
LE MÉRINOS DE RAMBOUILLET

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RÉSUMÉ

Le Mérinos de Rambouillet, originaire d'Espagne, a été sélectionné à la Bergerie Nationale pour obtenir une excellente qualité de laine. Des reproducteurs ont été exportés dans le monde entier. Suite à la baisse des cours de la laine, la race a subi un déclin. Elle se limite actuellement à 200 têtes, toutes localisées à Rambouillet, avec un taux de consanguinité de 54 p. cent. Pour sauvegarder la race, des embryons ont été congelés et peuvent être réimplantés. Dans l'avenir, des descendants de reproducteurs exportés pendant les décennies précédentes pourraient être réintroduits afin de redonner de la vigueur à la race.

ABSTRACT

The Merino of Rambouillet originating from Spain, has been selected for two centuries in the "Bergerie Nationale" in order to obtain an excellent quality of wool. Pedigree sires have been exposed in the whole world. Following the fall of wool prices, the breed began to decline. Nowadays, there are only 200 animals bred in Rambouillet. To preserve the breed, embryos have recently been frozen, and could be reimplanted. In the future, some products from those pedigree sires that have been exported during the former decades, could also be reintroduced in the existing flock, to avoid the loss of vigour of the Rambouillet Merino.

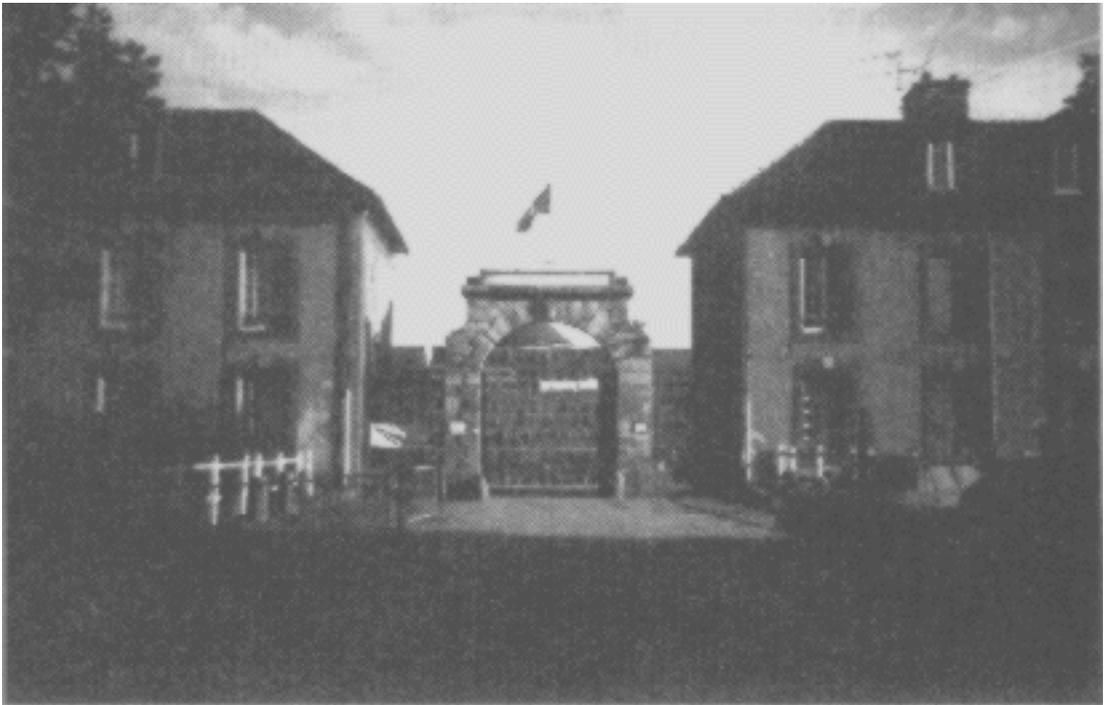
1.0 HISTORIQUE DE LA RACE

1.1 Origine du Mérinos et de la Bergerie Nationale

1.1.1 Rappels historiques

Face aux besoins qualitatifs et quantitatifs en laine de la France, plusieurs essais ont été menés à la fin du XVIII^{ème} siècle pour introduire du sang mérinos en croisement avec les races locales. En 1786, 384 moutons de race Mérinos quittent la région de Ségovie en Espagne pour rejoindre Rambouillet où s'achève la construction de la bergerie royale. Ces animaux sont à l'origine de la race actuelle. Il n'y eut pas d'autre introduction, à l'exception de l'importation de 40 animaux en 1801, cependant avec peu d'influence sur le reste du troupeau en raison de leur qualité, très inférieure à celle de la première livraison. Sous le I^{er} Empire, la bergerie de Rambouillet, devenue impériale après avoir été nationale sous le Directoire et le Consulat, joue un rôle important, parallèlement à d'autres bergeries impériales, dans la fourniture de laine aux armées napoléoniennes et la diffusion de reproducteurs, aboutissant à une mérinisation quasi-complète du troupeau ovin français.

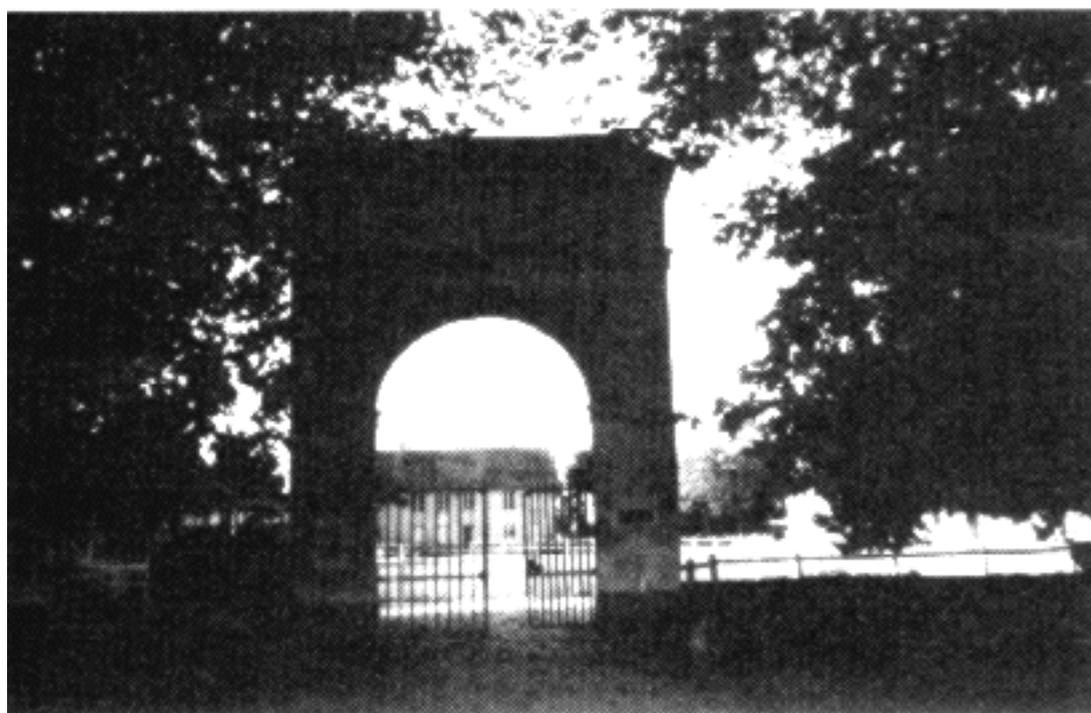
A la chute de l'Empire, la plupart des bergeries impériales ferment, à l'exception de Rambouillet. Pourtant l'élevage des animaux de race en général et du Mérinos en particulier commence à être prisé. Mais la laine très fine est trop onéreuse pour être utilisée seule, et à partir des années 1820, son prix baisse, développant la concurrence des races à viande en particulier anglaises.



L'entrée principale de la Bergerie Nationale de Rambouillet



Le colombier de Louis XVI



Cour de présentation des animaux de la Bergerie Nationale



L'allée principale

1.1.2 Formation de la race

La troupe des 367 moutons (compte-tenu de la mortalité) arrivés à Rambouillet en 1786 était constituée à partir de diverses souches espagnoles et formait un troupeau disparate avec des variations extérieures parfois spectaculaires, cependant sans rôle important sur la qualité des laines. La sévère sélection, basée sur la finesse de la laine ainsi que sur quelques données phénotypiques (cornes, couleur), s'est effectuée en consanguinité par croisements successifs, aboutissant à la race "Mérinos de Rambouillet".

1.2 L'épopée et le déclin du Mérinos (XIXème siècle, première moitié du XXème siècle)

La fin de l'empire marque l'apogée du Mérinos. La laine est bien valorisée à la vente, et des reproducteurs essaient de Rambouillet vers toute la France dans un premier temps, puis à partir du milieu du siècle vers les pays neufs (Australie, Nouvelle-Zélande, Afrique et Amérique du Sud sont les plus gros importateurs) ainsi que vers l'Europe de l'Est, l'Afrique du Nord,...

Mais à mesure que la diffusion des animaux à laine fine s'effectue sur une échelle de plus en plus importante, le prix de la laine ne cesse de décroître. En effet ce produit, étant donné sa facilité de transport, subit de plein fouet la concurrence des pays neufs qui bénéficient de grands espaces et de coûts de production bien moindres. En revanche la viande, difficile voire impossible à transporter à l'époque, dégage une valorisation intéressante, ce qui aboutit à une autre sélection et à l'introduction des races anglaises (Leicester/Dishley dans un premier temps, Southdown ensuite). Ce revirement entraîne le déclin du Mérinos au XXème siècle en France, ce qui ne signifie pas pour autant sa disparition: D'une part la plupart des races ovines françaises ont été mérinisées, d'autre part il se développe dans les pays neufs.

1.3 Le XXème siècle

L'activité de la Bergerie Nationale de Rambouillet reste la sélection et l'exportation de reproducteurs. Parallèlement se met en place, dès le milieu du XIXème siècle, une fonction de formation des bergers, qui deviendra assez importante après la guerre de 1914/1918, aboutissant en 1922 à l'ouverture officielle d'une école de bergers, dont la réputation deviendra grande.

Vers 1940, l'insémination artificielle y est expérimentée avec succès sur des ovins, contribuant à créer après la II^{de} guerre mondiale une école de formation des inséminateurs. Puis cette vocation de centre de formation spécialisé en élevage ne fait que s'accroître: Outre les activités précédentes s'ouvrent successivement une école d'aviculture et un centre équestre. L'établissement prend le nom de Centre d'Enseignement Zootechnique (C.E.Z.) en 1955 et ouvre en 1965 la première section de Brevet de Technicien Supérieur en Productions Animales. Il garde aussi le rôle de conserver le troupeau Mérinos de Rambouillet.

2.0 CARACTÉRISTIQUES DE LA RACE

2.1 Standard

La tête est courte, fine, les orbites peu saillantes. Le profil est légèrement busqué, avec souvent des plis au travers du nez. Les yeux sont vifs, à peine saillants, les oreilles courtes et horizontales. Seuls les mâles sont munis de cornes, enroulées régalièrement. Le cou est court, le fanon peu ou pas développé avec, chez les individus plissés, présence de plis dénommés cravates ou tabliers. Le squelette est fort, la poitrine ample et les côtes rondes. Le corps est cylindrique avec un dos horizontal, la croupe large. Les membres sont robustes, écartés, bien d'aplomb. La toison est très serrée et recouvre tout le corps. Les béliers mesurent 70-75 cm et pèsent 70 à 80 kg contre respectivement 60-65 cm et 45 à 60 kg pour les brebis.

2.2 Qualités lainières

La toison très serrée, sans jarre, est à mèches carrées, recouvrant tout le corps et représentant 8 à 10 p. cent du poids vif des animaux adultes (4 à 5 kg chez la brebis, 8 à 10 kg chez le bélier). La mèche de laine blanche est très ondulée, d'une longueur de 6-7 cm, d'une finesse moyenne de 110-120 (28-30 microns). Elle est homogène en longueur et en finesse, élastique et résistante. Le tassé moyen est de 5000 brins de laine par cm². Le rendement LAF est de 36 p. cent. Le Mérinos de Rambouillet constitue ainsi le prototype idéal du mouton à laine.

3.0 LE TROUPEAU ACTUEL

3.1 Situation et rôle

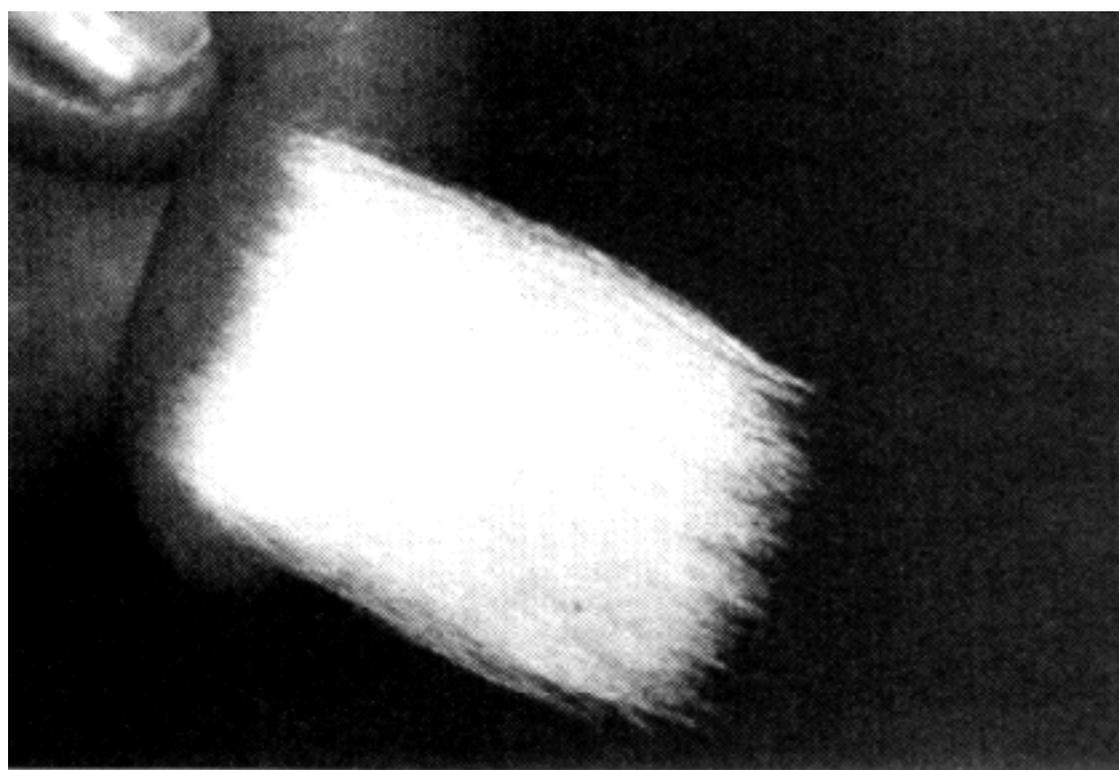
Actuellement, l'unique troupeau subsistant en France est celui de la Bergerie Nationale de Rambouillet, constitué de 130 brebis et 30 agnelles de renouvellement, et de 15 béliers adultes et de 30 mâles de renouvellement. Cependant, nous avons déjà signalé la diffusion mondiale de la race entre 1850 et 1930, notamment dans l'hémisphère Sud. D'autre part, il est à l'origine de diverses races dont les "Rambouillet" aux Etats-unis, "Sopravissana" en Italie, "Mérinos turc" en Turquie, "Mérinos stavisfol" en C.E.I., "Dubrovnik" en Yougoslavie.

Le troupeau rambolitain constitue un conservatoire de la race, réservoir de gènes particulièrement important pour la finesse de la laine et le désaisonnement.

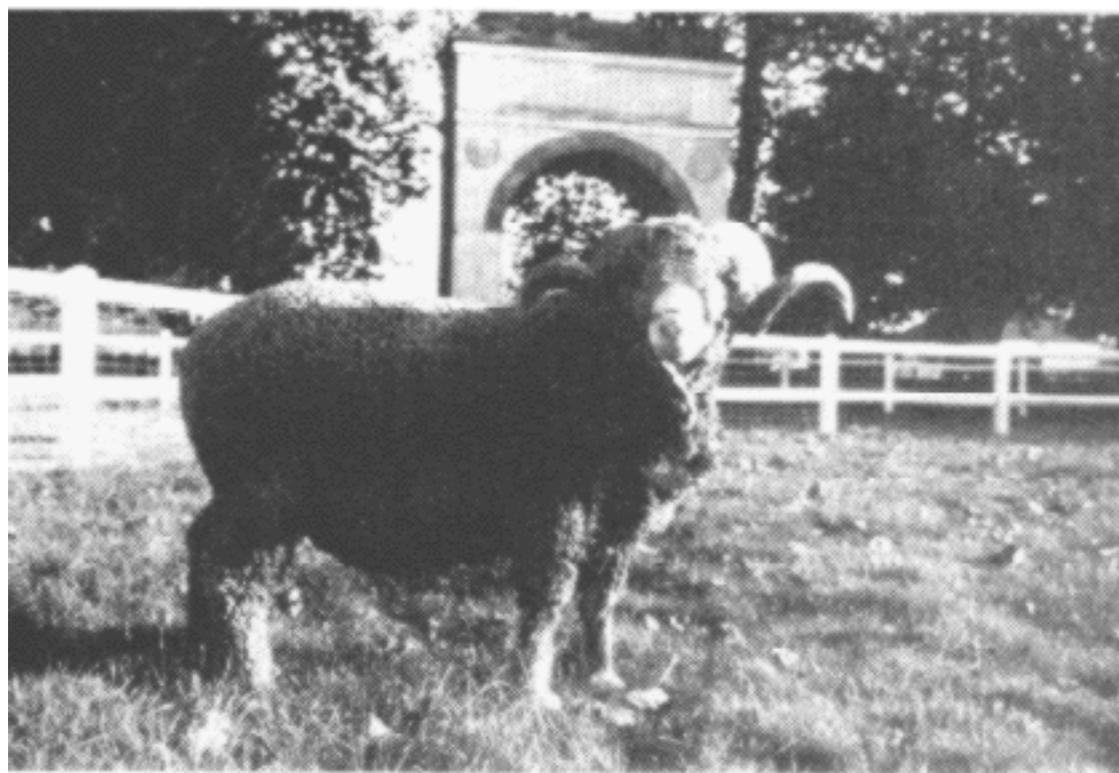
3.2 Conduite du troupeau

Les brebis sont mises en lutte une fois par an au mois de mai. Ce désaisonnement est l'une des grandes caractéristiques des races du groupe mérinos. Les agnelles nées à l'automne sont luttées également en mai, à l'âge de 18 mois.

Les performances de reproduction sont médiocres (128 p. cent de prolificité), ainsi que la valeur laitière des mères et la croissance des agneaux, la sélection ayant surtout porté sur les caractéristiques lainières. Les brebis utilisent les prairies naturelles du parc de Rambouillet l'été et des fourrages conservés l'hiver. Les mâles quant à eux ne sortent jamais, mais peuvent parfois être affouragés en vert si les disponibilités fourragères le permettent.



Un produit de choix



Le Mérinos de Rambouillet de nos jours



Le troupeau de Rambouillet

3.3 Reproduction et sélection

Les objectifs de sélection de la race sont maintenir les qualités lainières et éviter une consanguinité trop étroite. Pour ce faire, la connaissance des généalogies a permis de déterminer un plan d'accouplement pour la mise en lutte: L'élevage est divisé en 8 familles; un bélier et une brebis ne peuvent être accouplés que s'ils n'ont aucun ancêtre commun avant la quatrième génération (arrières grand-parents, cf. annexe).

Ainsi, les performances de reproduction sont comparables à celles connues il y a un siècle. En outre, les reproducteurs ont acquis une grande homogénéité de la toison et un fort caractère raceur. Après 200 ans de reproduction en circuit fermé, la consanguinité est devenue considérable: 54 p. cent.

L'I.N.R.A. (Jouy en Josas) produit annuellement à l'aide de l'outil informatique la généalogie de chaque reproducteur sur quatre générations, ce qui permet de déduire pour chaque bélier la liste des brebis possibles et pour chaque brebis la liste des béliers possibles. Le nombre de béliers possibles par brebis varie de 2 à 18, et le nombre de brebis possibles par bélier de 2 à 38. Le plan final d'accouplement est établi sur le critère finesse de la laine, en essayant toutefois de respecter un ratio équilibré de brebis par bélier (en particulier pour les reproducteurs n'ayant que peu de partenaires possibles). Ainsi par exemple le bélier 5116:

		père 0055
	père 8039	mère 1024
père 3413		père 8013
	mère 4071	mère 5086
Bélier 5116		père 5068
	père 7052	mère 9055
	mère 1011	père 5083
	mère 5078	mère 2019

Les brebis possibles pour ce bélier:

7038, 7045, 7049, 7063, 7067, 7084, 7085, 7087, 8014, 8018, 8032, 8040, 8044, 8046, 8051, 8059, 8066, 8074, 8076, 8080, 8099, 8109, 8118

Les brebis accouplées, in fine, avec ce bélier:

7038, 7063, 7085, 8032, 8080, 8066, 7087, 8109

4.0 MESURES DE CONSERVATION ET POLITIQUE D'AVENIR

4.1 Création d'une cryo-embryothèque

La faiblesse des effectifs, tous concentrés à Rambouillet, peut faire craindre le pire quant à l'existence future de la race. Le moindre accident (épidémie, incendie,...) entraînerait la disparition irréversible du Mérinos de Rambouillet. Pour remédier à ce risque, le C.E.Z. s'est lancé avec le concours du Ministère français de l'Agriculture et l'Institut National de la Recherche Agronomique de Tours dans un programme congélation d'embryons de Mérinos, utilisant en cela les compétences de son école d'insémination: Si le troupeau actuel venait à disparaître, il pourrait être recréé par implantation des embryons congelés sur des mères porteuses d'autres races ovines.

4.2 Voies d'avenir

Nous avons déjà signalé le très fort taux de consanguinité de la race, 54 p. cent, valeur qui peut quasiment apparaître aberrante. La race subit actuellement de graves conséquences de cette valeur extrême: manque de viabilité et déficience des agneaux, baisse de vigueur des béliers, difficulté des brebis à reconnaître et élever leurs jeunes ...,

Si cette situation devait empirer, il serait envisageable de réintroduire par de nouveaux reproducteurs du sang certes étranger, mais toujours à l'origine Mérinos de Rambouillet.

Certains troupeaux ovins australiens en particulier ont été constitué à partir d'animaux exportés par la Bergerie Nationale.

Ainsi, il serait possible de redonner de la vigueur à la race tout en conservant ses caractéristiques et son authenticité.

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AUTOCHTHONOUS SHEEP BREEDS IN HUNGARY

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SUMMARY

The authors give information on the phenotypic characteristics and production, the history and present state of three autochthonous Hungarian sheep breeds : the Racka, the Tsigai and the Cikta.

RÉSUMÉ

Les auteurs donnent des informations sur les caractères phénotypiques, la productivité, l'histoire et la situation actuelle de trois races autochtones hongroises : la Racka, la Tsigai et la Cikta.

1.0 INTRODUCTION

There are three sheep breeds involved in an official programme for maintaining local animal genetic resources in Hungary. Once these breeds - the Racka, Tsigai and Ciktawere represented by big populations but during the last two centuries they have gradually been replaced by more productive modern breeds, thus their numbers decreased to a very low level. In addition to the description of the breeds, their history and their present situation, the activities carried out in order to preserve their genetic variability and to find their place in today's agriculture are described in this note.

2.0 THE HUNGARIAN RACKA

The Racka is one of the breeds belonging to a group of populations living in eastern and central Europe, generally called Zackel type sheep. The Hungarian Racka, also referred to as Hortobagy Racka, is a unique member of the Zackel/Racka group. The breed is different from all the other populations : both males and females wear long, longitudinally twisted "V" shaped horns. Formerly the general scientific opinion was that this breed arrived in Hungary with the Hungarian conquerors in the 9th century (BOKONYI,1974; GAAL,1986; HANKO,1937; MATOLCSI,1975). Recent archeological findings proved the presence of the Racka in the 10th century, and new theories suggest an earlier development of this very particular "V" horned variety of the Racka group of breeds (BARTOSIEWITZ, in print).

The Hungarian Racka population had been the country's dominant breed until the 18th century, then began to decline rapidly in numbers because of the introduction and favouring of Merinos. Today there are about 2000 ewes kept in state and cooperative farms, in national parks and in farms belonging to hobby breeders.

Two colour types can be distinguished, the white (with light brown or rarely grey face and legs) and the black that is greying with age.

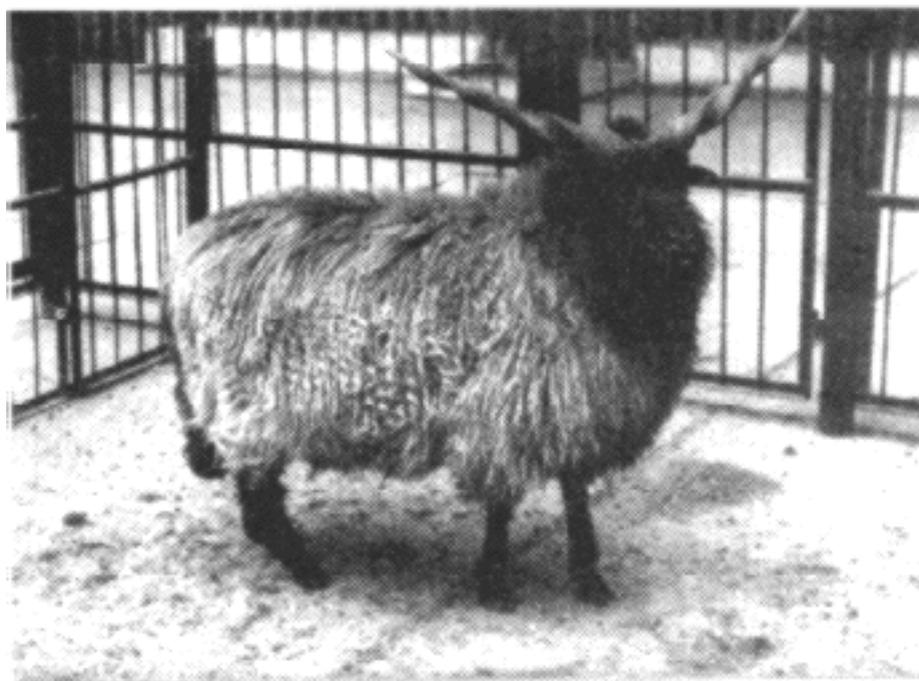
The head is of medium size, very lean and noble. The eyes are big, protruding and bright. The skull is quite wide, but the facial part gets narrow. The ewes' profile contour is straight and the head of the rams is also fine. The ears are of medium size, laterally protruding, but in some individuals smaller ears also occur. The carriage of the head is graceful, the neck is of medium length, not muscular, and arching from a low point, therefore the animal when on the alert can hold its head very high.

The withers and back are flat and deep. The rump frequently appears as overgrown. The bony frame is fine and extremely firm. The conformation of the legs is regular, their movement is light and well coordinated. The legs are long, the height of the knee joints (Bieler point) exceeds half the total height of the withers. The tail is fairly long, reaches down far below the hock.

In both males and females, the horns are long, twisted, and they protrude "V" shaped at an angle. Between the horns of female lambs and ewes there is a tuft of wool in the form of a forelock. The hoofs are very firm and not very susceptible to panaritium.

The body weight of shorn breeding adult ewes at the time of spring shearing, is 35 to 40 kg. Adult rams' weight is as much as 55 to 75 kg. Lambs, by the age of 30 days, weigh 7 to 10 kg, their body weight at the age of 50 to 60 days is 12 to 14 kg. By the time of slaughter, between October and December, they are likely to reach a body weight of 30 to 50 kg, their carcass weight is in the range of 40 to 42 percent (DUNKA,1992).

The breed grows fast and matures early. The rate of twinning is about 10 to 15 percent, there is a slight difference between the two colour types in this respect; the black ewes give birth to twin lambs more often than the white ones (DUNKA,1992). In the past the mutton of Hungarian Racka was highly appreciated on the markets of Europe. The place of fat deposition is abdominal and subcutaneous rather than intramuscular. It is reputed that Racka mutton has a higher nutritional value than that of the mutton sheep breeds or the Merinos but cannot meet the consumers' actual demand for more palatable lighter coloured meat.



The Racka

The Racka has mixed fleece i.e. both floss and over-hair occur in it. Lambs' coats are nicely curled but later, after the first shearing they lose their waviness. The diameters of fleece threads range between 18-45 μ , those of over-hairs are between 54-130 μ . The annual growth of coat staples may reach 30 cm and never tend to be shorter than 20 cm. The proportion of over-hair and floss is 66 : 34. Adult rams produce 3 to 4 kg and ewes 2 to 3 kg wool with a 50 to 60 percent yield (DUNKA,1992).

The purebred Racka was never selected for fur production. Because of this reason there are a lot of differences between and within flocks. Subjectively, the pattern of the black Racka fur is more beautiful and more homogenous, however the white variety is more valuable according to objective parameters (BODO *et al.*,1986). The fur of the black lambs is similar to that of the Karakul lambs but the ringlets are not so regular, they are smaller, more curly and less smooth. Nowadays the fur of Racka lambs is mostly produced at slaughtering after weaning and after the grazing period at 8 to 10 months of age, for making fur coats and blankets by the local handicraft industries.

The milk production of Racka is reasonable despite the fact that it has never been selected for this trait; approximately 40 liters milked per lactation.

According to recent data the owners of 1440 ewes get state financial support for each weaned lamb. The breeders' aim is to preserve the purebred population. Since 1984, The Hungarian Racka Sheep Breeders' Association maintains the two colour varieties by line breeding. The differentiation of lines is based on blood typing. The geographic isolation of some of the bigger units is of particular importance in order to avoid inbreeding (DUNKA and JAVOR,1991).

3.0 THE TSIGAI

This breed originates from Asia Minor. It was brought to the Carpathian region by Rumanian shepherds from the 13th century. It still has a relatively large population in the neighbouring countries, therefore Hungary preserves only a small stock. At present there are two flocks of 320 ewes kept in a cooperative farm and in a national park. They are maintained by state subsidies.

There are two colour varieties, black and white. The fleece of the white sheep can be greyish white because of the presence of black hair among the white ones. The black animals have black fleece that becomes paler on their back if exposed to sunlight, then they have a reddish appearance. The legs and the head are brownish or black. The ewes are generally hornless and there are often hornless rams as well.

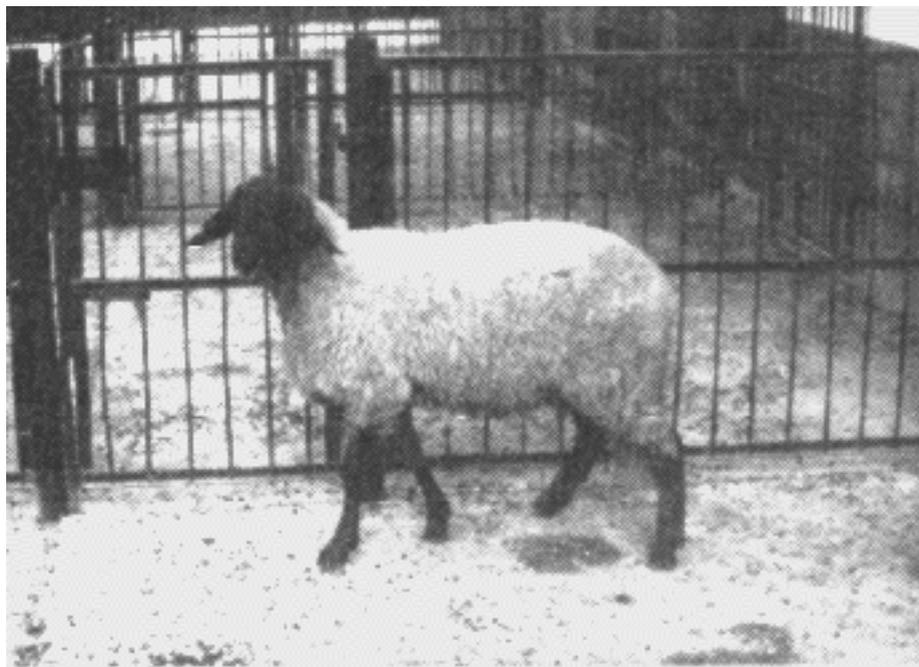
The live weight of ewes is about 40 kg and that of the rams is about 55 kg. The wool production of the breed is less than that of the Merinos. Their milk production could reach 50 to 60 liters per ewe and per lactation under good management conditions (SCHANDL,1955).

A recent study on the gene frequencies of the Tsigai blood polymorphic systems revealed no significant changes during the last 13 years. The observed and expected genotypes are close to each other. It means a genetic equilibrium, by which the maintenance of the breed and its genes is assured (FESLTS,1991).

4.0 THE CIKTA

This breed originates from the Zaupeel sheep of Bavaria and was brought to Hungary by German settlers in the 18th century. It was thought to be extinct in their country of origin, however a few years ago a small flock was found and the breed was reconstituted in Germany (SEIBOLD,1990). Since then genetic examinations proved the relationship of the German and Hungarian populations. The breed has never played an important role in Hungary. Today there are 300 ewes in a conservationist's private farm, who gets state support for the weaned lambs.

It is a white coarse-wooled sheep with bare face and legs. The live weight of ewes ranges from 25 to 45 kg. The staple length is 20 to 40 cm and the usual fibre diameter is 30-40 μ , but



The Tsigai



The Cikta

with extremes of 16-70 μ . The annual fleece weight of ewes is 1.5 to 2 kg with a yield of 65 to 70 percent (BODO,1985). The wool was formerly used for making handwoven materials.

Recent studies showed only slight changes in the frequencies of the Cikta blood polymorphic systems during the last 13 years. This is considered to be only temporary, and due to the breeder having favoured certain rams (FESLTS,1991).

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GOAT BREEDS IN ITALY

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SUMMARY

Italian autochthonous goats have been discriminated for centuries, first by laws which have limited their rearing, then because foreign breeds, such as Saanen and Alpine, were preferred. Recently, this trend changed and now the number of autochthonous goats is increasing. In Italy, the only goat which can be considered as being wild is the Capra di Montecristo. Among domesticated goats, the Vallese is classified as *Capra prisca*; the Maltese, the Rossa Mediterranea, the Garganica, the Orobica, the Frontalasca, the Verzaschese, the Sarda, the Argentata dell'Etna and the Locale are classified as *Capra hircus hircus* while the Girgentana is classified as *Capra hircus girgentana*.

Data have been published on the production and reproduction of each of these breeds, on the importance of the populations and on development trends; many reports exist on the rearing areas of these breeds.

RÉSUMÉ

Les chèvres autochtones italiennes ont été discriminées pendant des siècles, premièrement par des lois qui limitaient leur élevage et puis parce que on a préféré des races étrangères comme la Saanen et l'Alpine. Il y a quelques années que cette tendance est changée et le nombre des chèvres autochtones élevées est en train d'augmenter de plus en plus. En Italie, seulement la Capra di Montecristo appartient au groupe des chèvres sauvages. Parmi les chèvres domestiquées, la Vallese est classifiée comme *Capra prisca*, la Maltese, la Rossa Mediterranea, la Garganica, la Orobica, la Frontalasca, la Veraschese, la Sarda, l'Argentata dell'Etna et la Locale sont classifiées comme *Capra hircus hircus* tandis que la Girgentana est classifiée comme *Capra hircus girgentana*.

Pour chacune de ces races, les données concernant leur production et leur reproduction, l'importance des populations et leurs chances de se développer ont été publiées; de même, il existe des rapports sur les zones où elles sont élevées.

1.0 THE DEVELOPMENT TREND

During the last decade animal husbandry has undergone some important changes, mainly because of the effect of EC agricultural policy. In the sixties and seventies there has been a strong push towards milk and meat production; the eighties were characterized by overproduction of meat and cow's milk; in the nineties the interest is changing towards extensive production and product quality. In Italy the goat was traditionally found in extensive areas of the middle and upper mountains and because of its milk and cheese intrinsic quality, is being favoured by the new E.C. policy. In the last ten years livestock numbers increased by about 15% (Fig.1). Most important is the fact that the image of this species is changing: the previous attitude of discrimination and ostracism - represented in the thirties by laws limiting goat raising - has been abandoned and a new attitude of attention and interest favouring a regional legislation encouraging goat husbandry developed. A first tendency was that breeders preferred to import Saanens and Alpines from abroad because it was easier to find breeding males on the market and because of their higher milk potential. In recent years this trend attenuated because of the risk of introducing new diseases and because the total milk production of cheese, in terms of kilos, made per head of autochthonous breeds is more and more becoming similar to that of foreign breeds (CASU et al.1989a, PIZZILLO et al.,1992).

At present breed localization is as follows:

- In the North and in the Centre, the traditional system is based on a few numerous autochthonous breeds; in modern farm units almost exclusively Saanen and Alpine goats are raised.
- In the South ("Mezzogiorno") most farms raise autochthonous breeds, more or less specialized in milk production; Saanen and Alpine can only be found in Apulia.

Generally the trend is towards the use of autochthonous material, by the selection of breeds which are already sufficiently productive (Maltese, Rossa Mediterranea) and through the recovery of traditional dairy practices.

2.0 THE GENETIC RESOURCES

The goat was probably domesticated during the VIII millennium B.C. in Iran, Palestine and Syria and during the VII millennium B.C. it appeared in Europe, following the movement of populations looking for new cultivable lands. In Italy it was present in many places during the ancient Neolithic age (7.500-4.600 B.C.; WILKENS,1987). The present goat livestock situation is the result of a moderate differentiation, rapidly crystallized, of this population shift to the West; a shift which occurred through different waves without causing changes in the genetic composition (LAUVERGNE et al.,1988). As a consequence, contrary to what happened for sheep, the presence of "traditional populations" in Italy is still high. Nowadays, the origin of breeds and populations can be summarized according to ZEUNER's scheme (1963):

Wild goats:

Capra aegagrus hircus Linnæus. The only wild goat population in Italy can be found in the island of Montecristo.

Domesticated goats:

Capra prisca Adametz. According to MARCUZZI and VANNOZZI (1981) this group is made up of the Vallese goats, a small population bred on the Swiss border.

Capra hircus hircus Linnæus. Most domesticated goats are said to belong to this group: Maltese, Ionica, Rossa Mediterranea, Garganica, Orobica, Frontalasca, Verzaschese, Sarda, Ar entata dell Etna and the main other local populations (Locale).

Capra hircus gargentana Amshker. Within this group we can find the Girgentana, a characteristic breed with corkscrew-like horns.

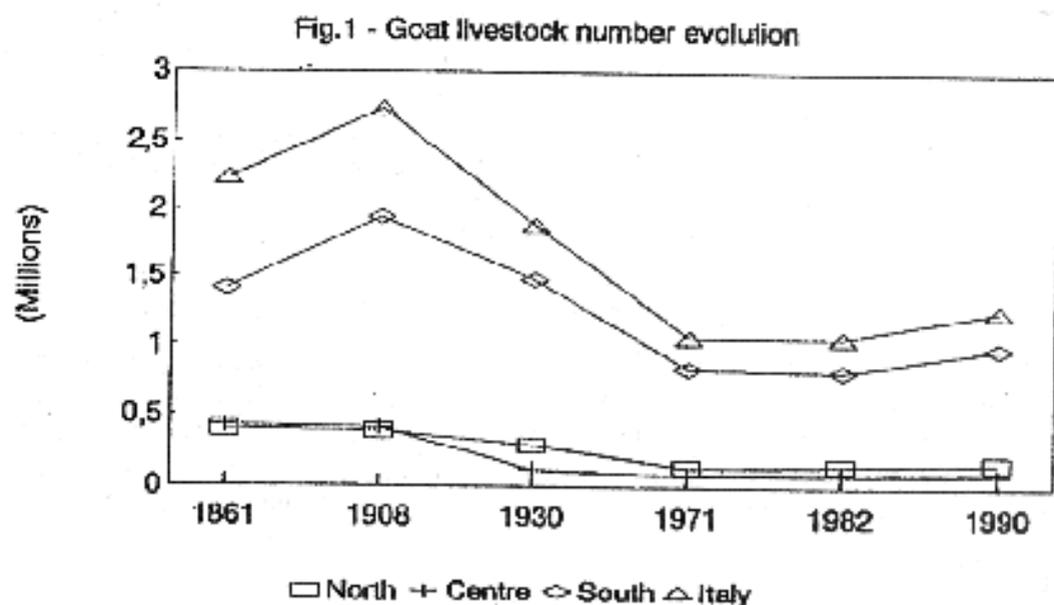


TABLE I PROLIFICACY, MILK PRODUCTION AND COMPOSITION

Breed	Milk (l) (x ± s.d.)	Fat (%) (x ± s.d.)	Protein (%) (x ± s.d.)	Casein (%) (x ± s.d.)	Proficiency (%)
Argentata dell'Etna	150 ± 45 (1)				
Rossa Mediterranea	174 ± 82 (2)	4.8 ± 0.6 (2)	3.16 ± 0.4 (2)	2.6 ± 0.4 (3)	180
Garganica	134 ± 50 (3)	5.4 ± 1.1 (3)	3.8 ± 0.5 (3)	2.7 ± 0.5	140
Girgentana	435 ± 169 (2)	4.7 (4)	4.2 (4)		190 (4)
Ionica	360 ± 109 (2)	5.3 ± 1.2 (3)	3.7 ± 0.4 (3)	2.8 ± 0.4 (3)	170 - 180
Locale	270 ± 110 (5)	5.7 ± 0.1 (5)	3.8 ± 0.05 (5)		120 - 190
Maltese	357 ± 172 (2)	3.8 ± 0.8 (3)	3.3 ± 0.6 (3)	2.6 ± 0.4 (3)	180 (4)
Orobica o di Val Gerola	338 ± 68 (2)	3 ± 0.2 (2)	2.89 ± 0.17 (2)		
Sarda	199 ± 69 (2)	4.6 (6)	3.7 (6)	2.9 ± 0.5 (7)	120 (8)

Source: (1) Portolano, 1979; (2) AIA, 1991; (3) Pizzilo et al., 1992; (4) Piras, 1986; (5) De Maria Ghionna, 1984; (6) Casu et al., 1989a; (7) Campus et al., 1983; (8) Casu et al., 1989b.

With the exception of the wild goat of Montecristo all other goats are milked and can be considered as dairy goats. Goats belonging to the group *Capra hircus hircus* have a different phenotype (specific husbandry systems, isolation in some areas, and little influence of one breed on another). To identify the groups within this background and allow for understanding the differences among populations we retained the following criteria:

- *hanging ear breeds*. They had their origin in the Mediterranean area and their ancestors are *Damascus* and *Nubian* goats. In this group we can classify the Maltese, Ionica, Rossa Mediterranea. They have the highest milk production and live weight and have always been raised in small flocks in sedentary systems;
- *goats linked to the pastoral system*. In the “Mezzogiorno”, most husbandry systems of the past were pastoral or transhumant and goats were raised together with sheep. They were not selected, quite light weighted and not very productive. Among these breeds we can find the Sarda, Garganica, and a very numerous population, phenotypically heterogeneous and often without a specific name which, for convenience purpose is called Locale;
- *isolated populations raised in restricted areas*. Mostly in Alpine valleys, known as Orobica (or Val di Garda), Frontalasca, Verzaschese. Their numbers are limited (4000 per breed) and their milk production is of importance.

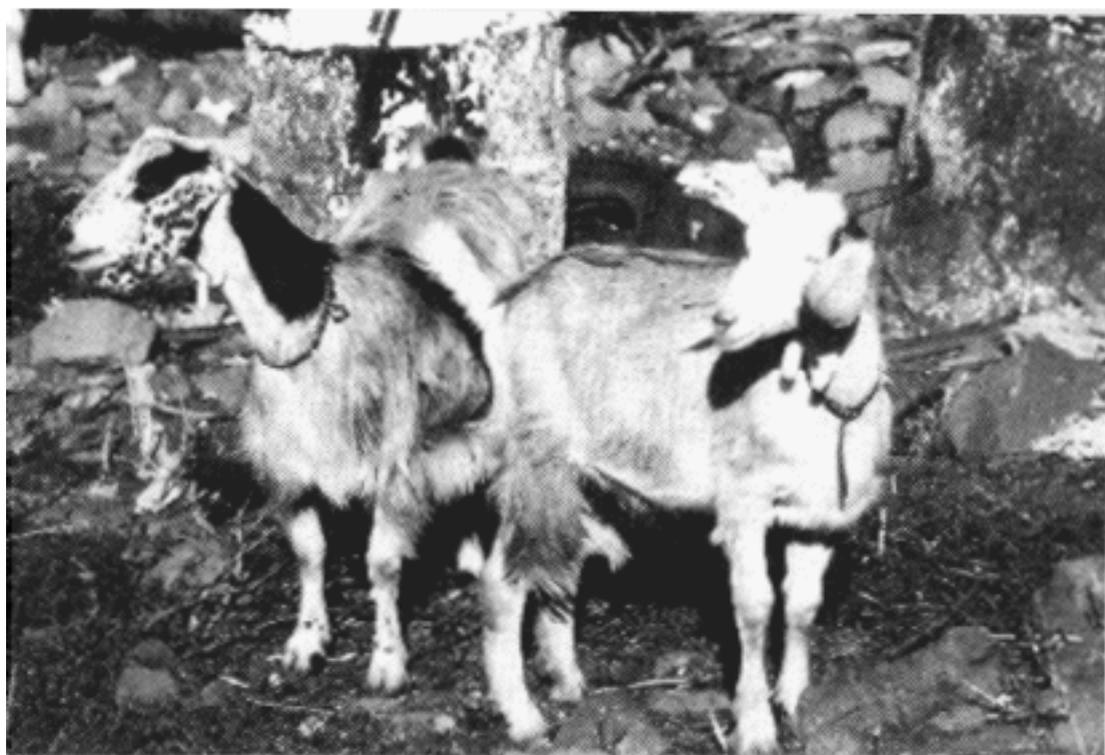
During recent years, Saanen and Alpine have been introduced but there has been little crossbreeding between these two breeds and the autochthonous populations. Selection just started and 1% of population is being milk recorded.

Thus, in practice, almost the total goat population kept its original characteristics. They are the result of the combination of the original genetic components, of the climatic and environmental influences and of the husbandry systems.

The indicative productivity data of the various italian breeds are shown in table 1; table 2 shows their numbers and geographic distribution.



Mediterranean grazing (Sardinia)



Argentata dell'Etna



Frontalasca



Garganica

TABLE 2
BREEDS LIVESTOCK NUMBER AND DIFFUSION AREAS

Breed	Livestock number (2)	Diffusion areas	N° recorded goats (1)
Argentata dell'Etna	7,000	Sicilia	—
Rossa Mediterranea	56,000	Mezzogiorno d'Italia	253
Frisia o Frontalasca	2,000	Valtellina, Valchiavenna	—
Garganica	105,000	Puglia, Basilicata, Calabria, Campania	—
Girgentana	9,000	Sicilia, Campania	132
Ionica	19,000	Puglia	1,085
Locale	200,000	Mezzogiorno d'Italia	—
Maltese	50,000	Basilicata, Calabria, Sicilia, Campania	2,170
Orobica o di Val Gerola	2,500	Lombardia	723
Sarda	266,000	Sardegna	2,331
Capra di Montecristo	270	Isola di Montecristo	—
Vallese	4,000	Sondrio, Varese	—
Verzaschese	700	Varese	—

Source: (1) AIA, 1991

(2) ASSONAPA, 1992



Girgentana

3.0 THE “BREEDS”

3.1 Argentata dell’Etna

It is a population of about 7,000 head mainly raised in the Eastern area of Sicily (PORTOLANO,1979). Its name comes from the colour of its mantle which is grey with silvery reflections; its ears are hanging and it is occasionally hornless. It is very appreciated by breeders as it is a hardy animal, using well the scarce pastures of Sicily and has a good milk production (200-300l).

3.2 Capra di Montecristo

The only wild goat in Italy can be found in the Montecristo island. SPAGNESI et al. (1986) estimated that, on a surface of 1000 ha, about 270 goats are living; it is a quite high livestock number which can endanger the animal/ilex plants ratio. Males reach a weight of 30-40 kilos while female weight is up to 20 kilos. Prolificity is a bit higher than 100%. The feeding of Montecristo goats reflects well the floral composition of the island. The main species which compose the intake are heathers. Coat colour is variable, ranging from a type similar to the Wild Goat of Crete to black; all together 7 kinds of coats have been identified (SPAGNESI et al.,1986).

This goat represents a very interesting natural patrimony from the scientific and faunistic point of view. It is protected and its evolution is being studied.

3.3 Frisia or Frontalasca

In spite of the big ethnical heterogeneity, typical of mountain farms, in the Valtellina there is a goat population which has been able to keep its genetic homogeneity because of the isolation of the valleys in that region.

Frisia goat is also called Frontalasca because it comes from Frontale (Alta Valtellina) and probably derives from the Swiss breed Striata. At present the population amounts to 6,000 head, distributed in 307 flocks with an average number of 20 head. During winter the flocks live indoor and eat hay but rarely concentrate; in spring the flocks graze in the vicinity of the farms (ASSONAPA,1992). The size of the animals is big, females weigh about 60 kg and males about 90; typically, their coat is black with two characteristic white stripes on the sides of the head, abdomen and limbs; the horns, when present, are well developed and of the markar type.

3.4 Garganica

Its name comes from the Garganopromontory but it is spread all throughout the Southern Appennine. It is black, with long hair, a very hardy and gregarious animal; therefore, it is difficult to rear it together with other species or goat breeds. It is generally raised freely on the range in the woods or on common pastures, in flocks consisting only of goats with more than 150 head. About 100,000 head are raised, milk production

and prolificity are quite low (130l and 40%) because the flock always consists of animals chosen not for their milk production but on the basis of their rusticity and adaptation to difficult environmental conditions (i.e., goats with one kid only or with small udder to avoid damage while grazing in brambles or bushes). Fat and protein contents are, on the contrary, high.

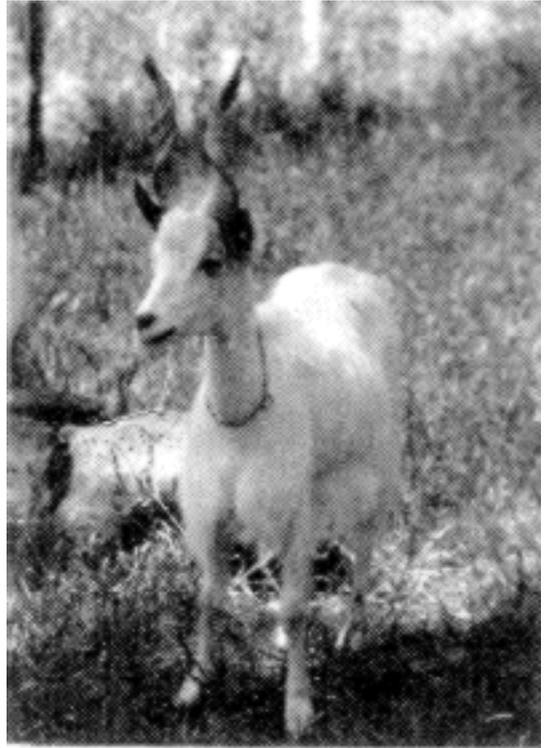
3.5 Girgentana

Widely spread in Sicily, during the last years an important reduction of its population was observed; in 1958 there were about 37,000 head (PINO and PORTOLANO,1960), while at present no more than 5,000 head are reared, mainly in the province of Agrigento and also in the provinces of Potenza and Salerno. The flocks are quite small (15-20 heads) and the feeding system is characterized by the utilization of pastures together with consumption of concentrate. Milk

production is high as well as the fat and protein contents. Prolificity is high, too. The Girgentana goat is a very interesting animal but its reduced number, the competition by more numerous goats with the same productivity (Maltese and Rossa Mediterranea) and the attractiveness inspired by its appearance (corkscrew horns) will make of it a hobby animal.

3.6 Ionica

This goat is similar to the Maltese, with hanging ears, but the difference is that the Ionica has no black spots on its head or on the distal part of its limbs and has a higher live weight. It is almost exclusively raised in the Southern area of Apulia where it can be found in intensive agricultural systems, the byproducts of which (horticulture, pruning of grapes and olive trees) are an important component in the feeding of this goat, above all during summer. In winter, it grazes on wheat and barley crops and rarely on meadows. Milk production, fat and protein contents are high. Its population is, however, quite limited: about 20,000 head of which a bit more than 1,000 are registered in the herd book.



Girgentana

3.7 Locale

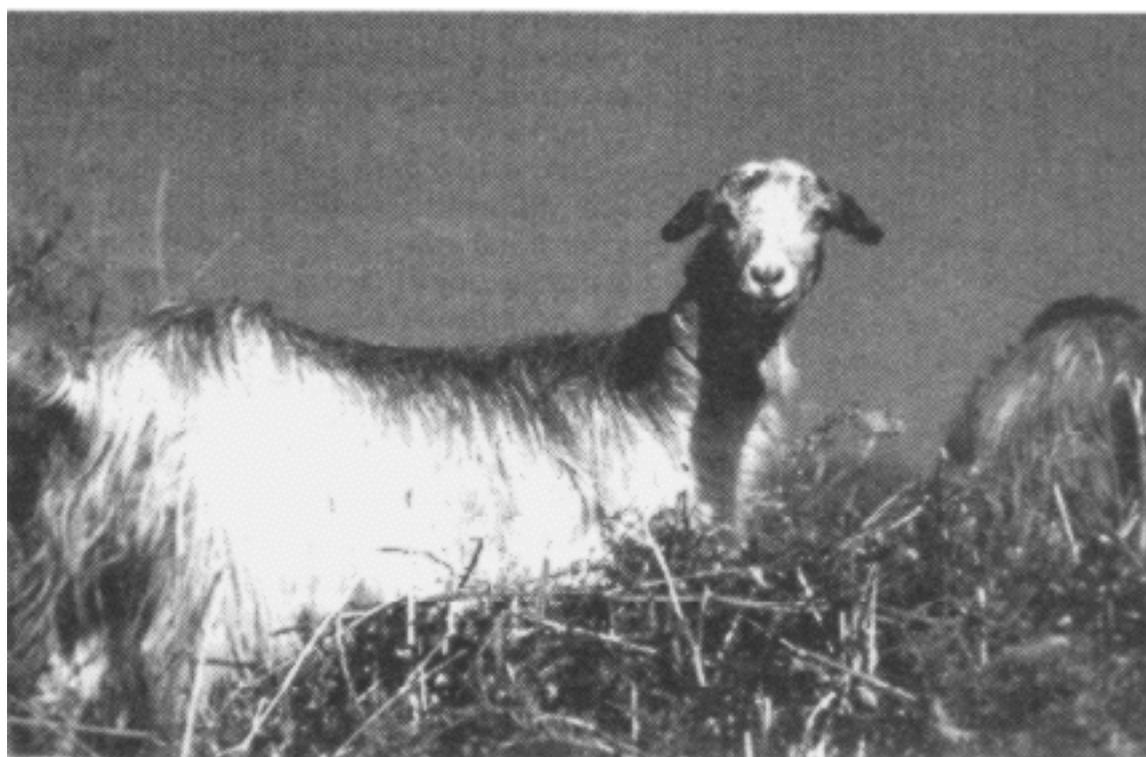
The name “Locale” is given to a heterogeneous population, which can be found throughout the whole continental “Mezzogiorno” and above all in the mountainous area of Southern Appennine. It cannot be classified under any of the standardized breeds. Very often it has not got any name, however it has a remarkable economic importance. It is very difficult to estimate the number of head; but probably, in Italy, there are about 1,200,000 goats of which about half are represented by well defined breeds; so one can estimate that the number of local goats is more than the 200,000. It is a very heterogeneous population. From the ethnographic and ethnologic point of view, the influence of both foreign breeds (Saanen, Alpine, Toggenburg) and of the autochthonous ones (Maltese, Garganica, Rossa Mediterranea) is clear. Husbandry systems also show the heterogeneity of the territory: in the high mountains there are the very hardy local goats which use free range collective pastures and are not very productive while, going down to the valleys, productivity increases because husbandry becomes more and more a permanent practice (RUBINO et al., 1983). Milk production varies a lot, ranging from 1001 in mountain flocks up to 400 I in the lowland; the same variability can be observed in prolificity. Fat and protein contents are high.

3.8 Maltese

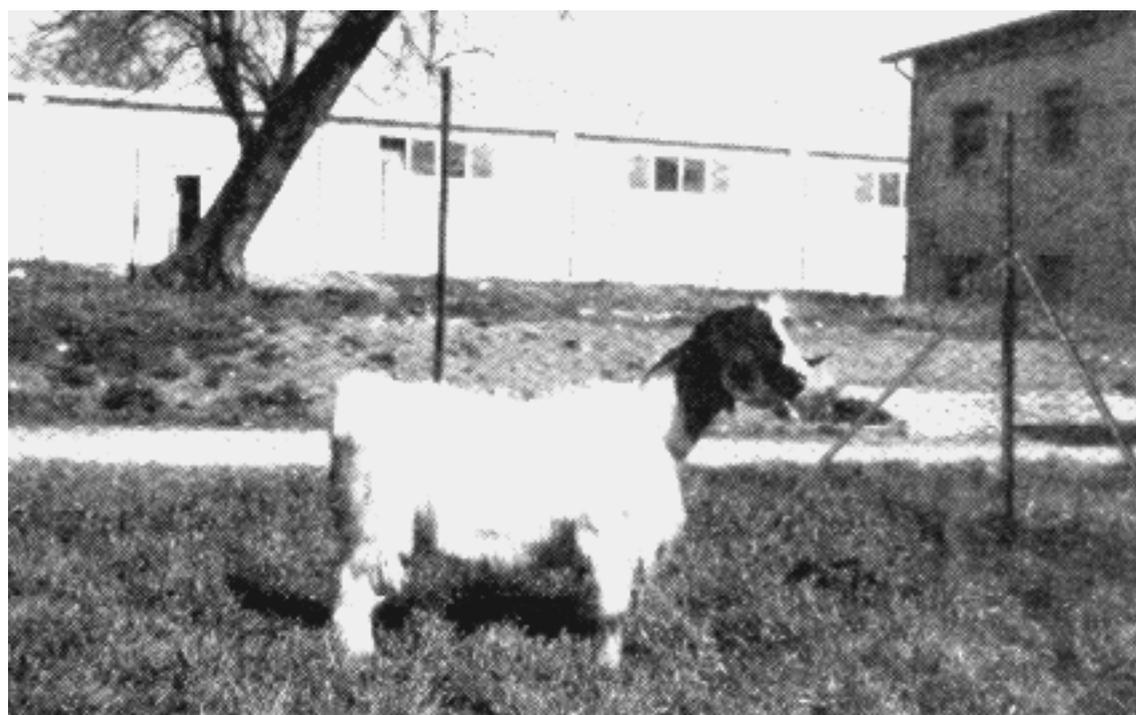
Originally this breed came from the Middle East and spread first in Sicily; during recent years it spread also in the continental “Mezzogiorno”. It is the Italian dairy goat par excellence and it is the favourite breed of new entrepreneurs or of those who want to replace their breeds with more productive ones. In Sicily, it is raised in small flocks (40-60 goats) in permanent systems which also use native pastures, cereal crops and horticulture by-products. On the continent it can be found in quite big flocks, 200-400 head, milking is often mechanical, feeding is based



Ionica



Locale



Maltese



Rossa Mediterranea

on meadows, grazing hay and concentrate. Kidding occurs during the whole year, with a concentration during the months of November and February. Milk production is about 3501 with a high fat (3.8%) and protein (3.3%) contents. Prolificity is also high (180%). This breed accounts for about 50,000 head but only 2,000 of them are registered in the herd book.

3.9 Orobica or della Val Gerola

This breed originated from the Gerola valley and can be found in several valleys in the provinces of Como and Bergamo. Its size is medium, its coat can be uniform or patched, with shades from grey to black; its horns, in particular those of males, are characteristic, i.e.: long with a flat section. It is a hardy animal which feeds on shrubs and alpine pastures. It is raised in small farms, in general together with cattle or sheep. There are about 4000 head in Italy. Milk production is important (over 3001) while fat and protein contents are quite low. Probably, a cross with Alpine or Saanen goats occurred in the past (CAMOZZINI et al.,1991).

3.10 Rossa Mediterranea

Throughout the “Mezzogiorno” and above all in Sicily there is a population which is quite homogeneous for its coat colour (tawny) and for its hanging ears; this breed was also called *Derivata di Siria* because it is similar to the Damascus goat. In 1991 the Herd Book Association decided to call it *Rossa Mediterranea* to include under this name all tawny-coloured goats of this type. This goat gives an important milk production (about 300 l) with high fat (4.8%) and protein (3.2%) contents. Prolificity is about 180%.

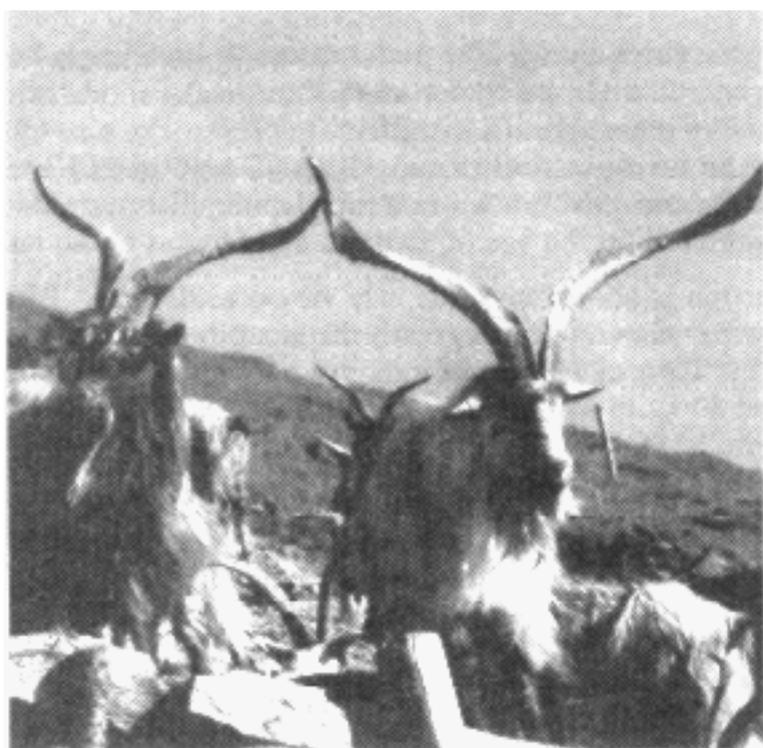
Husbandry systems vary according to the geographic area. In the high mountains, there are flocks with more than 100 head, composed in general only of goats, they utilize common pastures and receive concentrate only during kidding periods. In the lowland, there are flocks raised together with sheep; they use meadows and receive concentrate. There are also more intensive farms, with more than 200 head and with machine milking. The population is about 50,000 head and tends to increase since breeders prefer this goat for its rusticity and productive potential.

3.11 Sarda

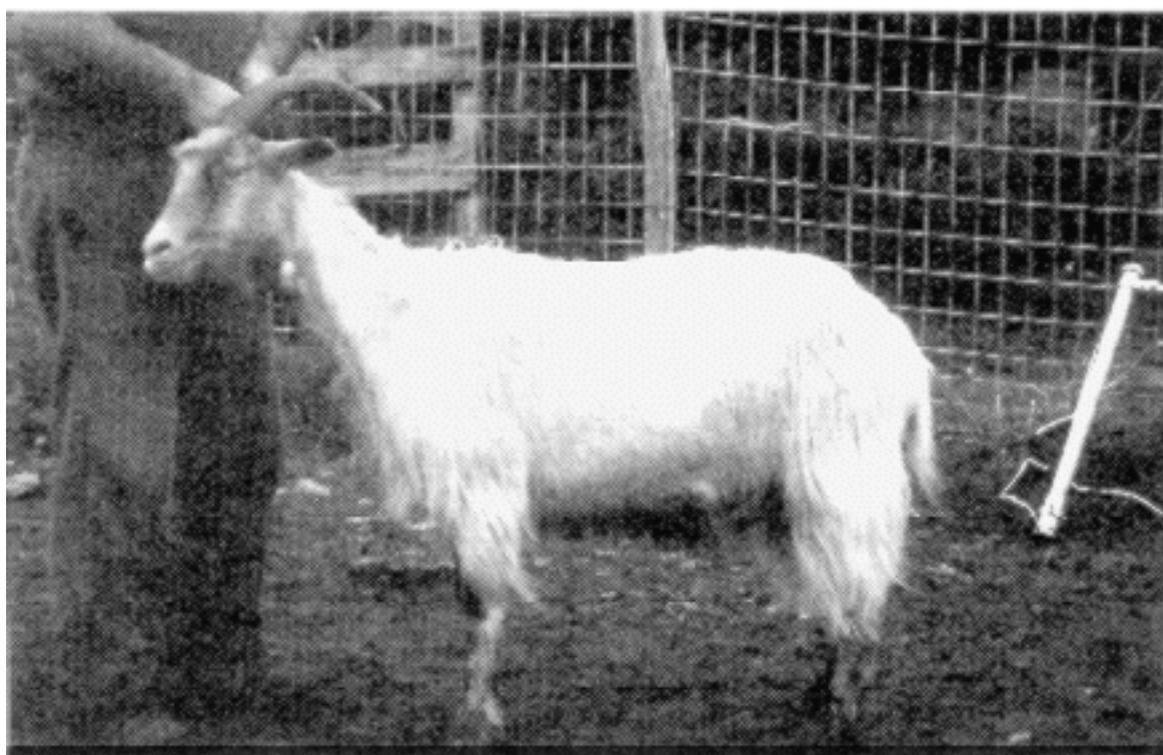
The Sarda goat lives only in Sardinia, where 266,000 head are raised, that is 22 % of the national goat population, with an average of more than 10 head per square km. The main rearing pattern is free ranging, with animals living outdoor during the whole year without shelters. Population concentration is higher in mountainous areas where there is a sporadic form of transhumance; in the plains extensive breeding is beginning to spread. Feeding is mainly based on the utilization of mediterranean shrubs while autumn-winter herbage is only used in plain areas (BRANDANO,1979). The size of flocks varies from 77 to 400 head with an average of 190 animals (BRANDANO and PIRAS,1978). Kiddings are concentrated at the end of November or during January/February. Milking period starts when kids are slaughtered (at the age of 30 days) and finishes at the end of summer.

Milk production is about 2001 but may vary considerably. BRANDANO (1979) noticed that the environment influences greatly the quantity of milk produced: goats having had more than one kid produce 232 kg of milk in a period of 180 days on the coast,162 kg in the lowlands and 89 kg in mountainous areas. Even if milk production is low, fat and protein contents are high; these traits are sensibly reflected in the organoleptic and rheologic characteristics of cheeses (CASU et al.,1989a).

The Sarda breed is the most interesting one among the autochthonous populations both for its importance and because it kept its original characteristics almost intact. BRANCA and CASU (1988) showed the absence of genetic erosion even if in the past an attempt of pastoral standardization towards a long hair type, to obtain a coarse textile material, was made.



Orobica



Sarda

3.12 Vallese

Imported from Switzerland during the thirties, the Vallese is a small breed spread in the valleys of the provinces of Sondrio and Varese, on the Swiss border. It is a medium-big size breed; females weight more than 50 kg and males 80 kg; their coat is white, with black head, neck, withers and limbs.

The Vallese can be considered a dual purpose breed because kids have a weight at birth of almost 5 kg and a high live weight gain; milk production is about 150 l. It is called the glaciers' goat for its rusticity and for its ability to live in the most inaccessible areas. About 4,000 goats are recorded in the Herd Book in Switzerland.

3.13 Verzaschese

This population comes from the Val Verzasca (Switzerland) and is above all spread in the province of Varese. It is a tall breed, kids weigh at birth more than 5 kg and have good live weight gain; for this reason it is considered a meat breed. It wears horns and its coat is completely black with quite long hair. At present there are about 700 head distributed in 25 farms (ASSONAPA,1992).

4.0 CONCLUSION

The demand for well defined quality goat cheese is increasing, stimulating breeders towards an increase in milk production and an individualization of breeds the milk of which has a high dairy yield. Italy has many autochthonous populations because of the geographic and regional territorial/political isolation which has characterized the peninsula during many centuries. No selection has been practiced on these populations which are suitable for extensive husbandry systems and are able to utilize well local grazing. They have a high milk production and their yield is rich in fat and proteins. The extensive type of feeding system and the high dry matter content in milk gives cheeses with a good flavour; however, their production is not very homogeneous. It is possible to produce typical cheeses, the characteristics of which vary from an area to another. Since the new EC policy tends towards privileging extensive husbandry systems and the higher intrinsic quality of animal products, these populations have all the characteristics to play a major role in the new development process, otherwise, there would be a danger of abandonment.

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