ASSESSMENT OF GENETIC RISK AND LONG-TERM VIABILITY IN THREE SPECIALIZED PALAS SHEEP BREEDS

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Abstract

This study characterized genetic risk and long-term viability in the Palas Milk Breed, Palas Meat Breed, and Prolific Palas Breed populations maintained at the Research and Development Institute for Sheep and Goat Breeding Palas-Constanța. The indicators analyzed were effective population size (Ne), effective number of breeding males (Nm), increase in inbreeding per generation (ΔF), generation interval (L), annual inbreeding rate (ΔFan), and estimated 50-year accumulation of inbreeding (ΔF50). The Palas Milk Breed population had Ne = 60.30, Nm = 17.12, ΔF = 0.73% and ΔFan = 0.19%/year; the Palas Meat Breed population had Ne = 93.11, Nm = 15.63, ΔF = 1.04%, and ΔFan = 0.29%/year and the Prolific Palas Breed population had Ne = 87.72, Nm = 21.93, ΔF = 0.57% and ΔFan = 0.13%/year. The annual inbreeding rates remained below 0.5%/year. The findings support the continued use of rotational mating, balanced contributions from sire families, and periodic pedigree monitoring in each population.

Key words: *effective population size; inbreeding; genetic conservation; sheep; Palas*