

Abstract Submission Form

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Preferred presentation

Poster

Preferred session

Session 7: Breeding for agroecological transition in
sheep and goats

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Title of your paper

The estimation of variance components for litter size in two
Slovenian sheep breeds

Insert ABSTRACT text

The aim of this study was to estimate variance components for ewe litter size in two autochthonous Slovenian sheep breeds, the Jezersko-Solčava sheep (JS) and the Improved Jezersko-Solčava sheep (JSR). Both breeds are fertile all year round and are mainly bred for lamb production. Litter size records were collected from the farms according to the breeding programs for 17,071 ewes with 79,387 lambings (40,172 - JS, 39,215 - JSR) in the period from 2007 to 2023. A pedigree file with 24,425 animals was created from the central database for small ruminants in Slovenia. The fixed part of the model was analysed with the SAS statistical package using the MIXED procedure and included the breed effect (JS, JSR), ewe parity (from 2 to 10) and the year-season interaction (1, 2, 3, ..., 68), while the lambing interval was included as a linear covariate. The variance components were estimated using the REML method implemented in the VCE-6 program. The random part of the model consisted of the additive genetic effect, the permanent environment effect and the flock effect. JSR ewes had a significantly higher litter size (1.39 ± 0.01 lambs per litter) compared to JS ewes (1.26 ± 0.01 lambs per litter). Litter size was significantly lowest at the second parity (1.22 ± 0.01 lambs per litter) and increased until the sixth parity (1.36 ± 0.01 lambs per litter). Thereafter, it gradually decreased until the tenth parity (1.33 ± 0.01 lambs per litter). Litter size increased with increasing lambing period and was also influenced by year-season interaction. The estimated heritability for litter size was 0.06. The effect of permanent environment explained 0.02 variability, while the flock effect explained 0.11 variability in litter size. As expected, the variance components including estimated heritability for litter size were relatively low. Nevertheless, it is expected

that they could contribute to more effective selection in the future, and for this reason the estimated variance components will be used in predicting breeding values for ewe litter size from 2024 onwards.

Enter keywords

parity, lambing period, heritability, permanent environmental effect, flock effect