QTL detection for milk production traits, fatty acids, udder morphology and milking speed in Alpine and Saanen goats

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In France, an important research and development programme for mapping traits of interest in dairy goat has been carried out in the last three years. The project is based on a large daughter design of 20 Artificial Insemination Alpine and Saanen families. The traits considered relate to milk production, udder morphology, milking speed and resistance to mastitis (milk somatic cell counts). The project also includes a large scale on-farm phenotyping scheme for fatty acids ("PhénoFinlait" project) allowed by the use of mid infrared spectra. The population has been genotyped with the 50K SNP goat chip which was recently released by Illumina in the frame of the International Goat Genome Consortium. This tool was produced thanks to a few collaborative SNP discovery research programmes (INRA, France; Malaysian Agricultural Research and Development Institute; University of Utrecht, Netherlands). A total of 2,254 goats and 20 IA sires were genotyped with the illumina goat chip including a total of 53,347 synthetized SNPs. Quality control of genotype included essentially SNP call rate (> 99%), animal call rate (> 98%), minimum allele frequency (> 1%), Hardy Weinberg equilibrium and pedigree consistency. After editing, a total of 49,647 SNP were validated for further analyses. Almost all 2,254 goats had information for milk production traits (milk, fat and protein content and yield), SCC and for eleven udder type traits. Daughter yield deviations for ten fatty acids (plus 8 groups of fatty acids) were also available for 2,096 goats. Finally milking speed was recorded in a subset of goats, with an average of 40 daughters of the 20 Alpine and Saanen sires. QTL detection based on linkage analyses (using the QTLmap software) are in progress for milk production and SCC traits. The project was funded by the French Phenofinlait programme (ANR, Apis-Gène, CASDAR, CNIEL, FranceAgriMer, France Génétique Elevage and Ministry of Agriculture) and the European 3SR project.

BOOK OF ABSTRACTS

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