Research on Calving Traits in the Czech Republic

Prepared by the Czech Research Team with the particular input of Zdenka Vesela

Presented by Pavel Bucek

France, Nantes - Tuesday, 27. 08. 2013

Acknowledgement - countries (organisations) which provided data for the research on the international genetic evaluation of calving traits in the Czech Republic

Czech Republic	Czech Moravian Breeders´ Corporation, Inc. Czech Beef Breeders Association Institute of Animal Science
France	France Génétique Elevage
Denmark	Knowledge Centre for Agriculture
Ireland	Irish Cattle Breeding Federation Society Limited
Sweden	Swedish Dairy Association
Spain	INIA, FECL
Great Britain	Edinburgh Genetic Evaluation Service, a unit of Scottish Agricultural College

Outline/agenda

- Current situation in research on calving traits in the Czech Republic
- Proposal for discussion and expected deliverables for the meeting in Prague in November (including planning for other phases)
- Planning of the reports for the first parts of the research
- New overview of the data and results

Current situation with data

- **First report in Denmark** with basic descriptive statistics
- There are some **updated tables** on the basis of the updated data and information from Great Britain
- **New tables** which were not presented in Denmark
- There were a set of requirements from the Czech Research Group in Denmark: specification of the structure of files and a request for additional information from Great Britain
- There are complete pedigrees together with the information of country of origin. This will be very important for the analysis of connectedness among countries
- This means that all information which is necessary for our research is available and we really appreciate the kind interest and support from all involved countries and Interbull centre
- **The research team started with an updated analysis in August**
- **This means that it is possible to continue according to the research plan presented by me in London and Uppsala**

Plan of actions and expected deliverables for the meeting in Prague and before the meeting in Prague

- Analysis of situation in participant countries – written report before the meeting in Prague
- Basic statistical analysis and checking of data files – written report before the Prague meeting
- Identification of genetic connectedness between countries – presentation at the Prague meeting
- Preparation of input data files for genetic parameter estimation – Presentation at the Prague meeting
- Preparation and testing of model equations and genetic parameter estimation on data files within participant countries – presentation at the Prague meeting

Plan of action and expected deliverables for the meeting in Prague and before the meeting in Prague

- **We are not certain about this point for the meeting in Prague: Genetic parameters 2 by 2 countries estimation, resp. 3 by 3 countries (across France). Estimation of genetic correlations among countries**
- This will be influenced by the previous point: convergence of analysis, connectedness of data….. etc.
- For this point it is actually difficult to estimate time requirements
- This will be planned in November

Charolaise - number of animals with performance

Birth weights (BWT)
(6,488,618)

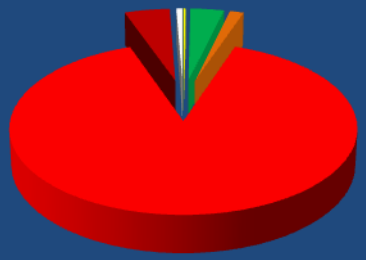
Calving ease (CAE)
(6,775,318)

Stillbirth (STB)
(364,635)

	CZE	DNK	FRA	IRL	SWE
BWT	40,113 *0.62%*	63,470 *0.98%*	**6,256,877** ***96.43%***		128,158 *1.98%*
CAE	40,113 *0.59%*	114,093 *1.68%*	**6,251,815** ***92.27%***	231,866 *3.42%*	137,431 *2.03%*
STB		132,769 *36.41%*		231,866 *63.59%*	

Limousine - Number of animals with performance

Birth weights (BWT)
(3,910,394)



CZE DNK ESP
FRA GBR IRL
SWE

Calving ease (CAE)
(4,055,484)

CZE DNK FRA
GBR IRL SWE

Stillbirth (STB)
(481,562)

DNK IRL

	CZE	DNK	ESP	FRA	GBR	IRL	SWE
BWT	9,554 *0.24%*	139,180 *3.56%*	56,814 *1.45%*	**3,493,022** ***89.33%***	186,814 *4.78%*		25,010 *0.64%*
CAE	9,554 *0.24%*	258,448 *6.37%*		**3,468,851** ***85.53%***	121,406 *2.99%*	170,856 *4.21%*	26,369 *0.65%*
STB		310,706 *64.52%*				170,856 *35.48%*	

Connectedness among countries

- We started with the number of common bulls with progenies in the different countries and connectedness was defined through the sire of progenies with performance and the sire of dams of progenies with performance
- These are preliminary results and we are planning to continue with more sophisticated methods and with the sharing of progenies of common bulls in relevant countries

Number of common bulls for birth weight-Charolaise

	CZE	DNK	FRA	SWE
CZE	1,058	55 (5.2%)	240 (22.7%)	36 (3.4%)
DNK	55 (2.2%)	2,535	102 (4.0%)	48 (1.9)
FRA	240 (0.17%)	102 (0.07%)	140,988	48 (0.03%)
SWE	36 (0.7%)	48 (1.0%)	48 (1.0%)	4,967

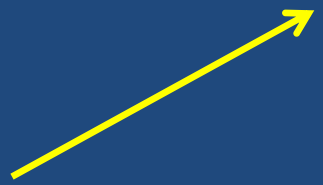
Bulls in a particular country on the diagonal
Common bulls above the diagonal

Number of common bulls for calving ease-Charolaise

	CZE	DNK	FRA	IRL	SWE
CZE	1,058	55 (5.2%)	240 (22.7%)	50 (4.7%)	36 (3.4%)
DNK	55 (1.7%)	3,115	103 (3.3%)	62 (2.0%)	50 (1.6%)
FRA	240 (0.17%)	103 (0.07%)	140,946	263 (0.2%)	48 (0.03%
IRL	50 (0.3%)	62 (0.4 %)	263 (1.8%)	14,958	27 (0.2%)
SWE	36 (0.7%)	50 (1.0)	48 (0.9%)	27 (0.5%)	5,212

Number of common bulls for stillbirth-Charolaise

	DNK	IRL
DNK	3,153	62 (2.0%)
IRL	62 (0.4%)	14,958



France???

Number of common bulls for birth weight-Limousine

	CZE	DNK	ESP	FRA	GBR	SWE
CZE	404	42 (10.4%)	50 (12.4%)	135 (33.4%)	40 (9.9%)	23 (5.7%)
DNK	42 (0.9%)	4,720	64 (1.4%)	108 (2.3%)	68 (1.4%)	66 (1.4%)
ESP	50 (3.6%)	64 (4.6%)	1,402	372 (26.5%)	95 (6.8%)	31 (2.2%)
FRA	135 (0.2%)	108 (0.2%)	572 (0.6%)	61,821	377 (0.6%)	41 (0.07%)
GBR	40 (0.4%)	68 (0.7%)	95 (1.0%)	377 (4.0%)	9,474	27 (0.3%)
SWE	23 (2.2%)	66 (6.4%)	31 (3.0%)	41 (4.0%)	27 (2.6%)	1,032

Number of common bulls for calving ease-Limousine

	CZE	DNK	FRA	GBR	IRL	SWE
CZE	404	41 (10.1%)	135 (33.4%)	42 (10.4%)	38 (9.4%)	23 (5.7%)
DNK	41 (0.7%)	6,161	107 (1.7%)	65 (1.1%)	62 (1.0%)	66 (1.1%)
FRA	135 (0.2%)	107 (0.2%)	61,286	290 (0.5%)	185 (0.3%)	41 (0.06%)
GBR	42 (0.6%)	65 (1.0%)	290 (4.3%)	6,723	226 (3.4%)	27 (0.4%)
IRL	38 (0.4%)	62 (0.6%)	185 (1.8%)	226 (2.2%)	10,247	21 (0.2%)
SWE	23 (2.2%)	66 (6.2%)	41 (3.9%)	27 (2.5%)	21 (2.0%)	1,066

Number of common bulls for stillbirth-Limousine

	DNK	IRL
DNK	6,390	63 (1.0%)
IRL	63 (0.6%)	10,247

Number of maternal grand sire common bulls for birth weight-Charolaise

	CZE	DNK	FRA	SWE
CZE	665	36 (5.4%)	170 (25.6%)	30 (4.5%)
DNK	36 (1.7%)	2,158	104 (4.8%)	57 (2.6%)
FRA	170 (0.2%)	104 (0.09%)	117,009	41 (0.04%)
SWE	30 (0.7%)	57 (1.4%)	41 (1.0%)	4,063

Number of maternal grand sire common bulls for calving ease- Charolaise

	CZE	DNK	FRA	IRL	SWE
CZE	665	36 (5.4%)	170 (25.6%)	35 (5.3%)	31 (4.7%)
DNK	36 (1.4%)	2,550	111 (4.6%)	63 (2.5%)	58 (2.3%)
FRA	179 (0.1%)	111 (0.09%)	117,059	308 (0.3%)	42 (0.035%)
IRL	35 (0.7%)	63 (1.2%)	308 (5.8%)	5,300	26 (0.5%)
SWE	31 (0.7)	58 (1.4%)	42 (1.0%)	26 (0.6%)	4,258

Number of maternal grand sire common bulls for stillbirth- Charolaise

	DNK	IRL
DNK	2,580	64 (2.5%)
IRL	64 (1.2%)	5,300

Number of maternal grand sire common bulls for birth weight-Limousine

	CZE	DNK	ESP	FRA	GBR	SWE
CZE	322	33 (10.3%)	43 (13.4%)	175 (54.3%)	26 (8.1%)	17 (5.3%)
DNK	33 (0.9%)	3,582	57 (1.6%)	106 (3.0%)	48 (1.3%)	67 (1.9%)
ESP	43 (3.2%)	57 (4.2%)	1,360	335 (24.6%)	67 (4.9%)	28 (2.1%)
FRA	175 (0.4%)	106 (0.2%)	335 (0.7%)	46,215	203 (0.4%)	35 (0.1%)
GBR	26 (0.4%)	48 (0.8%)	67 (1.1%)	203 (3.4%)	5,917	21 (0.4%)
SWE	17 (2.2%)	67 (8.8%)	28 (5.7%)	35 (4.6%)	21 (2.8%)	760

Number of maternal grand sire common bulls for calving ease-Limousine

	CZE	DNK	FRA	GBR	IRL	SWE
CZE	322	33 (10.3%)	174 (54.0%)	28 (8.7%)	32 (9.9%)	17 (5.3%)
DNK	33 (0.7%)	4,560	108 (2.4%)	51 (1.1%)	52 (1.1%)	67 (1.5%)
FRA	174 (0.4%)	108 (0.3%)	46,015	218 (0.5%)	228 (0.5%)	35 (0.08%)
GBR	28 (0.5%)	51 (0.8%)	218 (3.6%)	6,074	178 (2.9%)	22 (0.4%)
IRL	32 (0.8%)	52 (1.3%)	228 (5.5%)	178 (4.3%)	4,139	22 (0.5%)
SWE	17 (2.2%)	67 (8.7%)	35 (4.5%)	22 (2.9%)	22 (2.9%)	772

Number of maternal grand sire common bulls for stillbirth-Limousine

	DNK	IRL
DNK	4,706	52 (1.1%)
IRL	52 (1.3%)	4,123

Charolaise birth weights sire

Number of sires	Number of records (progenies) MIN	MAX	MEAN	STD	Countries
1,058	1	761	37.7	58.8	CZE
2,535	1	553	21.9	39.2	DNK
141,035	1	34,501	41.8	341.0	FRA
4,967	1	801	25.7	42.1	SWE

Charolaise calving ease sire

Number of sires	Number of records (progenies) MIN	MAX	MEAN	STD	Countries
1,058	1	761	37.7	58.8	CZE
3,115	1	872	23.8	45.2	DNK
141,000	1	34,471	41.8	341.0	FRA
14,132	1	2,591	9.8	43.7	IRL
5,212	1	850	26.4	43.4	SWE

Charolais stillbirth sire

Number of sires	Number of records (progenies)				Countries
	MIN	MAX	MEAN	STD	
3,153	1	1,035	24.4	48.2	DNK
14,132	1	2,591	9.8	43.7	IRL

Limousine birth weights sire

Number of sires	Number of records (progenies) MIN	MAX	MEAN	STD	Countries
404	1	210	23.4	34.8	CZE
4,720	1	2,162	26.0	62.0	DNK
1,402	1	820	36.2	53.3	ESP
61,839	**1**	**57,709**	**52.2**	**352.2**	**FRA**
9,475	1	1,685	19.6	55.3	GBR
1,032	1	248	23.7	32.7	SWE

Limousine calving ease sire

Number of sires	Number of records (progenies) MIN	MAX	MEAN	STD	Countries
404	1	210	23.4	34.8	CZE
6,161	1	3,365	27.2	77.1	DNK
61,302	1	57,609	52.3	353.0	FRA
6,723	1	1,497	17.9	45.3	GBR
9,680	1	2,763	10.3	38.7	IRL
1,066	1	250	24.7	34.1	SWE

Limousine stillbirth sire

Number of sires	Number of records (progenies) MIN	MAX	MEAN	STD	Countries
6,390	1	3,839	28.5	84.1	DNK
9,680	1	2,763	10.3	38.7	IRL

Charolaise birth weights maternal grand sire

Number of sires	Number of records (progenies) MIN	MAX	MEAN	STD	Countries
1,552	1	1,279	24.2	63.1	CZE
2,289	1	422	24.6	44.0	DNK
116,986	**1**	**32,940**	**42.4**	**350.1**	**FRA**
4,025	1	894	30.5	55.0	SWE

Limousine birth weights maternal grand sire

Number of sires	Number of records (progenies) MIN	MAX	MEAN	STD	Countries
559	1	332	16.5	35.6	CZE
3,790	1	2131	32.7	77.3	DNK
2,290	1	692	22.6	50.1	ESP
46,069	**1**	**56,840**	**58.3**	**434.6**	**FRA**
7,157	1	3,211	25.7	85.6	GBR
771	1	476	28.9	45.0	SWE

Charolaise calving ease maternal grand sire

Number of sires	Number of records (progenies) MIN	MAX	MEAN	STD	Countries
1,552	1	1,279	24.2	63.1	CZE
2,691	1	689	29.4	53.5	DNK
116,975	**1**	**32,925**	**42.4**	**349.9**	**FRA**
5,438	1	7,813	32.4	206.7	IRL
4,211	1	954	31.0	56.1	SWE

Limousine calving ease maternal grand sire

Number of sires	Number of records (progenies) MIN	MAX	MEAN	STD	Countries
559	1	332	16.5	35.6	CZE
4,767	1	2,740	35.8	96.2	DNK
45,920	**1**	**56,812**	**58.2**	**435.0**	**FRA**
6,854	1	1,896	17.6	54.1	GBR
4,198	1	4,300	31.3	164.7	IRL
782	1	483	29.5	45.7	SWE

CHA STB Maternal Grand Sire

Number of sires	Number of records (progenies) MIN	MAX	MEAN	STD	Countries
2,725	1	828	31.2	57.6	DNK
5,438	1	7,813	32.4	206.7	IRL

LIM STB Maternal Grand Sire

Number of sires	Number of records (progenies) MIN	MAX	MEAN	STD	Countries
4,916	1	3,276	38.3	106.3	DNK
4,198	1	4,300	31.3	164.7	IRL

CHA BWT dam

Number of dams	Number of records (progenies) MIN	MAX	MEAN	STD	Countries
10,924	1	58	3.7	2.9	CZE
19,249	1	18	3.3	2.5	DNK
2,014,281	1	17	3.1	2.3	FRA
36,275	1	16	3.5	2.5	SWE

LIM BWT dam

Number of dams	Number of records (progenies) MIN	MAX	MEAN	STD	Countries
2,487	1	69	3.8	3.3	CZE
38,678	1	18	3.6	2.9	DNK
17,895	1	16	3.2	2.4	ESP
941,455	1	19	3.7	2.8	FRA
56,341	1	75	3.3	3.0	GBR
7,000	1	16	3.5	2.7	SWE

CHA CAE dam

Number of dams	Number of records (progenies) MIN	MAX	MEAN	STD	Countries
10,924	1	58	3.7	2.9	CZE
31,911	1	18	3.6	2.7	DNK
2,013,305	1	17	3.1	2.3	FRA
74,708	1	55	3.1	2.4	IRL
39,028	1	16	3.5	2.5	SWE

LIM CAE dam

Number of dams	Number of records (progenies) MIN	MAX	MEAN	STD	Countries
2,487	1	69	3.8	3.3	CZE
70,629	1	19	3.7	2.9	DNK
937,795	1	18	3.7	2.8	FRA
52,943	1	41	2.3	1.9	GBR
56,853	1	70	3.0	2.5	IRL
7,441	1	16	3.5	2.7	SWE

CHA STB dam

Number of dams	Number of records (progenies) MIN	MAX	MEAN	STD	Countries
34,394	1	20	3.9	2.9	DNK
74,708	1	55	3.1	2.4	IRL

LIM STB dam

Number of dams	Number of records (progenies) MIN	MAX	MEAN	STD	Countries
77,805	1	19	4.0	3.0	DNK
56,853	1	70	3.0	2.5	IRL

Summary of sample data set

- There are slight differences in these tables in comparison with the meeting in Denmark
- We have excluded unknown parents and added data from Great Britain

Summary of the sample dataset for birth weight (Charolaise)

	CZE	DNK	ESP	FRA	GBR	IRL	SWE
Records	40,113	63,470		6,256,877			128,158
Herds (average size)	265 (151.4)	1,397 (45.4)		22,420 (279.1)			1,386 (92.5)
Contemporary groups (average size)	3,710 (10.8)	8,706 (7.3)		357,931 (17.5)			9,784 (13.1)
Sires (offspring)	1,058 (37.7)	2,535 (21.9)		140,988 (41.8)			4,967 (25.7)
Dams (calves)	10,924 (3.7)	19,249 (3.3)		2,014,281 (3.1)			36,275 (3.5)

Summary of the sample dataset for calving ease (Charolaise)

	CZE	DNK	ESP	FRA	GBR	IRL	SWE
Records	40,113	114,093		6,251,815		231,866	137,431
Herds	265 (151.4)	2,674 (42.7)		22,413 (279.0)		9,613 (24.1)	1,542 (89.1)
Contemporary groups	3,710 (10.8)	16,553 (6.7)		357,847 (17.5)		9,609 (24.1)	9,610 (14.3)
Sires	1,058 (37.7)	3,115 (23.8)		140,946 (41.8)		14,958 (9.8)	5,212 (26.4)
Dams	10,924 (3.7)	31,911 (3.6)		2,013,305 (3.1)		74,708 (3.1)	39,028 (3.5)

Summary of the sample dataset for stillbirth (Charolaise)

	CZE	DNK	ESP	FRA	GBR	IRL	SWE
Records		132,769				231,866	
Herds		2,910 (45.6)				9,613 (24.1)	
Contemporary groups		19,150 (6.9)				9,609 (24.1)	
Sires		3,153 (24.4)				14,958 (9.8)	
Dams		34,394 (3.9)				74,708 (3.1)	

Summary of the sample dataset for birth weight (Limousine)

	CZE	DNK	ESP	FRA	GBR	IRL	SWE
Records	9,554	139,180	56,814	3,493,022	186,814		25,010
Herds	99 (96.5)	2,651 (52.5)	344 (165.2)	11,601 (301.1)	2,906 (64.3)		299 (83.6)
Contemporary groups	1,082 (8.8)	17,440 (8.0)	5,648 (10.1)	198,994 (17.5)	22,939 (8.1)		1,974 (12.7)
Sires	404 (23.4)	4,720 (26.0)	1,402 (36.2)	61,821 (52.2)	9,474 (19.6)		1,032 (23.7)
Dams	2,487 (3.8)	38,678 (3.6)	17,895 (3.2)	941,455 (3.7)	56,341 (3.3)		7,000 (3.5)

Summary of the sample dataset for calving ease (Limousine)

	CZE	DNK	ESP	FRA	GBR	IRL	SWE
Records	9,554	258,448		3,468,851	121,406	170,856	26,369
Herds	99 (96.5)	5,896 (43.8)		11,538 (300.6)	2,127 (57.1)	6,798 (25.1)	322 (81.9)
Contemporary groups	1,082 (8.8)	36,874 (7.0)		197,136 (17.6)	10,131 (12.0)	6,797 (25.1)	1,945 (13.5)
Sires	404 (23.4)	6,161 (27.2)		61,286 (52.3)	6,723 (17.9)	10,247 (10.3)	1,066 (24.7)
Dams	2,487 (3.8)	70,629 (3.7)		937,795 (3.7)	52,943 (2.3)	56,853 (3.0)	7,441 (3.5)

Summary of the sample dataset for stillbirth (Limousine)

	CZE	DNK	ESP	FRA	GBR	IRL	SWE
Records		310,706				170,856	
Herds		6,377 (48.7)				6,798 (25.1)	
Contemporary groups		6,797 (25.1)				43,472 (7.1)	
Sires		6,390 (28.4)				10,247 (10.3)	
Dams		77,805 (4.0)				56,853 (3.0)	

Thank you for your attention!