
THE NATIVE PIG OF SRI LANKA

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SUMMARY

The origin and breed characteristics of the native pig of Sri Lanka are reported. The breed suffers from many disadvantages including inter alia small litter size, heavy preweaning mortality and poor growth rate. Nevertheless, it will remain a valuable genetic resource and a source of meat, providing additional income to the household economies in the western coastal belt of Sri Lanka.

RESUME

L'origine et les caractéristiques de la race porcine autochtone de Sri Lanka sont décrites. Cette race présente de nombreux inconvénients parmi lesquels la petite taille des portées, la forte mortalité avant le sevrage et le rythme de croissance médiocre. Néanmoins, elle reste une ressource génétique intéressante et une source de viande fournissant un revenu supplémentaire aux familles paysannes de la cote ouest de Sri Lanka.

RESUMEN

Se describen el origen y las características raciales del cerdo indígena de Sri Lanka. La raza tiene muchas desventajas, entre otras, el minero pequeño de la camada, el alto grado de mortalidad antes del destete y un escaso crecimiento. Sin embargo, seguir representando un valioso recurso genético y una fuente de carne que representa un ingreso adicional para las economías domésticas de la faja costera Occidental de Sri Lanka.

1. INTRODUCTION

Native pigs have long been reared as backyard scavengers in the western coastal belt of Sri Lanka. At present, native pigs constitute only 50 percent of the total pig population as against 80 percent in 1972. This decline is similar to that experienced elsewhere in the tropics (Eusebio 1980; Devendra 1980), where the need to maximize profits rather than to subsist has resulted in native types being replaced by exotic breeds. However, because of their large numbers, the native breed comprises a valuable component of local genetic resources and this report documents its productive traits under a restricted feeding system.

2. ORIGIN

The native pig closely resembles the Sri Lankan wild pig and must have evolved as a result of gradual domestication of wild pigs, although studies on its phylogeny have yet to be undertaken. The Sri Lankan wild pig, which still abounds in the local jungles, resembles the Indian wild pig (*Sus scrofa cristatus*) in many physical aspects, but is smaller in size. The presence of horizontal stripes in newborn piglings, which gradually disappear with age, is further proof of the native pig's wild ancestry. The tendency to use all four toes while standing and walking also links the native type to wild pigs, as it is characteristic of wild pigs to use all four toes to get more footing in their natural habitat (Fisher and Devendra 1963). The exotic breeds, in contrast, use only the two front toes.

3. BREED DESCRIPTION

The native pig is small in size. The average height at shoulders of adult males and females is 60.2 and 49.3 cm respectively (Table 1). The striking features of the native breed are its tapering face, long snout and compact body. Length of head accounts for 25-30 percent of total body length, whereas the corresponding value for exotic pigs is only 10-12 percent (Sahaayaruban et al. 1983). The legs are short and this results in the abdomen and udder being dragged almost on the ground in pregnant animals. The ears are short, erect and pointed backwards. The predominant colour is black. Dark grey, tan and mixtures of tan with grey or black are also seen.

The native boar is characterized by its coarser hair with an almost mane-like crest along the back and a narrower body. The tusks are well developed and project from the mouth.

TABLE 1

BODY MEASUREMENTS OF ADULT INDIGENOUS PIGS (cm)

Parameter	Male	Female
Length of head	28.8	25.0
Width of head	10.9	9.6
Length of ear	13.2	9.2
Width of ear	8.3	7.7
Height at shoulders	60.2	49.3
Heart girth	89.0	73.2
Barrel girth	89.6	81.8
Length of tail	36.5	25.0
Total body length (tip of the snout to last sacral vertebra)	111.4	86.0

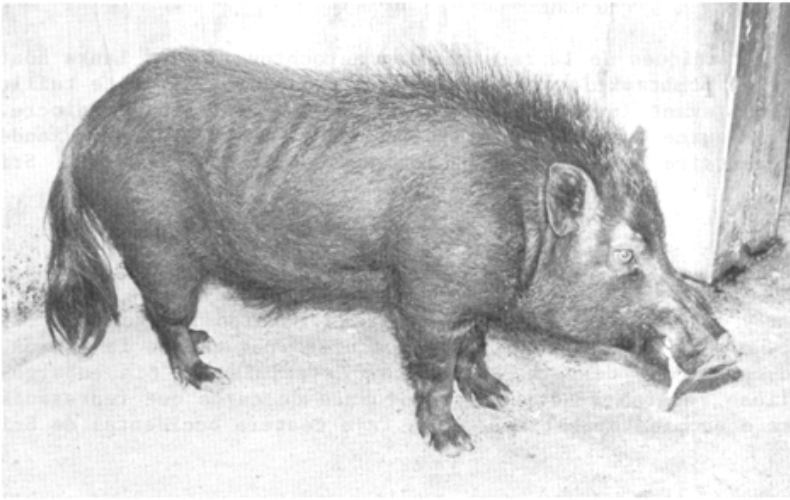


Fig. 1

The native boar. Note the characteristic long snout and the mane-like crest along the back.



Fig. 2

A group of native females. Predominant colour is black. The black-spotted female is a crossbred with Large White.

4. REPRODUCTIVE PERFORMANCE

The average age at first farrowing is 298 days (range 246-417 days). This would indicate that age at first mating is around 6 months. Native females are known to exhibit signs of oestrus as early as 3-4 months, but breeding is usually delayed until after 6 months to ensure that conception occurs only after reasonable body size is achieved. The average interval between farrowings is about 216 days. Gestation length ranges from 108 to 118 days with a mean of 113. The average weaning to oestrus interval ranges from 21 to 45 days.

The native -males show sexual activity from 3 months onwards, but they are not generally fit for service until 12 months. The boars perform satisfactorily until they are 3 1/2-4 years of age.

The average litter size at birth is 6.0 (Table 2). Prewaning mortality is high, ranging from 26 to 40 percent, resulting in a litter size of only 4.2 at weaning. The high mortality rate among native pigs appears to be related to low birth weights and insufficient milk, both corollary to the low body weights and inherent limitations of the dam. Almost one third of deaths occurs during the first two weeks of life.

TABLE 2
LITTER CHARACTERISTICS OF INDIGENOUS PIGS

Litter size at birth	6.0
Litter size at weaning	4.2
Litter weight at birth, kg	3.4
Litter weight at weaning, kg	21.5
Prewaning mortality, %	30.3

5. GROWTH AND CARCASS TRAITS

The average birth and weaning weights are 0.56 and 5.12 kg respectively (Table 3). This corresponds to a preweaning average daily gain of 81 g. The animals are slow growing and maturity is reached only around 18-24 months. The mature weights of native males and females are 45-55 and 35-40 kg respectively.

Data from limited observations indicate that the dressing percentage of native animals is 50-55 percent. This is much lower than the value of 75 percent reported for improved pigs in Sri Lanka (Rajamahendran et al. 1978). The lower dressing percentage of native pigs is due to a relatively larger head and to a relatively larger proportion of internal organs. Native pigs under backyard rearing produce excessively fatty carcasses, but this does not hold true under improved feeding conditions.

TABLE 3
GROWTH CHARACTERISTICS OF INDIGENOUS PIGS

Age	Weight (kg)		
	Male	Female	Mean
Birth	0.59	0.52	0.56
2 months (weaning)	5.92	4.1	5.12
4 months	7.27	6.41	6.88
6 months	13.24	13.08	13.18
18-24 months (maturity)	45-55	35-40	-

6. CONCLUSIONS

Though the native pigs are of little value for commercial pork production, it is concluded that they will remain valuable as sources of meat and secondary income to the household economies in the western coastal belt of Sri Lanka. Their hardiness and adaptability to existing conditions seem to compensate for their low productivity. Under the backyard pig production system, practically no expenses in housing, feeding or veterinary care are incurred. The income from these animals may be low, but it is all profit.

Since the component traits of sow productivity have low to medium heritabilities, attempts have been made to exploit heterosis by crossbreeding the native females with exotic boars (Goonewardene et al. 1983). The preliminary results from the upgrading programme do not look promising due to the inherent limitations of the native females. Litter sizes at birth and weaning were improved over the mean performance of parent breeds by 12 and 11 percent respectively. Crossbreeding, however, had little effect on the birth weight and preweaning daily gain of piglings.

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THE BARROSO CATTLE OF GUATEMALA

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SUMMARY

The Barroso cattle of Guatemala was developed on the Pacific coast of Guatemala as a dual-purpose breed suited to a tropical environment. Numbers are fast diminishing but one large herd remains where certain measurements were made to describe the breed.

RESUME

Les bovins Barroso de la cote pacifique du Guatemala sont une race A deux fins adaptée au milieu tropical. Leur nombre diminue rapidement, mais il subsiste un grand troupeau dans lequel ont été faites certaines mensurations pour décrire la race.

RESUMEN

El vacuno Barroso de Guatemala se desarrollo en la costa pacífica de país, como raza de doble finalidad, adaptable al medio tropical. El número de cabezas esta disminuyendo rápidamente pero existe todavía un nato grande donde se efectuaron algunas mediciones para describir la raza.

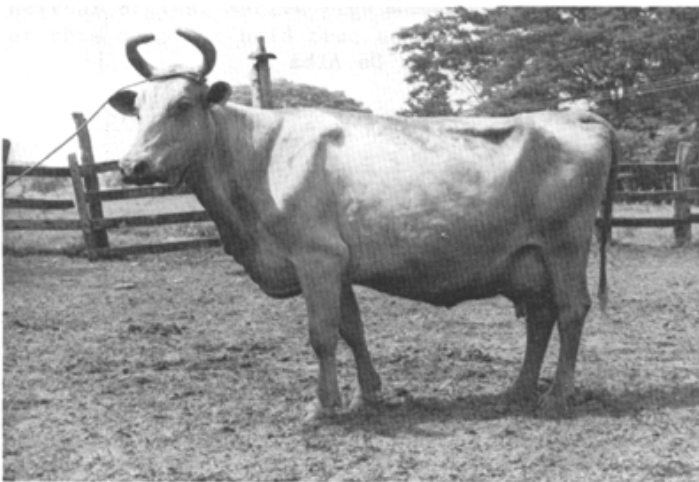
Central America has had several nuclei of improved tropically adapted dairy cattle. They share the characteristics of thick, deeply pigmented skin and short sparse hair. Areas that have animals selected for dairy characteristics were found in Choluteca, Honduras and Rivas, Nicaragua, with a predominance of yellow and red cattle. CATIE at Turrialba selected a herd with animals from Honduras and Nicaragua in 1955 (De Alba and Carrera 1958). Samples of the Barroso were not included largely due to distance but also poor knowledge of where to find superior animals. Since then a relic herd, privately owned, has been making progress in building up numbers. This herd was started by Salvador Melgar about 216 years ago; he gathered representative animals from the west coast of Guatemala. The present herd numbers about 800 animals of all ages. Observations on this herd form the basis for this note. A thesis was presented by the senior author at the University of Guatemala with some of these observations included (Melgar 1984).

The name "Barroso" means dun. It resembles the coat colour that comes from crossing a Charolais with Aberdeen Angus; it is similar also to the colour of the new beef breed from Australia, the Murray Grey. It is assumed that the same "dilution" genes are involved. A quick survey of the herd revealed the presence of about 1 percent white cows and 0.5 percent black. It is assumed that a homozygous state can be attained for the pure barroso colour in the whole herd.

The main herd is located in the municipality of Chiquimulilla, about 20 km from the sea and at an altitude of 60 metres above sea level. Mean maximum temperatures per month give a yearly average of 34.70C. Rainfall is decidedly seasonal with less than 20 mm from December to March, and highest monthly average in September, with 207 mm.

Some of the more distinguishing characteristics are a very short sparse hair, pigmented skin, a scanty tail switch, very small ears, incurving horns, wrinkles around the eyes and neck, pronounced angular lines in the cows but a decided sexual dimorphism in bulls which are very muscular and much taller than cows. The nostrils are black. The udder is always well placed and attached and of the same colour as the rest of the coat, but white spotting in the udder was found in 10 percent of the cows. Males are always darker in colour than cows.

Fifty adult cows were measured and the average height at withers was found to be 131 ± 4.8 cm, heart girth 180 ± 9.24 cm and barrel circumference 218 ± 11.3 cm. Adult weight of 50 cows in lactation was 460 ± 41 kg and 10 bulls running with the herd averaged 788 ± 59 kg.



Representative Barroso cow at the Herd of Dn. Salvador Melgar. Note short hair and scanty tail switch

The herd is milked once a day with a calf used to aid milk let-down and tied to one front leg of the cow while milking proceeds. Milking is done between 05.00 and 07.00 hours. Then the calves run with their dams on pasture until noon and are separated in pens for the rest of the day and night. Milking is suspended at about 225 days and the calves turned to pasture with their dams for about 30 more days before weaning. Bulls are run with cows at all times. The short term nature of these observations does not permit measurements of herd fertility to be made. Pasture feeding is used exclusively with no additional supplement except salt and minerals once a month. Pastures are irrigated in the months of near zero rainfall and are not fertilized. Species on pastures are mainly African Star (*Cynodon nlemfuensis* and *Echinochloa polystachia*).

Milk from 50 cows was weighed fortnightly and up to 225 days of lactation. The maximum individual production for that period was 1380 kg. Twenty of the 50 cows surpassed 1000 kg. Mean for 225 days was 976.6 ± 359 kg. Lowest yield was 650 kg. Birth weight of the calves of these 50 cows was 30 kg and weight at end of milking period 139 kg.

No age or month of calving effect could be proved by least squares analysis, due mainly to small numbers. Milk samples taken at various periods on these 50 cows showed an average butterfat content of 4.6 percent and total solids of 12-.69 percent. Monthly observations showed respiratory frequency average for morning of 44 ± 9 and afternoon of 59 ± 8 , highest value was observed in the afternoon of June with 71 ± 18 , lowest value for morning of January with 32 ± 6 . Highest rectal temperature was recorded in May with 38.8 °C and lowest in the morning of January with 37.9°C. None of the animals observed showed evidence of heat stress on the hottest days.

The studied herd of Barroso cattle constitutes a very valuable source of germ plasm for genetic studies of tropically adapted dairy cattle. It would make an excellent base to make progress on selection for milk production under tropical conditions and or crossbreeding studies. It has greater size and more uniformly short hair than the milking criollos of Nicaragua selected at Turrialba. The best herd of these (red criollos) is still to be found in Rivas, Nicaragua. Should these herds be mixed and coat colour differences disregarded? The herd at Turrialba was strongly selected for ability to milk without the calf so it could be incorporated into more intensive dairy systems. The herd of Barroso has had no such selection, but is much larger. Should similar methods be recommended for it?

FO made a small grant to CATIE in Turrialba to purchase three selected bulls from this heard. It was found too difficult to bring them overland to Turrialba. They have remained in the care of the second author of this note and placed in small herds of cattle, with mixed breeding with Zebu and Brown Swiss evident. Recorded milk yields from these crossbreds is lower than the present average of the Barroso. Observations will be made on these offspring of the Barroso bulls.

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HUNGARIAN ACTIVITIES ON THE CONSERVATION OF DOMESTIC ANIMAL GENETIC RESOURCES

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SUMMARY

In Hungary there is an official programme for maintaining domestic animal genetic resources which is supported financially by the government. The following breeds are involved: Hungarian Grey cattle; Water buffalo; Racka, Ciggja and Cikta sheep; Mangalica pig; Nonius, Mezohegyes Halfbred, Gidran, Kisbér Halfbred, Shagya Arab and Lipizza horses and some poultry and dog breeds.

RESUME

Le gouvernement hongrois finance un programme officiel de conservation des ressources génétiques des animaux domestiques. Ce programme porte sur les races suivantes: bovins hongrois gris; buffles; ovins Racka, Cigája et Cikta; porcins Mangalica; chevaux Nonius, demi-sangs Mezohegyes, Gidran, demi-sangs Kisber, arabes Shagya et Lipizza, ainsi que quelques races de volaille et de chiens.

RESUMEN

En Hungría existe un programa oficial para mantener los recursos genéticos animales del país, con apoyo económico del Gobierno. Las razas incluidas en el programa son las siguientes: vacuno Gris Húngaro, Búfalo Aengtico; ovinos Racka, Cigfija y Cikta; porcino Mangalica; caballos Nonius, mestizos de Mezohegyes, Gidran, mestizo de Kisber, arabe Shagya y Lipizza, y algunas razas de ave de corral y perros.

1. INTRODUCTION

Although in recent decades manufacturing industry has developed, agriculture remains of vital importance in Hungary. The task of agriculture is not only to supply the population with food, but it also produces a large proportion of exports. Animal husbandry plays a significant role in agricultural production; therefore the old noncommercial breeds have been more or less replaced by more productive modern ones. This process has caused a rapid decrease in the traditional breeds and populations.

For the maintenance of these breeds conservation work became essential. The conservation of the old breeds of domestic animals was started at the end of the 1950s by some individuals employed by state farms, who did not allow the slaughter of the last herds of some old breeds threatened by extinction.

Recognizing the importance of preservation of genetic resources both at national and international level, the Hungarian Ministry of Agriculture and Food in 1973 charged the Institute for Animal Breeding and Feed Control with the conservation of declining breeds. The official preservation programme involves the maintenance of cryogenic gene banks and the direction of breeding work in the old non-commercial herds in the state farms and cooperative farms. This institution (ATMI) distributes also the financial support of the government among the farms participating in the programme.

The amount of financial support depends on the performance of the herds (e.g. the number of weaned calves in the case of the Hungarian Grey cattle).

The indigenous pig and horse breeds of Hungary have already disappeared, but there are some very old cattle, buffalo, sheep, goose and dog breeds as well as some strains of horses, sheep, pigs, dogs and poultry developed one or two centuries ago which are now involved in the official preservation programme. The Hungarian Spotted (Simmental) cattle breed is also included.

In the framework of the programme the task is to purify (if necessary), propagate (if possible) and preserve these rare domestic animal breeds. These relic herds of living animals are in the possession of state farms and cooperative farms as they are relatively large. Thus the herds and flocks are also large; the number of hobby breeders is relatively small but it is increasing.

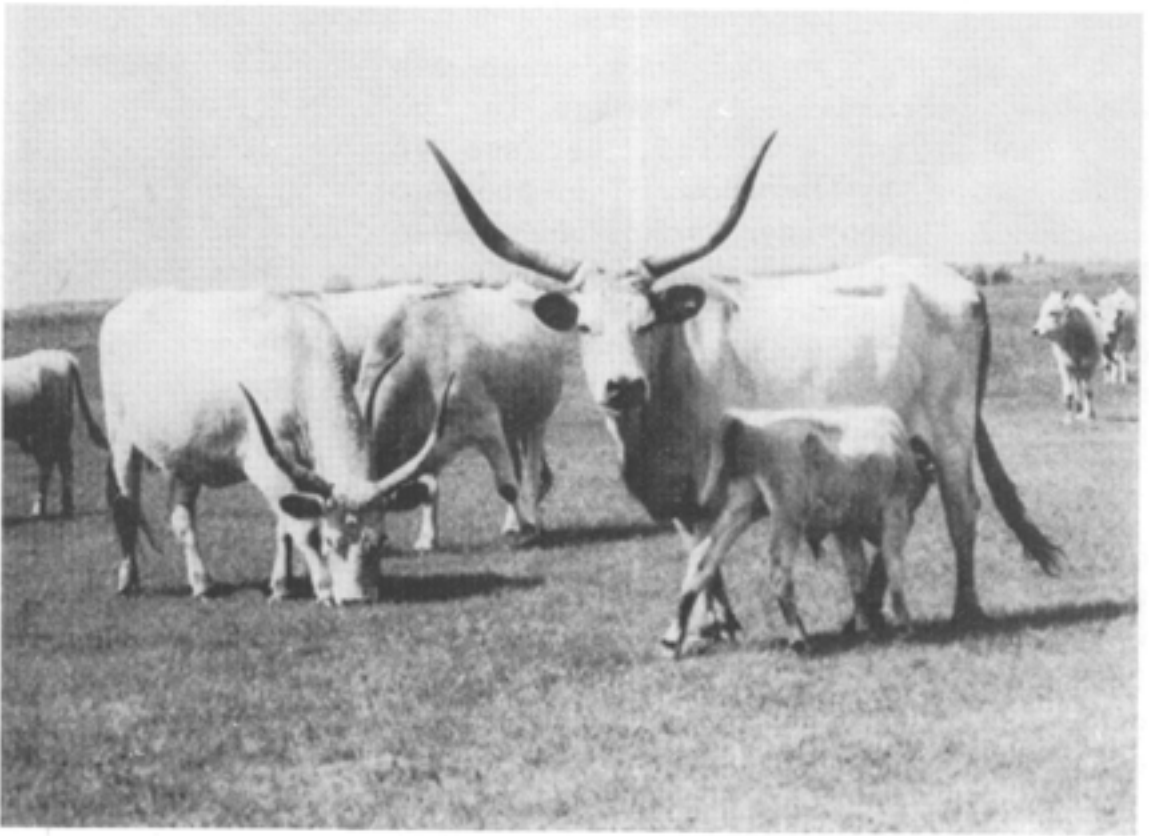
Some words about the scientific work in connection with the maintenance of indigenous breeds. The Institute for Animal Breeding and Feed Control coordinates a research programme which is financially supported by the Ministry of Agriculture. The most important topics of research are the following: evolution and history of the breeds in question, their genetic structure (including blood groups and other biochemical polymorphisms), the specification of the necessary environmental and veterinary conditions, study of the best breeding and mating methods, estimation of the possible usefulness of the indigenous breeds in modern breeding programmes.

The indigenous breeds involved in the official preservation programme are described below.

2. HUNGARIAN GREY CATTLE

There are three theories about the origin of Hungarian Grey cattle; none is proved by archaeology or history:

- According to general opinion in the last century this breed arrived here with the Hungarian conquerors in the 9th century.
- The most ancient bone relics of Hungarian Grey cattle were found from the 13th to 14th centuries onward. Therefore, the second theory suggests a later importation. This may have been from the east (by the Cumanen or by the Beseny6 people) or from the south (from Italy or from the Balkan peninsula).
- The third theory suggests a relatively recent domestication (Middle Ages) in the Hungarian forests.



Hungarian Grey cattle on native pasture at Hortobágy
(Photo: Hudetz)

It is very difficult to settle this dispute, but it is obvious that there may be some truth in more than one of these theories.

During the 14th-18th centuries, Hungarian Grey cattle were a very successful beef breed, not only in Hungary but also abroad. Large herds were driven on foot to Germany and Italy and arrived in relatively good condition. They were well known and appreciated on the markets of Venice, Nuremberg, Augsburg and Vienna.

In the 19th century agriculture became very intensive in Hungary and the role of the Grey cattle changed; it became a producer of excellent draught oxen.

At the end of the last century the number of Hungarian Grey cattle started to decrease. The lowest figures recorded were 187 females and 6 males. At present the stock of cows amounts to 1000 individuals in 6 herds.

Milk production is relatively poor (about 2000 kg milk per lactation). The calf crop is good but fattening performance for beef production is poor. It is an excellent draught animal. Other valuable traits are: easy calving (100 percent without any assistance); resistance against diseases; endurance of unfavourable conditions; very hard hooves; capacity for compensatory growth after a setback; the beauty and nobleness of the long horns.

Selection is based on breed type, reproductive ability, health and longevity. Inbreeding is avoided by a rotational mating system and by crossing of inbred lines.

Recently some successful experiments were executed using Hungarian Grey cattle as a component of maternal lines in beef cattle breeding. Nowadays Hungarian Grey cattle may be considered as a non-commercial breed which has been rescued from extinction. In the future it may once again be a commercial breed, but this depends on several factors.

3. SHEEP

Three sheep breeds are involved in the programme; the most interesting is the Racka.

3.1 Racka

The Racka is one of a group of breeds living in the neighbouring countries called Zackel. The screw-horned Hortobagy Racka is a unique and very interesting breed.

Formerly the general scientific opinion was that this breed arrived here with the Hungarian conquerors in the 9th century. Now the results of excavations suggest that the breed was established in Hungary only in the 13th-15th centuries.

The Hungarian Racka sheep was already decreasing in number in the 18th and 19th centuries, because of competition by Merinos. The present stock of Hortobagy Rackas has been kept since the 1950s in state or cooperative farms, and the number of ewes is about 1500. Recently more and more hobby breeders are keeping Racka sheep.

Two colour types can be distinguished within the breed, white (with light brown or rarely with grey face and legs) and black (greying with age). The mating system consists of rotating ram lines to avoid the disadvantages of inbreeding (which have not yet been observed). The main objectives of selection are: breed type, reproductive ability and vitality.

Liveweight of ewes is 35-45 kg. Staple length is 25-30 cm and fibre diameter is 30-60 μ . Annual fleece weight in ewes is 1.5-2.0 kg with a yield of 60-70 percent clean wool. The wool is used for handwoven carpets and from the fur of Racka, shepherds' traditional furcoats are manufactured. Very promising crossbreeding experiments were made in the early 1960s with Karakul rams for improving the fur quality of lambs.

3.2 Ciggja (Tsigai)

This breed has a relatively large population in neighbouring countries; therefore Hungary is planning to preserve only a small stock. At present there is only one herd in Hungary with 240 ewes.

The liveweight of ewes is about 45-60 kg and that of rams is 65-100 kg. The staple length is 25-30 cm and the fibre diameter is 26-40 μ . The annual fleece weight of ewes reaches 2.5-3.0 kg with a yield of 40-65 percent. The milk production of Ciggja ewes is considerable: it is 60-70 percent more than that of Merinos. The wool is yellowish-white; the face and legs are black.

3.3 Cikta

This is a unique breed; it originates from the Zaupel sheep of Bavaria which is now extinct. It was brought to Hungary by German settlers in the 18th century.

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



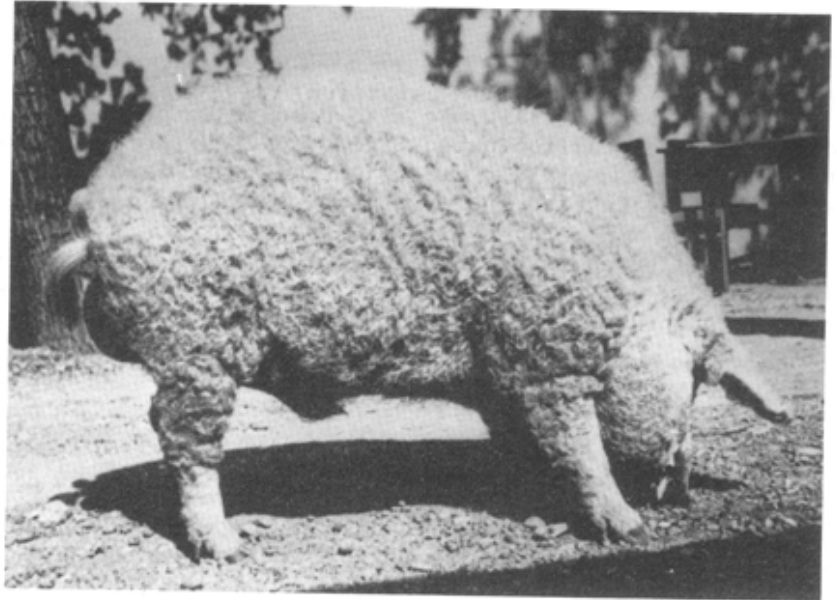
Racka ram
(Photo: Hudetz)

of 16-70 P. Annual fleece weight of ewes is 1.5-2.0 kg with a yield of 65-70 percent. The wool was formerly used for making hand-woven materials. There is only one flock in Hungary (270 ewes) kept by ATMI at a testing centre. After a period of crossbreeding with Merino, Berrichon and East Friesian sheep, sufficient purebred ewes and rams survived and formed the present flock. The main point of selection is breed type.

4 . PIGS

Mangalica (Mangalitsa)

This breed originates from the Serbian Sumadija breed, and has been kept in Hungary since the beginning of the 19th century. A hundred years ago it was a famous commercial breed with a very high level of fat production; at that time it was the main pig breed of Hungary. Times have changed and because of the demand for lean pork this breed is already completely replaced by other breeds and hybrid strains .



Mangalica boar (Photo: Eszes)

Within the Mangalica breed three colour varieties survive: the common blonde or yellowish-white, the “swallow-bellied” (black with pale belly) , and the light red (rose) variety.

About 200 sows and 30 boars are kept at 8 locations. In order to avoid *inbreeding*, in the last five years some imports have taken place from Transylvania (Romania) and Vojvodina (Yugoslavia).

5. WATER BUFFALO

Transylvanian buffaloes are kept on two farms and in zoological gardens. The stock numbers 70 females and 7 males. This stock was collected in the 1970s. This water buffalo is not a special strain and it serves primarily for demonstration. The genetic material can be refreshed from neighbouring countries where a relatively large stock is still living.

6. HORSES

There are-also some famous horse breeds (or strains) in Hungary which are worthy of being preserved. The original Hungarian horse breed was transformed in the past. It seems that the horse was so important in the life of our forefathers, that they have always transformed the whole stock of the country according to the demand of their age.

6.1 Nonius

This breed was founded in 1816 by an Anglo-Norman stallion named Nonius at the military stud of Mezohegyes. The founder stallion gave very good foals out of Spanish mares, the advantageous traits of which could be fixed by inbreeding. Later some Thoroughbred stallions were also used. The Nonius was suit-able for the artillery and for hard agricultural work. There are still some thousands of mares of the breed, but the number is declining rapidly.

6.2 Mezohegyes Halfbred

Also in the last century the Mezohegyes Halfbred was founded on the basis of two English Thoroughbred stallions; it was excellent for both riding and light draught work. The strain (called also Furioso-North Star according to the names of the founder stallions) is noble and elegant and owing to its large size and working ability it is also suitable for agriculture. The whole breed numbers 120 mares on 6 farms.

6.3 Gidran

The Gidran strain was also bred at Mezohegyes, since the 1810s. The founder was a chestnut Arab stallion named Siglavy Gidran the colour of which has been preserved up to the present time. The breed can be considered an Anglo-Arab strain because Arab stallions and English Thoroughbreds played the main role in its development.

This breed is very suitable for modern sports owing to its relatively large size. The whole stock of the breed is very small (numbering about 30-40 mares); therefore it really is threatened with extinction.

6.4 Kisbér Halfbred

This is a breed of much finer constitution heavily permeated by Thoroughbred blood. Several Thoroughbred stallions were used to establish and to improve the breed. It has been used as an ideal hussar (light cavalry) horse. The purpose of establishing the Kisbér Halfbred was to breed stallions which could transmit the advantages of the English Thoroughbred without the disadvantages of the direct input of Thoroughbreds. The Kisbér Halfbred has provided a lot of excellent sport horses. The number of the ancient strain has declined (about 70 mares) and there is a discussion whether the Kisbér Halfbred is a breed or a breeding method.

6.5 BAbolna or Shagya Arab

Shagya, an Arab stallion, was imported from Arabia to the military stud of BAbolna in 1836. Using other Arabians (O-Bajan, Siglavy, Mersuch, Gazal, etc.) and some Hungarian mares a noble but large size Arab strain was established with good riding characteristics, better than that of the purebred Arabians. This BAbolna strain was accepted by the World Arabian Horse Organization only recently as Shagya Arab in spite of the fact that the BAbolna Arab would be the more logical name. The number of Shagya Arab mares is declining very rapidly and now it is in real danger of extinction.

6.6 Lipizza Breed

The breed was developed since 1580 at the Lipizza (Lipitsa) stud (Yugoslavia). It is now bred in the neighbouring Danube countries: Austria, Czechoslovakia, Romania, Yugoslavia and Hungary. Each of the studs has 40-80 brood mares. Breeding is based upon the same 7-8 male lines in all countries. Exchange of stallions between countries occurs after some generations of inbreeding (Yamada 1980). Therefore I think the maintenance and preservation of the Lipizza breed can be considered a very appropriate exercise in international cooperation.

7. POULTRY

The preservation of poultry breeds is not so difficult as that of domestic mammals because it is not so expensive and one can use more efficient methods. This paper only lists the old breeds and varieties threatened by extinction and which deserve consideration as genetic resources.

Hen: Speckled Hungarian, Yellow (Gold) Hungarian, White Hungarian, Naked-Neck Black and Speckled..

Goose: Frizzled Feather.

Although the preservation of the genes of poultry breeds is possible by scientific mating systems in batteries, it is very important also to keep old breeds under their original environmental conditions in small farms.

8. DOGS

Some native dog breeds are registered in Hungary as listed below: Herder's dogs: Komondor, Kuvasz, Mudi, Puli, Pumi. Magyar aggr (Hungarian Greyhound). Erdélyi kopó (Chien courant of Transylvania). Magyar vizsla (Hungarian Pointer).

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