Country   Finland

Trait category:	Individual trait(s):
Reproduction-calving	Calf mortality (direct, maternal)
Reproduction-fertility	Days open (female)
	Fertility treatments (female)
	Non-return rate 60 (male)
Health	Somatic cell count
	Mastitis treatments
	Other treatments
Workability	Milking speed
	Leakage
	Temperament
Conformation	Udder
	Locomotion
	Other

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Reproduction calving traits	Calf mortality (direct, maternal)
Breed(s	Ayrshire, Friesian, Finncattle
Trait definition and unit(s) of measuring	Scored in 2 categories: stillbirth or dead within 24 hours of birth (0), alive (1)
Method of measuring and collecting data	Scored by farmer and collected by milk recording system
Time period for data inclusion	Data from active cows since 70's
Age groups	All
Genetic parameters	$h^2_{calf\ mortality\ (direct)} = 0.03$ $h^2_{calf\ mortality\ (maternal)} = 0.03$
Sire categories	All bulls
Environmental effects pre-adjustment evaluation model	 Sex, month of calving, number of lactation, heifer's calving age Calculated from the register and is compared to the reference mean
Base for age adjustment	None
Use of genetic groups and/or relationships	None
Method (model) of genetic evaluation	SI; in 1996 or 1997 will be evaluated with BLUP AM
System validation	-
Expression of proof	EPD-index with M = 100 and SD = 10, higher values indicate less stillbirth
Genetic (reference) base	Yearly rolling by breed, bulls born 7-9 years before current evaluation
Criteria for official publication of sire proofs	> 100 daughters The maternal index is generally published, the direct index is sometimes published.
Number of evaluations/ publications per year	Two; January, June
Use in total merit index	No
Key reference on methodology applied	Internet homepage: http://www.mloy.fi

Reproduction fertility traits	a) b) c)	Days open (female) Fertility treatments (female) Non-return rate 60 (male)

Breed(s	a-c)	Ayrshire, Friesian, Finncattle
Trait definition and unit(s) of measuring	a)	Number of days between calving and successful insemination
	b)	Treatment and culling due to fertility disorders within 150 days after calving. Scored as no treatment (0) or treatment (1)
	c)	Percentage cows not re-inseminated within 60 days after first insemination. The first 500 inseminations per bull are taken into account
Method of measuring and collecting data	a)	Calculated from milk recording system plus AI-service technician
	b)	Calculated from health recording system
	c)	Calculated from AI registers
Time period for data inclusion	a)	Since 1976
	b)	Since 1978
	c)	Since 1970
Age groups	a,b)	1st to 3rd lactation
	c)	All
Genetic parameters	a)	$h^2_{days\ open\ (female)} = 0.05$, t = 0.135
	b)	$h^2_{fertility\ treatments\ (female)} = 0.01$, t = 0.07
	c)	$h^2_{non-return\ rate\ 60\ (male)} = 0.28$
Sire categories	a-c)	AI bulls
Environmental effects		
pre-adjustment	a,b)	None
	c)	Month, AI-cooperative
evaluation model	a)	Age at calving x lactation number, season of calving x year, herd x period of five years x lactation of group, herd x year x lactation group, permanent environment
	b)	Herd x year, calving year x month, lactation number
	c)	Selection index
Base for age adjustment	a-c)	None
Use of genetic groups and/or relationships	a)	Genetic groups by breed, birth year and sex
	b)	Genetic groups by breed and birth year
	c)	None
Method (model) of genetic evaluation	a)	ST BLUP AM
	b)	ST BLUP SM
	c)	ST SI
System validation	a)	Data quality control, genetic trend estimation
	b)	Data quality and calculation control, genetic trend estimation
	c)	Data quality control

Reproduction fertility traits *continued*	a) b) c)	Days open (female) Fertility treatments (female) Non-return rate 60 (male)
Expression of proof	a) b) a,b) c)	EBV with M = 100 and SD = 10, higher values are more desirable EPD-index with M = 100 and SD = 10, higher values are more desirable Fertility index = 2/3 days open index + 1/3 fertility treatments EPD-index with M = 100 and SD = 10, higher values are more desirable
Genetic (reference) base	a,b) c)	Yearly rolling by breed, bulls born 7-9 years before current evaluation Mean of the breed
Criteria for official publication of sire proofs	a,b) c)	REL > 70% > 500 inseminations
Number of evaluations/ publications per year	a-c)	Two; January, June
Use in total merit index	a,b) c)	1.0 x kg protein + 0.3 x % protein + 0.5 * fertility + 0.3 x udder health + 0.3 x udder conformation None
Key reference on methodology applied	a-c)	Internet homepage: http://www.mloy.fi

Health traits	a)	Somatic cell count
	b)	Mastitis treatments
	c)	Other treatments

Breed(s	a-c)	Ayrshire, Friesian, Finncattle
Trait definition and unit(s) of measuring	a)	Lactation mean of log transformed test-day somatic cell count (in 1000/ml)
	b)	Records made by veterinarians and culling due to udder diseases in 150 days after calving, scored in 2 categories; no treatment (0), treatment (1)
	c)	All treatments besides fertility disorders and mastitis in 150 days after calving, recorded in 2 categories; no treatment (0) or treatment (1)
Method of measuring and collecting data	a)	From milk recording system, every other month
	b,c)	From health recording system
Time period for data inclusion	a)	Since 1978
	b,c)	Since 1983
Age groups	a-c)	1st to 3rd lactation
Genetic parameters	a)	$h^2_{somatic\ cell\ count} = 0.15$, t = 0.45
	b)	$h^2_{udder\ disease} = 0.05$, t = 0.02
	c)	$h^2_{other\ treatments} = 0.02$, t = 0.07
Sire categories	a-c)	AI bulls
Environmental effects pre-adjustment	a)	Stage of lactation and number of lactations
	b,c)	None
evaluation model	a)	Age at calving x lactation number, season of calving x year, herd x period of five years x lactation of group, herd x year x lactation group, permanent environment
	b,c)	Herd x year, calving year x month, lactation number
Base for age adjustment	a-c)	None
Use of genetic groups and/or relationships	a-c)	Genetic groups by breed and birth year
Method (model) of genetic evaluation	a)	ST BLUP AM, repeated records
	b,c)	ST BLUP SM, repeated records
System validation	a)	Data quality control, genetic trend estimation
	b,c)	Data quality and calculation control, genetic trend estimation
Expression of proof	a,b)	EBV with M = 100 and SD = 10, higher values are more desirable. Udder health index = 2/3 x somatic cell count index + 1/3 x udder disease index weight
	c)	EPD-index with M = 100 and SD = 10, higher values are more desirable
Genetic (reference) base	a-c)	Yearly rolling by breed, bulls born 7-9 years before current evaluation

Health traits *continued*	a)	Somatic cell count
	b)	Mastitis treatments
	c)	Other treatments

Criteria for official publication of sire proofs	a)	REL > 70%
	b,c)	> 50 daughters
Number of evaluations/ publications per year	a-c)	Two; January, June
Use in total merit index	a,b)	Included, see page 46
	c)	No
Key reference on methodology applied	a-c)	Internet homepage: http://www.mloy.fi

Workability traits	Milking speed Leakage Temperament

Breed(s)	Ayrshire, Friesian, Finncattle
Trait definition and unit(s) of measuring	Milking speed is scored from slow (1) to fast milking (5) Leakage is dripping of milk before milking, scored in 2 categories; no (0), yes (1) The overall temperament is scored from easy (1) to difficult to handle (5)
Method of measuring and collecting data	Interview information collected by AI-technicians
Time period for data inclusion	Since 1992
Age groups	1st lactation
Genetic parameters	$h^2_{milking\ speed} = 0.20$ $h^2_{leakage} = 0.07$ $h^2_{temperament} = 0.09$
Sire categories	AI bulls

Environmental effects
  pre-adjustment
  evaluation model
	
	None
	Breed, calving year, AI technician, herd effect

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, genetic trend estimation
Expression of proof	EPD index with M = 100 and SD = 10, higher values are more desirable
Genetic (reference) base	All bulls by breed
Criteria for official publication of sire proofs	> 10 daughters
Number of evaluations/ publications per year	Two; January, June
Use in total merit index	No
Key reference on methodology applied	Internet homepage: http://www.mloy.fi

Conformation traits	**Udder:** fore udder attachment, udder depth, balance, rear udder attachment, suspensory ligament, distance udder/floor, teat placement, teat length **Locomotion:** rear legs-side view, feet **Other:** height, body depth

Breed(s	Ayrshire, Friesian, Finncattle
Trait definition and unit(s) of measuring	Scored on a linear 1-9 point scale, except for distance udder/floor, height and body depth, which are measured in cm
Method of measuring and collecting data	Scored by advisers of the Finnish Animal Breeding Association
Time period for data inclusion	Since 1994
Age groups	All
Genetic parameters	$h^2_{udder\ traits}$ = 0.12 to 0.32 $h^2_{locomotion\ traits}$ = 0.12 to 0.16 $h^2_{other\ traits}$ = 0.48 to 0.73
Sire categories evaluated	AI bulls

Environmental effects
    pre-adjustment
    evaluation model
	None
	Herd advisor x judging year, lactation number, lactation stage, body height class (only for suspensory ligament), measured or judged, height at front legs (only for locomotion traits)

Base for age adjustment	None
Use of genetic groups and/or relationships	Genetic groups by breed and sex
Method (model) of genetic evaluation	ST BLUP AM
System validation	Data quality control, checking list from calculations
Expression of proof	EBV with M = 100 and SD = 10, higher values are more desirable
Genetic (reference) base	Yearly rolling by breed, bulls born 7-9 years before current evaluation
Criteria for official publication of sire proofs	REL > 50
Number of evaluations/ publications per year	Two; January, June
Use in total merit index	Included, see page 46
Key reference on methodology applied	Internet homepage: http://www.mloy.fi