**Form GE**

Status as of: 2019-04-16

**DESCRIPTION OF NATIONAL GENETIC EVALUATION SYSTEMS**

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| **Country (or countries)** | France | |
| **Main trait group1** | Workability | |
| **Breed(s)** | Prim’Holstein and Pie Rouge (HOL), Montbéliarde, Normande, Brown Swiss | |
| **Trait definition(s) and unit(s) of measurement2** Attach an appendix if needed | Milking Speed (MS)  Temperament (TEMP) |
| **Method of measuring and collecting data** | according to farmer's ranking (1 to 5), collected at the same time as type scores |
| **Time period for data inclusion** | HOL, MS : since 1990 ; TEMP : since 1996  Normande : MS since 1990  Montbéliarde, MS : since 1990 ; TEMP : since 2001  Brune (BSW): MS since 1996 ;. |
| **Age groups (e.g. parities) included** | Parities 1-2, one score per cow |
| **Other criteria (data edits) for inclusion of records** | One score by cow. If by mistake, a cow is scored twice, the score is chosen as close as possible to 30 months |
| **Criteria for extension of records** (if applicable) |  |
| **Sire categories** | All sires |
| **Environmental effects3, pre-adjustments** | HOL, MON, NOR: Adjustment for heterogeneous residual variances  BSW: None |
| **Method (model) of genetic evaluation3** | MT-BLUP AM (simultaneously with conformation traits) |
| **Environmental effects3 in the genetic evaluation model** | As these traits are simultaneously evaluated with conformation traits, the model is the same as for type evaluation:  Number of levels in parentheses   * HOL: Stage of lactation (25)\* parity (2) \* region (8)\* year (F); Age at calving (25)\* parity (1 or 2) \* region (8)\* year (F); Herd – round – classifier (F) * Normande: Stage of lactation (18)\* parity (1 or 2) \* region (7)\* year (F); Age at calving (11) \* parity (2) region (7)\* year (F); Herd – round – classifier (F). * Montbéliarde: Stage of lactation (22)\* parity (2) \* year (F); Age at calving (18)\* parity (2\* year (F); Herd – round – classifier (F) * Brune: Stage of lactation\*parity (5)\*year; Age at calving \* parity (9)\*year; Herd-round-classifier(F) |
| **Adjustment for heterogeneous variance in evaluation model** | HOL, MON, NOR : A structural model is used in a univariate setting, the logarithm of the residual variance is described as the sum of a mean, a stage of lactation\*parity (25)\*type of scoring,(2)\*region (8) fixed effect, an age at calving(25)\*type of scoring\*region fixed effect and a classifier \*type of scoring\* year random effect for HOL and Montbéliarde.  Normande : stage of lactation\*parity\*region, age at calving\*region, type of scoring, classifier\*\*type of scoring\*year random effect. A constant heritability is assumed (i.e., genetic variance is proportional to residual variance)  Records are adjusted so the residual variances are homogeneous and are included in a multiple trait BLUP animal modelBWS: BSW:None |
| **Use of genetic groups and relationships** | Groups of unknown parents defined according to sex, birth year and region or country origin of the progeny (30 groups in HOL) |
| **Blending of foreign/Interbull information in evaluation** | No |
| **Genetic parameters in the evaluation** | rg for HOL: see Conformation form  h²: see part 2 |
| **System validation** | Checks on Data quality; Planned connection between regions (= young bulls  with 1st crop daughters in several regions) during progeny test. EBV correlations; analysis of proofs’ variation according to number of daughters and status of bull (Progeny tested or not, 1st or 2nd crop). Validation of genetic trend (Interbull Methods II & III). Analysis of residuals within classes (ex: within department, region, 1st or 2nd crop) |
| **Expression of genetic evaluations** If standardised (e.g. RBV), give standardisation formula in the appendix |  |
| **Definition of genetic reference base**  **Next base change** | HOL, Normande, BSW: RBV; (m= 0, σg=1)  MON : RBV; (m= 100, σg=12)  male rolling base: bulls born between years (n-10) to (n-7), with a reliability of .70 at least.  April 2016 |
| **Calculation of reliability** | same as for conformation |
| **Criteria for official publication of evaluations** | REL ≥ 0.70 for HOL, MON and NOR  REL ≥ 0.50 for BSW |
| **Number of evaluations / publications per year** | 3 : April, August, December |
| **Use in total merit index4** | Use in ISU= Index de Synthèse UPRA = total merit index  Defined by each breed:  For ISU, Combined functionnal proofs are computed by an approximate MT BLUP AM based on precorrected records for Functionnal (SCC, Fertility, Longevity), dairy (Milk Yield and Protein content), Milking Speed and 5 type traits. (cmb= combined in the following formulae):  • Holstein (HOL): ISU = 19.62 /0.35 (0.35 SYNT/25.2 + 0.108 SCScmb  + 0.072 MAScmb + 0.11 CC1cmb + 0.055 HCOcmb + 0.055  CRCcmb + 0.05 LONGcmb + 0.05 MSPcmb + 0.15 Overall conformation) +100  with SYNT = 1.079 (Protein Y + 0.1 Fat Y + 0.5 Fat content + Protein Content)  (35% Production, 15% Conformation, 22% Female Fertility, 18% UdderHealth, 5% Longevity, 5% Milking Speed)  • Normande: ISU = 22.11 /0.40 (0.40 SYNT /22.45 + 0.0925 SCScmb +  0.0925 MAScmb + 0.0775 CC1cmb + 0.03875 HCOcmb + 0.03875 CRCcmb + 0.05 LONGcmb + 0.03 MSPcmb + 0.18 Overal conformation) +100  with SYNT = 1.098 (Protein Y + 0.1 Fat Y)  (40% Production, 18% Conformation, 15.5% Female Fertility, 18.5%  Udder Health, 5% Longevity, 3% Milking Speed)  • Montbéliarde (MON): ISU = 23.39 /0.45 (0.45 SYNT/25.2 + 0.087 SCScmb + 0.058 MAScmb + 0.09 CC1cmb + 0.045 HCOcmb + 0.045 CRCcmb + 0.05 LONGcmb + 0.05  [MSPcmb-100]/12 + 0.125 [Overall conformation-100]/12) + 100  with SYNT = 1.055 Protein Y + 0.1 Fat Y. + 3 Protein Content + 0.5 Fat content  (45% Production, 12.5% Conformation, 18% Female Fertility, 14.5%  Udder Health, 5% Longevity, 5% Milking Speed)  • Brune (BSW): ISU = 100 + 21.81 / 0.40\* [0.40 INEL/25.2 + 0.12 SCScmb + 0.08 MAScmb + 0.10 CC1cmb + 0.05 HCOcmb + 0.05 CRCcmb + 0.05 LONGcmb + 0.15 Overall conformation]  (40% Production, 20% UdderHealth, 20% Female Fertility, 15% Conformation, 5% Longevity) |
| **Anticipated changes in the near future** |  |
| **Key reference on methodology applied** | Ducrocq V., 1993 : Genetic parameters for type traits in the French Holstein breed based on a multiple-trait animal model. Livest. Prod. Sci, 36, 143-146 |
| **Key organisation: name, address, phone, fax, e-mail, web site** | Computing:  GenEval Evaluation génétique des animaux d’élevage  3 rue du Petit Robinson F78350 Jouy-en-Josas  Mail: [contact.international@geneval.fr](mailto:contact.international@geneval.fr)  Phone : +33 (0) 1 85 36 05 05 Web site : <https://www.geneval.fr/>  Publishing:  Institut de l’Elevage  149 Rue de Bercy  F75595 Paris cedex 12  Mail: [sophie.mattalia@idele.fr](mailto:sophie.mattalia@idele.fr)  Web site : www.idele.fr |

1) Either: Production (e.g. milk, fat, protein), Conformation, Health (e.g. mastitis resistance, milk somatic cell, resistance to diseases other than mastitis), Longevity, Calving (e.g. stillbirth, calving ease), Female fertility (e.g. non-return rate, interval between reproductive events, number of AI’s, heat strength), Workability (e.g. milking speed, temperament), Beef production, Efficiency (e.g. body weight, energy balance, body conditioning score), or Other traits.

2) Indicate frequencies per category if the trait is categorical and specify transformation of data if practiced.

3) Use abbreviations for most common effects (see document with list of abbreviations at http://www-interbull.slu.se/service\_documentation/General/list\_of\_abbreviations.rtf) and indicate random (R) or fixed (F).

4) Please give economic weights and indicate how they are expressed (preferably in genetic standard deviation units).