

ANALYSES OF THE GENETIC DIVERSITY WITHIN LITHUANIAN WHITE-BACKED CATTLE

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Summary. The objective of this study was to use red cell antigen system to assess temporal changes in intrabreed genetic variation of Lithuanian White-Backed cattle under restoration. Now, native cattle with a white dorsal stripe and black or brown pigment side colour are an indigenous breed found mostly in the southeastern regions of Lithuania.

The blood samples of Lithuanian White-Backed cattle were classified in to five different groups. The animals from each group were not related, except the animals from groups 1, 2 and 4. The genetic markers used to characterize the intrabreed were 29 alleles in EAB and EAC systems of blood groups. Within-group variation was estimated by expected heterozygosity, allele frequencies and genetic identity (r).

The result is important since it shows that cattle from different herds have retained reasonably not high genetic diversity at the biochemical loci. Allele frequencies differentiation between the groups showed that all groups of LWB cattle were significantly different from one another. Genetic divergence of the LWB cattle in addition to within population genetic diversity is a result of the combined effects of breeding, geographic origin, the extent of admixture occurring during breed foundation and development.

The results suggest that there has been different gene flow among modern-day pedigree breeds of cattle in to the single animal from different regions, and it has resulted in significant genetic differentiation of the groups. Heterozygosities of LWB cattle were high and ranged between 0.793 and 0.923. Decrease of heterozygosities in progeny of conservation herd showed that consequently, to purifying the LWB population the breed could have lost 0.4% of their heterozygosity over few generations. The influence of selected bulls on animals from the conservation herd was defined sufficiently high ($r=0.58$ and 0.50).

Keywords: blood groups, White-Backed cattle, genetic variation, heterozygosity.