



HAL
open science

Genomic evaluation on the French scale of Holstein bulls from a large Indian NGO

Vincent Ducrocq

► **To cite this version:**

Vincent Ducrocq. Genomic evaluation on the French scale of Holstein bulls from a large Indian NGO. 69. Annual Meeting of the European Federation of Animal Science (EAAP), Aug 2018, Dubrovnik, Croatia. ⟨hal-02734507⟩

HAL Id: hal-02734507

<https://hal.inrae.fr/hal-02734507v1>

Submitted on 2 Jun 2020

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



HAL Authorization

Genomic evaluation on the French scale of Holstein bulls from a large Indian NGO*V. Ducrocq¹, D. Cruz Hidalgo¹, M. Boussaha¹, P.D. Deshpande², A.B. Pande² and M. Swaminathan²**¹GABI,INRA, AgroParisTech, Université Paris-Saclay, 78350 Jouy-en-Josas, France, ²BAIF, Central Research Station, Uruli Kanchan, Maharashtra, India; vincent.ducrocq@inra.fr*

BAIF Development Research Foundation (<http://www.baif.org.in>) is the largest Indian NGO in agriculture. BAIF runs a very large bull stud, which produced in 2016 12.5 million doses from *Bos taurus* bulls (Holstein (HF) and Jersey), *Bos indicus* and crossbred bulls, as well as buffaloes. BAIF also manages a bull dam nucleus herd founded in the late 1970s from Canadian HF, Danish Friesian and Jersey heifers. In 2015, a total of 288 animals from BAIF stud and nucleus farm were genotyped with the Illumina Bovine SNP50 Beadchip[®] including 59 HF bulls and 23 HF cows. The cluster option of the R package 'adegenet' distributed the HF bulls into 4 groups according to their SNP similarities without using any prior knowledge. Looking at the pedigree of these bulls, the four groups could be interpreted according to their origin as sons of: 'old' Danish bulls (G1), 'old' Canadian bulls (G2), 'more recent' Canadian and Indian bulls (G3), 'recent' (born in the 1990s), and US and French bulls (G4). Based on these genotypes, HF bulls and cows were genomically evaluated on the French scale for all traits evaluated in France, as if they were born in France (recognizing that this scale is not the proper one for selection in India). Group averages showed large differences between groups for production traits, with a strong increase in milk yield and a strong decrease in fat % from G1 to G4, and limited changes for protein%. Quite surprisingly, a large improvement in Functional Longevity was observed from G1 to G4, related to a strong improvement of overall udder type and feet and legs. Udder health, fertility and calving traits GEBVs were globally positive on the French scale in contrast with production and type traits GEBVs, which were substantially lower than the French genetic base (cows born in 2008-2010). Therefore, current imports of HF bulls semen are likely to strongly improve udder and feet and legs traits, but will also lead to a huge increase in genetic level for production compared with the former generation of BAIF bulls. This may be challenging in some areas with limited resources.