COUNTRY'S NAME	CANADA
Production traits	**Milk, fat, and protein**
Breed	(a) Holstein, Ayrshire, Guernsey, Jersey (b) Brown Swiss, Canadienne (c) Milking Shorthorn
Trait definition and unit of measurement	Direct: Records are kg of yield for milk, fat and protein produced within a 24-hour test day period and EBVs are average 305-d milk, fat and protein yields (kg) across lactations 1, 2 and 3. Indirect: Percentages calculated indirectly from yield EBVs
Criteria for inclusion & extension of records	Includes all test day records between 5 and 305 days in milk (DIM) for animals with a known sire registration number. Test day records are expressed as 24-hour yields, which may be measured as supervised or unsupervised based on all milkings within 24 hours or an AM/PM program with timers. No extension of records is required.
Time period for data inclusion	Cows which first calved since January 1, 1988 plus historical pedigree information (3 generations).
Sire categories	All bulls with progeny information including domestic and foreign AI bulls plus natural service herd sires.
Number of lactations included in the evaluation	Actual test day records for lactations 1, 2 and 3 with equal weights for lactation, but AM/PM tests receiving a weight of .88.
Environmental effects: Pre-adjustment **Base for age pre-adjustment**	Heterogeneous herd-test day-parity, adjustment factors are estimated at every run. None, since no age pre-adjustment
Method (model) of genetic evaluation	MT (milk yield, fat yield, protein yield, somatic cell score) – ML (1, 2, 3) - RR – TD - BLUP – AM
Environmental effects in the genetic evaluation model	Fixed: Herd-test day-parity, regressions on DIM within Parity–region–age of calving combination (Wilmink curve) Random: Animal lactation curve, lactation curve for permanent environment
Use of genetic groups	Phantom parent groups are defined separately for Canadian versus foreign ancestry according to birth year
Genetic parameters in the evaluation	Overall and within lactation heritabilities: .29 to .45 Overall and within lactation genetic correlations: .55 to .89 (for details see: Appendix 1)
System validation	Interbull Method 3 genetic trend validation
Expression of genetic evaluations	(1) EBV in kgs with each lactation EBV standardized to equal variance then averaged across lactations for each bull's published EBV (2) Percent deviation calculated indirectly from the published EBVs for yield traits
Genetic (reference) base **Next base change**	Rolling cow base updated in February based on cows with test day records included in genetic evaluations associated with a calving date during the calendar year three years previous (ie: calving for lactation 1, 2 or 3 in 1996 for 1999 evaluations).
Criteria for official publication of evaluations	Breeds (a): Minimum of 20 daughters with test day records passed 90 DIM in at least 20 herds and minimum Reliability of 60%. Breeds (b) minimums are 10 daughters, 5 herds and 55% Reliability. Breed (c) minimums are 10 daughters, 5 herds and 45% Reliability. Holstein foreign-proven bulls require increased minimum Reliability of 75%.
Number of evaluations / publications per year	Quarterly on the second Monday in February, May and August and the first Monday in November. Evaluations are released electronically via the Internet web site.
Use in production / total merit index	Lifetime Profit Index (LPI) includes protein yield (49%), fat yield (11%), mammary system (18%), feet & legs (15%), overall conformation (3.5%), capacity (3.5%) and is available for bulls and cows in breeds (a) and (b). Total Economic Value (TEV) includes protein yield (52%), fat yield (12%), herd life (26%), somatic cell score (6%), udder depth (3%) and milking speed (1%) and is available for bulls in breeds (a) and Brown Swiss. All genetic evaluations are standardized for mean and SD before calculation.
Anticipated changes in the near future	Publish individual lactation EBVs for each trait rather than (or in conjunction with) combining them into one EBV.
Key reference on methodology applied	Schaeffer, L. R., J. Jamrozik, G. J. Kistemaker, and B. J. Van Doormaal. 1999. Experience with a test day model. J. Dairy Sci. (Abstract & to be submitted for publication) Jamrozik, J., L. R. Schaeffer, and F. Grignola. 1998. Genetic parameters for production traits and somatic cell score of Canadian Holsteins with multiple trait random regression model. 6WCGALP. 23:303-306.

	Jamrozik, J., L. R. Schaeffer, Z. Liu, and G. Jansen. 1997. Multiple trait random regression test day model for production traits. Interbull Bulletin No. 16:43.
Key organization: name, address, phone, fax, e-mail, web site	Canadian Dairy Network 150 Research Lane, Suite 307 Guelph, Ontario, Canada. N1G 4T2 Telephone: 519-767-9660 Facsimile: 519-767-6768 Web site: www.cdn.ca E-mail: vandoorm@cdn.ca

Appendix 1- Genetic parameters used in the Canada

	Ayrshire	Brown Swiss	Guernsey	Holstein	Jersey
Trait (lactation)			**Heritabilities (x100) (overall)**		
Milk	36	41	42	39	42
Fat	31	36	36	34	35
Prot	32	38	39	36	39
			Heritabilities (x100) (by lactations)		
Milk (1)	33	42	40	38	38
Milk (2)	37	41	43	39	43
Milk (3)	38	40	44	41	45
Fat (1)	30	36	33	33	33
Fat (2)	32	36	37	34	37
Fat (3)	32	35	37	35	37
Protein (1)	29	38	36	34	35
Protein (2)	33	40	40	36	41
Protein (3)	35	37	41	38	42
			Genetic correlations (x100)		
Milk (1 & 2)	69	66	76	70	79
Milk (1 & 3)	57	58	68	62	70
Milk (2 & 3)	70	73	79	74	78
Milk (1 & all)	82	82	87	84	89
Fat (1 & 2)	69	70	77	71	80
Fat (1 & 3)	55	60	66	62	70
Fat (2 & 3)	71	75	78	76	79
Fat (1 & all)	82	83	86	84	89
Protein (1 & 2)	69	71	79	72	82
Protein (1 & 3)	53	59	68	61	72
Protein (2 & 3)	70	75	79	75	81
Protein (1 & all)	81	83	85	84	89
			Genetic variances (overall)		
Milk	492936	695461	704879	789864	431992
Fat	772	1193	1178	1095	892
Prot	431	735	726	651	528
			Genetic variances (by lactations)		
Milk (1)	293746	417707	405855	486035	245541
Milk (2)	505448	718208	648912	783187	394162
Milk (3)	609013	836890	795687	892502	483111
Fat (1)	446	656	606	614	464
Fat (2)	798	1224	1144	1086	837
Fat (3)	970	1452	1409	1311	1035
Protein (1)	240	416	371	382	275
Protein (2)	456	768	694	641	493
Protein (3)	555	852	859	761	593