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DESCRIPTION OF NATIONAL PHENOTYPIC EVALUATION SYSTEMS

Country (or countries)	United States of America
Main trait group	Male fertility [sire conception rate (**SCR**)]
Breed(s)	AYS (RDC), BSW, GUE, HOL (B&W, R&W), JER, MSH (RDC)
Trait definition(s) and unit(s) of measurement	Service-sire relative conception rate (%)
Method of measuring and collecting data	Collected by Dairy Herd Improvement Affiliates
Time period for data inclusion	Most recent 4 years
Age groups (e.g. parities) included	Parities 1, 2, 3, 4, 5 (no heifer breedings)
Other criteria (data edits) for inclusion of records	All confirmed (failure or success) breedings to cows (no heifers) up to 7 included; service coded as failure if another reproductive event (breeding–AI or NS, heat, or diagnosis of "not pregnant") subsequently reported or as success if validated with a pregnancy check or resulting calving date; record confirmed by another breeding, subsequent calving, pregnancy check, or "do not breed" code; service-sire identification required; no crossbreds; DIM at breeding from 30 to 365; known sire and dam for service sire; cow age of 22 months to 15 years; minimum lactation milk yield of 6,000 pounds (AYR, GUE, JER, MSH), 8,000 pounds (BSW), or 10,000 pounds (HOL); no ET donors or sexed semen breedings; breeding replaced by a subsequent breeding within 10 days; herd-year restrictions of 1 reported breeding for ≥50% of cows, 80% AI use, and mean conception rate of 10 to 90%
Criteria for extension of records (if applicable)	Not applicable
Sire categories	AI bulls (not inactive) <16 years old
Environmental effects, pre-adjustments	None
Method (model) of phenotypic evaluation	ST BLUP RP AM within breed
Environmental effects[3] in the evaluation model	Breeding HYS-registry status (F), parity (F), service number (F), standardized milk yield (F), cow age (F), short cycle (breeding ≤17 days after last service) (F), service-sire inbreeding (F), expected inbreeding of resulting embryo (F), service-sire age group (R), AI organization-breeding year (R), residual service sire (R), cow EBV (R), cow PE (R), residual (R)
Adjustment for heterogeneous variance in evaluation model	None
Use of genetic groups and relationships	None

Blending of foreign/Interbull information in evaluation	Not applicable
Phenotypic parameters in the evaluation	Service-sire age group variance, 0.000143; AI organization-breeding year variance, 0.000110; residual service-sire variance, 0.000535; cow genetic variance, 0.005327; cow PE variance, 0.002943; residual variance, 0.196970
System validation	Not applicable
Expression of phenotypic evaluations	SCR, %; SCR = within-breed SCR − breed mean
Definition of reference base Next base change	All evaluated bulls (rolling, every evaluation)
Calculation of reliability	100 × [n/(n + 260)], where n is number of breedings
Criteria for official publication of evaluations	≥200 total breedings, ≥30 breedings during current 12 months, and breedings in ≥5 herds (AYR, BSW, GUE); ≥300 total breedings, ≥100 breedings during current 12 months, and breedings in ≥10 herds (HOL); ≥200 total breedings, ≥100 breedings during current 12 months, and breedings in ≥10 herds (JER); ≥100 total breedings, ≥10 breedings during current 12 months, and breedings in ≥5 herds (MSH)
Number of evaluations/ publications per year	3 (April, August, December)
Use in total merit index[4]	None
Anticipated changes in the near future	
Key reference on methodology applied	Kuhn, M.T., J.L. Hutchison, and J.S. Clay. 2004. Prediction of service sire fertility. J. Dairy Sci. 87(Suppl. 1):412(abstr. 738). Kuhn, M.T., and J.L. Hutchison. 2006. Methodology for prediction of bull fertility from field data. J. Dairy Sci. 89(Suppl. 1):15–16(abstr. M26). Kuhn, M.T., and J.L. Hutchison. 2008. Prediction of dairy bull fertility from field data: Use of multiple services and identification and utilization of factors affecting bull fertility. J. Dairy Sci. 91:2481–2492. Kuhn, M.T., J.L. Hutchison, and H.D. Norman. 2008. Modeling nuisance variables for prediction of service sire fertility. J. Dairy Sci. 91:2823–2835.
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: aipl.inquiry@ars.usda.gov web site: http://aipl.arsusda.gov