Genetic diversity in the Slovak Spotted breed using pedigree information

E. Hazuchová, O. Kadlečík, I. Pavlík, R. Kasarda

Slovak University of Agriculture in Nitra, Slovak Republic,

hazuchova.eva@gmail.com

Background and Aim

Slovak Spotted is a dual-purpose breed with a good milk and meat production, which belongs to the Simmental type of cattle.

The aim of this study was to:

- determine the pedigree completeness,
- inbreeding levels,
- characteristics of gene origin in Slovak Spotted breed.

Material and methods

- assessment of the diversity was made on the basis of pedigree information from the database of the of the Breeding Services of SR.
- pedigree file consisted of 109,534 individuals (105,124 dams and 4410 sires).
- reference population set up 36,896
- individuals (36,834 dams and 62 sires) for data processing software SAS V9.2 was used. For monitoring of genetic variability was used ENDOG v4.8 software (Gutiérrez, Goyarch, 2005).

Results

	ESTACION DE LA CONTRACTOR DEL CONTRACTOR DE LA CONTRACTOR DE LA CONTRACTOR DE LA CONTRACTOR	A CONTRACTOR OF THE PARTY OF TH	, 2000	N STREET, STRE
Variable	\overline{x}	S	X _{min}	X _{max}
The maximum number of generation traced	8.06	1.44	0	12
The average number of fully traced generations	2.10	0.64	0	5.0
The equivalent complete generations	4.45	0.78	0	6.46
The coefficient of inbreeding (F _i)	0.35	0.01	0	26.17
The individual increase of inbreeding (ΔF_i)	0.09	0.004	0	14.67
Average relatedness coefficient (AR)	0.8	0.003	0	2.25
Number of founders (f)	42,398			<u>-</u>
Effective number of founders (f _e)	346			<u>-</u>
Effective number of ancestors (f _a)	87			
Number of ancestors explaining 50% diversity	44			-

Conclusion

The level of inbreeding gain per generation and relatedness were under 1 %. The comparison between the f and f_e advert to a decrease of genetic diversity as consequence of unequal contributions of founders. This could happen due to excessive use of some animals as parents of subsequent generations. In order to prevent loss of diversity within breed it is needed to monitor and use suitable mating strategy.

Presentation of this work was supported by the Ministry of Education, Science, Research and Sport of the Slovak Republic.