Materials of the Conferences

GENETIC EVALUATION OF BULLS ON MASTITIS RESISTANCE BY MEANS OF LINEAR STATISTIC MODELS

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Accuracy of animal breeding value (BV) is the actual problem of selection. The best linear unbiased prognosis method (BLUP) is applied for the estimation of BV in the countries with developed animal breeding PC software. Advantages of the method are: a calculation of environmental factors influencing (it may dislodge a true estimation of an animal genotype) and relatives information. The BLUP method is approving in the Russian cattle breeding for the BV estimation of production traits. However dairy cattle of all Russian herds requires in technological traits improvement also, including mastitis resistance increase. As the mastitis is one of widespread and expensive illnesses of dairy cows. The frequency of the disease varies within the range of 12-40 % up to 50-80 % [2]. The losses from one case of mastitis are equivalent to the cost of 400-470 kg of milk [3].

The purpose of our research is the BLUP evaluation of bulls-sires genotypes on daughters mastitis resistance. The research was conducted on the data of first three lactations of Ayrshire cows (daughters of 40 sires, 1983-1998 years of calving, 5145 lactations totally). Resistance-susceptibility of cows to mastitis were estimated on score scale, carried out with application of logarithmic transformation $(LnX+3,4)$ [1]. The score for healthy cows equals 3,00, for mastitis suspect cows - varies from 3,17 up to 6,10, for mastitis cows - from 6,11 up to 26,00. reeding value of bulls (BV) was evaluated by BLUP.

The statistical model included fixed effects of year, month of calving, milk yield, weight, period from calving to insemination and intensity of milk ejection of daughters.

The mean score for mastitis varied from 3,00 for the daughters of the best bull up to 6,59 of inferior one. BV estimations of sires varied from -0,87 for the best bull up to +1,48 score for the inferior bull. Reliability of BV estimations of different bulls was from 7,4 to 91,0 %. Genetic repeatability of BV estimations was at the high level $(r_g=0,683…0,706)$.

Our analyses has shown: it is possible to increase the effect of selection of more mastitis resistance genotypes on 16-40 %, using sires, genetically evaluated on mastitis score by BLUP [4]. So, it is necessary to conduct a mastitis resistance trait in electronic pedigrees of cattle (both males and females) in all Russian dairy herds. Such approach allows one to predict a complex breeding value of cattle.

The Literature:

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