World Academy of Science, Engineering and Technology
International Journal of Mathematical and Computational Sciences
Vol:14, No:12, 2020

Across-Breed Genetic Evaluation of New Zealand Dairy Goats

Authors : Nicolas Lopez-Villalobos, Dorian J. Garrick, Hugh T. Blair

Abstract : Many dairy goat farmers of New Zealand milk herds of mixed breed does. Simultaneous evaluation of sires and does across breed is required to select the best animals for breeding on a common basis. Across-breed estimated breeding values (EBV) and estimated producing values for 208-day lactation yields of milk (MY), fat (FY), protein (PY) and somatic cell score (SCS; LOG2(SCC) of Saanen, Nubian, Alpine, Toggenburg and crossbred dairy goats from 75 herds were estimated using a test day model. Evaluations were based on 248,734 herd-test records representing 125,374 lactations from 65,514 does sired by 930 sires over 9 generations. Averages of MY, FY and PY were 642 kg, 21.6 kg and 19.8 kg, respectively. Average SCC and SCS were 936,518 cells/ml milk and 9.12. Pure-bred Saanen does out-produced other breeds in MY, FY and PY. Average EBV for MY, FY and PY compared to a Saanen base were Nubian -98 kg, 0.1 kg and -1.2 kg; Alpine -64 kg, -1.0 kg and -1.7 kg; and Toggenburg -42 kg, -1.0 kg and -0.5 kg. First-cross heterosis estimates were 29 kg MY, 1.1 kg FY and 1.2 kg PY. Average EBV for SCS compared to a Saanen base were Nubian 0.041, Alpine -0.083 and Toggenburg 0.094. Heterosis for SCS was 0.03. Breeding values are combined with respective economic values to calculate an economic index used for ranking sires and does to reflect farm profit.

Keywords : breed effects, dairy goats, milk traits, test-day model
Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development
Conference Location : Chicago, United States
Conference Dates : December 12-13, 2020