

FACTS ON APPLIED SIRE-EVALUATION PROCEDURES FOR DAIRY PRODUCTION TRAITS

COUNTRY	UNITED STATES
Breed(s)	Ayrshire, Brown Swiss, Guernsey Holstein Jersey, Milking Shorthorn
Traits evaluated and units of measurement	Milk, fat, protein, solids-not-fat (lbs), SNF %, fat %, prot. %
Number of lactations	All
Genetic parameters applied	$h^2=0.20$ Repeatability = 0.50 Environmental correlation = 0.14
Inclusion and extension of records	Lact. from culled cows not included if <15 days, extended if 15-304 days Records terminated with a dry period before 305 days after calving are extended to 305 days Records in progress included if ≥ 40 days
Sire categories evaluated	All sires
Effects considered	
by preadjustments	Ag at calving (months) and calendar month of calving, times milked per day, lactation length
by model of evaluation	Herd (H)-year-season, cow, sire (S) ancestor merit (Pedigree-index, year of birth), HxS
Base for age adjustment	Maturity (ME), highest yield age across average of calendar months
Use of genetic groups/ relationships/pedigree	Not used but ancestor merit as above
Method of evaluation used	MCC
Expression of genetic merit	PD (lbs, %)
Genetic base, kind/definition	Stepwise, average sire PD for first lacta- tion cows calving in 1982 weighted by number of cows
Minimum requirements for official publication of sire proofs	10 daughters
Use of selection index or total merit index	Index for milk production value (\$) Combined index for yield and type (TPI)
Name and address of organiza- tion responsible for sire evaluations and publishing of results	United States Department of Agriculture Agricultural Research Service Bldg. 263, BARC-East, Beltsville Maryland 20705 U.S.A.
Key references on methodology applied	Production Research Report No. 165, USDA, March 1976. Dairy Herd Improvement Letter, Vol. 60, No. 2, October 1984.

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

Year of first proof	No. of bulls (milk and fat)	Predicted difference (PD-82)						No. of bulls (protein)	Protein lbs	
		Milk lbs		Fat lbs		$\bar{x}$	S.D.			
		$\bar{x}$	S.D.	$\bar{x}$	S.D.					
Breed: Ayrshire										
1976	3	-359	542	-7.9	12.1	2	-5.0	18.4		
77	4	-117	134	-6.8	11.5	6	-5.3	6.1		
78	5	-309	168	-2.6	12.6	7	-2.9	4.8		
79	8	-95	461	-1.1	15.2	3	-9.3	20.0		
80	5	-137	465	-5.7	24.3	3	-12.3	25.0		
81	7	179	414	7.1	21.2	4	11.0	18.3		
82	2	450	304	12.6	7.7	1	4.0	-		
83	7	-9	362	1.1	13.0	5	-2.4	11.4		
84	12	2	608	1.1	20.3	10	0.6	17.2		
Breed: Brown Swiss										
1976	7	-313	805	-13.0	24.0	5	-6.2	12.6		
77	7	-304	880	-9.5	23.8	7	-14.1	20.0		
78	4	-423	342	-23.8	13.9	3	-16.3	13.4		
79	3	-205	260	-6.0	8.2	6	-15.2	26.3		
80	5	-670	459	-24.9	15.2	9	-10.8	16.4		
81	17	-170	631	-2.6	30.4	9	13.4	16.4		
82	14	46	503	6.2	22.9	11	6.2	14.8		
83	13	249	664	12.8	17.4	9	8.6	19.4		
84	17	342	478	13.9	16.3	14	7.7	12.6		
Breed: Guernsey										
1976	19	-642	441	-23.8	21.6	8	-8.4	20.3		
77	21	-295	430	-8.2	17.2	14	-4.6	14.8		
78	16	-351	386	-15.7	18.7	12	-10.6	17.0		
79	25	-348	421	-15.0	21.2	8	-8.6	17.1		
80	22	-381	399	-15.2	15.7	10	-12.3	14.0		
81	16	-46	452	-7.9	25.6	10	-6.6	18.4		
82	26	-24	395	-4.4	16.5	24	-3.5	13.4		
83	20	198	445	-3.1	18.5	13	1.5	9.3		
84	26	84	399	-0.4	19.0	22	-3.6	12.3		
Breed: Holstein										
1976	333	-611	547	-20.7	19.8	151	-10.3	16.1		
77	472	-549	520	-17.9	19.8	240	-10.0	15.1		
78	389	-434	567	-12.6	17.6	263	-9.3	15.9		
79	577	-452	551	-13.4	19.0	277	-9.6	15.4		
80	624	-311	529	-8.4	19.6	296	-6.6	14.1		
81	634	-196	567	-7.5	20.9	386	-7.1	15.6		
82	716	-51	549	-3.3	19.8	454	-2.4	14.9		
83	697	-33	525	-0.4	18.5	520	-2.7	14.8		
84	843	-11	525	-0.2	17.4	595	-3.4	14.0		
Breed: Jersey										
1976	23	-494	414	-19.6	17.6	18	-12.3	6.6		
77	44	-295	498	-11.7	19.0	32	-10.5	11.7		
78	40	-395	390	-15.2	15.2	29	-10.3	13.1		
79	37	-254	529	-7.3	22.5	24	-5.2	14.1		
80	32	-112	448	-2.6	18.3	27	-6.9	13.5		
81	30	-31	419	-2.9	18.7	21	-2.0	11.5		
82	34	143	448	3.1	20.7	24	1.9	16.3		
83	34	62	399	-0.2	14.3	26	-1.0	12.3		
84	29	260	406	7.1	18.1	26	-0.9	13.0		

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

Year of calving	Milk lbs	Fat lbs	Fat %
Breed: Ayrshire			
1976	12259	483	3.94
77	12501	489	3.91
78	12507	488	3.90
79	12679	492	3.88
80	12963	502	3.88
81	12941	502	3.88
82	12928	502	3.89
83	12934	506	3.91
Breed: Brown Swiss			
1976	13687	546	3.99
77	13804	548	3.98
78	13572	542	3.99
79	13961	561	4.02
80	14122	567	4.01
81	14249	571	4.01
82	14364	573	3.99
83	14468	579	4.00
Breed: Guernsey			
1976	11048	512	4.63
77	11221	517	4.60
78	11210	517	4.61
79	11325	523	4.62
80	11502	530	4.61
81	11542	534	4.63
82	11634	538	4.63
83	11687	540	4.62
Breed: Holstein			
1976	16280	591	3.63
77	16547	597	3.61
78	16699	603	3.61
79	16945	609	3.59
80	17190	617	3.59
81	17310	622	3.59
82	17497	629	3.59
83	17400	629	3.61
Breed: Jersey			
1976	10708	519	4.84
77	10827	521	4.81
78	10839	524	4.83
79	11077	535	4.83
80	11320	542	4.79
81	11467	550	4.79
82	11673	558	4.78
83	11707	562	4.80