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ASSESSMENT OF GREY STEPPE CATTLE GENETIC AND PHENOTYPIC TRAITS AS VALUABLE RESOURCES IN PRESERVING BIODIVERSITY

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Abstract

The paper reveals original findings in agrobiodiversity, as part of the global biodiversity puzzle. The Grey Steppe cattle are endangered to extinction and are part of a genetic preservation program in Romania. The research approached the productive performance, the genetic determinism of milk production traits, studied on a Grey Steppe breed population nucleus of 30 individuals, throughout 4 productive cycles. The average milk yield in all 4 consecutive lactations reached 1858 kg per capita, while total lipids and proteins reached 4.41% and 3.56%. Recalculated for Maturity Equivalent, the production summed up 2197 kg milk (4.36% fat, 3.52% proteins). The electrophoresis profiling revealed 6 loci codifying the major proteins in milk: alpha-casein S₁ (α S₁-cz), beta-casein (β -cz), kappa-casein (K-cz), beta-lactoglobulin (β -lg), alpha-lactoglobulin (α -la) and alpha-casein S₂ (α S₂-cz). Apart from these, we identified a new allele in heterozygote state in two individuals of the studied population and we coded it α S₁-CN I^{RV}. The main lactoprotein is the kappa-casein (K-cz), identified with high heritability in the studied population ($h^2 = 0.57\%$), while the α S₁ casein (α S₁-cz) had intermediate capacity of transmittance across generations ($h^2 = 0.29\%$). The Grey Steppe breed represents a valuable gene pool due to its high capacity of adaptation to local conditions, to its versatility in using lower quality feed than other specialized breeds, as well as to its reproductive robustness and to its potential in bearing ancestral, undiscovered genes coding beneficial lactoprotein species.

Key words: biodiversity, genes, Grey Steppe cattle, lactoproteins, milk yield

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