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**ABSTRACT**

The Hutsul/Hucul horse is a native breed, that is, an equine population developed and adapted to the climatic conditions characteristic to the mountain area of the Carpathian Mountains in northern Romania and has a spreading area on territories belonging to other countries in the same region such as Ukraine, Hungary and Slovakia.

According to the present administrative organization the actual breeding area of the Hutsul horse in our country stretches across the counties of Suceava, Neamț, Maramureș and Bistrița-Năsăud.

There are varying opinions about the origin of this breed. Some scholars (The Vienna School, L. Adamantz) consider it to be of oriental origin – some Arab horses degenerated due to the harsh living conditions in the mountains.

In relation to its origin the investigations indicate a mixture of a trotter breed and a Mongol breed as there are members in the Hutsul breed that remind accurately either of one or the other of the two original breeds. Whichever is its origin, oriental or northern, the Hutsul is undoubtedly a mountain horse being recorded as such as early as 1606 in Dorohostajki's work „Hipica” as a robust, well-build, well-proportioned animal and especially with a solid genetic base.

The Hutsul horse fits into small size horse category, the average height at withers is approximately 139.2 cm for mares and 141.3 cm for stallions. This size which is the largest among the mountain breeds was achieved through selection for the purpose of size increase in order to meet the breeders' requests. The weight varies from 345 kg to 470 kg with an average of 400 kg.

The body constitution of the Hutsul horse is rectangular (104,6%), the body length in mares surpassing the height at the withers point by almost 7 cm and being a breed feature different from the others.

This rectangular constitution with a chest well-developed in depth and circumference as well as the width development of the croup reminds of the heavy horse conformation and justifies some experts' opinion that the Hutsul is a small-sized draught horse.

The head of the Hutsul horse viewed on the whole of its body development is relatively large with a large forehead and prominent eye orbits and small, mobile ears. The head profile is different – it is generally straight in the frontal side and slightly convex in its upper nasal region in the Tarpanic breed and convex along the entire profile in the Przewalski. The masseteric region of the cheeks is developed a fact which sometimes gives the head a rough character. The hair tuft on the forehead is rich, long, and covers the forehead and the eyes. The neck is muscular, strongly attached to both ends and displayed horizontally with a thick and long mane. The wither is large and hardly bulging and the well-kept stallions have a tight neck with fat deposits and continues with the back without visible delineation.

The back and the loins are rather long, large, solid and muscular; however, because of the height of the crupper which overtakes the height of the withers, the back seems slightly curved (ansa-like) a feature which owes something to the length of this area. The chest is large, muscular, with a good arching of the ribs. The crupper is long, large and sloping. The thigh and the shin are also muscular being in line with the crupper and forming a powerful grouping for motility.

The limbs are generally short, with strong articulations, with well-contoured musculature with short and straight shinbones and fetlocks. Through selective breeding the perimeter of the shinbones grew from 16.84 cm in 1927 to 18 cm in the present in the case of the mares and to over 19 cm in the case of the stallions. The hooves are relatively small, correctly shaped and extremely resistant. It does not have strong bones. The posture is generally in accordance with the breed traits though in the case of some individuals differences may occur, such as the front legs slightly underneath, and close tibial-tarsal-metatarsal inferior epiphysial joints.

The gait is proper in most animals though at the rear the gait has a narrow conformation. This fact is not considered to be a flaw in the mountain horses because it constitutes an advantage when walking along paths that do not allow the spreading out of fast gaits. On flat ground the stride of the Hutsul horse is short but brisk and the trotting is hardly noticeable.

The hair color of the Hutsul varies: 60% dark brown, 15% black, chestnut 17%, 7% grey, 1% grey and red (“caproriu”). Very frequent is the donkey stripe and in many animals there can be seen zebra stripes on the forearm, knees, articulations and not so common on the neck and shoulders.

The white spots on the forehead and on the legs have a similar occurrence as in other species. Similarly proper to this horse type is the reduced frequency of light colors like yellowish of the mane or the tail in the individuals of chestnut coloring. In the case of the grey-colored individuals the fox-like ears are frequent – the auricular concha has a black stripe and the tip is white.

In the winter this horse grows very long and dense hair and in the summer it is very short.

The Hutsul horse has a delayed development – the reproductive instinct kicks in at the age of 2.

At the Lucina stud farm the reproduction for mares begins for the first time at the age of 4. The rutting period manifests itself quite strongly lasting two days in the primiparous mares and five to six days in broodmares.

The fecundity rate is higher than in other breeds the average being 83% and the survival rate is 76% reaching 80% or more in some years.

The temperament is generally lively and the disposition is very good as the horses are tame and obedient, easy to train and use for daily exploitation.

The body constitution is robust (80.42%) and only to a little extent (3.19%) is very small, the Hutsul horses being very resistant to prolonged effort, to tiredness as well as to harsh rearing conditions. The energetic capacity validated through the pulling tests on many series of animals highlights the particular qualities of the Hutsul breed as a draught horse for rough terrain in the hill and mountain areas.

In the pulling contest on the 10 km distance for 800 kg weight for a pair of harnessed horses – carriage bearing and trot – the average per breed was of 31'22", and along genealogical lines the average time was: Goral 30'25", Hroby 31'59", Ouşor 31'49, Pietrosu 32', 32" and Prislop 31'24". These figures show a particular energetic capacity of the Hutsul in comparison to its body development and average speed of 19.3 km per hour.

In the pack-saddle contest for 120 kg on the 10 km distance an average time of 27'47 and 9/10 was achieved with the horses from the Pietrosu and Ouşor lines getting the best results. From the score results in the pulling contest it can be concluded that the present day Hutsul horse has improved his capacity in comparison to the older breed with more marked traits in regards to pulling in animals from the Goral line and to pack saddle in animals from the Pietrosu and Ouşor lines.

Naturally formed the breed was consolidated and improved through a long selection work to which an important contribution was that of the Lucina stud farm.

The Lucina stud farm was established in the year 1788 functioning as a department of the Rădăuţi stud farm, Suceava County, until the year 1856 when it became a stud farm in its own right. In 1877, the Austrians introduced here the first nucleus of Hutsul horses acquired from the native people and this first nucleus would rapidly grow until the start of the First World War when the stud farm was moved to Austria. It is worth mentioning the foreigners' appreciation for this horse type which, bought from the Lucina stud farm, reached numerous stud farms in Europe, Germany and England included.

The sales abroad have stimulated the breeders' interest for the Hutsul horse but as the best animals were sold the necessity for a government concerted action to improve this horse became evident. After its re-establishment, in 1919 the Romanian authorities bought at an auction in Vienna a part of the stud farm animals – breeding young stallions and mares from the Hutsul breed – thus re-organizing by 1922 the Lucina farm with 26 mares and 3 stallions.

Until 1943 the Lucina farm became again a department of the Rădăuţi stud farm after which it became a stud breeding farm in its own right. In 1944, because of the war, the Lucina farm is again re-located at Sâmbăta de Jos; during this period the buildings are

totally destroyed. After the war, the buildings are reconstructed and populated with stallions and mares from Brodina and Izvoarele Sucevei while the young livestock is kept in private stables in Moldova Sulița.

From the year 1948, as the buildings were renovated, the farm moves back to Lucina where there existed proper conditions for the continuation of the rearing work. The climate of Lucina area is humid with an yearly precipitation average of 800-900 mm, the distribution per season being of 125-150 mm in the winter, 175-200 mm in the spring, 350 mm in the summer and 175-200 mm in the autumn.

The humid air affects, on the whole, the functions of the Hutsul horse, a fact which makes their skin become thicker, the hair denser and longer, a solid build and lively disposition. The snowfall average frequency in a 20 year-period - the first snow occurring on September, 8 and the last one on May, 24 – was of 195 days.

The yearly average temperature was of 5 degrees Celsius with the highest temperature reaching 36.7 degrees Celsius and the lowest 35.1 degrees below zero. The nebulosity characteristic to the area is reduced, ranging from 5 to 5.2, though the surrounding areas have a higher nebulosity (Gheorghieni, Cîrlibaba). This is due to some particular air currents which descend from the mountain into the valleys opening at the edge of the area. The winds are not strong as the area is surrounded by forests of spruce trees, pine trees and fir trees.

The soil in the area is of the podzolic type, the most common soil for the humid and temperate region. In general, this soil type has the smallest percentage of calcium (0.3-0.4% CAO) and an average pH of 4,5-5,9. The farm soil also includes peat areas as well as calcareous soil on Mount Chiciura.

According to the organoleptic tests the water is drinkable both from wells and water streams from where the animals usually drink; it is a soft water with acid reaction and with a lower temperature than the normal value reaching 4.5 degrees Celsius in the winter and 6 degrees in the summer.

The flora characteristic to the sub-alpine level at the altitude of 1200-1600 meters, is represented by large clearings resulted from deforestation with vegetation consisting of gramineae of the *Agrostis tenuis* family and *Festuca rubra* – the Leguminosae amounting to 5-6% of the vegetation and 10-15% for other species.

The spontaneous vegetation has overall a weak nutritional value. Over the last years the pastures at Lucina have been significantly improved through cleaning, leveling, drainage and fertilization. The pastures remain green throughout the warm season.

Currently the Lucina farm rears the Hutsul as a pure breed with a number of 5 breeding stallions, 60 broodmares and the rest to 470 consists of young livestock, beasts of burden and animals for sale. A particular event occurred on this farm: a new breed was formed – the Bucovina horse – by crossing the Hutsul breed with the Romanian heavy horse breed, an experiment which was coordinated by Prof. PhD. Vasile Ujica from the Zootechnics Faculty in Iassy. The resulting horses are highly appreciated by the people living in the mountain region but also by the military units which request this horse type for mountain areas.

For amusement purposes the same staff created the Romanian pony using the same crossings, minus the variants, from the Hutsul breed and the Shetland pony.

The rearing of the entire livestock is conducted in quarters as follows:

1. Central Division has three shelters where are grown Lucina stud jellies, office buildings, buildings for the staff, hardware workshop, fodder magazine, fenery for fibrous fodder and paddocks for each of the three shelters.

2. Gaina -section - for young females and training horses

3. Stirbu section - Quarantined horses

4. Hostinet-section - colts

5. Camionca Section - for stallions, only in winter time

6. Izvoarele Sucevei section - for stallions, only in the summer time.

Out of the 1775.5 hectares, total area of Lucina stud, 382.6 hectares are filled with hay. From these surfaces stud obtains a sufficient amount of forage fiber, which ensure the necessary for 380 horses, available on the premises. Grazing of horses is taking place exclusively on land belonging to stud, about 849 hectares.

The unit has an area of 507.4 hectares of forests, and the remaining 36.5 hectares are occupied by lakes (0.2 ha), construction yards (18.8 ha), roads (15.8 ha) and 1.7 hectares of unproductive land.

The difficult issues surfacing at the moment is the situation of the buildings made up entirely from wood and which have been in use for over 80 years, most of them being

completely ruined and they no longer safely withstand weight loads or weather adversities.

It is also worth mentioning that in all quarters or divisions of the stud farm there have been built residences for the working staff but they are unsanitary and hardly comfortable.

The land belonging to the pastures and hayfields requires maintenance works in respect to the floral structure and basis but apart from these works it is necessary that improvement works are done to the pastures in order to introduce mechanical works (mowing and ploughing) with scythes and hay rakes drawn by horses as well as tractors given that the existing ground does not allow this type of work.

Given the isolation from the village and public roads, it is necessary to rebuild the access road between the present quarters and also between the farm and the village of Moldova Sulița by paving the existing road and building concrete bridges to withstand floods.

### **Conclusions**

◇ The Hutsul horse is the only native Romanian breed that survived owing to its perfect adaptation to the harsh conditions of the mountain region and to the preservation and improvement of the prime livestock by obtaining a pure breed at the Lucina stud farm.

◇ Due to its valuable traits – rusticity, confident gait when walking on rough terrain, resistance to hard work, well developed orientation sense, longevity and attachment to man – the Hutsul horse organically fits into the economy of the mountain region being irreplaceable for the people, the army and forestry operations.

◇ The Lucina stud farm, established in 1856, has been and continues to be the breeding farm for this horse class, also functioning as elite genetic material for the improvement of the mountain horse population from the Carpathians and other mountainous regions of Europe.

◇ The breeding material of the Lucina stud farm is part of the following strains: Goral III, Prislop III, Hroby VIII, Hroby X, Oușor II and Pietrosu III.

◇ The main objective of the betterment work, starting from the establishing of the farm and up to the present, continues to be the size increase of the Hutsul horse without

losing its valuable characteristics of adaptability to the mountainous area; this objective was achieved within the allowed limits of hereditary conservationism which is a strong feature of the breed.

◇ The present-day Hutsul horse originating in Lucina is characterized by the following body measurements – body size 139 cm, body length 146 cm, chest perimeter 176.3 cm, shinbone perimeter 18.4cm, fertility percentage 83%, birthrate 76% - and by work abilities developed for pulling and pack-saddle on rough terrain.

◇ The increased hereditary ( $h^2$ ) percentage of some features (waist 0.66, body length 0.56, chest depth 0.64, breeding longevity 0.75) serves as selection criteria for the Hutsul genetic material and for the accurate hereditary transmission of these features.

◇ On the basis of the search results which represent the object of the current paper the following constitute recommendations for future betterment work of the Hutsul horse from Lucina stud farm:

- the development of the following strains Goral III, Prislop, Hroby VIII and Hroby X, and isolated breeding through strain crossbreeding.

- the improvement and ramification of the Ouşor II and Pietrosu III lines through strain crossbreeding

- the preservation of colors and of the coloring features common to the Hutsul horse (grey, chestnut, stripe, cross, zebra stripe, fox-like ears) as well as of the black hoof resistant to rocky mountain roads

- the development of the Hutsul horse abilities for packsaddle by reintroducing the training and testing of the energetic ability of the young horse population

- the continuation of the work regarding the genetic consolidation of the Bukovina horse and the Romanian pony both equine types resulting from crossbreeding related to the size increase and improvement of the Hutsul horse from the Lucina farm.