

**FACTS ON SIRE EVALUATION PROCEDURES APPLIED FOR
PRODUCTION TRAITS**

COUNTRY: CANADA

Breed(s)	[I] Holstein, Ayrshire, Guernsey, Jersey [II] Brown Swiss, Canadienne
Trait(s) evaluated and unit(s) of measurement	Milk, fat and protein BCA, fat and protein % (indirectly)
Number of lactations	All lactations
Genetic parameters assumed	h^2 :milk,fat,protein yield = 0.33
Criteria for inclusion and extension of records	Genetic evaluations are computed from terminated records and projected records in progress for at least 90 days. Evaluations are based on all historical and current records. Supervised records and some owner/sampler records that meet strict requirements are used.
Sire categories evaluated	Domestic and foreign AI and natural service bulls.
Environmental effects considered by pre-adjustment	Age and month of calving
by evaluation model	Herd, year, season, parity of freshening and their interactions, animal and permanent environment.
Base for age adjustment (months)	Mature equivalent (84 months)
Use of genetic groups and/or relationships	All known relationships and phantom parents groups defined separated by Canadian vs Foreign ancestry.
Method of evaluation	ST BLUP repeatability AM
Expression of proof	ETA
Genetic (reference) base	All cows calving in the calendar year two years prior to the evaluation date
Criteria for official publication of sire proofs	Ayrshire, Guernsey, Holstein, Jersey: - minimum of 10 herds. - 60% repeatability Brown Swiss, Canadienne: - minimum of 5 herds - 45% repeatability
Number of evaluations/publications per year	2, January and July
Use of production index	Lifetime Profit Index - LPI $6*[(5*fat)+6*protein] + 4*[(3*final class)+(4*mammary system)+(2*feet and legs)+(capacity)]$

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Name, address and faxnumber of organization responsible for sire evaluation and publication	Agriculture Canada Livestock Development Division Sir. John Carling Building Ottawa, Ontario K1A 0C5, Canada Fax: 819-953-3828 Bitnet: GENDAIRY@NRCVM01
Key references on methodology applied	Robinson, A. & Chesnais, J. 1988. Application of the animal model on national basis to the evaluation Canadian Livestock. J. Dairy Sci. 71 (suppl. 2)

COUNTRY: CANADA

Number of AI bulls (NB) tested, means (X) and standard deviations (SD) of proofs (BCA) from most recent run, by bull's year of birth (YB) and breed

		Milk		Fat		Protein		Fat %		Protein %	
YB	NB	X	SD	X	SD	X	SD	X	SD	X	SD
Breed:		Holstein									
1975	112	-5.42	6.62	-5.42	7.26	-5.05	5.70	0.00	0.12	0.01	0.07
1976	120	-3.58	7.04	-3.57	6.03	-3.03	5.71	0.00	0.13	0.03	0.07
1977	124	-3.57	6.80	-3.77	6.65	-3.40	5.84	0.00	0.13	0.00	0.07
1978	156	-3.07	6.52	-2.96	7.00	-2.87	5.64	0.00	0.13	0.00	0.07
1979	193	-0.03	7.08	-0.78	7.09	-0.75	6.22	-0.01	0.13	0.00	0.07
1980	247	-0.75	6.31	-0.94	6.67	-1.26	6.20	0.00	0.13	0.00	0.06
1981	235	1.81	6.87	1.07	6.64	1.02	6.33	-0.01	0.15	-0.01	0.07
1982	218	2.37	6.53	1.75	6.68	1.45	5.85	-0.01	0.14	-0.02	0.06
1983	298	2.23	6.79	1.25	5.98	1.32	5.78	-0.02	0.14	-0.02	0.06
1984	319	3.45	6.72	3.46	6.09	3.24	5.95	0.00	0.06	0.00	0.06
1985	276	4.53	6.79	4.24	6.21	4.37	5.79	0.00	0.14	0.00	0.06
1986	241	5.76	5.66	5.27	5.54	5.57	5.18	0.00	0.12	0.00	0.06
1987	40	6.64	5.10	4.87	5.35	6.24	5.02	-0.04	0.11	0.00	0.05
Breed:		Ayrshire									
1975	13	-7.54	5.29	-6.85	5.39	-6.14	4.76	0.01	0.06	0.03	0.05
1976	13	-3.43	6.80	-5.42	7.23	-4.32	7.23	-0.05	0.10	-0.01	0.07
1977	9	-4.48	7.38	-3.96	4.95	-2.82	6.68	0.01	0.11	0.04	0.08
1978	12	-3.29	6.06	-2.01	5.41	-0.87	6.63	0.03	0.04	0.05	0.04
1979	8	-0.04	5.57	-1.25	3.91	-1.39	5.67	-0.03	0.09	-0.03	0.08
1980	18	0.87	6.34	0.39	6.26	-0.52	0.09	-0.03	0.09	-0.03	0.06
1981	20	1.30	4.05	-0.32	4.04	-0.11	4.80	-0.04	0.08	-0.03	0.07

COUNTRY: CANADA											
Number of AI bulls (NB) tested, means (X) and standard deviations (SD) of proofs (BCA) from most recent run, by bull's year of birth (YB) and breed											
		Milk		Fat		Protein		Fat %		Protein %	
YB	NB	X	SD	X	SD	X	SD	X	SD	X	SD
1982	15	0.35	4.31	-0.18	3.45	1.01	3.89	-0.01	0.10	0.01	0.05
1983	20	1.49	7.07	0.24	5.47	2.55	6.14	-0.03	0.12	0.02	0.06
1984	28	4.48	4.81	3.55	4.85	5.40	4.95	-0.02	0.06	0.02	0.05
1985	24	4.59	6.61	4.13	6.62	5.35	5.79	0.01	0.07	0.01	0.05
1986	17	3.57	4.96	4.87	5.25	4.03	4.65	0.04	0.08	0.01	0.05
Breed:		Brown Swiss									
1975	2	-3.85	8.01	-4.63	10.87	-3.58	8.00	0.02	0.08	0.01	0.02
1976	2	3.38	3.06	3.86	0.71	4.70	0.11	0.01	0.06	0.03	0.08
1977	2	4.45	2.73	5.74	6.82	3.48	0.64	0.03	0.25	-0.02	0.05
1978	3	6.14	12.27	3.14	12.35	5.18	9.75	0.08	0.10	-0.03	0.04
1979	4	-2.27	5.95	0.50	6.28	-0.58	6.33	0.07	0.04	0.04	0.06
1980	1	-1.56		1.68		-0.99		0.09		0.01	
1981	2	-3.67	6.76	-3.93	1.58	-3.07	5.62	0.00	0.23	0.02	0.03
1982	2	-3.60	2.84	-6.89	1.90	-3.69	2.72	-0.09	0.02	0.00	0.00
1983	3	-5.12	11.33	-7.73	12.88	-2.29	10.60	-0.07	0.03	0.07	0.03
1984	1	4.85		2.71		2.69		-0.06		-0.05	
1985	3	4.29	4.31	5.62	1.26	5.56	1.64	0.04	0.13	0.03	0.06
1986	1	-0.11		-3.90		0.40		-0.10		0.01	
Breed:		Canadienne									
1976	1	23.15		18.63		16.47		-0.07		-0.15	
1978	2	2.28	5.20	1.83	4.17	0.08	6.61	-0.01	0.02	-0.05	0.02
1980	1	-5.05		-1.56		-1.09		0.10		0.10	
1984	2	5.64	4.36	1.78	5.96	5.69	1.13	-0.10	0.06	0.00	0.07
1985	1	3.64		5.72		0.07		0.07		0.01	
1986	1	3.58		6.00		4.67		0.07		0.02	
Breed:		Guernsey									
1975	1	-7.21		-3.51		-4.86		0.10		0.06	
1976	3	1.62	5.60	-1.57	6.93	0.49	6.30	-0.10	0.08	-0.03	0.01
1977	2	1.74	5.50	-2.72	5.24	-0.32	4.61	-0.12	0.31	-0.05	0.02
1978	2	-2.73	19.31	0.21	12.34	-0.54	17.73	0.09	0.17	0.05	0.04
1979	5	-2.60	6.27	0.51	1.59	-0.72	4.82	0.10	0.17	0.05	0.05
1980	3	-2.69	7.97	-1.39	5.81	2.44	5.59	0.04	0.24	0.01	0.13
1981	5	10.49	3.51	4.45	4.73	8.02	2.99	-0.14	0.12	-0.05	0.08
1982	2	-1.59	0.19	-1.10	2.60	-0.54	1.03	0.01	0.08	0.02	0.02
1983	2	7.62	2.93	7.52	1.03	8.33	4.61	0.02	0.11	0.01	0.03
1984	4	0.96	2.36	0.96	4.02	2.73	1.82	0.00	0.11	0.04	0.05
1985	1	15.86		8.58		15.50		-0.17		-0.01	
1986	3	3.85	10.59	5.11	9.00	6.03	10.57	0.05	0.09	0.05	0.01

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Number of AI bulls (NB) tested, means (X) and standard deviations (SD) of proofs (BCA) from most recent run, by bull's year of birth (YB) and breed											
		Milk		Fat		Protein		Fat %		Protein %	
YB	NB	X	SD	X	SD	X	SD	X	SD	X	SD
Breed:		Jersey									
1975	8	-2.78	10.10	-5.07	5.71	-5.19	9.44	-0.08	0.16	-0.06	0.07
1976	8	-5.98	5.57	-5.04	7.17	-4.13	6.64	0.01	0.16	0.05	0.09
1977	8	0.12	10.88	1.24	10.88	0.18	10.58	0.04	0.21	0.00	0.07
1978	12	0.51	9.31	1.98	9.61	1.10	8.58	0.05	0.16	0.02	0.09
1979	7	4.82	15.83	4.59	11.65	4.59	14.33	0.01	0.14	-0.01	0.07
1980	8	0.77	8.18	1.94	7.75	0.70	8.30	0.04	0.10	0.00	0.08
1981	4	-0.16	5.86	-1.09	5.73	-0.01	5.04	-0.03	0.16	0.01	0.11
1982	8	-1.34	7.05	-2.42	3.85	-2.22	6.81	-0.03	0.16	-0.01	0.06
1983	11	2.86	10.27	3.19	7.92	3.04	9.64	0.03	0.20	0.00	0.11
1984	13	8.95	6.54	7.68	4.96	9.89	5.22	-0.01	0.14	0.02	0.09
1985	14	9.41	7.86	10.24	5.91	10.72	6.57	0.05	0.13	0.02	0.08
1986	6	10.46	4.59	11.91	3.00	11.95	2.56	0.07	0.11	0.03	0.09
1987	2	19.14	1.78	10.34	1.34	15.79	1.18	-0.20	0.08	-0.09	0.01

COUNTRY: CANADA							
Average of adjusted production records (BCA) included in the most recent evaluation run, by daughters' year of calving (YC) and breed							
YC	Milk		Fat	Protein		Fat %	Protein %
Breed:	Holstein						
1980	7054		262			3.72	
1981	7057		261			3.70	
1982	7230		266			3.69	
1983	7381		272			3.70	
1984	7521		277			3.69	
1985	7756		282	224		3.65	2.90
1986	7865		288	246		3.67	3.13
1987	8047		294	257		3.68	3.20
1988	8216		302	265		3.69	3.23
1989	8221		302	264		3.69	3.22
1990	8343		306	269		3.69	3.23
1991	8554		311	273		3.65	3.20
Breed:	Ayrshire						
1980	5936		237			3.99	
1981	5908		234			3.97	
1982	6079		241			3.96	
1983	6134		242			3.95	

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Average of adjusted production records (BCA) included in the most recent evaluation run, by daughters' year of calving (YC) and breed

YC	Milk	Fat	Protein	Fat %	Protein %
1984	6259	246		3.93	
1985	6382	248	199	3.89	3.12
1986	6510	255	220	3.92	3.38
1987	6625	259	226	3.91	3.41
1988	6703	263	229	3.93	3.42
1989	6677	261	227	3.91	3.41
1990	6665	259	227	3.89	3.41
1991	6772	262	229	3.87	3.38
Breed:	Brown Swiss				
1980	5937	241		4.05	
1981	5964	240		4.03	
1982	6088	243		3.99	
1983	6267	251		4.02	
1984	6332	255		4.03	
1985	6435	255	212	3.96	3.30
1986	6428	256	223	3.98	3.47
1987	6557	260	230	3.97	3.51
1988	6657	254	236	3.97	3.55
1989	6739	266	237	3.95	3.52
1990	6680	264	236	3.95	3.54
1991	6909	274	247	3.96	3.58
Breed:	Canadienne				
1980	4106	177		4.32	
1981	4282	183		4.27	
1982	4580	195		4.28	
1983	4623	196		4.26	
1984	4766	199		4.19	
1985	4632	191	134	4.11	2.89
1986	4732	197	171	4.17	3.62
1987	4699	194	170	4.12	3.63
1988	4843	202	176	4.17	3.65
1989	4919	204	180	4.15	3.66
1990	5084	210	185	4.14	3.65
1991	5210	216	189	4.15	3.64
Breed:	Guernsey				
1980	5118	243		4.75	
1981	5114	242		4.74	
1982	5237	246		4.72	
1983	5380	254		4.72	

COUNTRY: CANADA**Average of adjusted production records (BCA) included in the most recent evaluation run, by daughters' year of calving (YC) and breed**

YC	Milk	Fat	Protein	Fat %	Protein %
1984	5454	256		4.72	
1985	5546	256	186	4.63	3.35
1986	5640	259	203	4.60	3.62
1987	5767	262	208	4.57	3.62
1988	5845	265	213	4.56	3.65
1989	5765	259	207	4.51	3.61
1990	5906	264	213	4.48	3.62
1991	6085	275	222	4.55	3.65
Breed:	Jersey				
1980	4691	239		5.11	
1981	4669	236		5.08	
1982	4776	240		5.03	
1983	4922	246		5.01	
1984	5013	250		5.01	
1985	5147	252	183	4.91	3.55
1986	5188	254	202	4.90	3.90
1987	5270	257	207	4.90	3.93
1988	5347	262	212	4.92	3.98
1989	5331	260	210	4.89	3.95
1990	5488	268	217	4.90	3.96
1991	5633	273	220	4.87	3.92