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## **Genomic selection in French Lacaune and Manech dairy sheep breeds : comparison of BLUP and GBLUP accuracies.**

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### **Abstract**

The selection of the 5 French dairy sheep breeds is currently based on the usual quantitative genetics approach, both for milk production and udder functional traits, using pedigree and recorded phenotypes in nucleus flocks. Moreover since 2002 a gene-assisted selection has also been implemented to select for scrapie resistance against classical scrapie and BSE strain, based on large scale *PrP* gene genotypings. The 2009 release of a high-density SNP array in sheep (Illumina Ovine SNP50 BeadChip) enables, at least in the French Lacaune and Manech red faced breeds, thanks to the size of their respective nucleus and the extensive use of animal insemination (AI), to take the opportunity of studying genomic selection. On the other hand a multi-breed genomic evaluation will be tested between French Manech red and black faced breeds, or Lacaune and Manech breeds. The aim of our study was to compare results of pedigree- and genomic-based EBV (PEBV and GEBV respectively), based on reference populations including, by the end of 2011, 2,615 and 1,295 AI rams respectively in French Lacaune and Manech (red and black faced) breeds. Moreover, one step and two steps approaches, using GBLUP method based respectively on lactations or on daughter yield deviations as phenotypes, have been investigated. The results showed that GEBV would be more efficient than PEBV in agreement with the reference population size and effective size of each breed: an increase of accuracy of GEBV versus PEBV from 13 % up to 41 % has been found according to the traits and the breeds. Thus selection of young 3-4 month old unproven rams could be possible.

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