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VARIATION OF LINEAR DESCRIBED TYPE TRAITS IN CZECH-MORAVIAN BELGIAN HORSE AND SILESIAN NORIKER

Majzlík I., Vostrý L., Čapková Z. and Hofmanová B.
Czech University of Life Sciences Prague, Czech Republic
e-mail: majzlik@af.czu.cz

INTRODUCTION

Czech –Moravian Belgian (CMB) horse and Silesian Noriker (SN) – the only genetic resources of draught-horse breeds in the Czech Republic, these populations are raised during last 120 years on the imported horses from Belgium, Austria or Bavaria in specific conditions of Czech and Moravia (Silesia) districts.

Actual population size	Stallions	Mares
Czech –Moravian Belgian Horse (CMB)	**58 (*55*)**	**1084 (*392*)**
Silesian Noriker (SN)	**40 (*36*)**	**416 (*284*)**
( ) No of animals included in National gene resource programme		

OBJECTIVE

The aim of this study was to examine variation of linear described type traits in horse breeds under the study.

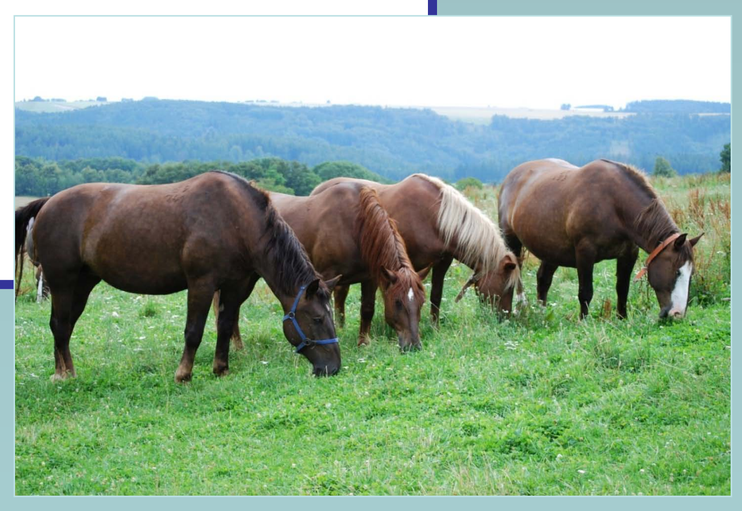
MATERIAL AND METHODS

❑580 CMB horses and 282 SN were described using the standard procedure of linear description for 22 type traits.
❑ The population parameters of the type traits linear described were analysed by the least-squares analysis using the GLM procedure (SAS, 2005).

MODEL USED

$$Y_{ijkl} = \mu + SEX_i + YEARB_j + AGEC_k + LIN_l + SIRE_{kl} + e_{ijkl}$$

where :
Y_{ijkl} = observation of a type trait linear described,
μ= overall mean,
SEX_i = fixed effect of the i-th sex,
$YEARB_j$ = fixed effect of the j-th year of birth,
$AGEC_k$= fixed effect of the k-th age at classification,
LIN_l =fixed effect of the l-th line of sire,
$SIRE_{kl}$ = fixed effect of the k-th sire at l-th line of sire,
e_{ijkl} = random residual error



RESULTS

❑The estimated parameters characterize the specific properties and variation of both breeds in their current state (mean figures of type traits described for CMB are 4.45 – 6.7 with SD= 0.56 – 1.17, for SN then 4.72 – 6.68 with SD= 0.43 – 1.15).
❑Two effects – Sex, Age at time of description - reached no statistical significance at prevailing type traits of either breed, therefore no correction is necessary for these effects this time.
❑The Year of birth has proved high statistical significance for body conformation traits of both breeds.
❑No extremes of type traits grades 1 or 9 were found in population under study because both groups consist of breeding animals which are preselected.
❑The coefficients of variation are useful measure of variation- prevailing traits showed CV= 15-20%.
❑The highest coefficient of variation (18 – 21%) showed in both breeds parameters nobility, length of whithers, shoulder, hindlegs- side view and gait properties.
❑The analysis revealed significant differences between lines and within sires in type traits – this variability should kept be in both gene resource breeds.

CONCLUSION

❑Linear assesment of the type traits is an useful tool of the selection for type traits in draught-horse breeds.
❑Linear assesment of the type traits is carried out at the age of three - four years of the horse.
❑Two effects – Sex, Age at time of description - reached no statistical significance at prevailing type traits of CMB and SN breeds, therefore no correction is necessary for these effects this time.
❑In both breeds under study was found significant phenotype variability of type traits of sire lines – from this fact could be drawn conclusion about genetic variability.
❑The variability should be kept as a source of agrobiodiverzity in both draught horse breeds especially in population included in National programme for Animal Genetic Resources.
❑The results of this study is the first step in complex analysis of the properties CMB and SN breeds leading to estimation of heritabilities of type traits in heavy horses.

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