Estimation of breeding values for meat sheep in France

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Reproductive performances of ewes and growth of lambs are registered in the national farm recording system, in order to estimate breeding values of rams and ewes for several traits: prolificacy, maternal ability and growth potential. Estimation of breeding values for prolificacy is based on normal scores of litter size after natural or hormone-induced estrus, considered as two different but genetically linked traits, under BLUP animal model methodology. Maternal ability combines growth between birth and 30 days of age and survival of lambs, each dependant on maternal and direct genetic effects, under BLUP animal model methodology. The evaluation model takes into account the number of lambs suckled thanks to a multiplicative factor (1 for a lamb reared as a single, 0.7 for twin-reared lambs) for the maternal genetic effect. Last trait recorded in farm is growth potential between 30 and 70 days, which is estimated using improved sire model BLUP. Young males are chosen on genetic values of their parents and then evaluated on central stations for growth, conformation and fattening traits. On these individual test stations, genetic evaluation is only made intra test group using animal model, but with limited pedigree information. In some breeds, the best males are then evaluated on progeny test for carcass and slaughter traits. Results obtained on many slaughter traits are presented in graphical spider charts. Currently, important work is being done to evaluate the economic importance of each selected trait. The first step, recently completed, was to model the production systems. We are now going to set up synthetic index at each step of the selection schemes. Furthermore, on-going researches concern parasite resistance, social behavior, fertility and semence production for a potential short or long term inclusion in the national genetic evaluation.

National genetic evaluations in dairy sheep and goats in France

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In France, breeding schemes in dairy sheep and goats have been oriented for a long time towards the improvement of dairy traits (milk, fat and protein yields, and fat and protein contents). The estimated breeding values (EBV) for these traits are performed using a BLUP repeatability animal model assuming heterogeneous variances and constant variance ratios. In 2010, the evaluations involved 2,128,729 animals and 6,735,408 records from the five dairy sheep breeds, and 2,760,612 animals and 7,273,465 records from the two main goat breeds. These last years, to reduce production costs and take into account also milking labour and animal welfare, EBVs have been carried out for functional traits, i.e. somatic cell score (SCS) for mastitis resistance and udder type traits. These EBVs are computed with the dairy trait model for SCS and a multiple-trait BLUP animal model for type traits. According to the data availability, all these EBVs are not yet computed for all breeds. For the most advanced breeds, a total merit index has been proposed giving more or less the same weight for production and functional traits. The short-term objective is to implement genetic evaluations for SCS in all breeds and to update the breeding objectives accordingly. On-going researches on genetic evaluations concern reproduction traits, milking speed, longevity, milk production persistency and once-daily-milking ability. The availability for sheep, and soon for goats, of a pangenomic high density SNP chip allows considering genomic selection programs. In Lacaune dairy sheep breed, a life-size test of genomic selection is in progress based on genomic estimated breeding values (GEBV) for all traits with a GBLUP method. First results are presented in other papers at this congress.

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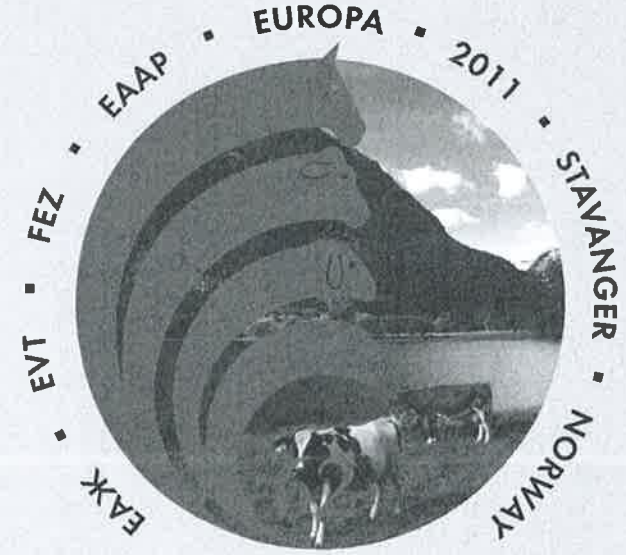

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