

# Conformation data for repatriation of Carpathian Brown Cattle in Hungary

by

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## The breed history

*Carpathian Brown Cattle* are small sized, undemanding, and in its constitution sometimes faulty. The cattle have been living in the North-Eastern Carpathians, as well as in Transylvania since the first half of the 1800s, in which, there were three ecotypes that were distinguished according to their regions and to their characteristics: the *Verchovina Cattle* on the West-side of this part of Carpathians, the *Hucul Cattle* at the Southern end of Maramures Mountains, and the *Mokány Cattle* in Northern Transylvania.

It was speculated that they are direct descendants of *Bos europeus brachyceros Adametz* found on the course of Central European diggings in the first half of the 1900s. These cattle were developing independently by the 20th century without mixing with *Braunvieh* from the Alps and with the *Illyrian Cattle* from the Balkan Peninsula. According to CSUKÁS the Podcarpathian and Transylvanian cattle population, which counted approximately 100 thousand individuals at that time have received the Alpine blood (among others *Schwyzzer*, *Oberinntaler*, *Allgäuer*, *Montafoner* etc.) in 1879 firstly. After this genetic impact there have been two new breeds developed, the *Carpathian-Ukrainian* breed as well as the *Maramures* breed, which are mentioned collectively as *Carpathian Brown Cattle (kárpati borzderes)* by the authors who were dealing with them.

CSUKÁS surveyed extensively the cattle production at higher altitude, including the Browns. Based on own experiences he published his book with the title “*Cattle breeding in Podcarpathia*” (*A Kárpátalja szarvasmarhatenyésztése*) in 1940. In this time, he could find the following two variants of *Carpathian Brown Cattle* which would be considered original (with 80% share): the first was the “*Riska Cattle of Beregerdő which is occasionally black darkening*” („*Beregerdő néha feketében sötétlő riskája*”), while the second was the “*Mokány Cattle in the Hucul Mountains with some Podolian Cattle blood which is brightening in silver-grey*” („*a Huzul havasok podoliai vért is tartalmazó ezüstsziürkébe világosodó mokányja*”). The third cattle type he met was refined by Alpine blood.

The differentiation of the variants was not an easy task or entirely clear, because of the extremely large degree of heterogeneity which always existed in the breed group.

By 1961 only the half of the cattle population in the upper region of the river Tisza consisted of the Brown Cattle. With the simultaneous expansion of the large-scale farming, the number of small holder's farms was reduced, and then the *Carpathian Brown Cattle* completely disappeared in Hungary by the end of the 1980s.

CONSTANTINESCU (1927) also cited (after SIERBAN) *Mokany* and *Risca*. The official name of Mocanitză (Mokány) appeared only later, in works published after 1950 when the authorities in Bucharest declared it as a breed. The official census in 1955 in Romania there were 68,500 specimens of the Mocanitză breed, meaning 2,8% out of the total number of cattle in Romania. Mocanitză is the breed for which there is a huge amount of interest today because of its exceptionally adaptability to the mountain environmental conditions.

### **The breed characteristics**

The occurrence of the *Riska Cattle* (*riska marha*) in Southern-Transdanubia was at least as frequent in the 19. century as in Podcarpathia according to contemporary sources. It was the relative of the cattle of Drava Region as well as of other dwarf cattle of Southland. The yearly milk production of this smaller than the *Mokány Cattle* sized, whitish coloured breed was at about 1,000-1,200 litre only. Individuals kept under satisfactory circumstances could give 1,300-1,600 litre milk. There was possible also partially *Galician Cattle* in its variant of the previous County Bereg supposed.

The *Mokány Cattle* (*mokány marha*) was the animal of the mountain habitants, mostly of the Wallachians in the 19. century. „*Its colour varies between the light end the dark crane-colour, the muzzle, the tongue, the tip of the horns, and the claws are dark coloured. The animals are of dwarf sized in consequence of the more hundred years long disadvantageous keeping conditions, the cows weight is 170-230 kg only...; the head is long, narrow, and relatively large; the withers is high, the loin is long and surrounded by sunken flanks, the tail head is highly set, the rump is sloping...; the barrel is large, the udder is medium large and well shaped, the extremities are medium long and with poor musculature, the bones are strong, the front legs are often buck-kneed, while the rear legs are cow-hocked. Despite of its light body weight the Mokány Cattle can exert excessive force...; the cows produce also at about 1,100-1,200 litre milk...; however, this cattle is less suitable for fattening*” - as it was written by CSELKÓ in his book with the title “*Cattle breeding*” („*Szarvasmarhatenyésztés*”) published in 1921.

The third breed variant, the *Improved Carpathian Brown Cattle* has developed after the crossing of *Apline Braunvieh* which aimed to improve the producing-ability of the local *Riska Cattle* and *Mokány Cattle*. Later on, this improved variant has entered into the public awareness as *Carpathian Brown Cattle*. A previous Hungarian Standard (MNOSZ 6802-53) defined the breed requirements for the *Carpathian Brown Cattle* as follows: it is medium sized, rather fine, but of strong constitution; it can well adapt to the modest living conditions; it is poorly muscled; it is good yielder of milk which yearly milk production reaches at least the seven times of the live weight with 3.8% butterfat content.

In 2009 in the Apuseni Mountains (Codru Moma area) there were some specimens with similar phenotype to Mocanitză. It very likely that there is an extremely reduced number of pure blood Mocanitză, but the possibility of the existence of cross-breed is much higher. The cross-bred specimens with a high percentage of Mocanitză can be found in the mountainous area of Banat, in the valley of the Olt river (Ciineni), in villages such as Padis, Motru Sec, Closani, Cerna (yellow, black, brown colour), in areas such Neamt (Modova) and Vrancea (MATIUTI, 2010).

### **Establishing and judgement of the stock in Mikóháza, Hungary**

Today more than 50 thousand animals are registered which are carrying *Brown Cattle* characters in the Carpathians. From them there are individuals available in some villages who

are in their appearance and ancestry the original ones. The individuals in Mikóháza have been purchased also from such sites. The half of the population came from Maramures in 2008, while the other half arrived from Fogaras in 2010.

The animals in Mikóháza live in mountain forest zone glades, in the so called *polyán* (*polje*) extensively managed year round. The meadows are enclosed by electric fence, and provided by shelter and by well. There is also a handling corridor in the polyán to make the individual control, -treatment, and the veterinary intervention available. Cattle are grazing with *Tsigai* sheep and with *Hucul* horses together.

The conformation judging and the taking of body measurements were done in November 2010. The evaluation of conformation is important to determine the breed characteristics of the small imported herd, as well as to compare the Mikóháza herd to the previous data about this breed in order to reveal any possible changes. There were calculated body indices (Table 1) from the body measurements. All the values from our research and from the literature were corrected for two ages (for 2 and for 5 years of age) by logarithmic (base 10) function fitting.

Table 1. **Calculation of indices used in the comparison**

|  |
|--|
| index of strength, rear view = $100 / (\text{rump width} / \text{height at withers})$                        |
| index of head length = $100 \times \text{head length} / \text{trunk length}$                                 |
| index of rump overgrowth = $100 \times \text{sacral height} / \text{height at withers}$                      |
| index of stubbiness = $100 \times \text{heart girth} / (\text{chest depth}^2 + \text{trunk length}^2)^{0.5}$ |
| index of compactness = $100 \times \text{heart girth} / \text{height at withers}$                            |
| index of leg length = $100 \times \text{chest depth} / \text{height at withers}$                             |

Beside of the extensive keeping condition the animals seemed to be clean, well-groomed and of excellent health status. The cows were characterized by a firm constitution (although, there were two cows of rough and another of spongy constitution). Most of the cows were in medium-good condition (3.5 scores on average). Younger animals shown clearer joints. There were strong bones established in two-third of the cows, while fine bones in the one-third of them.

The ground colour of the animal's hair coat was greyish-black, chestnut-brown, fawn-coloured, and light brown. As an indication of the Alpine blood being present in the Mikóháza herd the white hair in the auricles and the white frame around the muzzle appeared frequently. The dark belly occurred once, and the dorsal stripe occurred twice in it.

One half of the population carried horns with black tip and lighter body, while the other half of it had single colour brownish or lighter brownish horns.

UNGVÁRY (2011) give account more about the results of the detailing conformation judging in his thesis ("*Conformation scoring of Carpathian Brown Cattle*").

In regard of the important body measurements it can be stated the Mikóháza herd does not differ from the previous *Carpathian Browns* according to the height at withers like the rump width I. and II. (between the hips and the trochanters, respectively; Table 2). But, the statistically significant deviations found in the chest depth, in the heart girth, and in the cannon girth cannot also be kept essential from professional point of view. The body measurements investigated - with except of the rump width I. and II. - increased significantly by aging.

Table 2. **Body measurement of Carpathian Brown Cattle (cm)**

| Measurements         | n  | at 2 years of age<br>LSM<br>(effect of age, P) | at 5 years of age<br>LSM<br>(effect of data source, P) |
|----------------------|----|--|--|
| height at withers    |    | 0.011  | 0.242  |
| Mikóháza, 2010:      | 19 | 117.5  | 126.3  |
| previous literature: | 20 | 117.8  | 126.6  |
| chest depth          |    | 0.010  | 0.023  |
| Mikóháza, 2010:      | 19 | 56.7   | 62.0   |
| previous literature: | 11 | 58.8   | 64.1   |
| rump width I.        |    | 0.205  | 0.173  |
| Mikóháza, 2010:      | 19 | 39.8   | 44.6   |
| previous literature: | 6  | 43.7   | 48.6   |
| rump width II.       |    | 0.325  | 0.133  |
| Mikóháza, 2010:      | 19 | 37.0   | 41.1   |
| previous literature: | 7  | 43.6   | 47.7   |
| hearth girth         |    | 0.007  | <0.001   |
| Mikóháza, 2010:      | 19 | 163.8  | 182.7  |
| previous literature: | 16 | 167.7  | 186.6  |
| cannon girth         |    | <0.001   | 0.022  |
| Mikóháza, 2010:      | 19 | 18.6   | 19.9   |
| previous literature: | 15 | 18.0   | 19.4   |

Also from the values of the body indices it is obvious the cows in Mikóháza do not differ significantly from the earlier *Carpathian Browns* (Table 3), although, it became more stubby (because of the shorter trunk) and relatively longer legged (because of the more shallow chest). The value of this later index changes a lot by aging; older animals have relatively shorter extremities. The different values of the compactness by data sources are considered professionally to be practically the same. The larger compactness of the Mikóháza herd might not be caused by the body measurements taken down by us, thus it is explained with the conceivable wrong data of the literature.

Table 3. **Body indices of Carpathian Brown Cattle**

| Index of             | n  | at 2 years of age<br>LSM<br>(effect of age, P) | at 5 years of age<br>LSM<br>(effect of data source, P) |
|----------------------|----|--|--|
| strength, rear view  |    | 0.936  | 0.345  |
| Mikóháza, 2010:      | 19 | 302.9  | 279.5  |
| previous literature: | 6  | 297.2  | 273.8  |
| head length          |    | 0.095  | 0.192  |
| Mikóháza, 2010:      | 19 | 37.2   | 34.9   |
| previous literature: | 8  | 34.1   | 31.7   |
| rump overgrowth      |    | 0.367  | 0.985  |
| Mikóháza, 2010:      | 19 | 100.8  | 100.7  |
| previous literature: | 8  | 102.9  | 102.7  |
| stubbinness          |    | 0.319  | 0.047  |
| Mikóháza, 2010:      | 19 | 132.3  | 124.8  |
| previous literature: | 7  | 118.8  | 111.3  |
| compactness          |    | 0.182  | 0.002  |
| Mikóháza, 2010:      | 19 | 138.6  | 146.8  |

|                      |    |       |        |
|----------------------|----|-------|--------|
| previous literature: | 15 | 134.3 | 142.5  |
| leg length           |    | 0.001 | <0.001 |
| Mikóháza, 2010:      | 19 | 211.7 | 196.2  |
| previous literature: | 19 | 204.7 | 189.2  |

We conclude from our new experiences in regards of conformation the animals arrived to Mikóháza resemble to that variant of the original *Carpathian Brown Cattle* which was improved by *Alpine Braunvieh* mostly. The fact to it the today Mikóháza herd is not larger in its measurements than the previous *Carpathian Brown Cattle* was found reassuring by us.

The further increase and improvement of the seed-stock in Mikóháza by in Romania or in Ukraine carefully selected individuals is indispensable in order to establish a proper breeding work in Hungary.

We hope our investigation contributes to the built-up of the breeding association, to the herd-booking, to the determination of the breed standard and of the selection criteria of this old-new cattle breed in Hungary.

There is demand on molecular genetic analysis – as it was by BÉLA BÉRI already formulated (“*The breeding program of the Brown Cattle*”, 2004) – to decide the question, whether the original Carpathian or the improver Alpine genes occur at larger extent in the population in Mikóháza. This research work is managed by the colleagues at the Department for Animal Husbandry of University Debrecen, who got the allowance from the Breeding Authority to deal with scientific investigation in the given ecotype.

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