FACTS ON APPLIED SIRE-EVALUATION PROCEDURES FOR DAIRY PRODUCTION TRAITS

COUNTRY	CANADA
Breed(s)	Ayrshire, Guernsey, Holstein, Jersey
Traits evaluated and units of measurement	Milk, fat, protein (BCA = Breed Class Average), fat and protein %
Number of lactations	1
Genetic parameters applied	h^2 (milk, fat, protein BCA) = 0.25 h^2 (fat %, protein %) = 0.50
Inclusion and extension of records	Records terminated after 120 days are included Records in progress 90 days or more are extended For records in progress using Schaeffer's non-linear method
Sire categories evaluated	All AI and NS bulls
Effects considered by preadjustments	Age and month of calving
by model of evaluation	Herd-year-season, sire, gen.group of sires
Base of age adjustment	BCA
Use of genetic groups/ relationships/pedigree	AI separately from NS/add. gen. rel.ship matrix/sires and maternal grandsires
Method of evaluation used	Single trait BLUP (Direct Sire Comparison)
Expression of genetic merit	PD (BCA-points)
Genetic base, kind/definition	Rolling, bulls with min. 20 daughters (rec.) in 5 herds whose first daughters calved during previous 5 years
Minimum requirements for official publication of sire proofs	Daughters in $\geq$5 herds, rpt $\geq$0.55
Use of selection index or total merit index	Total merit index not used
Name and address of organization responsible for sire evaluations and publishing of results	Livestock Development Division Agriculture Canada Sir. John Carling Building Ottawa, Ontario K1A OC5, Canada

Key references on methodology applied

Batra & Lee. 1984. Comparison of three methods of predicting 305-day lact. production in dairy cattle. Can. J. Anim. Sci.

Schaeffer, Freeman & Burnside. 1975 Evaluation of Ontario Holstein dairy sires for milk and fat production. J. Dairy Sci. 58:109-115.

Country: Canada App. 1/1

Number of bulls tested, means and standard deviations of proofs by year

Year of first proof	No. of bulls	Predicted differences: Milk (BCA) $\bar{x}$	Milk (BCA) S.D.	Fat (BCA) $\bar{x}$	Fat (BCA) S.D.	No. of bulls	Protein (BCA) $\bar{x}$	Protein (BCA) S.D.
Breed: Ayrshire DSC-87 (base 1987)								
1977	10	1.5	4.7	0.7	4.3	4	5.4	4.9
78	12	-0.6	4.4	-0.1	5.4	9	1.3	4.3
79	11	-3.4	4.7	-2.6	3.7	7	-1.9	4.0
80	9	-6.1	4.7	-3.7	4.4	9	-4.4	4.7
81	15	-1.0	6.3	-0.7	5.4	10	-0.5	5.8
82	8	-5.6	5.7	-6.5	2.7	7	-5.5	5.4
83	6	-3.9	5.8	-2.2	4.4	6	-2.7	4.6
84	14	+0.7	4.9	+0.9	5.6	14	+1.6	4.9
85	14	+0.9	4.6	+0.4	4.4	14	+0.3	4.4
86	20	+2.1	4.4	+1.8	4.6	20	+1.4	4.7
Breed: Guernsey DSC-87								
1977	2	+2.9		+5.1				
78	3	-5.2		-5.0				
79	2	-6.5		-5.8				
80	2	-3.6		+1.4				
81	1	-0.5		-1.4				
82	2	-1.6		-0.2				
83	1	+8.3		-0.9				
84	3	-3.9		+0.1				
85	3	+3.7		+2.5				
86	4	-1.9		+2.1				
Breed: Holstein DSC-87								
1977	82	-5.9	5.2	-6.9	5.4	47	-4.4	4.9
78	90	-6.1	4.2	-6.7	5.1	49	-4.9	3.8
79	106	-6.8	5.2	-7.2	5.4	62	-5.2	4.6
80	89	-6.2	5.5	-7.1	5.2	72	-5.6	4.6
81	94	-3.1	6.0	-3.3	5.8	90	-2.7	5.1
82	119	-3.0	5.1	-2.3	5.4	118	-2.4	4.6
83	126	-2.5	5.4	-2.3	5.9	125	-2.2	4.6
84	150	-0.7	5.5	-0.8	6.3	148	-0.4	5.0
85	180	-0.5	5.1	0.0	5.7	179	-0.3	4.7
86	207	+0.9	5.4	+1.1	5.8	207	+1.0	5.1

Country: Canada

Number of bulls tested, means and standard deviations of proofs by year

Year of first proof	No. of bulls	Predicted differences: Milk (BCA) $\bar{x}$	Fat (BCA) $\bar{x}$	No. of bulls	Protein (BCA) $\bar{x}$
Breed: Jersey DSC-87					
1977	5	-0.5	-3.6	3	-0.6
78	7	+3.6	+0.1	6	+2.9
79	2	+2.0	-0.8	2	+0.5
80	4	+0.6	+0.4	3	+1.6
81	2	-3.5	-2.1	2	-2.4
82	3	+8.3	+6.4	3	+8.7
83	5	-0.5	-1.9	4	+1.4
84	6	-1.0	+0.3	6	-0.9
85	2	+8.7	+6.6	2	+9.2
86	7	+2.0	+1.7	7	+2.0

Country: Canada App. 2/1

Average phenotypic levels of (adjusted) production records included in the sire evaluation procedures

Year of calving	Milk (BCA)	Fat (BCA)	Prot.(BCA)	Fat %	Protein %
Breed: Ayrshire					
1976	144.5	140.9	144.5	3.95	3.30
77	149.8	145.7	145.7	3.94	3.21
78	152.4	149.3	148.6	3.97	3.22
79	154.3	152.4	156.2	4.00	3.34
80	154.5	153.0	155.4	4.01	3.32
81	156.2	153.1	157.7	3.97	3.33
82	159.4	155.8	159.3	3.96	3.30
83	159.2	155.6	161.6	3.96	3.35
84	163.0	157.8	165.5	3.92	3.35
85	166.1	159.9	170.1	3.90	3.38
Breed: Guernsey					
1976	134.8	128.0	135.7	4.67	3.59
77	136.9	130.5	137.3	4.69	3.58
78	138.3	133.8	141.1	4.76	3.64
79	140.5	135.1	144.9	4.73	3.68
80	142.1	136.4	144.2	4.72	3.62
81	145.0	138.2	145.9	4.69	3.59
82	147.8	140.3	147.5	4.67	3.56
83	149.5	143.1	150.5	4.71	3.59
84	151.6	144.2	153.0	4.68	3.60
85	152.3	142.5	153.8	4.60	3.60
Breed: Holstein					
1976	126.9	126.5	126.5	3.69	3.16
77	128.6	128.1	126.6	3.68	3.12
78	131.2	131.1	130.0	3.70	3.14
79	131.5	132.1	133.1	3.72	3.21
80	131.5	132.2	132.0	3.72	3.18
81	133.4	133.7	133.5	3.70	3.17
82	135.9	136.0	135.9	3.70	3.17
83	138.8	139.3	139.3	3.71	3.18
84	141.1	141.3	142.0	3.70	3.19
85	145.5	144.9	147.3	3.68	3.21

Average phenotypic levels of (adjusted) production records included in the sire evaluation procedures

Year of calving	Milk (BCA)	Fat (BCA)	Prot.(BCA)	Fat %	Protein %
Breed: Jersey					
1976	128.3	122.2	133.3	5.09	3.95
77	131.5	125.0	132.1	5.08	3.82
78	133.7	127.6	137.7	5.10	3.77
79	133.2	127.9	135.7	5.13	3.87
80	135.9	130.0	138.8	5.11	3.88
81	138.5	131.4	141.1	5.07	3.87
82	143.3	133.9	142.6	4.99	3.78
83	144.4	136.0	146.3	5.03	3.85
84	146.1	137.0	148.8	5.01	3.87
85	147.7	136.3	151.6	4.93	3.90

Conversion of BCA factors to 2 year-old and mature equivalent yields in kg

Breed	First lactation			Mature Cows		
	Milk	Fat	Protein	Milk	Fat	Protein
Ayrshire	31	1.31	1.02	40	1.62	1.32
Guernsey	40	1.49	1.07	37	1.82	1.32
Holstein	43	1.58	1.37	53	1.92	1.68
Jersey	26	1.42	0.99	35	1.87	1.33

To convert BCAs to kilograms, multiply the production in BCA by the factor in the table, e.g., 150 BCAs is equivalent to
150 x 43 = 6450 kg for a 2 year-old Holstein cow and
150 x 53 = 7950 kg for a mature Holstein cow.