



THE GLOBAL STANDARD
FOR LIVESTOCK DATA

Network. Guidelines. Certification.

Yearly survey on the situation of MILK RECORDING SYSTEMS (Years 2020 and 2021) in ICAR member countries for cow, sheep, goats and buffaloes



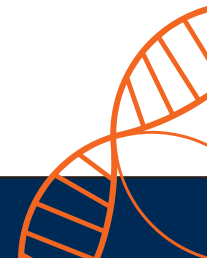
TABLE OF CONTENT

COW SURVEY

Table 1 - National milk production	9
Table 2 - Position of milk recording: Methods and Organisations	13
Table 3 - Milk recording methods.....	17
Table 3 - Milk recording methods.....	18
Table 3 - Milk recording methods.....	19
Table 4.1 - All breeds together - All recorded cows	20
Table 4.2 - All breeds together - Cows in herdbook	23
Table 4.2 - All breeds together - Cows in herdbook	25
Table 4.3 - Main breeds - All recorded cows	26
Table 4.4 - Main breeds - Cows in herdbook.....	40
Table 5 - Health, fertility and longevity	50

SHEEP SURVEY

Table 1A - Milk recording and management of the lactation	65
Table 1B - Methods of milk recording.....	68
Table 2A - Type of lactation calculation for milk yield	69
Table 3 - Optional tests for milk composition.....	72
Table 4 - Recording of non-milking traits.....	74
Table 5 - Milk recording equipment used in case of machine milking	76
Table 6 - Breeding programme using artificial insemination	77
Table 7 - Molecular information.....	78



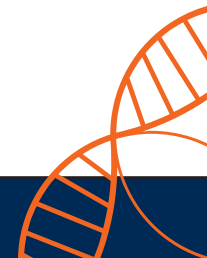
GOAT SURVEY

Table 1A - Milk recording and management of the lactation	80
Table 1B - Methods of milk recording.....	83
Table 2A - Type of lactation calculation for milk yield	84
Table 2B - Milk yield results.....	85
Table 3 - Optional tests for milk composition.....	87
Table 4 - Recording of non-milking traits.....	89
Table 5 - Milk recording equipment used in case of machine milking	90
Table 6 - Breeding programme using artificial insemination	91
Table 7 - Molecular information.....	92

BUFFALOES SURVEY

Table 1 - National milk production	94
Table 2 - Position of milk recording: Methods and Organisations	95
Table 3 - Milk recording methods.....	96
Table 4.1 - All breeds together - All recorded buffaloes.....	97
Table 4.2 - All breeds together - Buffaloes in herdbook	98
Table 4.3 - Main breeds - All recorded buffaloes	99
Table 4.4 - Main breeds - Buffaloes in herdbook	100

ICAR Member Organisations participating in the survey	101
---	-----



Preface

Billions of people consume milk and dairy products worldwide. Milk is no longer viewed solely as a source of nutrients for new-born children and, alongside dairy products, is now viewed as a fundamental source of protein and energy for all consumers. Milk and dairy products also offer significant opportunities for farmers, processors, retailers and other stakeholders within the dairy value chain.

At the primary level of the sector is raw production, which requires consumers, industry and governments to understand the complex relations between its various components. In order to facilitate this understanding, up-to-date information on the contribution to the economy of milk and dairy products must be provided, including how best to develop the dairy industry to effectively increase food security and generate maximum income for the entire value chain.

ICAR has been collecting data since 1996 on national milk production, milk recording and the cost of the whole milk production chain, together with information about the source of its funding. Particularly relevant in this publication are the sections in which the productivity of each of the many breeds that comprise the national sector is assessed, so that even minor breeds can be described and their contributions to the national statistics can be evaluated at the correct scale. This data was initially collected only for the cow milking sector but since 2008 the sheep and goat milking sectors have been included in the survey.

This publication incorporates dairy sector primary production information from a wide range of sources in a unique manner that examines the existing relationships between farmers, dairying and dairy-industry development. This collaboration by ICAR's many national Members, including leading and coordinating the planning, preparation and publication process, has made this booklet possible.

In producing this booklet, ICAR aims to provide:

- an in-depth look at the most sensitive step in the dairy chain and nutrition within the national primary production dairy sector, going from milk production to consumption
- a realistic picture of the various national distinctions and the differences in scale of the dairy sector in the analysed countries
- insights into dairy's potential by presenting specific stakeholder actions to improve future production and planning

The technical editorial team wishes to thank all who gave so generously of their expertise, time and energy, particularly the following ICAR Members who supported the production of this booklet::

- | | |
|-------------------------------|---|
| • Australia (by Data GeneLtd) | • Germany (by BRS) |
| • Austria | • Hungary (by ATKFT) |
| • Belgium (Flemish Region) | • Iceland |
| • Belgium (Wallonie) | • Ireland |
| • Bulgaria | • Italy (by AIA) |
| • Canada | • Latvia |
| • Chile | • Luxembourg |
| • Croatia | • Mexico |
| • Czech Republic | • New Zealand (by LIC) |
| • Denmark | • Norway |
| • Estonia | • Pakistan |
| • Finland | • Poland (by PFHB) |
| • France | • Romania (by Asociatia Crescatorilor de Taurine) |
| • Germany (by DLQ) | • Romania (by Asociatia Crescatorilor de Vaci Baltata Romaneasca tip Simmental) |



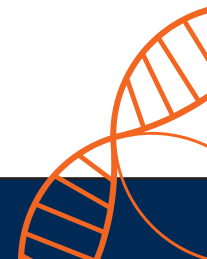
- Slovak Republic
- Slovenia
- South Korea (by DCIC)
- Spain
- Switzerland
- Taiwan
- The Netherlands (by CRV)
- Tunisia
- United Kingdom (by QMMMS)
- United Kingdom (by Holstein UK)
- United Kingdom (by CIS)
- United Kingdom (by Royal Jersey)
- Uruguay

ICAR Member Organisations are encouraged to submit and complete the missing data by June 2022, i.e. before the finalisation of the present booklet and its distribution to the competent authorities

NOTE:

This publication is based on the data submitted by each ICAR Member Organisation and that are available on the on-line ICAR database at: <https://my.icar.org>

ICAR also advises that data hereby collected were downloaded for each species on 30 April 2022



Cow Survey (Years 2020 and 2021)

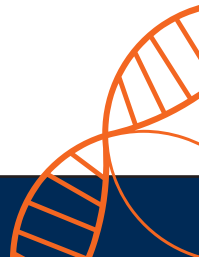


Table 1 - National milk production

COW SURVEY

Country	Year	Total number of dairy cows	Total number of dairy herds	Average of cows per herd	Average milk production per cow per year (kg)	Percent of fat production per cow per year (%)	Percent of protein production per cow per year (%)	Average cell count	Notes
Australia (DataGene Limited)	2020	1.411.000	5.055	279	6.170	4,15	3,45		
Australia (DataGene Limited)	2021	1.384.000	4.618	300	6.380	4,2	3,43		
Austria	2020	518.452	27.225	19	7.286	4,14	3,43		Quelle: Statistik Austria, BMLRT.
Austria	2021	521.036	26.500	20					
Belgium (Flemish Region by CRV)	2020	345.091	4.020	86	9.305	4,24	3,5		720 kgs fat + prot
Belgium (Flemish Region by CRV)	2021	345.920	3.800	91	9.349	4,28	3,51		728 kgs fat+protein
Belgium (Wallonia)	2020	186.896	2.730	69	7.053	4,1	3,37	217	
Belgium (Wallonia)	2021	181.102	2.656	68				225	
Bulgaria	2021	103.686							
Canada	2020	966.800	10.095	96	9.830	4,08	3,36	201	
Canada	2021	977.800	9.952	98	9.982	4,11	3,36	192	
Chile	2020	355.000	5.000	71	6.197	4,04	3,56		
Chile	2021	340.000	4.950	68	6.665	4,09	3,6		
Croatia	2020	130.012	15.921	8	4.386	4,2	3,4		
Croatia	2021	124.697	14.839	8	4.651	4,1	3,5		
Czech Rep.	2020	358.777			9.133	3,9	3,47		
Czech Rep.	2021	358.128			9.443	3,91	3,42		
Denmark	2020	568.400	2.600	219	9.940	4,29	3,6		
Denmark	2021	563.527	2.440	231	10.100	4,32	3,62	221	
Estonia	2020	85.049	1.236	69	9.943	3,9	3,4		
Estonia	2021	84.284	1.100	77	9.966	3,9	3,4		
Finland	2020	255.621	5.566	46	9.624	4,39	3,55		
Finland	2021	248.530	5.119	49	9.524	4,42	3,56		
France	2020	3.573.000	53.000	67	6.900				
Germany (BRS)	2020	3.921.410	57.322	68	8.425	4,12	3,47		

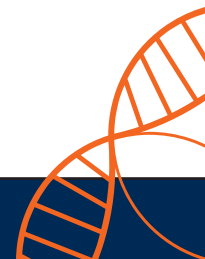


Table 1 - National milk production

Country	Year	Total number of dairy cows	Total number of dairy herds	Average of cows per herd	Average milk production per cow per year (kg)	Percent of fat production per cow per year (%)	Percent of protein production per cow per year (%)	Average cell count	Notes
Germany (BRS)	2021	3.832.716	54.787	70	8.550	4,13	3,47		
Holstein UK	2021								
Hungary (by LPT)	2020	225.800			8.418	3,75	3,31		
Hungary (by LPT)	2021					3,78	3,33		
Iceland	2020	26.331	533	48	6.384	4,26	3,42	253	
Iceland	2021	25.951	517	50	6.336	4,2	3,39	261	
Ireland	2020	1.570.180	17.495	89	5.449	4,2	3,55		
Ireland	2021	1.603.721	18.100	89	5.622	4,23	3,55		
Israel	2020	115.432	477	242	11.924	3,84	3,35	259	Cows in herd book
Italy (AIA)	2020	3.144.528	44.615						
Italy (AIA)	2021	3.166.679	46.433						
Japan	2020	849.300	13.500	63	8.812				Total number of cows and herds, on the 1st Feb 2021
Latvia	2020	137.757	12.158	11	7.163				
Latvia	2021	132.789	10.733	12	7.362				
Lithuania	2020	238.188	28.500						
Luxembourg	2020	54.536	620	88	8.203	4,17	3,45		
Luxembourg	2021	54.828	603	91	8.085	4,22	3,46		
Netherlands (by CRV)	2020	1.474.850	13.988	105	9.203	4,4	3,6		736 kgs fat + protein
Netherlands (by CRV)	2021	1.447.992	13.582	107	9.209	4,43	3,61		740 kgs fat+protein
New Zealand (by DairyNZ)	2020	4.921.548	11.179	440	4.296	5	3,96		
New Zealand (by LIC)	2020	4.921.548	11.179	440	4.296	5	3,96		Milk production = milk volume in litres
New Zealand (by LIC)	2021	4.903.733	11.034	444	4.426	5,01	3,95		Milk production = milk volume in litres
Norway	2020	207.855	7.214	29	8.204	4,29	3,51	64	
Norway	2021	213.190	6.925	31	8.191	4,28	3,56		
Pakistan (by CABROP)	2022	22.500							
Poland	2020	2.125.694	222.650	10	6.787	4,04	3,25		

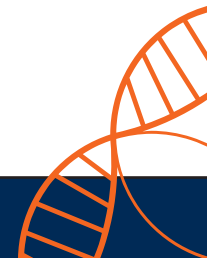


Table 1 - National milk production

Country	Year	Total number of dairy cows	Total number of dairy herds	Average of cows per herd	Average milk production per cow per year (kg)	Percent of fat production per cow per year (%)	Percent of protein production per cow per year (%)	Average cell count	Notes
Poland	2021	2,035,188	211,517	10	7,015				
Romania (Asociatia Generala a Crescatorilor de Taurine)	2020	71,527	8,825	8	7,147	3,79	3,47		
Romania (Asociatia Generala a Crescatorilor de Taurine)	2021	120,495	9,157	13	6,750	3,79	3,44		
Romania (Simmental Assoc.)	2020	279,283	12,475	22	7,291	3,6	3,3		
Romania (Simmental Assoc.)	2021	189,050	8,341	23	6,537	3,85	3,45		
Serbia	2020	93,000			4,591				Data relating to the region AP Vojvodina in Serbia
Slovak Republic	2020	114,155			7,968				
Slovak Republic	2021	110,039			8,045				
Slovenia	2020	97,838	5,467	18	6,810	4,1	3,3		
South Africa (by ARC)	2020	537,030	1,053	510	6,606				
South Korea (by DCIC Centre)	2020	237,460	2,905	81	10,423	3,95	3,22	202	
South Korea (by DCIC Centre)	2021	240,766	2,856	84	10,412	3,98	3,22	193	
Spain	2020	810,737	12,162	67	9,134	3,73	3,3		
Spain	2021	808,855	11,350	71	9,266	3,76	3,32		
Switzerland	2020	546,479	24,351	22	7,007	4,14	3,36		
Switzerland	2021					4,18	3,38		Other figures are published in summer 2022.

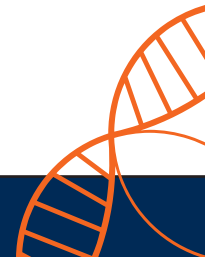


Table 1 - National milk production

Country	Year	Total number of dairy cows	Total number of dairy herds	Average of cows per herd	Average milk production per cow per year (kg)	Percent of fat production per cow per year (%)	Percent of protein production per cow per year (%)	Average cell count	Notes
Taiwan	2020	62.916	532	118	6.948	3,94	3,31	271	TS(%)=12.76
Taiwan	2021	64.988	530	123	7.000	4,01	3,36	277	TS(%)=12.93
Tunisia (OEP)	2020	217.510	9.887	22	5.946	3,66	3,27	606	
UK - England (by CIS)	2020	258.123	1.200	215	8.712	4,29	3,37		
UK - Jersey Island	2020	2.216	15	147	5.852	5,3	3,91		
UK - Jersey Island	2021	2.123	15	141	5.763	5,29	3,93	214	
UK - N. Ireland (by CIS)	2020	85.643	578	148	7.680	4,22	3,38		
UK - Scotland (by CIS)	2020	112.250	525	213	8.528	4,19	3,32		
UK - Wales (by CIS)	2020	41.685	217	192	8.072	4,26	3,36		
Uruguay (by MU)	2020	419.000	3.300	127	5.245	3,71	3,36		Source: MGAP/DIEA Anuario Estadístico Agropecuario 2021

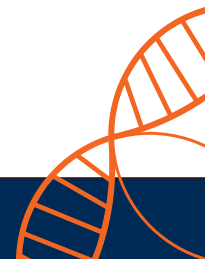


Table 2 - Position of milk recording: Methods and Organisations

Country	Year	Number of recorded cows	Percent of recorded cows	Number of recorded herds	Percent of recorded herds	Average number of cows per recorded herd	Cows in automatic milking, %	Herds in automatic milking, %	Notes
Australia (DataGene Limited)	2020	539.991	38,7	2.056	40,7	262,8			
Australia (DataGene Limited)	2021	527.553	38,1	1.967	42,6	268,2			
Austria	2020	427.809	82,5	18.746		22,8			
Austria	2021	435.426	83,6	18.435		23,6			
Belgium (Flemish Region by CRV)	2020	202.047	58,5	2.009	50	96			
Belgium (Flemish Region by CRV)	2021	199.622	58,5	1.925	52,9	104	18	15	
Belgium (Wallonia)	2020	62.968	33,2	715	26,2	88,1	12,1	10	
Belgium (Wallonia)	2021	61.589	34	686	25,8	89,8	12,7	10,6	
Canada	2020	614.064	63,5	6.446	63,9	95,3			
Canada	2021	600.480	61,4	6.284	63,1	95,6			
Chile	2020	158.500	44,6	500	10	317			
Chile	2021	155.450	45,7	460	9,3	338			
Croatia	2020	80.569	62	3.832	24,1	21	3	0,7	
Croatia	2021	77.875	65,5	3.565	24	21,8	5	1,5	
Czech Rep.	2020	345.587	96,3	1.243		278			
Czech Rep.	2021	345.397	96,2	1.219		283			AZ=62,7
Denmark	2020	513.825	91	2.600	88	219	25	25	
Denmark	2021	508.000	90	2.200	89	231	24	27	
Estonia	2020	81.819	96,2	478	38,7	171,2			
Estonia	2021	81.025	96,1	435	39,5	186,3			
Finland	2020	204.792	80,1	4.000	71,9	50,5	44,4	25,5	
Finland	2021	200.134	80,5	3.755	73,4	53,3	49,3	29,2	
France	2020	2.200.652	62	34.793	66	63,2	13		

Table 2 - Position of milk recording: Methods and Organisations

Country	Year	Number of recorded cows	Percent of recorded cows	Number of recorded herds	Percent of recorded herds	Average number of cows per recorded herd	Cows in automatic milking, %	Herds in automatic milking, %	Notes
Hungary (by LPT)	2021	181.195		437		414	5,3	6,4	
Iceland	2020	26.331	100	533	100	48,4	57,4	42,4	
Iceland	2021	25.951	100	517	100	50	60,4	46,5	
Ireland	2020	829.301	53	6.919	39	120			A method 53%, B method=47%
Ireland	2021	983.278	61	8.060	44	122	1,3	1,5	A method 53%, B method=47%
Italy (AIA)	2020	1.387.864		15.220		91,2			
Italy (AIA)	2021	1.417.548		14.913		95,1		4,4	
Japan	2020	528.591	62,2	7.265	53,8	62,9			
Latvia	2020	116.497	84,5	3.873	31,8	30			
Latvia	2021	113.574	85,5	3.651	34	31,1			
Lithuania	2020	133.530	55,7	2.847	10	46,6			
Lithuania	2021	130.910	55,7	2.672	9,9	48			
Luxembourg	2020	46.858	85,9	515	83,1	91	39	34,6	
Luxembourg	2021	49.267	89,9	520	86,2	94,7	41,1	37,8	
Netherlands (by CRV)	2020	1.474.850	92,6	13.988	88,9	105	33	30	
Netherlands (by CRV)	2021	1.447.992	92,1	13.582	89	107	35	32	
New Zealand (by DairyNZ)	2020	3.689.000	75	8.212	73,5	449			
New Zealand (by LIC)	2020	3.689.051	75	8.212	73,5	449			
New Zealand (by LIC)	2021	3.734.784	76	8.218	74,5	454			
Norway	2020	191.267	92	7.070	98	29,3	52,9	30,5	
Norway	2021	192.469	90,3	6.788	98	30,9	57,1	34,8	
Poland	2020	797.423	36,9	19.641	8,8	40,6	3,4	1,4	
Poland	2021	793.535	39	18.559	8,8	42,8	3,9	1,7	
Portugal (by ANABLE)	2020	90.975		1.472		61,8			

Table 2 - Position of milk recording: Methods and Organisations

Country	Year	Number of recorded cows	Percent of recorded cows	Number of recorded herds	Percent of recorded herds	Average number of cows per recorded herd	Cows in automatic milking, %	Herds in automatic milking, %	Notes
Romania (Asociatia Generala a Crescatorilor de Taurine)	2020	106.715	100	8.599	100	12,4			
Romania (Asociatia Generala a Crescatorilor de Taurine)	2021	120.495	100	9.157	100	13			
Romania (Simmental Assoc.)	2020	279.283	100	12.475	100	22			
Romania (Simmental Assoc.)	2021	189.050	100	8.341	100	22,7			
Serbia	2020	62.543	67,3	3.330	16,4	18,8			Data relating to the region AP Vojvodina in Serbia
Slovak Republic	2020	107.364	94	405		265			
Slovak Republic	2021	102.885	89	362		284			
Slovenia	2020	79.040	80,8	3.106	56,8	25,4			
South Africa (by ARC)	2020	19.879	3,7	120	11,4	166			
Spain	2020	549.176	67	5.258	42	94		9,4	
Spain	2021	545.844	67	4.918	43	96		10,9	
Sweden (Vaxa)	2020	209.625	77	2.147	77,5	93,6	45,2	35,3	Milk recording year 1/9-31/8
Switzerland	2020	422.637	77,3	18.709	76,8	22,6			
Switzerland	2021	420.488		18.294		23,1	12	5,5	
Taiwan	2020	27.245	43,6	168	30,2	162	1,2	4,7	84 Kg/Day Highest Milk Yield

Table 2 - Position of milk recording: Methods and Organisations

Country	Year	Number of recorded cows	Percent of recorded cows	Number of recorded herds	Percent of recorded herds	Average number of cows per recorded herd	Cows in automatic milking, %	Herds in automatic milking, %	Notes
UK - Jersey Island	2020	2.216		15		147			
UK - Jersey Island	2021	2.123		15		141	0,8	6,7	
UK - N. Ireland (by CIS)	2020	85.643		578		148			
UK - N. Ireland (by CIS)	2021	83.741		559		149	2	1,9	
UK - Scotland (by CIS)	2020	112.250		525		213			
UK - Scotland (by CIS)	2021	111.519		512		217	10,7	11,1	
UK - Wales (by CIS)	2020	41.685		217		192			
UK - Wales (by CIS)	2021	42.810		221		193	5,6	5,9	

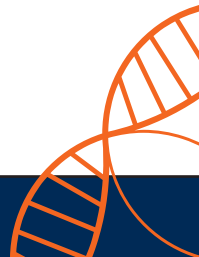


Table 3 - Milk recording methods

Country	Year	Method, % of rec cows A	Method, % of rec cows B	Method, % of rec cows C	Avg nr of recording days per herd and year	Avg nr of sampled recordings per herd and year	Sampling scheme, % of rec cows P	Sampling scheme, % of rec cows E	Sampling scheme, % of rec cows M	Sampling scheme, % of rec cows Z	Sampling scheme, % of rec cows T	Sampling scheme, % of rec cows C	Notes
Austria	2020	100									100		
Austria	2021	100									100		
Belgium (Flemish Region by CRV)	2020	59,4	40,6		8,6	8,6							
Belgium (Flemish Region by CRV)	2021	48,5	51,5		8,5								
Belgium (Wallonia)	2020	86,4	13,6		9,7	676,8		65,1		13	21,9		
Belgium (Wallonia)	2021	86,9	13,1		9,7	755,8		65		12,3	22,7		
Chile	2020	99,9	0,1		11	11	33				67		
Chile	2021	99,9	0,1		11	11	32				68		
Croatia	2020	62,1	37,9		11	11				31,6	68,4		
Croatia	2021	56,6	43,4		11	11				35,9	64,1		
Czech Rep.	2020	100			12	12	38,5			60,5	1		
Czech Rep.	2021	100			12	12	36,3			62,7	1		
Denmark	2020	10	90		10	10							
Denmark	2021	10	90		10	10					76	24	
Estonia	2020		100										
Estonia	2021		100			12							
Finland	2020	4,2	94,2	1,7	11,6	7	10,2			89,8			
Finland	2021	3,9	94,2	1,9	11,9	7,2	8			92			
France	2020	77,1	20,6	2,3				70,6		2,9	26,5		
France	2021	76,4	21,3	2,2				70,1		3	26,9		
Hungary (by LPT)	2020	93,2	0	6,8	11	11				28		72	AC: 64%, AZ: 28%, CC: 8%
Hungary (by	2021	92,9		7,1	11	11				29		71	AC: 63,9%,

Table 3 - Milk recording methods

Country	Year	Method, % of rec cows A	Method, % of rec cows B	Method, % of rec cows C	Avg nr of recording days per herd and year	Avg nr of sampled recordings per herd and year	Sampling scheme, % of rec cows P	Sampling scheme, % of rec cows E	Sampling scheme, % of rec cows M	Sampling scheme, % of rec cows Z	Sampling scheme, % of rec cows T	Sampling scheme, % of rec cows C	Notes
Luxembourg	2021	80	20										
Netherlands (by CRV)	2020	31	69		9	9							
Netherlands (by CRV)	2021	32	68		9	9							
Norway	2020		100										
Norway	2021		100		11,5	7,5		52,6		47,4			
Poland	2020	100						22,6		0,1	77,3		
Poland	2021	100						24,9		0,9	74,2		
Romania (Asociatia Generala a Crescatorilor de Taurine)	2020	100			11	11					100		
Romania (Asociatia Generala a Crescatorilor de Taurine)	2021	100			11	11					100		
Romania (Simmental Assoc.)	2020	100			11	11							
Romania (Simmental Assoc.)	2021	100			11	11							
Serbia ¹	2020	100			330	11					100		
Slovak Republic	2020	100			11	11					99,5		
Slovak Republic	2021	100			12	11	0,4	32,75			66,8		
Slovenia	2020	100			11	11					100		
Spain	2020	100				11		1,4		9,5	88,7		

Table 3 - Milk recording methods

Country	Year	Method, % of rec cows A	Method, % of rec cows B	Method, % of rec cows C	Avg nr of recording days per herd and year	Avg nr of sampled recordings per herd and year	Sampling scheme, % of rec cows P	Sampling scheme, % of rec cows E	Sampling scheme, % of rec cows M	Sampling scheme, % of rec cows Z	Sampling scheme, % of rec cows T	Sampling scheme, % of rec cows C	Notes
Tunisia (OEP)	2020	29	71		8	8				71,5	28,6		
UK - England (by CIS)	2020	56	44								34		
UK - England (by CIS)	2021	52	45		9	9	34,9	0	0	45,4	19,7		
UK - Jersey Island	2020	47	53								13		
UK - Jersey Island	2021	66	33		11	11	80	0	0	6,7	13,3		
UK - N. Ireland (by CIS)	2020	77	23								45		
UK - N. Ireland (by CIS)	2021	73	23		7	7	37,6	0	0	26,1	36,3		
UK - Scotland (by CIS)	2020	79	21								24		
UK - Scotland (by CIS)	2021	68	23		9	9	57,8	0	0	36,1	6		
UK - Wales (by CIS)	2020	51	49								37		
UK - Wales (by CIS)	2021	53	47		9	9	25,8	0	0	37,6	36,7		

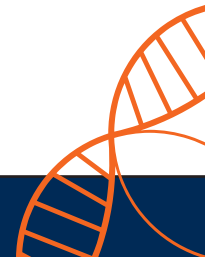


Table 4.1 - All breeds together - All recorded cows

Country	Year	Number of lactations	Length of the lactations (days)	Milk yield per recorded cow (kg)	Milk per cow in 305 days (kg)	Percent fat content (%)	Percent protein content (%)	Average cell count	Notes
Australia (DataGene Limited)	2020	539.991	324	7.041	7.041	4	3,3		
Australia (DataGene Limited)	2021	527.553	323	7.085	7.085	4,1	3,4		
Austria	2020	360.885	299		7.896	4,14	3,43		
Austria	2021	360.238	299		7.817	4,16	3,43		
Belgium (Flemish Region by CRV)	2020	102.400	347	10.179		4,2	3,49		783 kgs fat + prot
Belgium (Flemish Region by CRV)	2021	106.489	347	10.289		4,22	3,5		794 kgs fat+protein
Belgium (Wallonia)	2020	43.829	355	8.916	8.068	4,05	3,4		
Belgium (Wallonia)	2021	39.582	350	9.194	8.228	4,12	3,43		
Canada	2020	304.156	305		10.702	4,05	3,32		
Canada	2021	302.268	305		10.852	4,07	3,33		
Chile	2020	104.204	342	7.726	8.084	4,04	3,56		
Chile	2021	103.556	341	7.920	8.302	4,09	3,6		
Croatia	2020	59.148	375	7.861	6.564	4,1	3,4		
Croatia	2021	60.048	378	8.124	6.780	4,1	3,4		
Czech Rep.	2020	292.817	296	9.255	9.465	3,95	3,46		
Czech Rep.	2021	291.707	296	9.443	9.657	3,91	3,42		
Denmark	2020	513.825	365	10.504		4,29	3,6		Numbers expressed as 365/366 days rolling average
Denmark	2021	504.049	365	10.518		4,32	3,61	221	
Estonia	2020	80.910	332	10.400	10.212	3,84	3,35	235	
Estonia	2021	80.589	332	10.484	10.304	3,84	3,36	239	
Finland	2020	174.457	305	10.168	10.211	4,33	3,58	180	
Finland	2021	167.790	305	10.073	10.170	4,36	3,58	179	
France	2020	2.200.652	339	8.707	8.591	3,99	3,39		
France	2021	2.064.131	344	8.887	8.793	3,99	3,4		
Germany (BRS)	2020	3.450.471	323	9.154	8.942	4,11	3,48		
Germany (BRS)	2021	3.383.011	322	9.168	9.048	4,12	3,49		
Hungary (by NEBIH)	2020	143.885	297		10.301	3,68	3,34		
Hungary (by NEBIH)	2021								Not yet available
Iceland	2020	25.649	365	6.384		4,26	3,42	253	Numbers expressed as 365/366 day rolling average

Table 4.1 - All breeds together - All recorded cows

Country	Year	Number of lactations	Length of the lactations (days)	Milk yield per recorded cow (kg)	Milk per cow in 305 days (kg)	Percent fat content (%)	Percent protein content (%)	Average cell count	Notes
Italy (AIA)	2020	821.856	305	9.462	9.462	3,8	3,35		
Italy (AIA)	2021	861.681	305	9.701	9.701	3,83	3,36		
Japan	2020	349.545	365	11.086	9.905	3,94	3,35		
Latvia	2020	93.858	376	8.170	8.109	4,01	3,32		
Latvia	2021	92.473	376	8.320	8.352	4,02	3,36		
Luxembourg	2020	46.858	320	8.908		4,15	3,45		
Luxembourg	2021	49.267	319	8.889		4,2	3,47		
Netherlands (by CRV)	2020	964.892	356	10.290		4,37	3,59		819 kgs fat + protein
Netherlands (by CRV)	2021	965.230	357	10.383		4,39	3,59		829 kgs fat+protein
New Zealand (by DairyNZ)	2020	3.689.051	216	4.371		4,74	3,87		
New Zealand (by LIC)	2020	3.689.000	268	4.371		4,74	3,87		
New Zealand (by LIC)	2021	3.735.000	276	4.462		4,75	3,87		
Norway	2020	144.856	305	8.106	7.671	4,3	3,48	64	
Norway	2021	146.171	305	8.109	7.779	4,31	3,57		
Poland	2020	797.423	305	8.823	8.823	4,07	3,41		
Poland	2021	793.535	305	8.837	8.837	4,13	3,42		
Romania (Asociatia Generala a Crescatorilor de Taurine)	2021	68.189	347	7.088	6.750	3,79	3,44		
Romania (Simmental Assoc.)	2020	113.057	359	7.291	7.376	3,6	3,3		
Romania (Simmental Assoc.)	2021	79.486	345	6.537	6.627	3,85	3,45		
Serbia	2020	44.366	346	7.809	6.978	3,8	3,34		Data relating to the region AP Vojvodina in Serbia
Slovak Republic	2020	82.770	297	8.669	8.844	3,87	3,39		
Slovak Republic	2021	81.173	297	8.866	9.045	3,86	3,38		
Slovenia	2020	77.499	370	8.264	7.160	4,01	3,37	398	
South Africa (by ARC)	2020	36.214	307	5.649	5.968	5,07	3,88		
South Korea (by DCIC Centre)	2020	144.568		10.843	10.423	3,95	3,21	202	
Spain	2020	345.862	370	12.528	10.695	3,72	3,24		
Spain	2021	352.187	369	12.612	10.786	3,75	3,27		
Sweden (Vaxa)	2020	209.625	365	10.232		4,25	3,57	252	365 days rolling average
Switzerland	2020	373.254	301	7.808	7.886	4,05	3,34		

Table 4.1 - All breeds together - All recorded cows

Country	Year	Number of lactations	Length of the lactations (days)	Milk yield per recorded cow (kg)	Milk per cow in 305 days (kg)	Percent fat content (%)	Percent protein content (%)	Average cell count	Notes
UK - Jersey Island	2020	2.618	331	6.808	6.032	5,49	3,83		
UK - Jersey Island	2021	2.399	324	7.154	6.448	5,51	3,85	305	
UK - N. Ireland (by CIS)	2020	87.996	322	8.933	7.965	4,09	3,3		
UK - N. Ireland (by CIS)	2021	88.710	319	8.998	7.995	4,15	3,31	184	
UK - Scotland (by CIS)	2020	125.462	325	9.613	8.556	4,03	3,2		
UK - Scotland (by CIS)	2021	124.057	322	9.647	8.628	4,07	3,23	224	
UK - Wales (by CIS)	2020	45.085	330	9.203	8.155	4,12	3,26		
UK - Wales (by CIS)	2021	47.440	326	9.119	8.136	4,19	3,27	214	

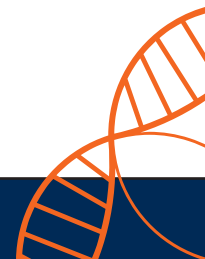


Table 4.2 - All breeds together - Cows in herdbook

Country	Year	Number of lactations	Length of the lactations (days)	Milk yield per recorded cow (kg)	Milk per cow in 305 days (kg)	Percent fat content (%)	Percent protein content (%)	Average cell count	Notes
Australia (DataGene Limited)	2020	50.503	341	7.726	7.726	3,98	3,3		
Australia (DataGene Limited)	2021	48.812	342	7.804	7.804	4,07	3,32		
Austria	2020	342.704	299		7.945	4,14	3,43		
Austria	2021	341.684	299		7.869	4,16	3,44		
Belgium (Flemish Region by CRV)	2020	72.577	347	10.342		4,22	3,49		797 kgs f+p
Belgium (Flemish Region by CRV)	2021	74.321	346	10.468		4,22	3,5		808 kgs fat+protein
Czech Rep.	2020	286.242	296	9.343	9.555	3,95	3,47		Holstein and Fleckvieh breeds
Czech Rep.	2021	281.066	296	9.498	9.714	3,91	3,42		Holstein and Fleckvieh breeds
Denmark	2020	513.825	365	10.504		4,29	3,6		Numbers expressed as 365/366 days rolling average
Denmark	2021	504.049	365	10.518		4,32	3,61	221	
Estonia	2020	74.871	333	10.545	10.333	3,82	3,35		
Estonia	2021	75.171	332	10.629	10.417	3,83	3,35		
Finland	2020	65.488	305		10.584	4,28	3,55		
Finland	2021	70.096	305		10.448	4,32	3,56		
France	2020	2.200.652	339	8.707	8.591	3,99	3,39		
France	2021	2.064.031	344	8.887	8.793	3,99	3,66		
Germany (BRS)	2020	2.659.582	324	9.362	9.120	4,11	3,49		
Germany (BRS)	2021	2.596.315	322	9.376	9.224	4,12	3,49		
Hungary (by NEBIH)	2020	137.604	298		10.362	3,67	3,34		
Hungary (by	2021								Not yet available

Table 4.2 - All breeds together - Cows in herdbook

Country	Year	Number of lactations	Length of the lactations (days)	Milk yield per recorded cow (kg)	Milk per cow in 305 days (kg)	Percent fat content (%)	Percent protein content (%)	Average cell count	Notes
Iceland	2020	25.649	365	6.384		4,26	3,42	253	Numbers expressed as 365/366 day rolling average
Iceland	2021	25.383	365	6.336		4,2	3,36	261	Numbers expressed as 365/366 day rolling average
Italy (AIA)	2020	821.856	305	9.462	9.462	3,8	3,35		
Italy (AIA)	2021	861.681	305	9.701	9.701	3,83	3,36		
Japan	2020	317.752	364	11.100	9.995	3,95	3,35		
Latvia	2020	46.035	346		8.749	4,04	3,32		
Latvia	2021	64.929	377		8.440	3,98	3,31		
Netherlands (by CRV)	2020	848.025	356	10.373		4,38	3,59		826 kgs fat + protein
Netherlands (by CRV)	2021	842.618	357	10.469		4,39	3,6		837 kgs fat+protein
Poland	2020	552.250	305	8.808	8.808	3,97	3,33		
Poland	2021	552.560	305	8.868	8.868	4,02	3,34		
Portugal (by ANABLE)	2020	90.975	347	10.919	9.948	3,74	3,31		
Romania (Asociatia Generala a Crescatorilor de Taurine)	2021	9.157	347	7.088	6.750	3,79	3,44		
Romania (Simmental Assoc.)	2020	113.057	359	7.291	7.376	3,6	3,3		
Romania (Simmental Assoc.)	2021	78.810	345	6.543	6.631	3,85	3,45		
Serbia ¹	2020	38.118	358	8.013	7.239	3,97	3,31		
Slovenia	2020	77.499	370	8.264	7.160	4,01	3,37	398	
South Africa (by ARC)	2020	26.051	317	6.393	6.601	4,76	3,72		

Table 4.2 - All breeds together - Cows in herdbook

Country	Year	Number of lactations	Length of the lactations (days)	Minimum yield per recorded cow (kg)	Minimum yield per cow in 305 days (kg)	Percent fat content (%)	Percent protein content (%)	Average cell count	Notes
South Korea (by DCIC Centre)	2020	144.568	400		10.423	3,95	3,21	202	
South Korea (by DCIC Centre)	2021	146.060	396		10.412	3,98	3,22	193	
Spain	2020	345.862	370	12.528	10.690	3,72	3,24		
Spain	2021	352.187	369	12.612	10.786	3,75	3,27		
Switzerland	2020	373.254	301	7.808	7.886	4,05	3,34		
Switzerland	2021	321.979	301	7.883	7.969	4,08	3,35	95	
Tunisia (OEP)	2020	5.794	381	5.946	5.129	3,66	3,27		
UK - England (by CIS)	2020	187.579	326	10.211	9.030	4,1	3,23		
UK - England (by CIS)	2021	185.845	324	10.242	9.100	4,14	3,25	244	
UK - Jersey Island	2020	2.616	331	6.808	6.033	5,49	3,83		
UK - Jersey Island	2021	2.399	324	7.154	6.448	5,51	3,85	305	
UK - N. Ireland (by CIS)	2020	45.448	326	9.665	8.591	4,07	3,28		
UK - N. Ireland (by CIS)	2021	46.042	319	9.668	8.613	4,14	3,3	181	
UK - Scotland (by CIS)	2020	64.721	325	10.208	9.064	4,03	3,22		
UK - Scotland (by CIS)	2021	64.813	323	10.203	9.094	4,08	3,24	216	
UK - Wales (by CIS)	2020	34.217	332	9.628	8.538	4,1	3,22		
UK - Wales (by CIS)	2021	35.984	328	9.542	8.516	4,16	3,24	243	

Table 4.3 - Main breeds - All recorded cows

Country	Year	Breed	Number of lactations	Length of the lactations (days)	Milk yield per recorded cow (kg)	Milk per cow in 305 days (kg)	Percent fat content (%)	Percent protein content (%)	Average cell count	Notes
Australia (DataGene Limited)	2020	Holstein	206.681	330	7.709	7.709	3,84	3,26		
Australia (DataGene Limited)	2021	Holstein	197.973	329	7.716	7.716	3,92	3,28		
Australia (DataGene Limited)	2020	Jersey	41.726	317	5.491	5.491	4,82	3,72		
Australia (DataGene Limited)	2021	Jersey	41.409	317	5.539	5.539	4,86	3,72		
Austria	2020	Brown Swiss	34.730			7.625	4,16	3,53		
Austria	2021	Brown Swiss	32.799			7.564	4,18	3,54		
Austria	2020	Fleckvieh	272.316			7.834	4,16	3,44		
Austria	2021	Fleckvieh	273.095			7.742	4,17	3,44		
Austria	2020	Grauvieh	2.825			5.089	3,9	3,36		
Austria	2021	Grauvieh	2.731			5.160	3,91	3,37		
Austria	2020	Holstein	42.122			9.117	4,07	3,33		
Austria	2021	Holstein	42.378			9.064	4,09	3,33		
Austria	2020	Pinzgauer	5.975			5.981	3,88	3,3		
Austria	2021	Pinzgauer	5.992			6.008	3,92	3,33		
Belgium (Flemish Region by CRV)	2020	Holstein	55.494	348	10.688	9.749	4,18	3,47		818 kgs f+p
Belgium (Flemish Region by CRV)	2021	Holstein	57.150	347	10.792	9.863	4,19	3,48		828 kgs fat+protein
Belgium (Flemish Region by CRV)	2020	Red and White	12.211	351	9.583	8.724	4,37	3,54		766 kgs f+p
Belgium (Flemish Region by CRV)	2021	Red and White	11.713	350	9.686	8.838	4,42	3,6		777 kgs fat+protein
Belgium (Wallonia)	2020	Blanc-Bleu Belge	2.083	303	4.528	4.342	3,75	3,31		
Belgium (Wallonia)	2021	Blanc-Bleu Belge	1.826	303	4.561	4.368	3,79	3,31		
Belgium (Wallonia)	2020	Holstein	34.625	356	9.545	8.459	4,07	3,41		
Belgium (Wallonia)	2021	Holstein	31.016	354	9.689	8.642	4,11	3,42		
Belgium (Wallonia)	2020	Jersey	321	337	6.182	5.588	5,14	3,95		
Belgium (Wallonia)	2021	Jersey	395	337	6.184	5.634	5,17	3,95		

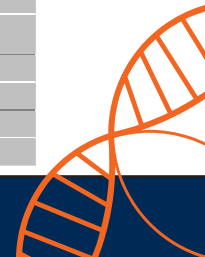


Table 4.3 - Main breeds - All recorded cows

Country	Year	Breed	Number of lactations	Length of the lactations (days)	Milk yield per recorded cow (kg)	Milk per cow in 305 days (kg)	Percent fat content (%)	Percent protein content (%)	Average cell count	Notes
Belgium (Wallonia)	2020	Montbéliarde	902	343	7.837	7.122	3,96	3,48		
Belgium (Wallonia)	2021	Montbéliarde	847	344	8.026	7.259	4,01	3,48		
Belgium (Wallonia)	2020	Normande	256	339	6.790	6.147	4,19	3,59		
Belgium (Wallonia)	2021	Normande	284	335	6.945	6.328	4,2	3,57		
Belgium (Wallonia)	2020	Red Holstein	5.116	353	8.614	7.687	4,17	3,45		
Belgium (Wallonia)	2021	Red Holstein	4.656	351	8.787	7.878	4,21	3,47		
Belgium (Wallonia)	2020	Rouge-Pie Est de la Belgique (East Belg. Red Pied)	526	317	5.180	4.868	4,16	3,43		
Belgium (Wallonia)	2021	Rouge-Pie Est de la Belgique (East Belg. Red Pied)	558	315	5.359	5.009	4,17	3,45		
Canada	2020	Alpine Brown	1.456	305		8.781	4,24	3,56		
Canada	2021	Alpine Brown	1.447	305		8.917	4,24	3,56		
Canada	2020	Ayrshire	6.290	305		8.210	4,14	3,42		
Canada	2021	Ayrshire	5.982	305		8.360	4,14	3,43		
Canada	2020	Canadienne	290	305		5.894	4,3	3,6		
Canada	2021	Canadienne	250	305		5.828	4,36	3,58		
Canada	2020	Guernsey	324	305		7.285	4,65	3,5		
Canada	2021	Guernsey	304	305		7.394	4,67	3,48		
Canada	2020	Holstein	282.919	305		10.939	4	3,29		
Canada	2021	Holstein	280.984	305		11.094	4,02	3,3		
Canada	2020	Jersey	12.585	305		7.111	5,13	3,89		
Canada	2021	Jersey	12.987	305		7.259	5,14	3,88		
Canada	2020	Shorthorn	292	305		7.176	3,99	3,34		
Canada	2021	Shorthorn	314	305		7.512	4,05	3,37		
Croatia	2020	Alpine Brown	1.241	367	7.089	5.894	4,1	3,5		
Croatia	2021	Alpine Brown	1.157	382	7.358	5.983	4,1	3,5		

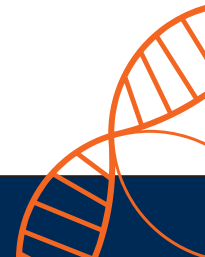


Table 4.3 - Main breeds - All recorded cows

Country	Year	Breed	Number of lactations	Length of the lactations (days)	Milk yield per recorded cow (kg)	Milk per cow in 305 days (kg)	Percent fat content (%)	Percent protein content (%)	Average cell count	Notes
Croatia	2020	Holstein	22.204	386	9.993	8.342	4,1	3,4		
Croatia	2021	Holstein	23.014	380	10.119	8.543	4,1	3,5		
Croatia	2020	Simmental	34.440	368	6.543	5.466	4,1	3,4		
Croatia	2021	Simmental	34.299	375	6.848	5.650	4,1	3,4		
Czech Rep.	2020	Fleckvieh	99.901	294	7.767	7.984	4,04	3,58		
Czech Rep.	2021	Fleckvieh	101.739	294	7.906	8.065	4,01	3,53		
Czech Rep.	2020	Holstein	171.425	298	10.254	10.434	3,9	3,41		
Czech Rep.	2021	Holstein	175.973	297	10.440	10.731	3,86	3,37		
Czech Rep.	2020	Montbéliarde	3.102	297	8.168	8.333	4,08	3,57		
Czech Rep.	2021	Montbéliarde	3.328	297	8.367	8.536	4,04	3,56		
Denmark ¹	2020	Cross	62.321	366	10.122		4,27	3,58		
Denmark	2021	Cross	61.385	365	10.153		4,3	3,6	236	
Denmark ¹	2020	Holstein	357.989	366	11.182		4,07	3,51		
Denmark	2021	Holstein	350.043	365	11.209		4,1	3,52	216	
Denmark ¹	2020	Jersey	66.775	366	7.545		5,97	4,27		
Denmark	2021	Jersey	67.073	365	7.564		5,98	4,3	219	
Denmark ¹	2020	Red Nordic	26.740	366	9.736		4,37	3,68		
Denmark	2021	Red Nordic	25.548	365	9.715		4,4	3,7	272	
Estonia	2020	Holstein	68.745	333	10.677	10.445	3,8	3,34	230	
Estonia	2021	Holstein	69.351	332	10.761	10.541	3,81	3,34	234	
Estonia	2020	Red	11.297	331	9.131	9.117	4,03	3,43	257	
Estonia	2021	Red	10.329	330	9.117	9.095	4,04	3,45	274	
Finland	2020	Ayrshire	77.574	305	9.550	9.640	4,48	3,64	177	
Finland	2021	Ayrshire	69.993	305	9.379	9.524	4,52	3,66	180	
Finland	2021	Brown	410	305	9.594	9.636	4,3	3,6	168	
Finland	2020	Finnish Cattle	1.477	305	6.465	6.681	4,39	3,47	198	
Finland	2021	Finnish Cattle	1.346	305	6.467	6.650	4,43	3,49	197	

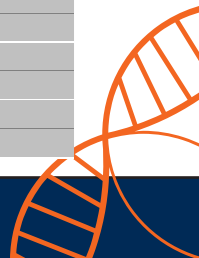


Table 4.3 - Main breeds - All recorded cows

Country	Year	Breed	Number of lactations	Length of the lactations (days)	Milk yield per recorded cow (kg)	Milk per cow in 305 days (kg)	Percent fat content (%)	Percent protein content (%)	Average cell count	Notes
Finland	2020	Guernsey	23	305	8.845	8.134	4,15	3,27	110	
Finland	2020	Holstein	93.756	305	10.760	10.761	4,21	3,53	181	
Finland	2021	Holstein	94.561	305	10.664	10.721	4,2	3,49	179	
Finland	2020	Jersey	1.018	305	8.253	8.254	5,22	3,91	198	
Finland	2021	Jersey	1.082	305	8.090	8.114	5,24	3,93	194	
Finland	2021	Montbéliarde	288	305	10.328	9.953	4,26	3,59	166	
France ^z	2020	Abondance	23.727	300	5.585	5.771	3,61	3,46		
France ^z	2021	Abondance	23.460	305	5.742	5.933	3,62	3,46		
France ^z	2020	Alpine Brown	16.162	347	7.692	7.423	4,16	3,58		
France ^z	2021	Alpine Brown	16.098	353	7.850	7.572	4,19	3,6		
France ^z	2020	Holstein	1.432.267	348	9.495	9.284	3,99	3,35		
France ^z	2021	Holstein	1.323.367	353	9.704	9.518	4,01	3,35		
France ^z	2020	Jersiaise	10.398	332	5.215	5.151	5,53	4,03		
France ^z	2021	Jersiaise	11.151	336	5.302	5.250	5,53	4,03		
France ^z	2020	Montbéliarde	404.093	317	7.503	7.604	3,87	3,48		
France ^z	2021	Montbéliarde	392.247	324	7.719	7.832	3,89	3,49		
France ^z	2020	Normande	166.515	333	6.835	6.845	4,21	3,63		
France ^z	2021	Normande	154.455	339	7.011	7.028	4,21	3,64		
France ^z	2020	Pie Rouge des Plaines	8.702	338	8.124	8.064	4,27	3,5		
France ^z	2021	Pie Rouge des Plaines	8.311	343	8.286	8.239	4,26	3,52		
France ^z	2020	Simmental	15.571	316	6.657	6.812	4,01	3,55		
France ^z	2021	Simmental	15.556	319	6.765	6.948	4,02	3,55		
France	2020	Tarentaise	8.672	281	4.352	4.647	3,68	3,42		
France	2021	Tarentaise	8.597	289	4.481	4.764	3,68	3,42		
Germany (BRS)	2020	Braunvieh	141.125	327	7.616	7.574	4,25	3,61		
Germany (BRS)	2021	Braunvieh	136.118	325	7.615	7.558	4,29	3,63		

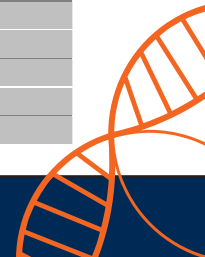


Table 4.3 - Main breeds - All recorded cows

Country	Year	Breed	Number of lactations	Length of the lactations (days)	Milk yield per recorded cow (kg)	Milk per cow in 305 days (kg)	Percent fat content (%)	Percent protein content (%)	Average cell count	Notes
Germany (BRS)	2020	Fleckvieh	853.573	320	8.080	7.851	4,2	3,54		
Germany (BRS)	2021	Fleckvieh	842.449	319	8.045	7.906	4,22	3,54		
Germany (BRS)	2020	Holstein - Rotbunt	212.788	324	8.939	8.804	4,17	3,5		
Germany (BRS)	2021	Holstein - Rotbunt	205.906	323	9.030	8.969	4,18	3,5		
Germany (BRS)	2020	Holstein - Schwarzbunt	2.019.318	325	9.840	9.621	4,05	3,45		
Germany (BRS)	2021	Holstein - Schwarzbunt	1.970.387	324	9.880	9.752	4,06	3,45		
Hungary (by NEBIH)	2020	Ayrshire	32	296		8.633	3,97	3,43		
Hungary (by NEBIH)	2020	Brown Swiss	188	298		8.320	3,94	3,56		
Hungary (by NEBIH)	2020	Holstein Friesian	134.071	298		10.448	3,66	3,33		
Hungary (by NEBIH)	2020	Jersey	726	295		6.792	5,13	3,97		
Hungary (by NEBIH)	2020	Norwegian Red	5	281		6.666	3,16	3,42		
Hungary (by NEBIH)	2020	Swedish Red	117	295		9.930	3,87	3,45		
Iceland ³	2020	Icelandic Cattle	25.649	365	6.384		4,26	3,42	253	
Iceland ³	2021	Icelandic Cattle	25.383	365	6.336		4,2	3,39	261	
Italy (AIA) ⁴	2020	Alpine Brown	40.544	305	7.649	7.649	4,03	3,6		
Italy (AIA) ⁴	2021	Alpine Brown	41.511	305	7.777	7.777	4,04	3,61		
Italy (AIA) ⁴	2020	Alpine Grey	3.122	305	5.316	5.316	3,73	3,37		
Italy (AIA) ⁴	2021	Alpine Grey	6.317	305	5.373	5.373	3,76	3,37		
Italy (AIA) ⁴	2020	Friesian	654.829	305	10.017	10.017	3,79	3,33		
Italy (AIA) ⁴	2021	Friesian	685.522	305	10.285	10.285	3,82	3,3		
Italy (AIA) ⁴	2020	Red Spotted	39.216	305	7.225	7.225	3,89	3,43		
Italy (AIA) ⁴	2021	Red Spotted	41.041	305	7.353	7.353	3,91	3,43		

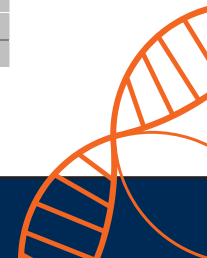
³ Numbers expressed as 365/366 day rolling average⁴ Reference period: Oct 1st, 2019 - Sept 30, 2020

Table 4.3 - Main breeds - All recorded cows

Country	Year	Breed	Number of lactations	Length of the lactations (days)	Milk yield per recorded cow (kg)	Milk per cow in 305 days (kg)	Percent fat content (%)	Percent protein content (%)	Average cell count	Notes
Italy (AIA) ⁵	2020	Valdostana Red Spotted	9.579	305	3.753	3.753	3,4	3,3		
Italy (AIA) ⁵	2021	Valdostana Red Spotted	10.133	305	3.843	3.843	3,5	3,31		
Japan	2020	Holstein	345.349	365	11.131	9.940	3,94	3,35		
Japan	2020	Jersey	2.929	353	6.995	6.496	5,05	3,97		
Latvia	2020	Alpine Brown	16.554	339		6.814	4,28	3,38		
Latvia	2021	Alpine Brown	15.644	378		6.954	4,26	3,38		
Latvia	2020	Holstein	58.699	347		8.747	3,97	3,3		
Latvia	2021	Holstein	64.112	376		8.928	3,92	3,3		
Latvia	2020	Latvian Blue	260	335		5.282	4,38	3,39		
Latvia	2021	Latvian Blue	267	368		5.320	4,32	3,4		
Luxembourg	2020	Holstein	36.091	321	9.156		4,12	3,43		
Luxembourg	2021	Holstein	37.391	321	9.152		4,18	3,46		
Luxembourg	2020	Red Holstein	5.764	319	8.399		4,25	3,49		
Luxembourg	2021	Red Holstein	6.080	318	8.427		4,28	3,5		
Netherlands (by CRV)	2020	Holstein	589.930	358	10.688	9.611	4,34	3,56		844 kgs fat + protein
Netherlands (by CRV)	2021	Holstein	588.280	359	10.775	9.684	4,35	3,58		854 kgs fat+protein
Netherlands (by CRV)	2020	Meuse Rhinhe Issel	5.904	341	7.367	6.881	4,55	3,75		611 kgs fat + protein
Netherlands (by CRV)	2021	Meuse Rhinhe Issel	5.583	345	7.503	6.965	4,57	3,75		624 kgs fat+protein
Netherlands (by CRV)	2020	Red and White	120.718	356	9.838	8.923	4,54	3,67		808 kgs fat + protein
Netherlands (by CRV)	2021	Red and White	117.942	356	9.933	9.000	4,56	3,67		817 kgs fat+protein
New Zealand (by DairyNZ)	2020	Ayrshire	13.175	216	4.115		4,35	3,59		
New Zealand (by DairyNZ)	2020	Friesian x Jersey	1.511.195	211	4.127		4,95	3,98		

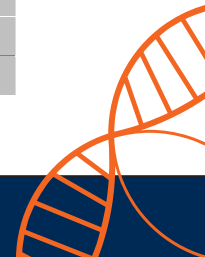
⁵ Reference period: Oct 1st, 2019 - Sept 30, 2020

Table 4.3 - Main breeds - All recorded cows

Country	Year	Breed	Number of lactations	Length of the lactations (days)	Milk yield per recorded cow (kg)	Milk per cow in 305 days (kg)	Percent fat content (%)	Percent protein content (%)	Average cell count	Notes
New Zealand (by DairyNZ)	2020	Holstein	888.546	210	4.492		4,47	3,77		
New Zealand (by DairyNZ)	2020	Jersey	246.178	209	3.201		5,59	4,18		
New Zealand (by LIC)	2020	Ayrshire	13.175	216	4.115		4,35	3,59		
New Zealand (by LIC)	2021	Ayrshire	12.320	232	4.390		4,35	3,59		
New Zealand (by LIC)	2020	Friesian x Jersey	1.511.195	211	4.127		4,95	3,98		
New Zealand (by LIC)	2021	Friesian x Jersey	1.568.568	223	4.325		4,95	3,99		
New Zealand (by LIC)	2020	Holstein	888.546	210	4.492		4,47	3,77		
New Zealand (by LIC)	2021	Holstein	896.690	224	4.764		4,5	3,8		
New Zealand (by LIC)	2020	Jersey	246.178	209	3.201		5,59	4,18		
New Zealand (by LIC)	2021	Jersey	245.791	225	3.418		5,6	4,19		
Norway	2020	Holstein	2.585	305	9.906	9.375	4,19	3,42	58	
Norway	2021	Holstein	2.781	321	9.897	9.495	4,2	3,49		
Norway	2020	Jersey	1.137	305	6.359	6.054	5,9	4,06	70	
Norway	2021	Jersey	1.220	315	6.301	6.096	5,87	4,14		
Norway	2020	Red	132.844	305	8.089	7.650	4,29	3,48	63	
Norway	2021	Red	133.832	304	7.761	7.761	4,31	3,57		
Poland	2020	Black and White	1.839	305	4.723	4.723	4,16	3,31		
Poland	2021	Black and White	1.810	305	4.740	4.740	4,22	3,33		
Poland	2020	Holstein	677.249	305	9.076	9.076	4,05	3,39		
Poland	2021	Holstein	675.158	305	9.093	9.093	4,11	3,41		
Poland	2020	Jersey	978	305	6.711	6.711	5,12	3,89		
Poland	2021	Jersey	967	305	6.491	6.491	5,17	3,82		
Poland	2020	Montbéliarde	3.476	305	8.180	8.180	4,05	3,51		
Poland	2021	Montbéliarde	3.452	305	8.149	8.149	4,16	3,52		

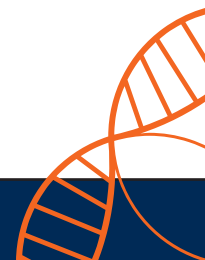


Table 4.3 - Main breeds - All recorded cows

Country	Year	Breed	Number of lactations	Length of the lactations (days)	Milk yield per recorded cow (kg)	Milk per cow in 305 days (kg)	Percent fat content (%)	Percent protein content (%)	Average cell count	Notes
Poland	2020	Red	2.820	305	3.520	3.520	4,26	3,36		
Poland	2021	Red	2.783	305	3.696	3.696	4,27	3,38		
Poland	2020	Red and White	3.952	305	4.393	4.393	4,12	3,25		
Poland	2021	Red and White	4.064	305	4.419	4.419	4,15	3,28		
Poland	2021	Red Holstein	29.348	305	8.119	8.119	4,24	3,44		
Poland	2020	Red Holstein	30.067	305	8.134	8.134	4,17	3,44		
Poland	2020	Simmental	10.015	305	6.531	6.531	4,16	3,45		
Poland	2021	Simmental	9.905	305	6.493	6.493	4,21	3,47		
Romania (Asociatia Generala a Crescatorilor de Taurine)	2021	Holstein	9.157	347	7.088	6.750	3,79	3,44		
Romania (Simmental Assoc.)	2020	Montbéliarde	2.012	368	8.399	8.400	3,53	3,33		
Romania (Simmental Assoc.)	2021	Montbéliarde	1.758	353	7.361	7.368	3,8	3,52		
Romania (Simmental Assoc.)	2020	Simmental	111.045	350	6.183	6.352	3,72	3,29		
Romania (Simmental Assoc.)	2021	Simmental	77.728	338	5.713	5.886	3,9	3,39		
Serbia ⁶	2020	Brown swiss	70	350	8.593	7.705	3,71	3,47		
Serbia ⁶	2020	Holstein Friesian	34.234	342	8.032	7.043	3,81	3,25		
Serbia ⁶	2020	Simmental	10.062	345	6.801	6.186	3,92	3,29		
Slovak Republic	2020	Holstein	36.774	298	10.014	10.190	3,81	3,33		
Slovak Republic	2021	Holstein	37.627	299	10.222	10.376	3,8	3,33		
Slovak Republic	2020	Pinzgauer	408	291	4.631	4.797	3,78	3,42		
Slovak Republic	2021	Pinzgauer	230	289	4.253	4.428	3,76	3,38		
Slovak Republic	2020	Simmental	15.493	295	7.014	7.192	3,95	3,53		
Slovak Republic	2021	Simmental	15.588	295	7.063	7.242	3,93	3,51		

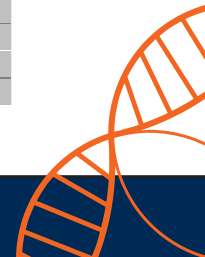
⁶ Data relating to the region AP Vojvodina in Serbia

Table 4.3 - Main breeds - All recorded cows

Country	Year	Breed	Number of lactations	Length of the lactations (days)	Milk yield per recorded cow (kg)	Milk per cow in 305 days (kg)	Percent fat content (%)	Percent protein content (%)	Average cell count	Notes
Slovenia	2020	Alpine Brown	7.772	382	7.276	6.130	4,1	3,46		
Slovenia	2020	Holstein	33.949	379	9.838	8.403	3,94	3,31		
Slovenia	2020	Simmental	28.168	358	6.850	6.075	4,09	3,43		
South Africa (by ARC)	2020	Ayrshire	1.425	278	6.242	7.554	4,39	3,55		
South Africa (by ARC)	2020	Guernsey	315	302	6.300	6.752	4,42	3,6		
South Africa (by ARC)	2020	Holstein	16.792	279	7.846	9.187	4,03	3,36		
South Africa (by ARC)	2020	Jersey	17.682	307	5.649	5.968	5,07	3,88		
South Korea (by DCIC Centre)	2020	Holstein	144.568	400		10.423	3,95	3,21	202	
South Korea (by DCIC Centre)	2021	Holstein	10.412	396		10.412	3,98	3,22	193	
Spain	2020	Alpine Brown	1.370	365	9.116	7.524	3,85	3,58		
Spain	2021	Alpine Brown	1.172	373	9.286	7.690	3,84	3,66	415	
Spain	2020	Friesian	344.447	370	12.528	10.690	3,72	3,24		
Spain	2021	Friesian	352.187	369	12.612	10.786	3,75	3,27	283	
Spain	2020	Pasiega	45	336			3,3	3,12		
Spain	2021	Pasiega	34	340			3,43	3,19		
Sweden (Vaxa)	2020	Holstein	114.237	365	10.787		4,14	3,51	252	
Sweden (Vaxa)	2020	Jersey	1.785	365	7.065		5,88	4,16	276	
Sweden (Vaxa)	2020	Red and White	66.115	365	9.471		4,41	3,68	253	
Sweden (Vaxa)	2020	Swedish Polled	557	365	5.698		4,4	3,61	308	
Switzerland	2020	Alpine Brown	110.237	301	7.307	7.380	4,02	3,42		
Switzerland	2021	Alpine Brown	108.821	301	7.331	7.404	4,04	3,43	102	
Switzerland	2020	Eringer	391		3.428		3,75	3,36		
Switzerland	2021	Eringer	391		3.428		3,75	3,36		
Switzerland	2020	Evolener	52	291	3.212	3.327	3,69	3,34		
Switzerland	2021	Evolener	28	295	3.093	3.171	3,75	3,43	98	

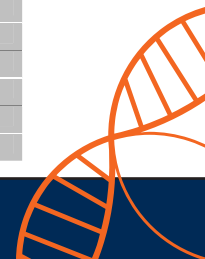


Table 4.3 - Main breeds - All recorded cows

Country	Year	Breed	Number of lactations	Length of the lactations (days)	Milk yield per recorded cow (kg)	Milk per cow in 305 days (kg)	Percent fat content (%)	Percent protein content (%)	Average cell count	Notes
Switzerland	2020	Fleckvieh	59.292	300	7.170	7.260	4,12	3,32		
Switzerland	2021	Fleckvieh	45.569	300	7.192	7.282	4,16	3,33	81	
Switzerland	2020	Grauvieh	453	297	4.555	4.647	3,78	3,24		
Switzerland	2021	Grauvieh	109	297	4.555	4.647	3,81	3,24	99	
Switzerland	2020	Hinterwälder	107	296	3.746	3.831	3,99	3,33		
Switzerland	2021	Hinterwälder	109	294	3.504	3.602	4,01	3,31	113	
Switzerland	2020	Holstein	91.811	302	8.950	9.017	4,02	3,26		
Switzerland	2021	Holstein	83.109	302	9.086	9.163	4,05	3,26	96	
Switzerland	2020	Jersey	3.558	300	6.058	6.134	5,13	3,84		
Switzerland	2021	Jersey	3.683	300	6.083	6.159	5,18	3,87	109	
Switzerland	2020	Montbéliarde	9.395	300	7.664	7.760	3,78	3,38		
Switzerland	2021	Montbéliarde	7.370	300	7.771	7.868	3,82	3,39	90	
Switzerland	2020	Normande	1.070	300	6.991	7.078	4,11	3,42		
Switzerland	2021	Normande	766	300	7.122	7.211	4,12	3,43	102	
Switzerland	2020	Pinzgauer	93	298	5.867	5.970	3,85	3,32		
Switzerland	2021	Pinzgauer	74	298	5.665	5.765	3,9	3,3	90	
Switzerland	2020	Red Holstein	75.345	301	8.349	8.432	4,07	3,3		
Switzerland	2021	Red Holstein	56.818	301	8.438	8.522	4,11	3,31	96	
Switzerland	2020	Simmental	20.936	300	6.015	6.090	3,97	3,37		
Switzerland	2021	Simmental	14.956	298	6.002	6.108	4	3,37	71	
Switzerland	2021	Water buffalo	176	270	2.684	2.938	7,6	4,46	80	
Taiwan	2020	Holstein	27.167			8.346	3,94	3,31	271	
Taiwan	2020	Jersey	78	319	7.168	6.854	4,87	3,73	385	
Tunisia (OEP)	2020	Alpine Brown	473	373	6.273	5.692				
Tunisia (OEP)	2020	Holstein	4.891	385	5.967	5.092				
Tunisia (OEP)	2020	Montbéliarde	115	358	6.357	5.803				
Tunisia (OEP)	2020	Tarentaise	115	329	3.898	3.737				

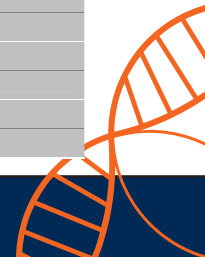


Table 4.3 - Main breeds - All recorded cows

Country	Year	Breed	Number of lactations	Length of the lactations (days)	Milk yield per recorded cow (kg)	Milk per cow in 305 days (kg)	Percent fat content	Percent protein content (%)	Average cell count	Notes
UK - England (by CIS)	2020	Alpine Brown	1.231	335	7.677	6.773	4,28	3,43		
UK - England (by CIS)	2021	Alpine Brown	1.153	332	7.720	6.814	4,29	3,42	410	
UK - England (by CIS)	2020	Ayrshire	5.558	305	7.363	6.768	4,24	3,35		
UK - England (by CIS)	2021	Ayrshire	5.621	307	7.500	6.931	4,34	3,36	407	
UK - England (by CIS)	2020	Friesian	8.813	317	6.942	6.282	4,36	3,44		
UK - England (by CIS)	2021	Friesian	10.065	312	6.767	6.203	4,4	3,43	394	
UK - England (by CIS)	2020	Guernsey	497	314	5.724	5.160	5,39	3,49		
UK - England (by CIS)	2021	Guernsey	404	320	6.026	5.407	5,09	3,55	413	
UK - England (by CIS)	2020	Holstein	252.351	327	10.064	8.892	4,07	3,25		
UK - England (by CIS)	2021	Holstein	252.004	324	10.085	8.972	4,11	3,25	403	
UK - England (by CIS)	2020	Jersey	11.751	310	6.223	5.617	5,31	3,9		
UK - England (by CIS)	2021	Jersey	12.246	310	6.325	5.704	5,28	3,89	395	
UK - England (by CIS)	2020	Montbéliarde	5.099	322	8.193	7.387	4,21	3,38		
UK - England (by CIS)	2021	Montbéliarde	5.375	317	8.201	7.460	4,22	3,38	394	
UK - England (by CIS)	2020	Other Breeds	349	333	6.848	5.815	4,4	3,39		
UK - England (by CIS)	2021	Other Breeds	415	298	5.866	5.374	4,5	3,42	392	
UK - England (by CIS)	2020	Shorthorn	5.667	311	7.591	6.982	4,21	3,41		
UK - England (by CIS)	2021	Shorthorn	6.346	315	7.550	6.939	4,21	3,42	393	
UK - Jersey Island	2020	Jersey	2.618	331	6.808	6.032	5,49	3,83		
UK - Jersey Island	2021	Jersey	2.399	324	7.154	6.448	5,51	3,85	305	

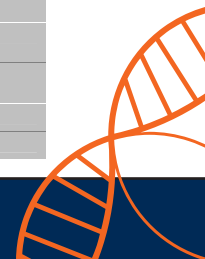


Table 4.3 - Main breeds - All recorded cows

Country	Year	Breed	Number of lactations	Length of the lactations (days)	Milk yield per recorded cow (kg)	Milk per cow in 305 days (kg)	Percent fat content (%)	Percent protein content (%)	Average cell count	Notes
UK - N. Ireland (by CIS)	2020	Alpine Brown	86	306	8.167	7.496	4,31	3,43		
UK - N. Ireland (by CIS)	2021	Alpine Brown	107	350	8.697	7.509	4,19	3,44	155	
UK - N. Ireland (by CIS)	2020	Ayrshire	1.816	309	6.953	6.436	4,1	3,34		
UK - N. Ireland (by CIS)	2021	Ayrshire	1.780	311	7.117	6.567	4,13	3,33	199	
UK - N. Ireland (by CIS)	2020	Friesian	1.859	308	7.218	6.715	4,29	3,4		
UK - N. Ireland (by CIS)	2021	Friesian	2.099	309	7.187	6.606	4,19	3,41	226	
UK - N. Ireland (by CIS)	2020	Guernsey	2	279	4.571	4.571	4,99	3,41		
UK - N. Ireland (by CIS)	2021	Guernsey	1	195	2.959	2.959	4,09	3,18	25	
UK - N. Ireland (by CIS)	2020	Holstein	82.018	323	9.059	8.062	4,08	3,29		
UK - N. Ireland (by CIS)	2021	Holstein	82.255	320	9.138	8.112	4,14	3,3	179	
UK - N. Ireland (by CIS)	2020	Jersey	548	323	6.883	6.091	5,14	3,87		
UK - N. Ireland (by CIS)	2021	Jersey	711	316	6.667	5.757	4,99	3,86	201	
UK - N. Ireland (by CIS)	2020	Montbéliarde	885	310	7.740	7.135	4,13	3,39		
UK - N. Ireland (by CIS)	2021	Montbéliarde	873	297	7.785	7.204	4,21	3,36	167	
UK - N. Ireland (by CIS)	2020	Other Breeds	400	307	7.191	6.430	4,28	3,51		
UK - N. Ireland (by CIS)	2021	Other Breeds	501	302	6.942	5.073	4,36	3,49	193	
UK - N. Ireland (by CIS)	2020	Shorthorn	382	303	7.385	6.885	4,12	3,34		
UK - N. Ireland (by CIS)	2021	Shorthorn	383	308	7.496	6.883	4,21	3,34	185	
UK - Scotland (by CIS)	2020	Alpine Brown	437	303	7.390	6.705	4,25	3,48		
UK - Scotland (by CIS)	2021	Alpine Brown	385	313	8.019	7.224	4,26	3,5	396	

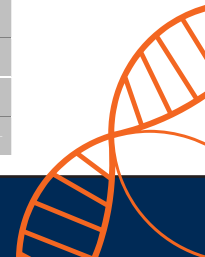


Table 4.3 - Main breeds - All recorded cows

Country	Year	Breed	Number of lactations	Length of the lactations (days)	Milk yield per recorded cow (kg)	Milk per cow in 305 days (kg)	Percent fat content (%)	Percent protein content (%)	Average cell count	Notes
UK - Scotland (by CIS)	2020	Ayrshire	7.795	313	7.860	7.205	4,21	3,32		
UK - Scotland (by CIS)	2021	Ayrshire	7.811	311	7.908	7.258	4,22	3,32	409	
UK - Scotland (by CIS)	2020	Friesian	4.983	316	7.170	6.562	4,3	3,31		
UK - Scotland (by CIS)	2021	Friesian	4.359	318	7.394	6.778	4,26	3,32	394	
UK - Scotland (by CIS)	2020	Guernsey	5	216	6.298	6.294	4,56	3,3		
UK - Scotland (by CIS)	2021	Guernsey	3	292	7.907	7.866	4,2	3,28	360	
UK - Scotland (by CIS)	2020	Holstein	104.369	327	10.058	8.910	3,96	3,18		
UK - Scotland (by CIS)	2021	Holstein	102.538	325	10.101	8.991	3,99	3,19	405	
UK - Scotland (by CIS)	2020	Jersey	3.845	309	6.214	5.694	5,6	4		
UK - Scotland (by CIS)	2021	Jersey	4.519	305	6.414	5.909	5,57	4,03	394	
UK - Scotland (by CIS)	2020	Montbéliarde	3.055	309	8.182	7.544	4,32	3,37		
UK - Scotland (by CIS)	2021	Montbéliarde	3.310	306	8.060	7.529	4,33	3,39	384	
UK - Scotland (by CIS)	2020	Other Breeds	182	303	6.919	6.399	4,14	3,36		
UK - Scotland (by CIS)	2021	Other Breeds	191	288	6.732	6.330	4,06	3,33	396	
UK - Scotland (by CIS)	2020	Shorthorn	791	301	7.546	7.088	4,37	3,37		
UK - Scotland (by CIS)	2021	Shorthorn	941	296	7.487	7.091	4,34	3,41	384	
UK - Wales (by CIS)	2020	Alpine Brown	329	341	7.839	6.767	4,37	3,4		
UK - Wales (by CIS)	2021	Alpine Brown	406	344	7.854	6.762	4,3	3,4	436	
UK - Wales (by CIS)	2020	Ayrshire	519	319	6.390	5.795	4,25	3,33		
UK - Wales (by CIS)	2021	Ayrshire	493	316	6.234	5.647	4,37	3,33	421	
UK - Wales (by CIS)	2020	Friesian	2.194	307	6.153	5.660	4,22	3,52		
UK - Wales (by CIS)	2021	Friesian	2.086	318	6.648	5.792	4,23	3,5	389	

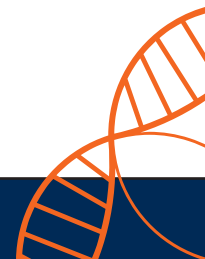


Table 4.3 - Main breeds - All recorded cows

Country	Year	Breed	Number of lactations	Length of the lactations (days)	Milk yield per recorded cow (kg)	Milk per cow in 305 days (kg)	Percent fat content (%)	Percent protein content (%)	Average cell count	Notes
UK - Wales (by CIS)	2020	Guernsey	128	378	5.399	4.554	4,44	3,47		
UK - Wales (by CIS)	2021	Guernsey	104	335	5.035	4.440	4,46	3,45	473	
UK - Wales (by CIS)	2020	Holstein	40.105	332	9.558	8.450	4,09	3,24		
UK - Wales (by CIS)	2021	Holstein	42.183	327	9.432	8.415	4,17	3,26	408	
UK - Wales (by CIS)	2020	Jersey	1.186	312	6.163	5.645	4,87	3,76		
UK - Wales (by CIS)	2021	Jersey	1.238	305	5.893	5.484	4,98	3,79	397	
UK - Wales (by CIS)	2020	Montbéliarde	174	341	8.454	7.291	4,57	3,43		
UK - Wales (by CIS)	2021	Montbéliarde	258	368	7.973	6.675	4,43	3,34	399	
UK - Wales (by CIS)	2020	Other Breeds	35	365	7.638	6.284	5,03	3,56		
UK - Wales (by CIS)	2021	Other Breeds	51	363	7.242	5.962	4,73	3,52	409	
UK - Wales (by CIS)	2020	Shorthorn	415	291	5.975	5.659	4,03	3,41		
UK - Wales (by CIS)	2021	Shorthorn	621	296	7.010	6.640	4,2	3,4	373	

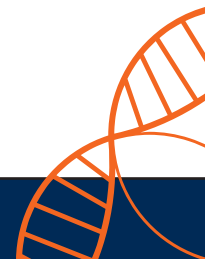


Table 4.4 - Main breeds - Cows in herdbook

Country	Year	Breed	Number of lactations	Length of the lactations (days)	Milk yield per recorded cow (kg)	Milk per cow in 305 days (kg)	Percent fat content (%)	Percent protein content (%)	Average cell count	Notes
Australia (DataGene Limited)	2020	Holstein	36.700	344	8.367	8.367	3,74	3,18		
Australia (DataGene Limited)	2021	Holstein	35.642	346	8.416	8.416	3,85	3,2		
Australia (DataGene Limited)	2020	Jersey	10.018	333	5.783	5.783	4,86	3,74		
Australia (DataGene Limited)	2021	Jersey	9.577	333	5.911	5.911	4,92	3,74		
Austria	2020	Brown Swiss	33.964			7.649	4,16	3,53		
Austria	2021	Brown Swiss	32.070			7.594	4,18	3,54		
Austria	2020	Fleckvieh	259.422			7.893	4,16	3,44		
Austria	2021	Fleckvieh	259.881			7.801	4,17	3,44		
Austria	2020	Grauvieh	2.746			5.109	3,9	3,36		
Austria	2021	Grauvieh	2.663			5.172	3,91	3,37		
Austria	2020	Holstein	38.166			9.206	4,07	3,33		
Austria	2021	Holstein	38.385			9.168	4,09	3,33		
Austria	2020	Pinzgauer	5.630			5.982	3,88	3,3		
Austria	2021	Pinzgauer	5.622			6.014	3,91	3,3		
Belgium (Flemish Region by CRV)	2021	Black and White	57.150	347	10.795	9.865	4,19	3,48		828 kgs fat+protein
Czech Rep.	2020	Fleckvieh	108.293	294	7.824	8.042	4,03	3,58		
Czech Rep.	2021	Fleckvieh	107.133	294	7.953	8.175	4,01	3,53		
Czech Rep.	2020	Holstein	177.949	297	10.267	10.474	3,9	3,41		
Czech Rep.	2021	Holstein	178.580	297	10.463	10.674	3,86	3,37		
Denmark ¹	2020	Holstein	357.989	366	11.182		4,07	3,51		
Denmark ¹	2021	Holstein	350.043	365	11.209		4,1	3,52	216	
Denmark ¹	2020	Jersey	66.775		7.545		5,97	4,27		
Denmark ¹	2021	Jersey	67.073	365	7.564		5,98	4,3	219	
Denmark ¹	2020	Red Nordic	26.740		9.736		4,37	3,68		
Denmark ¹	2021	Red Nordic	25.548	365	9.715		4,4	3,7	272	

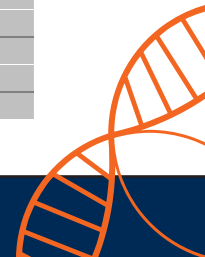
¹ Numbers expressed as 365/366 days rolling average

Table 4.4 - Main breeds - Cows in herdbook

Country	Year	Breed	Number of lactations	Length of the lactations (days)	Milk yield per recorded cow (kg)	Milk per cow in 305 days (kg)	Percent fat content (%)	Percent protein content (%)	Average cell count	Notes
Estonia	2020	Holstein	64.174	334	10.793	10.546	3,79	3,34		
Estonia	2021	Holstein	65.247	332	10.872	10.630	3,81	3,34		
Estonia	2020	Red	10.238	331	9.260	9.214	4,03	3,44		
Estonia	2021	Red	9.432	330	9.280	9.200	4,04	3,46		
Finland	2020	Ayrshire	29.033	305		10.029	4,42	3,61		
Finland	2021	Ayrshire	30.075	305		9.849	4,46	3,63		
Finland	2021	Brown	99	305		10.653	4,26	3,54		
Finland	2020	Finnish Cattle	942	305		6.472	4,34	3,43		
Finland	2020	Holstein	35.204	305		11.171	4,16	3,5		
Finland	2020	Jersey	261	305		8.145	5,36	3,98		
France ²	2020	Abondance	23.727	300	5.585	5.771	3,61	3,46		
France ²	2021	Abondance	23.460	305	5.742	5.933	3,62	3,46		
France ²	2020	Alpine Brown	16.162	347	7.692	7.423	4,16	3,58		
France ²	2021	Alpine Brown	16.098	353	7.850	7.572	4,19	3,6		
France ²	2020	Holstein	1.432.267	348	9.495	9.284	3,99	3,35		
France ²	2021	Holstein	1.323.367	353	9.704	9.518	4,01	3,35		
France ²	2020	Jersiaise	10.398	332	5.215	5.151	5,53	4,03		
France ²	2021	Jersiaise	11.151	336	5.302	5.250	5,53	4,03		
France ²	2020	Montbéliarde	404.093	317	7.503	7.604	3,87	3,48		
France ²	2021	Montbéliarde	392.247	324	7.719	7.832	3,89	3,49		
France ²	2020	Normande	166.515	333	6.835	6.845	4,21	3,63		
France ²	2021	Normande	154.455	339	7.011	7.028	4,21	3,64		
France ²	2020	Pie Rouge des Plaines	8.702	338	8.124	8.064	4,27	3,5		
France ²	2021	Pie Rouge des Plaines	8.311	343	8.286	8.239	4,26	3,52		

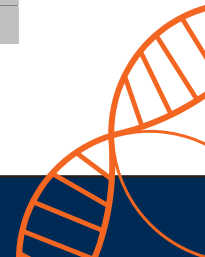
² Milk in 305 days is adjusted to adult level.

Table 4.4 - Main breeds - Cows in herdbook

Country	Year	Breed	Number of lactations	Length of the lactations (days)	Milk yield per recorded cow (kg)	Milk per cow in 305 days (kg)	Percent fat content (%)	Percent protein content (%)	Average cell count	Notes
France ³	2020	Simmental	15.571	316	6.657	6.812	4,01	3,55		
France ³	2021	Simmental	15.556	319	6.755	6.948	4,02	3,55		
France ³	2020	Tarentaise	8.672	281	4.352	4.647	3,68	3,42		
France ³	2021	Tarentaise	8.597	289	4.481	4.764	3,68	3,42		
Germany (BRS)	2020	Braunvieh	121.663	319	7.772	7.703	4,25	3,62		
Germany (BRS)	2021	Braunvieh	117.385	319	7.769	7.681	4,29	3,64		
Germany (BRS)	2020	Fleckvieh	717.601	320	8.263	7.998	4,19	3,54		
Germany (BRS)	2021	Fleckvieh	709.441	319	8.227	8.055	4,21	3,54		
Germany (BRS)	2020	Holstein - Rotbunt	150.168	325	9.315	9.126	4,15	3,5		
Germany (BRS)	2021	Holstein - Rotbunt	145.524	324	9.395	9.284	4,16	3,5		
Germany (BRS)	2020	Holstein - Schwarzbunt	1.612.255	325	10.037	9.793	4,04	3,45		
Germany (BRS)	2021	Holstein - Schwarzbunt	1.566.328	324	10.079	9.933	4,05	3,45		
Hungary (by NEBIH)	2020	Ayrshire	32	296		8.633	3,97	3,43		
Hungary (by NEBIH)	2020	Brown Swiss	188	298		8.320	3,94	3,56		
Hungary (by NEBIH)	2020	Holstein	134.071	298		10.448	3,66	3,33		
Hungary (by NEBIH)	2020	Jersey	425	296		7.120	5,02	3,91		
Hungary (by NEBIH)	2020	Norwegian Red	5	281		6.666	3,16	3,42		
Hungary (by NEBIH)	2020	Red Spotted (Fleckvieh)	3.533	294		7.089	3,96	3,55		
Hungary (by NEBIH)	2020	Swedish Red	117	295		9.930	3,87	3,45		
Iceland ⁴	2020	Icelandic Cattle	25.649	365	6.384		4,26	3,43	253	
Iceland ⁴	2021	Icelandic Cattle	25.383	365	6.336		4,2	3,39	261	
Italy (AIA) ⁵	2020	Alpine Brown	40.554	305	7.649	7.649	4,03	3,6		

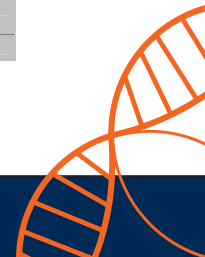
³ Milk in 305 days is adjusted to adult level.⁴ Numbers expressed as 365/366 day rolling average⁵ Numbers expressed as 365/366 day rolling average

Table 4.4 - Main breeds - Cows in herdbook

Country	Year	Breed	Number of lactations	Length of the lactations (days)	Milk yield per recorded cow (kg)	Milk per cow in 305 days (kg)	Percent fat content (%)	Percent protein content (%)	Average cell count	Notes
Italy (AIA) ⁵	2021	Alpine Brown	41.511	305	7.777	7.777	4,04	3,61		
Italy (AIA) ⁵	2020	Alpine Grey	6.122	305	5.316	5.316	3,73	3,37		
Italy (AIA) ⁵	2021	Alpine Grey	6.317	305	5.373	5.373	3,76	3,37		
Italy (AIA) ⁵	2020	Friesian	654.829	305	10.017	10.017	3,79	3,33		
Italy (AIA) ⁵	2021	Friesian	685.522	305	10.285	10.285	3,82	3,33		
Italy (AIA) ⁵	2020	Red Spotted	39.216	305	7.225	7.225	3,89	3,43		
Italy (AIA) ⁵	2022	Red Spotted	41.401	305	7.353	7.353	3,91	3,43		
Italy (AIA) ⁵	2020	Valdostana Red Spotted	9.579	305	3.753	3.753	3,4	3,3		
Italy (AIA) ⁵	2021	Valdostana Red Spotted	10.133	305	3.843	3.843	3,5	3,31		
Japan	2020	Holstein	314.447	364	11.139	10.025	3,94	3,35		
Japan	2020	Jersey	2.422	348	7.009	6.570	5,07	3,97		
Latvia	2020	Alpine Brown	11.080	340		7.099	4,3	3,39		
Latvia	2021	Alpine Brown	13.851	378		7.030	4,27	3,39		
Latvia	2020	Blue	182	332		5.299	4,37	3,38		
Latvia	2021	Blue	219	370		5.303	4,31	3,39		
Latvia	2020	Holstein	33.063	348		9.385	3,93	3,3		
Latvia	2021	Holstein	49.476	376		9.215	3,88	3,29		
Netherlands (by CRV)	2020	Black & White	589.930	358	10.688	9.611	4,34	3,56		844 kgs fat+protein
Netherlands (by CRV)	2021	Black & White	588.280	357	10.775	9.684	4,35	3,58		854 kgs fat+protein
Netherlands (by CRV)	2020	Meuse Rhinhe Issel	5.904	341	7.367	6.881	4,55	3,75		611 kgs fat+protein
Netherlands (by CRV)	2021	Meuse Rhinhe Issel	5.583	345	7.503	6.965	4,57	3,75		624 kgs fat+protein
Netherlands (by CRV)	2020	Red and White	120.718	356	9.838	8.923	4,54	3,67		808 kgs fat+protein
Netherlands (by CRV)	2021	Red and White	117.942	356	9.933	9.000	4,56	3,67		817 kgs fat+protein
Poland	2020	Black and White	1.404	305	4.751	4.751	4,08	3,25		
Poland	2021	Black and White	1.349	305	4.727	4.727	4,16	3,26		

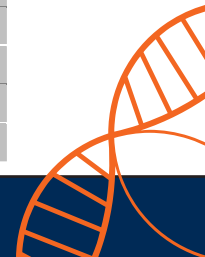


Table 4.4 - Main breeds - Cows in herdbook

Country	Year	Breed	Number of lactations	Length of the lactations (days)	Milk yield per recorded cow (kg)	Milk per cow in 305 days (kg)	Percent fat content (%)	Percent protein content (%)	Average cell count	Notes
Poland	2020	Brown Swiss	245	305	6.470	6.470	4,27	3,48		
Poland	2021	Brown Swiss	248	305	7.024	7.024	4,4	3,47		
Poland	2020	Holstein	511.265	305	8.952	8.952	3,96	3,33		
Poland	2021	Holstein	512.473	305	9.013	9.013	4,01	3,34		
Poland	2020	Jersey	764	305	6.655	6.655	5,06	3,84		
Poland	2021	Jersey	733	305	6.499	6.499	5,14	3,82		
Poland	2020	Montbéliarde	2.718	305	8.122	8.122	3,98	3,48		
Poland	2021	Montbéliarde	2.503	305	8.040	8.040	4,09	3,48		
Poland	2020	Red	2.330	305	3.661	3.661	4,25	3,35		
Poland	2021	Red	2.232	305	3.654	3.654	4,23	3,33		
Poland	2020	Red and White	3.247	305	4.472	4.472	4,09	3,23		
Poland	2021	Red and White	3.378	305	4.406	4.406	4,11	3,23		
Poland	2020	Red Holstein	22.033	305	8.076	8.076	4,08	3,38		
Poland	2021	Red Holstein	21.535	305	8.118	8.118	4,14	3,38		
Poland	2020	Simmental	7.315	305	6.366	6.366	4,12	3,42		
Poland	2021	Simmental	7.149	305	6.367	6.367	4,13	3,42		
Portugal (by ANABLE)	2020	Holstein	90.975	347	10.919	9.948	3,74	3,31		
Romania (Asociatia Generala a Crescatorilor de Taurine)	2021	Holstein	9.157	347	7.088	6.750	3,79	3,44		
Romania (Simmental Assoc.)	2020	Montbéliarde	1.952	370	8.459	8.460	3,53	3,32		
Romania (Simmental Assoc.)	2021	Montbéliarde	1.704	353	7.368	7.374	3,8	3,52		
Romania (Simmental Assoc.)	2020	Simmental	110.545	350	6.186	6.354	3,72	3,29		
Romania (Simmental Assoc.)	2021	Simmental	77.106	338	5.717	5.889	3,9	3,39		

Table 4.4 - Main breeds - Cows in herdbook

Country	Year	Breed	Number of lactations	Length of the lactations (days)	Milk yield per recorded cow (kg)	Milk per cow in 305 days (kg)	Percent fat content (%)	Percent protein content (%)	Average cell count	Notes
Serbia ⁶	2020	Brown swiss	50	353	8.760	8.251	4,16	3,38		
Serbia ⁶	2020	Holstein Friesian	29.286	371	8.302	7.165	3,84	3,25		
Serbia ⁶	2020	Simmental	8.782	349	6.978	6.302	3,91	3,31		
Slovenia	2020	Brown	7.772	382	7.276	6.130	4,1	3,46		
Slovenia	2020	Holstein	33.949	379	9.838	8.403	3,94	3,31		
Slovenia	2020	Simmental	5.712	364	8.064	7.098	4,08	3,46		
South Africa (by ARC)	2020	Ayrshire	1.364	263	7.070	8.901	4,17	3,4		
South Africa (by ARC)	2020	Guernsey	158	314	6.691	7.054	4,38	3,57		
South Africa (by ARC)	2020	Holstein	13.811	287	10.581	11.919	3,85	3,29		
South Africa (by ARC)	2020	Jersey	10.718	321	6.095	6.149	5,13	3,87		
South Korea (by DCIC Centre)	2020	Holstein	144.568	400		10.423	3,95	3,21	202	
South Korea (by DCIC Centre)	2021	Holstein	146.060	396		10.412	3,98	3,22	193	
Spain	2020	Alpine Brown	1.370	365	9.116	7.524	3,85	3,58	341	
Spain	2021	Alpine Brown	1.172	373	9.286	7.690	3,84	3,66	341	
Spain	2020	Friesian	344.447	370	12.525	10.690	3,72	3,24	296	
Spain	2021	Friesian	352.187	369	12.612	10.786	3,75	3,27	283	
Spain	2020	Pasiega	45	336			3,3	3,12		
Spain	2021	Pasiega	34	340			3,43	3,19		
Switzerland	2020	Braunvieh	110.237	301	7.307	7.380	4,02	3,42		
Switzerland	2021	Braunvieh	108.821	301	7.331	7.404	4,04	3,43	102	
Switzerland	2020	Eringer	391		3.428		3,75	3,36		
Switzerland	2021	Eringer	391		3.428		3,75	3,36		
Switzerland	2020	Evolener	52	291	3.212	3.327	3,69	3,34		
Switzerland	2021	Evolener	28	295	3.093	3.171	3,75	3,43	98	

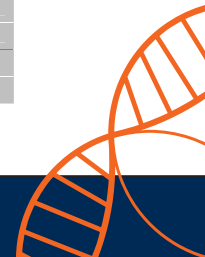
⁶ Data relating to the region AP Vojvodina in Serbia

Table 4.4 - Main breeds - Cows in herdbook

Country	Year	Breed	Number of lactations	Length of the lactations (days)	Milk yield per recorded cow (kg)	Milk per cow in 305 days (kg)	Percent fat content (%)	Percent protein content (%)	Average cell count	Notes
Switzerland	2020	Fleckvieh	59.292	300	7.170	7.260	4,12	3,32		
Switzerland	2021	Fleckvieh	45.569	300	7.192	7.282	4,16	3,33	81	
Switzerland	2020	Grauvieh	453	297	4.555	4.647	3,78	3,24		
Switzerland	2021	Grauvieh	109	297	4.555	4.647	3,81	3,24	99	
Switzerland	2020	Hinterwälder	107	296	3.746	3.831	3,99	3,33		
Switzerland	2021	Hinterwälder	109	294	3.504	3.602	4,01	3,31	113	
Switzerland	2020	Holstein	91.811	302	8.950	9.017	4,02	3,26		
Switzerland	2021	Holstein	83.109	302	9.086	9.163	4,05	3,26	96	
Switzerland	2020	Jersey	3.558	300	6.058	6.134	5,13	3,84		
Switzerland	2021	Jersey	3.683	300	6.083	6.159	5,18	3,87	109	
Switzerland	2020	Montbéliarde	9.395	300	7.664	7.760	3,78	3,38		
Switzerland	2021	Montbéliarde	7.370	300	7.771	7.868	3,82	3,39	90	
Switzerland	2020	Normande	1.070	300	6.991	7.078	4,11	3,42		
Switzerland	2021	Normande	766	300	7.122	7.211	4,12	3,43	102	
Switzerland	2020	Pinzgauer	93	298	5.867	5.970	3,85	3,32		
Switzerland	2021	Pinzgauer	74	298	5.665	5.765	3,9	3,3	90	
Switzerland	2020	Red Holstein	75.345	301	8.349	8.432	4,07	3,3		
Switzerland	2021	Red Holstein	56.818	301	8.438	8.522	4,11	3,31	96	
Switzerland	2020	Simmental	20.936	300	6.015	6.090	3,97	3,37		
Switzerland	2021	Simmental	14.956	298	6.002	6.108	4	3,37	71	
Switzerland	2021	Water buffalo	176	270	2.684	2.938	7,6	4,46	80	
Tunisia (OEP)	2020	Alpine Brown	473	373	6.273	5.692				
Tunisia (OEP)	2020	Holstein	4.891	385	5.967	5.092				
Tunisia (OEP)	2020	Montbéliarde	115	358	6.357	5.803				
Tunisia (OEP)	2020	Tarentaise	115	329	3.898	3.737				
UK - England (by CIS)	2020	Ayrshire	4.743	305	7.299	6.707	4,23	3,37		
UK - England (by CIS)	2021	Ayrshire	4.735	308	7.513	6.947	4,33	3,35	242	

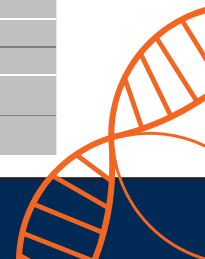


Table 4.4 - Main breeds - Cows in herdbook

Country	Year	Breed	Number of lactations	Length of the lactations (days)	Milk yield per recorded cow (kg)	Milk per cow in 305 days (kg)	Percent fat content (%)	Percent protein content (%)	Average cell count	Notes
UK - England (by CIS)	2020	Brown	264	335	8.531	7.478	4,32	3,52		
UK - England (by CIS)	2021	Brown	255	329	8.361	7.329	4,35	3,51	287	
UK - England (by CIS)	2020	Friesian	2.973	315	7.081	6.467	4,18	3,4		
UK - England (by CIS)	2021	Friesian	3.326	314	7.214	6.617	4,22	3,39	202	
UK - England (by CIS)	2020	Guernsey	391	316	5.852	5.245	5,47	3,49		
UK - England (by CIS)	2021	Guernsey	295	321	6.278	5.597	5,11	3,56	293	
UK - England (by CIS)	2020	Holstein	171.793	327	10.505	9.279	4,05	3,21		
UK - England (by CIS)	2021	Holstein	169.876	325	10.533	9.347	4,1	3,23	221	
UK - England (by CIS)	2020	Jersey	6.762	323	6.750	5.975	5,52	3,92		
UK - England (by CIS)	2021	Jersey	6.728	323	6.826	6.044	5,54	3,92	236	
UK - England (by CIS)	2020	Montbéliarde	653	321	7.216	6.447	4,13	3,37		
UK - England (by CIS)	2021	Montbéliarde	630	312	7.527	6.764	3,96	3,36	231	
UK - Jersey Island	2020	Jersey	2.616	331	6.808	6.033	5,49	3,83		
UK - Jersey Island	2021	Jersey	2.399	324	7.154	6.448	5,51	3,85	305	
UK - N. Ireland (by CIS)	2020	Ayrshire	1.472	310	6.931	6.415	4,13	3,34		
UK - N. Ireland (by CIS)	2021	Ayrshire	1.388	313	7.131	6.595	4,15	3,34	190	
UK - N. Ireland (by CIS)	2020	Brown	28	305	8.380	7.763	4,61	3,5		
UK - N. Ireland (by CIS)	2021	Brown	30	374	9.582	8.143	4,36	3,52	164	
UK - N. Ireland (by CIS)	2020	Friesian	439	331	7.571	7.021	4,44	3,43		
UK - N. Ireland (by CIS)	2021	Friesian	492	320	7.402	6.933	4,47	3,43	257	

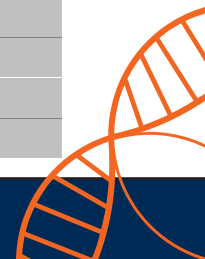


Table 4.4 - Main breeds - Cows in herdbook

Country	Year	Breed	Number of lactations	Length of the lactations (days)	Milk yield per recorded cow (kg)	Milk per cow in 305 days (kg)	Percent fat content (%)	Percent protein content (%)	Average cell count	Notes
UK - N. Ireland (by CIS)	2020	Holstein	43.279	326	9.791	8.693	4,06	3,28		
UK - N. Ireland (by CIS)	2021	Holstein	43.877	319	9.785	8.709	4,13	3,3	179	
UK - N. Ireland (by CIS)	2020	Jersey	213	349	7.530	6.310	5,4	3,93		
UK - N. Ireland (by CIS)	2021	Jersey	241	364	7.704	6.353	5,46	3,92	240	
UK - N. Ireland (by CIS)	2020	Montbéliarde	13	316	7.861	6.957	3,91	3,26		
UK - N. Ireland (by CIS)	2021	Montbéliarde	9	338	7.418	6.892	4,31	3,6	131	
UK - Scotland (by CIS)	2020	Ayrshire	6.052	310	8.057	7.422	4,2	3,31		
UK - Scotland (by CIS)	2021	Ayrshire	6.189	310	8.082	7.431	4,21	3,32	241	
UK - Scotland (by CIS)	2020	Brown	309	307	7.206	6.547	4,25	3,51		
UK - Scotland (by CIS)	2021	Brown	254	317	7.883	7.114	4,26	3,56	283	
UK - Scotland (by CIS)	2020	Friesian	555	311	7.526	7.088	4,22	3,34		
UK - Scotland (by CIS)	2021	Friesian	562	310	7.462	7.002	4,16	3,38	212	
UK - Scotland (by CIS)	2021	Guernsey	0							
UK - Scotland (by CIS)	2020	Holstein	55.984	327	10.579	9.360	3,96	3,18		
UK - Scotland (by CIS)	2021	Holstein	55.310	325	10.627	9.440	4,01	3,22	222	
UK - Scotland (by CIS)	2020	Jersey	1.772	336	7.277	6.429	5,76	3,97		
UK - Scotland (by CIS)	2021	Jersey	2.430	321	6.932	6.207	5,85	4,03	210	
UK - Scotland (by CIS)	2020	Montbéliarde	49	298	7.520	7.252	4,38	3,46		
UK - Scotland (by CIS)	2021	Montbéliarde	68	309	7.136	6.577	4,35	3,42	132	
UK - Wales (by CIS)	2020	Ayrshire	419	318	6.693	6.071	4,28	3,33		
UK - Wales (by CIS)	2021	Ayrshire	375	323	6.824	6.163	4,38	3,33	271	

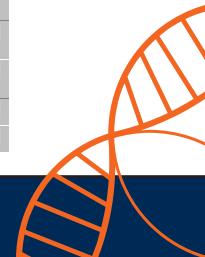


Table 4.4 - Main breeds - Cows in herdbook

Country	Year	Breed	Number of lactations	Length of the lactations (days)	Milk yield per recorded cow (kg)	Milk per cow in 305 days (kg)	Percent fat content (%)	Percent protein content (%)	Average cell count	Notes
UK - Wales (by CIS)	2020	Brown	260	337	7.664	6.677	4,3	3,37		
UK - Wales (by CIS)	2021	Brown	311	339	7.650	6.657	4,24	3,38	301	
UK - Wales (by CIS)	2020	Friesian	651	294	5.865	5.502	4,23	3,4		
UK - Wales (by CIS)	2021	Friesian	606	305	6.281	5.956	4,28	3,44	259	
UK - Wales (by CIS)	2020	Guernsey	116	383	5.322	4.437	4,42	3,47		
UK - Wales (by CIS)	2021	Guernsey	97	331	4.948	4.372	4,44	3,45	185	
UK - Wales (by CIS)	2020	Holstein	32.423	333	9.806	8.691	4,08	3,21		
UK - Wales (by CIS)	2021	Holstein	34.222	328	9.694	8.648	4,14	3,24	238	
UK - Wales (by CIS)	2020	Jersey	345	340	6.481	5.678	5,71	3,68		
UK - Wales (by CIS)	2021	Jersey	372	331	6.318	5.584	5,53	3,76	268	
UK - Wales (by CIS)	2020	Montbéliarde	3	370	8.875	7.513	4,91	3,53		
UK - Wales (by CIS)	2021	Montbéliarde	1	382	9.464	8.074	4,15	3,36	111	

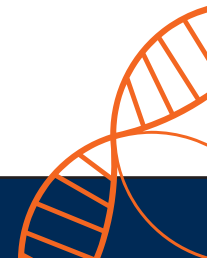


Table 5 - Health, fertility and longevity

Country	Breed	Year	Avg. age at 1st calving, days	Avg. calving interval, days	Cows alive at 200 DIM, %	Avg. age at culling, d	Avg. lactation nr at culling	Avg. milk yield per day of life, kg	Avg. lifetime yield, kg milk	Notes
Austria	All recorded cows	2020		393						
Austria	All recorded cows	2021		393						
Belgium (Flemish Region by CRV)	All recorded cows	2020	781	405		1.904	3	29,7	28.879	2204 kgs f+p lifetime
Belgium (Flemish Region by CRV)	All recorded cows	2021	777	405		1.905	3	30	29.397	2258 kgs fat+protein
Belgium (Wallonia)	All recorded cows	2020		411						
Belgium (Wallonia)	All recorded cows	2021		411						
Belgium (Wallonia)	Blanc-Bleu Belge	2020		380						
Belgium (Wallonia)	Blanc-Bleu Belge	2021		380						
Belgium (Wallonia)	Holstein	2020		413						
Belgium (Wallonia)	Holstein	2021		413						
Belgium (Wallonia)	Jersey	2021								
Belgium (Wallonia)	Montbéliarde	2020		404						
Belgium (Wallonia)	Montbéliarde	2021		404						
Belgium (Wallonia)	Normande	2020		407						
Belgium (Wallonia)	Normande	2021		407						
Belgium (Wallonia)	Red Holstein	2020		411						
Belgium (Wallonia)	Red Holstein	2021		411						
Belgium (Wallonia)	Rouge-Pie Est de la Belgique	2020		380						
Belgium (Wallonia)	Rouge-Pie Est de la Belgique	2021		380						
Canada	All recorded cows	2020		415						
Canada	All recorded cows	2021		419						

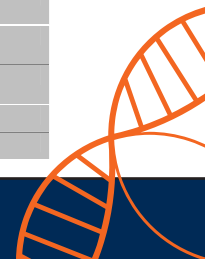


Table 5 - Health, fertility and longevity

Country	Breed	Year	Avg. age at 1st calving, days	Avg. calving interval, days	Cows alive at 200 DIM, %	Avg. age at culling, d	Avg. lactation nr at culling	Avg. milk yield per day of life, kg	Avg. lifetime yield, kg milk	Notes
Croatia	All recorded cows	2020	830	444		2.604				
Croatia	All recorded cows	2021	836	446		2.637				
Croatia	Brown	2020	959	464		3.379				
Croatia	Brown	2021	967	467		3.538				
Croatia	Holstein	2020	788	450		1.978				
Croatia	Holstein	2021	775	441		1.983				
Croatia	Simmental	2020	840	441		2.800				
Croatia	Simmental	2021	848	446		2.806				
Czech Rep.	All recorded cows	2020		397						
Czech Rep.	All recorded cows	2021		394						
Czech Rep.	Fleckvieh	2020		392						
Czech Rep.	Fleckvieh	2021		389						
Czech Rep.	Holstein	2020		400						
Czech Rep.	Holstein	2021		397						
Denmark	Holstein	2021	757							
Denmark	Jersey	2021	717							
Denmark	Red Danish	2021	769							
Estonia	All recorded cows	2020		403		1.848		15,6	28.888	
Estonia	All recorded cows	2021	755	399		1.841	3,1	16,1	29.658	
Estonia	Estonian Holstein	2020		403		1.813		15,9	28.761	
Estonia	Estonian Holstein	2021	750	399		1.800	3	16,4	29.466	
Estonia	Estonian Red	2020		406		2.054		14,6	29.897	
Estonia	Estonian Red	2021	790	404		2.091	3,5	15	31.382	
Finland	All recorded cows	2020	774	405	86	1.933	3,2	13,4	29.503	
Finland	All recorded cows	2021	768	402	85	1.952	3,3	16,2	31.644	
Finland	Ayrshire	2020	779	404	85	1.964	3,3	12,9	28.711	
Finland	Ayrshire	2021	776	402	85	1.992	3,4	15,5	30.734	
Finland	Brown	2020	787	403	82	1.513	2,2	9,8	18.013	
Finland	Brown	2021	775	413	84	1.515	2,3	12	17.366	

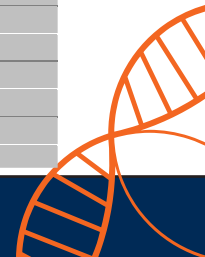


Table 5 - Health, fertility and longevity

Country	Breed	Year	Avg. age at 1st calving, days	Avg. calving interval, days	Cows alive at 200 DIM, %	Avg. age at culling, d	Avg. lactation nr at culling	Avg. milk yield per day of life, kg	Avg. lifetime yield, kg milk	Notes
Finland	Eastern Finnish	2020	813	397	78	1.985	3,1	4,9	11.233	
Finland	Eastern Finnish	2021	832	387	82	2.009	3,1	6	12.073	
Finland	Guernsey	2021	758	379	86	983	1,2	6,2	2.373	
Finland	Holstein	2020	769	406	86	1.905	3,2	14,2	30.792	
Finland	Holstein	2021	762	402	86	1.922	3,2	17,1	32.961	
Finland	Jersey	2020	798	402	84	1.664	2,7	9,3	18.413	
Finland	Jersey	2021	789	400	85	1.858	3,1	12,6	23.284	
Finland	Montbéliarde	2020	737	384	88	1.060	1,4	6,2	8.042	
Finland	Montbéliarde	2021	753	391	86	1.203	1,7	10,4	12.606	
Finland	Northern Finnish	2020	792	408	81	1.993	3,3	6,7	15.928	
Finland	Northern Finnish	2021	819	400	81	1.837	3,1	8,2	15.042	
Finland	Western Finnish	2020	815	405	82	1.918	3,1	8,6	19.973	
Finland	Western Finnish	2021	796	400	82	1.906	3,1	10,4	19.873	
France	Abondance	2020		406						
France	Brune	2020		428						
France	Jersiaise	2020		413						
France	Montbéliarde	2020		401						
France	Normande	2020		408						
France	Pie Rouge des Plaines	2020		412						
France	Prim Holstein	2020		420						
France	Simmental Francaise	2020		397						
France	Tarentaise	2020		402						
Germany (BRS)	All recorded cows	2020		407						
Germany (BRS)	All recorded cows	2021		407						
Germany (BRS)	Braunvieh	2020		418						
Germany (BRS)	Braunvieh	2021		419						
Germany (BRS)	Fleckvieh	2020		394						
Germany (BRS)	Fleckvieh	2021		394						
Germany (BRS)	Holstein - Rotbunt	2020		413						

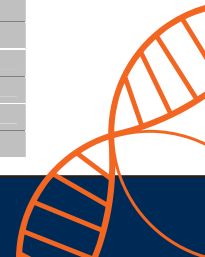


Table 5 - Health, fertility and longevity

Country	Breed	Year	Avg. age at 1st calving, days	Avg. calving interval, days	Cows alive at 200 DIM, %	Avg. age at culling, d	Avg. lactation nr at culling	Avg. milk yield per day of life, kg	Avg. lifetime yield, kg milk	Notes
Germany (BRS)	Holstein - Rotbunt	2021		415						
Germany (BRS)	Holstein - Schwarzbunt	2020		412						
Germany (BRS)	Holstein - Schwarzbunt	2021		412						
Iceland	Icelandic Cattle	2020	825	394		1.839	2,9		16.583	
Iceland	Icelandic Cattle	2021	819	394		1.865	2,9		17.475	
Ireland	All recorded cows	2020		384						
Japan	All recorded cows	2020		431						
Japan	Holstein	2020		431						
Japan	Jersey	2020		421						
Luxembourg	All recorded cows	2020		417						
Luxembourg	All recorded cows	2021		418						
Luxembourg	Holstein - Rotbunt	2020		415						
Luxembourg	Holstein - Rotbunt	2021		418						
Luxembourg	Holstein - Schwarzbunt	2020		419						
Luxembourg	Holstein - Schwarzbunt	2021		420						
Netherlands (by CRV)	All recorded cows	2020	776	407		2.132	3,6	28,7	34.000	2691 kgs fat + protein lifetime
Netherlands (by CRV)	All recorded cows	2021	774	408		2.180	3,7	29	35.624	2826 kgs fat+protein
Netherlands (by CRV) ¹	Holstein R&W	2020	776	407		2.132	3,6	28,7	34.000	
Netherlands (by CRV) ¹	Meuse Rhinhe Issel	2020	776	407		2.132	3,6	28,7	34.000	
Netherlands (by CRV) ¹	Holstein R&W	2021	774	408		2.180	3,7	29	35.624	
Netherlands (by CRV) ¹	Meuse Rhinhe Issel	2021	774	408		2.180	3,7	29	35.624	
New Zealand (by DairyNZ)	All recorded cows	2020		369						
New Zealand (by LIC)	All recorded cows	2020		369						

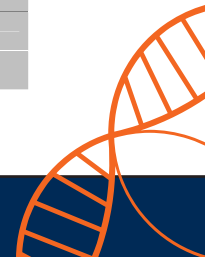
¹ Averages are calculated over all breeds

Table 5 - Health, fertility and longevity

Country	Breed	Year	Avg. age at 1st calving, days	Avg. calving interval, days	Cows alive at 200 DIM, %	Avg. age at culling, d	Avg. lactation nr at culling	Avg. milk yield per day of life, kg	Avg. lifetime yield, kg milk	Notes
Norway	All recorded cows	2020	783		85	1.648	2,7	10	18.932	
Norway	Holstein	2020	790	390	80	1.511	2,3	10,8	19.233	
Norway	Jersey	2020	763	397	87	1.654	2,6	7,8	14.957	
Norway	Norwegian Red	2020	782	378	86	1.655	2,7	10	19.015	
Poland	All recorded cows	2020		430						
Poland	All recorded cows	2021	841	426						
Poland	Black & White	2021	908	429						
Poland	Holstein Friesian	2021	796	427						
Poland	Holstein R&W	2021	808	423						
Poland	Jersey	2020		419						
Poland	Jersey	2021	795	414						
Poland	Montbéliarde	2020		416						
Poland	Montbéliarde	2021	874	419						
Poland	Polish Black-White	2020		444						
Poland	Polish Holstein Friesian (HO)	2020		432						
Poland	Polish Holstein Friesian (RW)	2020		427						
Poland	Polish Red	2020		428						
Poland	Polish Red	2021	841	428						
Poland	Polish Red-White	2020		422						
Poland	Polish Red-White	2021	829	416						
Poland	Simmental	2020		413						
Poland	Simmental	2021	867	414						
Romania (Asociația Generală a Crescătorilor de Taurine)	Holstein	2021	825	411						

Table 5 - Health, fertility and longevity

Country	Breed	Year	Avg. age at 1st calving, days	Avg. calving interval, days	Cows alive at 200 DIM, %	Avg. age at culling, d	Avg. lactation nr at culling	Avg. milk yield per day of life, kg	Avg. lifetime yield, kg milk	Notes
Romania (Simmental Assoc.)	Bălțată Românească (Simmental)	2020		377						
Romania (Simmental Assoc.)	Bălțată Românească (Simmental)	2021	915	386						
Romania (Simmental Assoc.)	Montbéliarde	2020		397						
Romania (Simmental Assoc.)	Montbéliarde	2021	884	389						
Serbia ²	All recorded cows	2020		427						
Serbia ²	Brown Swiss	2020		424						
Serbia ²	Holstein Friesian	2020		452						
Serbia ²	Simmental	2020		434						
Slovak Republic	All recorded cows	2020	791	409						
Slovak Republic	All recorded cows	2021	782	405						
Slovak Republic	Holstein	2020	778	411						
Slovak Republic	Holstein	2021	730	406						
Slovak Republic	Slovak Pinzgauer	2020	10	427						
Slovak Republic	Slovak Pinzgauer	2021	938	419						
Slovak Republic	Slovak Simmental	2020	872	405						
Slovak Republic	Slovak Simmental	2021	897	403						
Slovenia	All recorded cows	2020		420						
Slovenia	Brown	2020	756	430		2.520			25.439	
Slovenia	Holstein	2020	745	426		2.072			27.421	
Slovenia	Holstein	2021		426						
Slovenia	Simmental	2020	748	413		2.266			22.875	
Slovenia	Simmental	2021		413						

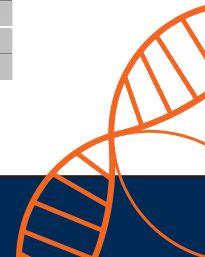
² Data relating to the region AP Vojvodina in Serbia

Table 5 - Health, fertility and longevity

Country	Breed	Year	Avg. age at 1st calving, days	Avg. calving interval, days	Cows alive at 200 DIM, %	Avg. age at culling, d	Avg. lactation nr at culling	Avg. milk yield per day of life, kg	Avg. lifetime yield, kg milk	Notes
South Africa (by ARC)	All recorded cows	2020		417						
South Africa (by ARC)	Ayrshire	2020		403						
South Africa (by ARC)	Guernsey	2020		434						
South Africa (by ARC)	Holstein	2020		432						
South Africa (by ARC)	Jersey	2020		417						
South Korea (by DCIC Centre)	Holstein	2020	829	463						
South Korea (by DCIC Centre)	Holstein	2021	824	457						
Spain	Frisona	2020	784	421						
Spain	Frisona	2021	779	421						
Spain	Parda Alpina	2020	900	406	100	3.467	7	23,6	60.196	
Spain	Parda Alpina	2021	900	415	100	3.650	7	24,9	63.594	
Spain	Pasiega	2021		405						
Sweden (Vaxa)	Swedish Holstein	2020	827	401		1.860		14,2		
Sweden (Vaxa)	Swedish Jersey	2020	836	416		1.864		9,8		
Sweden (Vaxa)	Swedish Polled	2020	900	423		2.076		7,7		
Sweden (Vaxa)	Swedish Red & White	2020	839	395		1.873		12,6		
Switzerland	All recorded cows	2020		405						
Switzerland	All recorded cows	2021	913	407		2.409	4	12,7	31.490	
Switzerland	Black Holstein	2021	855	413		2.227	3,5	14,9	32.594	
Switzerland	Braunvieh	2020		409						
Switzerland	Braunvieh	2021	949	411		2.409	3,9	10,5	28.627	
Switzerland	Evolener	2020		380						
Switzerland	Evolèner	2021	797	362		3.358	5,1	8,2	21.030	
Switzerland	Grauvieh	2020		380						
Switzerland	Grauvieh	2021	979	382		3.030	4,3	5,9	18.383	
Switzerland	Hinterwälder	2020		361						

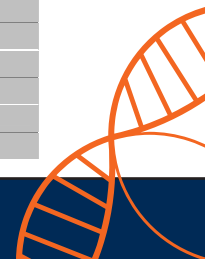


Table 5 - Health, fertility and longevity

Country	Breed	Year	Avg. age at 1st calving, days	Avg. calving interval, days	Cows alive at 200 DIM, %	Avg. age at culling, d	Avg. lactation nr at culling	Avg. milk yield per day of life, kg	Avg. lifetime yield, kg milk	Notes
Switzerland	Hinterwälder	2021	821	369		3.030	4,8	5	16.217	
Switzerland	Holstein	2020		413						
Switzerland	Jersey	2020		400						
Switzerland	Jersey	2021	809	399		2.263	3,8	9	22.492	
Switzerland	Montbéliarde	2020		396						
Switzerland	Montbéliarde	2021	970	395		2.446	3,9	12,5	30.770	
Switzerland	Normande	2020		392						
Switzerland	Normande	2021	919	399				5,7	19.098	
Switzerland	Pinzgauer	2020		385						
Switzerland	Pinzgauer	2021	1.028	389		2.555	3,7	12,7	31.490	
Switzerland	Red Holstein	2020		409						
Switzerland	Red Holstein	2021	888	410		2.446	4,1	14,4	35.415	
Switzerland	Simmental	2020		382						
Switzerland	Simmental	2021	976	382		2.628	4,6	10,2	26.600	
Switzerland	Swiss Fleckvieh	2020		392						
Switzerland	Swiss Fleckvieh	2021	906	393		2.665	4,7	12,8	33.962	
Switzerland	Water Buffalo	2020		432						
Switzerland	Water buffalo	2021	1.153	407						
Taiwan	All recorded cows	2020	753							
Taiwan	Holstein	2020	753							
Tunisia (OEP)	All recorded cows	2020	1.011	455						
Tunisia (OEP)	Alpine Brown	2020	1.048	450						
Tunisia (OEP)	Holstein	2020	992	456						
Tunisia (OEP)	Montbéliarde	2020	1.054	442						
Tunisia (OEP)	Tarentaise	2020	970	419						
UK - England (by CIS)	All recorded cows	2020		404						
UK - England (by CIS)	All recorded cows	2021	845	401	89	2.319	3	9,5	20.361	
UK - England (by CIS)	Ayrshire	2020		409						

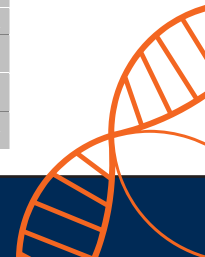


Table 5 - Health, fertility and longevity

Country	Breed	Year	Avg. age at 1st calving, days	Avg. calving interval, days	Cows alive at 200 DIM, %	Avg. age at culling, d	Avg. lactation nr at culling	Avg. milk yield per day of life, kg	Avg. lifetime yield, kg milk	Notes
UK - England (by CIS)	Ayrshire	2021	860	406	89	2.265	3	9,5	20.021	
UK - England (by CIS)	Brown Swiss	2020		410						
UK - England (by CIS)	Brown Swiss	2021	882	410	92	2.335	3	10	22.653	
UK - England (by CIS)	Friesian	2020		391						
UK - England (by CIS)	Friesian	2021	862	396	91	2.410	4	8,3	17.935	
UK - England (by CIS)	Guernsey	2020		412						
UK - England (by CIS)	Guernsey	2021	886	403	90	2.480	3	7,5	17.335	
UK - England (by CIS)	Holstein	2020		405						
UK - England (by CIS)	Holstein	2021	810	402	89	2.144	3	12,5	24.702	
UK - England (by CIS)	Jersey	2020		395						
UK - England (by CIS)	Jersey	2021	780	394	88	2.307	3	8,8	17.349	
UK - England (by CIS)	Montbéliarde	2020		395						
UK - England (by CIS)	Montbéliarde	2021	858	403	90	2.366	3	10,8	23.745	
UK - England (by CIS)	Other Breeds	2020		403						
UK - England (by CIS)	Other Breeds	2021	843	392	86	2.319	3	8,5	18.471	
UK - England (by CIS)	Shorthorn	2020		389						
UK - England (by CIS)	Shorthorn	2021	806	393	92	2.172	3	9,5	19.826	
UK - Jersey Island	All recorded cows	2020		416						
UK - Jersey Island	All recorded cows	2021	790	414	90	2.575	4	10	22.356	



Table 5 - Health, fertility and longevity

Country	Breed	Year	Avg. age at 1st calving, days	Avg. calving interval, days	Cows alive at 200 DIM, %	Avg. age at culling, d	Avg. lactation nr at culling	Avg. milk yield per day of life, kg	Avg. lifetime yield, kg milk	Notes
UK - Jersey Island	Jersey	2020		416						
UK - Jersey Island	Jersey	2021	790	414	90	2.575	4	10	22.356	
UK - N. Ireland (by CIS)	All recorded cows	2020		407						
UK - N. Ireland (by CIS)	All recorded cows	2021	914	409	88	2.324	3	9,1	19.111	
UK - N. Ireland (by CIS)	Ayrshire	2020		404						
UK - N. Ireland (by CIS)	Ayrshire	2021	898	397	91	2.268	3	8,5	17.786	
UK - N. Ireland (by CIS)	Brown Swiss	2020		399						
UK - N. Ireland (by CIS)	Brown Swiss	2021	865	397	96	2.047	3	10	19.185	
UK - N. Ireland (by CIS)	Friesian	2020		394						
UK - N. Ireland (by CIS)	Friesian	2021	1.144	398	89	2.390	3	9	19.722	
UK - N. Ireland (by CIS)	Guernsey	2020		397						
UK - N. Ireland (by CIS)	Guernsey	2021		443	0	0	0	5	20.241	
UK - N. Ireland (by CIS)	Holstein	2020		407						
UK - N. Ireland (by CIS)	Holstein	2021	833	440	88	2.002	2	10	19.217	
UK - N. Ireland (by CIS)	Jersey	2020		407						
UK - N. Ireland (by CIS)	Jersey	2021	833	405	89	1.983	2	8	16.703	
UK - N. Ireland (by CIS)	Montbéliarde	2020		396						
UK - N. Ireland (by CIS)	Montbéliarde	2021	1.082	409	86	4.230	2	9,8	24.536	
UK - N. Ireland (by CIS)	Other Breeds	2020		385						
UK - N. Ireland (by CIS)	Other Breeds	2021	781	392	92	1.553	3	8,3	13.837	

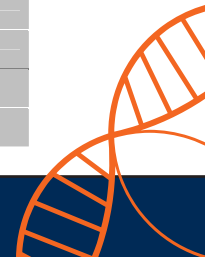


Table 5 - Health, fertility and longevity

Country	Breed	Year	Avg. age at 1st calving, days	Avg. calving interval, days	Cows alive at 200 DIM, %	Avg. age at culling, d	Avg. lactation nr at culling	Avg. milk yield per day of life, kg	Avg. lifetime yield, kg milk	Notes
UK - N. Ireland (by CIS)	Shorthorn	2020		398						
UK - N. Ireland (by CIS)	Shorthorn	2021	896	387	91	2.587	4	9	20.973	
UK - Scotland (by CIS)	All recorded cows	2020		405						
UK - Scotland (by CIS)	All recorded cows	2021	895	393	90	2.225	3	9,9	21.336	
UK - Scotland (by CIS)	Ayrshire	2020		410						
UK - Scotland (by CIS)	Ayrshire	2021	934	411	88	2.415	3	9,5	21.435	
UK - Scotland (by CIS)	Brown Swiss	2020		402						
UK - Scotland (by CIS)	Brown Swiss	2021	932	398	87	2.016	3	9	20.038	
UK - Scotland (by CIS)	Friesian	2020		404						
UK - Scotland (by CIS)	Friesian	2021	933	389	92	2.555	4	9,8	23.567	
UK - Scotland (by CIS)	Guernsey	2020		380						
UK - Scotland (by CIS)	Guernsey	2021	833	360	100	0	0	11	23.224	
UK - Scotland (by CIS)	Holstein	2020		406						
UK - Scotland (by CIS)	Holstein	2021	829	406	89	2.118	3	12,8	24.697	
UK - Scotland (by CIS)	Jersey	2020		396						
UK - Scotland (by CIS)	Jersey	2021	762	391	90	2.025	3	8,5	16.411	
UK - Scotland (by CIS)	Montbéliarde	2020		385						
UK - Scotland (by CIS)	Montbéliarde	2021	991	377	92	2.244	3	10,5	23.647	
UK - Scotland (by CIS)	Other Breeds	2020		402						
UK - Scotland (by CIS)	Other Breeds	2021	976	397	85	2.423	3	8,5	19.092	

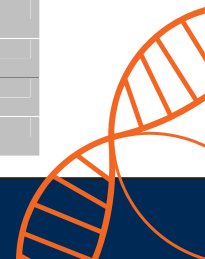


Table 5 - Health, fertility and longevity

Country	Breed	Year	Avg. age at 1st calving, days	Avg. calving interval, days	Cows alive at 200 DIM, %	Avg. age at culling, d	Avg. lactation nr at culling	Avg. milk yield per day of life, kg	Avg. lifetime yield, kg milk	Notes
UK - Scotland (by CIS)	Shorthorn	2020		394						
UK - Scotland (by CIS)	Shorthorn	2021	820	383	90	1.993	3	10	19.071	
UK - Wales (by CIS)	All recorded cows	2020		407						
UK - Wales (by CIS)	All recorded cows	2021	886	408	90	2.518	3	8,8	19.695	
UK - Wales (by CIS)	Ayrshire	2020		422						
UK - Wales (by CIS)	Ayrshire	2021	911	413	88	2.469	3	7,5	17.696	
UK - Wales (by CIS)	Brown Swiss	2020		467						
UK - Wales (by CIS)	Brown Swiss	2021	873	429	91	2.798	4	9,3	23.220	
UK - Wales (by CIS)	Friesian	2020		391						
UK - Wales (by CIS)	Friesian	2021	876	399	89	2.386	3	8,3	18.156	
UK - Wales (by CIS)	Guernsey	2020		471						
UK - Wales (by CIS)	Guernsey	2021	1.043	445	89	3.403	4	6,7	16.705	
UK - Wales (by CIS)	Holstein	2020		407						
UK - Wales (by CIS)	Holstein	2021	835	406	90	2.175	3	11,5	23.342	
UK - Wales (by CIS)	Jersey	2020		406						
UK - Wales (by CIS)	Jersey	2021	813	406	92	2.551	3	8,3	18.018	
UK - Wales (by CIS)	Montbéliarde	2020		438						
UK - Wales (by CIS)	Montbéliarde	2021	958	380	95	2.102	3	10,3	25.018	
UK - Wales (by CIS)	Other Breeds	2020		400						
UK - Wales (by CIS)	Other Breeds	2021	863	401	96	3.026	4	7,5	14.714	

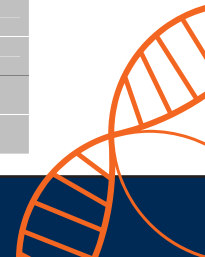
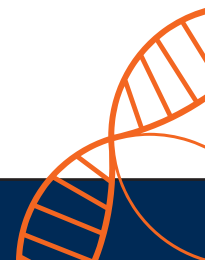


Table 5 - Health, fertility and longevity

Country	Breed	Year	Avg. age at 1st calving, days	Avg. calving interval, days	Cows alive at 200 DIM, %	Avg. age at culling, d	Avg. lactation nr at culling	Avg. milk yield per day of life, kg	Avg. lifetime yield, kg milk	Notes
UK - Wales (by CIS)	Shorthorn	2020		378						
UK - Wales (by CIS)	Shorthorn	2021	817	373	92	1.963	3	9	17.259	



Sheep Survey (Years 2020 and 2022)

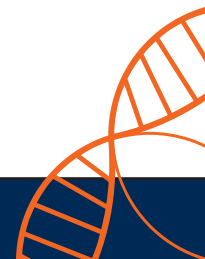


Table 1A - Milk recording and management of the lactation

SHEEP SURVEY

Country	Breed	Year	Flocks	Ewes/ Does	Recorded flocks	Recorded ewes	Milking scheme	Suckling period, d	Milking machine, % of recorded flocks	Flocks in D recording	Ewes in D recording/ Does in D recording
Croatia	East Friesian	2020	217	1.876	7	158	4	56	88		
Croatia	Istrian Sheep	2020	80	2.900	14	1.302	4	66	14		
Croatia	Lacaune	2020	54	3.472	10	1.597	4	61	100		
Croatia	Paska Sheep	2020	543	30.000	34	4.178	4	36	29		
Czech Rep.	All Breeds	2020			28	1.494					
France	Basco-Béarnaise	2020	310	78	82	26.380	2	35	98	33	9.141
France	Basco-Béarnaise	2021	310	78.000	84	28.061	2	35	98	32	8.804
France	Corse	2020	350	83	59	20.206	2	35	96	45	12.627
France	Corse	2021	350	85.000	53	18.863	2	35	97	45	13.446
France	Lacaune	2020	2.500	1.000	373	188.696	2	25	100	1.050	494.259
France	Lacaune	2021	2.500	1.140.000	373	192.928	2	25	100	1.006	505.457
France	Manech tête noire	2020	268	72	35	11.098	2	35	98	20	7.137
France	Manech tête noire	2021	268	72.000	34	10.547	2	35	98	5	1.580
France	Manech tête rousse	2020	952	275	212	83.014	2	35	99	77	25.094
France	Manech tête rousse	2021	952	275.000	209	84.286	2	35	99	73	24.549
Italy (AIA)	Appenninica	2020			1	5	2	30			
Italy (AIA)	Assaf	2020			11	1.152	2	30			
Italy (AIA)	Assaf	2021			12	1.396	2	30			
Italy (AIA)	Barbaresca	2020			6	280	2	30			
Italy (AIA)	Barbaresca	2021			5	153	2	30			
Italy (AIA)	Carsolina	2021			1	155	2	30			
Italy (AIA)	Comisana	2020			55	3.530	2	30			
Italy (AIA)	Comisana	2021			53	4.218	2	30			
Italy (AIA)	Delle Langhe	2020			35	2.391	2	30			
Italy (AIA)	Delle Langhe	2021			31	2.484	2	30			
Italy (AIA)	Lacaune	2020			46	6.461	2	30			
Italy (AIA)	Lacaune	2021				53	7.492	30			
Italy (AIA)	Massese	2021			81	6.722	2	30			

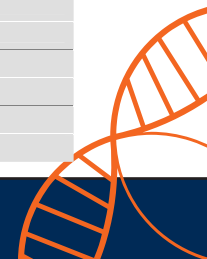


Table 1A - Milk recording and management of the lactation

Country	Breed	Year	Flocks	Ewes/ Does	Recorded flocks	Recorded ewes	Milking scheme	Suckling period, d	Milking machine, % of recorded flocks	Flocks in D recording	Ewes in D recording/ Does in D recording
Italy (AIA)	Moscia Leccese	2020			6	57	2	30			
Italy (AIA)	Moscia Leccese	2021			6	36	2	30			
Italy (AIA)	Nera di Arbus	2020			39	1.336	2	30			
Italy (AIA)	Nera di Arbus	2021			38	1.585	2	30			
Italy (AIA)	Noticiana	2020			1	46	2	30			
Italy (AIA)	Pinzirita	2020			14	677	2	30			
Italy (AIA)	Pinzirita	2021			14	338	2	30			
Italy (AIA)	Sarda	2020			683	116.374	2	30			
Italy (AIA)	Sarda	2021			626	115.455	2	30			
Italy (AIA)	Valle del Belice	2020			262	23.310	2	30			
Italy (AIA)	Valle del Belice	2021			264	21.677	2	30			
Slovak Republic	Assaf	2020			1	134	2	30			
Slovak Republic	Assaf	2021			1	38	2	30			
Slovak Republic	East Friesian	2020			5	19	2	30			
Slovak Republic	East Friesian	2021			4	18	2	30			
Slovak Republic	Improved Valachian	2020			24	3.078	2	40			
Slovak Republic	Improved Valachian	2021			23	2.593	2	40			
Slovak Republic	Lacaune	2020			15	717	2	30			
Slovak Republic	Lacaune	2021			15	727	2	30			
Slovak Republic	Slovak Dairy Sheep	2020			19	1.742	2	30			
Slovak Republic	Slovak Dairy Sheep	2021			18	1.704	2	30			
Slovak Republic	Tsigai	2020			21	1.921	2	40			
Slovak Republic	Tsigai	2021			22	1.529	2	40			

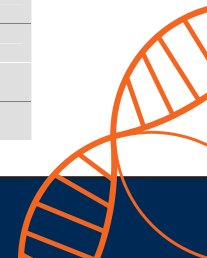


Table 1A - Milk recording and management of the lactation

Country	Breed	Year	Flocks	Ewes/ Does	Recorded flocks	Recorded ewes	Milking scheme	Suckling period, d	Milking machine, % of recorded flocks
Slovak Republic	Valachian	2020			2	34	2	40	
Slovak Republic	Valachian	2021			2	34	2	40	
Slovenia	Bovec Sheep	2020	30	2.500	24	2.491	2	40	100
Slovenia	Bovec Sheep	2021	24	2.950	24	2.900	2	42	100
Slovenia	Improved Bovec sheep	2020	15	1.050	13	1.017	2	35	100
Slovenia	Improved Bovec sheep	2021	13	950	13	927	2	35	100
Slovenia	Istrian Pramenka	2020	6	750	5	712	2	60	100
Slovenia	Istrian Pramenka	2021	4	800	4	797	2	52	100
Spain	Carranzana	2020			2	256	2	30	0
Spain	Carranzana	2021			2	348	2	30	0
Spain	Lacaune	2020	60	100.000	14	11.060	80	25	21
Spain	Lacaune	2021	60	100.000	15	13.292	80	25	21
Spain	Latxa	2020			160	60.601		30	95
Spain	Latxa	2021			172	64.773		30	95
Spain	Manchega	2020	624	552.143	135	164.738	2	30	100
Spain	Manchega	2021	605	551.200	128	133.862	2	30	100
Spain	Merino de Grazalema	2020	34	5.375	9	1.861	2	45	0
Spain	Merino de Grazalema	2021	33	5.370	10	1.907	2	45	0

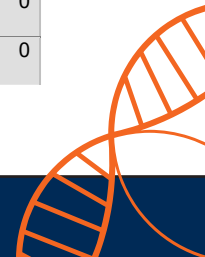


Table 1B - Methods of milk recording

Country	Breed	Year	Share of A4, A5, A6, B4, B5, B6, C4, C5, C6, %	Share of AT, BT, CT, %	Share of AC, BC, CC, %	Share of E4, E5, E6, ET, EC, %
Croatia	East Friesian	2020	B4 = 90	AT = 10		
Croatia	Istrian Sheep	2020	B4 = 10	AT = 90		
Croatia	Lacaune	2020	B4 = 100			
Croatia	Paska Sheep	2020		AT = 100		
Czech Rep.	All Breeds	2020		AT=100%		
France	All Breeds	2020			AC = 100	
France	All Breeds	2021	0	0	AC = 100	0
Italy (AIA)	All breeds except Sarda	2020		AT = 100		
Italy (AIA)	All breeds except Sarda	2021		AT		
Italy (AIA)	Sarda	2021		AT	AC	
Slovak Republic	All Breeds	2020			AC = 100	
Slovak Republic	All Breeds	2021			AC = 100	
Slovenia	Bovec sheep	2020	0	AT4 = 100	0	0
Slovenia	Improved Bovec Sheep	2020	0	AT4 = 100	0	0
Slovenia	Istrian Pramenka	2020	0	AT4 = 100	0	0
Spain	Carranzana	2020		AT100%		
Spain	Carranzana	2021		AT:100 %		
Spain	Lacaune	2020		AT4: 100%		
Spain	Lacaune	2021		AT4: 100%		
Spain	Latxa	2020		AT4:40% AC4:60%	AC: 80%	
Spain	Latxa	2021		AT4:40% AC4:60%	AC: 80%	
Spain	Manchega	2020		AT100%		
Spain	Manchega	2021		AT100%		
Spain	Merino de Grazalema	2020	A4= 30,9%	AT4 = 34,22%	AC4= 34,88%	
Spain	Merino de Grazalema	2021	A4 = 27,14%	AT4 =31,31%	AC4 = 41,53%	

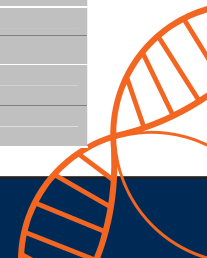


Table 2A - Type of lactation calculation for milk yield

Country	Breed	Year	TSMM1 (Y/N)	TMM3 (Y/N)	TMY4 (Y/N)	TSMM1 (Y/N)	TMM2 (Y/N)	TMY3 (Y/N)
Croatia	East Friesian	2020	Yes	Yes	No	No	No	No
Croatia	Istrian Sheep	2020	Yes	Yes	No	No	No	No
Croatia	Lacaune	2020	Yes	Yes	No	No	No	No
Croatia	Paska Sheep	2020	Yes	Yes	No	No	No	No
Czech Rep.	All Breeds	2020						
France	All Breeds	2021	No	Yes	No	No	No	No
France	France (all breeds)	2020	No	Yes	No	No	No	No
Italy (AIA)	All Breeds	2020	Yes	Yes	No	No	From day 30 from lambing to reference lactation	No
Italy (AIA)	All Breeds	2021	Yes	Yes	No	No	From day 30 from lambing	No
Slovak Republic	All Breeds	2020	No	Yes	No	No	Yes. 150	No
Slovak Republic	All Breeds	2021	No	Yes	No	No	Yes. 150	No
Slovenia	Bovec sheep	2020	Yes	Yes	Yes	No	No	No
Slovenia	Improved Bovec sheep	2020	Yes	Yes	Yes	No	No	No
Slovenia	Istrian Pramenka	2020	Yes	Yes	Yes	No	No	No
Spain	Carranzana	2020	No	No	No	No	No	No
Spain	Carranzana	2021	No	No	No	No	No	No
Spain	Lacaune	2020	No	No	Yes			Yes 160
Spain	Lacaune	2021	No	No	SI			Yes 160
Spain	Latxa	2020	Yes	Yes	Yes	Yes	Yes 120	Yes 120
Spain	Latxa	2021	Yes	Yes	Yes	Yes	Yes 120	Yes 120
Spain	Manchega	2020	Yes	No	No	Yes 120	No	No
Spain	Manchega	2021	Yes	No	No	Yes 120	No	No
Spain	Merino de Grazalema	2020	Yes	No	No	Yes 107	No	No
Spain	Merino de Grazalema	2021	Yes	No	No	Yes 108	No	No

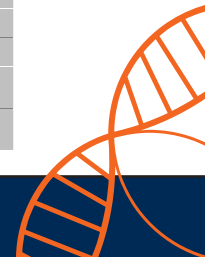


Table 2B - Milk yield results

Country	Breed	Year	Yearlings	Adults	All ewes
Croatia	East Friesian	2020	185,1	195,7	192,5
Croatia	Istrian Sheep	2020	98,1	107,8	104,7
Croatia	Lacaune	2020	246,2	241,6	243,2
Croatia	Paska Sheep	2020	81,1	103,4	101,5
Czech Rep.	All Breeds	2020			287
France	Basco-Béarnaise	2020	107	231 (159 days)	218 (151 days)
France	Basco-Béarnaise	2021	160 (102 days)	238 (158 days)	224 (148 days)
France	Corse	2020	99 (131 days)	157 (197 days)	148 (186 days)
France	Corse	2021	101 (135 days)	163 (199 days)	153 (188 days)
France	Lacaune	2020	275 (158 days)	349 (179 days)	330 (173 days)
France	Lacaune	2021	294 (162 days)	365 (181 days)	347 (176 days)
France	Manech tête noire	2020	128 (116 days)	177 (151 days)	175 (151 days)
France	Manech tête noire ¹	2021	140 (122 days)	187 (150 days)	184 (149 days)
France	Manech tête rousse	2021	220 (152 days)	255 (165 days)	251 (164 days)
Italy (AIA) ²	Assaf	2020	229	341	323
Italy (AIA) ²	Assaf	2021	197	298	284
Italy (AIA) ²	Barbaresca	2020	79	130	124
Italy (AIA) ²	Comisana	2020	94	153	146
Italy (AIA) ²	Comisana	2021	95	134	131
Italy (AIA) ²	Delle Langhe	2020	102	169	165
Italy (AIA) ²	Delle Langhe	2021	86	166	159
Italy (AIA) ²	Lacaune	2020	224	341	319
Italy (AIA) ²	Lacaune	2021	204	322	299
Italy (AIA) ²	Massese	2020	113	130	128
Italy (AIA) ²	Massese	2021	118	134	133
Italy (AIA) ²	Moscia Leccese	2020		146	146
Italy (AIA) ²	Moscia Leccese	2021	54	145	116
Italy (AIA) ²	Nera di Arbus	2020	121	201	190
Italy (AIA) ²	Nera di Arbus	2021	116	203	193
Italy (AIA) ²	Noticiana	2020	18	111	107
Italy (AIA) ²	Pinzirita	2020	91	123	122
Italy (AIA) ²	Pinzirita	2021	175	163	163
Italy (AIA) ²	Sarda	2020	149	231	222
Italy (AIA) ²	Sarda	2021	154	238	228
Italy (AIA) ²	Valle del Belice	2020	119	198	192
Italy (AIA) ²	Valle del Belice	2021	147	199	195
Slovak Republic	Assaf	2020			194,10
Slovak Republic	Assaf	2021			217,87
Slovak Republic	East Friesian	2020			226,32

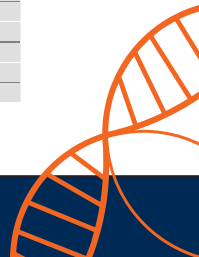
¹ Very few yearlings with production in MTN. Lambings mainly occurs at 2-yr-old.² From day 30 from lambing to reference lactation length

Table 2B - Milk yield results

Country	Breed	Year	Yearlings	Adults	All ewes
Slovak Republic	East Friesian	2021			190,24
Slovak Republic	Improved Valachian	2020			120,13
Slovak Republic	Improved Valachian	2021			116,39
Slovak Republic	Lacaune	2020			285,61
Slovak Republic	Lacaune	2021			290,17
Slovak Republic	Slovak Dairy Sheep	2020			171,19
Slovak Republic	Slovak Dairy Sheep	2021			163,50
Slovak Republic	Tsigai	2020			110,13
Slovak Republic	Tsigai	2021			123,28
Slovak Republic	Valachian	2020			107,94
Slovak Republic	Valachian	2021			104,42
Slovenia	Bovec sheep	2020			TSM = 182 kg, TMM = 126 kg, suckled = 56 kg, lact
Slovenia	Improved Bovec sheep	2020			TSM = 241 kg, TMM = 183 kg, suckled = 58 kg, lact
Slovenia	Istrian Pramenka	2020			TSM = 150 kg, TMM = 90 kg, suckled = 60 kg, lacta
Spain	Lacaune	2020	334	407	371
Spain	Lacaune	2021	338	387	363
Spain	Latxa	2020	213	266	260
Spain	Latxa	2021	218	249	261
Spain	Manchega	2020	220	240	236
Spain	Manchega	2021	222	244	241
Spain	Merino de Grazalema	2020	63,65	109,68	106,61
Spain	Merino de Grazalema	2021	68,96	115,65	108,41

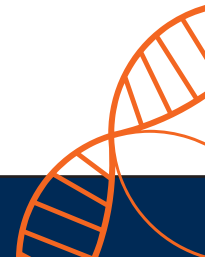


Table 3 - Optional tests for milk composition

Country	Breed	Year	Parity, number of ewes	Recording method for milk composition	Fat %	Protein %	SCC (Y/N)	Other analyses
Croatia	East Friesian	2020	158	B4, AT	5,2	4,7		
Croatia	Istrian Sheep	2020	1087	AT	7,3	6,2		
Croatia	Lacaune	2020	1597	AT, B4	6,1	5,8		
Croatia	Paska Sheep	2020	4178	AT	7,5	5,9		
Czech Rep.	All Breeds	2020		AT	Yes	Yes	Yes	Lactose
France	Basco-Bearnaise, Manech Tete Noire, Manech Tete Rousse	2020	Parity 1 (21489)	Part-lactation sampling	Yes	Yes	Yes	Urea
France	Corse	2020	Parity 1 (3272)	Part-lactation sampling	Yes	Yes	Yes	Urea
France ¹	Corse	2021	Parity 1 (3269 ewes)	Part-lactation sampling	Yes	Yes	Yes	Urea on request
France	Lacaune	2020	Parity 1 (43392) and Parity 2	Part-lactation sampling	Yes	Yes	Yes	Urea
France ¹	Lacaune	2021	Parity 1 (44613 ewes) and parity 2 (33353 ewes)	Part-lactation sampling	Yes	Yes	Yes	Urea (on request)
France ¹	Pyrenean breeds	2021	Parity 1 (23371 ewes)	Part-lactation sampling	Yes	Yes	Yes	Urea
Italy (AIA)	Comisana	2020	Primiparous, 3670 lactations	AT	7.36	5.12		
Italy (AIA)	Sarda	2020	Primiparous, 10312 Lactations	AC	5.75	5.17		
Italy (AIA)	Sarda	2021	Primiparous, 1159 Lactations	AC	5.24	5.01		
Slovak Republic	Assaf	2020	Parity 1 to 3 (134 ewes)	AC	Yes	Yes		Lactose
Slovak Republic	Assaf	2021	Parity 1 to 3 (38 ewes)	AC	Yes	Yes		Lactose
Slovak Republic	East Friesian	2020	Parity 1 to 3 (19 ewes)	AC	Yes	Yes		Lactose
Slovak Republic	East Friesian	2021	Parity 1 to 3 (18 ewes)	AC	Yes	Yes		Lactose
Slovak Republic	Improved Valachian	2020	Parity 1 to 3 (3078 ewes)	AC	Yes	Yes		Lactose
Slovak Republic	Improved Valachian	2021	Parity 1 to 3 (2593 ewes)	AC	Yes	Yes		Lactose
Slovak Republic	Lacaune	2020	Parity 1 to 3 (717 ewes)	AC	Yes	Yes		Lactose
Slovak Republic	Lacaune	2021	Parity 1 to 3 (727 ewes)	AC	Yes	Yes		Lactose
Slovak Republic	Slovak Dairy Sheep	2020	Parity 1 to 3 (1742 ewes)	AC	Yes	Yes		Lactose
Slovak Republic	Slovak Dairy Sheep	2021	Parity 1 to 3 (1704 ewes)	AC	Yes	Yes		Lactose

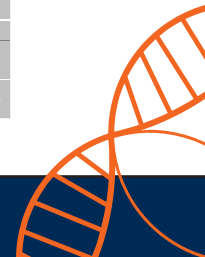
¹ MIR spectra are stored

Table 3 - Optional tests for milk composition

Country	Breed	Year	Parity, number of ewes	Recording method for milk composition	Fat %	Protein %	SCC (Y/N)	Other analyses
Slovak Republic	Tsigai	2020	Parity 1 to 3 (1921 ewes)	AC	Yes	Yes		Lactose
Slovak Republic	Tsigai	2021	Parity 1 to 3 (1529 ewes)	AC	Yes	Yes		Lactose
Slovak Republic	Valachian	2020	Parity 1 to 3 (34 ewes)	AC	Yes	Yes		Lactose
Slovak Republic	Valachian	2021	Parity 1 to 3 (34 ewes)	AC	Yes	Yes		Lactose
Slovenia	Bovec sheep	2020	All milk recorded ewes	AT4	Yes	Yes	Partially	Lactose, urea
Slovenia	Improved Bovec sheep	2020	All milk recorded ewes	AT4	Yes	Yes	Partially	Lactose, urea
Slovenia	Istrian Pramenka	2020	All milk recorded ewes	AT4	Yes	Yes	Partially	Lactose, urea
Spain	Carranzana	2020		AT			No	Dry extract lactase
Spain	Carranzana	2021		AT				Dry extract lactose
Spain	Lacaune	2020		AT4	5,62	4,70	Yes	Extracto seco, urea,lactosa,acetona,BHB
Spain	Lacaune	2021		AT4	5,67	4,62	Yes	Extracto seco, urea,lactosa,acetona,BHB
Spain	Latxa	2020		AC	6,05	5,01	Yes	Lactase dry extract
Spain	Latxa	2021		AC				Dry extract lactose
Spain	Manchega	2020		AT4	7,40	5,70	Yes	ES, Lactosa, Urea, Caseína
Spain	Manchega	2021		AT4	7,40	5,60	Yes	ES, Lactosa, Urea, Caseína
Spain	Merino de Grazalema	2020		AT4, AC4 A4	6,13	5,13	Yes 541627	Yes, lactose, dry stract
Spain	Merino de Grazalema	2021		AT4, AC4 A4	6,98	5,92	Yes 134940	Yes, lactose dry stract

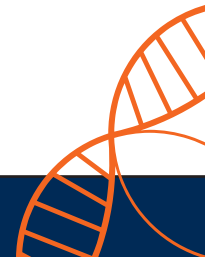


Table 4 - Recording of non-milking traits

Country	Breed	Year	Parity, number of ewes	Recording method for milk composition	Fat %	Protein %	SCC (Y/N)	Other analyses
Croatia	East Friesian	2020	158	B4, AT	5,2	4,7		
Croatia	Istrian Sheep	2020	1087	AT	7,3	6,2		
Croatia	Lacaune	2020	1597	AT, B4	6,1	5,8		
Croatia	Paska Sheep	2020	4178	AT	7,5	5,9		
Czech Rep.	All Breeds	2020		AT	Yes	Yes	Yes	Lactose
France	Basco-Bearnaise, Manech Tete Noire, Manech Tete Rousse	2020	Parity 1 (21489)	Part-lactation sampling	Yes	Yes	Yes	Urea
France	Corse	2020	Parity 1 (3272)	Part-lactation sampling	Yes	Yes	Yes	Urea
France ¹	Corse	2021	Parity 1 (3269 ewes)	Part-lactation sampling	Yes	Yes	Yes	Urea on request
France	Lacaune	2020	Parity 1 (43392) and Parity 2	Part-lactation sampling	Yes	Yes	Yes	Urea
France ¹	Lacaune	2021	Parity 1 (44613 ewes) and parity 2 (33353 ewes)	part-lactation sampling	Yes	Yes	Yes	Urea (on request)
France ¹	Pyrenean breeds	2021	Parity 1 (23371 ewes)	part-lactation sampling	Yes	Yes	Yes	Urea
Italy (AIA)	Comisana	2020	Primiparous, 3670 lactations	AT	7.36	5.12		
Italy (AIA)	Sarda	2020	Primiparous, 10312 Lactations	AC	5.75	5.17		
Italy (AIA)	Sarda	2021	Primiparous, 1159 Lactations	AC	5.24	5.01		
Slovak Republic	Assaf	2020	Parity 1 to 3 (134 ewes)	AC	Yes	Yes		Lactose
Slovak Republic	Assaf	2021	Parity 1 to 3 (38 ewes)	AC	Yes	Yes		Lactose
Slovak Republic	East Friesian	2020	Parity 1 to 3 (19 ewes)	AC	Yes	Yes		Lactose
Slovak Republic	East Friesian	2021	Parity 1 to 3 (18 ewes)	AC	Yes	Yes		Lactose
Slovak Republic	Improved Valachian	2020	Parity 1 to 3 (3078 ewes)	AC	Yes	Yes		Lactose
Slovak Republic	Improved Valachian	2021	Parity 1 to 3 (2593 ewes)	AC	Yes	Yes		Lactose
Slovak Republic	Lacaune	2020	Parity 1 to 3 (717 ewes)	AC	Yes	Yes		Lactose
Slovak Republic	Lacaune	2021	Parity 1 to 3 (727 ewes)	AC	Yes	Yes		Lactose
Slovak Republic	Slovak Dairy Sheep	2020	Parity 1 to 3 (1742 ewes)	AC	Yes	Yes		Lactose
Slovak Republic	Slovak Dairy Sheep	2021	Parity 1 to 3 (1704 ewes)	AC	Yes	Yes		Lactose
Slovak Republic	Tsigai	2020	Parity 1 to 3 (1921 ewes)	AC	Yes	Yes		Lactose
Slovak Republic	Tsigai	2021	Parity 1 to 3 (1529 ewes)	AC	Yes	Yes		Lactose
Slovak Republic	Valachian	2020	Parity 1 to 3 (34 ewes)	AC	Yes	Yes		Lactose
Slovak Republic	Valachian	2021	Parity 1 to 3 (34 ewes)	AC	Yes	Yes		Lactose
Slovenia	Bovec sheep	2020	All milk recorded ewes	AT4	Yes	Yes	Partially	Lactose, urea
Slovenia	Improved Bovec sheep	2020	All milk recorded ewes	AT4	Yes	Yes	Partially	Lactose, urea
Slovenia	Istrian Pramenka	2020	All milk recorded ewes	AT4	Yes	Yes	Partially	Lactose, urea

¹ MIR spectra are stored

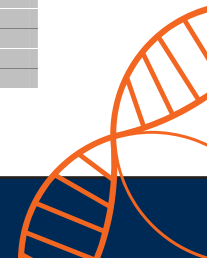


Table 4 - Recording of non-milking traits

Country	Breed	Year	Parity, number of ewes	Recording method for milk composition	Fat %	Protein %	SCC (Y/N)	Other analyses
Spain	Carranzana	2020		AT			No	Dry extract lactase
Spain	Carranzana	2021		AT				Dry extract lactase
Spain	Lacaune	2020		AT4	5,62	4,70	Yes	Extracto seco, urea,lactosa,acetona,BHB
Spain	Lacaune	2021		AT4	5,67	4,62	Yes	Extracto seco, urea,lactosa,acetona,BHB
Spain	Latxa	2020		AC	6,05	5,01	Yes	Lactase dry extract
Spain	Latxa	2021		AC				Dry extract lactose
Spain	Manchega	2020		AT4	7,40	5,70	Yes	ES, Lactosa, Urea, Caseína
Spain	Manchega	2021		AT4	7,40	5,60	Yes	ES, Lactosa, Urea, Caseína
Spain	Merino de Grazalema	2020		AT4, AC4 A4	6,13	5,13	Yes 541627	Yes, lactose, dry stract
Spain	Merino de Grazalema	2021		AT4, AC4 A4	6,98	5,92	Yes 134940	Yes, lactose dry stract

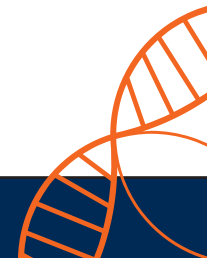


Table 5 - Milk recording equipment used in case of machine milking

Country	Breed	Year	Jar/meter	Manufacturer	Measurements (weight, volume, sample)	Approximate number in use	Notes
France	All Breeds	2021	Jars	Sarl Gely Serge	Volume / Sampler	3000	MM25SG: few farms equipped. LC-TT: first use in 2018, not yet in routine). Jar ARG1 first use planned in 2022
Italy (AIA)	All breeds	2021	Jar, meter	Mibo-Girotech, Royal, Afimilk (Afifree)		150 Mibo-Girotech, 50 Royal, 20 Afimilk (Afifree)	
Slovak Republic	All Breeds	2021	Fisher Slovakia - Volume	Berango/Milkovis	Volume / Sampler no	Berango 168, Milkovis 199	
Spain	Latxa	2021	Meter	Westfalia	Volume	220	
Spain	Carranzana	2021	Meter	Westfalia	Volume	30	
Spain	Manchega	2021	Meter	DeLaval, Westfalia, Flaco, GEA, Ardiekin	Volume / Sampler	1212	
Spain	Merino de Grazalema	2021	Meter	Cercampo y Tustda	Volume	12	
Spain	Lacaune	2021	Meter	Delaval y GEA	Volume	64	
Croatia	Lacaune	2020	Jars	Cartel Germany	Volume / Sampler	20	
Croatia	East Friesian	2020	Jar	Cartel Germany	Volume / Sampler	6	
Croatia	Istrian Sheep	2020	Jar	Cartel Germany	Volume / Sampler	16	
Croatia	Paska Sheep	2020	Jar	Cartel Germany	Volume / Sampler	20	
Czech Rep.	All Breeds	2020		Tru-Test	Tru-Test Mini		
France	All Breeds	2020	Jars	Sarl GELY Serge	Volume / Sampler	3000	MM25SG: few farms equipped. LC-TT: first use in 2018, some flocks)
Slovak Republic	All Breeds	2020	Fisher Slovakia - Volume	Berango / Milkovis	Volume / Sampler No	Berango 168, Milkovis 199	
Slovenia	Bovec sheep, Improved Bovec sheep Istrian Pramenka	2020		True test	Weight		
Spain	Manchega	2020	Meter	DeLaval, Westfalia, Flaco, GEA, Ardiekin	Volume / Sampler no	1248	
Spain	Lacaune	2020	Meter	Delaval y GEA	Volume	64	
Spain	Merino de Grazalema	2020	Meter	Cercampo y Tustda	Volume	12	
Spain	Carranzana	2020	Meter	Westfalia	Volume	30	
Spain	Latxa	2020	Meter	Westfalia	Volume	220	

Table 6 - Breeding programme using artificial insemination

Country	Breed	Year	Fresh semen	Frozen semen	Progeny tested rams per year (bucks)	Inseminations per tested ram (buck)	Notes
Croatia	all breeds	2020					No artificial insemination
France	Basco-Béarnaise	2020	16.052				
France	Basco-Béarnaise	2021	17.037		60	120-140	60 rams genomically pre-selected. No more progeny test (no lay off)
France	Corse	2020	8.036		22		GEBVs used to choose rams to be progeny-tested
France	Corse	2021	8.591		21	120-140	21 rams genomically pre-selected. No more progeny test (no lay off)
France	Lacaune	2020	423.830				
France	Lacaune	2021	419.453		297	120-140	297 rams genomically pre-selected. No more progeny test (no lay off)
France	Manech tête noire	2020	5.935				
France	Manech tête noire	2021	5.800		28	120-140	28 rams genomically pre-selected. No more progeny test (no lay off)
France	Manech tête rousse	2020	61.222				
France	Manech tête rousse	2021	60.283		174	120-140	174 rams genomically pre-selected. No more progeny test (no lay off)
Slovenia	All Breeds	2020	No	No			AI is not in use.
Spain	Carranzana	2020	53	0	0	0	
Spain	Carranzana	2021	0	0	0	0	
Spain	Lacaune	2020	3.134	0	0	200	
Spain	Lacaune	2021	3.623	0	23	200	
Spain	Latxa	2020	20.771	0	76	120	
Spain	Latxa	2021	21.173	0	76	120	
Spain	Manchega	2020	24.579	0	1.038	333	
Spain	Manchega	2021	27.433	0	523	391	
Spain	Merino de Grazelema	2020	62	0	40	20	
Spain	Merino de Grazelema	2021	61	0	39	15	

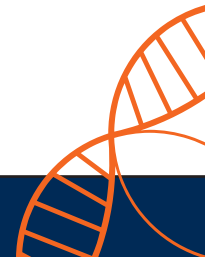
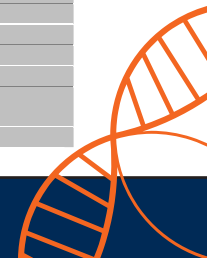


Table 7 - Molecular information

Country	Breed	Year	Genotyping method	Animals, flocks analysed	Use in routine selection	Notes
Croatia	Istrian Sheep	2020				Samples collected
Croatia	Paska Sheep	2020				Samples collected
Czech Rep.	2020	2020	PrP		Yes	
France	Basco-Béarnaise	2020	PrP; OvineBeadChip 54k & 15k	1179 rams and ewes as PrP; 212 rams as OvineBeadChip	Yes	
France	Basco-Béarnaise	2021	PrP and OvineBeadChip 54k & 15k	1312 rams and ewes (PrP); 244 rams on Chip		
France	Corse	2020	PrP and OvineBeadChip 54k & 15k	141 rams as OvineBeadChip; 1852 rams and ewes as PrP	Yes	
France	Corse	2021	PrP and OvineBeadChip 54k & 15k	1904 rams and ewes (PrP); 374 rams with Chip	Yes	
France	Lacaune	2020	PrP and OvineBeadChip 54k & 15k	6053 rams as PrP; 2963 rams as OvineBeadChip	Yes	
France	Lacaune	2021	PrP genotyping + OvineBeadChip 54k & 15k	6693 rams as PrP; 3081 rams as OvineBeadChip	Yes	
France	Manech tête noire	2020	PrP and OvineBeadChip 54k & 15k	529 rams and ewes as PrP; 110 rams as OvineBeadChip	Yes	
France	Manech tête noire	2021	PrP and OvineBeadChip 54k & 15k	631 rams & ewes (PrP); 102 rams on Chip	Yes	
France	Manech tête rousse	2020	PrP and OvineBeadChip 54k & 15k	3100 rams and ewes as PrP; 596 rams as OvineBeadChip	Yes	
France	Manech tête rousse	2021	PrP and OvineBeadChip 54k & 15k	2852 rams & ewes (PrP); 714 rams on Chip	Yes	
Italy (AIA)	All Breeds	2020	Filiation test, PnP	Filiation Test 2980 animals; PnP 1685 animals	Yes	Performed by Herdbook
Italy (AIA)	All breeds	2021	Filiation test, PnP	Filiation test 2384 animals, PnP 3645 animals	Yes	Performed by Herdbook
Slovak Republic	All Breeds	2020	PrP genotyping	1045 analysis	Yes	
Slovenia	All Breeds	2020	PrP genotyping		Yes	
Spain	Carranzana	2020	PNRP and Filiation test	PNRP 0 and Filiation test 0	No	
Spain	Carranzana	2021	PNRP and Filiation test	PNRP 0 and Filiation test 0	No	
Spain	Lacaune	2020	Filiation	Filiation 4865	Yes	
Spain	Lacaune	2021	Filiation	Filiation 7250	Yes	
Spain	Latxa	2020	PNRP and Filiation test	PNRP 920 and Filiation test 1658	Yes	
Spain	Latxa	2021	PNRP and Filiation test	PNRP 663and Filiation test 1536	Yes	
Spain	Manchega	2020	Filiation Test , PNRP, SNP	Filiation Test 36325, PNRP1910, SNP1329	Yes	
Spain	Manchega	2021	Filiation Test , PNRP, SNP	Filiation Test 37306, PNRP18760, SNP1020	Yes	
Spain	Merino de Grazalema	2020	Filiation & PNRP	Filiation 413 and PNRP 40	Yes	



Goat Survey (Years 2020 and 2021)

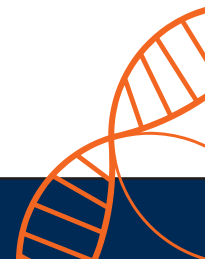


Table 1A - Milk recording and management of the lactation

GOAT SURVEY

Country	Breed	Year	Flocks	Ewes/ Does	Recorded flocks	Recorded ewes	Milking scheme	Suckling period, d	Milking machine, % of recorded flocks	Flocks in D recording	Ewes in D recording/ Does in D recording
Croatia	Alpine	2020	2.173	20.585	49	3.052	4	50	88		
Croatia	Saanen	2020	1.359	9.124	15	569	4	59	87		
Czech Rep.	All Breeds	2020				5.152					
France	Alpine	2020	1.195	162.505	1.159	150.758					
France	Alpine	2021	1.162	161.496	1.135	146.854					
France	Poitevine	2020			28	451					
France	Poitevine	2021			25	351					
France	Saanen	2020	793	95.964	769	83.969					
France	Saanen	2021	756	93.378	736	80.750					
Italy (AIA)	Alpina	2020			4	44	2	40			
Italy (AIA)	Alpina	2021			6	33	2	40			
Italy (AIA)	Argentata Dell'etna	2020			7	312	2	40			
Italy (AIA)	Argentata Dell'etna	2021			12	505	2	40			
Italy (AIA)	Aspromontana	2020			104	11.085	2	40			
Italy (AIA)	Aspromontana	2021			98	7.124	2	40			
Italy (AIA)	Bionda Dell'adamello	2020			5	102	2	40			
Italy (AIA)	Bionda Dell'adamello	2021			5	55	2	40			
Italy (AIA)	Camosciata Delle Alpi	2020			221	12.572	2	40			
Italy (AIA)	Camosciata Delle Alpi	2021			236	13.573	2	40			
Italy (AIA)	Garganica	2020			3	58	2	40			
Italy (AIA)	Garganica	2021			3	42	2	40			
Italy (AIA)	Girgentana	2020			7	285	2	40			
Italy (AIA)	Girgentana	2021			8	228	2	40			
Italy (AIA)	Maltese	2020			33	445	2	40			
Italy (AIA)	Maltese	2021			30	456	2	40			
Italy (AIA)	Messinese	2020			6	347	2	40			
Italy (AIA)	Messinese	2021			11	873	2	40			
Italy (AIA)	Murciana	2020			14	960	2	40			
Italy (AIA)	Murciana	2021			18	1.201	2	40			
Italy (AIA)	Nicastrese	2020			70	3.281	2	40			
Italy (AIA)	Nicastrese	2021			64	3.737	2	40			
Italy (AIA)	Orobica	2020			2	35	2	40			
Italy (AIA)	Orobica	2021			4	36	2	40			
Italy (AIA)	Roccamerano	2020			10	330	2	40			
Italy (AIA)	Roccamerano	2021			10	297	2	40			
Italy (AIA)	Rustica di Calabria	2020			115	5.774	2	40			
Italy (AIA)	Rustica di Calabria	2021			113	6.275	2	40			
Italy (AIA)	Saanen	2020			162	13.130	2	40			
Italy (AIA)	Saanen	2021			154	11.606	2	40			

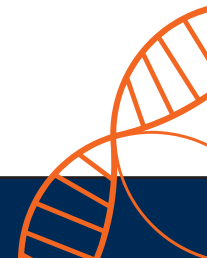


Table 1A - Milk recording and management of the lactation

Country	Breed	Year	Flocks	Ewes/ Does	Recorded flocks	Recorded ewes	Milking scheme	Suckling period, d	Milking machine, % of recorded flocks	Flocks in D recording	Ewes in D recording/ Does in D recording
Italy (AIA)	Sarda	2020			62	4.291	2	40			
Italy (AIA)	Sarda	2021			125	13.788	2	40			
Italy (AIA)	Sarda Primitiva	2020			13	361	2	40			
Italy (AIA)	Sarda Primitiva	2021			13	398	2	40			
Italy (AIA)	Verzaschese	2020			7	70	2	40			
Italy (AIA)	Verzaschese	2021			7	99	2	40			
Latvia	All Breeds	2020	1.222	5.003	24	1.282					
Latvia	All Breeds	2021	1.152	4.910	22	1.296					
Pakistan (by CABROP)	All Breeds	2022				2.700					
Serbia ¹	Alpine	2020		6.706	124	4.457		60	100	44	2213
Serbia ¹	Saanen	2020		906	6	389		55	100	4	180
Slovak Republic	Alpine	2020			2	20	2	40			
Slovak Republic	Alpine	2021			2	19	2	40			
Slovak Republic	Anglo Nubian	2020			12	39	2	40			
Slovak Republic	Anglo Nubian	2021			9	37	2	40			
Slovak Republic	Brown Shorthaired	2020			2	5	2	40			
Slovak Republic	Brown Shorthaired	2021			1	4	2	40			
Slovak Republic	White Shorthaired	2020			4	166	2	40			
Slovak Republic	White Shorthaired	2021			2	286	2	40			
Slovenia	Alpine	2020	20	1.000	16	944	2	40	100		
Slovenia	Alpine	2021	16	1.100	16	1.067	2	45	100		
Slovenia	Dreznica	2020	40	700	40	650	2	50	100		
Slovenia	Dreznica	2021	45	810	45	800	2	55	100		
Slovenia	Saanen	2020	20	700	12	602	2	40	100		
Slovenia	Saanen	2021	12	720	12	708	2	31	100		
Spain	Guadarrama	2020	23	8.702	19	3.945	11	45			
Spain	Guadarrama	2021	21	7.941	17	4.459	14	50			

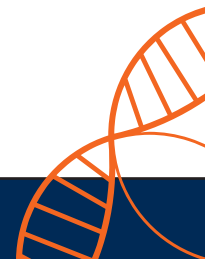
¹ Data relating to the region of AP Vojvodina in Serbia

Table 1A - Milk recording and management of the lactation

Country	Breed	Year	Flocks	Ewes/ Does	Recorded flocks	Recorded ewes	Milking scheme	Suckling period, d	Milking machine, % of recorded flocks	Flocks in D recording	Ewes in D recording/ Does in D recording
Spain	Malagueña	2020			38	14.189	1		100		
Spain	Malagueña	2021			33	12.863	1		100		
Spain	Palmera	2020	57	8.510	8	882	2	30	100		

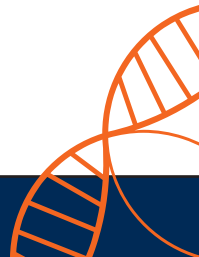


Table 1B - Methods of milk recording

Country	Breed	Year	Share of A4, A5, A6, B4, B5, B6, C4, C5, C6, %	Share of AT, BT, CT, %	Share of AC, BC, CC, %	Share of E4, E5, E6, ET, EC, %
Croatia	Alpine	2020	B4 = 12	AT = 88		
Croatia	Saanen	2020	B4 = 43	AT = 57		
Czech Rep.	All Breeds	2020			AC	EC
Italy (AlA)	All breeds	2020		AT = 100		
Italy (AlA)	All Breeds	2021		AT 100%		
Latvia	All Breeds	2020	100			
Latvia	All Breeds	2021	100			
Serbia ¹	Alpine	2020		AT4		
Serbia ¹	Saanen	2020		AT4		
Slovak Republic	All Breeds	2020			AC = 100	
Slovak Republic	All Breeds	2021			AC = 100	
Slovenia	Alpine	2020	0	AT4 = 100	0	0
Slovenia	Dreznica	2020	0	AT4 = 100	0	0
Slovenia	Saanen	2020	0	AT4 = 100	0	0
Spain	Guadarrama	2020	A6: 98 %	AT6: 2 %	AC: 80%	
Spain	Guadarrama	2021	A6: 72,5 %	AT6: 27,5 %	AC: 80%	
Spain	Malagueña	2020	A4-26%. A6-5%	AT4, 59%, AT6,10%		
Spain	Malagueña	2021	A4-24%. A6-15%	AT4, 49%, AT6,12%		
Spain	Palmera	2020	A6 =100%			

¹ Data relating to the region AP Vojvodina in Serbia

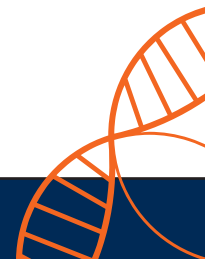


Table 2A - Type of lactation calculation for milk yield

Country	Breed	Year	TSM1 (Y/N)	TMM3 (Y/N)	TMY4 (Y/N)	TSM1 (Y/N)	TMM2 (Y/N)	TMY3 (Y/N)
Croatia	Alpine	2020	Yes	Yes	No	No	No	No
Croatia	Saanen	2020	Yes	Yes	No	No	No	No
Czech Rep.	All Breeds	2020						
France	Alpine	2020	No	No	Yes	No		
France	Alpine	2021	No	No	Yes	No		
France	Poitevine	2020	No	No	Yes	No		
France	Poitevine	2021	No	No	Yes	No		
France	Saanen	2020	No	No	Yes	No		
France	Saanen	2021	No	No	Yes	No		
Italy (AIA)	All Breeds	2020	Yes	Yes	No	Yes	Yes	No
Italy (AIA)	All breeds	2021	Yes	Yes	No	Yes	Yes	No
Latvia	All Breeds	2020	No	No	Yes			Yes 305
Latvia	All Breeds	2021	N	No	Yes			Yes 305
Serbia ¹	Alpine	2020	Yes	Yes	Yes	Yes	Yes	Yes
Serbia ¹	Saanen	2020	Yes	Yes	Yes	Yes	Yes	Yes
Slovak Republic	All Breeds	2020	No	Yes	No	No	Yes 240	No
Slovak Republic	All Breeds	2021	No	Yes	No	No	Yes 240	No
Slovenia	Alpine	2020	Yes	Yes	Yes	No	No	No
Slovenia	Dreznica	2020	Yes	Yes	Yes	No	No	No
Slovenia	Saanen	2020	Yes	Yes	Yes	No	No	No
Spain	Guadarrama	2020	no	Yes	Yes		Yes 210	Yes 210
Spain	Guadarrama	2021	no	Yes	Yes		Yes 210	Yes 210
Spain	Malagueña	2020	No	Yes	Yes	No	Yes	Yes
Spain	Malagueña	2021	No	Yes	Yes	No	Yes	Yes
Spain	Palmera	2020	No	Yes	No	Yes 150	Yes 210	

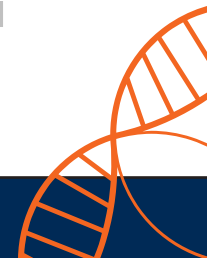
¹ Data relating to the region of AP Vojvodina in Serbia

Table 2B - Milk yield results

Country	Breed	Year	Yearlings	Adults	All ewes
Croatia	Alpine	2020	50	641	599,2
Croatia	Saanen	2019	578	663	637
Croatia	Saanen	2020	598	581	586
Czech Rep.	All Breeds	2020			662
France ¹	Alpine	2020	914 (328 days)	1007(312 days)	974 (318 days)
France ¹	Alpine	2021	920 (328 days)	1010 (311 days)	978 (317 days)
France ¹	Poitevine	2020	352 (257 days)	520 (263 days)	484 (262 days)
France ¹	Poitevine	2021	438 (272 days)	547 (264 days)	530 (265 days)
France ¹	Saanen	2020	1039 (343 days)	1021 (319 days)	1028 (328 days)
France ¹	Saanen	2021	1052 (347 days)	1024 (318 days)	1034 (329 days)
Italy (AIA)	Alpine	2020	656	497	497
Italy (AIA)	Argentata Dell'etna	2020	176	173	174
Italy (AIA)	Argentata Dell'etna	2021	97	239	237
Italy (AIA)	Aspromontana	2020	104	128	127
Italy (AIA)	Aspromontana	2021	136	160	161
Italy (AIA)	Bionda dell' Adamello	2020	335	524	476
Italy (AIA)	Bionda dell' Adamello	2021	308	502	457
Italy (AIA)	Camosciata Delle Alpi	2020	389	580	535
Italy (AIA)	Camosciata Delle Alpi	2021	381	577	533
Italy (AIA)	Ciocciara Grigia	2020			116
Italy (AIA)	Derivata di Siria	2020	91	202	198
Italy (AIA)	Garfagnana	2020	160	390	364
Italy (AIA)	Garganica	2020	120	195	174
Italy (AIA)	Garganica	2021		124	124
Italy (AIA)	Girgentana	2020	390	391	391
Italy (AIA)	Jonica	2020	329	305	306
Italy (AIA)	Maltese	2020	218	332	327
Italy (AIA)	Maltese	2021	268	393	374
Italy (AIA)	Messinese	2020	138	152	152
Italy (AIA)	Messinese	2021	103	142	140
Italy (AIA)	Murciana	2021	304	369	356
Italy (AIA)	Murciano-Granadina	2020	266	424	397
Italy (AIA)	Napoletana	2020			266
Italy (AIA)	Nicastrese	2020	134	143	142
Italy (AIA)	Nicastrese	2021	151	154	153
Italy (AIA)	Orobica	2021	138	442	417

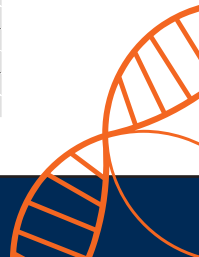
¹ Units expressed in Kg

Table 2B - Milk yield results

Country	Breed	Year	Yearlings	Adults	All ewes
Italy (AIA)	Roccaverano	2020	314	456	435
Italy (AIA)	Roccaverano	2021	264	491	449
Italy (AIA)	Rustica di Calabria	2020	95	116	116
Italy (AIA)	Rustica di Calabria	2021	153	151	151
Italy (AIA)	Saanen	2020	407	591	535
Italy (AIA)	Saanen	2021	421	618	568
Italy (AIA)	Sarda	2020	133	176	174
Italy (AIA)	Sarda	2021	117	170	166
Italy (AIA)	Sarda Primitiva	2020	99	156	155
Italy (AIA)	Sarda Primitiva	2021	87	144	136
Italy (AIA)	Toggenburg	2021		853	853
Italy (AIA)	Valdostana	2020	404	284	284
Italy (AIA)	Verzaschese	2020	170	371	311
Italy (AIA)	Verzaschese	2021	231	361	332
Latvia ²	All Breeds	2020			422
Latvia ²	All Breeds	2021			408
Serbia ³	Alpine	2020			567
Serbia	Saanen	2020			611
Slovak Republic	Alpine	2020			995
Slovak Republic	Alpine	2021			900
Slovak Republic	Anglo Nubian	2020			984
Slovak Republic	Anglo Nubian	2021			943
Slovak Republic	Brown Shorthaired Goat	2020			680
Slovak Republic	Brown Shorthaired Goat	2021			878
Slovak Republic	White Shorthaired Goat	2020			932
Slovak Republic	White Shorthaired Goat	2021			770
Slovenia	Alpine	2020			TSMM = 446 kg, TMM = 336 kg, suckled = 110 kg, lac
Slovenia	Dreznica	2020			TSMM = 367 kg, TMM = 257 kg, suckled = 110 kg, lac
Slovenia	Saanen	2020			TSMM = 570 kg, TMM = 515 kg, suckled = 55 kg, lact
Spain	Guadarrama	2020	319	500	409
Spain	Guadarrama	2021	383	538	460
Spain	Malagueña	2020	483	689	586
Spain	Malagueña	2021	510	712	611
Spain	Palmera	2020	342	499	473

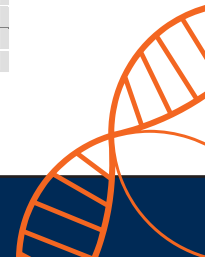
² Units expressed in kg³ Data relating to the region of AP Vojvodina in Serbia

Table 3 - Optional tests for milk composition

Country	Breed	Year	Parity, number of ewes	Recording method for milk composition	Fat %	Protein %	SCC (Y/N)	Other analyses
Croatia	Alpine	2020	3052	AT, B4	Yes 3,2	Yes 3,0		
Croatia	Saanen	2020	569	AT, B4	Yes 3,2	Yes 3,0		
Czech Rep.	All Breeds	2020		AC, EC	Yes	Yes	Yes	
France	All Breeds	2020	All	MIR	Yes	Yes	Yes	
France	All Breeds	2021	All	MIR	Yes	Yes	Yes	
Italy (AIA)	Alpina	2020	All, 36	AT	3.69	3.00		
Italy (AIA)	Alpina	2021	All, 34	AT	3.71	3.36		
Italy (AIA)	Argentata dell'Etna	2020	All, 126	AT	4.74	3.04		
Italy (AIA)	Aspromontana	2020	All, 8659	AT	4.85	3.93		
Italy (AIA)	Aspromontana	2021	All, 6326	AT	4.95	3.74		
Italy (AIA)	Bionda Dell'adamello	2020	All, 47	AT	3.12	3.11		
Italy (AIA)	Bionda Dell'adamello	2021	All, 47	AT	3.07	2.96		
Italy (AIA)	Camosciata Delle Alpi	2020	All, 8678	AT	3.62	3.44		
Italy (AIA)	Camosciata Delle Alpi	2021	All, 9186	AT	3.54	3.41		
Italy (AIA)	Derivata di Siria	2020	All, 28	AT	4.10	3.50		
Italy (AIA)	Derivata di Siria	2021	All, 44	AT	4.43	3.60		
Italy (AIA)	Garganica	2020	All, 25	AT	3.96	3.63		
Italy (AIA)	Jonica	2020	All, 45	AT	3.12	3.11		
Italy (AIA)	Jonica	2021	All, 35	AT	4.18	2.56		
Italy (AIA)	Maltese	2020	All, 126	AT	3.99	3.20		
Italy (AIA)	Maltese	2021	All, 291	AT	4.04	3.48		
Italy (AIA)	Murciana	2020	All, 479	AT	4.71	3.59		
Italy (AIA)	Murciana	2021	All, 989	AT	4.46	3.51		
Italy (AIA)	Nicastrese	2020	All, 1303	AT	4.83	3.80		
Italy (AIA)	Nicastrese	2021	All, 2196	AT	4.88	3.80		
Italy (AIA)	Orobica	2020	all, 32	AT	2.82	2.99		
Italy (AIA)	Orobica	2021	All, 49	AT	3.47	3.02		
Italy (AIA)	Roccamerano	2020	All, 225	AT	3.60	3.32		
Italy (AIA)	Roccamerano	2021	All, 265	AT	3.37	3.28		
Italy (AIA)	Rustica di Calabria	2020	All, 3648	AT	4.98	3.95		
Italy (AIA)	Rustica di Calabria	2021	All, 4184	AT	5.10	3.97		
Italy (AIA)	Saanen	2020	All, 7456	AT	3.47	3.35		
Italy (AIA)	Saanen	2021	All, 7415	AT	3.38	3.31		
Italy (AIA)	Sarda	2020	All, 2720	AT	5.53	4.44		
Italy (AIA)	Sarda	2021	All, 12226	AT	4.71	3.89		
Italy (AIA)	Sarda Primitiva	2021	All, 298	AT	6.06	4.47		
Italy (AIA)	Verzaschese	2020	All, 40	AT	3.49	3.24		
Italy (AIA)	Verzaschese	2021	All, 70	AT	3.49	3.32		
Latvia	All Breeds	2020		A4	Y	Yes	No	
Latvia	All Breeds	2021		A4	Yes	Yes	No	

Table 3 - Optional tests for milk composition

Country	Breed	Year	Parity, number of ewes	Recording method for milk composition	Fat %	Protein %	SCC (Y/N)	Other analyses
Serbia ¹	Alpine	2020	3595	AT	Yes. 3,55	Yes. 3,36	Yes	
Serbia ¹	Saanen	2020	367	AT	Yes. 3,71	Yes. 3,11	Yes	
Slovak Republic	Alpine	2020	Parity 1 to 3 (20 ewes)	AC	Yes	Yes		Lactose
Slovak Republic	Alpine	2021	Parity 1 to 3 (19 ewes)	AC	Yes	Yes		Lactose
Slovak Republic	Anglo Nubian	2020	Parity 1 to 3 (39 ewes)	AC	Yes	Yes		Lactose
Slovak Republic	Anglo Nubian	2021	Parity 1 to 3 (37 ewes)	AC	Yes	Yes		Lactose
Slovak Republic	Brown Shorthaired	2020	Parity 1 to 3 (5 ewes)	AC	Yes	Yes		Lactose
Slovak Republic	Brown Shorthaired	2021	Parity 1 to 3 (4 ewes)	AC	Yes	Yes		Lactose
Slovak Republic	White Shorthaired	2020	Parity 1 to 3 (166 ewes)	AC	Yes	Yes		Lactose
Slovak Republic	White Shorthaired	2021	Parity 1 to 3 (286 ewes)	AC	Yes	Yes		Lactose
Slovenia	Alpine	2020	All milk recorded does	AT4	Yes	Yes	Partly	
Slovenia	Dreznica	2020	All milk recorded does	AT4	Yes	Yes	Partly	
Slovenia	Saanen	2020	All milk recorded does	AT4	Yes	Yes	Partly	
Spain	Guadarrama	2020		A6/AT6	4,71	3,57	Yes	
Spain	Guadarrama	2021		A6/AT6	Yes 4,97	Yes 3,53	Yes	
Spain	Malagueña	2020		A4,A6,AT	4,6	3,6	Yes	
Spain	Malagueña	2021		A4,A6,AT	Yes 4,2	Yes 3,2	Yes	
Spain	Palmera	2020		A6	5,07	4,24		

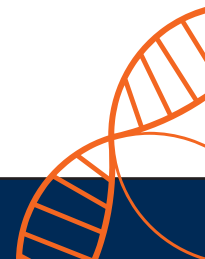
¹ Data relating to the region of AP Vojvodina in Serbia

Table 4 - Recording of non-milking traits

Country	Breed	Year	Traits	On-farm recording (Y/N)	Breeding evaluation (Y/N)
Croatia	Alpine	2020	Reproductive traits and birth weight	Yes	No
Croatia	Saanen	2020	Reproductive traits and birth weight	Yes	No
Czech Rep.	All Breeds	2020	Weight, reproductive traits	Yes	
Italy (AIA)	Camosciata Delle Alpi	2020	Linear evaluation	Yes	Yes
Italy (AIA)	Camosciata delle Apli	2021	Linear evaluation	Yes	Yes
Italy (AIA)	Saanen	2020	Linear evaluation	Yes	Yes
Italy (AIA)	Saanen	2021	Linear evaluation	Yes	Yes
Latvia	All Breeds	2020	Udder score	Yes	No
Latvia	All Breeds	2021	Udder score	Yes	No
Serbia ¹	Alpine	2020	Fertility, birth weight, body weight	Farm recording	Yes
Serbia ¹	Saanen	2020	Fertility, birth weight, body weight	Farm recording	Yes
Slovak Republic	All Breeds	2020	Reproductive traits, weight	Yes	No
Slovak Republic	All Breeds	2021	Reproductive traits, weight	Yes	No
Slovenia	Alpine	2020	Litter size, daily gain	Yes	No
Slovenia	Dreznica	2020	Litter size, daily gain	Yes	No
Slovenia	Saanen	2020	Litter size, daily gain	Yes	No
Spain	Guadarrama	2020	Udder score	Yes	No
Spain	Guadarrama	2021	Udder score	Yes	No
Spain	Malagueña	2020	Morphology, weights and growths and longevity	Yes	Yes
Spain	Malagueña	2021	Morphology, weights and growths and longevity	Yes	Yes
Spain	Palmera	2020	Morphology, weights and growths,	Yes	Yes

¹ Data relating to the region AP Vojvodina in Serbia

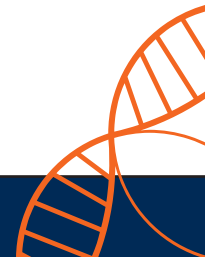


Table 5 - Milk recording equipment used in case of machine milking

Country	Breed	Year	Jar/meter	Manufacturer	Measurements (weight, volume, sample)	Approximate number in use
Croatia	Alpine	2020	Jar	Cartel Germany	Volume / Sampler	45
Croatia	Saanen	2020	Jar	Cartel Germany	Volume / Sampler	11
Czech Rep.	All Breeds	2020		Tru-Test	Tru-Test Mini	
Italy (AIA)	All	2020	Jar, meter	Mibo-Girotech, Royal, Afimilk (Afifree)		150 Mibo-Girotech, 50 Royal, 20 Afimilk (Afifree)
Italy (AIA)	All	2021	Jar, meter	Mibo-Girotech, Royal, Afimilk (Afifree)		150 Mibo-Girotech, 50 Royal, 20 Afimilk (Afifree)
Serbia ¹	Alpine	2020	Jar		Weight, sample	10
Serbia ¹	Saanen	2020	Jar		Weight, sample	1
Slovak Republic	All Breeds	2020	Fisher Slovakia - Volume	Tru-Test	Weight, Sampler no	28
Slovak Republic	All Breeds	2021	Fisher Slovakia - Volume	Tru-Test	Weight, Sampler no	28
Slovenia	Alpine	2020		Waikato, Tru-test	Weight	
Slovenia	Dreznica	2020		Waikato, Tru-test	Weight	
Slovenia	Saanen	2020		Waikato, Tru-test	Weight	
Spain	Guadarrama	2020	Meter	Alfa Laval/Schneder	Weight sample	12
Spain	Guadarrama	2021	Meter	Alfa Laval/Schneder	Weight sample	12
Spain	Malagueña	2020	Meter	Tru-Test	Weight sample	18
Spain	Malagueña	2021	Meter	Tru-Test	Weight sample	18
Spain	Palmera	2020	Meter	Tru-Test	Weight sample	12

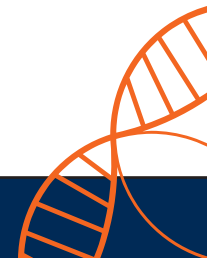
¹ Data relating to the region of AP Vojvodina in Serbia

Table 6 - Breeding programme using artificial insemination

Country	Breed	Year	Fresh semen	Frozen semen	Progeny tested rams per year (bucks)	Inseminations per tested ram (buck)	Notes
Croatia	Alpine	2020		Yes			
Croatia	Saanen	2020		Yes			
Italy (AIA)	All breeds	2020		1695			
Italy (AIA)	All breeds	2021		1813			
Slovenia	Alpine	2020	No	Yes			Small number of does were inseminated.
Slovenia	Dreznica	2020	No	No			AI is not in use.
Slovenia	Saanen	2020	No	Yes			Small number of does were inseminated.
Spain	Guadarrama	2020	295	0	4	355	
Spain	Guadarrama	2021	225	0	3	100	
Spain	Malagueña	2020	775	40	6	300	
Spain	Malagueña	2021	1218	10	9	300	
Spain	Palmera	2020	0				

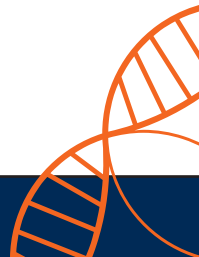
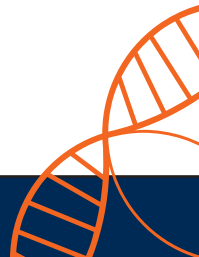


Table 7 - Molecular information

Country	Breed	Year	Genotyping method	Animals, flocks analysed	Experimental use	Use in routine selection	Notes
Croatia	Istrian breed	2020					Samples collected
Italy (AIA)	All breeds	2020	Parentage testing	111 Animals		Yes	Performed by HerdBook
Italy (AIA)	All breeds	2021	Parentage testing	106		Yes	Performed by HerdBook
Slovenia	Alpine	2020			No	No	
Slovenia	Dreznica	2020	GoatSNP50	59 analysis in 10 flocks	Yes	No	
Slovenia	Saanen	2020			No	No	
Spain	Guadarrama	2020	Filiation test	Filiation 2277		Yes	
Spain	Guadarrama	2021	Filiation test	Filiation 3058		Yes	
Spain	Malagueña	2020	Filiation test	Filiation 5000		Yes	
Spain	Malagueña	2021	Filiation test	Filiation 3720		Yes	
Spain	Palmera	2020	Filiation test	Filiation test 150 & caseins30		Yes	



Buffaloes Survey (Years 2020 and 2021)

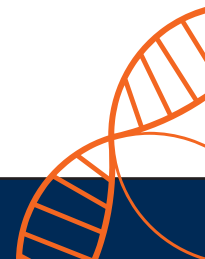


Table 1 - National milk production

Country	Year	Total number of dairy buffaloes	Total number of dairy herds	Average of buffaloes per herd	Average milk production per buffaloes per year (kg)	Percent of fat production per buffaloes per year (%)	Percent of protein production per buffaloes per year (%)	Average cell count
Italy (AIA) ¹	2020	403.627	1.971					
Italy (AIA)	2021	414.150	1.937					
Pakistan (by CABROP)	2022	24.179						

¹ Statistics from National Zootechnical Data Bank (BDN), reference date: june 30th, 2020.
Number of heads = cows + adult males + young males and females

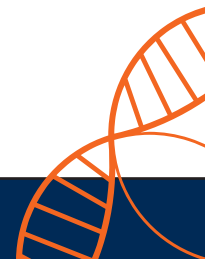


Table 2 - Position of milk recording: Methods and Organisations

Country	Year	Number of recorded buffaloes	Percent of recorded cows	Number of recorded herds	Percent of recorded herds	Average number of buffaloes per recorded herd	buffaloes in automatic milking, %	Herds in automatic milking, %
Italy (AIA)	2020	67.598		312		216,7		
Italy (AIA)	2021	74.048		321		230,7		

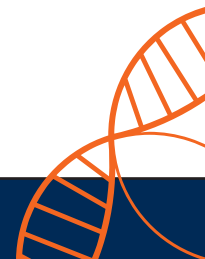


Table 3 - Milk recording methods

Country	Year	Method, % of rec buffaloes A	Method, % of rec buffaloes B	Method, % of rec buffaloes C	Avg nr of recording days per herd and year	Avg nr of sampled recordings per herd and year	Sampling scheme, % of rec buffaloes P	Sampling scheme, % of rec buffaloes E	Sampling scheme, % of rec buffaloes M	Sampling scheme, % of rec buffaloes Z	Sampling scheme, % of rec buffaloes T	Sampling scheme, % of rec buffaloes C	Sampling scheme, % of rec buffaloes I
Italy (AIA)	2022	100											

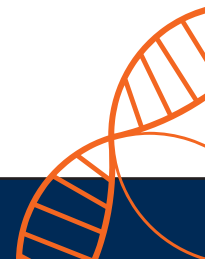


Table 4.1 - All breeds together - All recorded buffaloes

Country	Year	Number of lactations	Length of the lactations (days)	Milk yield per recorded buffalo (kg)	Milk per buffalo in 305 days (kg)	Percent fat content (%)	Percent protein content (%)	Average cell count
Italy (AIA)	2020	41.137	270	2.368	2.368	7,77	4,64	
Italy (AIA)	2021	49.796	270	2.332	2.332	7,64	4,45	

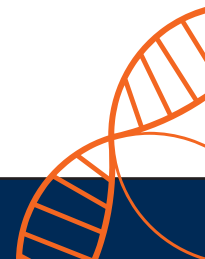


Table 4.2 - All breeds together - Buffaloes in herdbook

Country	Year	Number of lactations	Length of the lactations (days)	Milk yield per recorded buffalo (kg)	Milk per cow in 305 days (kg)	Percent fat content (%)	Percent protein content (%)	Average cell count
Italy (AIA)	2020	41.137	270	2.368	2.368	7,77	4,64	
Italy (AIA)	2021	49.796	270	2.332	2.332	7,64	4,65	

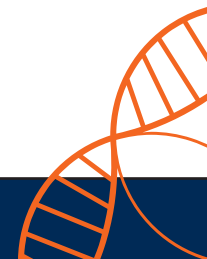


Table 4.3 - Main breeds - All recorded buffaloes

Country	Year	Breed	Number of lactations	Length of the lactations (days)	Milk yield per recorded buffalo (kg)	Milk per cow in 305 days (kg)	Percent fat content (%)	Percent protein content (%)	Average cell count
Italy (AIA)	2020	Mediterranean Buffalo	41.137	270	2.368	2.368	7,74	4,64	
Italy (AIA)	2021	Mediterranean Buffalo	49.796	270	2.332	2.332	7,64	4,65	

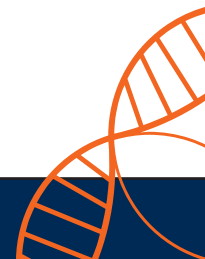
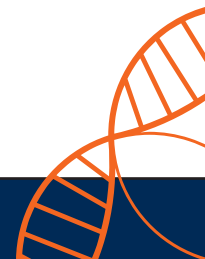


Table 4.4 - Main breeds - Buffaloes in herdbook

Country	Year	Breed	Number of lactations	Length of the lactations (days)	Milk yield per recorded buffalo (kg)	Milk per cow in 305 days (kg)	Percent fat content (%)	Percent protein content (%)	Average cell count
Italy (AIA)	2020	Mediterranean Buffalo	41.137	270	2.368	2.368	7,74	4,64	
Italy (AIA)	2021	Mediterranean Buffalo	49.796	270	2.332	2.332	7,64	4,65	



ICAR Member Organisations participating in the survey

The following are the contacts of the ICAR Member Organisations who participated in the surveys and that are responsible for the submission of the data.

Their collaboration is acknowledged and much appreciated

Australia

Matthew Shaffer
DataGene Limited
mshaffer@datagene.com.au; Toine.Roozen@slu.se

Austria

Martin Stegfellner
Zentrale Arbeitsgemeinschaft Österreichischer Rinderzüchter (ZAR)
stegfellner@zar.at

Belgium (Flemish Region)

Jos Buiting
Coöperatie Koninklijke CRV u.a.
jos.buiting@crv4all.com

Belgium (Wallonie)

Jean-François Duckerts
Service Public de Wallonie (SPW)
Direction Générale Agriculture, Ressources naturelles et Environnement (DGARNE)
Département du Développement
Direction de la Qualité
jeanfrancois.duckerts@spw.wallonie.be

Bulgaria

Georgi Yordanov
Executive agency for selection and reproduction in animal breeding
g.yordanov@iasrj.eu

Canada

Daniel Lefebvre
Lactanet Canada
dlefebvre@lactanet.ca

Chile

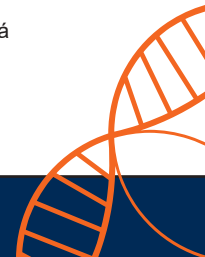
Jorge Lama
COOPRINSEM
jlama@cooprinsem.cl

Croatia

Zdenko Ivkić
Hrvatska agencija za poljoprivredu i hranu (Croatian Agency for Agriculture and Food)
zdenko.ivkic@hapih.hr

Czech Republic

Josef Kucera
Czech Moravian Breeder's Corporation Inc. (Českomoravská společnost chovatelů, a.s.)
kucera@cmsch.cz



Denmark

Jonas Persson
SEGES Innovation P/S
jop@vikingdanmark.dk

Estonia

Kaivo Ilves
Eesti Põllumajandusloomade Jõudluskontrolli AS
kaivo.ilves@epj.ee

Finland

Juho Kyntäjä
ProAgria Group
juho.kyntaja@mtech.fi

France

Laurent Journaux
France Génétique Elevage
laurent.journaux@france-genetique-elevage.fr

Germany

Folkert Onken
Deutscher Verband für Leistungs und Qualitätsprüfungen e.V (German Association for Performance and Quality Testing, DLQ)
folkert.onken@dlq-web.de

Germany

Nora Hammer
German Livestock Association (Bundesverband Rind und Schwein e.V. – BRS)
N.Hammer@rind-schwein.de

Hungary

Árpád Kenéz
Livestock Performance Testing Ltd. Hungary, (Állattenyésztési Teljesítményvizsgáló Kft/ Livesto)
kenez.arpad@atkft.hu

Iceland

Karvel Lindberg Karvelsson
The Icelandic Agricultural Advisory Centre
klk@rml.is

Ireland

Brian Coughlan
ICBF, Irish Cattle Breeding Federation Society Limited
bcoughlan@icbf.com; scoughlan@icbf.com

Italy

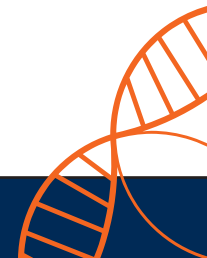
Mauro Fioretti
AIA, Associazione Italiana Allevatori
Fioretti.m@aia.it

Latvia

Ivans Vorslovs
State Agency Agricultural Data Centre (ADC)
Mairita.Elbrete@ldc.gov.lv; ldc@ldc.gov.lv

Luxembourg

Armand Braun
CONVIS - Herdbuch Service Elevage et Génétique
armand.braun@convis.lu; info@convis.lu



Mexico

Felipe J. Ruiz Lopez
Asociacion Holstein de México, AC
felipe.ruiz@holstein.com.mx;

New Zealand

Bevin Harris
Livestock Improvement Corporation
bharris@lic.co.nz

Norway

Tone Roalkvam
TINE SA
tone.roalkvam@tine.no

Pakistan

Jason Aldiss
CABROP
jason@advancedagritech.com

Poland

Joanna Kwaśniewska
PFCBDF, Polish Federation of Cattle Breeders and Dairy Farmers
j.kwasniewska@pfhb.pl

Romania

Neata Imparatur Toader
Asociatia Generala a Crescatorilor de Taurine din Romania
agctr1@gmail.com

Romania

Dan Vitelar
Asociatia Crescatorilor de Vaci Baltata Romaneasca tip Simmental
office@baltataromaneasca.ro

Slovak Republic

Marta Dianova
The Breeding Services of the Slovak Republic (Plemenárske služby SR,
š.p.,)
MartaDianova@pssr.sk

Slovenia

Marija Klopčič
University of Ljubljana, Biotechnical Faculty
marija.klopčič@bf.uni-lj.si

South Korea

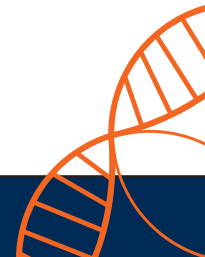
Jiesob Shin
Dairy Cattle Improvement Centre, NongHyup Agribusiness Group Inc.
nicejiseob@naver.com

Spain

José Luis Urquijo y Narváez
FEAGAS (Federación Española de Asociaciones de Ganado Selecto)
feagas@feagas.es

Switzerland

Eric Barras
ASR Arbeitsgemeinschaft Schweizerischer Rinderzüchter
barras@holstein.ch



Taiwan

Jeng-Fang Huang
Livestock Research Institute
huangajf@mail.tlri.gov.tw

The Netherlands

Jos Buiting
Coöperatie Koninklijke CRV u.a.
jos.buiting@crv4all.com

Tunisia

Ezzeddine Chalhaf
Ministère de l'Agriculture, Office de l'Élevage et des Pâturages (OEP)
dg@oep.nat.tn

United Kingdom

Andrew John Bradley
Quality Milk Management Services Ltd
andrew.bradley@qmms.co.uk

United Kingdom

Darren Todd
Holstein UK
darrentodd@nbdc.uk

United Kingdom

Janette Mathie
CIS, Cattle Information Service
janettemathie@thecis.co.uk

United Kingdom

David B. Hambrook
Royal Jersey Agricultural & Horticultural Society-Royal Jersey Showground
Milk Records
genetics@royaljersey.co.uk

Uruguay

Fernando Sotelo
Instituto Nacional para el Mejoramiento Lechero
fsotelo@mu.org.uy

