

## INTRODUCTION

The latest routine international evaluation for calving traits took place as scheduled at the Interbull Centre. Data from twenty-one (21) countries were included in this evaluation.

International genetic evaluations for calving traits of bulls from Australia, Austria-Germany, Belgium, Canada, Denmark-Finland-Sweden, France, Germany, Hungary, Ireland, Israel, Italy, Netherlands, New Zealand, Norway, Japan, Spain, Switzerland, the United Kingdom, Slovak Republic, Poland and the United States of America were computed. Brown Swiss, Holstein, and Red Dairy Cattle breed data were included in this evaluation.

## CHANGES IN NATIONAL PROCEDURES

Changes in the national genetic evaluation of calving traits are as follows:

FRA (HOL) French Holstein breeding organisations have made the choice to suspend the publication of EBVs for bulls that entered progeny testing and produced daughters but were not subsequently placed on the market as public breeding bulls based on their progeny test results. As consequence, around 1000 bulls are now missing or their publication status have changed from official to unofficial

ITA (HOL) Base change, applied a yearly cutoff of data causing some bulls to be missings

IRL (ALL) Pedigree verification. Minor change in data edits: individual milk records where the sire is unknown are excluded from the evaluation unless the cow has at least 3 tests within a given lactation.

POL (HOL) New definition of UPG groups, pedigree pruning, new genetic base, applied new coding for status of bulls and type of proof for MACE according to the new recommendation from Interbull Centre. Model changed and new variance components were estimated. New data filtering applied, major changes have been: filtered heifer and cow traits separately, used herd-year instead of herd-year-season as CG, removed herd-year of less than 5 records instead of 3, removed 2005 cow traits due to low number and different frequency, included up to 10 instead of 6 parities, changed gestation length filter from empirical to hard coded 265-297 days, improved strategy of filtering out twinning/triplets to retain more useful records. The new data filtering causes drops in information and some bulls to be missing from the evaluation

AUS (ALL) Decrease in information due to pedigree updates and change in status of some bulls that do not qualify for inclusion any longer. DSB: Used to participate with data based on DCE but have now calculated actual breeding values for dsb and msb. Due to change in trait provided for DSB also the direction of scale has changed from B- to B+.

MSB: First time participating

DFS (ALL) Editing causing drops in information

DEA (BSW) Base change

CAN (ALL) Base change

ISR (HOL) Small reduction on Herds/daughters/EDC due to corrections in pedigree.

EST (ALL) Small decrease in number of EDC of some bulls having the same number of daughters/herds compare to previous evaluation due to the changed number of herd of changed location of some daughters in different dairy farms of owners

USA (ALL) Drops in herds/daughters/EDC are related to pedigree correctness and daughter-herd-year minimum edits.

DEU (ALL) Base change

JPN (HOL) Base change

CHE (HOL, BSW) Base change. Change from a multi-trait sire-mgs to a multi-trait animal model with direct and maternal genetic effects. New variance components, change of trait definitions: The new ebvs only include first (heifer) calvings whereas the old ebvs included first and later calvings, adding heterosis and recombination to BSW evaluations, pedigree includes all the genotyped animals, change in base definition (6 to 8 years old cows), change on decode farm ID (HOL): farm code ID from Swiss national animal recording database is now used. GES: first time participating for BSW.

GBR (HOL) Base change

BEL (HOL) Slight drops in information due to pedigree verification.

NZL (ALL) Pedigree verification causing slight change in information and reliability. GES: 12 HOL and 6 JER bulls have extreme proof deviation from the birth year mean. This group of bulls has been specifically bred to be short gestation length bulls and are not just normal population bulls.

ESP (HOL) Base change

NLD (ALL) Base change

## INTERBULL CHANGES COMPARED TO THE PREVIOUS ROUTINE RUN

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A new document called confdoc\_DEFINITION{runid}.itb has been introduced reporting all the trait definitions applied by countries as reported in the PREP.

Direct Gestation Length (ges) has been added as the fifth trait in the calving evaluation starting from the August 2025 MACE routine evaluation, and therefore added in the calv{BRD}{RUNID}.itb and calv{BRD}{RUNID}.ipr.

During 2023-2024, Interbull Centre and the Interbull Technical Committee (ITC) have worked on developing a new procedures for adjusting of the international correlations after a given test run in case countries would decide NOT TO implement the changes tested in the next routine run. Until now, the relative difference between the previous routine and test run correlations, for each pair of countries, was assessed and the average value of the two was used whenever such difference did exceed a threshold of 0.01. Otherwise, correlations from the latest test run were used. However, in some cases, the difference in correlations between routine/test runs were way above a 1% difference so that by using the average value the newly derived correlations would still be greatly affected by the changes tested but not implemented. This remark has been made in few occasions by some participating countries. A new approach proposed by Peter Sullivan, was developed and extensively tested. The new approach is based on first identifying the relative impact of the changes tested by a country during the test run (but not implemented in a routine run) and then correcting the whole correlation matrix detracting such estimated impact. This new approach would assure that the new correlations would be free from any effect from any changes tested but not implemented. The new procedure has been fully developed during 2023 and extensively tested during 2024 and introduced officially in the April 2025 routine evaluation.

## DATA AND METHOD OF ANALYSIS

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Data were national genetic evaluations of AI sampled bulls with at least 10 daughters or 10 EDC (for clinical mastitis and maternal calving traits at least 50 daughters or 50 EDC, and for direct calving traits at least 50 calvings or 50 EDC) in at least 10 herds. Table 1 presents the amount of data included in this Interbull evaluation for all breeds.

National proofs were first de-regressed within country and then analysed jointly with a linear model including the effects of evaluation country, genetic group of bull and bull merit. Heritability estimates used in both the de-regression and international evaluation were as in each country's national evaluation.

Table 2 presents the date of evaluation as supplied by each country

Estimated genetic parameters and sire standard deviations are shown in APPENDIX I and the corresponding number of common bulls are listed in APPENDIX II.

## SCIENTIFIC LITERATURE

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The international genetic evaluation procedure is based on international work described in the following scientific publications:

International genetic evaluation computation:  
Schaeffer. 1994. J. Dairy Sci. 77:2671-2678  
Klei, 1998. Interbull Bulletin 17:3-7

Verification and Genetic trend validation:  
Klei et al., 2002. Interbull Bulletin 29:178-182.  
Boichard et al., 1995. J. Dairy Sci. 78:431-437

Weighting factors:  
Fikse and Banos, 2001. J. Dairy Sci. 84:1759-1767

De-regression:  
Sigurdsson and G. Banos. 1995. Acta Agric. Scand. 45:207-219  
Jairath et al. 1998. J. Dairy Sci. Vol. 81:550-562

Genetic parameter estimation:  
Klei and Weigel, 1998, Interbull Bulletin 17:8-14  
Sullivan, 1999. Interbull Bulletin 22:146-148

Post-processing of estimated genetic correlations:  
Mark et al., 2003, Interbull Bulletin 30:126-135  
Jorjani et al., 2003. J. Dairy Sci. 86:677-679  
<https://wiki.interbull.org/public/rG%20procedure?action=print>

Time edits  
Weigel and Banos. 1997. J. Dairy Sci. 80:3425-3430

International reliability estimation  
Harris and Johnson. 1998. Interbull Bulletin 17:31-36

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NEXT ROUTINE INTERNATIONAL EVALUATION  
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Dates for the next routine evaluation can be found on  
<https://interbull.org/ib/servicecalendar>

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NEXT TEST INTERNATIONAL EVALUATION  
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Dates for the next test run can be found on  
<https://interbull.org/ib/servicecalendar>

From 2025 an extra MACE test run has been scheduled in May, data submissions' deadline and target for distribution of results are all reported in the above link.

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PUBLICATION OF INTERBULL ROUTINE RUN  
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Results were distributed by the Interbull Centre to designated representatives in each country. The international evaluation file comprised international proofs expressed on the base and unit of each country included in the analysis. Such records readily provide more information on bull performance in various countries, thereby minimizing the need to resort to conversions.

At the same time, all recipients of Interbull results are expected to honor the agreed code of practice, decided by the Interbull Steering Committee, and only publish international evaluations on their own country scale. Evaluations expressed on another country scale are confidential and may only be used internally for research and review purposes.

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PUBLICATION OF INTERBULL TEST RUN  
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Test evaluation results are meant for review purposes only and should not be published.

^LTable 1. National evaluation data considered in the Interbull evaluation for calving (April Routine Evaluation 2026).  
Number of records for direct calving ease by breed

Country	BSW	GUE	HOL	JER	RDC	SIM
AUS			6779			
BEL			1420			
CAN	180		14143		558	
CHE	1464		1973			
CZE						
DEA	3867					
DEU			21643		328	
DFS			11732		6801	
ESP			2609			
EST						
FRA	441		12783			
FRM						
GBR			3551			
HUN			1744			
IRL			1236		26	
ISR			734			
ITA			8610			

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JPN
KOR
LTU
LVA
NLD          214          16366          92
NOR          4131
NZL          660          34
POL          5296
PRT
SVK          767
SVN
URY
USA          591          39296
ZAF
CAM

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No.Records      6757          156349          11970
Pub. Proofs    6352          0          140554          9846          14284          0
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^LAPPENDIX I. Sire standard deviations in diagonal and genetic correlations below diagonal

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BSW      dce
-----
      DEA      NLD      USA      CHE      CAN      FRA
DEA     9.28
NLD     0.82     5.40
USA     0.66     0.84     0.13
CHE     0.84     0.89     0.81    10.46
CAN     0.79     0.94     0.89     0.91     7.80
FRA     0.63     0.75     0.73     0.71     0.79     0.51
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BSW      mce
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      DEA      NLD      USA      CHE      CAN      FRA
DEA     9.72
NLD     0.57     4.57
USA     0.65     0.74     0.15
CHE     0.72     0.76     0.77    10.26
CAN     0.32     0.75     0.84     0.71     6.58
FRA     0.84     0.72     0.77     0.85     0.71     0.77
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BSW      ges
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      AUS      USA      CHE
AUS     3.14
USA     0.97     1.95
CHE     0.97     0.97     9.47
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HOL      dce
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      AUS      CAN      CHE      DFS      FRA      ISR      ITA      NLD      USA      GBR      HUN      DEU      BEL      IRL      SVK      ESP      POL      JPN      NZL
AUS     0.04
CAN     0.76     8.21
CHE     0.73     0.91     8.32
DFS     0.75     0.92     0.82    11.06
FRA     0.71     0.86     0.82     0.79     0.73
ISR     0.69     0.79     0.61     0.81     0.66     2.58
ITA     0.37     0.44     0.47     0.46     0.40     0.43     4.17
NLD     0.84     0.96     0.87     0.93     0.83     0.80     0.44     7.16
USA     0.71     0.89     0.88     0.84     0.82     0.79     0.44     0.86     0.12
GBR     0.69     0.80     0.61     0.72     0.64     0.64     0.24     0.81     0.64     6.07
HUN     0.46     0.52     0.44     0.36     0.46     0.51     0.23     0.53     0.48     0.46     1.23
DEU     0.81     0.95     0.90     0.90     0.86     0.78     0.40     0.94     0.86     0.75     0.53    12.21
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NZL	0.97	0.98	2.96	
USA	0.98	1.00	0.98	1.58

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 JER ges  
 -----  

	AUS	NZL	USA
AUS	2.72		
NZL	0.96	3.08	
USA	0.98	0.95	1.60

-----  
 RDC dce  
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	CAN	DFS	NOR	NLD	DEU	IRL	NZL
CAN	7.13						
DFS	0.88	10.78					
NOR	0.73	0.90	11.71				
NLD	0.95	0.90	0.88	4.82			
DEU	0.93	0.88	0.83	0.92	13.27		
IRL	0.74	0.72	0.76	0.76	0.77	0.12	
NZL	0.61	0.65	0.64	0.66	0.60	0.74	4.32

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 RDC mce  
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	CAN	DFS	NOR	DEU
CAN	7.11			
DFS	0.73	11.48		
NOR	0.56	0.76	13.38	
DEU	0.83	0.87	0.66	11.61

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 RDC ges  
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	AUS	NOR	NZL	USA
AUS	2.82			
NOR	0.97	12.50		
NZL	0.97	0.96	2.95	
USA	0.97	0.98	0.97	1.73

^LAPPENDIX II. Number of common bulls

BSW dce

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 common bulls below diagonal  
 common three quarter sib group above diagonal  

	DEA	NLD	USA	CHE	CAN	FRA
DEA	0	132	193	429	102	217
NLD	122	0	51	78	23	66
USA	151	46	0	134	113	77
CHE	360	71	101	0	79	119
CAN	90	21	107	70	0	61
FRA	168	54	60	91	52	0

BSW mce

-----  
 common bulls below diagonal  
 common three quarter sib group above diagonal  

	DEA	NLD	USA	CHE	CAN	FRA
DEA	0	139	115	452	37	177
NLD	124	0	42	80	17	59
USA	105	39	0	91	32	54
CHE	371	77	76	0	29	106
CAN	33	14	30	24	0	24
FRA	137	52	48	83	21	0

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BSW dsb  
-----

BSW msb  
-----

BSW ges  
-----

common bulls below diagonal  
common three quarter sib group above diagonal  
AUS USA CHE

-----  
AUS 0 19 23  
USA 18 0 161  
CHE 18 129 0  
-----

GUE dce  
-----

GUE mce  
-----

GUE dsb  
-----

GUE msb  
-----

GUE ges  
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HOL dce  
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common bulls below diagonal  
common three quarter sib group above diagonal

	AUS	CAN	CHE	DFS	FRA	ISR	ITA	NLD	USA	GBR	HUN	DEU	BEL	IRL	SVK	ESP	POL	JPN	NZL
AUS	0	1499	396	1103	1104	98	1031	1282	1857	824	436	1445	545	229	200	627	725	649	138
CAN	1440	0	649	1510	1553	137	1975	1693	4133	1068	695	2649	686	211	320	1039	1262	1197	57
CHE	331	548	0	393	449	28	487	537	673	337	156	794	337	105	94	307	337	320	17
DFS	763	1227	332	0	1500	125	1329	1771	2023	889	522	2333	650	213	271	723	1004	713	64
FRA	822	1236	396	937	0	93	1527	1778	2247	965	646	2332	743	191	296	902	1191	875	59
ISR	61	92	13	86	55	0	128	153	227	98	54	141	57	44	38	80	124	90	16
ITA	836	1736	396	1055	1086	87	0	1594	2735	1116	667	2519	680	211	327	1028	1350	1086	44
NLD	996	1511	497	1243	1148	109	1334	0	2545	1151	558	3262	863	288	354	826	1256	885	79
USA	1778	4511	562	1442	1404	215	2325	1966	0	1503	840	3602	739	267	421	1175	1756	1615	83
GBR	643	904	296	542	579	57	854	790	1148	0	379	1364	485	244	188	546	805	620	36
HUN	275	556	99	335	405	34	490	315	658	217	0	832	283	99	173	396	404	426	20
DEU	1141	2181	702	1674	1523	108	1866	2808	2792	913	544	0	984	266	532	1153	1815	1243	58
BEL	505	659	311	573	765	30	689	883	692	432	211	1019	0	162	172	470	515	420	25
IRL	215	183	94	180	174	26	186	270	251	228	74	241	151	0	54	123	172	125	73
SVK	98	220	39	147	192	19	228	231	301	83	110	427	101	24	0	187	240	199	12
ESP	497	835	242	601	790	42	839	705	949	410	279	820	459	110	94	0	712	631	33
POL	549	1104	226	773	876	86	1130	1032	1718	647	285	1493	433	136	150	540	0	757	26
JPN	499	841	230	496	484	48	689	614	1098	405	232	747	330	102	92	421	482	0	30
NZL	119	36	12	35	30	12	27	50	67	19	11	38	18	61	6	21	17	18	0

HOL mce  
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common bulls below diagonal  
common three quarter sib group above diagonal

	CAN	CHE	DFS	FRA	ISR	ITA	NLD	USA	GBR	HUN	DEU	BEL	SVK	ESP	POL	JPN
CAN	0	568	1437	1270	119	1583	1398	2717	971	653	2271	615	285	798	1103	1210
CHE	463	0	467	454	36	470	547	600	360	170	790	334	93	272	351	319
DFS	1284	420	0	1665	139	1453	2250	2099	968	632	2945	726	274	710	1269	984
FRA	1002	406	1050	0	101	1329	1870	1928	825	667	2399	755	258	742	1228	1068
ISR	76	18	96	57	0	124	157	217	112	62	153	63	32	71	130	104
ITA	1364	383	1263	936	84	0	1482	2347	943	618	2236	628	271	786	1285	1092
NLD	1341	503	1925	1292	118	1311	0	2212	1064	663	3393	895	330	722	1344	1057
USA	2765	494	1752	1182	205	2039	1857	0	1272	852	3256	678	351	893	1650	1752
GBR	1053	332	983	842	84	1002	1151	1460	0	401	1200	513	181	506	765	631
HUN	548	121	435	419	40	477	452	721	368	0	901	304	176	363	464	525
DEU	1774	682	2182	1437	115	1667	2962	2459	1268	603	0	943	401	937	1872	1427
BEL	600	320	686	774	35	627	959	627	557	240	972	0	161	423	516	432

SVK	196	33	153	144	16	197	221	258	117	119	299	90	0	160	221	204
ESP	632	220	620	632	40	672	649	730	484	280	679	407	84	0	588	580
POL	943	248	1011	852	91	1094	1149	1610	755	331	1541	440	137	449	0	807
JPN	780	229	624	493	51	652	645	1032	514	290	744	328	88	390	484	0

HOL dsb

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common bulls below diagonal
common three quarter sib group above diagonal
  AUS  CAN  CHE  DFS  FRA  ISR  ITA  NLD  USA  DEU  POL  JPN
-----
AUS    0 1450  374 1103  977   98 1032 1444 1732 1441  824  660
CAN 1426    0  609 1465 1404  133 1992 2001 3808 2636 1497 1226
CHE  319  511    0  375  430   27  468  566  605  754  367  310
DFS  767 1231  317    0 1360  127 1345 1940 1887 2345 1215  728
FRA  769 1174  383  900    0   82 1503 1791 1816 2241 1440  880
ISR   61   91   12   86   52    0  130  156  223  143  137   91
ITA  842 1766  383 1077 1094   91    0 1842 2683 2556 1650 1127
NLD 1260 1992  533 1530 1435  120 1644    0 2687 3661 1681 1003
USA 1691 4274  496 1388 1184  212 2316 2412    0 3372 2096 1639
DEU 1144 2189  658 1679 1504  108 1936 3384 2658    0 2300 1277
POL  653 1356  264  944 1082  102 1432 1498 2143 1972    0  900
JPN  508  876  221  509  493   49  720  715 1144  774  583    0
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HOL msb

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common bulls below diagonal
common three quarter sib group above diagonal
  CAN  CHE  DFS  FRA  ISR  ITA  NLD  USA  DEU  POL  JPN  AUS
-----
CAN    0  548 1442 1203  118 1676 1459 2518 2225 1311 1226 1205
CHE  447    0  467  438   36  493  550  554  741  399  320  386
DFS 1319  424    0 1575  141 1584 2339 1914 2962 1567 1023 1178
FRA  980  398 1046    0   96 1417 1785 1579 2271 1479 1050  989
ISR   76   18   98   55    0  127  158  212  150  140  105   96
ITA 1432  402 1357  974   88    0 1695 2427 2479 1657 1178  994
NLD 1445  516 2057 1302  120 1500    0 2051 3379 1699 1100 1281
USA 2649  452 1761 1081  204 2107 1857    0 2872 1954 1645 1416
DEU 1715  641 2199 1365  112 1781 2973 2272    0 2316 1447 1453
POL 1142  290 1289 1043  104 1392 1521 1976 1949    0  971  873
JPN  803  231  658  505   53  693  700 1073  764  586    0  790
AUS 1165  328  918  740   62  816 1112 1452 1121  689  532    0
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```

HOL ges

```

common bulls below diagonal
common three quarter sib group above diagonal
  AUS  NLD  NZL  USA
-----
AUS    0  820  770 1115
NLD  696    0 1193 2321
NZL  710 1002    0 1238
USA 1141 1841 1148    0
-----

```

JER dce

JER mce

JER dsb

JER msb

JER ges

```

common bulls below diagonal
common three quarter sib group above diagonal
  AUS  NZL  USA
-----
AUS    0  269  236
-----

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```
NZL 269 0 439
USA 232 466 0
```

RDC dce

```
-----
common bulls below diagonal
common three quarter sib group above diagonal
      CAN  DFS  NOR  NLD  DEU  IRL  NZL
-----
CAN   0  186   6   5  11   2   0
DFS  191   0  170  62 101   9   3
NOR   5  146   0  54  34  25   2
NLD   5   60  53   0  28   7   1
DEU  11   93  32  27   0   3   1
IRL   2   6  24   7   2   0   0
NZL   0   3   2   1   1   0   0
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```

RDC mce

```
-----
common bulls below diagonal
common three quarter sib group above diagonal
      CAN  DFS  NOR  DEU
-----
CAN   0  123   5   9
DFS  122   0  152  65
NOR   4  127   0  21
DEU   9   57  20   0
-----
```

RDC dsb

RDC msb

RDC ges

```
-----
common bulls below diagonal
common three quarter sib group above diagonal
      AUS  NOR  NZL  USA
-----
AUS   0   59   73  63
NOR  52   0   71  84
NZL  72  70   0  130
USA  61  85  131   0
-----
```

SIM dce

SIM mce

SIM dsb

SIM msb

SIM ges