

FACTS ON APPLIED SIRE-EVALUATION PROCEDURES FOR DAIRY PRODUCTION TRAITS

COUNTRY	UNITED STATES
Breed(s)	Ayrshire, Brown Swiss, Guernsey, Holstein, Jersey, Milking Shorthorn, Red and White
Traits evaluated and units of measurement	Milk, fat and protein (lbs), fat and protein %
Number of lactations	All
Genetic parameters applied	$h^2 = 0.20$ $t = 0.50$ $c = 0.14$
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	Age 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 of age adjustment	Maturity (M.E.), 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 lactation 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 organization 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

Country: United States

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

Year of birth	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										
1975	3	529	487	20.7	24.6	3	18.0	18.3		
76	5	110	349	-1.6	14.4	5	-3.6	8.7		
77	7	-75	255	-3.7	9.9	6	-5.2	9.0		
78	7	13	617	1.7	16.9	7	0.0	18.1		
79	14	174	338	4.4	12.7	14	2.9	10.7		
80	9	285	265	5.7	17.4	9	3.7	10.0		
81	14	217	385	4.5	10.4	14	1.1	9.1		
82	5	261	380	3.6	11.8	5	2.0	13.7		
Breed: Brown Swiss										
1975	12	-446	428	-16.4	14.2	8	-13.9	16.8		
76	13	192	652	14.8	30.6	12	10.8	20.8		
77	19	428	553	19.3	18.1	16	9.2	17.3		
78	16	-164	680	-5.1	20.9	14	-4.2	19.6		
79	23	279	405	4.6	20.6	22	2.0	13.6		
80	22	70	354	0.9	16.6	22	-1.7	13.0		
81	19	385	347	13.1	19.9	18	6.6	14.3		
82	11	468	532	21.6	25.4	10	9.5	17.5		
Breed: Guernsey										
1975	22	-214	513	-12.1	18.0	17	-8.8	14.6		
76	21	-78	383	-10.0	21.2	19	-10.3	13.2		
77	22	32	473	-5.5	17.8	20	-4.4	14.9		
78	23	191	456	5.6	24.6	23	-1.0	16.0		
79	20	180	502	2.0	15.3	20	-0.2	14.0		
80	27	373	414	15.1	16.0	27	7.3	12.2		
81	35	395	501	15.7	20.5	35	8.8	14.3		
82	32	441	373	18.9	14.5	31	11.3	12.0		
83	7	477	400	20.6	14.0	7	11.3	9.5		
Breed: Holstein										
1975	571	-260	527	-8.1	19.5	390	-7.5	15.0		
76	695	-153	531	-7.5	19.9	491	-6.8	15.4		
77	687	8	557	-1.9	19.5	541	-2.0	16.0		
78	704	-40	531	-1.3	19.1	626	-3.3	15.1		
79	917	67	575	1.1	19.0	827	-0.9	16.3		
80	1069	212	560	5.7	19.7	989	2.3	16.5		
81	1059	373	541	11.0	18.3	985	6.5	15.2		
82	1019	494	523	14.9	17.1	928	9.9	15.0		
83	267	603	484	16.5	14.9	229	11.7	13.3		

Country: United States

App.1/2

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

Year of birth	No.of bulls (milk and fat)	Predicted difference (PD-82)						No.of bulls (protein)	Protein lbs	
		Milk lbs		Fat lbs		Protein lbs				
		$\bar{x}$	S.D.	$\bar{x}$	S.D.		$\bar{x}$		S.D.	
Breed: Jersey										
1975	30	-24	451	-4.3	19.3	27	-4.4	14.4		
76	28	49	438	0.9	16.1	26	-3.9	12.7		
77	38	123	440	1.8	19.8	33	1.2	15.8		
78	27	251	536	9.3	17.7	27	2.1	15.5		
79	34	137	502	5.1	24.4	34	-2.0	18.9		
80	48	364	496	12.9	20.3	48	4.7	16.1		
81	65	263	434	10.5	18.4	65	0.8	13.0		
82	53	418	393	16.2	14.9	52	6.5	11.9		
83	15	572	387	22.5	13.6	15	11.7	12.4		

Country: United States

Average phenotypic levels of (adjusted) production records included
in the 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
84	12965	507	3.91
85	13377	523	3.91
86	13474	523	3.88
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
84	14656	583	3.98
85	15076	603	4.00
86	15116	603	3.99
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
84	11847	544	4.59
85	12176	557	4.58
86	12308	557	4.53

Country: United States

App. 2/2

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

Year of calving	Milk lbs	Fat lbs	Fat %
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
84	17737	641	3.61
85	18196	654	3.59
86	18480	663	3.59
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
84	11867	564	4.76
85	12180	577	4.74
86	12433	590	4.75