
THE CAMEL BREEDS OF INDIA IN SOCIAL AND HISTORICAL PERSPECTIVE

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SUMMARY

This article traces the evolution of one-humped camel (*C. dromedarius*) breeds in India and describes the social and historical factors that contributed to their formation. In India a number of distinct breeds developed from the breeding herds maintained by the Maharajahs of Rajputana for supplying camels for desert warfare. After a summary of the literature, details are provided on the characteristics and historical background of the individual breeds or types. The threats to the continued existence of these breeds and their genetic diversity are also evaluated.

RESUME

Cet article met en évidence l'évolution des races de dromadaires (*C. dromedarius*) aux Indes et décrit les facteurs sociaux et historiques qui ont contribué à leur formation. Aux Indes, un nombre de races différentes s'est développé à partir de troupeaux d'élevage maintenus par les Maharajas de Rajputana pour avoir à disposition des chameaux pour les guerres dans le désert. Après un aperçu sur la littérature, des détails sont donnés sur les caractéristiques et les antécédents des races ou types individuels. On analyse également les facteurs menaçant l'existence de ces races et leur diversité génétique.

1.0 INTRODUCTION

The one-humped or dromedary camel (*Camelus dromedarius*) reaches the eastern limit of its continuous distribution area in the Indian subcontinent. With 1.1 million head, India has the third largest camel population in the world; the majority of these are in Rajasthan (70.1 %), with much smaller numbers in Haryana (11.2%), Gujarat (7.0%), Punjab (5.9%) and the rest in Madhya Pradesh and Uttar Pradesh (K:HANNA et al.,1990). In India, camels are utilized primarily as draught animals while their food potential goes largely unexploited. Their most frequent function is to pull two-wheeled carts, but they are also used for ploughing, lifting water, threshing, and riding. The use of the camel as a draught animal became popular only since World War II, hinging on the invention of a type of cart equipped with used airplane tires. Until then camels had been used primarily as pack animals. In addition, they had also fulfilled an important military function in the princely states of former Rajputana (now Rajasthan) that maintained camel corps (KOHLEERROLLEFSON,1992).

This note is based on data collected through field investigations and interviews with camel breeders as well as by examining a wide range of historical sources and literature.

2.0 REVIEW OF THE LITERATURE

2.1 Historical Sources

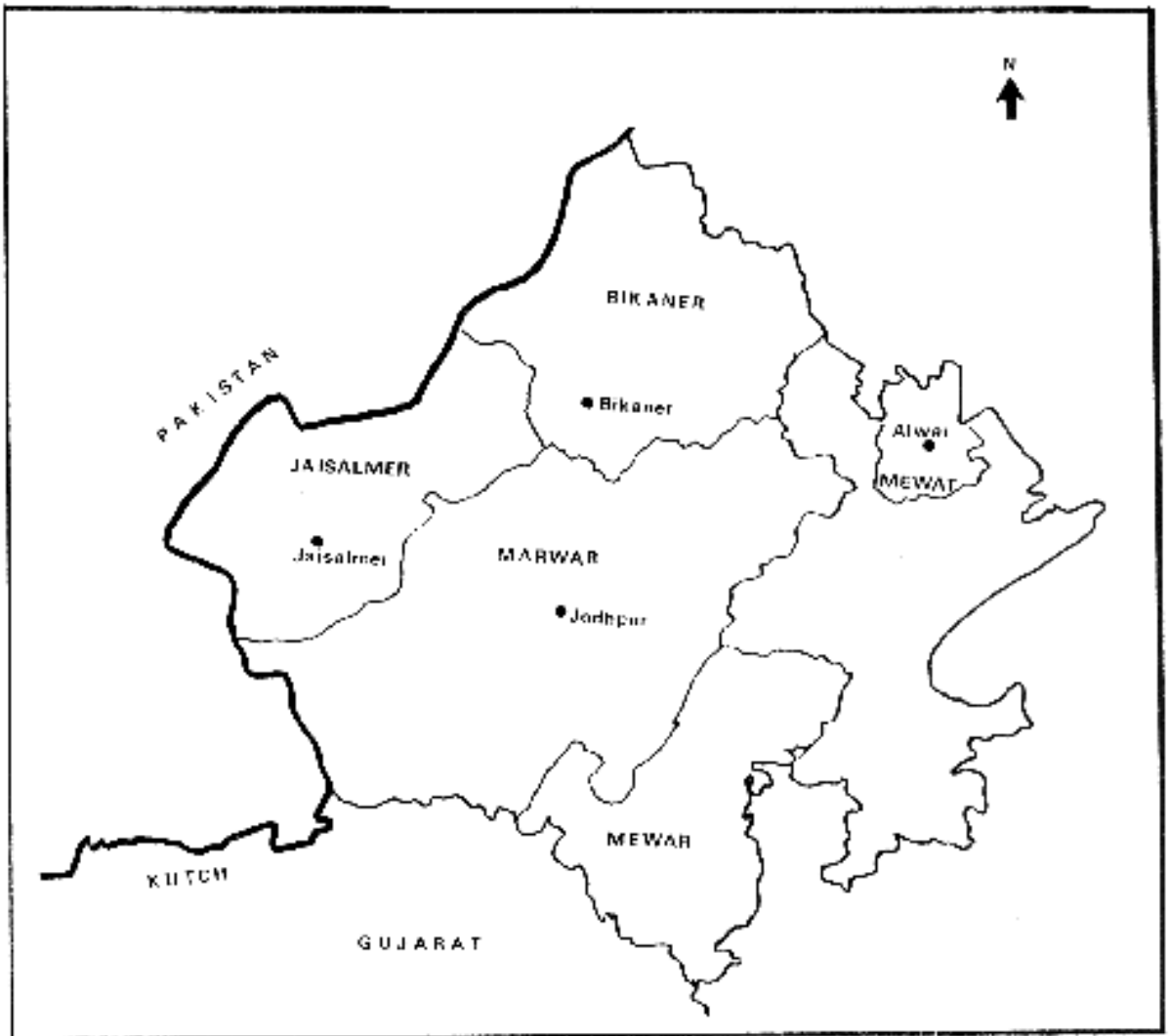
One of the earliest references to Indian camel breeds is contained in the *Ain-i Akbari*, a book written during the reign of Moghul emperor Akbar (1556-1605), which states that because of Akbar's liking for this animal "the quality of country bred camels improved very much, soon surpassing those of Iran and Turan". A number of locations (Ajmer, Jodhpur, Nagaur, Bikaner, Jaisalmer, Batinda and Bhatnir) were mentioned for their great numbers of camels, but the best camels were said to come from an area near Cach [Kutch] in Gujarat. Camels were reported to be most numerous in Sindh. The camels from Ajmer were reputed to be the fastest, and those from Thatha the best beasts of burden {ABU'L FAZL ALLAMI,1965}. In the 18th century, Nagaur, Jaisalmer, and Bikaner were renowned centres of breeding in Rajasthan, but camels imported from Baluchistan and Gujarat were also popular (SAXENA,1980).

2.2. Colonial

British colonials in charge of camel mounted regiments also commented on the Indian camel breeds; their comments reflect their perspectives as recruiters of animals useful for military campaigns. Major Hogg (in CROSS,1917) singled out Rajputana as prime breeding zone, especially mentioning the camels of Alwar and Bikaner, and contrasted its "thoroughbred" camels favourably with the universally encountered "dogla" or cross-bred camel. He lamented the loss of camel breeds caused by the closure of forest areas to grazing and expansion of irrigation agriculture, limiting the area where camel breeding could be practiced. The other types of camels he mentioned include the *pawindah* and the *peshin* {from Baluchistan}, the *thal* ("the most miserable specimen"), the *pahari* from the Salt Ranges, and the camels from Dera Ismail Khan, all from present-day Pakistan.

Hogg lumped together the Montgomery, Sindh and Gujarat camels, but he commented that they probably represented distinct types in the past.

LEESE (1927) echoed the sentiments of Hogg in regards to the decline of camel breeding zones, especially in the North Punjab. He also gave the camels from Rajputana the highest marks, particularly those bred in Bikaner, Jessulmere [Jaisalmer], Alwar, and Bahawalpur (now in Pakistan). He discussed the camels of the United Provinces, Punjab, and the Northwest Frontier, remarking that all the riding camels used in these areas were imported from Rajputana. He agrees with Hogg on the *thal* camel being inferior, and for Sindh he noted those from Tharparkar as excellent riding animals.



Camel Breeding Zones of Rajasthan

2.3. Modern Sources

In the recent literature much fewer breeds are enumerated, and there is no agreement in regards to which regional types should be considered as true breeds. RATHORE (1986) distinguishes between Bikaneri, Jaisalmeri, and Mewari for Rajasthan, and the Kachhi [Kutchi] in Gujarat. KHANNA (1988 and 1990) lists Bikaneri, Jaisalmeri, Sindhi, Marwari, Mewari and Kutchi as breeds that can be distinguished on the basis of body characteristics. MITTAL (1990) concedes only three distinct breeds, the Bikaneri, Jaisalmeri, and Kutchi, categorizing all others as “non-descript”.

To determine which regional types of camels should be classified as “breeds” is not only a question of grouping them according to physical and/or performance characteristics; valuable clues can also be retrieved from an examination of the sociohistorical context in which camel breeding was practiced in India. A “breed” is mostly the product of human intervention; it can only develop when a subpopulation of a domestic animal species is separated and sexually isolated from the rest of the gene-pool. This can happen as a result of conscious selection for certain phenotypic or performance characteristics, as is typically the case in herd book registered livestock breeds. However, the keeping of a herdbook or of written records is not a prerequisite for breed formation. Many non-literate pastoral societies have developed distinct breeds because of social

mechanisms which preclude the commercial sale of breeding stock, essentially leading to a well demarcated and stable genepool (KOHLENER-ROLLEFSON, in print). In India there were several regional situations in which camel subpopulations were sequestered and distinct breeds could develop.

3.0 SOCIOECONOMIC CONTEXT OF CAMEL BREEDING

Currently, camel ownership is widespread among the rural population of western Rajasthan and is not a phenomenon restricted to members of a particular caste or occupation. Possession of a camel and cart can provide a very reasonable income through transporting a variety of loads. This type of business represents an attractive economic option for members of many castes, although it appears to be especially favoured by Sindhi Muslims who have a past tradition of working as caravaneers.

3.1. The Origin of the Camel in Rajasthan

According to local legends, the camel was introduced to Rajasthan from Sindh by Pabuji, a Rajput folk hero, who is assumed to have been a historical figure in the beginning of the 14th century. There is only scant evidence for the camel in Rajasthan prior to this period, and historical records suggest that the camel was not widely known in the area before this time.

3.2 Historical Patterns of Camel

Before the camel became popular as a draught animal, the breeding and ownership of camels was largely restricted to only two castes, the Rajputs and Raikas (although it can be inferred that the Marwari trader community who were involved in long-distance commerce and the caravan trade also had an interest in camel ownership). The Rajputs, composed of the ruling elite of Maharajahs, Rajahs and lesser feudal landowners, required large numbers of camels for warfare among themselves and against Muslim invasions. For this purpose, the majority of the states of Rajputana, including Bikaner, Jaisalmer, Jodhpur, and Jaipur, maintained camel corps. These so-called *risalas* comprised camels mounted by two riders, one of them equipped with a matchlock rifle. The necessary camels were recruited either by standing arrangements with tributary landowners or from their own "royal" breeding herds.

The Rajputs employed members of a specialized caste, the Raikas, to look after their *tolas* or camel breeding herds (KOHLENER-ROLLEFSON 1992; SRIVASTAVA 1991). In their function as expert camel handlers and breeders the Raikas, also called *Rebaris*, eventually even reached the Moghul courts in Delhi, where they were transferred on the occasion of marriages between Moghul princes and Rajput princesses (IBBETSON 1970). Even after the feudal system was abandoned and the royal camel *tolas* were dispersed at the beginning of the 20th century, many of the Raikas continued their camel breeding tradition, and today most large scale camel breeding is still practiced by them.

4.0 CAMEL BREEDING IN REGIONAL CONTEXT

4.1 Bikaner

The Bikaneri camel is the most famous in Rajasthan. It is characterized by its tall height (withers height 2.0-2.2 m) and is typically of reddish brown color, although other shades from sandy to dark brown also exist (KOHLENER, 1988). Its weight varies from 450-680 kg and it is in high demand as a draught animal. The development of the Bikaneri camel into a distinct breed can be attributed to the active interest of the Maharajahs of Bikaner who established their kingdom in 1489, after seceding from Jodhpur (Marwar). It is said that its founder Rao Bika brought with him some Raika families who settled in the village of Godhwala to take charge of the royal camel breeding herd.

In 1914 the *shutarkhaha* (camel breeding establishment) of the Maharajah of Bikaner consisted of 1,636 she-camels and offspring plus 49 stallions (Administrative Reports for Bikaner, 1913-14). It was disbanded in 1929 when the royal camels were sold off by auction. The Raikas from

Godhwala still own about 500-600 camels; some of the men are employed as camel handlers by the National Research Centre on Camel in Bikaner. This institution maintains a large breeding herd of Bikaneri camels and undertakes efforts to improve the draught potential of this breed.

The Bikaner camel corps was famous for centuries. In 1894 Maharajah Ganga Singh was complemented on his camel corps by Lord Elgin (SINGH,1974). It served with distinction in Egypt, Somaliland, and several other countries.

4.2 Jaisalmer

The Jaisalmeri camel is a typical riding type, bred in the vicinity of the town of Jaisalmer and in the district of the same name that is located on the border to Pakistan in the most arid part of the Thar Desert. Until recently there were no roads in this area and the camel was the only means of transportation. The Jaisalmeri camel is medium sized, of light build and usually of light-brown colour. It is able to cover 100-125 km, or even up to 160 km, in a cool night (RATHORE,1986).

The Maharajah of Jaisalmer maintained a breeding herd in the Raika village of Achla, but the village of Nachna was even more renowned for the quality of its camels (MEHAR, pers. comm.). The *thakurs* (landlords) of Nachna, relatives of the Jaisalmer royal family, were involved in camel breeding on a large scale and for this purpose employed Raikas from the village of Nokh, as well as some members of the Sindhi Muslim community. To the same end they transferred a number of Raika families from the Jodhpur area and settled them in "Rebarion ki Dhani" near Jaisalmer. During the First Afghan War in 1838-1839 the Jaisalmer ruler provided camels to the British government (SOMANI,1990).

Camel riding is no longer the preferred mode of travel for the rural population of Jaisalmer district, but the area is now witnessing a burgeoning tourist business, and riding camels are very much in demand for "camel safaris" as well as other forms of entertainment, especially racing and various types of games.

4.3 Marwar

The ruling family of Marwar, the biggest state of Rajputana, also maintained a camel corps which was deployed in their frequent military campaigns, and on occasion it was lent out to the Moghul emperors in Delhi (SAXENA,1980). Camels for the Maharajah's army were supplied by the Raikas of a number of villages in the vicinity of Jodhpur (including Salawas, Khejerli, Kharda, and Binaikia) who kept a total of 4,000-5,000 camels. According to information from Salawas, they received 50 Rps. per camel per year as compensation at the beginning of this century.

The Marwari camel tends to be of medium height, medium build, and of fairly dark color. It does not appear to represent as distinct a type as the camels of Jaisalmer or Bikaner. Whereas in these much smaller states camel breeding was concentrated in a few Raika settlements, in Marwar it was a much more dispersed activity. Camel breeding was not just a matter of royal patronage, but was also pursued by the Rajputs that composed the landed gentry. Especially acclaimed according to the British gazeteers were the Ramthalia camels bred by a family of Sodha Rajputs in a cluster of villages (Lunahar, Pachunda, Karada) near Sheo in the present-day Barmer district.

Marwar is the original home of the Raikas where they are most densely concentrated. It is likely that they supplied camels as pack animals to the trading community in addition to the Rajput armies. The main trade-route and traffic artery from Delhi and Agra to the Gulf of Cambay passed through Marwar, and in addition to ox-carts, burden camels were the main means of transportation.

4.4 Mewar

Mewar was a major state of former Rajputana ruled by the Maharaja of Udaipur. This is a hilly and relatively humid area with formerly extensive forest cover. The type of camel encountered here is usually heavy-boned, of medium height, and light-colour.

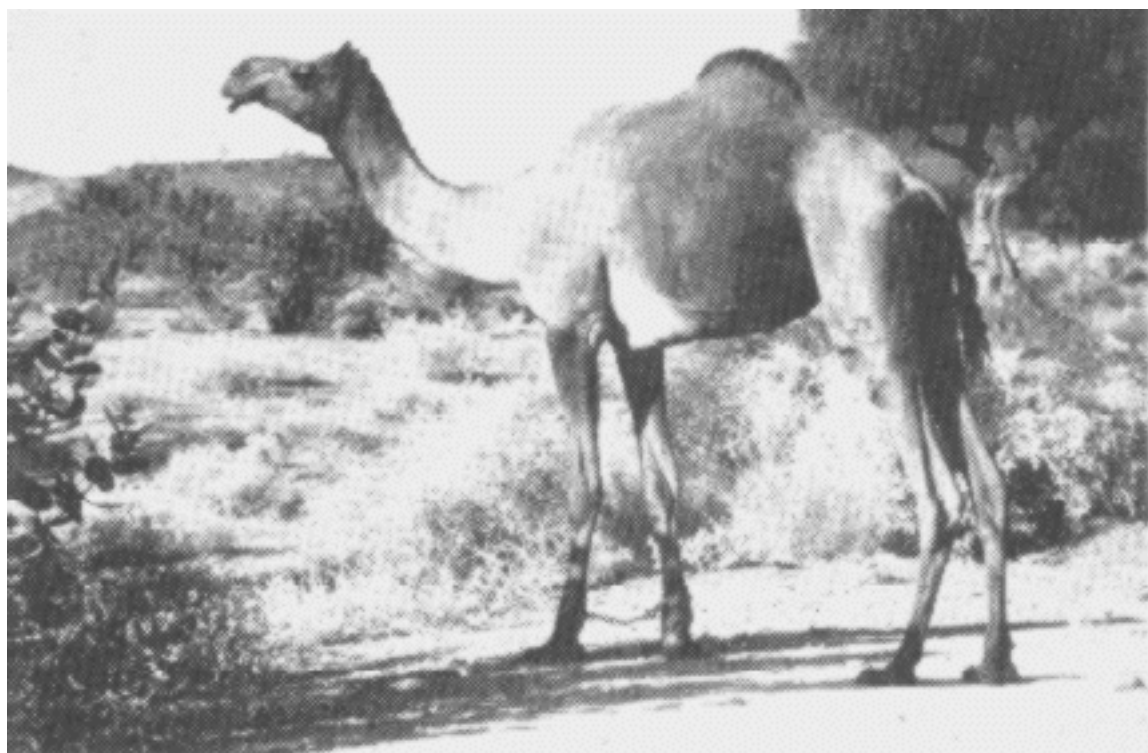
According to RATHORE (1986), the Mewari camel was developed from the hill camels of



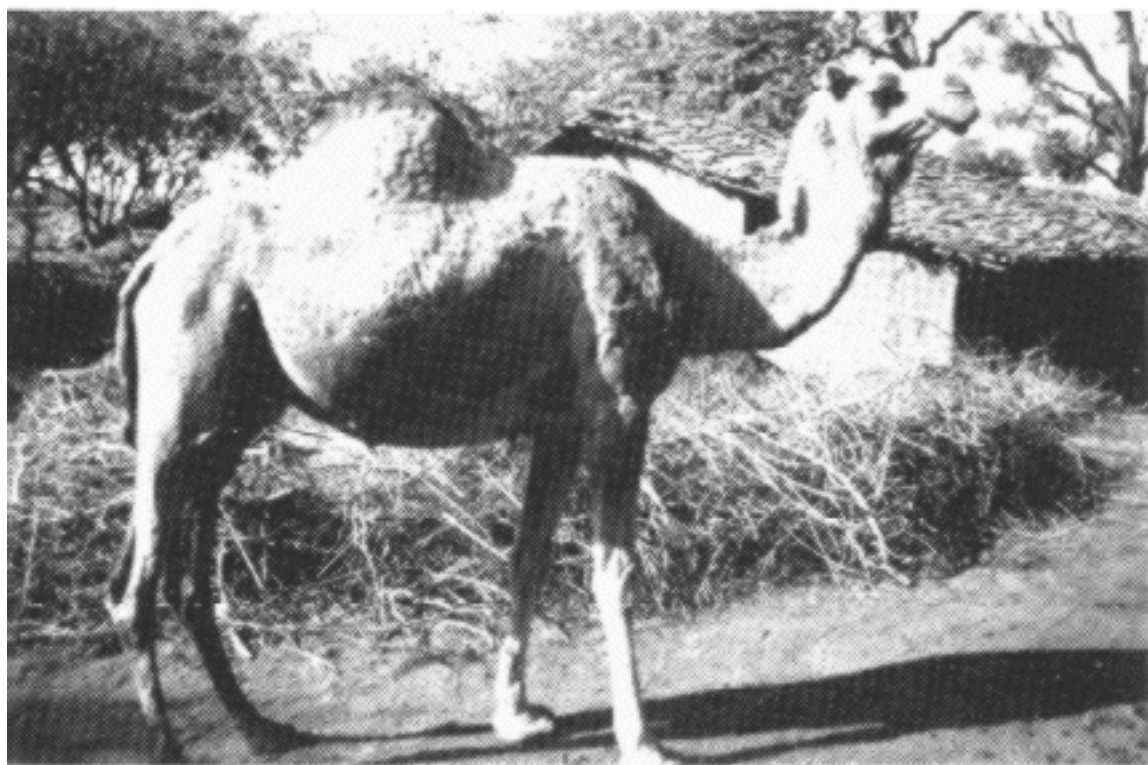
Bikaneri Camel



Jaisalmeri Camel



Marwari Camel



Mewari Camel

the Punjab. It is said to produce fairly good milk yields. There is no evidence for camel breeding ever being sponsored by the ruling family, and it seems to have been practiced only on a small scale by farmers owning one or two camels, a situation that was not conducive for the development of a well defined breed.

4.5 Alwar/Mewati

The Maharaja of Alwar undertook what was pronounced as the first camel breeding on “scientific lines”, maintaining a large camel breeding farm in a hilly area near Alwar whose “management was in the hands of Rewari [Rebari] camel men and doctors, by far the best in India”. According to Major Hogg, after years of selection the Alwar camels had accumulated all the splendid qualities of the Rajputana camel. “These blood animals were remarkable for their courage and character. The Alwar camel is harder-footed and slightly shorter in stature than his Bikaner counterpart, and his neck has a deeper curve and is more gracefully set on” (CROSS 1917). Unfortunately, what must have been a distinct breed at the beginning of this century appears to have already passed into oblivion; the present scions of the Alwar family have no recollections of their forefathers’ initiatives in respect to camel breeding.

4.6 Bahawalpur

The ruler of Bahawalpur was famous for the quality of his camels (ELPHINSTONE, 1969) and also maintained a camel corps. LEESE (1927) described the Bahawalpur camel as “tall and good both for baggage and riding, and with the desert stamp of head; he has not so much bone as his Multan neighbour, he stands hardship well in hot climates.”

4.7 Kutch

In Kutch, camel breeding was not a matter of royal patronage. It was practiced by Rajputs, Rabaris, Sindhis, and Bharvads. There are conflicting reports whether this was a camel importing or exporting area: POSTANS (1839) said that camels were brought principally from Marwar and Sindh. RATHORE (1986) stated that the Kutchi camels came from Sindh. They are well adapted to feeding off the vegetation in the salt marshes, are heavy bodied, and are of gray or darkbrown colour.

In 1979 the Gujarat government introduced Bikaneri blood to improve on draught capacity, and at a camel breeding farm in Dhori, near Bhuj, crosses between Bikaner and Kutchi camels are produced. The Kutch camels reportedly have good milk yields of between 2 and 6 kg per day and, contrary to the situation in Rajasthan, it is said that camel milk is even marketed. It is frequently asserted that camel milk represents the main food for some of the Rabaris, who sometimes subsisted for weeks on it (WESTPHAL-HELLBUSCH and WESTPHAL, 1974).

5.0 CONTEMPORARY PRODUCTION SYSTEMS

5.1 Management

Even today, practically all large camel herds are owned by Raikas or Rajputs. The production system is oriented towards male animals, which are regarded as much superior for work purposes and consequently fetch much higher prices. Since other products, such as milk, are of no great concern, the breeding system in the arid districts of western Rajasthan requires very little management input. Large camel holdings (50-200 head per family) often roam free during most of the year and are supervised only in the rainy months and the breeding season. They tend to return to their customary watering points at regular intervals, and the Raikas are experts in tracking down stray camels from their foot prints.

In the semi-arid districts and the area of the Aravalli Hills, camel herds are smaller (20-50 head) and are fed on harvested fields, crop by-products, and, during the rainy season, in the forest areas. Because of population pressure and the expansion of irrigation agriculture, it has become a serious problem for many of the traditional camel breeders to find grazing for their camels, and frequently animals are in a dismal nutritional state that predisposes them to diseases, especially mange and trypanosomiasis.

Members of agricultural castes with some land holdings, such as Jats and Bishnois, are increasingly taking up camel breeding. They usually keep only a few head of breeding stock, but because of access to agricultural by-products their camels tend to be in a much better state and therefore fetch higher prices than those of the Raikas.

5.2 Breeding Practices

The Raikas keep detailed mental records of their camels' ancestry. They memorize the maternal lines and refer to breeding sires as sons of respective female lines. Breeding males are selected for conformation and temper and are exchanged at least every four years to prevent inbreeding. They keenly observe which types of camels fetch the highest prices at fairs and try to obtain males that breed such animals.

The sale of female breeding stock is not condoned and was explicitly prohibited in a recent caste meeting. The exchange of female animals from one breeding herd to another is therefore almost totally restricted to transactions at the occasion of weddings. When a Raika bride from a camel breeding family moves to her husband's village, a number of camels are usually included in her dowry. The Raikas are exogamous, i.e. they marry outside their gotr (or lineage), but they have marriage arrangements only with certain villages. This leads to a reciprocal exchange of breeding camels that entails a consolidation of the gene-pool; undoubtedly this is a factor that contributed to the development of distinct local types.

5.3 Outlook

The socioeconomic framework of camel breeding in Rajasthan is undergoing substantial transformation. The camel breeding caste of the Raikas is gradually being forced out of their traditional occupation because of their landlessness. The common property resources which formed a crucial component of their production system decreased by 32% between 1956 and 1987 (VENKATESWARLU, 1989). The progress of the Indira Gandhi canal continues to eliminate much prime grazing territory; extensive sections of the Aravalli Hills which represented the traditional summer pasture grounds for many Raika camel herders have been elosed as pasture. These developments are threatening the survival of the Raikas and are favouring agricultural land owners.

The traditional system in which camel breeding was the domain of two castes and in which breeding stock was circulated only along kinship lines is being displaced by a commercial order in which animals are sold for cash and across regional borders. This will undoubtedly result in an increasing homogenization of the gene-pool. The distinct regional breeds that evolved out of the camel herds maintained by Rajput nobility are in the process of being replaced by a generic, general-purpose camel.

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LA PAZA OVINA RASA ARAGONESA: CARACTERES MORFOLÓGICOS Y PRODUCTIVOS

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RESUMEN

Se presenta el medio, censo y características morfológicas de la raza Rasa Aragonesa, ovino español situado en la cuenca media del río Ebro. Se exponen igualmente sus caracteres productivos (reproducción, pesos, crecimientos y producción de leche) y sus sistemas de explotación, finalizando con los planes de mejora por selección y cruzamiento.

SUMMARY

The morphological characteristics, environment, and number of Rasa Aragonesa sheep, a Spanish breed located in the middle Ebro Valley, are presented. The production features of this breed are also indicated, (reproduction, weights, growth, milk production) as well as the systems used to farm them. Finally plans for improvement by means of selection and crossing are discussed.

1.0 INTRODUCCIÓN

La Rasa Aragonesa es una raza ovina ubicada en la cuenca media del Ebro, abarcando básicamente Aragón y extendiéndose por el E y O a las provincias limítrofes. Su hábitat corresponde a un clima continental duro, con grandes oscilaciones térmicas, fuerte insolación y escasa y mal distribuida pluviometría (250-500 mm), presentando suelos calizos emplazados en valles, mesetas o colinas, con vegetación xerofita, apoyada por zonas de regadío y secano cerealistas. La oveja Rasa Aragonesa se halla adaptada a este difícil medio aprovechando los escasos pastos, rastrojeras y residuos de cosechas existentes.

Su origen corresponde al *Ovis Aries Ligeriensis*, primitivo tipo ovino situado en la Europa Central, que se extendió a Francia, pasando a España a través de los Pirineos acompañando a los pueblos indoeuropeos. Este tronco dio lugar a lo largo de los siglos a razas concretas, con numerosos caracteres comunes (Lacaune, Prealpes, etc. en Francia y Manchega y Segureña en España): lana blanca entrefina, ausencia de cuernos y perfil subconvexilíneo.

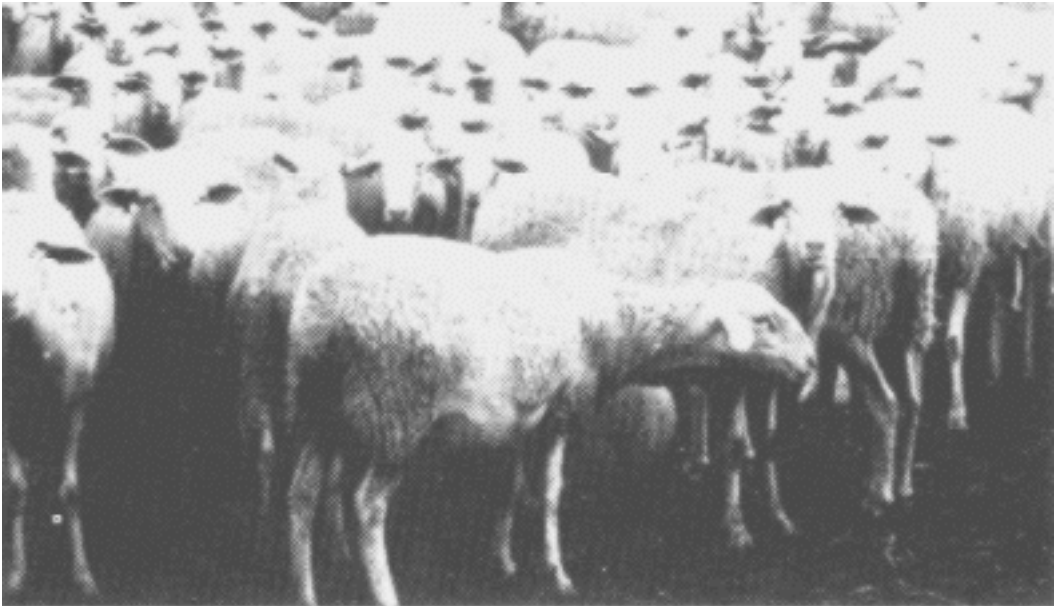
Su censo es elevado (2,6 millones de cabezas, de las que unos 2,2 millones son hembras reproductoras) ocupando el segundo lugar en España, tras la raza Merina, y situándose el 75% de la población en la región aragonesa, de la que toma nombre. El tamaño medio de la explotación gira en torno a los 200 animales, oscilando notablemente (entre 100 y 1.200 ovejas).

2.0 CARACTERES MORFOLÓGICOS

Sus características, tomadas de ESTEBAN y TEJON (1985) y SIERRA (1987), son las siguientes:

Perfil fronto-nasal subconvexo, tamaño mediano y proporciones medias.

Existen tres ecotipos: “Monegrino” con censo muy escaso, “Turolense” el más puro y “Mejorado” o de Valle, más moderno.



Ovejas

La cabeza es de tamaño medio, con ausencia de cuernos en ambos sexos. Posee orejas horizontales, más alargadas en el “Turolense”. Cuello delgado, presentando con frecuencia mamellas o pendientes.

Tronco proporcionado, línea dorso-lumbar horizontal con grupa ancha e inclinada. Desarrollo torácico y muscular medio; extremidades alargadas, bien aplomadas y con pezuñas duras. Todo esto nos describe un animal ligero, resistente y acostumbrado a grandes recorridos para procurarse el alimento.

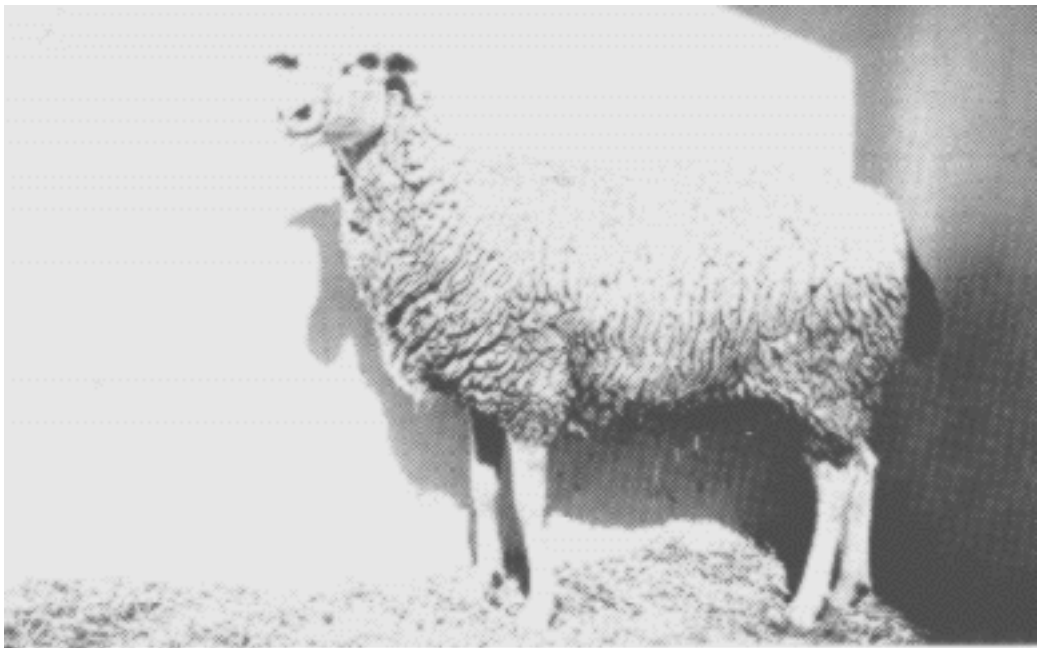
Son animales totalmente blancos, con vellón entrefino de mecha cuadrada (fibras de 5-10 cm de longitud y 24-30 μ de diámetro) con aspecto liso o “raso” (de ahí el nombre) y cabeza, vientre y extremidades al descubierto. La lana es más fina y el vellón algo más extenso en el ecotipo Monegrino y más basta en el Turolense.

El peso del vellón oscila entre 1,5-2,0 Kg en las hembras y de 2,0-3,0 Kg en los machos, presentando un rendimiento al lavado del 43-47%.

El peso vivo adulto es muy variable, incluso dentro del mismo ecotipo, en función de las diferentes condiciones ambientales:

Ecotipo	Machos	Hembras
Monegrino	55-80 Kg	45-55 Kg
Turolense	75-100 Kg	50-65 Kg
Valle o Mejorado	75-100 Kg	50-65 Kg

El Monegrino procede de la zona más árida y es más pequeño y recogido. El Turolense posee mayor alzada, siendo el Mejorado más compacto.



Oveja

3.0 CARACTERES PRODUCTIVOS Y DE EXPLOTACIÓN

Es fundamentalmente una raza rústica, de gran capacidad de adaptación al medio, ideal como línea madre.

3.1 Reproducción

Posee una *precocidad* sexual media presentando su primer parto entre 11 y 17 meses, según época de nacimiento y sistema de explotación. *La actividad sexual* es muy amplia, prolongándose a todo lo largo del año, con un relativo y variable descenso en primavera (anoestro estacionario con 35-70% de fertilidad). *Su prolificidad* oscila entre 1,20 a 1,50 corderos por parto en función de la época de cubrición, de las condiciones ambientales y de la mejora realizada (cifras medias anuales entre 1,21-1,36, SIERRA, 1983).

3.2 Producción de leche

En cuanto a la *capacidad lechera*, (FORCADA et al., 1984) ofrece producción suficiente para la alimentación del cordero en parto simple o gemelar (38,40 Kg y 45,40 Kg respectivamente en las primeras 7 semanas), siendo su leche de calidad media (7,10% grasa y 4,40% proteína). Sin embargo la curva de lactación es corta, no realizándose ordeño.

El peso medio al nacimiento y los crecimientos en función del sexo y modo de nacimiento se indican en el Cuadro 1, incluyendo también los resultados de cruce industrial (SIERRA, 1989a y 1991a).

En el Cuadro 2 se presentan los datos de mortalidad, igualmente en raza pura y en cruzamiento (SIERRA, 1983).

En pureza, se trata de una raza con un potencial medio de crecimiento, pero que ofrece un cordero de gran calidad: el "Ternasco" (SIERRA, 1974a y SAÑUDO, 1980). Es la producción más representativa de la Rasa Aragonesa, siendo el "Ternasco" un cordero joven (70-90 días), ligero (20-25 Kg de peso vivo y 9-12 Kg de canal) y producido siempre en estabulación, con pienso concentrado ad libitum y paja de cereal. Presenta una carne rosada y tierna, habiendo recibido actualmente la calificación oficial de Denominación específica de calidad. Dicha canal se halla ya terminada a temprana edad (22-24% de grasa) dada la precocidad de la raza.

4.0 SISTEMAS DE EXPLOTACIÓN

Las condiciones agrarias (fincas parceladas y diseminadas) hacen difícil las grandes empresas ovinas, limitando el tamaño del rebaño y dificultando el manejo en cercas.

En zonas de secano cereal es posible formar grupos con 500 a 800 ovinos por pastor, pero en regadío no es fácil pasar de 300. Todo ello supone un elevado coste de la mano de obra, que es a la vez rutinaria y difícil de encontrar, siendo uno de los problemas básicos

para la viabilidad de la empresa ovina. En general la raza se explota en pastoreo tradicional, regresando todos los días al aprisco, siendo frecuente la complementación entre pastos de secano y regadío.

La cubrición se realiza mediante monta natural en libertad, presentando planes reproductivos muy variados, con monta continuada a lo largo del año o bien por épocas. En las explotaciones muy extensivas, con escasos complementos alimenticios (lo que motiva la típica oveja "acordeón") es frecuente un parto al año y lactancia del cordero hasta el sacrificio, obteniéndose una menor productividad numérica (menos de 1 cordero vendido/hembra/año). Otras realizan intensificación reproductiva, incluso con el apoyo de control del ciclo sexual en primavera mediante esponjas vaginales y con destete de los corderos a unos 50 días de edad, alcanzando así 1,3-1,4 partos/oveja/año y 1,3-1,5 corderos por parto (1,4-1,7 corderos a la venta, descontando mortalidad y tasa de reposición). La media fluctúa en torno a 1,1-1,2 partos, con 1,2-1,4 de prolificidad y venta entre 1,05 y 1,4 corderos (SIERRA, 1991b).

La oveja recibe suplemento a fin de gestación y durante la lactación (maíz o cebada grano y heno de alfalfa), manteniéndose estabuladas en ciertos casos en las fases productivas.

Cuadro 1

Pesos, crecimientos y características de la canal en corderos Rasa Aragonesa y cruzados con Suffolk y Fleischschaff (SIERRA, 1989a y 1991a)

Genotipo corderos	Rasa Aragonesa (RA)		Suffolk x RA		Fleischschaff x RA	
	♂	♀	♂	♀	♂	♀
Peso vivo nacimiento (Kg)	3,450	3,324	4,181	3,846	3,982	3,675
Peso a 30 d. (Kg)	10,290	9,834	11,411	10,716	11,032	10,455
Crecimiento 0-30 d. (g)	228	217	241	229	235	226
Peso a 90 d. (Kg)	26,730	24,894	32,579	27,886	29,031	26,682
Crecimiento 30-90 d. (g)	274	251	352	286	300	270
Crecimiento 0-90 d. (g)	259	240	316	267	278	256
I de T. (50-90d.) ¹	3,39	3,82	3,31		3,40	
Rendimiento canal (PCF/PVS)	49,08	49,40	51,13		50,54	
Nota conformación ²	3,1	3,1	4,2		4,0	
Nota engrasamiento ²	3,7	3,9	2,9		3,0	

¹ I. de T.: Índice de transformación (Kg concentrado/Kg ganancia)

² Nota de 1 a 5 (de menor a mayor)

5.0 CONSERVACIÓN Y MEJORA GENÉTICA

La raza Rasa Aragonesa atravesó en los años 60 y 70 una etapa difícil en función de cruzamientos no controlados. Desde el año 1978 se creó el Registro Especial de Ganado Selecto y la Asociación Nacional de Ganaderos de la Rasa Aragonesa (ANGRA), con el correspondiente Libro Genealógico, que mantiene unas 70.000 ovejas en la actualidad, permitiendo potenciar y mejorar la raza.

5.1 Selección

Los técnicos de ANGRA desarrollan una labor de control de rendimientos (reproductivos, pesos y crecimientos) en los diferentes rebaños de la asociación.

Los caracteres básicos a considerar son:

- a. Morfológicos: estándar de la raza y morfología de explotación (aplomos, grupa, carencia de defectos, etc.).
- b. Caracteres maternos: Prolificidad (parámetro muy correlacionado con la rentabilidad, SIERRA,1991b) y capacidad lechera e instinto maternal.

No se desean elevados crecimientos, pues daría lugar a incremento excesivo del tamaño de las futuras ovejas, ni morfología carnífera. Se busca una oveja rústica, adaptada a las condiciones ambientales, con buenos caracteres maternos, en una palabra un “vientre económico” que rentabilice los escasos recursos del medio.

Desde hace unos años se ha iniciado un amplio programa de inseminación para desarrollar el testaje de sementales en coordinación con el Centro de Movera, de la Diputación General de Aragón. A todo esto se unen las subastas subvencionadas de sementales selectos y hembras registradas que son ofrecidos por ANGRA a los ganaderos de la región.

5.2 Cruzamientos

En su faceta de línea madre y con el fin de incrementar su producción de carne es frecuente la realización del cruce industrial, resaltando como líneas padre más utilizadas e interesantes: Ile de France, Fleischschaf y Suffolk (SIERRA, 1989a). Sin embargo el mercado solicita canales ligeras (ternasco) depreciando las pesadas, lo que limita la utilización de estos cruces.

Siendo una raza maternal interesó mejorar rápidamente sus caracteres reproductivos, iniciándose los cruzamientos con Finés (SIERRA,1974b) y con Romanov (SIERRA,1978; GABIÑA y VALLS,1985), ofreciendo esta última raza los resultados más interesantes (primer parto a los 10-1.2 meses y prolificidad entre 1,7-2,2 según la época, manteniendo una prolongada actividad sexual). Este hecho hizo desarrollar la raza sintética SALZ (50% Romanov y 50% Rasa Aragonesa) que ha mantenido los resultados alcanzados por la F₁ (SIERRA,1989b).

Cuadro 2

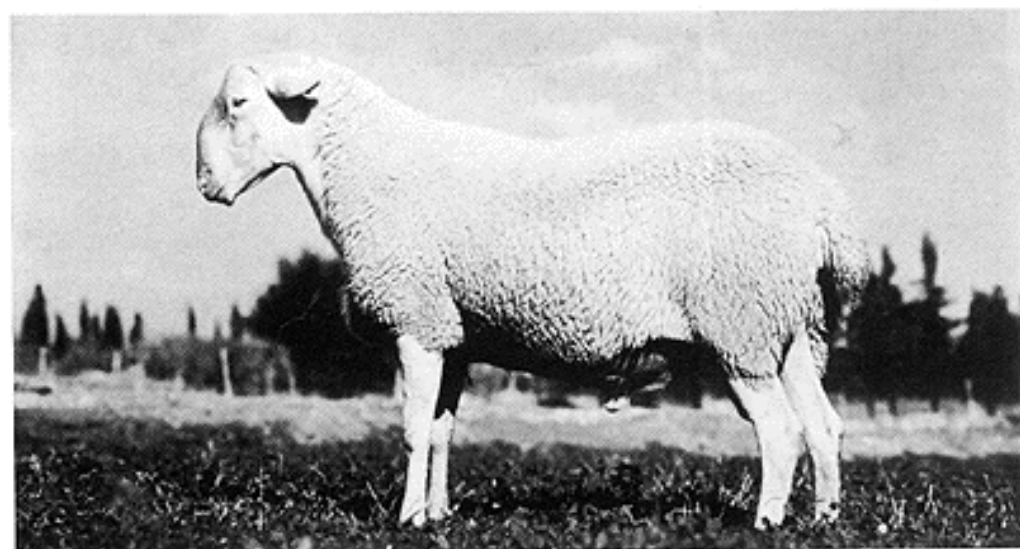
Mortalidad en corderos de raza R. Aragonesa y sus cruces. Efecto del sexo y modo de nacimiento en condiciones de granja (SIERRA, 1983)

Genotipo	Carácter		n	Mortalidad (período)		
				0-2d %	3-100d %	0-100d %
R.A. x R.A.	Sexo	♂	1.699	4,47	4,00	8,30
		♀	1.657	3,47	2,82	6,46
	M.N.	S.	4.080	3,87	2,60	6,37
		MI.	2.434	9,24	4,80	13,60
FI x R.A.	Sexo	♂	1.408	4,12	3,85	7,81
		♀	1.344	3,27	2,15	5,36
	M.N.	S.	3.705	3,10	2,34	5,37
		MI.	2.463	8,77	4,09	12,51
SI x R.A.	Sexo	♂	603	6,30	3,00	9,12
		♀	539	5,94	2,77	8,53
	M.N.	S.	1.086	3,50	2,19	5,62
		MI.	942	8,92	3,61	12,21

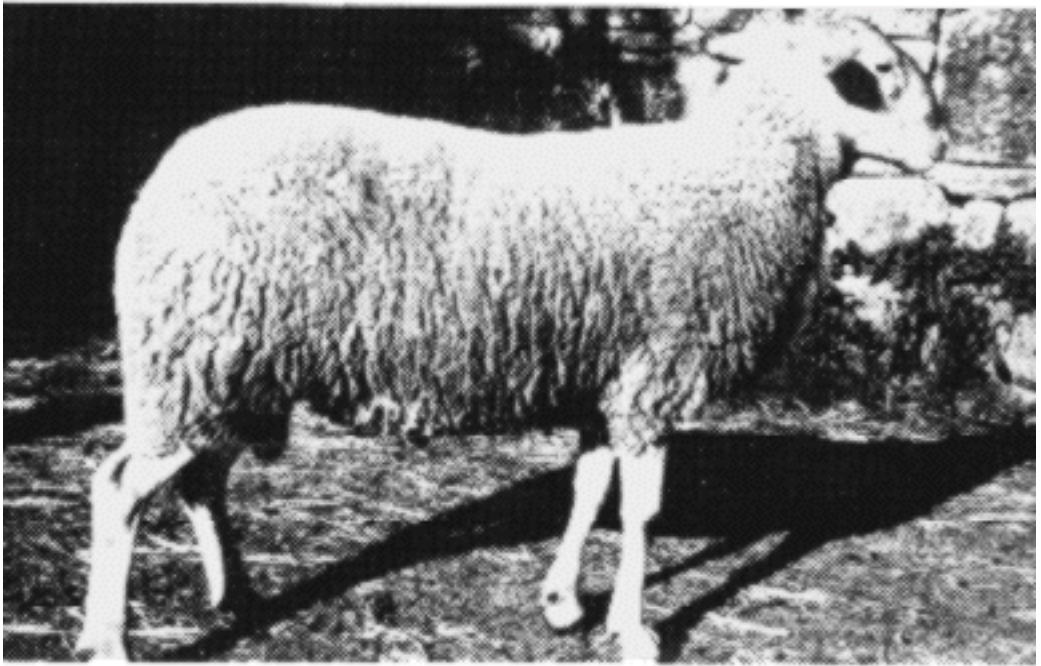
R.A.: Raza Aragonesa; FI: Fleischschaff; SI: Suffolk; M.N.: Modo de nacimiento

S.: Simple; MI: Múltiple

n: número de corderos; d: días; 0-2d.: Incluye los nacidos muertos.



Carnero



Carneros



Oveja

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THE LIPIZZANER IN ITALY

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SUMMARY

The Lipizzaner is one of Europe's most ancient breeds; its history goes back to the early 16th century. The original stock came from the North of Italy and Spain; six male lines introduced in the second half of the 18th century and the early 19th century, from Naples, the Austro-Hungarian empire, Denmark and Arabia upgraded the breed to its actual standard. The Italian national stud of Montemaggiore is perpetrating the Lipizzaner tradition. The horses are kept under extensive grazing conditions and all six "families" (Napolitano, Conversaro, Favory, Pluto, Maestoso and Siglavy) are present.

RESUME

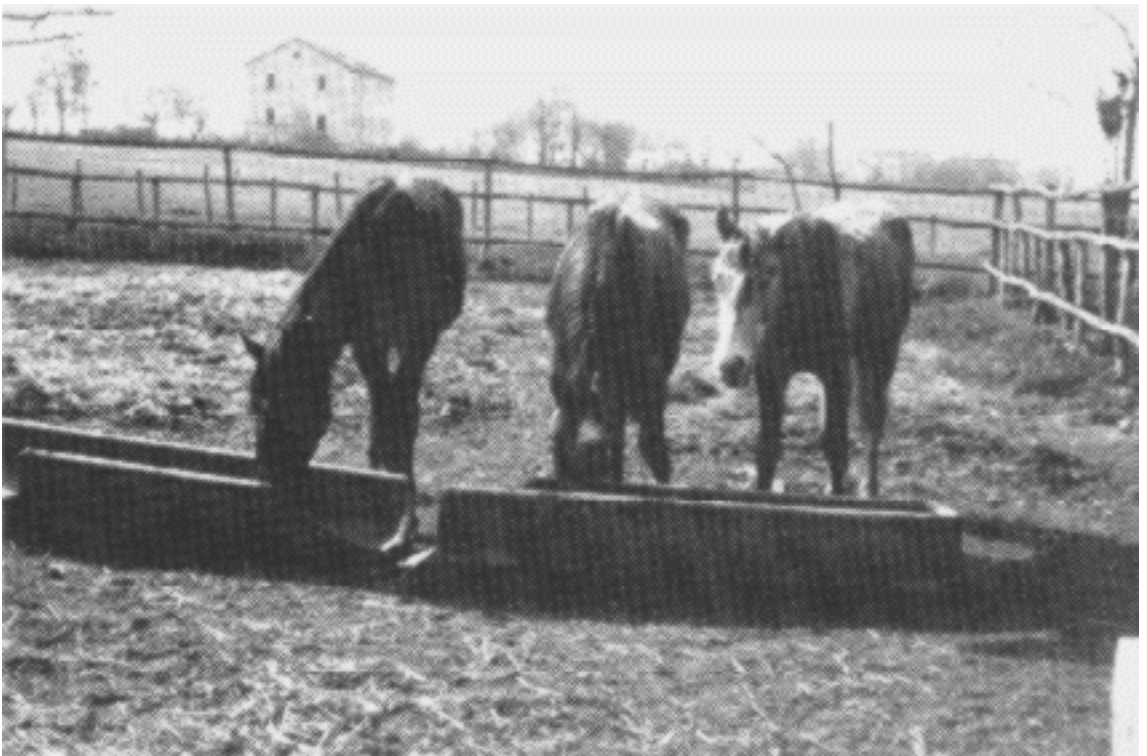
Le Lipizzan est une des races chevalines les plus anciennes d'Europe et son histoire remonte pratiquement au début du 16^{ème} siècle. La souche originale vient de l'Italie du Nord et de l'Espagne. Six lignées mâles introduites au cours de la deuxième moitié du 18^{ème} siècle et, au début du 19^{ème} siècle de Naples, de l'empire austro-hongrois, du Danemark et d'Arabie ont revalorisé la race et l'ont portée à son degré d'excellence actuel. Le haras national italien de Montemaggiore continue la tradition de l'élevage des Lipizzans. Les chevaux sont tenus dans des conditions de pâturage extensif et toutes les six "familles" sont présentes: Napolitano, Conversaro, Favory, Pluto, Maestoso et Siglavy.

1.0 THE PAST

The Lipizzan (Lipizzaner) breed of horses was established by Charles, Archduke of Stiria, third son of Ferdinand 1st of Austria. It was apparently the healthy climate and good quality of the autochthonous horses of the region of Carso and the Aquileiese area that convinced the Archduke to choose Lipitza (Lipizza), a few kilometers north of Trieste, for his new horse-breeding farm. The first stock was introduced on the 10th of May 1580. Some of the mares originated from the well known horse breeding regions of Aquileiese, Polesine and Veronese; others came from Spain as well as a number of stallions belonging to a Spanish breed of high stature, elegant carriage and majestic pace “carriage drawing horses.” Some of the best stallions and mares of Alz dalusia were also imported.

The Lipizzan breed is considered the oldest one in Europe. In the “Spanish horse riding school”, established in 1572, this breed was distinguished from the beginning and eventually became the only breed used in the horse shows, gaining world-wide fame. Today’s Lipizzan horse is the result of the original six male lines:

- Conversano, morel, born in 1767, imported from Naples.
- Favory, sorrel, born in 1773, from the Kladrup stud (Austro-Hungarian empire).
- Maestoso, white, born in 1773, from the Kladrup stud (Austro-Hungarian empire).
- Napolitano, bay, born in 1765, imported from Naples.
- Pluto, white, born in 1765, from the Royal Danish stud of Frederiksborg.
- Siglavy, white, born in 1810, imported from Arabia.



2.0 COLOUR AND STANDARDS

The dark colour of the foal coat lightens each time moulting occurs and the young horses consequently go through various shades of grey until they become completely white. In the past Lipizzans had coats of various colours but in the 19th century only snow-white horses were considered “Imperial Horses.” Since white is genetically the dominant colour it soon became the only colour of the breed. Lipizzans which retain the dark coat of youth are extremely rare nowadays.

A standard example of the breed measures 1.55 m to 1.65 m at the withers for stallions and 1.50 m to 1.60 m for mares. The length from the shoulders to the rump is larger than the height at the withers. The forelegs are short, muscular and sturdy while the hindlegs are slightly longer having the articulation of the fetlock somewhat open; this makes the rump look higher than the withers. The canon measurement can vary from 18 to 21 cm. The hooves are large, sloping and well supported. The head of the Lipizzan is generally rather heavy, narrow, long and slightly ramshaped, the nostrils are large and the jaws are quite strong. They have small, alert well separated ears and their eyes are regular and vivacious. The long arched neck has an ample abundant mane and appears muscular and well set to the head. The withers are generally not prominent but large and muscular. The back is long and sags slightly. The loins are rather long but large, muscular and well inclined. The tail is set high and well carried. The large chest has a good muscular mass. The thorax is remarkably high and deep, well joined at the shoulders and abdomen. The perimetre of the thorax exceeds the height at the withers by 1/8 to 1/6.



3.0 PURPOSE

The Lipizzan breed has been chosen to draw the carriages of royalties and therefore not only is the snow-white coat of great importance but also the agility when trotting which is very pronounced, based on the capacity of learning certain exercises.

Because of these peculiar characteristics Lipizzans have been and still are used in entertainment, from circuses all over the world to the Spanish horse riding school in Vienna, which still maintains the old imperial traditions.

4.0 THE LIPIZZANER TRADITION IN ITALY

The Lipizzan is also adaptable as a saddle horse and in particular as a jumper. In Italy they were used between the two world wars for genetic improvement in many stud farms. In 1922 on one of these farms Nasello was born, sired by Napolitano Allotria and by a Maremma mare; he was purchased by Filipponi, a Sabauda officer. A glorious series of international victories followed, twenty National cups were won and sixty-six first places in competitions until he received a first olympic trophy in 1936.

Towards the end of the second world war the Germans transported both Lipizzan and Piper horses to Czechoslovakia. The Americans moved the stud to Schwarzenburg before the Soviet troupes occupied the area; part of the stud was handed over, together with most of the archives, to Italy. Hence the Italian horse breeding Lipizzan stud established at Montemaggiore near Rome. Initially the farm was under the control of the Ministry of Defense, then the Ministry of Agriculture and Forestry took over. They entrusted it to the Istituto Sperimentale per la Zootechnia with the purpose of maintaining the purity of this breed.

The breed's six classical male families form the basis of the Italian national stud: Maestoso, Pluto Conversano, Favory, Napolitano and Siglavy There are 20 female lines: Sardinia, Spadiglia, Africa, Almerina, Europa, Famosa, Teodorosta, Djeborin, Mercurio, Doflorata, Stornella, Presciana, Argentina, Bradamante, Englendavia, Ivanka, Hamed-Flora, Capriola, Eljan and Fistula.

The present number of horses consist of 53 mares and 23 fillies of 3 years and under. There are six stallions belonging to the six original families, and 24 foals of which 2 Napolitano, 6 Conversano, 3 Favory, 3 Pluto, 5 Maestoso and 5 Siglavy. The group consists exclusively of white-coated animals.

Reproduction takes place naturally, the mares are divided into six groups and a stallion from each lineage is introduced and remains with them for about three months, from April to June. The horses are kept in the open air all year around, both day and night, except for the stallions which with the exception of the breeding session are kept in horse boxes. The animals graze freely with some complement of concentrates (varying quantities according to the season). Since the horses are reared naturally and are not broken-in, the mating choices depend only on the individual morphology and on the need to maintain the six original lines going.

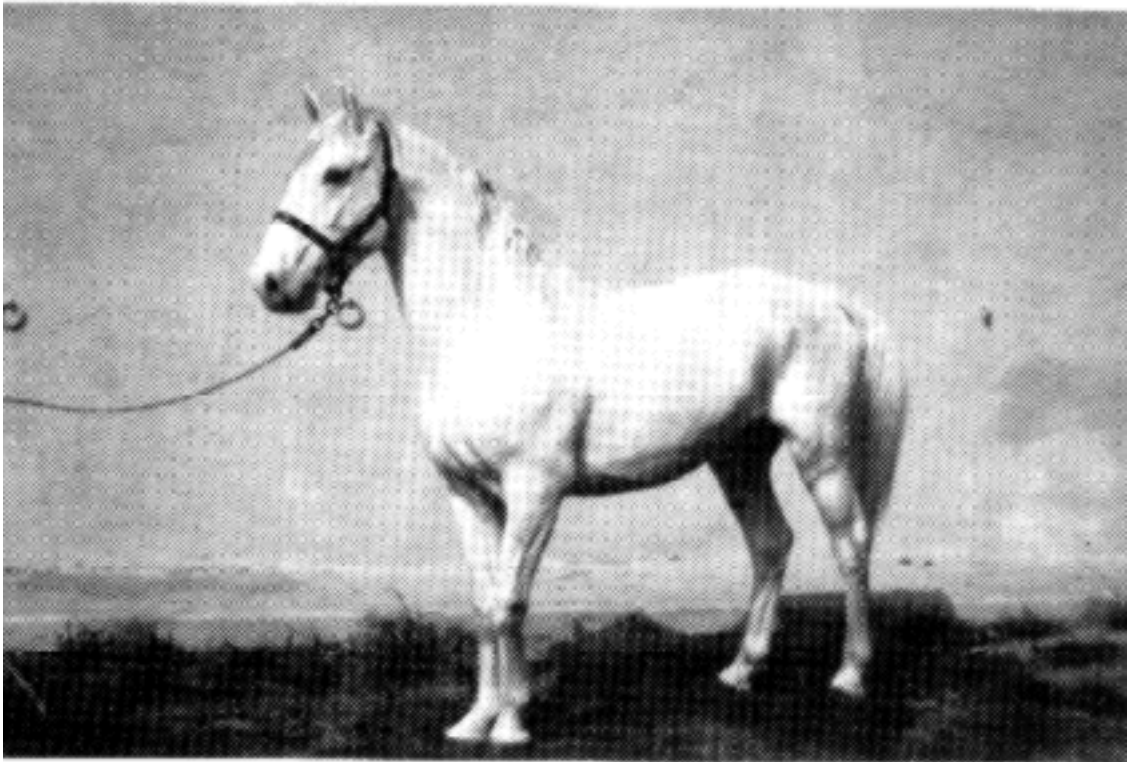
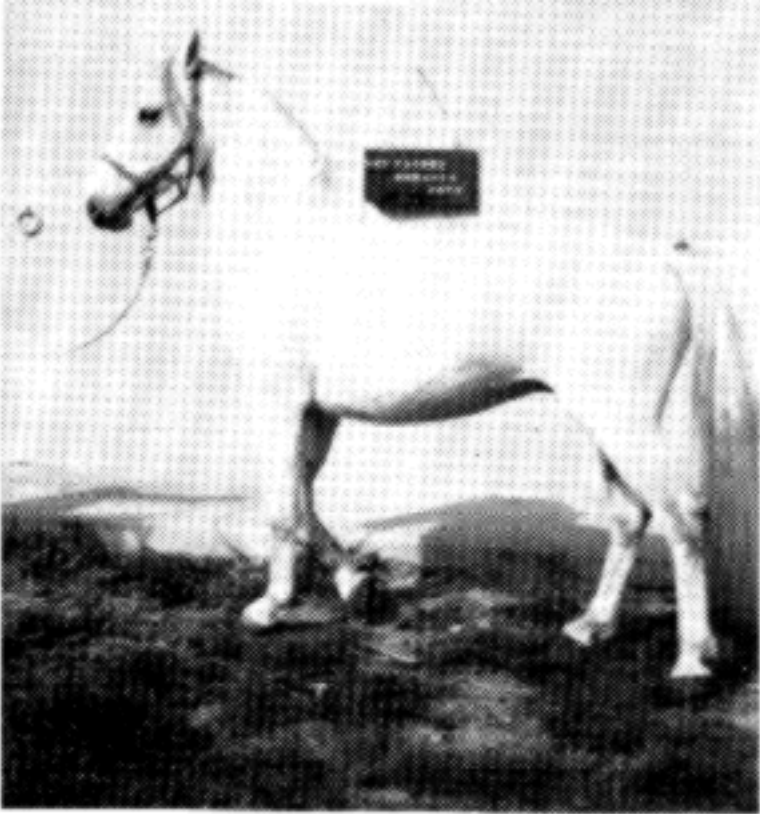
5.0 THE FUTURE

The reason favouring the maintenance and improvement of the Lipizzan horse stud of Montemaggiore lie mainly in their unrepeatable phylogenetic breed history and their functional attainment. Excluding some important but more "modern" horse breeds such as the English thoroughbred, no other breed has such an ancient detailed and meticulous genealogical record as the Lipizzan. This can be interpreted by the rare genealogical purity of the breed which contributes remarkable scientific data for phylogenetical or molecular genetic studies that could be of major importance to the knowledge of the basic principles of horse breeding.

Regarding the functional attainment, it emphasizes in particular the extreme degree of extension and the utmost precision and elegance with which these horses execute the trot. For the breed's future the good disposition of the Maestoso and Napolitano lines and the excellent conformation of the Siglavy are major assets.



Open-air conditions at the Institute's Montemaggiore farm



Stallions

Finally, the excellent rusticity of the Lipizzan must be underlined; it can live without ever being stabled and is known for its longevity, many mares live up to 15 years and more. As these qualities are combined with a good conformation and a remarkable maternal instinct, the mares can easily produce, through crossbreeding, show horses.

Over the last few years new interest has been shown for the Lipizzans. This has been clearly demonstrated by the foundation of the Lipizzan International Federation (L.I.F) which, apart from Italy, is active in many countries such as: Germany, Switzerland, .Belgium, Holland, France, England, Sweden, the U.S.A., Austria, Hungary, Czechoslovakia and the ex Yugoslavia.

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