Country	Italy

Trait category:	*Individual trait(s):*
Reproduction-calving	**Calving performance (direct)**
Workability	**Milking speed**
Conformation	**Udder**
	Locomotion
	Other

Holstein Friesian:
ANAFI
Via Bergamo 292
26100 Cremona, Italy
Telephone +39 372 474 235
Facsimile +39 372 474 203
E-mail anaficr@imicilea.cilea.it

Brown Swiss:
Associazione Nazionale Allevatori Bovini Della Razza Bruna (ANARB)
Loc. Ferlina 204
37012 Bussolengo (vr), Italy
Telephone +39 45 676 0111
Facsimile +39 45 715 6655
E-mail brown@mbox.vol.it

Italian Simmental:
Associazione Nazionale Allevatori Pezzata Rossa Italiana (ANAPRI)
Via R. Battistig 28
33100 Udine, Italy
Telephone +39 432 51 01 87
Facsimile +39 432 26 137

Reproduction calving traits	Calving performance (direct)
Breed(s)	Holstein Friesian
Trait definition and unit(s) of measuring	Scored in 5 categories; easy calving (1), assisted by only one person (2), difficult calving (3), caesarean birth (4), embryotomy (5)
Method of measuring and collecting data	Scored by farmer and collected by milk recorders
Time period for data inclusion	Since 1987
Age groups considered	All
Genetic parameters	$h^2_{\text{calving ease (direct)}} = 0.10$
Sire categories	All bulls
Environmental effects **pre-adjustment** **evaluation model**	None Herd, month of calving, age of the dam, sex of calf
Base for age adjustment	None
Use of genetic groups and/or relationships	None
Method (model) of genetic evaluation	ST BLUP SM
System validation	Data quality control, checks on model suitability, genetic trend estimation, variations overtime check
Expression of proof	EBV standardized with M = 0 and SD = 1, and expressed in three classes of difficulty: F (easy, less than -1), M (medium, between -1 and +1), D (difficult, higher than +1)
Genetic (reference) base	Fixed base of cows born in 1990, changed every 5 years
Criteria for official publication of sire proofs	≥ 100 calves in 20 herds
Number of evaluations/ publications per year	Two; December, June
Use in total merit index	No
Key reference on methodology applied	Jansen, G. & M. Serra, 1992. Valutazione genetica per ladifficoltà al parto. Bianco Nero 1 Philipsson, J., 1979. Sire evaluation standards and breeding strategies for limiting dystocia and stillbirth. Livest. Prod. Sci. 6: 111

Workability traits	Milking speed	
Breed(s)	[H]	Holstein Friesian
	[B]	Brown Swiss
	[S]	Italian Simmental
Trait definition and unit(s) of measuring	[H]	Scored in 2 categories; normal (0) or slow milking (1)
	[B]	Time from the start to the end of milking, adjusted for milk yield
	[S]	Scored on a linear 1-3 point scale from slow (1) to fast (3)
Method of measuring and collecting data	[H]	Scored by farmer and collected by recorders twice a year
	[B]	Measured by technicians
	[S]	Scored by farmer and collected by classifier
Time period for data inclusion	[H]	Since 1994
	[B]	Since 1972
	[S]	Since 1989
Age groups considered	[H]	All milking cows born after 1990
	[B]	1st to 8th lactation
	[S]	1st lactation, at an age between 20 and 38 months
Genetic parameters	[H]	$h^2_{\text{milking speed}} = 0.06$
	[B]	$h^2_{\text{milking speed}} = 0.24$
	[S]	$h^2_{\text{milking speed}} = 0.11$
Sire categories	[H,B,S]	All bulls
Environmental effects pre-adjustment evaluation model	[H,B,S]	None
	[H]	Herd x year x semester, parity
	[B]	Age, stage, herd x milking equipment, technician, error
	[S]	Herd x year, season, age, days in milk
Base for age adjustment	[H,B,S]	None
Use of genetic groups and/or relationships	[H]	Relationships, no genetic groups
	[B]	Genetic groups by birth year
	[S]	Relationships among evaluated bulls
Method (model) of genetic evaluation	[H]	ST BLUP AM
	[B,S]	ST BLUP SM
System validation	[H]	Data quality control, checks on model suitability, genetic trend estimation, variations overtime check
	[B,S]	-
Expression of proof	[H]	PTA, expected percentage of slow milking daughters
	[B]	EBV in kilogram milk per minute
	[S]	RBV standardized with M = 100 and SD = 12

Workability traits *continued*	Milking speed	
Genetic (reference) base	[H]	Fixed, cows born in 1990. Changed every 5 years
	[B]	Bulls born in 1980
	[S]	Fixed, sires born between 1985 and 1987
Criteria for official publication of sire proofs	[H]	≥ 50 daughters in 20 herds
	[B]	≥ 5 daughters
	[S]	≥ 10 daughters
Number of evaluations/ publications per year	[H]	Two; December, June
	[B]	Two; January, July
	[S]	Two; April, October
Use in total merit index	[H,B,S]	No
Key reference on methodology applied	[H]	Canavesi, F. & E. Santus, 1996. Cosa fare per la mungibilità? Bianco Nero, 3: 9-10
	[S]	Baiocco, C., L. Buttazzoni & D. Vicario, 1994. Nuovi indic genetici per la valutazione dei tori. L' Informatore Agrario, 26: 55-59

Conformation traits	**Udder:**	**[H]**	**fore udder attachment strength, rear udder attachment height, rear udder attachment width, ligament, udder depth, teat placement, teats length**
		[B]	**fore udder attachment, rear udder height, rear udder width, rear udder depth, teats-side view, teats-rear view, udder balance, udder cleft, udder overall**
		[S]	**fore udder, rear udder, udder support, teat conformation, teat placement, extra teats, udder overall**
	Locomotion:	**[H]**	**rear legs, feet angle**
		[B]	**rear legs-side view, pastern, hoofs**
		[S]	**leg angularity-side view, rear leg bone quality, feet angle, claw closeness**
	Other:	**[H]**	**stature, strength, body depth, rump angle, rump width, final score, angularity overall**
		[B]	**top line, stature, strength, body depth, rump angle, rump length, rump width, tail attachment, overall general appearance, body capacity overall, dairyness overall**
		[S]	**body length, body width, body depth, body size overall, rear muscularity, fore muscularity, muscularity overall, shoulder, topline, rump angle, type overall**

Breed(s)	[H]	Holstein Friesian
	[B]	Brown Swiss
	[S]	Italian Simmental
Trait definition and unit(s) of measuring	[H,B]	Individual traits are scored on a linear 1-50 point scale. Final score/general appearance is scored on a linear 1-100 point scale
	[S]	All traits are scored on a linear 1-9 point scale
Method of measuring and collecting data	[H,B,S]	Scored by classifier
Time period for data inclusion	[H]	Last 5 years
	[B]	Since 1985
	[S]	Since 1989

Conformation traits *continued*	Udder Locomotion Other	
Age groups considered	[H,B,S]	1st calvers
Genetic parameters	[H]	$h^2_{\text{udder traits}}$ = 0.15 to 0.29 $h^2_{\text{locomotion traits}}$ = 0.16 to 0.18 $h^2_{\text{other traits}}$ = 0.25 to 0.38 $h^2_{\text{overall traits}}$ = 0.15 to 0.31
	[B]	$h^2_{\text{udder traits}}$ = 0.06 to 0.25 $h^2_{\text{locomotion traits}}$ = 0.04 to 0.09 $h^2_{\text{other traits}}$ = 0.10 to 0.30 $h^2_{\text{overall traits}}$ = 0.25 to 0.39
	[S]	$h^2_{\text{udder traits}}$ = 0.33 $h^2_{\text{locomotion traits}}$ = 0.09 to 0.10 $h^2_{\text{other traits}}$ = 0.17 to 0.20
Sire categories	[H,B,S]	All bulls
Environmental effects		
pre-adjustment	[H,B,S]	None
evaluation model	[H]	Herd x year x round, age x stage of lactation
	[B]	Age x stage, classifier, herd x year, time to last milking
	[S]	Herd x year, technician, season, age, days in milk
Base for age adjustment	[H,B,S]	None
Use of genetic groups and/or relationships	[H]	Genetic groups and relationships
	[B]	Genetic groups to phantom parents
	[S]	Relationships among evaluated bulls
Method (model) of genetic evaluation	[H,B]	ST BLUP AM
	[S]	ST BLUP SM
System validation	[H]	Data quality control, checks on model suitability, genetic trend estimation, variations overtime check
	[B]	Genetic trend estimation
Expression of proof	[H]	EBV standardized to genetic base with M = 0 and SD = 1. Final score as EBV on original scale
	[B]	EBV with standardized M = 0 and SD = 1
	[S]	RBV with standardized M = 100 and SD = 12
Genetic (reference) base	[H]	Fixed, cows born in 1990. Changed every 5 years
	[B]	Cows born after 1990
	[S]	Fixed, sires born between 1985 and 1987
Criteria for official publication of sire proofs	[H]	≥ 10 daughters ≥ 5 herds
	[B]	≥ 15 daughters
	[S]	≥ 10 daughters
Number of evaluations/ publications per year	[H]	Four; December, March, June, September
	[B]	Two; January, July
	[S]	Two; April, October

Conformation traits *continued*	Udder Locomotion Other	
Use in total merit index	[H]	ILQM: 0.90 x ILQ + 180 x ICM ILQ = 4.5 x (-0.173 milk + fat + 11.4 protein) ICM = [(0.18 x fore udder attachment strength) + (0.16 x rear udder attachment height) + (0.05 x rear udder attachment width) + (0.20 x ligament) + (0.25 x udder depth + (0.16 x teats size)]
	[B]	ITE: 7.793 x fat + 29.75 x protein + 79.05 x fat % + 545.45 x protein % + 90.91 x final score
	[S]	No
Key reference on methodology applied	[H]	Jansen, G. Animal model per i caratteri morfologici.
	[S]	Baiocco, C., L. Buttazoni & D. Vicario, 1994. Nuovi indici genetici per la valutazione dei tori. L'Informatore Agrario, 26: 55-59