COUNTRY'S NAME	AUSTRIA
Production traits	**Milk, fat and protein**
Breed	SIM, BSW, HOL, PIN, Grauvieh
Trait definition and unit of measurement	Milk (kg), Fat (kg, %), Protein (kg, %) Milk recording
Criteria for inclusion & extension of records	Identified sire (93-98%), All records are included if there exists at least a 100 day yield, records longer than 305 days are cut at 305 days, No extension of records
Time period for data inclusion	First calving since 1979 (record), pedigree: 4 generations
Sire categories	All sires (NS = 29-87%, AI = 11-59%, Imported bulls = 0-59%, ET bulls = n.a.)
Number of lactations included in the evaluation	First three lactations (relative weight of lactations = 0.25: 0.30: 0.45), the first lactation is divided into three 100 day periods
Environmental effects: Pre-adjustment **Base for age pre-adjustment**	Age at calving (1st and 2nd lactation), days between date of calving and first test day, calving interval (current and preceding lactation) For 1st and 2nd lactation: SIM: 30, 43, BSW: 33, 46, HOL: 30, 40, PIN: 34, 47, Grauvieh: 34, 47 (latest update: 1993)
Method (model) of genetic evaluation	ST – ML – BLUP – AM
Environmental effects in the genetic evaluation model	Fixed: Region * herd-class * calving year * calving season Region (includes alpine grazing): SIM: 12, BSW: 9, HOL: 7, PIN: 3, Grauvieh: 2 Herd-class: SIM, BSW, HOL: 20, PIN: 16, Grauvieh: 14 Season: 4
Use of genetic groups	Genetic groups for animals with unknown parents: by year of birth (all breeds) and percentage of foreign genes (SIM and PIN only)
Genetic parameters in the evaluation	see Appendix
System validation	Checks on data quality (number, mean, standard deviation of raw data between successive rounds), RBV correlations and extreme differences between successive rounds, genetic trend estimation (as average RBVs by birth year)
Expression of genetic evaluations	EBV (kg and %) and RBV (production index)
Genetic (reference) base **Next base change**	Rolling, bulls born from (n-10) to (n-8) years with REL > 40%, e.g. 2000: bulls born between 1990 and 1992 February 2001
Criteria for official publication of evaluations	REL > 60%
Number of evaluations / publications per year	4 (February, May, August, November)
Use in production / total merit index	Production index = Milchwert (MW): RBV standardized with mean 100 and SD 12, Relative economic weigths: EBV fat yield : EBV protein yield = 1 : 1.6 Total merit index = Gesamtzuchtwert (GZW): Relative economic weigths: Milk (fat yield, protein yield) : Beef (daily gain, dressing percentage, carcass conformation) : Fitness (longevity, persistency, fertility, calving ease, still birth, somatic cell count) = SIM: 35.8 : 18.6 : 45.6; BSW: 44.2 : 0 : 55.8; HOL: 38.4 : 0 : 61.6; PIN: 33.8 : 15.6 : 50.6; Grauvieh: 45.8 : 7.2 : 47.0 Actual weigthing factors depend on REL (individual weighting factors)
Anticipated changes in the near future	Random regression TDM 2002
Key reference on methodology applied	Potucek, E., 1996. Zuchtwertschätzung für Merkmale der Milchleistung. In: Zuchtwertschätzung beim Rind. ZAR, 7-15.
Key organization: name, address, phone, fax, e-mail, web site	Zentrale Arbeitsgemeinschaft österreichischer Rinderzüchter (ZAR) Federation of Austrian Cattle Breeders Universumstrasse 33/8, A-1200 Wien Tel. (+43) 1 / 334 17 21 Fax: (+43) 1 / 334 17 13 e-mail: info@zar.at http://www.zar.at

Appendix I

Heritabilities (diagonals), genotypic correlations (above diagonals), phenotypic correlations (below diagonals)

Milk yield	lact. 1 (1st 100)	lact. 1 (2nd 100)	lact. 1 (3rd 100)	lact. 2	lact. 3
lact. 1 (1st 100)	.31	.84	.51	.61	.60
lact. 1 (2nd 100)	.53	.31	.78	.72	.73
lact. 1 (3rd 100)	.32	.45	.28	.64	.54
lact. 2	.32	.35	.40	.25	.82
lact. 3	.30	.34	.31	.45	.21

Fat yield	lact. 1 (1st 100)	lact. 1 (2nd 100)	lact. 1 (3rd 100)	lact. 2	lact. 3
lact. 1 (1st 100)	.35	.87	.61	.75	.71
lact. 1 (2nd 100)	.44	.37	.81	.82	.79
lact. 1 (3rd 100)	.27	.41	.31	.78	.69
lact. 2	.26	.29	.34	.29	.90
lact. 3	.24	.28	.28	.42	.26

Protein yield	lact. 1 (1st 100)	lact. 1 (2nd 100)	lact. 1 (3rd 100)	lact. 2	lact. 3
lact. 1 (1st 100)	.32	.81	.45	.55	.49
lact. 1 (2nd 100)	.44	.32	.64	.66	.61
lact. 1 (3rd 100)	.23	.44	.27	.66	.49
lact. 2	.30	.33	.37	.25	.80
lact. 3	.27	.31	.28	.47	.23

Genetic variance estimates for each trait

Milk yield	lact. 1 (1st 100)	lact. 1 (2nd 100)	lact. 1 (3rd 100)	lact. 2	lact. 3
lact. 1 (1st 100)	20800	16000	10700	32000	29000
lact. 1 (2nd 100)		17500	15000	34600	32900
lact. 1 (3rd 100)			21000	33600	26400
lact. 2				130000	99800
lact. 3					114000

Fat yield	lact. 1 (1st 100)	lact. 1 (2nd 100)	lact. 1 (3rd 100)	lact. 2	lact. 3
lact. 1 (1st 100)	52.4	38.8	28.6	91.5	84.8
lact. 1 (2nd 100)		38.1	32.5	85.5	80.6
lact. 1 (3rd 100)			42.3	86.5	74.1
lact. 2				288.3	252.7
lact. 3					275.8

Protein yield	lact. 1 (1st 100)	lact. 1 (2nd 100)	lact. 1 (3rd 100)	lact. 2	lact. 3
lact. 1 (1st 100)	21.2	16.8	10.9	30.2	25.4
lact. 1 (2nd 100)		20.1	15.1	35.2	30.6
lact. 1 (3rd 100)			27.6	41.0	28.9
lact. 2				140.2	106.1
lact. 3					125.2

Phenotypic variance estimates for each trait

Milk yield	lact. 1 (1^{st} 100)	lact. 1 (2^{nd} 100)	lact. 1 (3^{rd} 100)	lact. 2	lact. 3
lact. 1 (1^{st} 100)	45000	16000	11500	26000	26000
lact. 1 (2^{nd} 100)		38000	14000	24000	24000
lact. 1 (3^{rd} 100)			54000	35000	35000
lact. 2				390000	135000
lact. 3					410000

Fat yield	lact. 1 (1^{st} 100)	lact. 1 (2^{nd} 100)	lact. 1 (3^{rd} 100)	lact. 2	lact. 3
lact. 1 (1^{st} 100)	89.0	14.5	9.3	9.1	10.0
lact. 1 (2^{nd} 100)		57.8	14.7	5.7	9.8
lact. 1 (3^{rd} 100)			86.1	35.8	29.7
lact. 2				648.8	169.0
lact. 3					721.8

Protein yield	lact. 1 (1^{st} 100)	lact. 1 (2^{nd} 100)	lact. 1 (3^{rd} 100)	lact. 2	lact. 3
lact. 1 (1^{st} 100)	44.2	10.8	7.8	26.0	26.1
lact. 1 (2^{nd} 100)		41.2	19.4	26.3	25.6
lact. 1 (3^{rd} 100)			72.6	46.1	37.2
lact. 2				411.9	152.5
lact. 3					426.4

COUNTRY: Austria

Number of AI bulls (NB) tested, means (X), and standard deviations (SD) of proofs (kg, %) from most recent run, by bulls' year of birth (YB) and breed (The average proofs are calculated from all bulls).

		Milk		Fat		Protein		Fat %		Protein %	
YB	NB	X	SD	X	SD	X	SD	X	SD	X	SD
Breed						Fleckvieh (Simmental)					
1980	143	-77	352	-7.7	16.3	-4.1	9.0	-0.09	0.24	-0.03	0.12
1981	166	-84	330	-6.8	13.9	-4.4	8.9	-0.06	0.23	-0.03	0.12
1982	152	-90	309	-6.3	14.5	-3.3	9.3	-0.05	0.21	0.00	0.12
1983	145	-85	323	-5.8	15.1	-3.6	8.9	-0.04	0.22	-0.01	0.11
1984	157	-45	315	-3.9	16.0	-2.6	9.2	-0.04	0.24	-0.02	0.11
1985	157	13	386	-0.5	17.9	-0.4	10.4	-0.02	0.24	-0.01	0.12
1986	137	-5	409	-1.9	16.3	-0.5	11.1	-0.03	0.24	0.00	0.13
1987	146	2	345	-1.8	14.2	-0.7	9.4	-0.03	0.21	-0.01	0.12
1988	127	41	331	0.4	15.5	0.5	9.4	-0.02	0.19	-0.01	0.12
1989	135	14	364	1.5	15.7	-0.9	10.5	0.02	0.25	-0.02	0.12
1990	117	3	335	-0.7	14.7	-1.5	10.0	-0.01	0.21	-0.03	0.12
1991	123	52	302	0.5	13.3	1.2	8.9	-0.03	0.24	-0.01	0.12
1992	133	112	349	3.9	15.8	3.1	9.8	-0.01	0.22	-0.01	0.11
1993	100	193	394	7.0	16.0	4.3	10.4	-0.02	0.20	-0.04	0.11
Breed						Braunvieh (Brown Swiss)					
1980	49	-33	224	-4.0	12.5	-3.3	7.4	-0.05	0.19	-0.04	0.11
1981	49	12	244	-4.1	11.5	-3.0	8.1	-0.08	0.18	-0.06	0.11
1982	51	51	261	-2.6	13.4	-0.9	9.7	-0.08	0.18	-0.05	0.12
1983	44	-57	285	-5.0	12.5	-3.3	9.1	-0.05	0.15	-0.02	0.12
1984	57	43	280	-0.5	11.5	-0.5	8.7	-0.04	0.20	-0.03	0.12
1985	48	87	314	1.7	12.4	1.0	8.7	-0.03	0.20	-0.03	0.11
1986	36	146	351	3.6	15.6	3.0	10.4	-0.04	0.18	-0.03	0.09
1987	58	59	337	2.1	13.9	2.1	10.4	0.00	0.19	0.01	0.12
1988	53	29	378	2.6	17.0	2.1	11.6	0.03	0.22	0.03	0.11
1989	52	27	278	0.2	12.6	0.3	7.8	-0.02	0.19	-0.01	0.10
1990	45	-5	275	0.4	11.6	-0.1	8.3	0.02	0.17	0.00	0.10
1991	61	22	295	0.4	15.0	-0.1	9.0	-0.01	0.18	-0.01	0.09
1992	60	114	300	1.8	15.1	2.4	10.0	-0.05	0.17	-0.02	0.08
1993	30	262	253	8.5	13.8	8.1	7.7	-0.04	0.15	-0.01	0.07
Breed						Holstein					
1980	30	-233	270	-5.8	16.2	-5.3	9.8	0.07	0.23	0.03	0.11
1981	34	-78	432	3.1	21.0	-1.9	11.4	0.12	0.34	0.01	0.10
1982	45	-298	474	-8.2	17.8	-6.9	12.9	0.09	0.31	0.05	0.14
1983	47	36	508	2.4	17.9	1.6	13.7	0.03	0.32	0.01	0.13
1984	42	0	531	-4.0	21.0	-0.9	14.7	-0.06	0.29	-0.01	0.12
1985	64	-38	499	-1.2	19.9	1.6	15.9	0.02	0.33	0.05	0.11
1986	72	175	524	6.3	19.8	5.0	13.8	0.00	0.36	0.00	0.12
1987	68	-41	448	2.1	15.2	1.3	12.6	0.08	0.28	0.05	0.12
1988	66	115	491	7.9	16.9	3.3	12.5	0.07	0.33	0.00	0.13
1989	64	253	537	9.0	18.4	7.6	15.1	-0.01	0.35	0.00	0.14
1990	64	137	536	1.4	17.6	3.5	14.6	-0.06	0.30	-0.01	0.13
1991	58	-50	437	-1.3	16.9	1.0	12.5	0.03	0.28	0.05	0.12
1992	118	86	458	3.7	17.3	4.8	13.2	0.01	0.30	0.04	0.11
1993	78	201	490	5.2	18.8	4.7	13.1	-0.04	0.34	-0.02	0.11

COUNTRY: Austria

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

		Milk		Fat		Protein		Fat %		Protein %	
YC	NC	X	SD	X	SD	X	SD	X	SD	X	SD
Breed					Fleckvieh (Simmental)						
1980	38776	3961		161		130		4.07		3.27	
1981	38696	4015		164		130		4.07		3.25	
1982	41346	4024		163		131		4.06		3.27	
1983	44492	4047		165		132		4.08		3.27	
1984	42811	4059		167		133		4.10		3.27	
1985	42514	4095		168		135		4.11		3.31	
1986	44166	4192		173		137		4.13		3.28	
1987	42408	4143		170		135		4.10		3.27	
1988	42971	4234		176		140		4.15		3.30	
1989	43550	4251		177		141		4.17		3.31	
1990	45664	4347		182		143		4.18		3.30	
1991	44543	4403		183		145		4.15		3.30	
1992	45319	4533		189		152		4.17		3.35	
1993	46934	4591		191		153		4.16		3.34	
1994	49851	4588		192		153		4.18		3.34	
1995	55641	4604		192		155		4.18		3.38	
1996	53223	4716		196		160		4.17		3.38	
1997	55215	4934		207		167		4.19		3.38	
1998	21362	5151		214		174		4.16		3.38	
Breed					Braunvieh (Brown Swiss)						
1980	15379	4218		169		137		4.01		3.25	
1981	14974	4365		175		140		4.01		3.21	
1982	15781	4362		175		141		4.01		3.22	
1983	16962	4430		177		143		4.00		3.22	
1984	16004	4491		181		146		4.04		3.24	
1985	15585	4525		185		147		4.09		3.25	
1986	16268	4605		190		148		4.12		3.22	
1987	16116	4560		186		147		4.08		3.21	
1988	16152	4728		194		153		4.11		3.23	
1989	15629	4750		196		154		4.13		3.24	
1990	15658	4857		200		157		4.12		3.23	
1991	14885	4930		203		160		4.11		3.24	
1992	14997	5002		207		165		4.14		3.29	
1993	15404	5012		207		165		4.14		3.29	
1994	15917	4990		206		164		4.13		3.28	
1995	16495	4970		205		165		4.13		3.31	
1996	15661	5123		212		170		4.13		3.32	
1997	16103	5337		220		177		4.13		3.32	
1998	4714	5437		223		181		4.09		3.31	
Breed					Holstein						
1980	2951	5154		206		161		4.01		3.12	
1981	3259	5111		206		158		4.04		3.09	
1982	3779	5153		206		159		4.00		3.10	
1983	4104	5172		208		160		4.02		3.10	
1984	4206	5109		209		159		4.09		3.11	
1985	4260	5086		208		158		4.09		3.11	
1986	4346	5169		212		159		4.11		3.08	
1987	4000	5037		207		155		4.10		3.07	
1988	3699	5120		212		158		4.15		3.10	
1989	3688	5192		217		161		4.19		3.10	
1990	3647	5331		223		165		4.19		3.09	
1991	3656	5348		224		166		4.21		3.10	
1992	3639	5499		230		172		4.19		3.14	
1993	3740	5658		236		178		4.19		3.14	
1994	3956	5667		238		178		4.21		3.14	
1995	4653	5820		244		185		4.21		3.18	
1996	5384	6083		254		195		4.18		3.20	
1997	6473	6396		266		206		4.18		3.22	
1998	2365	6554		270		212		4.15		3.22	

Breed				PIN		
1980	4121	3626	143	117	3.95	3.22
1981	3708	3706	147	120	3.98	3.25
1982	3967	3607	141	117	3.92	3.24
1983	4054	3700	146	120	3.95	3.26
1984	3827	3831	153	125	4.00	3.26
1985	3969	3871	153	123	3.94	3.20
1986	3975	3937	155	122	3.94	3.12
1987	3962	3765	148	119	3.92	3.16
1988	3349	3778	149	120	3.94	3.19
1989	3516	3810	153	122	4.01	3.21
1990	3217	3945	157	126	3.98	3.21
1991	2970	4000	156	129	3.91	3.22
1992	2984	4055	159	132	3.93	3.25
1993	3108	3991	157	129	3.93	3.25
1994	3160	3999	158	131	3.94	3.28
1995	3010	3936	155	131	3.94	3.32
1996	2771	3996	157	132	3.92	3.32
1997	2839	4042	158	133	3.92	3.30
1998	751	4061	159	134	3.92	3.31
Breed				Grauvieh		
1980	710	3430	138	109	4.01	3.18
1981	670	3462	138	111	3.98	3.22
1982	768	3537	141	115	3.99	3.24
1983	765	3507	138	114	3.94	3.25
1984	702	3543	140	115	3.95	3.25
1985	775	3588	145	116	4.04	3.23
1986	839	3649	149	118	4.07	3.23
1987	827	3676	149	118	4.05	3.22
1988	829	3691	148	119	4.00	3.23
1989	825	3721	149	120	4.00	3.22
1990	724	3833	153	123	3.99	3.22
1991	696	3914	157	127	4.00	3.24
1992	716	3891	155	128	3.98	3.29
1993	746	3911	156	128	4.00	3.28
1994	804	3857	153	126	3.96	3.27
1995	879	3816	151	125	3.95	3.27
1996	727	3837	151	126	3.93	3.29
1997	705	3922	155	128	3.94	3.27
1998	176	3910	152	128	3.89	3.26