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Czech Journal of Animal Science

Analysis of genetic polymorphism in six meat sheep breeds and genetic distances between them

Chen R.J., Yang Z.P., Ji D.J., Qu D.Y., Li Y.L., Mao Y.J., Huang D.L.:

Czech J. Anim. Sci., 54 (2009): 461-467

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The genomes of 6 sheep populations (Dorset, Texel, Black-Suffolk, Tan sheep, Small-tailed Han sheep, Tan and Small-tailed Han hybrid sheep) were screened using 7 microsatellite DNA markers to

genetic distances among these populations. About 105 alleles were detected at 7 loci in 6 populations. The average observed and expected heterozygosity ranged from 0.2901 to 0.4534 and from 0.8007 to 0.8737 in 6 sheep populations. The expected heterozygosity of each population was much higher than the observed heterozygosity. The mean polymorphism information content (*PIC*) value of populations ranged from 0.7188 to 0.8546. The coefficient of gene differentiation (F_{st}) between populations was very low (6.98%). The percentage of inbreeding coefficient for all populations (F_{it}) was 56.02%, while within breeds (F_{is}) it was 52.72%. Assuming that heterosis could be estimated on the basis of genetic distances between examined breeds, the hybrid of Tan and Small-tailed Han sheep could be designated as the best female parent, followed by Tan sheep and Small-tailed Han sheep.

Keywords:

sheep; microsatellite DNA; genetic polymorphism; heterosis

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