Country United Kingdom

Trait category:	*Individual trait(s):*
Workability	**Milking speed**
	Temperament
Conformation	**Udder**
	Locomotion
	Other

Animal Data Centre
Lavrock Lane, Scots Hill,
Rickmansworth, Herts, WD3 3AW, United Kingdom
Telephone +44 1923 710852
Facsimile +44 1923 710505
E-mail 100560.453@compuserve.Com

University of Edinburgh
ICAPB
Ashworth laboratories
West Mains Road
Edinburgh, EH9 3JT, United Kingdom
Facsimile +44 131 667 3210
E-mail s.brotherstone@ed.ac.uk

Workability traits	Milking speed Temperament	
Breed(s)	[H] [G]	Holstein Guernsey
Trait definition and unit(s) of measuring	[H,G]	Milking speed is scored from slow (1) to fast (5) milking Temperament is scored from vicious (1) to placid (5)
Method of measuring and collecting data	[H,G]	Scored by farmer and collected by field officer
Time period for data inclusion	[H] [G]	Since 1991 Since 1993
Age groups	[H] [G]	At age between 21 to 59 months At age between 20 to 45 months
Genetic parameters	[H,G]	$h^2_{\text{milking speed}} = 0.21$ $h^2_{\text{temperament}} = 0.11$
Sire categories	[H,G]	All categories
Environmental effects		
pre-adjustment	[H] [G]	Classifier None
evaluation model	[H,G]	Herd x year x visit, age at calving, month of calving, stage of lactation at inspection
Base for age adjustment	[H,G]	No
Use of genetic groups and/or relationships	[H,G]	Groups by year of birth and sex of animal, sex of parent, country of origin. Full relation matrix used
Method (model) of genetic evaluation	[H,G]	ST BLUP AM, univariate and multivariate
System validation	[H,G]	Data validation. Research into model validation
Expression of proof	[H,G]	Standardized EBV with M = 0 and SD = 3, higher values indicate faster milking and more placid cows, respectively
Genetic (reference) base	[H]	EBV's of bulls born 1979-1988 and at least 75% Holstein
	[G]	Cows born in 1991
Criteria for official publication of sire proofs	[H]	REL ≥ 62%, with no more than 50% of daughters in same herd
	[G]	REL ≥ 50%
Number of evaluations/ publications per year	[H,G]	Two; January, July
Use in total merit index	[H,G]	No
Key reference on methodology applied	[H,G]	Groeneveld, E. & M. Kovac, 1990. A generalized computing procedure for setting up and solving mixed linear models. J. Dairy Sci. 73: 513-531

Conformation traits	**Udder:**	**fore udder attachment, rear udder height, central ligament, udder depth, teat placement rear view, teat placement side, teat length, mammary overall**
	Locomotion:	**rear legs side, foot angle, legs & feet overall**
	Other:	**stature, chest width, body depth, angularity, rump angle, rump width, type merit, beef shape, body conformation overall, dairy character overall**

Breed(s)	[H]	Holstein
	[A]	Ayrshire (except for type merit, and overall traits)
	[J]	Jersey (except for beef shape)
	[G]	Guernsey (except for beef shape and overall traits)
Trait definition and unit(s) of measuring	[H,A,J,G]	Most traits are scored on a linear 1-9 point scale, except for overall traits, which are scored on a 40-97 point scale. Final score is obtained from the overall traits: body conformation, dairy character, legs & feet and mammary system. Type merit is produced from total score
Method of measuring and collecting data	[H,A,J,G]	Scored by field officers
Time period for data inclusion	[H,A]	Since 1983
	[J]	Since 1988
	[G]	Since 1993
Age groups	[H]	From 21 to 59 months
	[A,J,G]	From 20 to 45 months
Genetic parameters	[H,A,J,G]	$h^2_{\text{udder traits}}$ = 0.15 to 0.40 $h^2_{\text{locomotion traits}}$ = 0.17 to 0.32 $h^2_{\text{other traits}}$ = 0.21 to 0.64
Sire categories	[H,A,J,G]	All categories
Environmental effects		
pre-adjustment	[H]	Classifier
	[A,J,G]	None
evaluation model	[H,A,J,G]	Herd x year x visit, age at calving, month of calving, stage of lactation at inspection
Base for age adjustment	[H,A,J,G]	None
Use of genetic groups and/or relationships	[H,A,J,G]	Groups by year of birth and sex of animal, sex of parent, country of origin. Full relation matrix used
Method (model) of genetic evaluation	[H,A,J,G]	Univariate and multivariate BLUP AM
System validation	[H,A,J,G]	Data validation, research into model
Expression of proof	[H,A,J,G]	Standardized EBV with M = 0 and SD = 3

Conformation traits *continued*	Udder Locomotion Other	
Genetic (reference) base	[H]	EBV of bulls born 1979-1988 and at least 75% Holstein
	[A]	Cows born in 1990
	[J]	REL ≥ 50%
	[G]	Cows born in 1991
Criteria for official publication of sire proofs	[H]	REL ≥ 62%, with no more than 50% daughters in same herd
	[A,J,G]	REL ≥ 50%
Number of evaluations/ publications per year	[H,A,J,G]	Two; January, July
Use in total merit index	[H]	ITEM: (-0.03 x kg milk PTA) + (0.60 x kg fat PTA) + (4.04 x kg protein) + (1.8 x angularity SD) + (1.1 x foot angle SD) + (2.7 x udder depth SD) + (-2.5 x teat length SD)
	[A]	ITEM: (-0.03 x kg milk PTA) + (0.60 x kg fat PTA) + (4.04 x kg protein) + (1.4 x angularity SD) + (1.2 x foot angle SD) + (1.1 x udder depth SD) + (-1.7 x teat length SD)
	[J]	ITEM: (-0.03 x kg milk PTA) + (0.60 x kg fat PTA) + (4.04 x kg protein) + (1.2 x angularity SD) + (0.7 x foot angle SD) + (2.2 x udder depth SD) + (-1.9 x teat length SD)
	[G]	ITEM: (-0.03 x kg milk PTA) + (0.60 x kg fat PTA) + (4.04 x kg protein) + (1.3 x angularity SD) + (1.4 x foot angle SD) + (2.2 x udder depth SD) + (-2.3 x teat length SD)
Key reference on methodology applied	[H,A,J,G]	Groeneveld, E. & M. Kovac, 1990. A generalized computing procedure for setting up and solving mixed linear models. J. Dairy Sci. 73: 513-531