



## Multivariate analysis of test-day and total milk yield in goats

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**ABSTRACT.** The objective of this study was to estimate genetic parameters for 305-day cumulative milk yield (MY305) and its association with test-day milk yield (TDMY) in Saanen and Alpine goats in order to provide information that allows the use of TDMY as selection criteria. This was done using standard multi-trait and reduced rank models. Data from 1157 lactations, including the first three kiddings, and 5435 test-day records from 683 Saanen and 449 Alpine goats were used. MY305 was analyzed together with TDMY by multi-trait analysis, from the first to tenth test-day, using records of the first three lactations as repeated measures. Three multi-trait models were used: a standard (SM) and two reduced rank models that fitted the first two (PC2) and three (PC3) genetic principal components. Akaike and Schwarz Bayesian information criteria were used to compare models. Heritability for TDMY estimated with the SM ranged from 0.20 to 0.66, whereas the range calculated from the PC2 model was 0.16 to

0.63. Genetic correlations between TDMY and MY305 were positive and moderate to high, ranging from 0.56 to 0.98 when estimated with the SM, and 0.91 to 1.00 when estimated with the PC2. The standard multi-trait model produced estimates that were more accurate than the reduced rank models. Although the SM provided the worst fit according to the two model selection criteria, it was the best in this dataset.

**Key words:** Heritability; Milk yield; Reduced rank models; Goat