

COUNTRY'S NAME	FRANCE
Production traits	Milk, Fat, Protein Yield
Breed	[I] Holstein, Montbéliarde, Normande [II] Simmental Française, Brune, Pie Rouge des Plaines, Abondance, Tarentaise
Trait definition and unit of measurement	Milk, fat and true protein yields: kg; fat and true protein contents ‰
Criteria for inclusion & extension of records	Inclusion of records: First lactation required, lactation in progress with at least 60 DIM. Sire information required in Holstein. Extension of records in first parity: lactation in progress: extended; terminated lactations: no extension, but adjusted for DIM; Extension of records in later parities: lactations in progress and terminated lactations extended.
Time period for data inclusion	All lactations started after September 1 st 1979; no limit for pedigree information
Sire categories	All bulls (about 160 000 bulls, of which 12000 are AI bulls, 7000 ET produced + 1000 imported bulls)
Number of lactations included in the evaluation	Parities 1 to 3, with weights 1, 0.8 and 0.8, respectively.
Environmental effects: Pre-adjustment	Multiplicative preadjustment for parity Pre-adjustment for lactation length, if the lactation is not extended HOL: Preadjustment for Holstein * Friesian heterosis and recombination (past data)
Base for age pre-adjustment	None
Method (model) of genetic evaluation	ST – R – BLUP – AM
Environmental effects in the genetic evaluation model	Random: animal, PE; Fixed: Herd * Year; parity * region * year; Calving month * parity * region * year (1 st vs 2 nd and 3 rd parities); Age at calving * parity * region * year ; Preceding dry period length * parity * region * year (for 2 nd and 3 rd parities)
Use of genetic groups	Groups of unknown parents defined according to birth year (2 years interval) and region or country of origin of the progeny (a total of 8 countries and 260 groups)
Genetic parameters in the evaluation	$h^2 = 0.30$ for Yields, 0.50 for contents $t = 0.50$ for Yields, 0.70 for contents
System validation	Checks on Data quality; Planned connection between regions (= young bulls with 1 st crop daughters in several regions) during progeny test; EBV correlations; analysis of proofs variations according to number daughters and status of bull (Progeny tested or not, 1 st or 2 nd crop) and to % of completed lactations; Validation of genetic trend (Interbull methods I, II & III). Analysis of DYDs within classes (ex: within departement, region, 1 st or 2 nd crop)
Expression of genetic evaluations	EBV
Genetic (reference) base	Rolling basis: average sire EBV of AI bulls, progeny tested in France and with: [I]: $REL \geq 0.70$ and born from years (n-10) to (n-7) [II]: $REL \geq 0.50$ and born from years (n-12) to (n-7) Fixed basis for variability: derived from the average residual variance observed in 1996 (1995 in HOL).
Next base change	each year in June
Criteria for official publication of evaluations	[I]: $REL \geq 0.70$ or if $0.60 \leq REL \leq 0.69$ and high minimum INEL level [II]: $REL \geq 0.50$
Number of evaluations / publications per year	4: January, April, June, October
Use in production / total merit index	$INEL = 1.15 \times (\text{Protein Yield} + 3 \text{ Protein content})$
Anticipated changes in the near future	

Key reference on methodology applied	<p>Bonaïti B. et al. 1990. La méthode française d'évaluation génétique des reproducteurs laitiers. INRA Prod. Anim. 3 (2) 83-92</p> <p>Bonaïti B, 1993: Problems arising with genetic trend estimation in genetic cattle. Interbull Meeting Proceedings. Bulletin 8</p> <p>Boichard D et al, 1995. Three methods to validate the estimation of genetic trend in dairy cattle. J Dairy Sci., 78, 431-437</p> <p>Robert-Granié C. et al, 1999. Accounting for variance heterogeneity in French dairy cattle genetic evaluation. Livest. Prod. Sci., 62, 343-357</p>
Key organization: name, address, phone, fax, e-mail, web site	<p>Computing: INRA Station de Génétique Quantitative et Appliquée Domaine de Vilvert F78352 Jouy en Josas cedex Mail: didier.boichard@dga.jouy.inra.fr Web site: www-sgqa.jouy.inra.fr</p> <p>Publishing: Institut de l'Élevage 149 Rue de Bercy F75595 Paris cedex 12 Mail: jean-claude.mocquot@inst-elevage.asso.fr Web site : www.inst-elevage.asso.fr</p>

COUNTRY: France											
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.											
YB	NB	Milk		Fat		Protein		Fat ‰		Protein ‰	
		X	SD	X	SD	X	SD	X	SD	X	SD
Breed Prim'Holstein											
1978	454	-1515	820	-54	26	-53	21	0.6	3.4	-0.7	1.5
1979	494	-1453	736	-49	26	-50	19	1.0	3.4	-0.4	1.5
1980	433	-1528	725	-53	27	-52	20	0.8	3.5	-0.5	1.5
1981	573	-1287	691	-42	26	-46	19	1.0	3.5	-0.6	1.4
1982	731	-1144	670	-36	26	-41	20	1.1	3.4	-0.6	1.5
1983	720	-966	658	-28	25	-37	18	1.3	3.5	-0.7	1.4
1984	332	-1012	574	-23	23	-35	15	2.2	3.4	-0.4	1.4
1985	530	-849	619	-20	23	-31	17	1.6	3.2	-0.4	1.4
1986	549	-685	607	-13	24	-24	17	1.7	3.4	-0.3	1.4
1987	640	-539	584	-12	23	-20	16	1.1	3.2	-0.3	1.4
1988	613	-368	607	-7	24	-14	17	0.8	3.2	-0.3	1.2
1989	604	-249	582	-5	24	-10	16	0.6	3.3	-0.3	1.3
1990	748	-196	528	-6	22	-8	15	0.2	2.9	-0.2	1.2
1991	673	-44	569	0	22	-1	15	0.2	2.9	0.1	1.2
1992	666	136	579	3	23	5	15	-0.3	2.8	0.1	1.3
1993	513	168	588	6	24	6	16	-0.1	3.0	0.1	1.3
1994	631	257	607	14	24	11	16	0.4	3.2	0.4	1.2
1995	319	435	593	18	24	16	17	0.0	2.8	0.3	1.2
Breed Normande											
1978	155	-1047	503	-53	23	-42	17	-1.2	2.2	-1.1	1.2
1979	141	-979	486	-52	22	-41	16	-1.6	2.4	-1.2	1.4
1980	152	-1009	535	-53	23	-42	18	-1.5	2.2	-1.2	1.4
1981	144	-850	467	-43	21	-36	14	-1.0	2.9	-1.2	1.3
1982	138	-918	514	-40	24	-35	16	0.1	3.0	-0.7	1.4
1983	133	-658	492	-31	20	-29	15	-0.3	2.5	-1.0	1.3
1984	137	-494	510	-21	22	-23	17	0.0	2.4	-1.0	1.4
1985	128	-434	493	-24	19	-21	16	-0.9	2.4	-1.0	1.3
1986	123	-421	505	-21	21	-19	16	-0.5	2.4	-0.7	1.4
1987	133	-396	486	-18	20	-18	16	-0.1	2.6	-0.8	1.2
1988	146	-368	524	-12	20	-17	16	0.7	2.7	-0.7	1.2
1989	120	-335	542	-11	21	-12	17	0.6	2.6	-0.2	1.6
1990	141	-306	494	-5	20	-9	15	1.3	2.3	0.3	1.5
1991	153	33	456	1	20	1	14	-0.1	2.4	-0.1	1.3
1992	163	150	476	3	19	4	14	-0.5	2.0	-0.1	1.1
1993	149	91	475	1	19	3	13	-0.5	2.4	0.0	1.2
1994	133	116	473	5	21	6	14	-0.1	2.2	0.4	1.2

Breed		Montbéliarde									
1978	86	-1150	619	-53	28	-39	19	-1.2	2.2	-0.1	1.2
1979	82	-1177	601	-59	26	-42	19	-2.0	2.1	-0.4	1.2
1980	95	-1121	556	-49	26	-37	18	-0.8	2.4	0.0	1.2
1981	84	-1144	584	-49	21	-37	18	-0.6	2.1	0.1	1.3
1982	110	-894	442	-38	19	-31	14	-0.5	2.0	-0.2	1.2
1983	115	-844	600	-41	24	-32	19	-1.1	2.1	-0.5	1.4
1984	95	-694	617	-29	24	-27	19	-0.3	2.2	-0.5	1.3
1985	120	-566	612	-25	24	-21	18	-0.4	2.1	-0.2	1.4
1986	125	-409	595	-21	24	-16	18	-0.7	2.1	-0.3	1.1
1987	124	-443	577	-20	22	-17	17	-0.3	2.7	-0.3	1.3
1988	134	-395	608	-20	21	-15	17	-0.6	2.1	-0.3	1.3
1989	165	-137	501	-4	18	-5	14	0.1	2.3	-0.1	1.2
1990	107	-105	511	-1	21	-2	15	0.4	2.1	0.1	1.0
1991	104	-133	508	-3	22	-2	16	0.3	1.9	0.3	1.3
1992	126	-103	556	-5	24	-3	18	-0.1	2.0	0.0	1.2
1993	149	253	512	7	20	6	15	-0.4	2.2	-0.3	1.2
1994	122	337	523	8	23	10	17	-0.8	1.8	-0.2	1.1

Breed		Simmental									
1978	6	-918	277	-46	11	-43	12	-2.0	0.5	-2.4	1.3
1979	7	-922	518	-39	28	-32	23	-0.5	2.1	-0.2	1.5
1980	7	-843	411	-47	17	-35	16	-2.7	0.7	-1.2	1.1
1981	8	-470	439	-18	27	-17	16	0.0	3.1	-0.1	1.2
1982	5	126	351	-4	8	-2	9	-1.6	1.8	-1.2	0.4
1983	8	-658	890	-16	43	-15	30	1.8	2.5	1.2	1.2
1984	7	-414	735	-18	32	-19	26	-0.6	2.6	-1.1	1.2
1985	7	-342	514	-14	20	-12	15	-0.2	1.6	-0.3	0.8
1986	5	-501	422	-16	30	-16	14	0.2	2.5	0.2	1.0
1987	8	-705	802	-28	32	-25	27	0.1	1.4	-0.2	1.4
1988	10	-349	460	-12	16	-13	14	0.5	2.9	-0.3	1.2
1989	10	-164	754	-7	24	-3	22	-0.1	2.9	0.4	1.2
1990	9	147	870	13	42	7	28	1.3	2.1	0.3	0.8
1991	7	-308	481	-16	21	-10	17	-0.6	2.2	0.2	1.1
1992	11	322	606	17	23	11	19	0.7	1.9	0.0	1.2
1993	12	202	838	0	30	4	24	-1.5	2.3	-0.4	1.2
1994	6	221	1069	-2	36	8	30	-1.9	2.7	0.2	1.6

Breed		Brune									
1978	6	-1102	424	-59	19	-43	14	-2.1	2.3	-0.8	1.8
1979	9	-889	636	-57	25	-42	21	-3.0	1.5	-1.7	1.1
1980	9	-702	397	-40	17	-32	6	-1.4	1.1	-1.1	1.3
1981	7	-398	379	-22	19	-18	17	-0.5	2.0	-0.4	0.8
1982	10	9	466	-11	20	-6	14	-1.7	1.7	-1.0	0.9
1983	2	447	1183	5	50	6	43	-1.5	0.0	-1.5	0.4
1984	1	5		-3		-3		-0.4		-0.5	
1985	2	-75	393	0	28	-8	6	0.3	1.7	-0.7	0.8
1986	2	-379	37	-20	11	-20	1	-0.7	1.8	-1.2	0.5
1987	6	87	730	-1	19	-3	16	-0.5	3.8	-0.9	1.7
1988	2	516	886	10	43	9	42	-1.7	1.1	-1.4	1.7
1989	9	-590	599	-17	28	-17	20	0.9	1.4	0.4	0.8
1990	4	244	427	8	19	-1	15	-0.3	1.2	-1.3	0.4
1991	5	370	512	15	20	12	14	0.0	1.9	0.0	1.0
1992	11	126	594	4	28	6	14	0.0	2.8	0.2	1.4
1993	4	-26	627	-1	21	2	16	0.1	3.2	0.6	0.8
1994	7	593	268	12	15	15	8	-1.8	2.0	-0.7	1.0

Breed		Pie Rouge des Plaines									
1978	8	-1308	384	-73	16	-48	12	-3.4	1.8	-0.8	0.8
1979	6	-1003	710	-62	17	-35	16	-3.1	3.3	-0.2	1.4
1980	8	-1369	627	-62	30	-41	19	-0.9	1.9	0.5	0.9
1981	10	-1204	638	-64	16	-44	18	-2.0	3.7	-0.7	1.0
1982	5	-1036	304	-51	11	-36	12	-1.3	1.8	-0.3	1.2
1983	7	-436	815	-29	36	-23	22	-1.5	1.5	-1.2	1.5
1985	6	-49	679	-13	16	-7	16	-1.4	2.8	-0.8	1.6
1986	6	-433	368	-17	18	-17	9	0.3	1.0	-0.3	0.9
1987	5	318	526	-5	10	2	15	-2.5	3.1	-1.3	1.2
1988	7	153	925	6	31	4	23	-0.2	3.2	0.0	1.4
1989	5	-320	527	-2	22	-2	17	1.6	1.7	1.2	0.7
1990	7	314	342	3	20	6	13	-1.3	4.1	-0.6	0.6
1991	3	-887	283	-30	9	-26	10	0.9	0.9	0.4	0.1
1992	6	388	819	15	10	10	15	-0.1	4.1	-0.5	1.9
1993	6	-221	614	-7	19	-8	9	0.1	3.0	0.1	1.6
1994	6	-236	512	5	26	1	15	1.7	4.0	1.1	1.2
1995	4	-81	438	-4	18	2	5	-0.1	3.0	0.7	1.8

COUNTRY: France													
Average of first lactation production records (kg, ‰) included in the most recent evaluation run, by daughters' year of calving (YC) and breed.													
YC	NC	Milk		Fat		Protein		Fat ‰		Protein ‰			
		X	SD	X	SD	X	SD	X	SD	X	SD		
Breed		Prim'Holstein											
1980		4414		171		143		3.88		3.24			
1981		4484		173		144		3.86		3.22			
1982		4608		176		148		3.83		3.22			
1983		4743		183		153		3.86		3.22			
1984		4789		185		154		3.86		3.21			
1985		4947		191		159		3.87		3.21			
1986		5053		197		162		3.91		3.21			
1987		5171		203		165		3.93		3.20			
1988		5380		210		172		3.90		3.19			
1989		5666		222		181		3.93		3.19			
1990		5939		235		193		3.97		3.24			
1991		6039		243		196		4.02		3.25			
1992		6181		251		200		4.06		3.25			
1993		6385		260		208		4.08		3.25			
1994		6465		263		211		4.07		3.26			
1995		6656		269		219		4.05		3.30			
1996		6716		273		223		4.07		3.32			
1997		6855		281		228		4.10		3.33			
1998		7039		288		235		4.10		3.33			
1999		7113		290		236		4.07		3.32			
Breed		Normande											
1980		3693		155		129		4.19		3.51			
1981		3691		153		127		4.16		3.46			
1982		3745		153		129		4.11		3.45			
1983		3843		159		133		4.16		3.46			
1984		3874		161		134		4.16		3.46			
1985		3982		165		137		4.16		3.45			
1986		4008		168		139		4.19		3.47			
1987		4117		172		141		4.18		3.43			
1988		4242		175		145		4.14		3.44			
1989		4429		183		151		4.13		3.42			
1990		4540		190		158		4.19		3.48			
1991		4557		194		159		4.26		3.49			
1992		4530		195		157		4.31		3.47			
1993		4591		199		160		4.35		3.49			
1994		4615		202		162		4.37		3.50			
1995		4746		206		167		4.36		3.52			
1996		4851		212		172		4.37		3.56			
1997		4971		219		177		4.41		3.57			
1998		5028		223		180		4.44		3.59			
1999		5082		222		181		4.38		3.57			

Breed		Montbéliarde			
1980	4030	149	135	3.71	3.36
1981	4044	149	135	3.68	3.35
1982	4157	153	139	3.68	3.35
1983	4136	153	138	3.72	3.35
1984	4099	154	138	3.76	3.37
1985	4316	161	145	3.73	3.37
1986	4399	165	147	3.76	3.35
1987	4518	170	152	3.76	3.36
1988	4536	170	151	3.75	3.33
1989	4666	175	156	3.76	3.36
1990	4850	185	164	3.81	3.39
1991	4864	186	164	3.83	3.37
1992	4945	191	167	3.87	3.37
1993	5056	197	171	3.90	3.39
1994	5120	200	174	3.91	3.42
1995	5225	204	179	3.90	3.44
1996	5299	208	183	3.93	3.44
1997	5472	214	188	3.91	3.43
1998	5519	214	189	3.89	3.44
1999	5625	219	194	3.90	3.43
Breed		Simmental			
1980	3266	124	110	3.81	3.38
1981	3246	123	110	3.81	3.39
1982	3298	123	111	3.75	3.38
1983	3402	127	114	3.75	3.36
1984	3350	125	112	3.74	3.37
1985	3431	129	114	3.77	3.36
1986	3595	136	120	3.79	3.35
1987	3641	138	122	3.79	3.35
1988	3658	137	122	3.75	3.33
1989	3761	142	126	3.78	3.37
1990	3962	151	134	3.83	3.40
1991	4162	159	141	3.82	3.39
1992	4185	163	142	3.91	3.40
1993	4219	166	144	3.95	3.41
1994	4197	167	145	3.98	3.45
1995	4242	169	148	3.99	3.50
1996	4273	173	150	4.04	3.52
1997	4414	179	155	4.06	3.52
1998	4516	181	159	4.01	3.53
1999	4598	186	163	4.05	3.54

Breed		Brune			
1980	3673	135	124	3.68	3.38
1981	3925	144	132	3.68	3.37
1982	3974	145	133	3.66	3.36
1983	4066	149	137	3.67	3.36
1984	4071	150	137	3.69	3.37
1985	4398	163	146	3.70	3.33
1986	4534	169	151	3.73	3.33
1987	4704	177	158	3.78	3.35
1988	4724	177	156	3.76	3.31
1989	4862	187	162	3.79	3.32
1990	5131	197	172	3.84	3.37
1991	5130	197	172	3.85	3.37
1992	5153	202	174	3.92	3.38
1993	5211	205	176	3.93	3.39
1994	5353	213	184	3.98	3.43
1995	5570	221	193	3.98	3.47
1996	5655	229	198	4.05	3.52
1997	5762	235	203	4.08	3.51
1998	5849	237	206	4.06	3.54
1999	6034	246	213	4.08	3.53
Breed		Pie Rouge des Plaines			
1980	3898	152	132	3.89	3.41
1981	3879	151	131	3.90	3.38
1982	3883	150	131	3.86	3.39
1983	3977	153	134	3.86	3.37
1984	4000	153	135	3.84	3.39
1985	4239	163	143	3.84	3.38
1986	4333	167	146	3.86	3.37
1987	4383	172	146	3.94	3.35
1988	4550	179	153	3.94	3.37
1989	4716	187	159	3.96	3.36
1990	4992	200	169	4.01	3.40
1991	5084	207	172	4.08	3.39
1992	5248	216	178	4.13	3.40
1993	5344	220	182	4.12	3.40
1994	5295	219	182	4.15	3.43
1995	5260	219	182	4.16	3.44
1996	5473	226	188	4.13	3.44
1997	5538	230	190	4.16	3.44
1998	5710	239	196	4.19	3.43
1999	5826	243	198	4.16	3.39