thibar lambs

Growth trait	Number of lambs	Mean	SD
Weights (kg) at			
10 d	9419	5.0	1.2
30 d	9416	8.14	1.9
70 d	8182	14.30	3.4
90 d	4749	17.40	5.6
Weight gains (g/d)			
10-30 d	9414	151	54
30-70 d	8184	155	51
70-90 d	4742	144	74

Fertility and prolificacy rates reported by the MOA national livestock program from 1991 to 1994 (OEP, 1994) were (68-88%) and (130-134%), respectively. These performances are relatively low for a breed raised in an environment where feed resources are in abundance. The absence of a reliable genetic strategy for the breed improvement could be a reason for such poor results. Actually, white fleeces appeared in the breed in the mid eighties along with fertility problems due to a high degree of inbreeding in the flocks. Brown Swiss rams were imported from Switzerland and used in order to reestablish the black color and introduce a new blood in the breed. Even though a recording system does exist for most of the large flocks in the country, reliable genetic evaluation tools, an adequate knowledge of modern animal breeding methods and a real breed organization are missing and should be looked at as main handicaps for the improvement of this well adapted breed.

The UAE local breed example

The United Arab Emirates has a long tradition in raising sheep and goats under dry conditions. Many sheep breeds are found, some are imported from neighbour countries and others are Australian breeds. Among these different breeds, one small size sheep breed with a black colour is considered as the native breed. The latter one is encountered in Al-Ain region which is known for its mild weather between late fall and early spring. The temperature starts rising after that to reach its maximum (47 degrees Celsius) in July and August. However, the hot weather during this time of the year is dry, not humid compared to other regions in the Emirates.

Average weights at birth, 3 month of age and average liveweight daily gains recorded at the UAE university flock were 2.6 kg, 12 kg and 106 g/d, respectively. Lambs are preferred small by local consumers and local lambs are more expensive than imported ones. Ewes are capable to breed all year round and the percentage of twinning in the University flock was 150%. Even though

performances of the breed are the ones wanted by the consumers (small size lambs) and the prolificacy rate is higher than most of the breeds in the Middle East and North Africa (Boujenane *et al*., 1995; Djemali *et al*., 1995; Gootwine, 1995; Gursoy *et al*., 1995) a crossbreeding program with the Chios breed was initiated in 1990 to increase meat production of the breed. Chios rams were imported from Cyprus for this purpose. Here again, the absence of a breed association and the absence of reliable genetic management systems have allowed the crossbreeding program of a breed well adapted to its environment to take place.

Conditions needed when breeding local sheep

Breeding programs have been successful in developed countries because they served real needs and they were designed on solid bases: recording, genetic evaluation and breed associations. Well trained people and caring breeders, working in harmony, have made these breeding programs successful and essential for their breed improvement. These considerations should be taken into account by developing countries national programs and international organizations helping them to improve their livestock production systems. The two cited examples showed the urgency of the following considerations that should be thought carefully beyond breeding goals:

(i) Identify the main important local breeds in the country:
- Number.
- Consumers preference.
- Breed purposes.

(ii) Develop a breeding strategy for the breed that includes:
- Breeding goals.
- Reliable recording system.
- Reliable genetic evaluation methods.
- A plan for dissemination of results and wanted genes.
- Evaluation of management progress and genetic trends in the recorded flocks.

(iii) Education and training programs for nationals who will have the responsibility to implement the breeding strategy.

(iv) Create a national association for the breed that includes private farmers backed up by specialized scientists and progressive administrators.

(v) Help the association to be fully responsible for the promotion of the breed.

International organizations have a lot to offer in the field of education and training in animal breeding and breed associations management. A facilitator role, based on the above conditions, played by international organization in bringing key people and national institutions together in a sustainable strategy, is essential for local sheep breed improvement.

Conclusions

The Black Thibar and the UAE local black are two sheep breeds adapted to their specific environments. Both of them are threatened by the absence of a reliable genetic strategy to maintain and improve their specific traits. This was mainly due to a lack of adequate knowledge of animal breeding methods and the absence of a national organization for these breeds. To overcome these limitations more attention should be given to genetics and breed organizations. Educated people in the field of animal breeding are essential for the sustainability of sound local sheep breeding strategies.

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