

## Analysis of breeding work of hucul horses

Magda Socik, Stanisław Socha\*

*Siedlce University of Natural Sciences and Humanities, Siedlce, Poland*

**Article Details:** Received: 2016-04-29 | Accepted: 2016-06-13 | Available online: 2016-09-01

<http://dx.doi.org/10.15414/afz.2016.19.si.55-58>

The aim of the study is to analyze breeding work of Hucul horses. The paper presents the following issues: assessment of breeding value, selection methods, methods of mating systems, including Hucul reproduction. When estimating breeding value of Hucul stallions and mares we take into account the following elements: wholesomeness, development, height, regularity of movement, as well as the construction of the animal. We pay attention to the use value and breeding value of the assessed animal, as well as its ancestors and offspring. The most appropriate method for this breed is the method of independent culling levels. It involves the simultaneous and independent selection having regard to each feature individually. Hucul horses can be selected for reproduction only using breeding methods having regard to the purity of the breed. The most important goal of mating is to maintain the current population (representatives) of both female families of and male lines. The main goals of breeding Huculs is to maintain the unique genotype and the disposition of inheritance of racial features by offspring, as well as to maintain the specific breed type.

**Keywords:** Hucul horses, breeding, selection, use value

### 1 Introduction

Huculs are one of the oldest small breeds of horses which are being cultured in Poland. The beginning of the breeding took place in the Hucul region, which is in the region of the eastern Carpathians. Probably they are a result of the intersection of descendants of tarpans and mongolian horses. Then they were refined by Turkish and Arabian horses. They are classified into primitive mountain horses. Because of their size they are also included in the subgroup of young horses, Ponies. This breed was created in natural conditions, based on the natural breeding combined with a mountain climate (Socik and Socha, 2016).

Hucul breeding is subject to the provisions of the Regulation (Polish Horse Breeders Association in Warsaw, 1994) concerning inscribing animals in the stud book. It must be conducted in accordance with the methods of selection and mating systems. The breeding of Hucul horses is conducted on the basis of a breeding program adopted for this breed (Polish Horse Breeders Association, 2012 and 2014). The aim of the study was to analyze breeding work of Hucul horses. The paper presents the following issues: assessment of breeding value, selection methods, methods of mating systems, including Hucul reproduction.

### 2 Material and methods

#### 2.1 Assessment of the use value and breeding value

When estimating breeding value of Hucul stallions and mares we take into account the following elements: wholesomeness, development, height, regularity of movement, as well as the construction of the animal. We pay attention to the use value and breeding value of the assessed animal, as well as its ancestors and offspring in the utility championship (Polish nationwide) and in field tests of courage (Polish Horse Breeders Association, 2012 and 2014).

#### 2.2 Selection methods

The primary purpose of breeding - including selection, is to breed new head sires, as well as the

\*Corresponding Author: Stanisław Socha Siedlce University of Natural Sciences and Humanities, Faculty of Natural Sciences; Institute of Bioengineering and Animal Breeding, Department of Breeding Methods, Poultry and Small Ruminants Breeding; ul. B. Prusa 14, 08-110 Siedlce, Poland. E-mail: socha@uph.edu.pl

renovation of herd of mares - mothers. The most appropriate method for this breed is the method of independent culling levels. It involves the simultaneous and independent selection having regard to each feature individually.

The selection is carried out for each animal individually and consists of three stages:

- A. Analysis of the pedigree (an approved laboratory conducts a special study of DNA-genetic markers that confirms the origin of offspring).
- B. Selection on the basis of body conformation, degree of performance development, evaluation of character.
- C. Selection realised on the basis of use value (tests of courage can be performed only in the centers listed in the special regulation regarding the way of conducting evaluation).

During selection the following characteristics are taken into account:

- type and conformation (using a scale of valuation of 100 points);
- biometric measurements (they must conform to the breed pattern);
- reproductive value in stallions;
- maternal values in mares;
- fertility;
- health;
- use value, taken into account the results of the courage tests.

The greatest difficulty is the selection of foals, because they are not fully developed and in the future are likely to change proportions. The selection is conducted by a unit maintaining stud book.

### **2.3 Mating methods**

After selection the animals are selected for mating. Hucul horses can be selected for reproduction only using breeding methods having regard to the purity of the breed. The population of these horses is so small that choosing horses for mating should be very careful, because there is a risk of inbreeding depression. The most important goal of mating is to maintain the current population (representatives) of both female families of and male lines (Socik and Socha, 2016).

There is a necessity of preserving the continuity of each and every male lines. Unfortunately, this may result in less severe selection of stallions, because of every male line at least two or three successors must be bred. In case of inbreeding in the first generation, there is no possibility of inscribing in the stud book.

Primitive breeds, which no doubt include Huculs, usually are characterized by high levels of breeding performance. Flock system allows a more distinct manifestation of heat, however, we should keep in mind that there are more falls of foals (Jaworski et al; 1996).

The traits characteristic for Hucul Horses are the following: longevity, fertility and fecundity (Tomczyk-Wrona, 2008). Special attention should be paid to maintenance breeding of horses, which gives the possibility to obtain horses adapted to the environment, that is, individuals resistant to all kinds of severe weather conditions and able to cope with varied area like mountains.

## **3 Results and discussion**

Hucul horses for decades did not attract more interest outside the Hucul region. There were even cases of reducing their breeding by the authorities, who ordered castration of stallions without exception. However, in 1979 it was ascertained that this breed is an achievement of the national culture - dying relic. It was decided to protect the unique genetic characteristics of the race.

The interest in breeding continues to increase. Nowadays, Hucul horses are bred throughout Poland, and it is the southern Poland that remains for them the most original territory.

The following table shows quantitative indicators of a population of horses registered in the Stud Book of Hucul Horses until 2012 (Polish Horse Breeders Association in Warsaw, 2012).

Table 1 Summary of population of Huculs registered in stud books until 2012

|              |    |   |      |      |      |      |      |      |      |
|--------------|----|---|------|------|------|------|------|------|------|
| pecification | 1. | Mares used in reproduction registered in stud book                        |      |      |      |      |      |      |      |
|              |    | Year  | 2000 | 2002 | 2004 | 2006 | 2008 | 2010 | 2012 |
|              |    | Amount  | 402  | 515  | 574  | 896  | 1120 | 1363 | 1446 |
|              | 2. | Stallions used in reproduction registered in stud book                    |      |      |      |      |      |      |      |
|              |    | Year  | 2000 | 2002 | 2004 | 2006 | 2008 | 2010 | 2012 |
|              |    | Amount  | 90   | 99   | 120  | 155  | 214  | 180  | 177  |
|              | 3. | Young mares registered in stud book                                       |      |      |      |      |      |      |      |
|              |    | Year  | 2000 | 2002 | 2004 | 2006 | 2008 | 2010 | 2012 |
|              |    | Amount  | 72   | 80   | 148  | 162  | 195  | 191  | 205  |
|              | 4. | Young stallions registered in stud book                                   |      |      |      |      |      |      |      |
|              |    | Year  | 2000 | 2002 | 2004 | 2006 | 2008 | 2010 | 2012 |
|              |    | Amount  | 13   | 20   | 24   | 33   | 24   | 17   | 8    |
|              | 5. | Young mares described, fulfilling the conditions imposed by stud book     |      |      |      |      |      |      |      |
|              |    | Year  | 2000 | 2002 | 2004 | 2006 | 2008 | 2010 | 2012 |
|              |    | Amount  | 117  | 141  | 190  | 242  | 345  | 343  | 300  |
|              | 6. | Young stallions described, fulfilling the conditions imposed by stud book |      |      |      |      |      |      |      |
|              |    | Year  | 2000 | 2002 | 2004 | 2006 | 2008 | 2010 | 2012 |
|              |    | Amount  | 131  | 144  | 146  | 203  | 323  | 311  | 303  |

The main goals of breeding Huculs are the following:

- A. Maintaining the unique genotype as well as the disposition of inheritance of racial features by offspring.
- B. Maintaining the specific breed type characterized by:
  - conformation according to the breed standard,
  - dry constitution,
  - small feeding requirements,
  - ability of normal functioning under adverse environmental conditions,
  - calm character and composed temperament,
  - perfect health resulting in longevity,
  - high fertility combined with protectiveness of broodmares,
  - strength at work,
  - possibility of versatile use.

A very important aspect in Hucul horse breeding is that they should be kept in their original biotope. As mountain horses, while living in flat area they lose their characteristic conformation traits, that is, a higher growth in subsequent generations and a loss of dryness is observed. This may gradually change the breed type (Socik and Socha, 2016).

#### 4 Conclusions

Hucul horse is one of the oldest breed of small horses, which accompanies us until today. The present study shows the advantages of Hucul, which should be an unquestionable argument for the

continuation of their breeding. Recently, we have observed the rapid development of equestrian tourism, many city dwellers look for pristine mountain areas with uncontaminated and pure air. Hucul horses, as primitive mountain horses, which are (most probably) a result of the intersection of tarpans and mongolian horses, are unmatched in overcoming long, heavy routes in difficult weather conditions. In the light of these arguments it becomes obvious that the promotion of Hucul horses should be extended in order to cover not only the southern Poland – which, unfortunately, has happened in recent years - but the whole country, as well as in foreign countries. It is the Polish state that plays a significant role and should support breeders of the race and their breeding centers. Hucul is a race we should be proud of and promote internationally, and Hucul horses should become one of the most desirable race for recreational riding, including hippotherapy.

#### References

- JAWORSKI Z. et al. (1996) Comparison of some of the results of reproduction performance of Polish primitive horses from reserve and stable groups in the Research Station of the Polish Academy of Science in Popielno. *Scientific Notebooks of Breeding Review of Polish Society of Animal Production*, no. 25, pp.83-89 (in Polish)
- POLISH HORSE BREEDERS ASSOCIATION IN WARSAW (1994) *Studbooks of Hucul horses and Polish primitive horses*. Volume VII. Warsaw: Polish Horse Breeders Association (in Polish).
- POLISH HORSE BREEDERS ASSOCIATION IN WARSAW (2012) *Program of breeding of Hucul horses*. Warsaw: Polish Horse Breeders Association (in Polish).
- POLISH HORSE BREEDERS ASSOCIATION IN WARSAW (2014) *Program of breeding of Hucul horses*. Warsaw: Polish Horse Breeders Association (in Polish).
- SOCIK M. and SOCHA S. (2016) *Hucul Horses Breeding – History and Contemporaneity*. Siedlce University of Natural Sciences and Humanities. Siedlce: in Press.
- TOMCZYK-WRONA I. (2008) *Genetic Resources and Genealogy in Hucul Horses breeding in Poland*. Cracow: Wydawnictwo Cztery Litery (in Polish).