Form GE Status as of: 2010-03-01

DESCRIPTION OF NATIONAL GENETIC EVALUATION SYSTEMS

Country (or countries)	United States of America
Main trait group	Conformation (type)
Breed(s)	AYS (RDC), BSW, GUE, JER
Trait definition(s) and unit(s) of measurement	Stature, strength, body depth (AYS, GUE), dairy form, rump angle, thurl width, rear leg (side view), rear legs (rear view) (GUE), foot angle, fore udder attachment, rear udder height, rear udder width, udder cleft, udder depth, teat placement, teat length, and final score
Method of measuring and collecting data	Traits scored visually on a 9-point scale by Select Sires appraisers (AYS), on a 50-point linear scale by breed association classifiers (BWS, GUE, JER except stature), and on an 80-point scale for stature (JER)
Time period for data inclusion	Appraisals from 1980 and later (AYS, GUE, JER) or 1982 and later (BSW); pedigree from birth years 1970 and later
Age groups (e.g. parities) included	≤60 months old (AYS); ≤68 months old (BSW); parities 1–3 (GUE); parities 1–2 (JER)
Other criteria (data edits) for inclusion of records	Valid sire identification required; appraisal during first (AYS, JER) or second (AYS) lactation required
Criteria for extension of records (if applicable)	Not applicable
Sire categories	All sires (AI and NS) evaluated together
Environmental effects, pre-adjustments	Age, lactation stage
Method (model) of genetic evaluation	MT AM
Environmental effects[3] in the genetic evaluation model	Herd-appraisal date-parity (F), herd × sire (R), PE (R)
Adjustment for heterogeneous variance in evaluation model	Within-iteration variance estimates used to adjust for variance heterogeneity
Use of genetic groups and relationships	Unknown parents grouped by birth year (2-year groups)
Blending of foreign/Interbull information in evaluation	None
Genetic parameters in the evaluation	For h^2/genetic variance estimates, see Appendix CO for AYS, JER, and GUE and Appendix BCO for BSW
System validation	Means and SDs for all variables calculated and examined overall; means for new bulls, changes for high bulls, largest changes, and key statistics for recent AI bulls checked

Expression of genetic evaluations	PTA
Definition of genetic reference base **Next base change**	Cows born in 2005 (stepwise, 5 years) April 2015
Calculation of reliability	Iterative method that estimates contributions from parents, records, and progeny
Criteria for official publication of evaluations	At least 5 daughters with a usable classification record; Interbull evaluations reported as official in the U.S. if they include data on udder support from an additional country, the U.S. has no evaluation, or Interbull excludes U.S. data and Interbull evaluation has higher REL
Number of evaluations/ publications per year	3 (April, August, December)
`	Type traits included in NM$ as composites with 7% of total emphasis for udder, 4% for feet/legs, and −6% for body size; Relative emphases of traits in composites: **Udder composite:** Fore udder: 7%, AYR, JER; 21%, BSW; 15%, GUE Rear udder height: 33%, AYR, JER; 6%, BSW; 15%, GUE Rear udder width: 19%, AYR, JER; 1%, BSW; 5%, GUE Udder cleft: 1%, AYR, JER; 2%, BSW; 15%, GUE Udder depth: 31%, AYR, JER; 35%, BSW; 33%, GUE Teat placement: 4%, AYR, JER; 11%, BSW; 15%, GUE Teat length: 4%, AYR, JER; −24%, BSW; −2%, GUE **Feet/legs composite:** Rear legs (side view): −30%, AYR, JER; −32%, BSW; −16%, GUE Rear legs (rear view): 36%, GUE Foot angle: 70%, AYR, JER; 68%, BSW; 48%, GUE **Body size composite:** Stature: 50%, AYR, BSW, GUE, JER Strength: 25%, AYR, GUE; 40%, BSW, JER Body depth: 15%, AYR, GUE Rump width: 10%, AYR, BSW, GUE, JER
Anticipated changes in the near future	None
Key reference on methodology applied	Gengler, N., G.R. Wiggans, and J.R. Wright. 1999. Animal model genetic evaluation of type traits for five dairy cattle breeds. J. Dairy Sci. 82 (June). Online. Gengler, N., T. Dusseldorf, G.R. Wiggans, J.R. Wright, and T. Druet. 2001. Heterogeneity of (co)variance components for Jersey type traits. J. Dairy Sci. 84:(July). Online. Gengler, N., G.R. Wiggans, J.R. Wright, and T. Druet. 2001. Simultaneous accounting for heterogeneity of (co)variance components in genetic evaluation of type traits. J. Dairy Sci. 84(Suppl. 1):247(abstr. 1022).

Key organisation: name, address, phone, fax, e-mail, web site	Animal Improvement Programs Laboratory Agricultural Research Service, U.S. Dept. of Agriculture Bldg. 005, Room 306, BARC-West 10300 Baltimore Ave. Beltsville, Maryland 20705-2350, USA Voice: 301-504-8334; Fax: 301-504-8092 E-mail: melvin.tooker@ars.usda.gov web site: http://aipl.arsusda.gov

Form GE **Appendix CO**

Parameters for national genetic evaluations for conformation traits as provided to Interbull (all breeds except Brown Swiss)

Country (or countries): United States of America

Main trait group: Conformation (type)

Breed(s): AYS (RDC), GUE, JER

Trait	Definition	h^2	Genetic variance	Official proof standardisation formula[a]
Stature	Stature	AYS, 0.54 GUE, 0.49 JER, 0.37	AYS SD = 5.61 GUE SD = 5.25 JER SD = 3.35	
Chest width	Strength	AYS, 0.31 GUE, 0.22 JER, 0.21	AYS SD = 3.37 GUE SD = 2.92 JER SD = 2.49	
Body depth	Body depth	AYS, 0.29 GUE, 0.32	AYS SD = 3.02 GUE SD = 3.50	
Angularity	Dairy form	AYS, 0.20 GUE, 0.28 JER, 0.21	AYS SD = 2.89 GUE SD = 3.65 JER SD = 2.83	
Rump angle	Rump angle	AYS, 0.28 GUE, 0.41 JER, 0.22	AYS SD = 2.89 GUE SD = 4.34 JER SD = 2.70	
Rump width	Thurl width (AYR, GUE) Rump width (JER)	AYS, 0.35 GUE, 0.29 JER, 0.18	AYS SD = 3.66 GUE SD = 2.99 JER SD = 2.12	
Rear leg set	Rear legs (side view) (AYR, GUE) Rear legs (JER)	AYS, 0.15 GUE, 0.16 JER, 0.07	AYS SD = 2.30 GUE SD = 2.31 JER SD = 1.41	
Rear leg rear view	Rear legs (rear view)	GUE, 0.08	GUE SD = 2.08	

Foot angle	Foot angle	AYS, 0.15 GUE, 0.10 JER, 0.10	AYS SD = 2.64 GUE SD = 1.91 JER SD = 1.92
Fore udder	Fore udder	AYS, 0.21 GUE, 0.29 JER, 0.19	AYS SD = 3.20 GUE SD = 4.03 JER SD = 2.85
Rear udder height	Rear udder height	AYS, 0.26 GUE, 0.28 JER, 0.26	AYS SD = 3.35 GUE SD = 3.64 JER SD = 3.39
Udder support	Udder cleft	AYS, 0.23 GUE, 0.21 JER, 0.17	AYS SD = 3.18 GUE SD = 3.08 JER SD = 2.25
Udder Depth	Udder depth	AYS, 0.31 GUE, 0.40 JER, 0.27	AYS SD = 3.53 GUE SD = 4.30 JER SD = 3.44
Front teat placement	Teat placement (AYS, GUE) Front teat placement (JER)	AYS, 0.24 GUE, 0.31 JER, 0.20	AYS SD = 3.38 GUE SD = 3.54 JER SD = 2.80
Teat length	Teat length (AYS, GUE) Front teat length (JER)	AYS, 0.30 GUE, 0.34 JER, 0.19	AYS SD = 3.60 GUE SD = 3.49 JER SD = 2.35
Rear teat placement	—	—	—
Overall conformation score	Final score	AYS, 0.27 GUE, 0.21 JER, 0.19	AYS SD = 1.56 GUE SD = 2.33 JER SD = 2.48
Overall udder score	—	—	—
Overall feet & leg score	—	—	—
Locomotion	—	—	—
Body condition score	—	—	—

[a] Expressed as follows:
StandEval = ((Eval − a)/b) × c + d, where a = mean of base adjustment, b = SD of base, c = SD of expression (include sign if scale is reversed), and d = base of expression.

Parameters for national genetic evaluations for conformation traits as provided to Interbull

Country (or countries): United States of America

Main trait group: Conformation

Breed: BSW

Trait	Definition	h^2	Genetic variance	Official proof standardisation formula[a]
Stature	Stature	0.43	SD = 4.22	
Chest width	Strength	0.20	SD = 2.56	
Body depth	—	—	—	
Angularity	Dairy form	0.18	SD = 2.76	
Rump angle	Rump angle	0.27	SD = 3.15	
Rump width	Thurl width	0.18	SD = 2.10	
Rear leg side view	Rear legs (side view)	0.18	SD = 2.35	
Pasterns/foot angle	Foot angle	0.13	SD = 2.31	
Deep heel (hoof height)	—	—	—	
Fore udder attachment	Fore udder attachment	0.22	SD = 3.31	
Rear udder attachment height	Rear udder height	0.22	SD = 3.01	
Rear udder attachment width	Rear udder width	0.19	SD = 2.83	
Udder support	Udder cleft	0.22	SD = 3.21	
Udder depth	Udder depth	0.34	SD = 3.52	
Front teat placement	Front teat placement	0.27	SD = 3.36	
Teat length	Teat length	0.34	SD = 3.89	
Rear teat placement	—	—	—	
Overall conformation score	Final score	0.29	SD = 1.51	
Overall udder score	—	—	—	
Overall feet & leg score	—	—	—	
Locomotion	—	—	—	
Body condition score	—	—	—	

[a] Expressed as follows:
StandEval = ((Eval − a)/b) × c + d, where a = mean of base adjustment, b = SD of base, c = SD of expression (include sign if scale is reversed), and d = base of expression.