

FACTS ON SIRE EVALUATION PROCEDURES APPLIED FOR PRODUCTION TRAITS

COUNTRY: GERMANY				
Breed(s)	[I] German Holstein Friesian, German Red and White [II] Simmental, Braunvieh, Gelbvieh, Vorderwälder [III] Angler [IV] Black-Pied-Dairy-Cattle (SMR)			
Trait(s) evaluated and unit(s) of measurement	Milk (kg), fat and protein (kg, %)			
Number of lactations	[I,II] 1-3, 1 st lactation subdivided in three 100 day intervals [III] 1-6; [IV] 1			
Genetic parameters assumed	[I,II,III] Ranges for heritabilities of yield in the 3 lactations and correlations between the intervals in 1st lactation and the 2nd and 3rd			
		h^2	r_g	r_p
	Milk (kg)	0.19 - 0.30	0.51 - 0.83	0.35 - 0.60
	Fat (kg)	0.20 - 0.31	0.60 - 0.90	0.34 - 0.55
	Prot (kg)	0.20 - 0.28	0.45 - 0.81	0.27 - 0.52
	[IV] h^2 : Milk, fat and protein (kg)=0.25; fat%=0.40; protein%=0.25			
Criteria for inclusion and extension of records	[I,II] Age at first calving 20-39 month, first lactation of length between 46-99 extended to 100 days (first interval), 2 nd interval not extended, 3 rd interval used if lactation length exceeds 249 days, later lactations not extended [III] First lactations of length between 46-249 are extended, later lactations not. [IV] Age at calving between 26 and 36 months, records between 100 and 240 days are extended to 305 days			
Sire categories evaluated	All sires			
Environmental effects considered	by pre-adjustment			
	[I,II,III] Calving age, current and previous calving interval, days between calving and first test day. [III] calving month. [IV] Length of lactation, record of mother, length of service period			
	by evaluation model			
	[I,II] Region*year*season*herd production level [III] Herd*year [IV] Age at first calving, herd*year*season, age of sire, breed of sire			
Base for age adjustment (months)	[I] 30 months; [II,III] 29-32 months			
Use of genetic groups and/or relationships	[I,II] Full relationship-matrix accounting for inbreeding, groups by year of birth and origin for missing pedigree. [III] Grouping of bulls by year of birth			
Method of evaluation	[I,II,III] MT BLUP AM; [IV] ST BLUP SM			

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Expression of proof	[I,II,III] EBV (kg,%), RBV, where RBV is standardized with mean=100 and SD=12 [IV] EBV (kg,%)
Genetic (reference) base	[I,II,III] EBV: fixed base, average of cows born 1985. RBV index: Rolling base, average of bulls tested in latest 3 year period. [IV] Rolling, average of all daughters (1st lactation) of the youngest age group of bulls tested
Criteria for official publication of sire proofs	[I] 10 daughters and Rpt \geq 50% [II,III] 20 daughters in 5 herds [IV] 40 daughters
Number of evaluations/publications per year	4
Use of production index	[I,II,III] RBV index: 1*EBV fat(kg) + 4*EBV protein(kg) [IV] Total merit index including milk (kg), fat (kg,%), protein (kg,%), milkability and udder conformation
Name, address and faxnumber of organization responsible for sire evaluation and publication	<u>Coordination:</u> Arbeitsgemeinschaft Deutscher Rinderzüchter /ADR Adenauerallee 174 D-5300 Bonn 1 Germany <u>Evaluation:</u> [I] RLN Postfach 1660 Heideweg 1 D-2810 Verden/Aller [II] Bayerische Landesanstalt für Tierzucht Post Poing D-8011 Grub and Ministerium für Ländlichen Raum, Landwirtschaft und Forsten Baden-Württemberg, Marienstrasse 41 D-7000 Stuttgart [III] LKV Schleswig-Holstein Steenbeker Weg 151 D-2300 Kiel 1 [IV] Informationsverarbeitung in der Tierproduktion e.V. O-1551 Paretz
Key references on methodology applied	[IV] Standard TGL 20834/01 - Testing of Performance and Breeding Value - Dual-purpose bulls on milk production, type and conformation.

COUNTRY: GERMANY											
Number of AI and NS bulls (NB) tested, means (X) and standard deviations (SD) of proofs (kg) 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:		German Holstein Friesian									
1975	1808	-341	418	-19.6	17.9	-10.1	12.7	-0.08	0.21	0.02	0.10
1976	1975	-267	410	-17.4	17.3	-8.3	12.1	-0.09	0.21	0.01	0.10
1977	2123	-174	392	-12.6	17.1	-5.2	11.8	-0.08	0.21	0.01	0.10
1978	2133	-117	381	-10.2	16.7	-3.6	11.2	-0.08	0.21	0.01	0.10
1979	2017	-50	375	-7.2	16.0	-1.9	10.9	-0.07	0.22	0.00	0.10
1980	1946	4	376	-3.7	16.2	-0.2	10.9	-0.05	0.23	0.00	0.10
1981	1826	52	391	-0.9	16.7	1.4	11.6	-0.04	0.23	0.00	0.10
1982	1612	94	377	-2.5	16.8	3.0	11.1	-0.02	0.23	0.00	0.11
1983	1521	145	404	4.0	17.8	3.6	11.3	-0.02	0.24	-0.02	0.10
1984	1248	178	429	7.8	18.3	5.1	12.2	-0.01	0.22	-0.01	0.10
1985	919	237	404	10.0	18.3	7.1	11.9	0.00	0.21	-0.01	0.09
1986	391	338	401	14.3	16.9	11.4	11.3	-0.01	0.21	0.00	0.10
Breed:		German Red and White									
1975	465	-239	321	-15.2	13.1	-6.7	10.2	-0.08	0.15	0.02	0.09
1976	546	-214	289	-14.0	12.4	-5.8	9.0	-0.07	0.16	0.02	0.09
1977	559	-188	333	-12.6	14.1	-4.5	9.8	-0.07	0.16	0.03	0.09
1978	562	-211	310	-11.9	14.4	-4.9	9.6	-0.05	0.15	0.03	0.08
1979	555	-161	321	-8.5	16.0	-3.6	9.7	-0.03	0.17	0.03	0.08
1980	575	-107	335	-5.8	15.6	-1.8	10.0	0.02	0.18	0.03	0.08
1981	461	-41	364	-1.3	16.6	0.5	10.2	0.01	0.18	0.03	0.08
1982	480	43	353	3.8	16.8	2.1	10.4	0.03	0.18	0.01	0.08
1983	509	165	395	9.4	17.9	4.9	11.4	0.04	0.20	-0.01	0.09
1984	438	218	430	10.5	19.0	6.1	12.2	0.02	0.20	-0.02	0.09
1985	327	209	399	11.7	19.6	7.0	12.0	0.04	0.19	0.00	0.08
1986	112	250	416	14.5	19.3	9.2	11.8	0.06	0.18	0.02	0.08
Breed:		Gelbvieh									
1975	26	-294	268	-14.1	11.0	-8.4	10.8	-0.05	0.20	0.05	0.18
1976	26	-228	299	-8.3	14.9	-6.9	11.4	0.02	0.20	0.03	0.12
1977	31	-147	242	-8.4	11.5	-6.1	8.4	-0.06	0.20	-0.02	0.16
1978	27	-69	351	-4.9	13.8	-3.9	10.5	-0.04	0.15	-0.03	0.15
1979	19	-58	352	-2.3	12.3	-1.9	10.0	0.01	0.14	0.01	0.09
1980	21	-72	339	-3.5	16.0	-0.6	10.5	-0.01	0.24	0.05	0.12
1981	21	-158	237	-3.3	7.4	-3.8	7.8	0.08	0.15	0.04	0.10
1982	12	-114	171	-1.3	7.4	-3.5	8.3	0.08	0.19	0.01	0.18
1983	18	20	374	5.1	15.4	3.9	9.3	0.10	0.22	0.09	0.18
1984	20	167	269	5.5	12.9	5.3	8.7	-0.02	0.20	-0.01	0.11
1985	22	20	295	2.3	12.2	2.8	8.5	0.04	0.14	0.05	0.11

COUNTRY: GERMANY											
Number of AI and NS bulls (NB) tested, means (X) and standard deviations (SD) of proofs (kg) 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
1986	11	187	348	2.8	13.3	3.8	10.2	-0.10	0.09	-0.06	0.07
Breed:		Braunvieh									
1975	120	-281	303	-13.4	13.2	-10.2	9.7	-0.04	0.19	-0.01	0.12
1976	103	-206	364	-9.2	15.4	-7.8	12.0	-0.02	0.18	-0.02	0.12
1977	86	-114	329	-8.1	13.4	-4.6	10.8	-0.06	0.18	-0.01	0.11
1978	105	-15	315	-5.0	11.5	-2.5	9.8	-0.09	0.17	-0.04	0.11
1979	100	20	296	0.8	13.2	0.6	10.2	0.00	0.17	0.00	0.12
1980	112	41	306	2.0	14.4	1.5	10.1	0.01	0.20	0.00	0.12
1981	119	50	317	0.6	13.6	1.0	10.3	-0.02	0.18	-0.01	0.11
1982	109	86	295	3.8	11.3	2.8	9.1	0.01	0.17	0.00	0.10
1983	94	127	332	5.2	14.7	4.6	10.8	0.00	0.20	0.01	0.12
1984	99	149	264	8.8	10.8	5.6	8.1	0.06	0.16	0.01	0.11
1985	100	206	269	9.5	12.3	7.4	8.9	0.02	0.16	0.01	0.11
1986	68	173	285	9.5	11.8	7.6	8.6	0.05	0.16	0.04	0.09
Breed:		Fleckvieh									
1975	568	-254	333	-13.2	14.3	8.1	10.4	-0.07	0.19	0.01	0.11
1976	590	-203	306	-11.2	12.9	6.9	9.3	-0.07	0.17	0.00	0.11
1977	574	-160	331	-7.5	13.7	5.3	9.8	-0.02	0.19	0.01	0.11
1978	617	-110	316	-5.0	14.2	3.7	9.9	-0.01	0.21	0.00	0.11
1979	587	-80	300	-3.9	12.4	2.7	9.0	-0.01	0.19	0.00	0.11
1980	589	-55	282	-2.3	12.5	1.3	8.9	-0.00	0.18	0.01	0.11
1981	582	-3	308	0.2	13.5	0.6	9.5	0.01	0.19	0.01	0.11
1982	535	18	311	1.1	13.3	1.4	9.4	0.01	0.19	0.02	0.12
1983	535	38	300	3.2	12.9	1.9	8.9	0.04	0.18	0.02	0.11
1984	509	133	329	8.7	14.5	4.6	9.5	0.07	0.21	0.01	0.11
1985	524	138	257	9.7	12.1	6.2	7.3	0.09	0.20	0.03	0.09
1986	337	167	288	11.5	12.7	7.8	7.7	0.10	0.17	0.05	0.10
Breed:		Vorderwälder									
1975	58	-354	312	-15.7	14.2	-9.1	10.0	-0.04	0.15	0.07	0.08
1976	52	-363	301	-15.9	13.2	-9.6	9.8	-0.04	0.15	0.06	0.08
1977	42	-269	271	-10.7	10.1	-6.4	6.7	0.00	0.17	0.06	0.10
1978	39	-202	356	-8.4	16.3	-4.5	10.9	-0.01	0.18	0.05	0.08
1979	36	7	407	-1.3	15.2	0.1	10.5	-0.03	0.17	0.00	0.12
1980	37	-70	260	-3.5	12.7	-1.2	6.9	-0.02	0.14	0.03	0.10
1981	41	-157	278	-6.3	12.6	-3.0	8.1	0.00	0.13	0.06	0.11
1982	40	-45	343	-2.7	15.6	-1.1	9.4	-0.02	0.20	0.01	0.11
1983	39	-31	327	-0.4	13.9	-1.6	8.5	0.02	0.16	-0.01	0.13
1984	35	23	289	2.5	14.9	1.3	9.1	0.03	0.16	0.01	0.08

COUNTRY: GERMANY											
Number of AI and NS bulls (NB) tested, means (X) and standard deviations (SD) of proofs (kg) 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
1985	31	124	271	10.7	14.1	5.4	8.9	0.12	0.15	0.03	0.07
1986	11	-4	311	3.2	14.2	-0.8	9.8	0.07	0.10	-0.02	0.09
Breed:		Angler									
1975	39	30	392	-5.7	13.3	5.4	10.9	-0.13	0.28	0.09	0.13
1976	72	30	408	-6.0	17.2	2.7	11.5	-0.14	0.20	0.04	0.12
1977	59	-11	384	-1.5	14.5	-0.6	11.2	-0.01	0.27	-0.00	0.09
1978	69	73	326	-2.3	11.8	-1.6	9.6	-0.11	0.21	-0.08	0.10
1979	66	-80	337	-4.9	13.6	-5.2	9.6	-0.01	0.24	-0.04	0.10
1980	79	-7	319	-3.7	14.4	-0.7	9.2	-0.06	0.24	-0.01	0.10
1981	100	-20	367	1.4	13.7	-0.2	11.1	0.06	0.23	0.01	0.10
1982	104	100	378	5.3	14.2	2.1	10.4	0.01	0.25	-0.03	0.10
1983	99	-20	331	-0.7	12.2	-2.0	8.6	0.01	0.23	-0.02	0.10
1984	86	135	354	10.3	13.9	3.4	9.8	0.07	0.26	-0.03	0.10
1985	89	294	364	15.3	14.4	4.8	9.4	0.01	0.22	-0.11	0.10
1986	69	337	308	14.3	10.5	5.5	8.1	-0.05	0.23	-0.13	0.09
>86	35	421	329	22.7	13.8	7.5	8.0	0.02	0.18	-0.15	0.10

COUNTRY: GERMANY					
Average of adjusted production records (kg) included in the most recent evaluation run, by daughters' year of calving (YC) and breed					
YC	Milk	Fat	Protein	Fat %	Protein %
Breed:	German Holstein Friesian				
1980	5143	203	174	3.94	3.38
1981	5150	204	171	3.96	3.32
1982	5292	210	175	3.96	3.30
1983	5308	211	174	3.97	3.28
1984	5256	211	173	4.01	3.29
1985	5435	221	180	4.07	3.31
1986	5670	235	187	4.14	3.29
1987	5663	236	184	4.16	3.25
1988	5814	242	191	4.16	3.28
1989	5995	252	197	4.20	3.28
1990	6066	258	199	4.25	3.28
1991	6197	263	202	4.25	3.25
Breed:	German Red and White				
1980	4725	178	159	3.76	3.38
1981	4703	177	158	3.77	3.37

COUNTRY: GERMANY

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

YC	Milk	Fat	Protein	Fat %	Protein %
1982	4751	180	160	3.79	3.37
1983	4721	180	159	3.81	3.36
1984	4681	180	158	3.85	3.37
1985	4810	188	162	3.92	3.38
1986	4991	200	167	4.00	3.34
1987	4990	201	165	4.03	3.31
1988	5045	204	167	4.05	3.32
1989	5214	214	173	4.10	3.31
1990	5332	221	177	4.15	3.32
1991	5435	227	179	4.18	3.30
Breed:	Fleckvieh				
1980	4012	157	138	3.92	3.42
1981	4080	160	140	3.92	3.43
1982	4114	161	138	3.91	3.36
1983	4247	166	142	3.91	3.35
1984	4297	168	144	3.92	3.35
1985	4141	163	138	3.93	3.34
1986	4261	168	144	3.94	3.38
1987	4373	174	147	3.98	3.37
1988	4249	169	141	3.98	3.33
1989	4400	175	148	3.99	3.38
1990	4539	184	153	4.05	3.37
1991	4615	188	155	4.08	3.38
Breed:	Braunvieh				
1980	4205	163	144	3.89	3.40
1981	4317	169	147	3.91	3.39
1982	4406	172	148	3.91	3.36
1983	4403	170	147	3.87	3.33
1984	4476	174	150	3.89	3.36
1985	4426	173	148	3.91	3.34
1986	4540	179	153	3.94	3.37
1987	4574	181	153	3.96	3.35
1988	4505	179	151	3.97	3.35
1989	4693	187	159	3.99	3.39
1990	4807	195	163	4.06	3.39
1991	4822	197	163	4.11	3.40
Breed:	Gelbvieh				
1980	3705	147	131	3.98	3.53
1981	3759	149	131	3.97	3.50

COUNTRY: GERMANY

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

YC	Milk	Fat	Protein	Fat %	Protein %
1982	3790	150	131	3.96	3.46
1983	3908	154	135	3.94	3.46
1984	3925	154	135	3.93	3.43
1985	3693	146	127	3.95	3.44
1986	3898	156	136	4.01	3.50
1987	4030	162	140	4.02	3.47
1988	3922	157	134	4.00	3.42
1989	4042	162	140	4.01	3.45
1990	4200	170	145	4.06	3.46
1991	4234	174	147	4.11	3.49
Breed:	Vorderwälder				
1980	3241	126		3.88	
1981	3254	125		3.84	
1982	3280	126	109	3.85	3.32
1983	3365	131	111	3.89	3.31
1984	3439	134	113	3.91	3.28
1985	3530	139	116	3.92	3.39
1986	3691	145	121	3.93	3.28
1987	3709	146	121	3.93	3.27
1988	3763	148	123	3.93	3.28
1989	3788	148	123	3.93	3.28
1990	3944	156	129	3.96	3.29
1991	3988	160	131	4.02	3.30
Breed	Angler				
1980	4686	219	172	4.69	3.70
1981	4678	225	169	4.82	3.63
1982	4764	230	170	4.84	3.58
1983	4703	226	166	4.82	3.55
1984	4680	229	167	4.90	3.59
1985	4801	243	174	5.09	3.65
1986	4886	250	177	5.14	3.65
1987	4850	245	174	5.07	3.60
1988	5030	256	182	5.11	3.64
1989	5171	268	188	5.19	3.65
1990	5124	266	185	5.21	3.62
1991	5068	268	181	5.29	3.61