

Title: Genetic parameters for tick count and udder health in commercial and indigenous ewes in South Africa

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Journal: Veterinary Parasitology 230: 33 – 42

Year: 2016

The genetics of tick infestation in sheep need study, as host resistance often forms part of integrated pest control programs. Repeated udder health scores, site-specific tick count, mating weight and reproduction records (N = 879–1204) were recorded annually from 2010 to 2015 on ewes of the indigenous Namaqua Afrikaner (NA) fat-tailed breed, as well as the commercial Dorper and SA Mutton Merino (SAMM) breeds. Udders were scored subjectively on a 1–5 scale (1 – udder intact and 5 – udder damaged severely) and ticks were counted on three locations. The body sites counted were the head and thoracic limb (HTLTC), udder-pelvic limb (UPLTC) and perineum-breech-tail (PBTC). These counts were also totaled for a total tick count (TTC). Reproduction traits were number of lambs weaned per ewe lambing and total weight of lamb weaned per ewe lambing. Udder health scores of NA ewes were lower than those of Dorsers, which in turn had lower scores than SAMM ewes. NA ewes had lower values for HTLTC, UPLTC and TTC than the commercial breeds, but higher values for PBTC than Dorsers. Heritability estimates amounted to 0.26 ± 0.04 for HTLTC, 0.53 ± 0.04 for UPLTC, 0.07 ± 0.06 for PBTC, 0.44 ± 0.06 for TTC and 0.61 ± 0.03 for udder health score. Animal permanent environment also affected PBTC (0.14 ± 0.07). Significant genetic correlations were found between the HTLTC and UPLTC (0.47 ± 0.10), UPLTC and udder health score (0.52 ± 0.07), HTLTC and UPLTC (0.24 ± 0.11) as well as UPLTC and PBTC (-0.44 ± 0.11). Heavier ewes had higher UPLTC (0.38 ± 0.09), TTC (0.33 ± 0.09) and impaired udder health (0.21 ± 0.08). Udder health scores and tick counts at all sites were not related to reproduction traits. The indigenous NA breed outperformed the commercial breeds with lower values for HTLTC, UPLTC, TTC and a better udder health score. Mechanisms contributing to the better performance of the NA breed under pastoral conditions and the scope for selection for tick tolerance within breeds should be studied further.

Keywords: Namaqua Afrikaner, SA Mutton Merino, live weight, reproduction

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