Form BEEF

DESCRIPTION OF BEEF NATIONAL GENETIC EVALUATION SYSTEM

Country (or countries) France

Trait name: Weaning weight

DATA COLLECTION

Breed(s)	Limousine
Trait definition	120 days adjusted weight + 210 days adjusted weaning weight
Method and frequency of measurement	Weighing of animals several times per year.
Who does the performance recording?	Technicians of performance recording Organisations (Bovin Croissance (BC))
Method of collecting data	Elementary performances are sent by BC to a regional database that then sends the data to the central national database.
Which animals are recorded?	Depending on the contract between the breeder and the performance recording organization: all the animals of the herd or all the animals of a certain breed.
Is birthday recorded?	Yes
Is day of recording available?	Yes
Are the data adjusted and/or selected? If yes please describe the methodology applied	The 120 and 210 days adjusted weights are calculated by intra-extrapolation for each animal with at least 2 weights, with two conditions on these weights: - the interval between the target age (120 or 210 days) and the closest weighing date must be less than 2 months, - the interval between the two weighing dates must be less than 300 days.
Time period for inclusion of records	Since 1972
Criteria (data edits) for inclusion of records	Animals belonging to herds that are under contract to a Bovin Croissance organization.

Is embryo transfer applied? How are ET animals been identified?[1] Is recipient mother ID recorded?	The technique is rarely applied. ET animals are identified with a specific code (separated from the ID). The recipient mother is recorded
How do you treat incomplete data?	By default, only the P210 adjusted weaning weight is considered. But if an animal didn't have enough weights to calculate it, the P120 adjusted weight is then considered.

<div align="center">MODEL AND METHOD</div>

Model used for genetic evaluation[2a]	MT-BLUP-AM with DAM genetic and env permanent effects
Environmental effects[2b]	CG (herd-birth campain-sex-management group) + Parity of Dam*Age of dam (10-20) + Season (~10) + individual situation. All these effects are considered as fixed categorical effects.
Use of genetic groups and relationships	Relationship matrix without genetic groups
Genetic parameters in the model [3]	
Adjustment for heterogeneous variance in evaluation model	No
System validation	Several data quality checks by INRA and Institut de l'Elevage at different stages of the procedure, correlation among different years,…
Definition of genetic reference base Next base change	Rolling base, including calves born in the last 5 years, and recorded for all preweaning traits (Birth weight, Calving conditions, P120 or P210 weaning weights, Muscular and skeletal development scoring notes) This base is updated for each evaluation each year.
Assessment of the index quality (reliability, connexion…)	The index quality is assessed through: 1- Reliability (CD) computed MTEDC5 Sullivan software 2- Number of evaluated offspring 3- Criteria of Admission to the group of connected herds (CACO) computed following the Fouilloux method: (Fouilloux M.N., Laloë D., A sampling method for estimating the accuracy of predicted breeding values in genetic evaluation, Genet. Sel. Evol. 33 (2001) 473-486).

<div align="center">PUBLICATION</div>

Expression of genetic evaluations	Estimated Breeding Values (EBV) for direct genetic effect (called CRsev (growth potential at weaning)) and maternal genetic effect (called ALait (milking ability)). EBV's are standardized in comparison with the reference base: base=100 and 10 point correspond to 1 genetic standard deviation of the calculated trait from the reference base. These EBV's are then used to construct a total merit index (ISEVR) and a maternal weaning index (IVMAT). Details in French and English can be found at:

	https://www.geneval.fr/indexations-races-bovines in the "IBOVAL Races bovines à viande" repository
Criteria per official publication of evaluations	The rules for publishing the sires are following: For direct effects, The "known sires" are the ones for which the accuracy is at a sufficient level (at least 25 recorded offspring, for each trait, used for Total Merit Index computation). Then, the sires that are comparable between "herd campaign" units at a racial level are called "connected sires"(they have sired at least 10 recorded offspring in one or several "herd-campaign" connected units). For maternal effects, the "known sires" are the ones for which the accuracy is at a sufficient level (at least 15 daughters in calving and 25 calves born from these cows with records). Then, the sires that are comparable between "herd campaign" units at a racial level are called "connected sires"(they have sired at least 10 recorded calves of their daughters in one or several "herd-campaign" connected units). Among these "connected sires" the ones that are in accordance with the French legislation of artificial insemination for public and private service regulation are stated as "publishable sires". A sire is considered as being an « active sire » if, over the 2 last campaigns (2005 and 2006 for IBOVAL2007) it had at least 2 calves born and recorded over one of these campaigns. Details in French and English can be found at: https://www.geneval.fr/indexations-races-bovines in the "IBOVAL Races bovines à viande" repository
Number of evaluations / publications per year	2 per breed and year
Anticipated changes in the near future	
Key reference on methodology applied	Details in French and English can be found at: https://www.geneval.fr/indexations-races-bovines in the "IBOVAL Races bovines à viande" repository
Key organization: Contact person, address, phone, fax, e-mail, website	Computing: GenEval Evaluation génétique des animaux d'élevage 3 rue du Petit Robinson F78350 Jouy-en-Josas Mail: contact.international@geneval.fr Phone : +33 (0) 1 85 36 05 05 Web site : https://www.geneval.fr/ Publishing: Institut de l'Elevage

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1) Use Appendix II BEEF for sample ID of ET animals
2a) Use abbreviation listed in the attached list of abbreviation to define the type of model.
2b) Use abbreviation for most common effects as listed in the attached list of
   abbreviation indicating, also, if the effect is treated as random (R) or fixed (F).
3) Use Appendix I BEEF for heritability/genetic variance estimates.

Parameters used in genetic evaluation

Country: FRANCE
Main trait group: Adjusted weaning weight
Breed: Limousine

Trait	Definition	$h_d{}^2$	$h_m{}^2$	$r_{g(d,m)}$	c^2	$\sigma_P{}^2$
120dw	120 days adjusted weight	0.30	0.11	-0.38	0.11	315
210dw	210 days adjusted weaning weight	0.36	0.09	-0.39	0.09	673

$h_d{}^2$: direct heritability
$h_m{}^2$: maternal heritability
$r_{g(d,m)}$: genetic correlation between direct and maternal effects
c^2: repeatability of maternal permanent environmental effects
$\sigma_P{}^2$: phenotypic variance

Correlations among traits:

Direct genetic effects	Maternal genetic effects	maternal permanent environmental effects
0.86	0.91	0.95