

STUDY OF WITHERS HEIGHT AVERAGE PERFORMANCES IN HUCUL HORSE BREED – HROBY BLOODLINE

STUDIUL PERFORMANTELOR MEDII ALE CARACTERULUI TALIE LA RASA HUȚUL - LINIA HROBY

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Study of average performances in a population have a huge importance because, regarding a population, the average of phenotypic value is equal with average of genotypic value. So, the studies of the average value of characters offer us an idea about the population genetic level. The biological material is represented by 177 hucul horse from Hroby bloodline divided in 6 stallion families (tab. 1) analyzed at 18, 30 and 42 months old, owned by Lucina hucul stood farm. The average performances for withers height are presented in tab. 2. We can observe here that the average performances of the character are between characteristic limits of the breed. Both sexes have a small grade of variability with a decreasing tendency in the same time with ageing. We can observe a normal evolution in time for growth process with significant differences only at age of 42 months. We can say in this condition that the average performances for withers height have different values, influenced by the age, with a decreasing tendency.

Key words: hucul, Hroby, bloodline, height

Introduction

The study of average performances for different characters in a population, have a great importance because, at the population level, the average of phenotypics value are equal with the average of genotypics value. That's mind that the study of average performances give us an idea about the genetic level of population.

Material and Methods

For realising the purposed objectives, biological material became from Lucina Stood Farm, Suceava county, represented by a sample of 177 horses (males and females) divided at 6 stallion familys, presented in Table 1.

Table 1.

The biological material			
Bloodline	Family size	Male	Female
HROBY	177	84	93
- Hroby XVI	10	3	7
- Hroby XVII	13	6	7
- Hroby XVIII	3	1	2
- Hroby XIX	31	15	16
- Hroby XX	54	29	25
- Hroby XXI	66	30	36

The sample was studied at three different ages:

- First grading – 1.5 years old
- Second grading – 2.5 years old
- Third grading – 3.5 years old

After the third grade the individuals support a performances testing for energetic capacity.

The sample was extracted from population in according with registered performances for al three ages to have one balanced experimental plan.

The analyzed statistics are: average, variance, standard deviation, average error and variability coefficient.

Results and Discussions

The average performances for withers height character are presented in tab.2 and fig. 1. Analysing the results from Table 2, we observe that the average value for withers height are between the characteristic limits of Hucul breed.

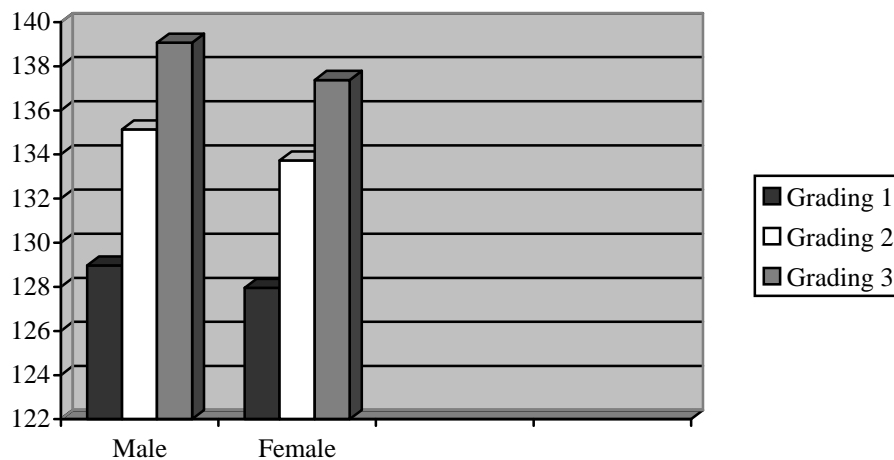


Fig. 1– Withers height dynamic in Hroby bloodline

We observe a normal evolution of growth process with insignificant differences between sexes at 1.5 years, but with distinctive and very significant differences at 2.5 and 3.5 years old. The bigger withers height value for males indicate a different metabolic profile comparing with the females.

For statistic testing of observed differences between halfsibs families from Hroby bloodline at all three analysed ages, we used the *Fisher* test. For observing between which families are the significant differences, we used *Tuckey* test.

Table 2.

The average performances for withers height in Hroby bloodline

Fam.	Sex	Age (years)											
		1.5				2.5				3.5			
		n	$\bar{X} \pm S_{\bar{X}}$	s	v%	n	$\bar{X} \pm S_{\bar{X}}$	s	v%	n	$\bar{X} \pm S_{\bar{X}}$	s	v%
H XVI	M	3	136.33 ± 0.33	0.58	0.43	3	141.33 ± 0.66	1.15	0.81	3	145 ± 1.53	2.65	1.83
H XVII		6	130.5 ± 1.48	3.62	2.77	6	136.33 ± 1.11	2.73	2	6	140.83 ± 1.11	2.71	1.92
H XVIII		1	132	-	-	1	137	-	-	1	139	-	-
H XIX		15	127.2 ± 0.95	3.69	2.9	15	132.33 ± 0.65	2.53	1.91	15	136.53 ± 0.53	2.07	1.52
H XX		29	130.97 ± 0.61	3.26	2.49	29	135.76 ± 0.53	2.87	2.11	29	139.28 ± 0.55	2.94	2.11
H XXI		30	126.77 ± 0.99	5.4	4.26	30	135 ± 0.6	3.28	2.43	30	139.2 ± 0.49	2.71	1.95
Total M		84	128.96 ± 0.52	4.78	3.71	84	135.13 ± 0.37	3.35	2.48	84	139.07 ± 0.34	3.08	2.21
H XVI	F	7	128.86 ± 0.59	1.57	1.22	7	135.86 ± 0.63	1.68	1.24	7	138 ± 0.69	1.83	1.33
H XVII		7	130.86 ± 0.94	2.48	1.9	7	135.86 ± 0.77	2.04	1.5	7	138.86 ± 0.8	2.12	1.53
H XVIII		2	131.5 ± 1.5	2.12	1.61	2	136.5 ± 1.5	2.12	1.55	2	141 ± 2	2.83	2.01
H XIX		16	126.88 ± 1.01	4.05	3.19	16	131.94 ± 0.71	2.82	2.14	16	135.5 ± 0.54	2.16	1.59
H XX		25	128.4 ± 0.77	3.86	3.01	25	133.28 ± 0.65	3.23	2.42	25	136.44 ± 0.52	2.58	1.89
H XXI		36	127.19 ± 0.51	3.04	2.39	36	133.86 ± 0.49	2.95	2.2	36	138.25 ± 0.48	2.89	2.09
Total F		93	127.96 ± 0.36	3.49	2.73	93	133.73 ± 0.32	3.05	2.28	93	137.38 ± 0.29	2.81	2.05
Total bloodline		177	128.44 ± 0.31	4.17	3.25	177	134.40 ± 0.25	3.26	2.43	177	138.18 ± 0.23	3.05	2.21
Significant observed differences (Student)		1.69 ^{NS}				3.11 ^{**}				4.02 ^{***}			

Conclusions

Calculated value for *Fisher* test reveals significant differences between half sibs families from Hroby bloodline ($F = 6.11$ for grading 1, $F = 6.80$ for grading 2, $F = 6.14$ for grading 3). For observing between which families are the significant differences, we used *Tuckey* test.

Calculated value for *Tuckey* test reveals that we have significant differences, at 1.5 years old between Hroby XVI and Hroby XXI, between Hroby XVII and Hroby XXI, between Hroby XIX and Hroby XX and between Hroby XX and Hroby XXI.

At 2.5 years old the significant differences are between Hroby XVI and Hroby XIX, between Hroby XVII and Hroby XIX, between Hroby XIX and Hroby XX and between Hroby XIX and Hroby XXI.

At 3.5 years old, the calculated value for *Tuckey*, point out significant differences between Hroby XVI and Hroby XIX, between Hroby XVII and Hroby XIX and between Hroby XIX and Hroby XXI.

The growth process in general, and the withers height evolution in special, vary in postparturition period in correlation with age, with an decreasing trend of values due to this factor.

By analysing this data we can observe:

- after parturition the hucul foals from Hroby bloodline have a normal growth.
- The highest growth intensity it's registered until 1.5 years old
- The biggest value for withers height growth are in the first period of postparturition life with a decreasing trend in relation with age factor.

After all this observation we can affirm that any kind of deficiencies in foals and young horses management and technology will have a very serious negative effect for production capacity and will be unrecoverable

Bibliography

1. **Georgescu, Gh. și col.** (1982) – *Tehnologia creșterii cabalinelor și echitație* - EDP. București
2. **Mărginean, Gh. E.** (coord.) (1997) – *Tratat de hipologie*. Editura Orion. București.
3. **Mărginean, Gh., Georgescu, Gh., Maftei, M.** (2005) – *Îndrumător de lucrări practice pentru exploatarea cabalinelor*. Editura AgroTehnica. București
4. **Popescu-Vifor, Șt.** (1985) – *Genetica procesului de dezvoltare la animale*, Editura Ceres, București.
5. **Saastamoinen, M.** (1990b) – *Factors affecting growth and development of foals and young horses*. Acta Agriculturae Scandinavica 40: 387-396.
6. **Tacu, A.** (1968) – *Metode statistice în zootehnie și medicină veterinară*. Ed. Agrosilvică. București.