

SS Fertility results v1

Trine Andersen

May-2024

SS Fertility results

Here is the first results of fertility singlestep indexes for all breeds. Only results for the combined index "fertility" is shown, but results are also generated and studied for sub-traits.

Analysis is done for JER, RDC and HOL

I have run full and reduced runs for traditional (EBV) and for singlestep (SS)

Reduced dataset is similar to full besides that offspring of bulls born after 2015 is removed.

Reliabilities for singlestep fertility still needs to be estimated. This will be added later.

JER:	2
Changes_SS_curr.....	2
Changes_SS_two.....	2
SS_full_reduc.....	3
EBV_full_reduc.....	3
Legarra_Reverter_SS.....	4
Legarra_Reverter_EBV.....	4
Mendelian_sampling.....	5
RDC:	6
Changes_SS_curr.....	6
Changes_SS_two.....	6
SS_full_reduc.....	7
EBV_full_reduc.....	7
Legarra_Reverter_SS.....	8
Legarra_Reverter_EBV.....	8
Mendelian_sampling.....	9
HOL:	10
Changes_SS_curr.....	10
Changes_SS_two.....	10
SS_full_reduc.....	11
EBV_full_reduc.....	11
Legarra_Reverter_SS.....	12
Legarra_Reverter_EBV.....	12
Mendelian_sampling.....	13

SS Fertility results v1

Trine Andersen

May-2024

 JER:
 Changes_SS_curr

Nongenotyped_females_with_phenotype

Obs	BYR	name	no	mean_ss	mean_e	std_ss	std_e	mean_dif	std_dif	corr
253	2015	fert	19608	97.0	96.7	7.6	7.3	0.3	2.4	0.95
254	2016	fert	17890	96.6	96.2	7.8	7.7	0.4	2.3	0.96
255	2017	fert	16888	97.7	97.0	7.8	7.7	0.6	2.2	0.96
256	2018	fert	17939	99.5	99.0	7.0	6.9	0.5	2.0	0.96
257	2019	fert	17632	98.1	97.9	8.2	8.2	0.2	2.0	0.97
258	2020	fert	19422	99.9	100.0	7.7	7.8	-0.1	2.0	0.97
259	2021	fert	23072	102.9	102.2	7.7	7.3	0.6	2.2	0.96
260	2022	fert	19423	102.8	101.4	6.8	5.9	1.4	2.8	0.91
261	2023	fert	163	103.4	102.8	6.4	4.6	0.6	3.4	0.86

nordic AI bulls with minimum 15 offspring

Obs	BYR	name	no	noff	std_noff	mean_ss	mean_e	std_ss	std_e	mean_dif	std_dif	corr
281	2010	fert	55	168	182	95.9	97.4	10.3	9.4	-1.5	4.5	0.90
282	2011	fert	47	141	166	97.3	97.5	12.8	11.3	-0.2	3.6	0.96
283	2012	fert	47	294	551	95.5	95.3	12.4	11.6	0.2	4.1	0.94
284	2013	fert	50	223	433	96.9	97.0	10.5	10.0	-0.2	3.3	0.95
285	2014	fert	36	386	494	99.1	98.4	12.3	12.5	0.8	3.0	0.97
286	2015	fert	30	936	940	100.6	99.3	12.3	12.8	1.3	3.2	0.97
287	2016	fert	26	615	643	100.2	99.7	13.7	13.5	0.5	1.4	0.99
288	2017	fert	29	983	780	100.8	100.5	14.9	15.0	0.3	1.9	0.99
289	2018	fert	20	642	859	98.4	98.3	13.2	13.5	0.1	5.9	0.90
290	2019	fert	23	445	489	107.0	104.1	11.7	10.3	2.9	3.8	0.95

Changes_SS_two

Genotyped females without phenotype

Obs	BYR	name	no	mean_ss	mean_two	std_ss	std_two	mean_dif	std_dif	corr
1	2019	fert	4162	99.0	99.1	10.6	7.0	-0.2	4.8	0.93
2	2020	fert	4982	100.2	100.1	10.4	6.7	0.1	4.9	0.93
3	2021	fert	2010	104.6	102.5	9.9	6.5	2.1	4.7	0.92
4	2022	fert	3939	103.7	102.2	9.4	5.9	1.5	4.9	0.89
5	2023	fert	13225	105.0	103.3	8.8	5.4	1.6	4.8	0.88
6	2024	fert	315	104.9	103.2	7.9	4.8	1.6	4.2	0.89

Genotyped females with phenotype

Obs	BYR	name	no	mean_ss	mean_two	std_ss	std_two	mean_dif	std_dif	corr
1	2015	fert	4023	97.8	97.7	10.1	7.4	0.1	4.2	0.93
2	2016	fert	4395	97.3	97.2	10.6	7.8	0.1	4.3	0.93
3	2017	fert	5894	98.8	98.2	10.3	7.6	0.5	4.3	0.93
4	2018	fert	7564	100.7	100.1	9.6	6.9	0.6	4.3	0.92
5	2019	fert	9039	99.7	99.6	10.7	7.9	0.2	4.5	0.93
6	2020	fert	10957	101.5	101.2	10.3	7.4	0.4	4.5	0.92
7	2021	fert	13412	105.0	103.1	9.9	6.8	1.9	4.6	0.91
8	2022	fert	12213	103.9	102.0	9.4	6.0	1.9	4.9	0.89
9	2023	fert	116	105.3	103.9	8.9	5.4	1.4	5.1	0.86

nordic AI bulls with minimum 15 offspring

Obs	BYR	name	no	noff	std_noff	mean_ss	mean_two	std_ss	std_two	mean_dif	std_dif	corr
1	2010	fert	55	168	182	95.9	96.6	10.3	8.7	-0.7	2.9	0.97
2	2011	fert	47	141	166	97.3	98.1	12.8	10.6	-0.8	3.0	0.98
3	2012	fert	47	294	551	95.5	95.8	12.4	10.9	-0.3	2.7	0.98
4	2013	fert	50	223	433	96.9	97.9	10.5	9.2	-1.0	3.0	0.96
5	2014	fert	36	386	494	99.1	99.2	12.3	11.2	-0.1	2.4	0.98
6	2015	fert	30	936	940	100.6	100.7	12.3	11.9	-0.1	1.6	0.99
7	2016	fert	25	593	647	100.1	100.3	14.0	12.8	-0.2	2.4	0.99
8	2017	fert	28	959	784	102.0	101.7	13.9	13.1	0.2	2.5	0.98
9	2018	fert	20	642	859	98.4	100.5	13.2	12.1	-2.1	3.5	0.96
10	2019	fert	23	445	489	107.0	105.2	11.7	9.8	1.8	4.0	0.94

nordic AI bulls without offspring

Obs	BYR	name	no	noff	std_noff	mean_ss	mean_two	std_ss	std_two	mean_dif	std_dif	corr
1	2019	fert	2	0	0	106.0	107.2	24.0	11.2	-1.3	12.8	1.00
2	2020	fert	25	0	0	106.6	105.7	9.4	5.9	0.9	4.8	0.90
3	2021	fert	4	0	0	104.5	103.0	6.5	4.6	1.6	2.0	0.99

SS Fertility results v1

Trine Andersen

May-2024

SS_full_reduc

nordic AI bulls with minimum 15 offspring in full

Obs	BYR	name	no	noff	std_noff	mean_ss	mean_rss	std_ss	std_rss	mean_dif	std_dif	corr
521	2000	fert	72	200	502	89.4	89.2	8.9	8.9	0.2	0.6	1.00
522	2001	fert	51	480	1637	92.6	92.5	9.4	9.5	0.1	0.6	1.00
523	2002	fert	55	227	612	90.7	90.7	11.9	11.9	0.0	0.6	1.00
524	2003	fert	54	391	1421	93.1	92.9	8.8	8.8	0.2	0.8	1.00
525	2004	fert	48	640	2088	90.4	90.3	13.6	13.5	0.2	0.7	1.00
526	2005	fert	44	362	1005	93.1	92.9	9.2	9.1	0.2	0.9	0.99
527	2006	fert	49	245	824	88.6	88.2	13.9	14.0	0.4	0.7	1.00
528	2007	fert	55	312	785	89.6	89.3	11.3	11.2	0.3	1.1	1.00
529	2008	fert	45	279	380	93.8	93.7	11.9	11.8	0.2	1.0	1.00
530	2009	fert	51	379	1025	94.9	94.9	11.6	11.6	0.0	1.3	0.99
531	2010	fert	55	168	182	95.3	95.6	10.1	9.3	-0.3	1.9	0.98
532	2011	fert	47	141	166	96.8	96.5	12.4	12.1	0.3	1.6	0.99
533	2012	fert	47	294	551	95.0	94.7	12.0	11.4	0.3	2.2	0.98
534	2013	fert	50	223	433	96.4	96.8	10.1	10.2	-0.4	2.0	0.98
535	2014	fert	36	386	494	98.6	98.9	12.1	11.6	-0.4	1.9	0.99
536	2015	fert	30	936	940	99.8	100.3	11.9	11.8	-0.4	2.0	0.99
537	2016	fert	26	615	643	99.5	97.5	13.4	10.6	2.0	8.0	0.80
538	2017	fert	29	983	780	100.1	99.9	14.5	9.7	0.3	9.2	0.78
539	2018	fert	20	642	859	97.6	97.1	12.6	8.9	0.6	8.6	0.73
540	2019	fert	23	445	489	106.2	103.2	11.5	10.5	3.0	4.5	0.92

EBV_full_reduc

nordic AI bulls with minimum 15 offspring in full

Obs	BYR	name	no	noff	std_noff	mean_e	mean_re	std_e	std_re	mean_dif	std_dif	corr
521	2000	fert	72	200	502	87.2	86.2	9.2	9.2	1.0	0.4	1.00
522	2001	fert	51	480	1637	91.0	90.1	10.3	10.3	0.9	0.5	1.00
523	2002	fert	55	227	612	89.3	88.4	12.9	12.8	0.9	0.4	1.00
524	2003	fert	54	391	1421	91.7	90.7	9.6	9.6	1.0	0.5	1.00
525	2004	fert	48	640	2088	89.4	88.4	14.6	14.5	1.0	0.5	1.00
526	2005	fert	44	362	1005	92.7	91.7	9.4	9.4	1.0	0.6	1.00
527	2006	fert	49	245	824	87.8	86.7	14.3	14.4	1.1	0.7	1.00
528	2007	fert	55	312	785	89.6	88.4	12.0	12.0	1.1	0.7	1.00
529	2008	fert	45	279	380	94.0	93.1	11.8	12.0	0.9	0.8	1.00
530	2009	fert	51	379	1025	96.2	95.3	11.6	11.7	0.9	0.9	1.00
531	2010	fert	55	168	182	97.3	96.4	9.5	9.2	0.9	1.2	0.99
532	2011	fert	47	141	166	97.5	96.6	11.3	11.2	0.8	1.4	0.99
533	2012	fert	47	294	551	95.3	94.4	11.6	11.3	0.9	1.8	0.99
534	2013	fert	50	223	433	97.1	96.4	10.1	10.0	0.6	1.9	0.98
535	2014	fert	36	386	494	98.4	97.6	12.5	12.4	0.8	1.9	0.99
536	2015	fert	30	936	940	99.3	99.0	12.8	12.7	0.3	2.4	0.98
537	2016	fert	26	615	643	99.7	95.1	13.5	8.0	4.5	10.5	0.63
538	2017	fert	29	983	780	100.5	98.4	15.0	8.1	2.1	12.9	0.51
539	2018	fert	20	642	859	98.3	97.5	13.5	6.8	0.9	11.6	0.51
540	2019	fert	23	445	489	104.1	96.2	10.3	6.8	7.9	9.3	0.47

SS Fertility results v1

Trine Andersen

May-2024

Legarra_Reverter_SS

genotyped bulls with status1&2 with more than 14 offspring with phenotype

Obs	status	t	name	no	b1	rsq
1	1&2	1	cr0	139	1.05	0.62
2	1&2	2	cr1	139	1.02	0.58
3	1&2	3	cr2	139	1.00	0.61
4	1&2	4	cr3	139	1.00	0.64
5	1&2	5	cr	139	1.01	0.62
6	1&2	6	nrr0	139	0.88	0.53
7	1&2	7	nrr1	139	0.94	0.61
8	1&2	8	nrr2	139	1.01	0.75
9	1&2	9	nrr3	139	1.06	0.79
10	1&2	10	nrr	139	1.02	0.75
11	1&2	11	icf1	139	0.93	0.63
12	1&2	12	icf2	139	0.92	0.68
13	1&2	13	icf3	139	0.93	0.71
14	1&2	14	icf	139	0.92	0.67
15	1&2	15	ifl0	139	0.97	0.56
16	1&2	16	ifl1	139	0.99	0.65
17	1&2	17	ifl2	139	1.05	0.72
18	1&2	18	ifl3	139	1.06	0.72
19	1&2	19	ifl	139	1.03	0.70
20	1&2	20	ais0	139	0.91	0.58
21	1&2	21	ais1	139	0.99	0.67
22	1&2	22	ais2	139	0.98	0.71
23	1&2	23	ais3	139	0.98	0.71
24	1&2	24	ais	139	0.98	0.70
25	1&2	30	icf1	139	0.87	0.59
26	1&2	31	icf2	139	0.89	0.66
27	1&2	32	icf3	139	0.91	0.69
28	1&2	34	fert	139	1.02	0.71
29	1&2	35	inte	139	1.02	0.70

Legarra_Reverter_EBV

genotyped bulls with status1&2 with more than 14 offspring with phenotype

Obs	status	t	name	no	b1	rsq
1	1&2	1	cr0	139	0.93	0.41
2	1&2	2	cr1	139	0.85	0.31
3	1&2	3	cr2	139	0.84	0.34
4	1&2	4	cr3	139	0.86	0.38
5	1&2	5	cr	139	0.85	0.35
6	1&2	6	nrr0	139	0.85	0.37
7	1&2	7	nrr1	139	0.96	0.45
8	1&2	8	nrr2	139	0.96	0.61
9	1&2	9	nrr3	139	1.01	0.67
10	1&2	10	nrr	139	1.00	0.61
11	1&2	11	icf1	139	0.92	0.40
12	1&2	12	icf2	139	0.87	0.45
13	1&2	13	icf3	139	0.87	0.47
14	1&2	14	icf	139	0.89	0.43
15	1&2	15	ifl0	139	0.91	0.41
16	1&2	16	ifl1	139	0.90	0.35
17	1&2	17	ifl2	139	0.96	0.43
18	1&2	18	ifl3	139	0.95	0.46
19	1&2	19	ifl	139	0.92	0.40
20	1&2	20	ais0	139	0.83	0.33
21	1&2	21	ais1	139	0.90	0.37
22	1&2	22	ais2	139	0.87	0.43
23	1&2	23	ais3	139	0.87	0.46
24	1&2	24	ais	139	0.88	0.43
25	1&2	30	icf1	139	0.90	0.42
26	1&2	31	icf2	139	0.82	0.43
27	1&2	32	icf3	139	0.83	0.45
28	1&2	34	fert	139	0.90	0.40
29	1&2	35	inte	139	0.90	0.40

SS Fertility results v1

Trine Andersen

May-2024

Mendelian_sampling

SS fert

Obs	BYR	m_Cownongen	m_Cowgeno	m_bull	N_Cownongen	N_Cowgeno	N_bull
1	2010	0.04	-0.58	-1.11	22338	2213	243
2	2011	0.07	-0.22	-0.30	21764	4103	386
3	2012	0.05	-0.33	-0.65	21786	4783	410
4	2013	0.06	0.01	-0.37	19718	3815	415
5	2014	0.13	-0.14	-0.07	20254	4787	451
6	2015	0.13	0.50	0.47	19263	5741	534
7	2016	0.12	0.50	0.12	17575	6788	470
8	2017	0.06	0.53	-0.08	16355	8437	547
9	2018	0.13	0.57	0.85	17233	10437	358
10	2019	0.08	0.58	0.11	16669	12751	464
11	2020	0.04	0.70	-0.15	18338	15135	470
12	2021	0.04	0.44	0.66	21730	15060	412
13	2022	0.02	0.29	0.41	17870	15563	460
14	2023	0.13	0.28	-0.07	156	13261	542
15	2024	.	0.12	-0.66	.	917	66

Jukkas EBV fert

Obs	BYR	m_Cownongen	m_Cowgeno	m_bull	N_Cownongen	N_Cowgeno	N_bull
1	2010	0.02	-0.03	0.36	22349	2196	90
2	2011	-0.02	-0.01	-0.11	21781	3972	86
3	2012	-0.02	-0.04	0.64	21801	4374	66
4	2013	-0.07	0.04	0.23	19731	3276	62
5	2014	0.02	0.06	0.23	20265	3929	79
6	2015	0.08	0.16	1.53	19277	4018	57
7	2016	0.04	0.08	1.30	17580	4378	66
8	2017	-0.03	-0.01	0.72	16359	5810	88
9	2018	0.03	0.02	0.51	17235	7417	55
10	2019	0.04	0.03	1.61	16674	8894	57
11	2020	0.00	0.03	-0.28	18352	10617	43
12	2021	-0.02	-0.03	0.30	21853	13565	5
13	2022	0.00	-0.01	.	19886	12932	.
14	2023	0.02	0.02	.	1469	1176	.

SS Fertility results v1

Trine Andersen

May-2024

 RDC:
 Changes_SS_curr

Nongenotyped_females_with_phenotype

Obs	BYR	name	no	mean_ss	mean_e	std_ss	std_e	mean_dif	std_dif	corr
298	2015	fert	69274	96.3	97.3	6.6	6.4	-1.1	1.6	0.97
299	2016	fert	59413	97.3	98.1	6.4	6.4	-0.8	1.6	0.97
300	2017	fert	51270	96.4	96.9	6.4	6.3	-0.4	1.6	0.97
301	2018	fert	44872	97.9	98.2	6.5	6.4	-0.3	1.6	0.97
302	2019	fert	39025	97.7	97.9	7.2	7.2	-0.1	1.6	0.97
303	2020	fert	36652	100.6	100.6	7.1	7.1	0.0	1.7	0.97
304	2021	fert	31381	99.9	99.4	5.9	5.9	0.5	2.0	0.94
305	2022	fert	17500	100.9	99.9	5.8	5.6	1.0	2.3	0.92
306	2023	fert	12	.	.	.	.	.	.	0.71

nordic AI bulls with minimum 15 offspring

Obs	BYR	name	no	noff	std_noff	mean_ss	mean_e	std_ss	std_e	mean_dif	std_dif	corr
331	2010	fert	165	210	499	92.6	95.1	9.2	8.9	-2.5	3.3	0.94
332	2011	fert	168	254	548	95.1	96.8	9.7	9.9	-1.7	2.9	0.96
333	2012	fert	169	245	446	96.8	98.6	9.8	9.4	-1.8	2.9	0.96
334	2013	fert	122	349	583	97.6	98.5	9.0	8.6	-0.9	2.5	0.96
335	2014	fert	85	532	771	97.6	97.9	9.7	9.5	-0.2	2.5	0.97
336	2015	fert	71	583	717	100.4	99.5	9.9	10.0	0.9	2.2	0.98
337	2016	fert	70	562	804	98.5	97.8	10.4	10.3	0.7	2.7	0.97
338	2017	fert	66	631	876	100.3	99.6	10.9	11.0	0.6	2.3	0.98
339	2018	fert	52	524	761	100.6	100.3	10.1	9.4	0.3	3.3	0.95
340	2019	fert	23	174	185	100.7	97.5	8.5	8.5	3.2	3.5	0.92

Changes_SS_two

Genotyped females without phenotype

Obs	BYR	name	no	mean_ss	mean_two	std_ss	std_two	mean_dif	std_dif	corr
1	2019	fert	3453	99.2	98.7	8.7	6.9	0.4	3.6	0.92
2	2020	fert	3358	101.7	100.8	8.7	6.9	1.0	3.6	0.92
3	2021	fert	3717	101.0	100.1	7.9	6.0	0.9	3.8	0.89
4	2022	fert	10057	102.9	101.6	7.3	5.7	1.2	3.6	0.87
5	2023	fert	20632	103.9	102.1	6.9	5.3	1.8	3.6	0.86
6	2024	fert	886	104.6	102.9	6.7	4.9	1.7	3.7	0.84
7	2026	fert	2	.	.	.	.	.	.	1.00

Genotyped females with phenotype

Obs	BYR	name	no	mean_ss	mean_two	std_ss	std_two	mean_dif	std_dif	corr
1	2015	fert	9675	97.2	98.2	8.4	6.9	-1.1	3.4	0.92
2	2016	fert	13471	97.4	98.3	8.3	6.9	-0.9	3.4	0.92
3	2017	fert	15727	97.3	97.7	8.4	6.9	-0.4	3.4	0.92
4	2018	fert	17621	99.2	99.1	8.2	6.7	0.1	3.4	0.92
5	2019	fert	17915	99.5	99.0	8.9	7.3	0.5	3.5	0.93
6	2020	fert	20352	102.8	101.8	8.5	7.1	1.0	3.4	0.92
7	2021	fert	20253	101.6	100.6	7.8	6.1	1.0	3.7	0.89
8	2022	fert	14637	102.9	101.6	7.5	5.9	1.3	3.7	0.88
9	2023	fert	5	.	.	.	.	.	.	0.95

nordic AI bulls with minimum 15 offspring

Obs	BYR	name	no	noff	std_noff	mean_ss	mean_two	std_ss	std_two	mean_dif	std_dif	corr
1	2010	fert	165	210	499	92.6	95.7	9.2	8.2	-3.1	2.6	0.96
2	2011	fert	168	254	548	95.1	97.2	9.7	8.8	-2.1	2.3	0.97
3	2012	fert	169	245	446	96.8	98.8	9.8	8.8	-2.0	2.3	0.98
4	2013	fert	122	349	583	97.6	98.9	9.0	7.9	-1.3	2.3	0.97
5	2014	fert	85	532	771	97.6	98.3	9.7	9.1	-0.7	1.9	0.98
6	2015	fert	71	583	717	100.4	100.2	9.9	9.5	0.2	1.8	0.98
7	2016	fert	69	568	808	98.6	98.5	10.5	9.7	0.1	2.0	0.98
8	2017	fert	66	631	876	100.3	99.7	10.9	10.3	0.6	2.2	0.98
9	2018	fert	52	524	761	100.6	100.6	10.1	8.8	0.0	3.1	0.95
10	2019	fert	23	174	185	100.7	99.7	8.5	7.0	1.0	3.7	0.90

nordic AI bulls without offspring

Obs	BYR	name	no	noff	std_noff	mean_ss	mean_two	std_ss	std_two	mean_dif	std_dif	corr
1	2019	fert	9	0	0	104.1	102.5	7.4	8.1	1.6	2.4	0.96
2	2020	fert	49	0	0	104.3	102.7	6.7	5.9	1.6	3.2	0.88
3	2021	fert	3	0	0	107.3	105.1	13.1	10.0	2.2	3.0	1.00

SS Fertility results v1

Trine Andersen

May-2024

SS_full_reduc

nordic AI bulls with minimum 15 offspring in full

Obs	BYR	name	no	noff	std_noff	mean_ss	mean_rss	std_ss	std_rss	mean_dif	std_dif	corr
641	2000	fert	266	481	1466	93.9	94.3	11.1	11.2	-0.3	0.5	1.00
642	2001	fert	248	302	847	96.4	96.7	10.5	10.5	-0.3	0.5	1.00
643	2002	fert	215	334	1308	96.1	96.4	9.8	9.8	-0.3	0.5	1.00
644	2003	fert	237	331	1219	92.7	93.1	10.2	10.2	-0.3	0.5	1.00
645	2004	fert	226	407	1732	95.0	95.3	9.1	9.0	-0.3	0.5	1.00
646	2005	fert	216	290	1053	95.9	96.2	9.4	9.4	-0.3	0.6	1.00
647	2006	fert	218	247	829	94.4	94.7	9.6	9.6	-0.3	0.6	1.00
648	2007	fert	218	220	803	95.8	96.2	9.9	9.9	-0.4	0.7	1.00
649	2008	fert	201	176	292	94.1	94.6	10.9	11.0	-0.5	0.8	1.00
650	2009	fert	158	174	220	94.4	94.8	10.1	10.0	-0.4	1.0	1.00
651	2010	fert	165	210	499	93.8	94.2	9.2	9.1	-0.5	1.0	0.99
652	2011	fert	168	254	548	96.3	96.6	9.7	9.7	-0.3	1.2	0.99
653	2012	fert	169	245	446	98.0	98.4	9.8	9.8	-0.3	1.3	0.99
654	2013	fert	122	349	583	98.8	99.4	9.0	8.9	-0.6	1.5	0.99
655	2014	fert	85	532	771	98.8	99.3	9.7	9.6	-0.4	1.4	0.99
656	2015	fert	71	583	717	101.6	102.5	9.9	9.9	-1.0	1.5	0.99
657	2016	fert	70	562	804	99.7	100.0	10.4	8.6	-0.3	7.2	0.73
658	2017	fert	66	631	876	101.4	102.0	10.8	7.0	-0.6	7.2	0.75
659	2018	fert	52	524	761	101.7	101.5	10.0	6.7	0.1	6.7	0.75
660	2019	fert	23	174	185	101.8	104.1	8.6	8.2	-2.3	7.0	0.65

EBV_full_reduc

nordic AI bulls with minimum 15 offspring in full

Obs	BYR	name	no	noff	std_noff	mean_e	mean_re	std_e	std_re	mean_dif	std_dif	corr
641	2000	fert	266	481	1466	93.6	93.7	11.3	11.3	-0.1	0.3	1.00
642	2001	fert	248	302	847	96.0	96.1	10.6	10.6	-0.1	0.3	1.00
643	2002	fert	215	334	1308	95.8	95.9	10.0	10.0	-0.1	0.4	1.00
644	2003	fert	237	331	1219	92.4	92.5	10.3	10.3	-0.1	0.4	1.00
645	2004	fert	226	407	1732	94.7	94.8	9.3	9.2	-0.1	0.5	1.00
646	2005	fert	216	290	1053	95.8	95.9	9.5	9.5	-0.1	0.5	1.00
647	2006	fert	218	247	829	94.4	94.4	9.7	9.7	0.0	0.4	1.00
648	2007	fert	218	220	803	95.9	96.0	10.0	9.9	-0.1	0.5	1.00
649	2008	fert	201	176	292	94.7	94.8	11.0	11.0	-0.1	0.6	1.00
650	2009	fert	158	174	220	95.6	95.8	10.1	10.0	-0.2	0.7	1.00
651	2010	fert	165	210	499	95.1	95.2	8.9	9.0	-0.1	0.8	1.00
652	2011	fert	168	254	548	96.8	96.9	9.9	9.9	-0.1	0.9	1.00
653	2012	fert	169	245	446	98.6	98.7	9.4	9.4	0.0	1.1	0.99
654	2013	fert	122	349	583	98.5	98.7	8.6	8.5	-0.2	1.4	0.99
655	2014	fert	85	532	771	97.8	97.9	9.5	9.7	-0.1	1.5	0.99
656	2015	fert	71	583	717	99.5	100.0	10.0	10.1	-0.5	1.4	0.99
657	2016	fert	70	562	804	97.8	96.7	10.3	7.4	1.1	9.2	0.51
658	2017	fert	66	631	876	99.6	99.0	11.0	5.5	0.6	9.2	0.55
659	2018	fert	52	524	761	100.3	98.9	9.4	4.9	1.4	9.2	0.30
660	2019	fert	23	174	185	97.5	96.6	8.5	6.1	1.0	7.3	0.54

SS Fertility results v1

Trine Andersen

May-2024

Legarra_Reverter_SS

genotyped bulls with status1&2 with more than 14 offspring with phenotype

Obs	status	t	name	no	b1	rsq
1	1&2	1	cr0	293	1.05	0.54
2	1&2	2	cr1	293	0.99	0.61
3	1&2	3	cr2	293	0.98	0.63
4	1&2	4	cr3	293	0.97	0.65
5	1&2	5	cr	293	0.97	0.63
6	1&2	6	nrr0	293	0.92	0.51
7	1&2	7	nrr1	293	0.86	0.49
8	1&2	8	nrr2	293	0.95	0.61
9	1&2	9	nrr3	293	0.95	0.64
10	1&2	10	nrr	293	0.93	0.59
11	1&2	11	icf1	293	0.98	0.70
12	1&2	12	icf2	293	0.95	0.74
13	1&2	13	icf3	293	0.96	0.76
14	1&2	14	icf	293	0.97	0.74
15	1&2	15	ifl0	293	1.09	0.57
16	1&2	16	ifl1	293	0.97	0.64
17	1&2	17	ifl2	293	0.96	0.66
18	1&2	18	ifl3	293	0.96	0.66
19	1&2	19	ifl	293	0.97	0.66
20	1&2	20	ais0	293	0.99	0.57
21	1&2	21	ais1	293	0.97	0.59
22	1&2	22	ais2	293	0.94	0.63
23	1&2	23	ais3	293	0.92	0.64
24	1&2	24	ais	293	0.95	0.62
25	1&2	25	hst0	293	0.80	0.46
26	1&2	26	hst1	293	0.86	0.59
27	1&2	27	hst2	293	0.94	0.63
28	1&2	28	hst3	293	0.87	0.62
29	1&2	29	hst	293	0.89	0.63
30	1&2	30	icf1	293	0.97	0.71
31	1&2	31	icf2	293	0.95	0.74
32	1&2	32	icf3	293	0.94	0.75
33	1&2	34	fert	293	0.98	0.65
34	1&2	35	inte	293	0.97	0.70

Legarra_Reverter_EBV

genotyped bulls with status1&2 with more than 14 offspring with phenotype

Obs	status	t	name	no	b1	rsq
1	1&2	1	cr0	293	0.97	0.40
2	1&2	2	cr1	293	0.89	0.40
3	1&2	3	cr2	293	0.90	0.43
4	1&2	4	cr3	293	0.90	0.45
5	1&2	5	cr	293	0.89	0.42
6	1&2	6	nrr0	293	0.87	0.39
7	1&2	7	nrr1	293	0.83	0.33
8	1&2	8	nrr2	293	0.94	0.46
9	1&2	9	nrr3	293	0.93	0.48
10	1&2	10	nrr	293	0.91	0.42
11	1&2	11	icf1	293	0.90	0.46
12	1&2	12	icf2	293	0.87	0.51
13	1&2	13	icf3	293	0.88	0.52
14	1&2	14	icf	293	0.87	0.50
15	1&2	15	ifl0	293	1.00	0.43
16	1&2	16	ifl1	293	0.90	0.44
17	1&2	17	ifl2	293	0.90	0.48
18	1&2	18	ifl3	293	0.89	0.49
19	1&2	19	ifl	293	0.89	0.46
20	1&2	20	ais0	293	0.95	0.43
21	1&2	21	ais1	293	0.86	0.36
22	1&2	22	ais2	293	0.84	0.39
23	1&2	23	ais3	293	0.80	0.40
24	1&2	24	ais	293	0.82	0.38
25	1&2	25	hst0	293	0.73	0.30
26	1&2	26	hst1	293	0.79	0.36
27	1&2	27	hst2	293	0.89	0.43
28	1&2	28	hst3	293	0.84	0.45
29	1&2	29	hst	293	0.84	0.41
30	1&2	30	icf1	293	0.89	0.47
31	1&2	31	icf2	293	0.88	0.52
32	1&2	32	icf3	293	0.86	0.51
33	1&2	34	fert	293	0.90	0.45

SS Fertility results v1

Trine Andersen

May-2024

34 1&2 35 inte 293 0.87 0.48

Mendelian_sampling

SS fert

Obs	BYR	m_Cownongen	m_Cowgeno	m_bull	N_Cownongen	N_Cowgeno	N_bull
1	2010	0.00	-0.84	-1.37	100720	3545	987
2	2011	0.01	-0.59	-0.40	96012	6102	1808
3	2012	0.03	-0.47	-0.28	86247	6874	2317
4	2013	0.04	0.15	-0.04	81483	7357	2338
5	2014	0.10	0.46	0.08	73935	8262	2322
6	2015	0.14	0.57	0.62	63445	10922	2369
7	2016	0.15	0.45	0.27	53667	14961	2336
8	2017	0.08	0.55	0.38	45882	17901	2607
9	2018	0.09	0.69	0.38	38984	20167	2555
10	2019	0.06	0.87	0.48	33566	20569	2446
11	2020	0.03	0.92	0.74	30271	22784	2828
12	2021	0.02	0.76	0.62	26040	23104	2772
13	2022	-0.01	0.65	0.48	14186	23849	2573
14	2023	0.27	0.44	0.05	11	20616	2257
15	2024	.	0.28	0.15	.	2028	340

Jukkas EBV fert

Obs	BYR	m_Cownongen	m_Cowgeno	m_bull	N_Cownongen	N_Cowgeno	N_bull
1	2010	0.02	-0.02	-0.23	101149	3459	224
2	2011	0.01	0.03	0.19	96370	5901	236
3	2012	-0.01	-0.04	0.06	86578	6465	242
4	2013	-0.01	0.01	0.78	81757	6799	204
5	2014	0.02	0.01	0.10	74146	7464	140
6	2015	0.00	-0.01	0.62	63591	9571	119
7	2016	0.00	-0.03	0.57	53778	13184	109
8	2017	0.01	0.01	0.35	45973	15386	100
9	2018	0.00	0.01	0.17	39048	17182	91
10	2019	-0.02	-0.02	-0.14	33608	17481	71
11	2020	0.00	0.01	0.07	30342	19931	62
12	2021	0.04	0.03	0.13	26286	20070	4
13	2022	0.02	0.02	.	16088	15983	.
14	2023	0.02	0.04	.	256	286	.

SS Fertility results v1

Trine Andersen

May-2024

 HOL:
 Changes_SS_curr

Nongenotyped_females_with_phenotype

Obs	BYR	name	no	mean_ss	mean_e	std_ss	std_e	mean_dif	std_dif	corr
298	2015	fert	216913	92.8	94.1	6.7	6.8	-1.3	1.7	0.97
299	2016	fert	209658	94.6	95.6	7.3	7.4	-1.0	1.7	0.97
300	2017	fert	187615	96.2	97.0	7.6	7.7	-0.8	1.7	0.97
301	2018	fert	179363	97.5	98.1	7.5	7.6	-0.7	1.7	0.98
302	2019	fert	170987	98.0	98.4	7.4	7.4	-0.4	1.7	0.97
303	2020	fert	173387	100.0	99.9	7.3	7.3	0.1	1.8	0.97
304	2021	fert	181813	100.8	100.2	6.6	6.5	0.6	2.0	0.95
305	2022	fert	124605	101.9	100.1	6.5	5.9	1.8	2.8	0.90
306	2023	fert	235	100.9	98.9	6.3	5.5	2.0	3.1	0.88

nordic AI bulls with minimum 15 offspring

Obs	BYR	name	no	noff	std_noff	mean_ss	mean_e	std_ss	std_e	mean_dif	std_dif	corr
331	2010	fert	193	774	2393	91.9	94.9	10.6	10.6	-3.0	2.7	0.97
332	2011	fert	155	474	982	93.5	95.5	9.2	9.0	-2.0	2.4	0.97
333	2012	fert	171	689	1211	95.7	97.2	10.9	11.1	-1.5	2.5	0.97
334	2013	fert	151	712	1300	97.8	98.7	10.9	11.0	-1.0	2.6	0.97
335	2014	fert	113	1071	1285	99.6	99.6	10.3	10.7	0.0	1.8	0.99
336	2015	fert	83	1592	1959	104.4	104.3	10.6	11.2	0.0	2.2	0.98
337	2016	fert	66	1517	1901	103.9	103.8	9.0	9.4	0.0	1.6	0.99
338	2017	fert	66	1609	1902	105.0	103.6	11.6	12.1	1.4	2.6	0.98
339	2018	fert	78	1204	1724	107.3	105.2	8.8	8.7	2.1	2.8	0.95
340	2019	fert	35	518	843	107.3	103.4	10.3	8.8	4.0	4.2	0.92

Changes_SS_two

Genotyped females without phenotype

Obs	BYR	name	no	mean_ss	mean_two	std_ss	std_two	mean_dif	std_dif	corr
1	2019	fert	8214	100.9	100.6	9.5	8.3	0.3	4.4	0.89
2	2020	fert	10303	103.5	102.0	9.2	7.9	1.5	4.4	0.88
3	2021	fert	6886	104.6	102.0	8.6	7.3	2.6	4.6	0.84
4	2022	fert	23777	106.5	103.4	8.3	6.8	3.0	4.8	0.82
5	2023	fert	65675	106.5	103.2	8.1	6.6	3.3	4.8	0.81
6	2024	fert	2510	106.1	103.0	8.1	6.5	3.1	4.7	0.81

Genotyped females with phenotype

Obs	BYR	name	no	mean_ss	mean_two	std_ss	std_two	mean_dif	std_dif	corr
1	2015	fert	12159	94.3	96.0	9.4	8.2	-1.7	4.5	0.88
2	2016	fert	18264	96.3	97.8	9.6	8.4	-1.4	4.4	0.89
3	2017	fert	26558	98.6	99.5	10.0	8.8	-0.9	4.4	0.90
4	2018	fert	36994	100.4	100.7	9.5	8.5	-0.2	4.4	0.89
5	2019	fert	40926	101.8	101.2	9.6	8.4	0.5	4.4	0.89
6	2020	fert	48655	104.6	103.0	9.1	7.9	1.6	4.4	0.88
7	2021	fert	55929	105.3	102.6	8.5	7.2	2.7	4.4	0.85
8	2022	fert	46484	106.4	103.4	8.3	6.9	3.0	4.7	0.83
9	2023	fert	79	108.3	104.5	8.1	6.5	3.8	5.0	0.79

nordic AI bulls with minimum 15 offspring

Obs	BYR	name	no	noff	std_noff	mean_ss	mean_two	std_ss	std_two	mean_dif	std_dif	corr
1	2010	fert	193	774	2393	91.9	94.9	10.6	9.7	-3.1	3.2	0.95
2	2011	fert	154	476	984	93.5	96.0	9.2	8.7	-2.5	2.7	0.96
3	2012	fert	171	689	1211	95.7	97.7	10.9	10.3	-1.9	2.6	0.97
4	2013	fert	151	712	1300	97.8	99.0	10.9	10.5	-1.3	2.1	0.98
5	2014	fert	113	1071	1285	99.6	100.1	10.3	10.1	-0.5	2.0	0.98
6	2015	fert	83	1592	1959	104.4	104.5	10.6	10.3	-0.1	1.9	0.98
7	2016	fert	66	1517	1901	103.9	104.3	9.0	9.2	-0.4	2.2	0.97
8	2017	fert	66	1609	1902	105.0	104.8	11.6	11.2	0.2	2.3	0.98
9	2018	fert	78	1204	1724	107.3	106.2	8.8	8.8	1.1	3.0	0.94
10	2019	fert	35	518	843	107.3	103.9	10.3	8.8	3.4	4.4	0.91

nordic AI bulls without offspring

Obs	BYR	name	no	noff	std_noff	mean_ss	mean_two	std_ss	std_two	mean_dif	std_dif	corr
1	2019	fert	7	0	0	106.9	102.6	5.0	4.7	4.3	4.4	0.59
2	2020	fert	54	0	0	108.8	106.7	6.9	5.7	2.1	4.0	0.82
3	2021	fert	5	0	0	106.6	103.9	7.3	5.8	2.7	2.8	0.94

SS Fertility results v1

Trine Andersen

May-2024

SS_full_reduc

nordic AI bulls with minimum 15 offspring in full

Obs	BYR	name	no	noff	std_noff	mean_ss	mean_rss	std_ss	std_rss	mean_dif	std_dif	corr
641	2000	fert	375	280	1404	79.9	79.6	11.0	11.1	0.3	0.5	1.00
642	2001	fert	438	299	1423	83.9	83.6	8.9	9.0	0.3	0.5	1.00
643	2002	fert	397	313	2285	84.7	84.4	9.6	9.6	0.3	0.5	1.00
644	2003	fert	352	277	1167	86.9	86.6	10.6	10.5	0.3	0.5	1.00
645	2004	fert	359	531	2504	86.6	86.3	10.7	10.7	0.3	0.5	1.00
646	2005	fert	353	298	1629	87.3	87.0	10.2	10.1	0.3	0.6	1.00
647	2006	fert	395	209	938	87.4	87.2	10.4	10.5	0.2	0.5	1.00
648	2007	fert	307	179	299	87.6	87.3	9.0	9.1	0.3	0.7	1.00
649	2008	fert	251	320	887	89.8	89.6	10.6	10.5	0.2	0.7	1.00
650	2009	fert	224	433	1244	90.3	90.1	11.3	11.1	0.1	1.1	1.00
651	2010	fert	193	774	2393	93.4	93.4	10.9	10.9	0.0	1.1	1.00
652	2011	fert	155	474	982	95.0	94.9	9.4	9.4	0.1	1.2	0.99
653	2012	fert	171	689	1211	97.4	97.4	11.2	11.1	0.0	1.3	0.99
654	2013	fert	151	712	1300	99.4	99.7	11.2	11.3	-0.2	1.3	0.99
655	2014	fert	113	1071	1285	101.3	101.2	10.6	10.4	0.0	1.2	0.99
656	2015	fert	83	1592	1959	106.2	106.9	10.9	11.0	-0.7	1.3	0.99
657	2016	fert	66	1517	1901	105.8	104.5	9.3	8.1	1.3	6.0	0.77
658	2017	fert	66	1609	1902	106.9	107.6	11.9	9.2	-0.6	6.5	0.84
659	2018	fert	78	1204	1724	109.3	108.3	9.1	8.1	1.0	5.4	0.81
660	2019	fert	35	518	843	109.3	107.7	10.6	8.5	1.7	5.1	0.88

EBV_full_reduc

nordic AI bulls with minimum 15 offspring in full

Obs	BYR	name	no	noff	std_noff	mean_e	mean_re	std_e	std_re	mean_dif	std_dif	corr
641	2000	fert	375	280	1404	78.8	78.8	11.4	11.4	0.0	0.3	1.00
642	2001	fert	438	299	1423	82.9	82.9	9.3	9.3	0.0	0.3	1.00
643	2002	fert	397	313	2285	83.7	83.7	9.9	9.9	0.0	0.4	1.00
644	2003	fert	352	277	1167	86.1	86.1	10.9	10.9	0.0	0.4	1.00
645	2004	fert	359	531	2504	86.0	86.0	11.1	11.0	0.0	0.4	1.00
646	2005	fert	353	298	1629	86.5	86.6	10.5	10.5	-0.1	0.5	1.00
647	2006	fert	395	209	938	87.0	87.0	10.6	10.6	0.0	0.5	1.00
648	2007	fert	307	179	299	87.6	87.5	9.3	9.3	0.1	0.6	1.00
649	2008	fert	251	320	887	89.6	89.7	10.7	10.7	0.0	0.6	1.00
650	2009	fert	224	433	1244	92.2	92.1	10.9	10.9	0.0	0.7	1.00
651	2010	fert	193	774	2393	94.9	95.0	10.6	10.7	-0.1	0.8	1.00
652	2011	fert	155	474	982	95.5	95.6	9.0	9.0	-0.1	0.8	1.00
653	2012	fert	171	689	1211	97.2	97.4	11.1	10.9	-0.2	1.1	1.00
654	2013	fert	151	712	1300	98.7	99.0	11.0	11.2	-0.2	1.3	0.99
655	2014	fert	113	1071	1285	99.6	99.5	10.7	10.6	0.2	1.2	0.99
656	2015	fert	83	1592	1959	104.3	104.8	11.2	11.3	-0.5	1.4	0.99
657	2016	fert	66	1517	1901	103.9	99.2	9.5	7.1	4.7	7.9	0.57
658	2017	fert	66	1609	1902	103.6	100.0	12.1	7.1	3.6	8.8	0.70
659	2018	fert	78	1204	1724	105.2	100.7	8.7	6.2	4.5	7.5	0.53
660	2019	fert	35	518	843	103.4	99.6	8.8	5.2	3.7	6.8	0.64

SS Fertility results v1

Trine Andersen

May-2024

Legarra_Reverter_SS

genotyped bulls with status1&2 with more than 14 offspring with phenotype

Obs	status	t	name	no	b1	rsq
1	1&2	1	cr0	910	1.05	0.65
2	1&2	2	cr1	910	1.03	0.74
3	1&2	3	cr2	910	1.02	0.78
4	1&2	4	cr3	910	1.01	0.78
5	1&2	5	cr	910	1.01	0.77
6	1&2	6	nrr0	910	0.98	0.60
7	1&2	7	nrr1	910	0.99	0.68
8	1&2	8	nrr2	910	1.00	0.73
9	1&2	9	nrr3	910	0.99	0.76
10	1&2	10	nrr	910	1.00	0.74
11	1&2	11	icf1	910	0.94	0.81
12	1&2	12	icf2	910	0.98	0.85
13	1&2	13	icf3	910	0.99	0.88
14	1&2	14	icf	910	0.98	0.86
15	1&2	15	ifl0	910	0.94	0.54
16	1&2	16	ifl1	910	0.98	0.77
17	1&2	17	ifl2	910	1.00	0.80
18	1&2	18	ifl3	910	0.98	0.84
19	1&2	19	ifl	910	0.98	0.81
20	1&2	20	ais0	910	0.98	0.59
21	1&2	21	ais1	910	1.02	0.75
22	1&2	22	ais2	910	1.01	0.77
23	1&2	23	ais3	910	0.99	0.80
24	1&2	24	ais	910	1.01	0.78
25	1&2	25	hst0	910	0.89	0.58
26	1&2	26	hst1	910	0.91	0.72
27	1&2	27	hst2	910	0.95	0.78
28	1&2	28	hst3	910	0.98	0.85
29	1&2	29	hst	910	0.96	0.81
30	1&2	30	icf1	910	0.95	0.82
31	1&2	31	icf2	910	0.99	0.86
32	1&2	32	icf3	910	0.99	0.88
33	1&2	34	fert	910	1.00	0.80
34	1&2	35	inte	910	0.98	0.85

Legarra_Reverter_EBV

genotyped bulls with status1&2 with more than 14 offspring with phenotype

Obs	status	t	name	no	b1	rsq
1	1&2	1	cr0	910	0.99	0.46
2	1&2	2	cr1	910	0.92	0.46
3	1&2	3	cr2	910	0.94	0.50
4	1&2	4	cr3	910	0.92	0.50
5	1&2	5	cr	910	0.93	0.49
6	1&2	6	nrr0	910	0.94	0.43
7	1&2	7	nrr1	910	0.91	0.43
8	1&2	8	nrr2	910	0.93	0.49
9	1&2	9	nrr3	910	0.90	0.53
10	1&2	10	nrr	910	0.91	0.49
11	1&2	11	icf1	910	0.99	0.60
12	1&2	12	icf2	910	1.01	0.63
13	1&2	13	icf3	910	1.01	0.70
14	1&2	14	icf	910	1.00	0.65
15	1&2	15	ifl0	910	0.94	0.40
16	1&2	16	ifl1	910	0.94	0.51
17	1&2	17	ifl2	910	0.96	0.56
18	1&2	18	ifl3	910	0.95	0.61
19	1&2	19	ifl	910	0.95	0.57
20	1&2	20	ais0	910	0.94	0.41
21	1&2	21	ais1	910	0.96	0.50
22	1&2	22	ais2	910	0.97	0.55
23	1&2	23	ais3	910	0.95	0.59
24	1&2	24	ais	910	0.96	0.55
25	1&2	25	hst0	910	0.97	0.41
26	1&2	26	hst1	910	0.95	0.54
27	1&2	27	hst2	910	0.96	0.57
28	1&2	28	hst3	910	1.01	0.69
29	1&2	29	hst	910	1.00	0.62
30	1&2	30	icf1	910	0.98	0.60
31	1&2	31	icf2	910	1.01	0.64
32	1&2	32	icf3	910	1.01	0.68
33	1&2	34	fert	910	0.97	0.56

SS Fertility results v1

Trine Andersen

May-2024

34 1&2 35 inte 910 0.97 0.62

Mendelian_sampling

SS fert

Obs	BYR	m_Cownongeno	m_Cowgeno	m_bull	N_Cownongeno	N_Cowgeno	N_bull
1	2010	0.03	-2.42	-1.82	190828	1156	720
2	2011	0.04	-1.80	-1.04	190753	2525	1186
3	2012	0.05	-0.87	-0.59	187986	4073	1566
4	2013	0.09	-0.04	0.41	180614	6996	1662
5	2014	0.09	0.28	-0.25	179352	7703	1837
6	2015	0.14	0.47	0.50	167289	10121	1820
7	2016	0.14	0.12	-0.02	159807	16865	2150
8	2017	0.15	0.35	-0.07	134490	24939	2288
9	2018	0.14	0.65	0.36	117563	34024	2181
10	2019	0.15	1.18	0.50	108719	39117	2329
11	2020	0.10	1.52	0.66	104417	45545	2169
12	2021	0.05	1.34	0.94	89811	38695	1647
13	2022	0.00	1.16	0.67	50575	38149	1671
14	2023	-0.16	0.94	0.84	81	38335	1847
15	2024	.	0.47	0.03	.	3860	329

Jukkas EBV fert

Obs	BYR	m_Cownongeno	m_Cowgeno	m_bull	N_Cownongeno	N_Cowgeno	N_bull
1	2010	0.05	0.02	2.13	191489	1122	177
2	2011	0.01	0.00	1.40	191310	2453	193
3	2012	-0.02	0.03	1.25	188464	3906	217
4	2013	0.01	0.03	1.89	180974	6597	170
5	2014	0.02	0.05	1.22	179688	7219	130
6	2015	-0.01	0.03	2.24	167514	9218	100
7	2016	0.01	0.04	1.44	159981	14951	98
8	2017	0.02	0.04	1.50	134609	21451	139
9	2018	0.04	0.03	1.43	117670	29085	123
10	2019	0.01	0.02	0.39	108807	32766	79
11	2020	0.02	0.03	-0.04	104545	37899	48
12	2021	0.01	0.00	-0.08	90444	35305	6
13	2022	0.03	0.03	.	58962	29405	.
14	2023	0.04	0.03	.	2070	1158	.