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VAHLSTEN, TERHI, MÄNTYSAARI, ESA A., STRANDÉN, ISMO,
Coefficients of relationship and inbreeding among Finnish Ayrshire and Holstein-Friesian

Keywords Ayrshire, Holstein-Friesian, inbreeding, relationship, generation interval,

Abstract

Pedigree data from national breeding value evaluations were used in calculation of the coefficient and rate of inbreeding, average rate of relationship and generation intervals for the Finnish Ayrshire and Holstein-Friesian dairy cattle populations. The 1,366,555 Ayrshire and 377,869 Holstein-Friesian animals. The mean coefficient of inbreeding for Ayrshire and Holstein-Friesian in the 1990s was 2.29% and 0.90%, respectively, and the trend was towards higher inbreeding values. The average coefficient of mean increase in inbreeding and generation interval was calculated for bulls born between 1976 and 1999, and for cows born between 1976 and 1999. The mean coefficient of relationship of Ayrshire bulls increased 2.22 %-units per generation and inbreeding increased 0.22 %-units per generation during the years studied. The mean coefficient of relationship of Finnish Holstein-Friesian bulls increased 0.96 %-units per generation and inbreeding 0.17 %-units per generation. The mean coefficient of relationship and inbreeding of Ayrshire cows increased 0.22 %-units and 0.31 %-units per generation, respectively.

For Holstein-Friesian cows the mean coefficient of relationship and inbreeding increased 0.25 %-units and 0.11 %-units per generation, respectively. Results show that inbreeding is low and it is increasing slowly in both breeds. However, especially the coefficient of relationship of Ayrshire bulls are high in some age classes and this may lead into faster increase in coefficients of inbreeding.

Contact terhi.vahlsten@welho.com

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