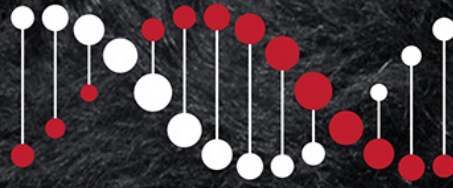


TACE



TransTasman Angus Cattle Evaluation

GENETIC BENCHMARKING REPORT

Angus Australia

JUNE 2023

<u>Report</u>	<u>Page</u>
Genetic Progress - Summary	1
Genetic Progress - Relative Change in each Trait	2
Genetic Progress - By Trait	3
Use of Reproductive Technologies	11
Generation Length - Sire and Dam Age	12
Genetic Diversity - Inbreeding	13
Genetic Conditions - Carrier Frequency By Register	14
Appendix 2 - Breed Genetic Trends	15

Genetic Progress Summary

2016 to 2021

Date: May 29, 2023

Page: 1

This report assesses the change in the average EBVs of Angus seedstock animals across the nominated five year period.

Trait	Units	Breed	
		Change	Av. Change / Yr
Calving Ease Direct	%	+1.5	+0.3
Calving Ease Daughters	%	+1.4	+0.3
Gestation Length	days	-0.8	-0.2
Birth Weight	kg	-0.3	-0.1
200 Day Growth	kg	+5.7	+1.1
400 Day Weight	kg	+10.2	+2.0
600 Day Weight	kg	+12.0	+2.4
Mature Cow Weight	kg	+8.6	+1.7
Milk	kg	+1.3	+0.3
Scrotal Size	cm	+0.4	+0.1
Days to Calving	days	-0.2	+0.0
Carcase Weight	kg	+7.4	+1.5
Carcase EMA	cm.sq	+1.2	+0.2
Carcase Rib Fat	mm	+0.1	+0.0
Carcase Rump Fat	mm	+0.0	+0.0
Retail Beef Yield	%	-0.1	+0.0
Carcase IMF	%	+0.5	+0.1
Docility	%	+2.2	+0.4
NFI-F	%	+0.0	+0.0
Claw Set	score	+0.0	+0.0
Foot Angle	score	+0.0	+0.0
Leg Angle	score	+0.0	+0.0
Angus Breeding (\$A)	\$	+28.7	+5.7
Domestic (\$D)	\$	+24.0	+4.8
Heavy Grain (\$GN)	\$	+39.4	+7.9
Heavy Grass(\$GS)	\$	+28.6	+5.7
Angus Breeding Low Feed Cost (\$A-L)	\$	+45.8	+9.2
Domestic Low Feed Cost (\$D-L)	\$	+39.7	+7.9
Heavy Grain Low Feed Cost (\$GN-L)	\$	+57.4	+11.5
Heavy Grass Low Feed Cost (\$GS-L)	\$	+50.9	+10.2
AngusPRO (\$PRO)	\$	+28.8	+5.8
Angus Terminal Sire (\$T)	\$	+24.8	+5.0

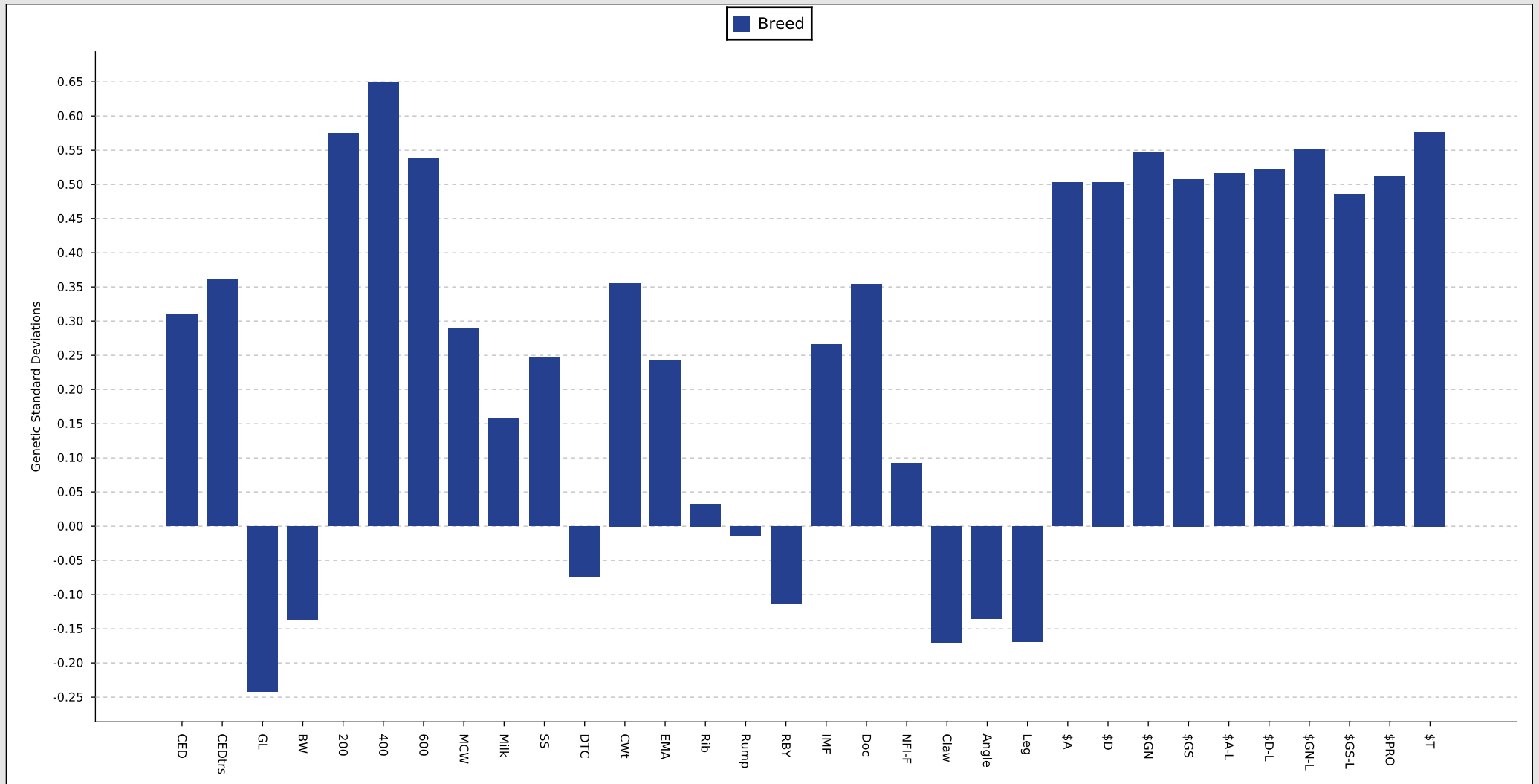
Genetic Progress Summary

Date: May 29, 2023

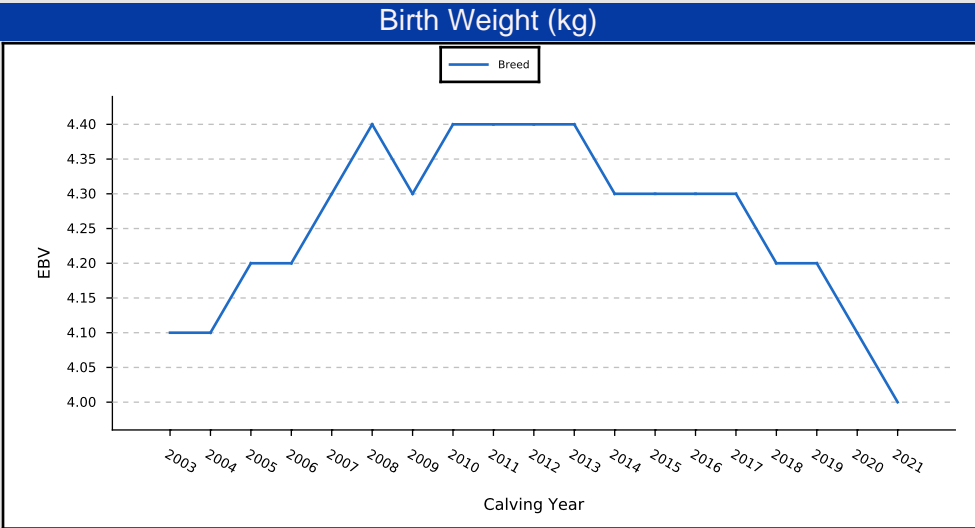
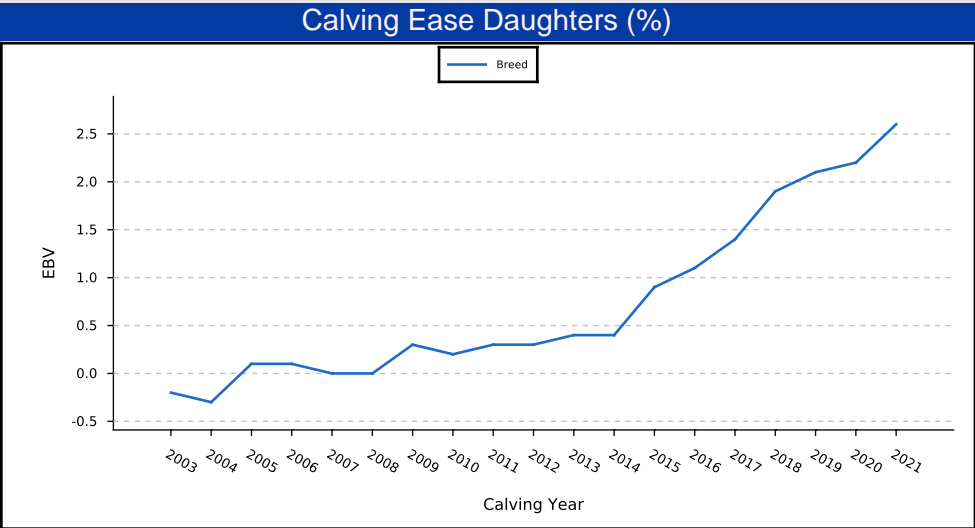
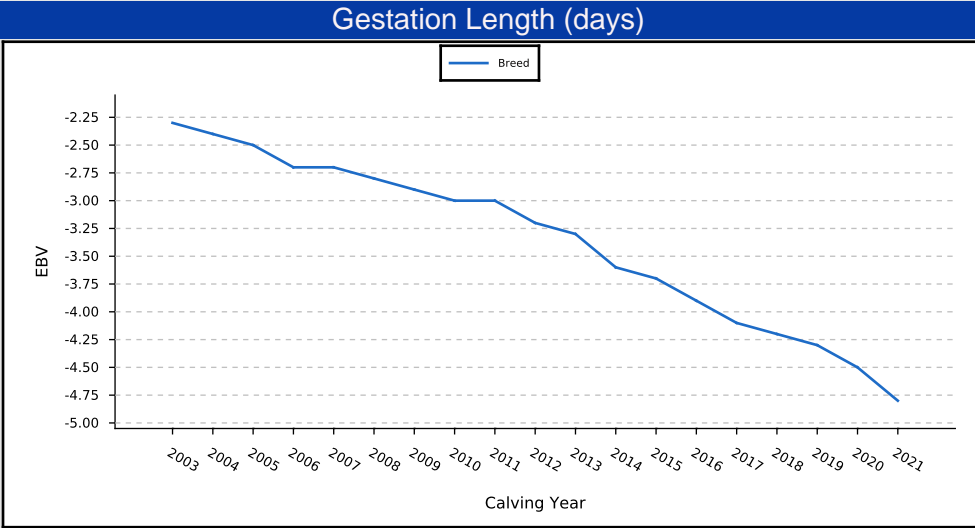
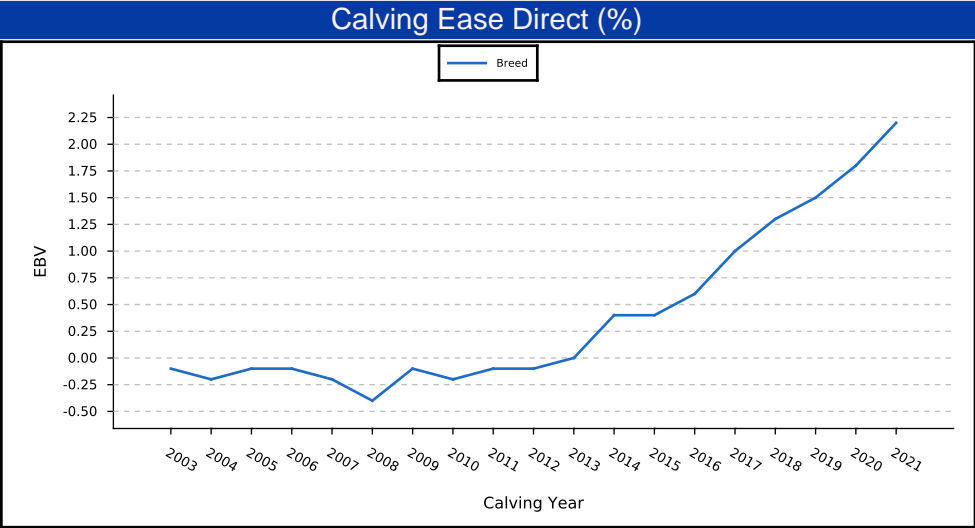
Relative Change in Each Trait - 2016 to 2021

Page: 2

This report assesses the change in the average EBVs of Angus seedstock animals across the nominated five year period in standard deviation units (rather than the units of measurement), enabling comparison of the relative change that has occurred in individual traits.

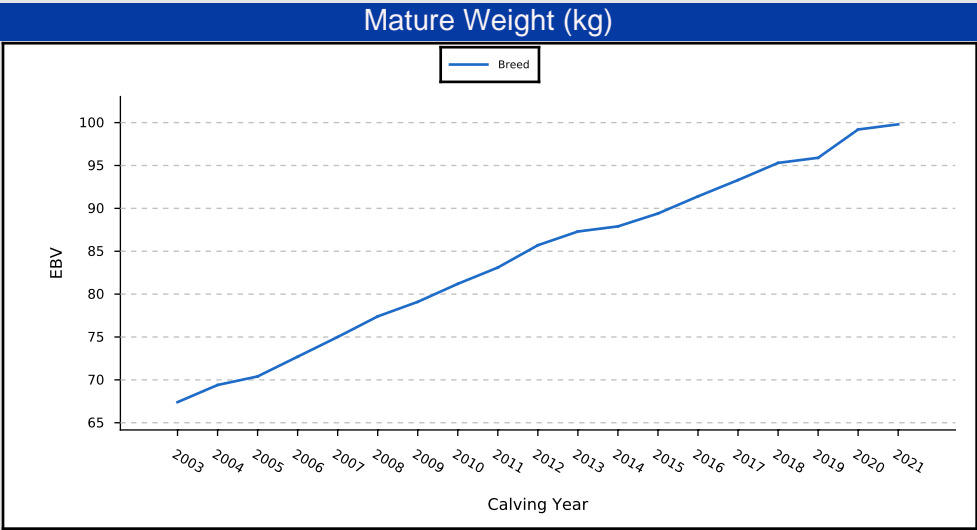
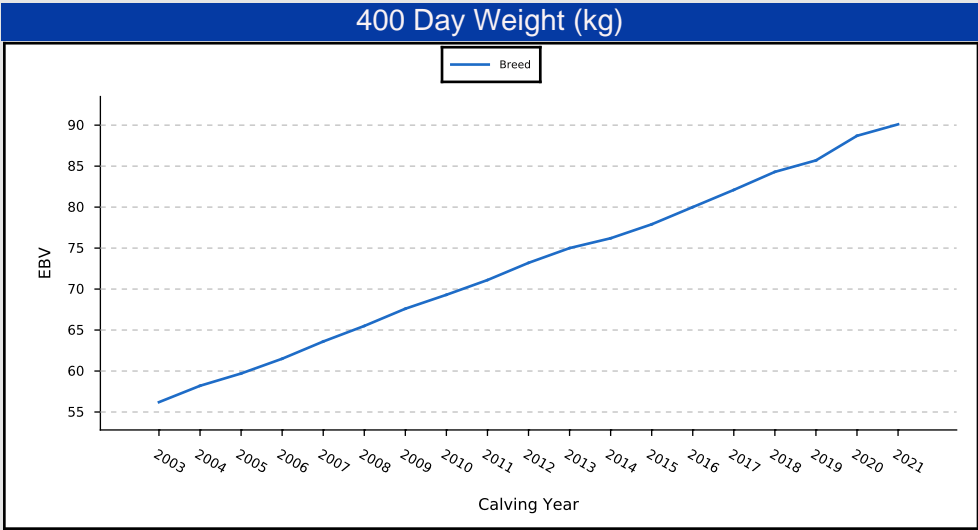
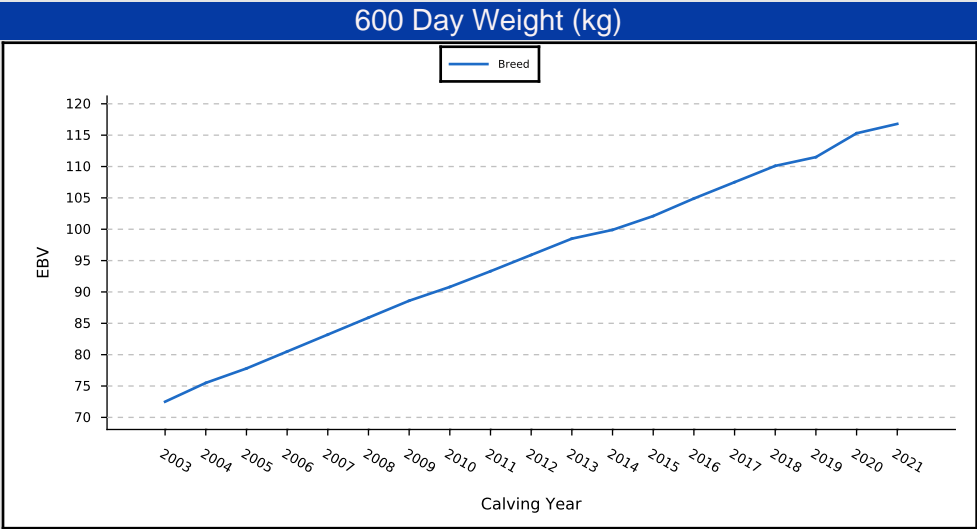
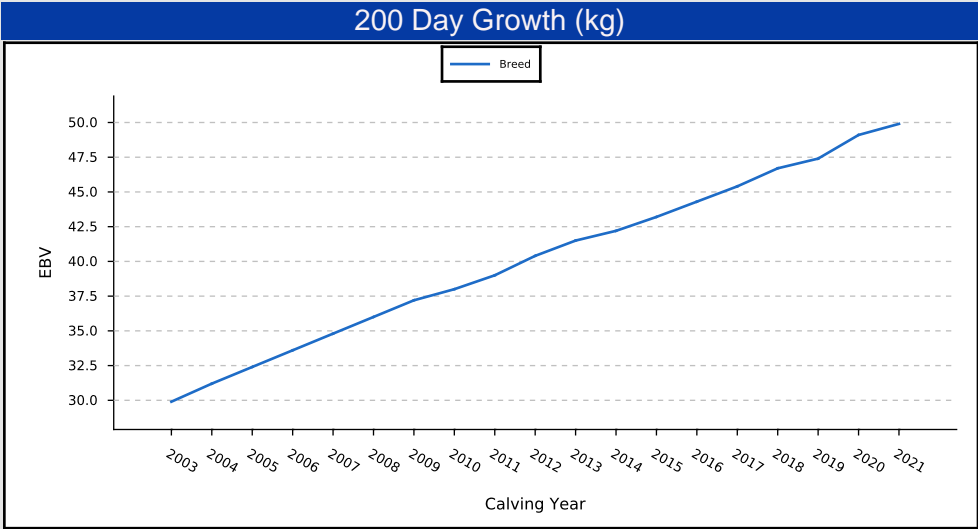


The reports below assess the change in the average EBVs of Angus seedstock animals born in each year for each respective trait.

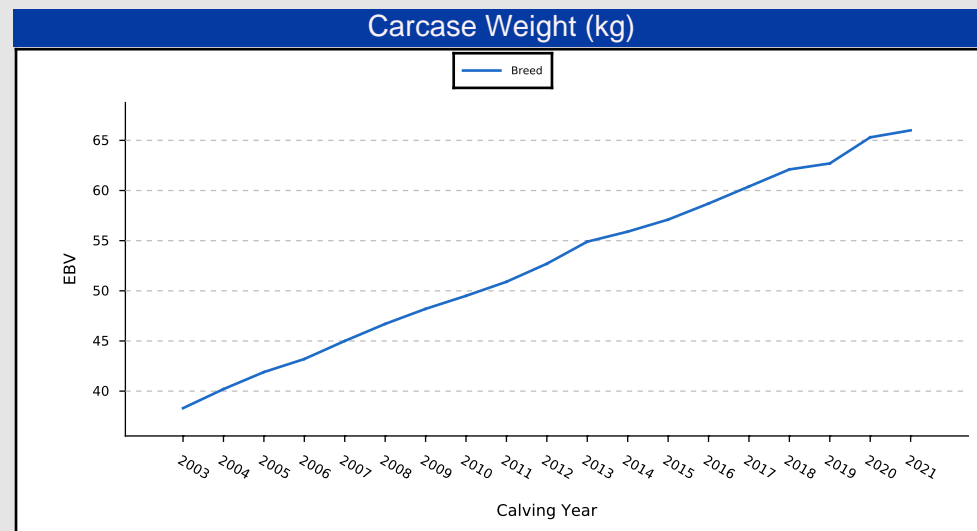
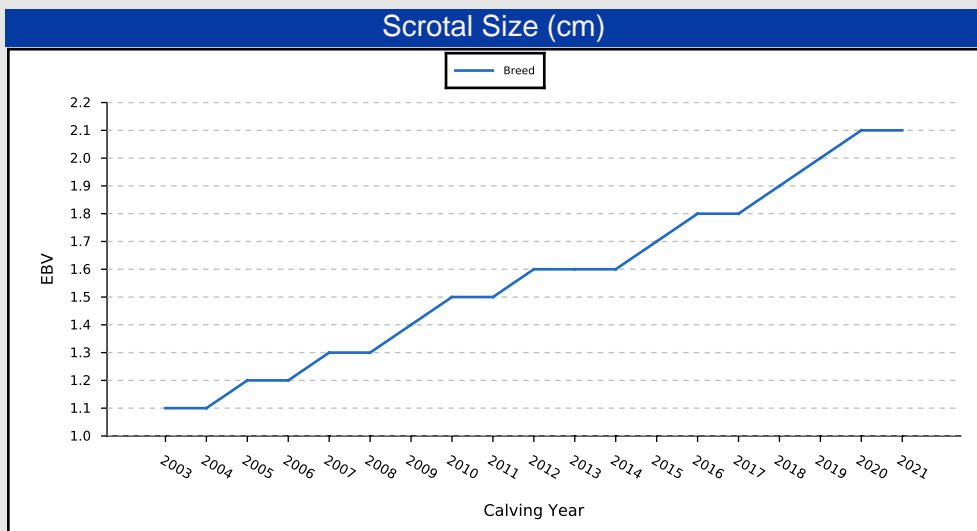
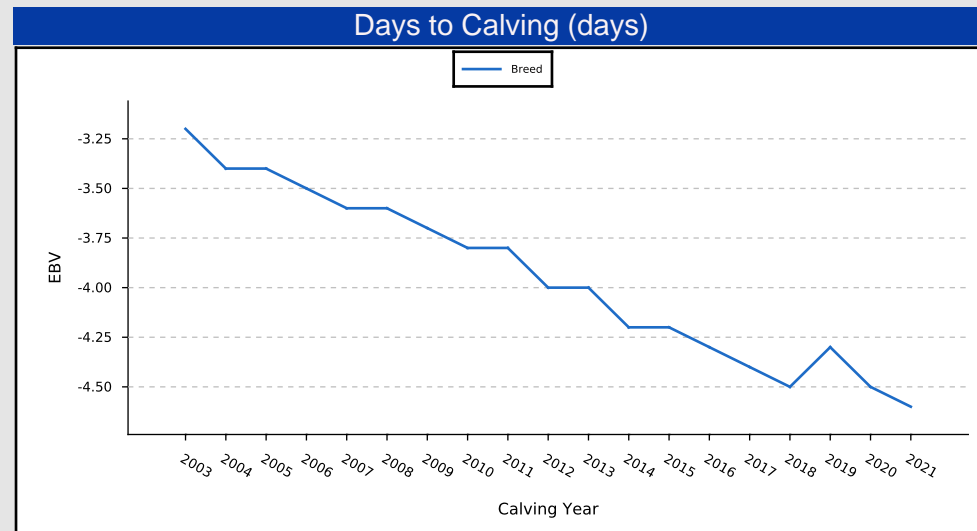
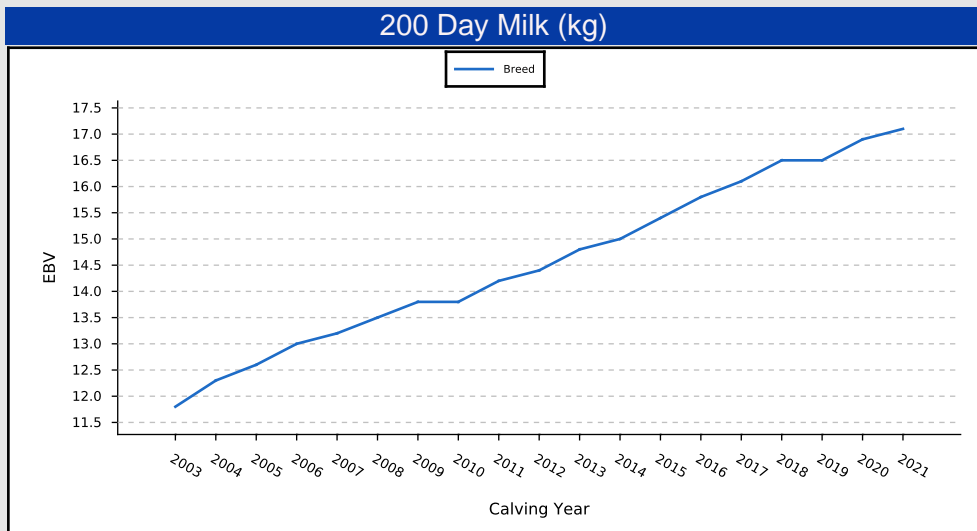


Genetic Progress By Trait

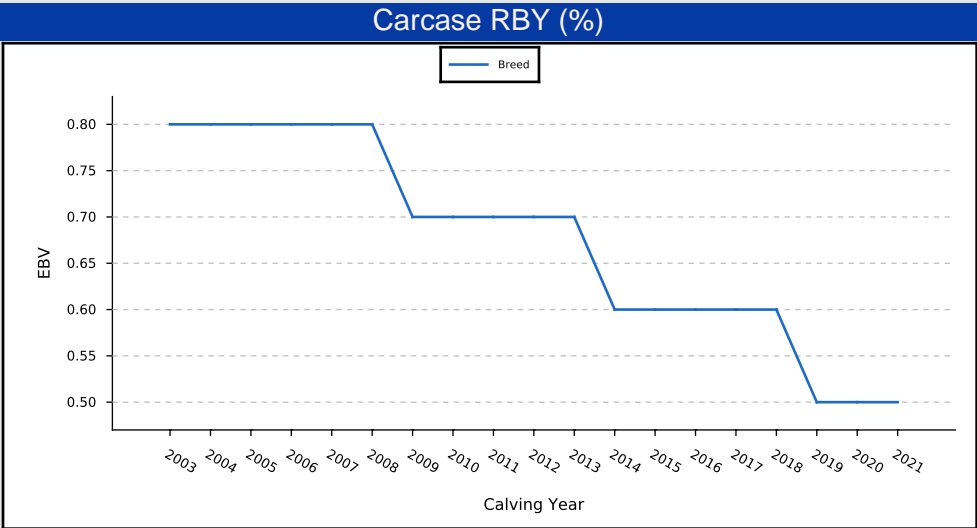
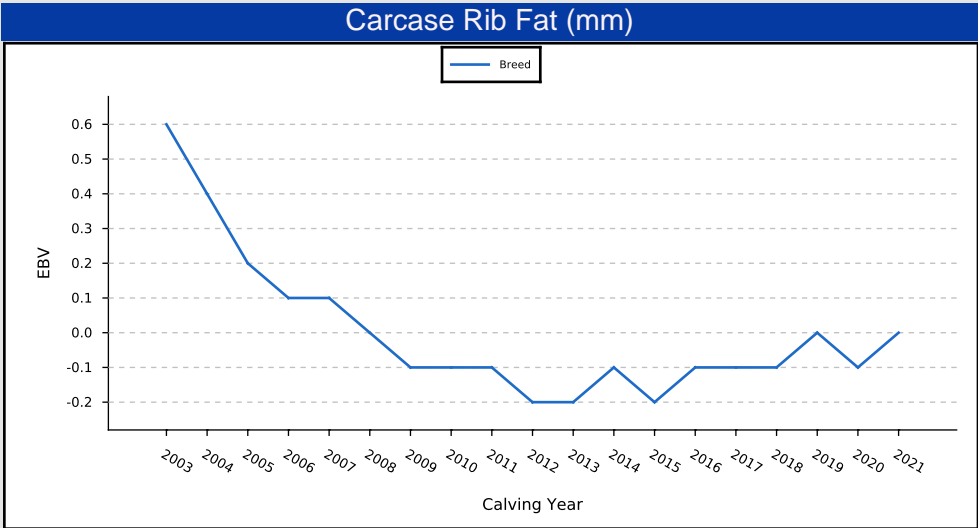
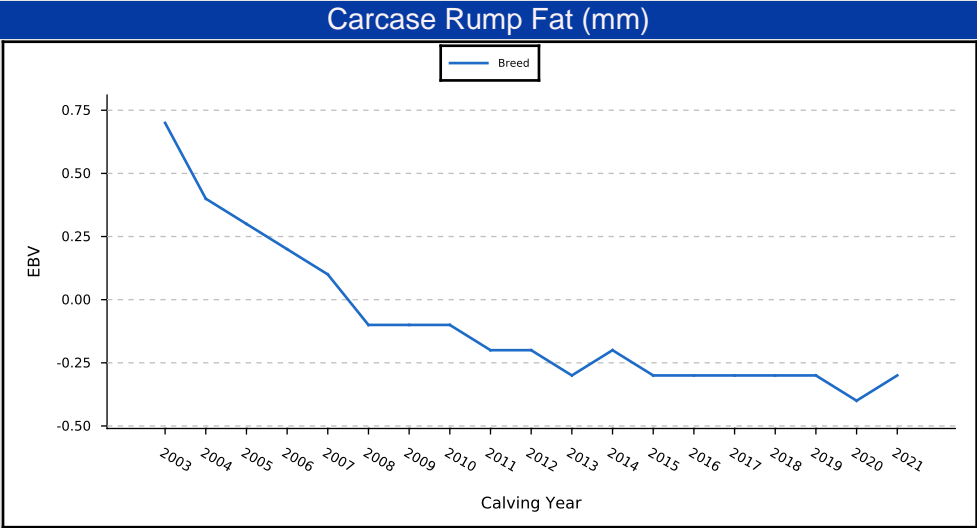
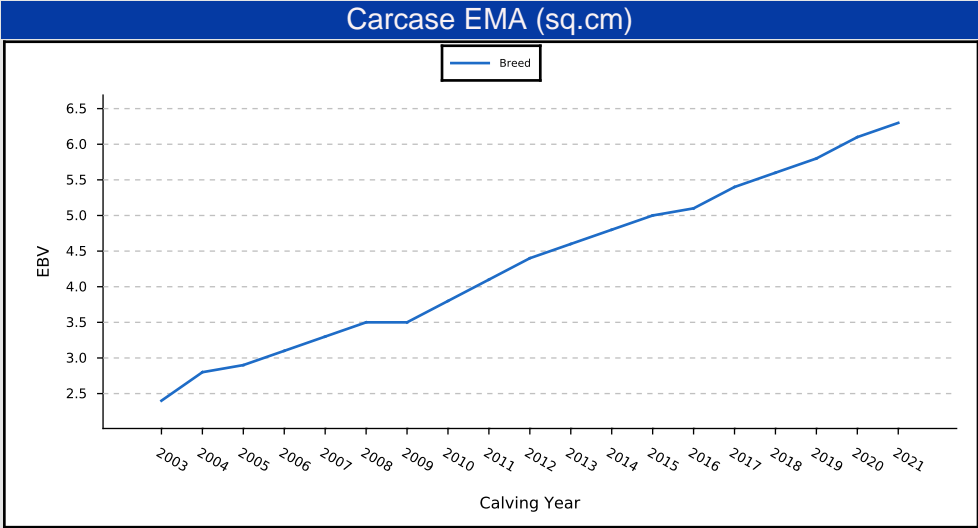
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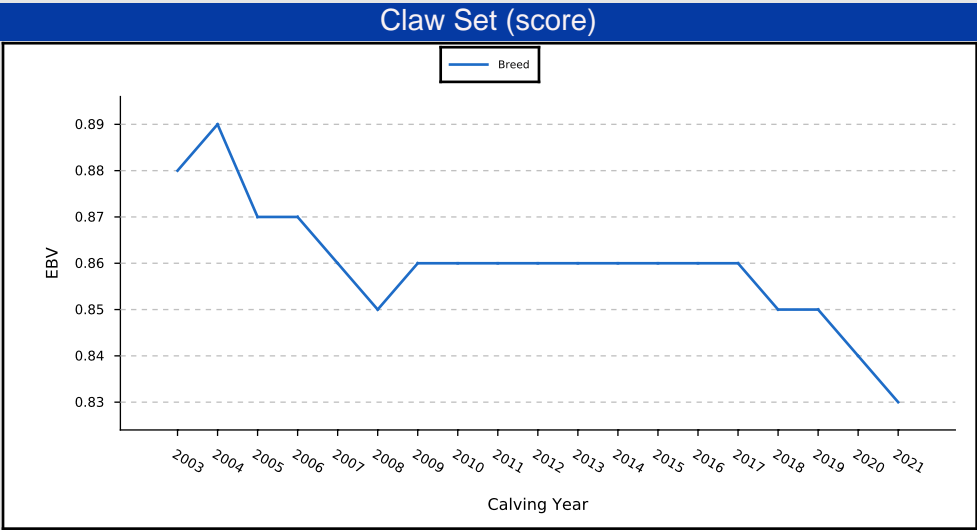
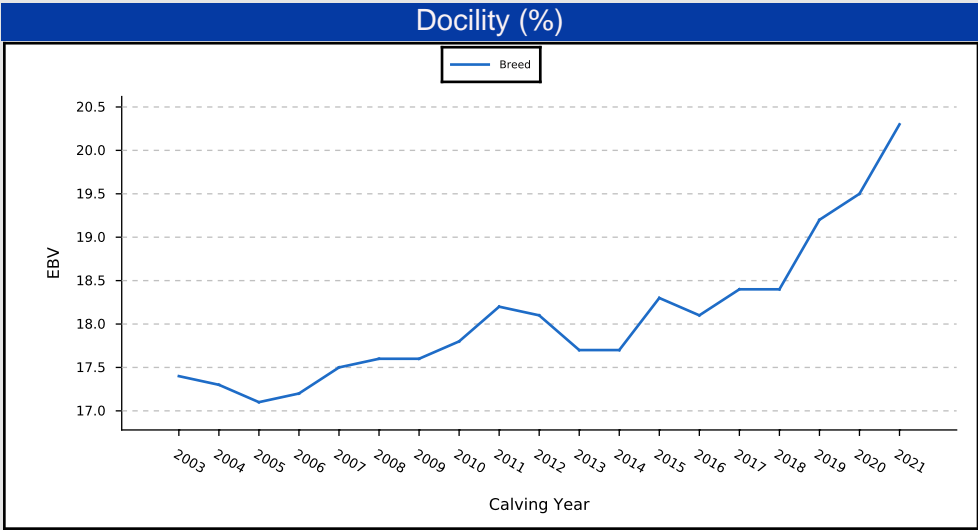
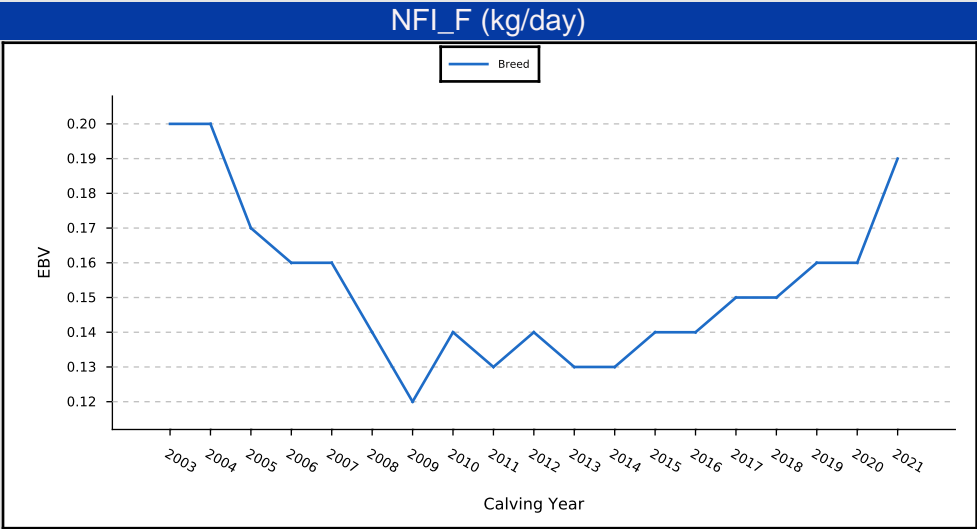
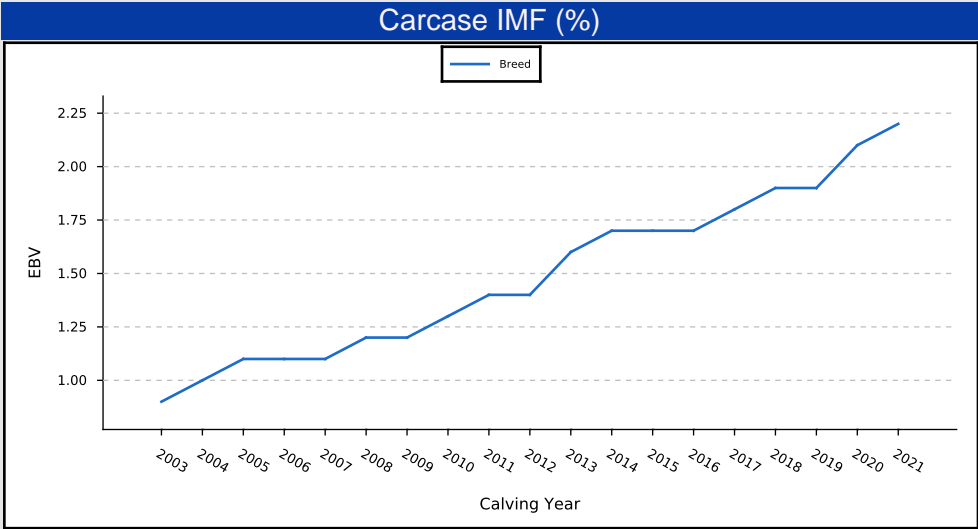


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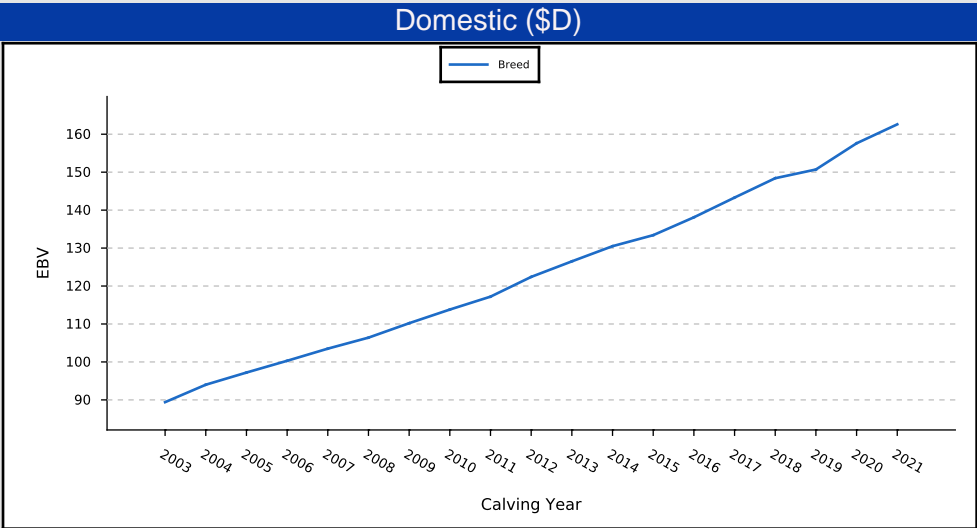
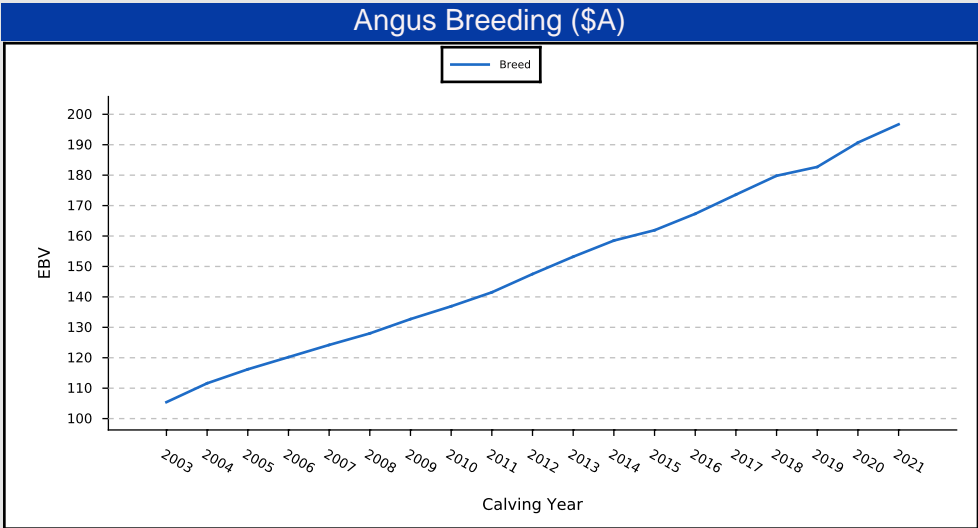
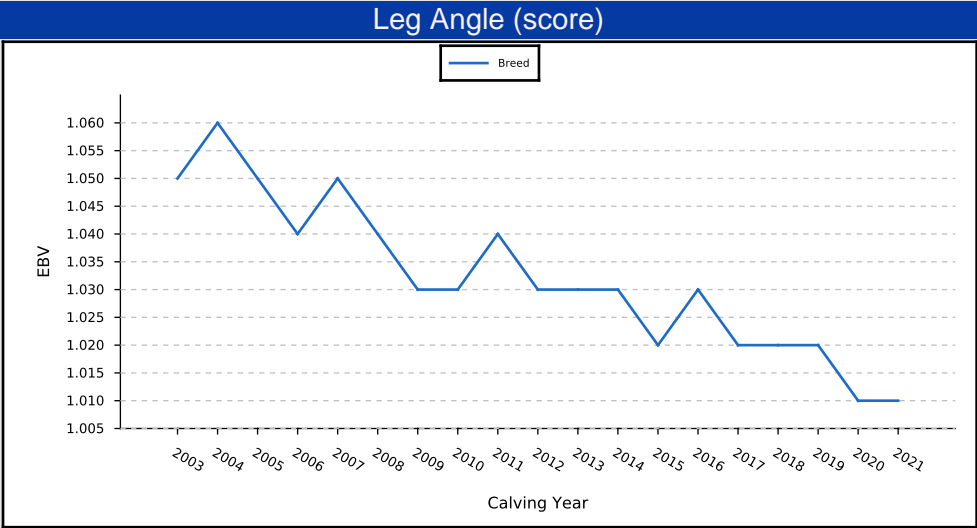
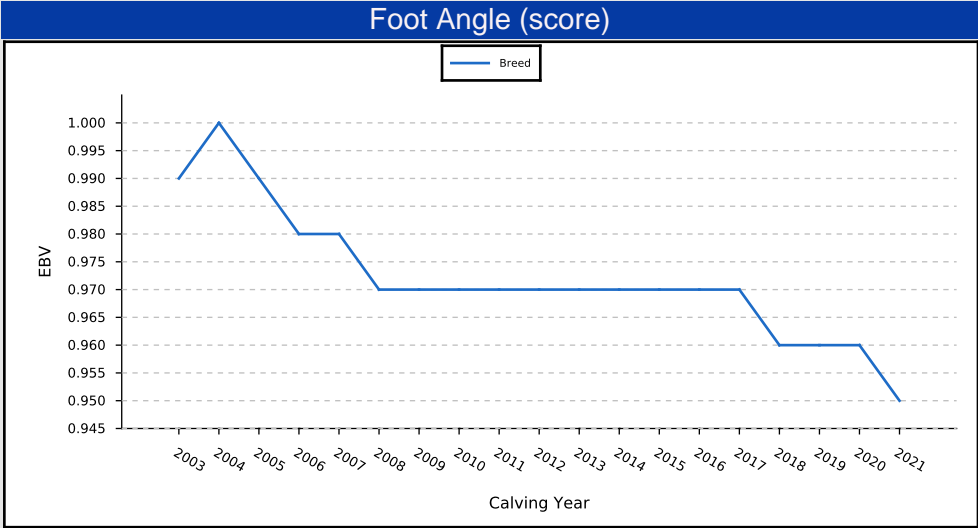


Genetic Progress By Trait

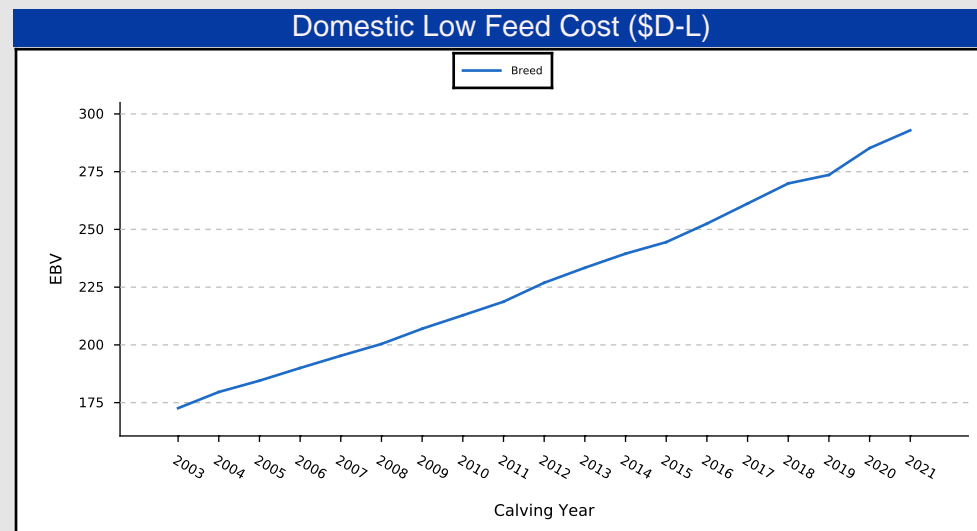
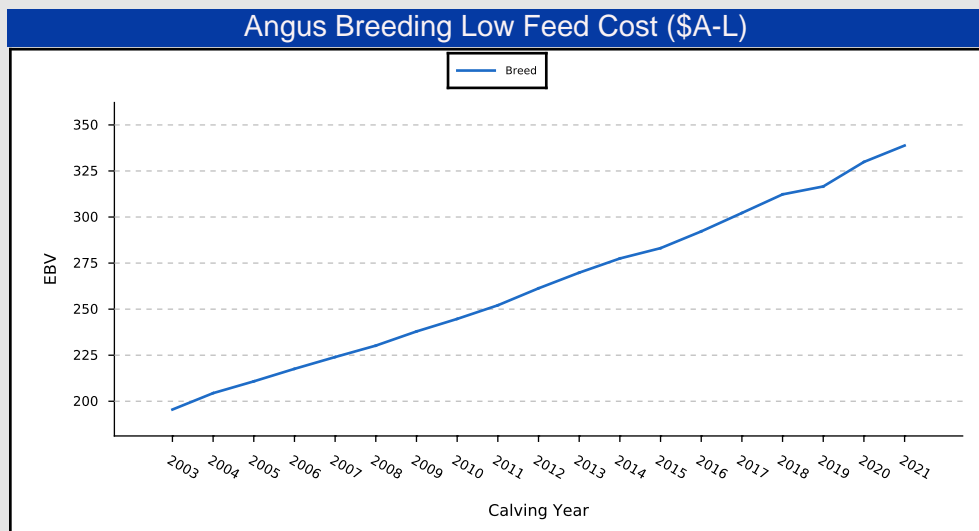
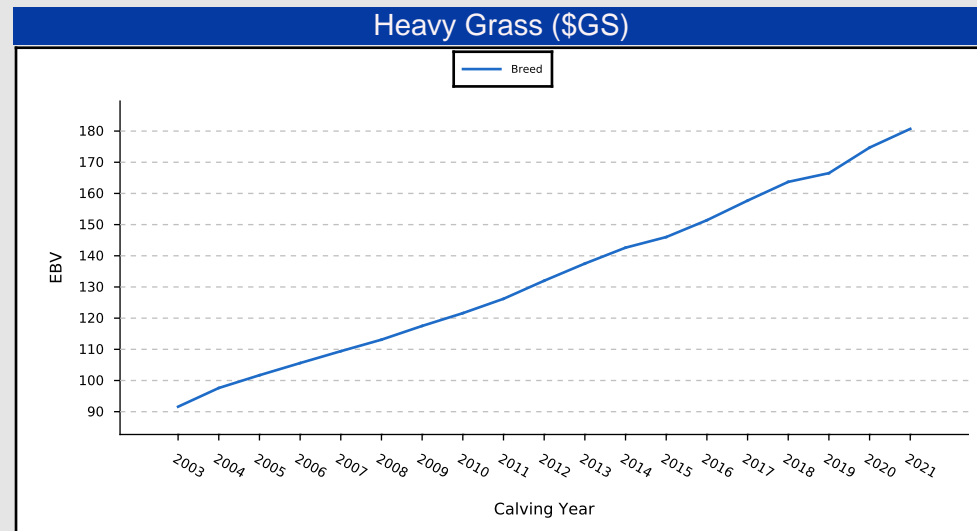
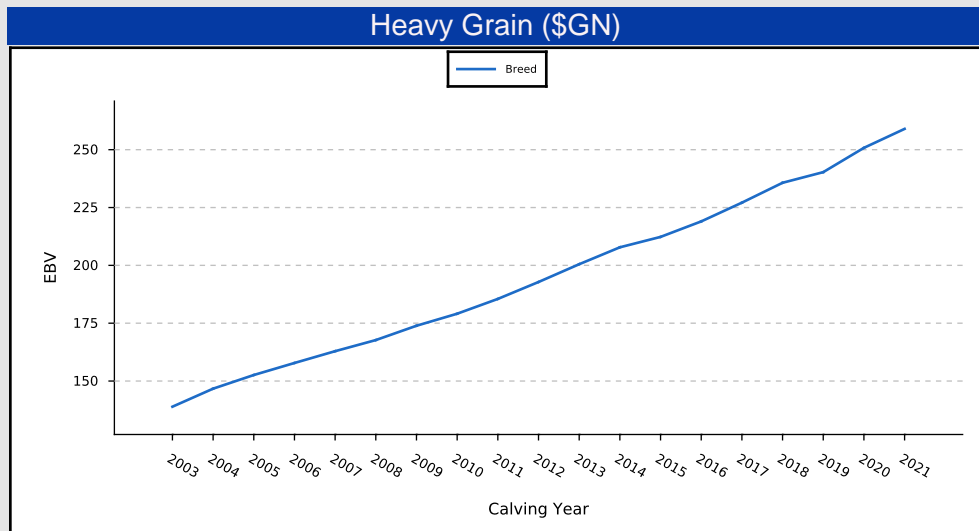
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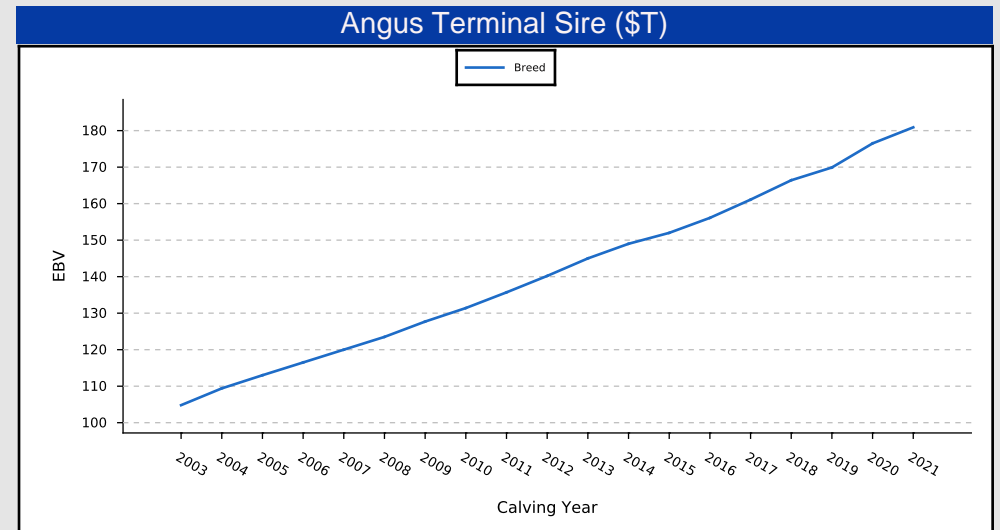
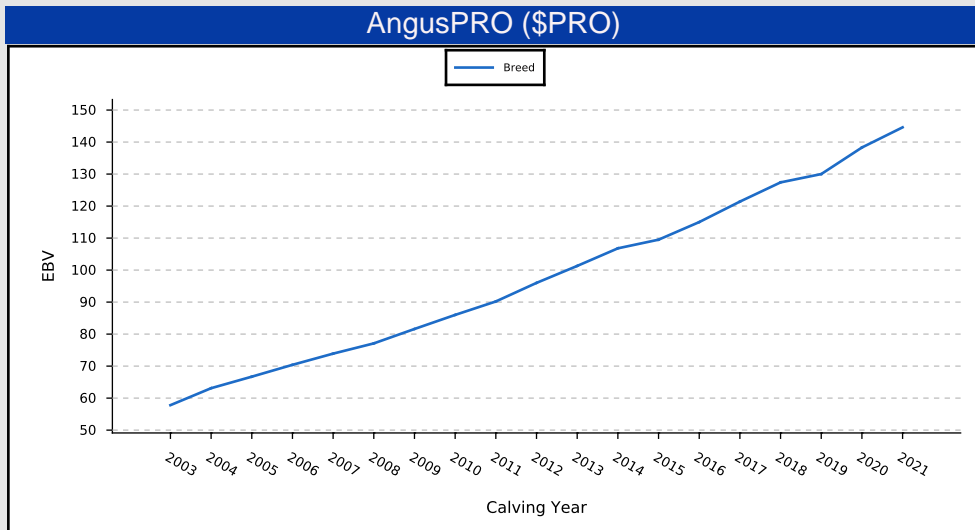
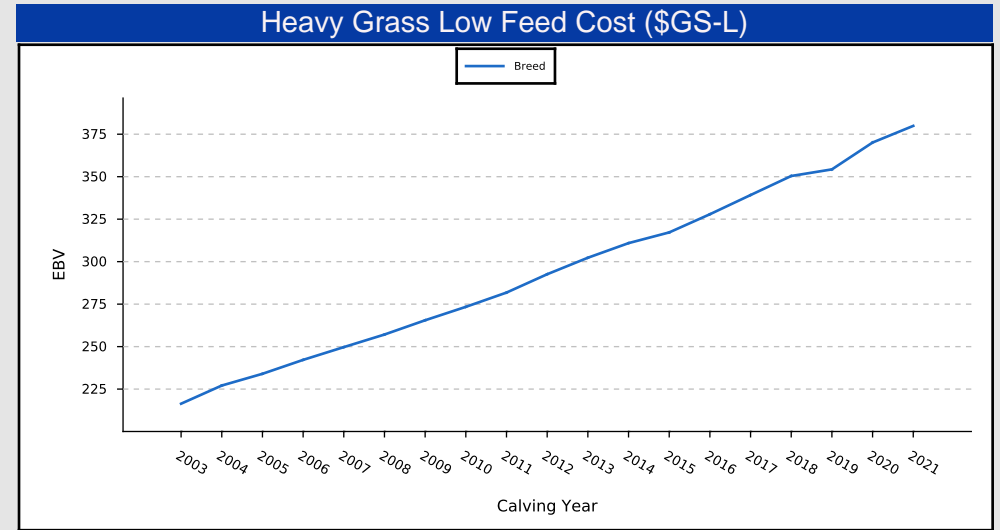
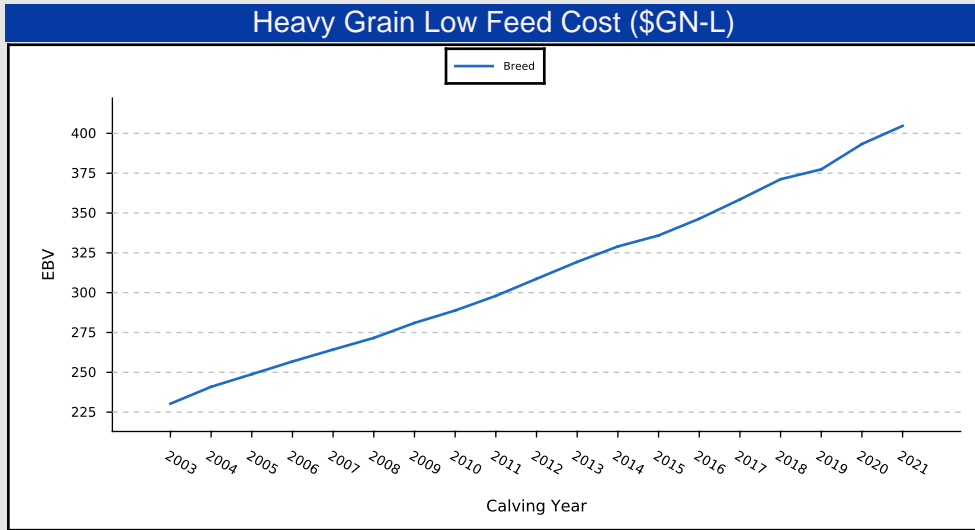
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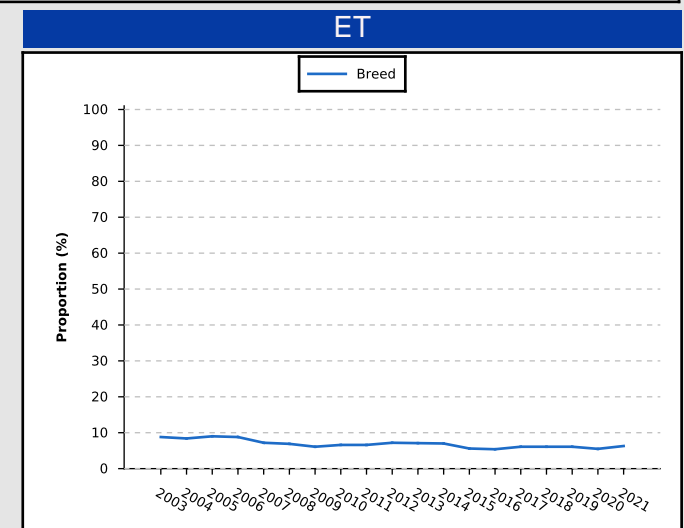
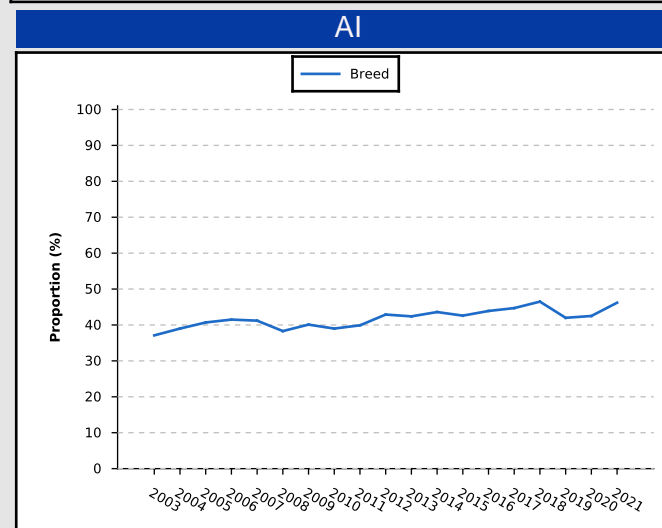
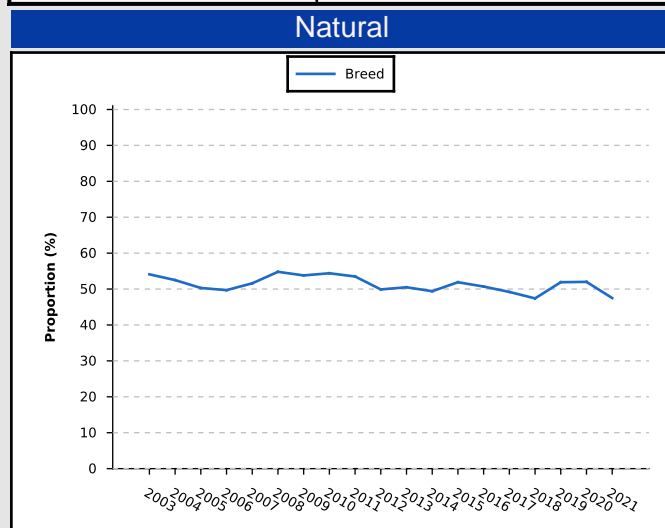
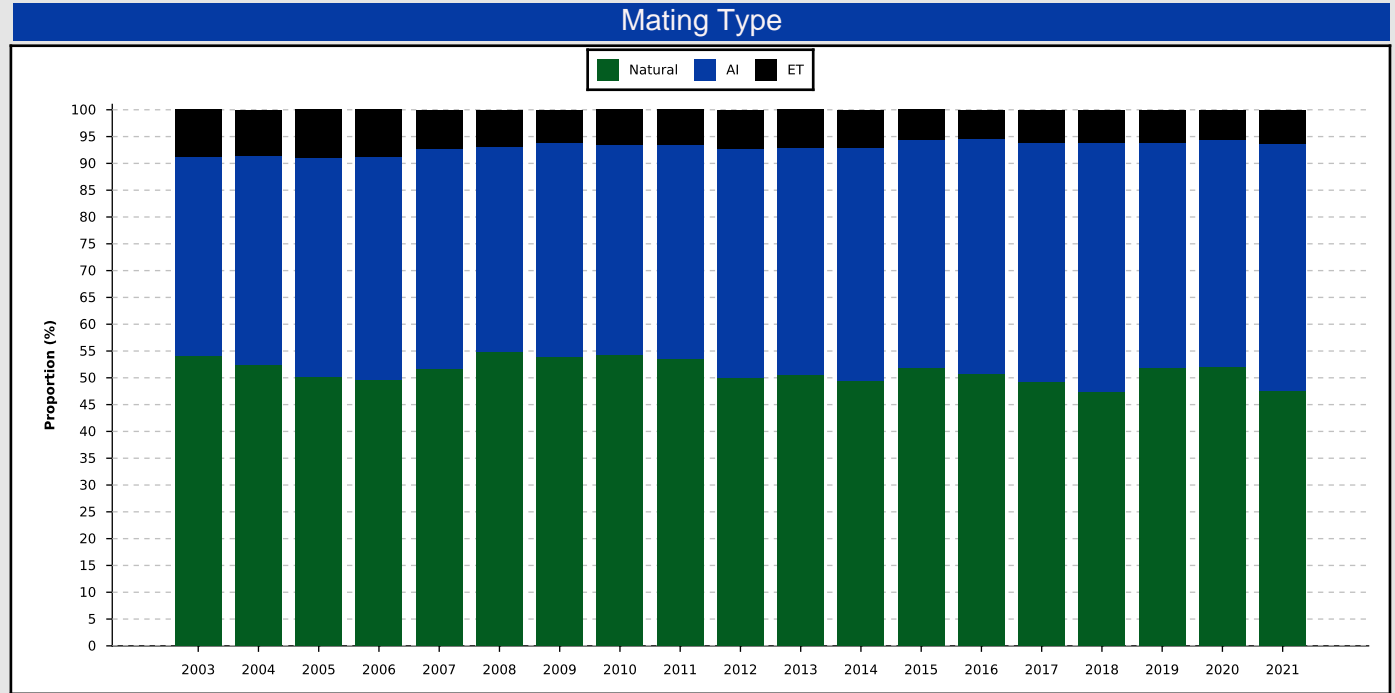


The reports below assess the change in the average EBVs of Angus seedstock animals born in each year for each respective trait.



This report assesses the utilisation of reproductive technologies within the Angus breed by summarising the number of animals born in each year that have been bred by artificial insemination and embryo transfer.

Calving Year	Animals	Mating Type		
		Natural	AI	ET
2003	65112	35233	24168	5711
2004	67042	35221	26169	5652
2005	69661	35035	28349	6277
2006	70727	35126	29344	6257
2007	67416	34799	27759	4858
2008	67821	37138	26000	4683
2009	66616	35859	26693	4064
2010	67268	36583	26266	4419
2011	73384	39230	29282	4872
2012	79447	39637	34098	5712
2013	81743	41314	34638	5791
2014	80599	39850	35107	5642
2015	81165	42091	34558	4516
2016	82130	41658	36074	4398
2017	85596	42106	38232	5258
2018	85583	40587	39800	5196
2019	85013	44136	35700	5177
2020	81751	42513	34748	4490
2021	92712	44029	42808	5875



Generation Length

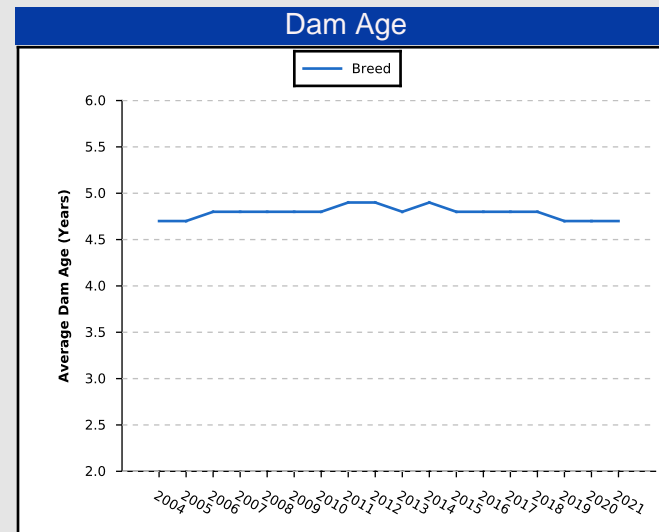
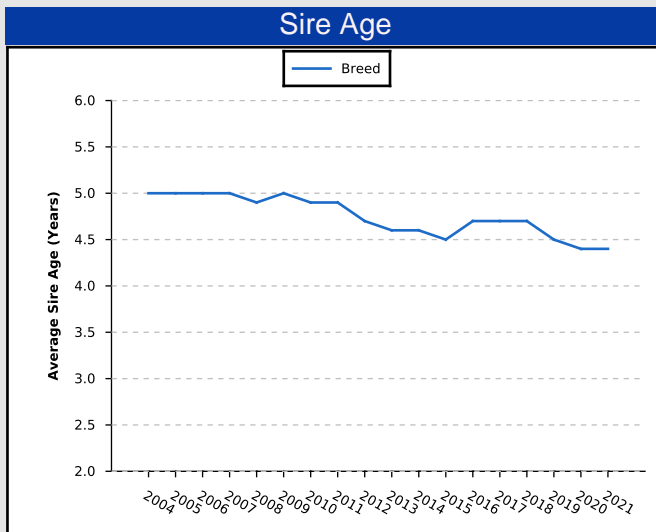
Average Sire and Dam Age By Year

Date: May 29, 2023

Page: 12

This report summarises the average age of the sires and dams of Angus seedstock animals over time. The statistics are calculated as the age of the sire and dam when their progeny are born, and are weighted according to the number of progeny that a sire or dam has in a particular year. For example, if a sire has 50 calves in a particular calving year, its age will make a greater contribution to the average age statistics than a sire with 5 calves.

Calving Year	Animals	Sire Age (Years)				Dam Age (Years)			
		All	Natural	AI	ET	All	Natural	AI	ET
2004	61480	5.0	3.6	6.3	8.0	4.7	4.6	4.4	6.4
2005	63445	5.0	3.6	6.3	7.9	4.7	4.6	4.5	6.3
2006	64553	5.0	3.7	6.2	7.7	4.8	4.7	4.4	6.4
2007	62608	5.0	3.7	6.3	7.6	4.8	4.7	4.4	6.4
2008	63342	4.9	3.7	6.4	7.8	4.8	4.8	4.4	6.7
2009	62864	5.0	3.7	6.5	7.9	4.8	4.7	4.5	6.9
2010	63341	4.9	3.7	6.1	7.6	4.8	4.8	4.5	6.5
2011	69551	4.9	3.7	6.1	7.6	4.9	4.9	4.5	6.8
2012	74891	4.7	3.7	5.6	6.7	4.9	4.9	4.5	6.7
2013	77097	4.6	3.7	5.4	6.4	4.8	4.8	4.5	6.8
2014	76001	4.6	3.7	5.4	6.7	4.9	4.9	4.5	6.9
2015	77549	4.5	3.7	5.3	6.7	4.8	4.8	4.5	6.9
2016	78133	4.7	3.8	5.5	6.7	4.8	4.9	4.5	6.8
2017	80674	4.7	3.8	5.5	6.6	4.8	4.8	4.5	6.8
2018	80911	4.7	3.7	5.5	6.5	4.8	4.8	4.5	6.9
2019	80582	4.5	3.6	5.3	6.8	4.7	4.7	4.4	6.5
2020	78204	4.4	3.6	5.2	6.0	4.7	4.7	4.3	6.8
2021	88063	4.4	3.5	5.2	6.5	4.7	4.7	4.3	6.9



Genetic Diversity

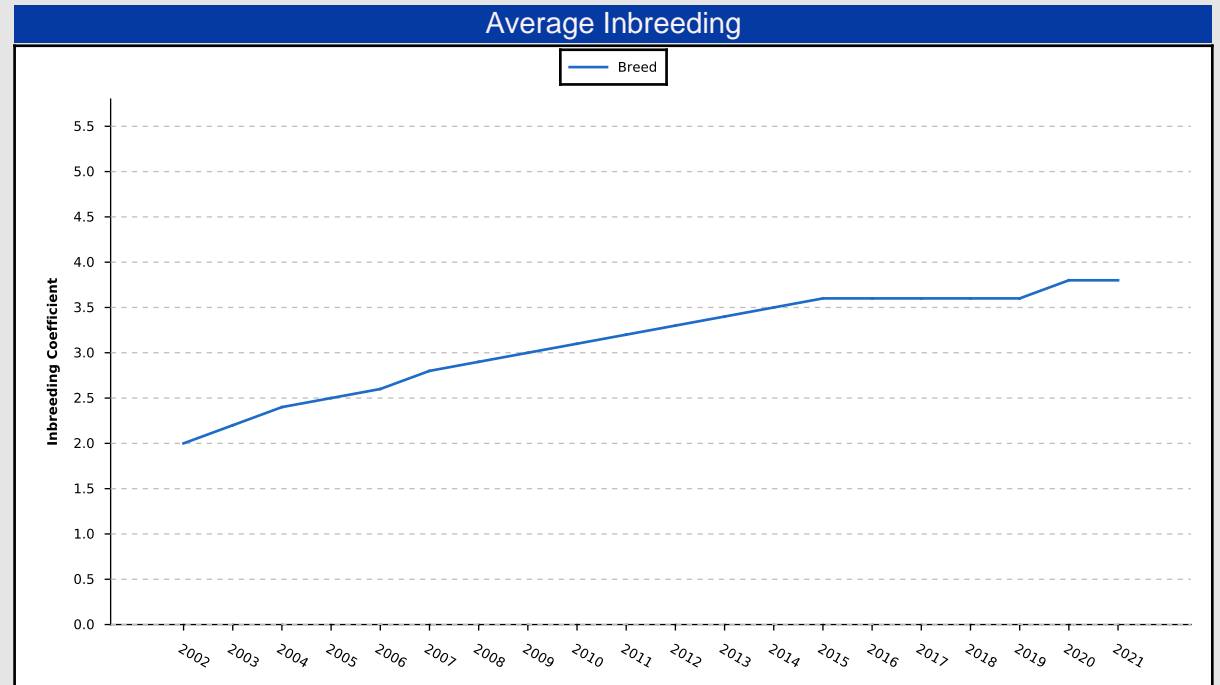
Average Inbreeding By Year

Date: May 29, 2023

Page: 13

This report assesses the genetic diversity within the Angus breed by summarising the average inbreeding co-efficient of animals born in each year.

Calving Year	Animals	Inbreeding Coefficient (%)	
		Breed	
2002	63189	2.0	
2003	59483	2.2	
2004	61480	2.4	
2005	63445	2.5	
2006	64553	2.6	
2007	62608	2.8	
2008	63342	2.9	
2009	62864	3.0	
2010	63341	3.1	
2011	69551	3.2	
2012	74891	3.3	
2013	77097	3.4	
2014	76001	3.5	
2015	77549	3.6	
2016	78133	3.6	
2017	80674	3.6	
2018	80911	3.6	
2019	80582	3.6	
2020	78204	3.8	
2021	88063	3.8	



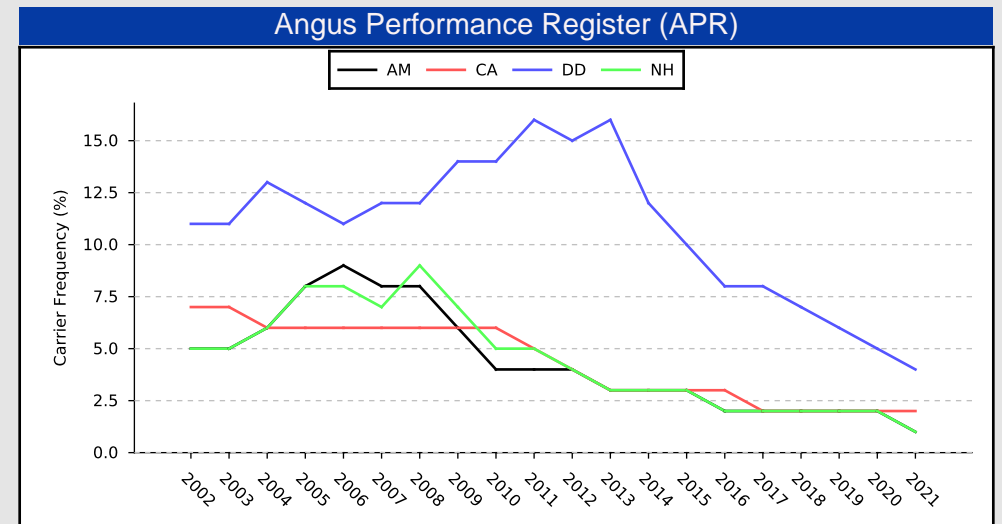
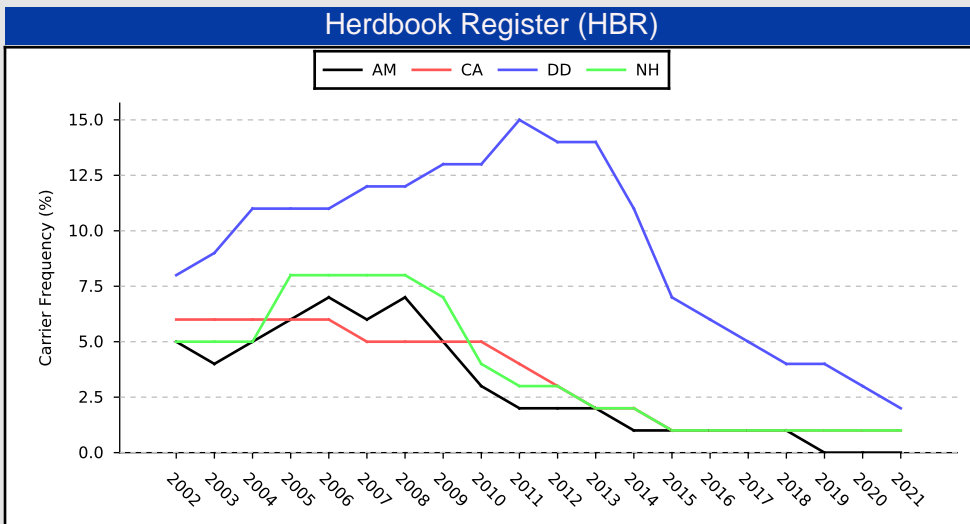
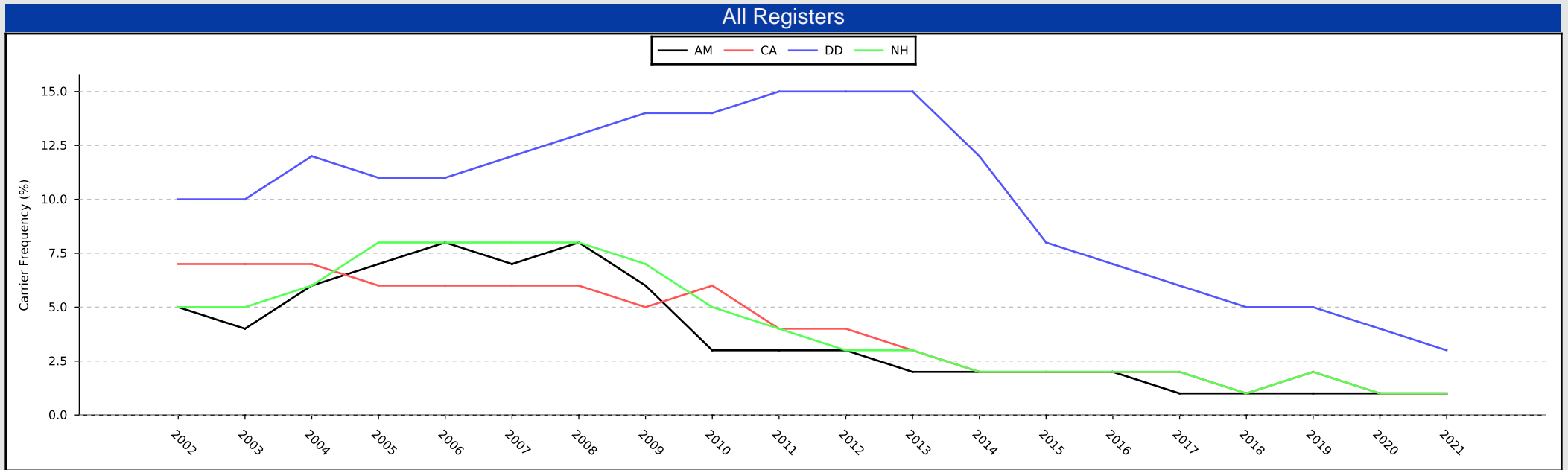
Genetic Conditions

Carrier Frequency By Register

Date: May 29, 2023

Page: 14

This report assesses the frequency of carriers for recessive genetic conditions over time. The statistics are calculated based on the results of the gene probability analyses conducted by Angus Australia.



Appendix 2 Breed Genetic Trends

Date: May 29, 2023

Page: 15

This report provides the average EBVs for all animals recorded with Angus Australia over time.

Year	Count	Estimated Breeding Values																															
		Calv-Ease		Birth		Growth				Fert		Carcase					Feed		Temp	Structural			Selection Index										
		Dir	Dtrs	GL	BW	200	400	600	Mwt	Milk	SS	DC	CW	EMA	RIB	P8	RBV	IMF	NFI-F	DOC	Claw	Angle	Leg	\$A	\$D	\$GN	\$GS	\$A-L	\$D-L	\$GN-L	\$GS-L	\$PRO	\$T
2003	59483	-0.1	-0.2	-2.3	+4.1	+30	+56	+73	+67	+12	+1.1	-3.2	+38	+2.4	+0.6	+0.7	+0.8	+0.9	+0.20	+17	+0.88	+0.99	+1.05	+105	+89	+139	+92	+196	+173	+230	+216	+58	+105
2004	61480	-0.2	-0.3	-2.4	+4.1	+31	+58	+76	+69	+12	+1.1	-3.4	+40	+2.8	+0.4	+0.4	+0.8	+1.0	+0.20	+17	+0.89	+1.00	+1.06	+112	+94	+147	+98	+204	+180	+241	+227	+63	+109
2005	63445	-0.1	+0.1	-2.5	+4.2	+32	+60	+78	+70	+13	+1.2	-3.4	+42	+2.9	+0.2	+0.3	+0.8	+1.1	+0.17	+17	+0.87	+0.99	+1.05	+116	+97	+153	+102	+211	+185	+249	+234	+67	+113
2006	64553	-0.1	+0.1	-2.7	+4.2	+34	+62	+81	+73	+13	+1.2	-3.5	+43	+3.1	+0.1	+0.2	+0.8	+1.1	+0.16	+17	+0.87	+0.98	+1.04	+120	+100	+158	+106	+218	+190	+257	+242	+70	+117
2007	62608	-0.2	+0.0	-2.7	+4.3	+35	+64	+83	+75	+13	+1.3	-3.6	+45	+3.3	+0.1	+0.1	+0.8	+1.1	+0.16	+18	+0.86	+0.98	+1.05	+124	+104	+163	+109	+224	+195	+264	+250	+74	+120
2008	63342	-0.4	+0.0	-2.8	+4.4	+36	+66	+86	+77	+14	+1.3	-3.6	+47	+3.5	+0.0	-0.1	+0.8	+1.2	+0.14	+18	+0.85	+0.97	+1.04	+128	+106	+168	+113	+230	+200	+272	+257	+77	+124
2009	62864	-0.1	+0.3	-2.9	+4.3	+37	+68	+89	+79	+14	+1.4	-3.7	+48	+3.5	-0.1	-0.1	+0.7	+1.2	+0.12	+18	+0.86	+0.97	+1.03	+133	+110	+174	+118	+238	+207	+281	+266	+82	+128
2010	63341	-0.2	+0.2	-3.0	+4.4	+38	+69	+91	+81	+14	+1.5	-3.8	+50	+3.8	-0.1	-0.1	+0.7	+1.3	+0.14	+18	+0.86	+0.97	+1.03	+137	+114	+179	+122	+245	+213	+289	+273	+86	+131
2011	69551	-0.1	+0.3	-3.0	+4.4	+39	+71	+93	+83	+14	+1.5	-3.8	+51	+4.1	-0.1	-0.2	+0.7	+1.4	+0.13	+18	+0.86	+0.97	+1.04	+142	+117	+186	+126	+252	+219	+298	+282	+90	+136
2012	74891	-0.1	+0.3	-3.2	+4.4	+40	+73	+96	+86	+14	+1.6	-4.0	+53	+4.4	-0.2	-0.2	+0.7	+1.4	+0.14	+18	+0.86	+0.97	+1.03	+148	+122	+193	+132	+261	+227	+309	+293	+96	+140
2013	77097	+0.0	+0.4	-3.3	+4.4	+42	+75	+99	+87	+15	+1.6	-4.0	+55	+4.6	-0.2	-0.3	+0.7	+1.6	+0.13	+18	+0.86	+0.97	+1.03	+153	+127	+201	+138	+270	+233	+319	+302	+101	+145
2014	76001	+0.4	+0.4	-3.6	+4.3	+42	+76	+100	+88	+15	+1.6	-4.2	+56	+4.8	-0.1	-0.2	+0.6	+1.7	+0.13	+18	+0.86	+0.97	+1.03	+159	+131	+208	+143	+278	+240	+329	+311	+107	+149
2015	77549	+0.4	+0.9	-3.7	+4.3	+43	+78	+102	+89	+15	+1.7	-4.2	+57	+5.0	-0.2	-0.3	+0.6	+1.7	+0.14	+18	+0.86	+0.97	+1.02	+162	+133	+212	+146	+283	+245	+336	+317	+110	+152
2016	78133	+0.6	+1.1	-3.9	+4.3	+44	+80	+105	+91	+16	+1.8	-4.3	+59	+5.1	-0.1	-0.3	+0.6	+1.7	+0.14	+18	+0.86	+0.97	+1.03	+167	+138	+219	+151	+292	+253	+346	+328	+115	+156
2017	80674	+1.0	+1.4	-4.1	+4.3	+45	+82	+108	+93	+16	+1.8	-4.4	+60	+5.4	-0.1	-0.3	+0.6	+1.8	+0.15	+18	+0.86	+0.97	+1.02	+174	+143	+227	+158	+302	+261	+359	+339	+121	+161
2018	80911	+1.3	+1.9	-4.2	+4.2	+47	+84	+110	+95	+17	+1.9	-4.5	+62	+5.6	-0.1	-0.3	+0.6	+1.9	+0.15	+18	+0.85	+0.96	+1.02	+180	+148	+236	+164	+312	+270	+371	+350	+127	+166
2019	80582	+1.5	+2.1	-4.3	+4.2	+47	+86	+112	+96	+17	+2.0	-4.3	+63	+5.8	+0.0	-0.3	+0.5	+1.9	+0.16	+19	+0.85	+0.96	+1.02	+183	+151	+240	+167	+317	+274	+377	+354	+130	+170
2020	78204	+1.8	+2.2	-4.5	+4.1	+49	+89	+115	+99	+17	+2.1	-4.5	+65	+6.1	-0.1	-0.4	+0.5	+2.1	+0.16	+20	+0.84	+0.96	+1.01	+191	+158	+251	+175	+330	+285	+393	+370	+138	+177
2021	88063	+2.2	+2.6	-4.8	+4.0	+50	+90	+117	+100	+17	+2.1	-4.6	+66	+6.3	+0.0	-0.3	+0.5	+2.2	+0.19	+20	+0.83	+0.95	+1.01	+197	+163	+259	+181	+339	+293	+405	+380	+145	+181

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