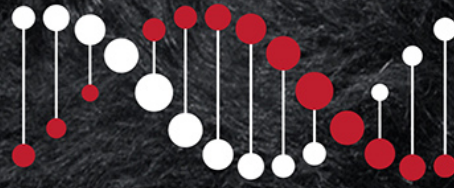


TACE



TransTasman Angus Cattle Evaluation

GENETIC BENCHMARKING REPORT

Angus Australia

MARCH 2023

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Genetic Progress Summary

2016 to 2021

Date: February 28,

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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	%	+1.5	+0.3
Gestation Length	days	-0.9	-0.2
Birth Weight	kg	-0.2	+0.0
200 Day Growth	kg	+5.7	+1.1
400 Day Weight	kg	+10.4	+2.1
600 Day Weight	kg	+12.2	+2.4
Mature Cow Weight	kg	+9.2	+1.8
Milk	kg	+1.4	+0.3
Scrotal Size	cm	+0.4	+0.1
Days to Calving	days	-0.2	+0.0
Carcase Weight	kg	+7.6	+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	%	+2.3	+0.5
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)	\$	+29.0	+5.8
Domestic (\$D)	\$	+24.1	+4.8
Heavy Grain (\$GN)	\$	+39.9	+8.0
Heavy Grass(\$GS)	\$	+28.9	+5.8
Angus Breeding Low Feed Cost (\$A-L)	\$	+46.6	+9.3
Domestic Low Feed Cost (\$D-L)	\$	+40.2	+8.0
Heavy Grain Low Feed Cost (\$GN-L)	\$	+58.3	+11.7
Heavy Grass Low Feed Cost (\$GS-L)	\$	+51.9	+10.4
AngusPRO (\$PRO)	\$	+29.0	+5.8
Angus Terminal Sire (\$T)	\$	+25.2	+5.0

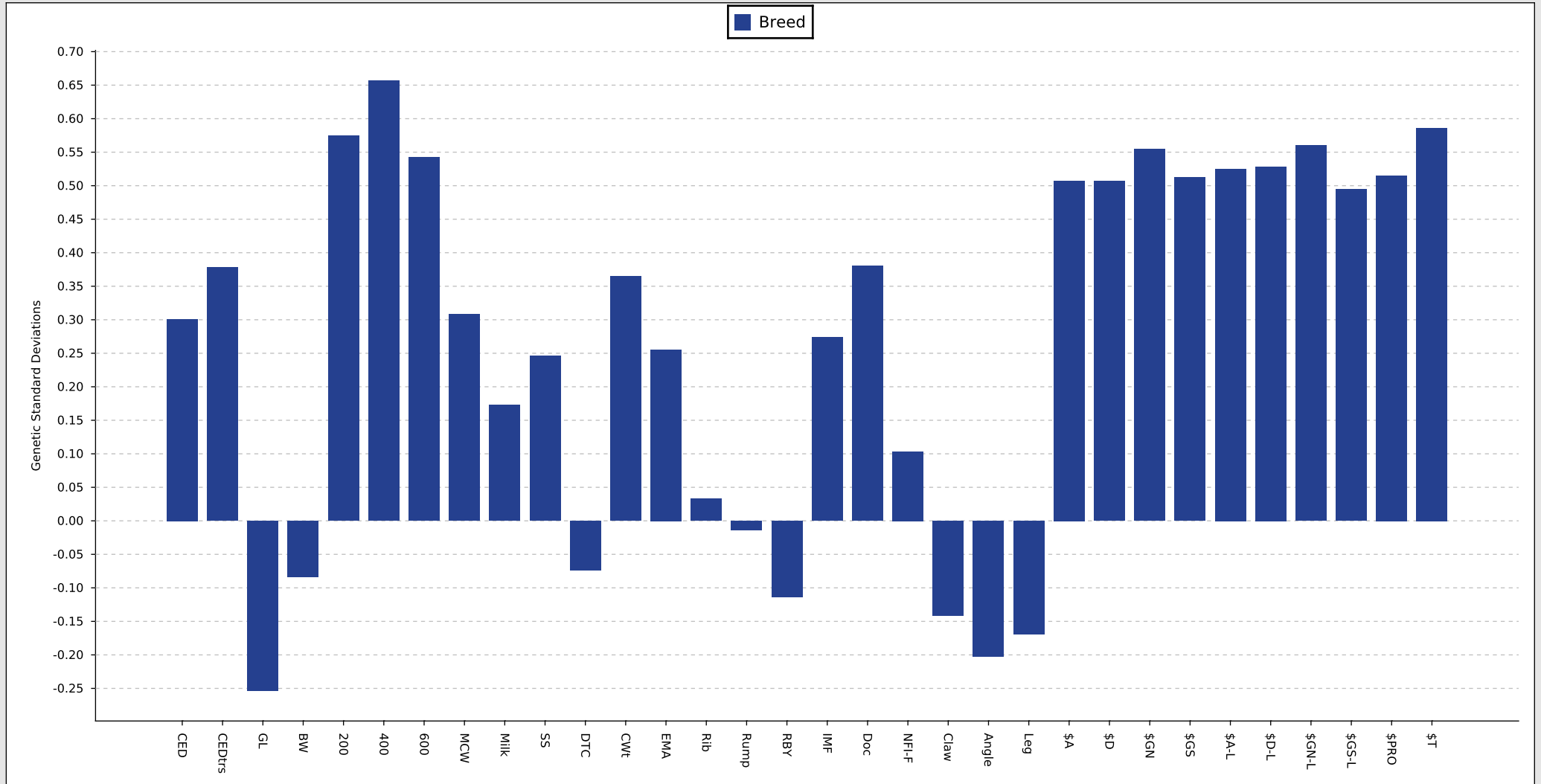
Genetic Progress Summary

Date: February 28,

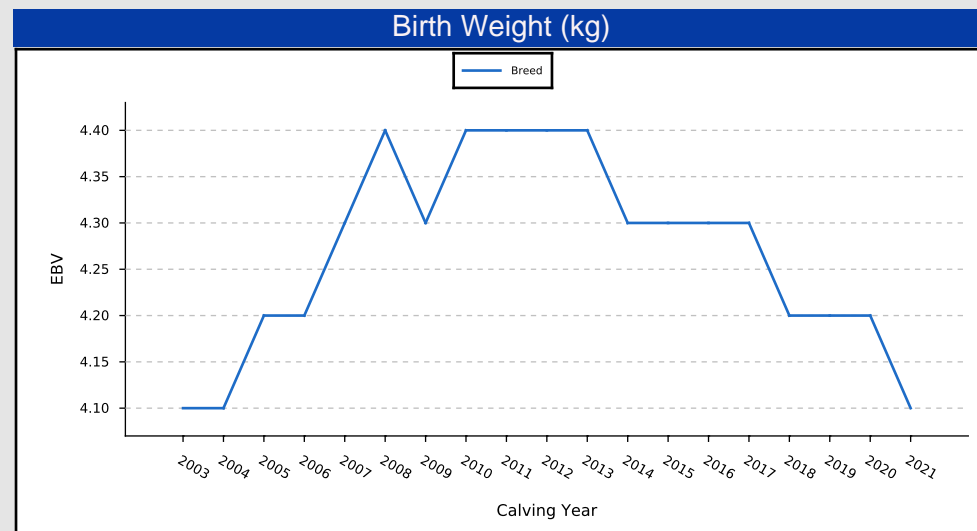
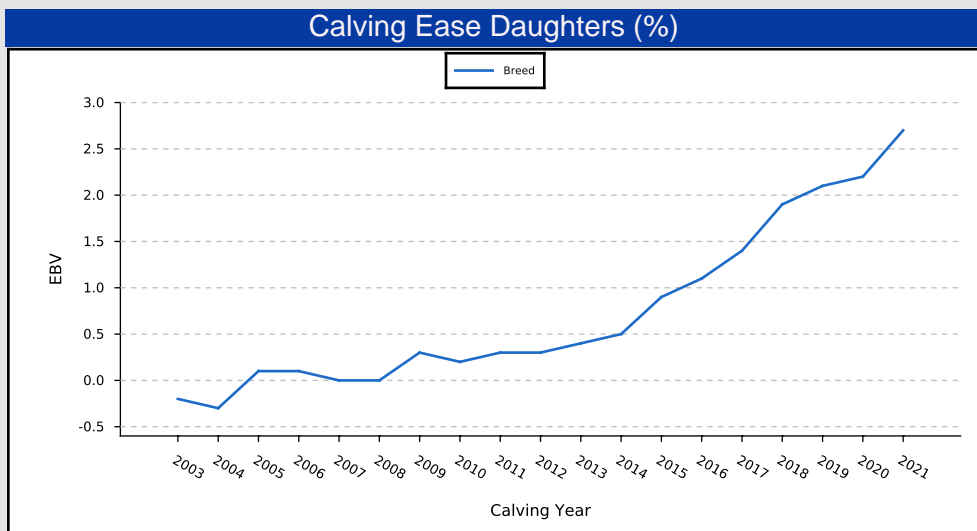
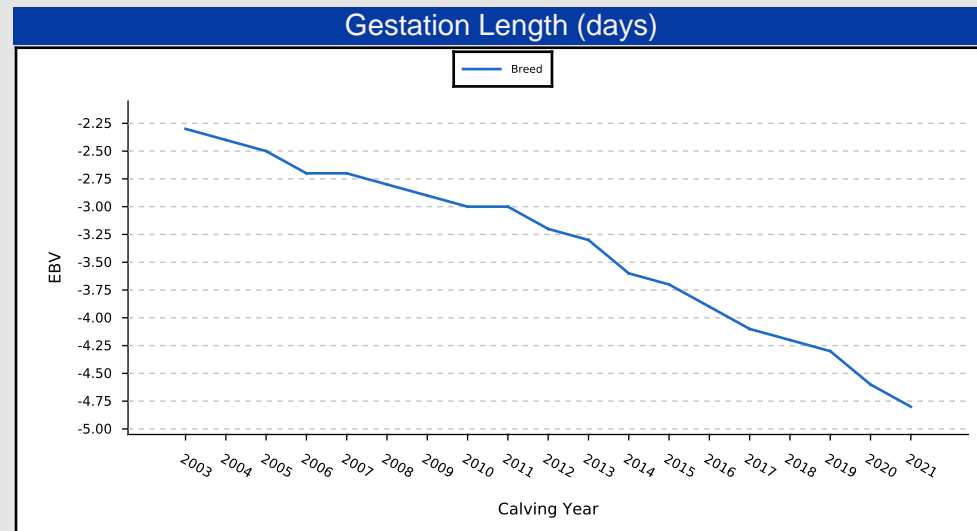
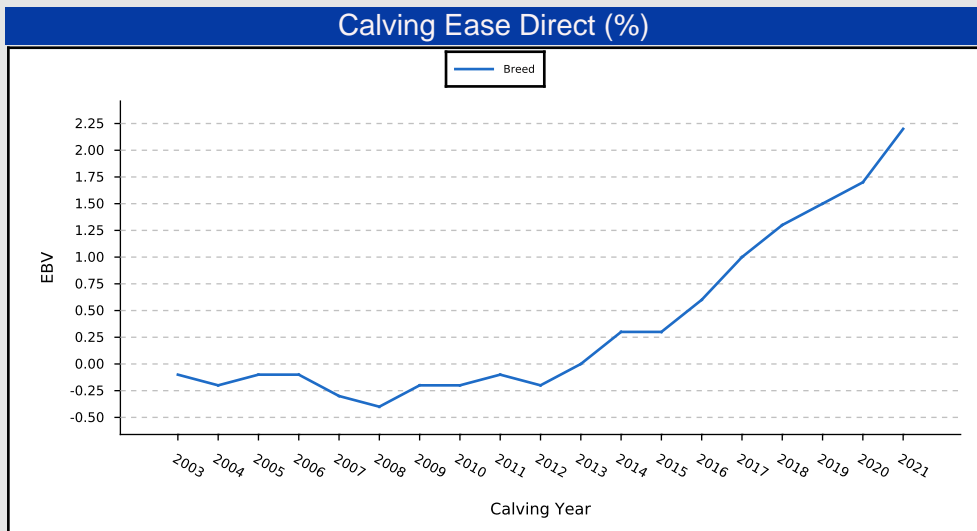
Relative Change in Each Trait - 2016 to 2021

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.

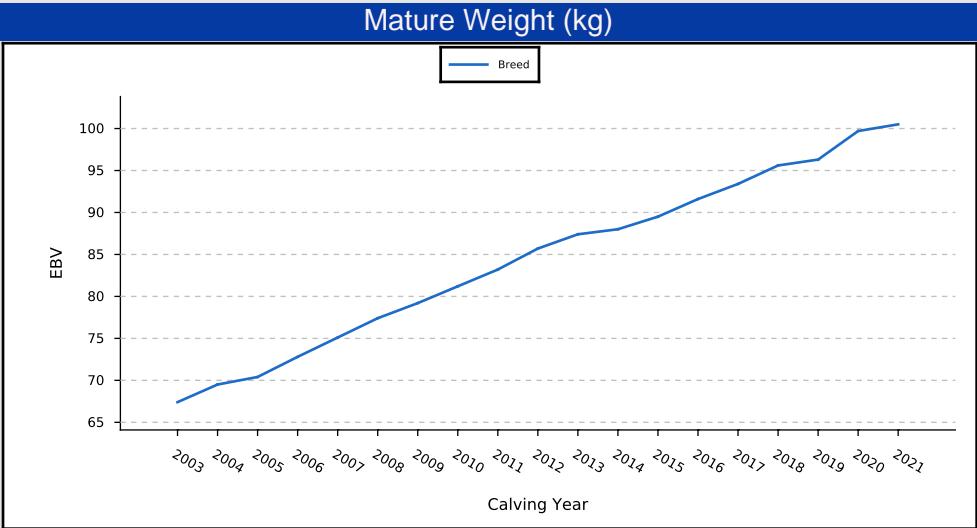
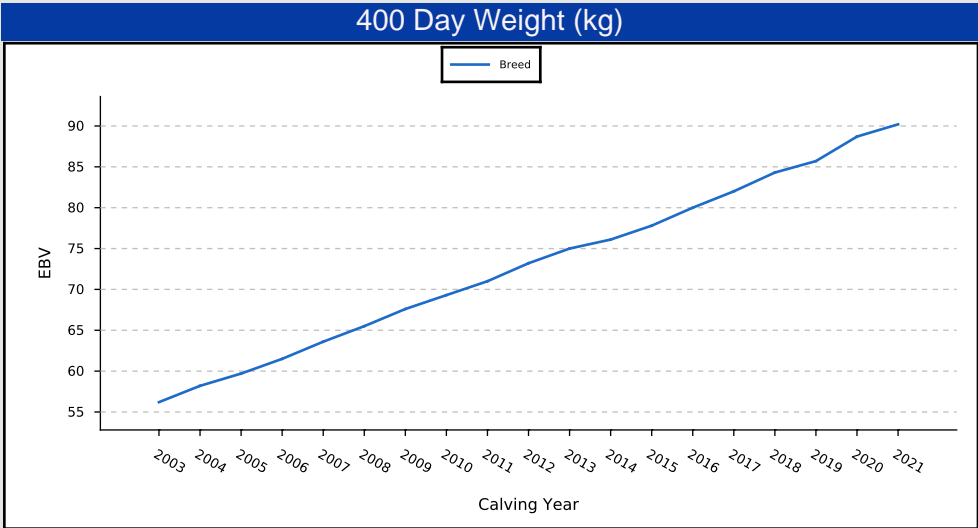
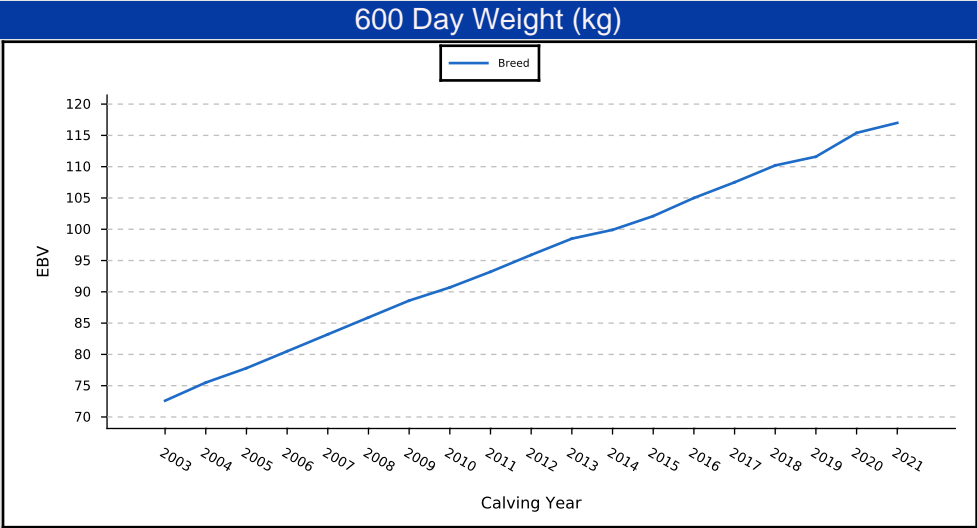
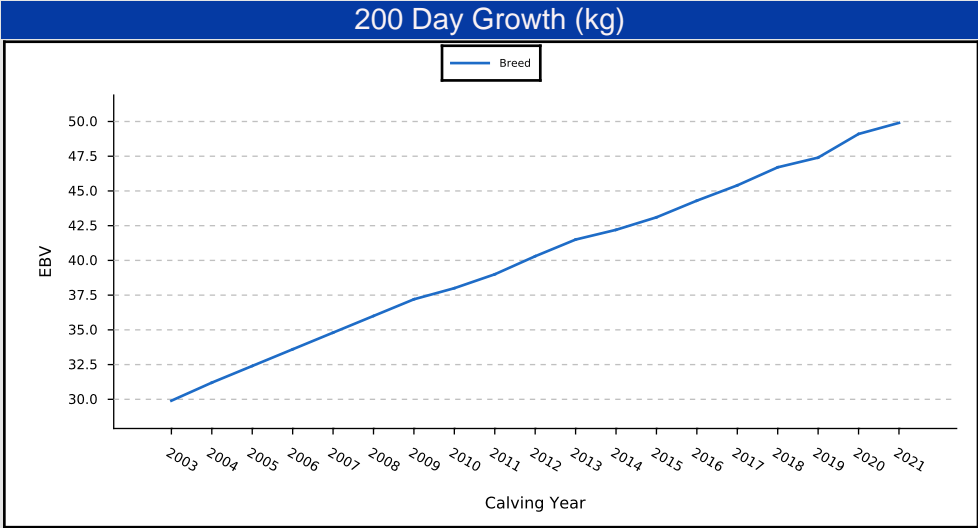


The reports below assess the change in the average EBVs of Angus seedstock animals born in each year for each respective trait.



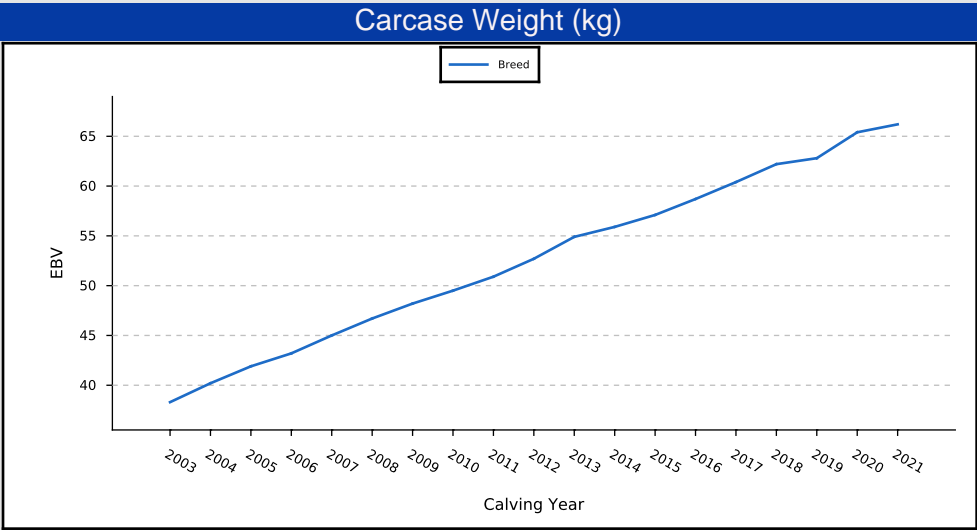
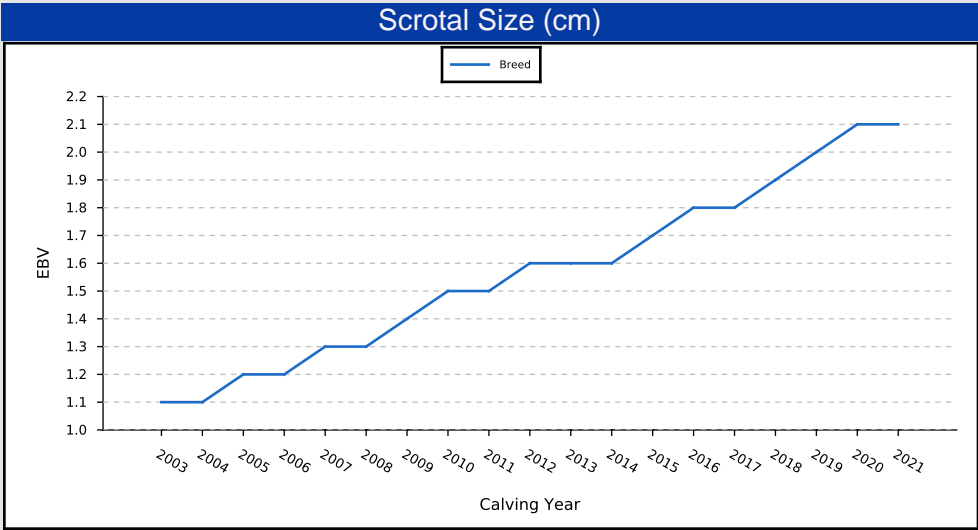
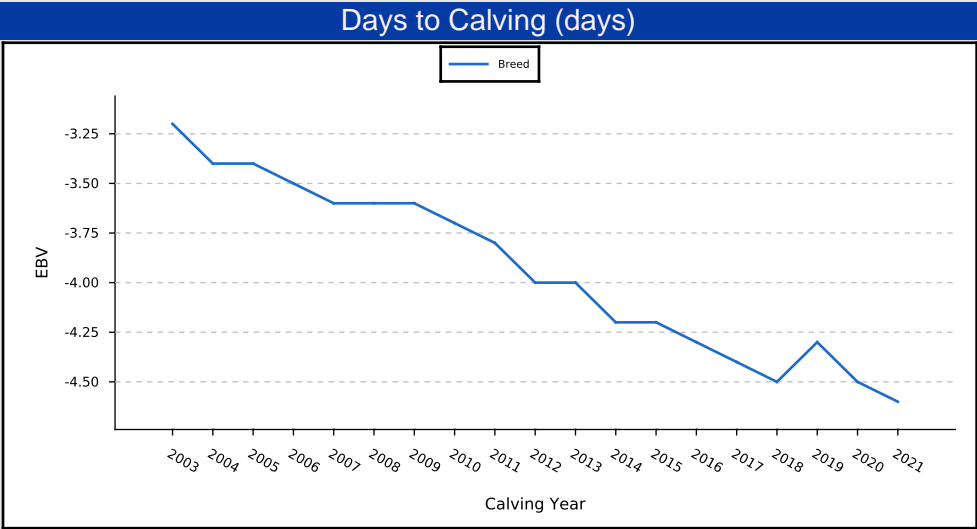
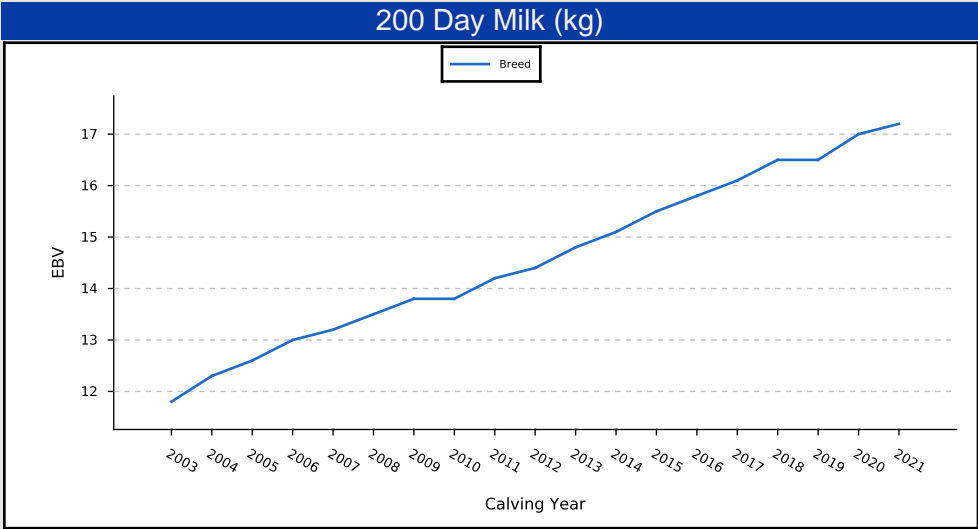
Genetic Progress By Trait

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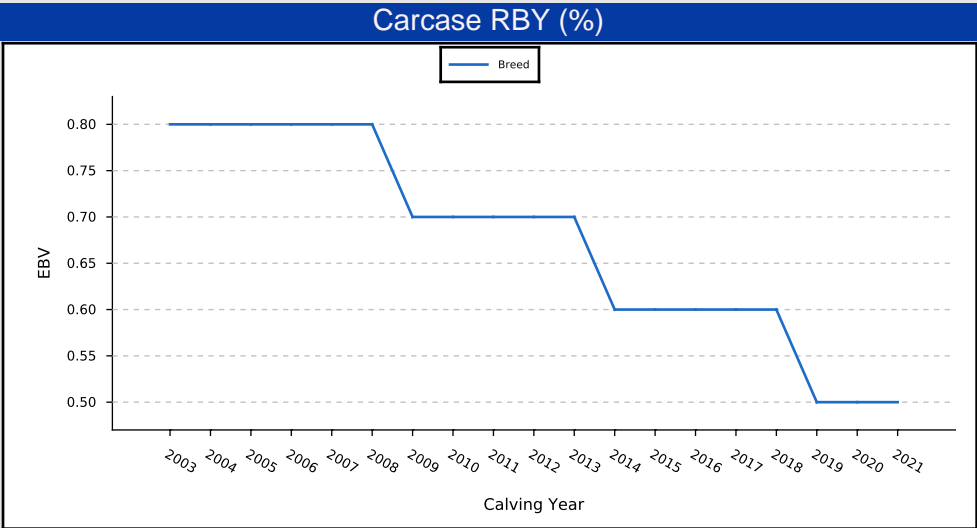
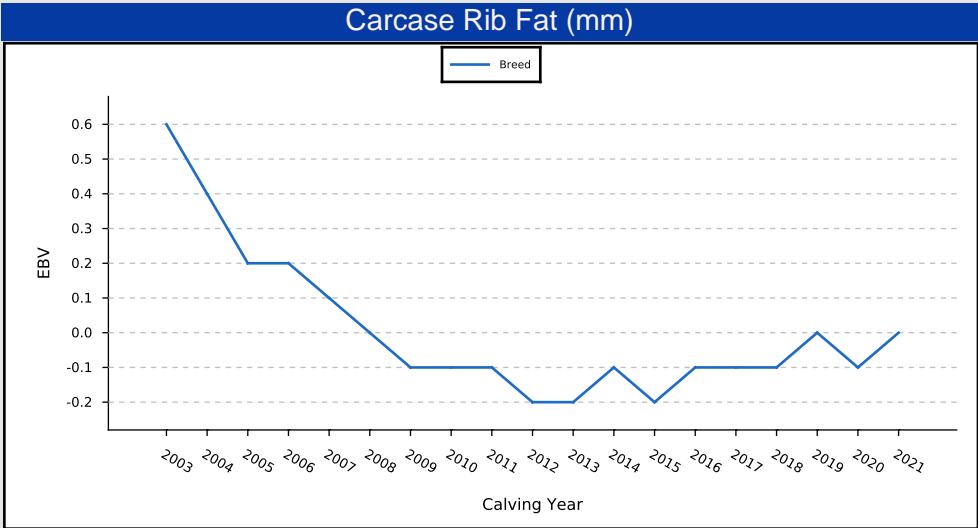
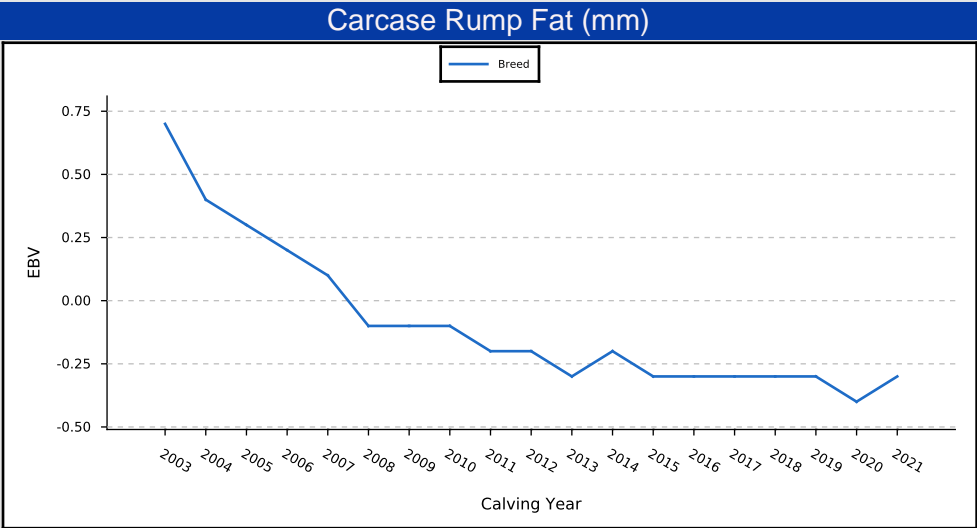
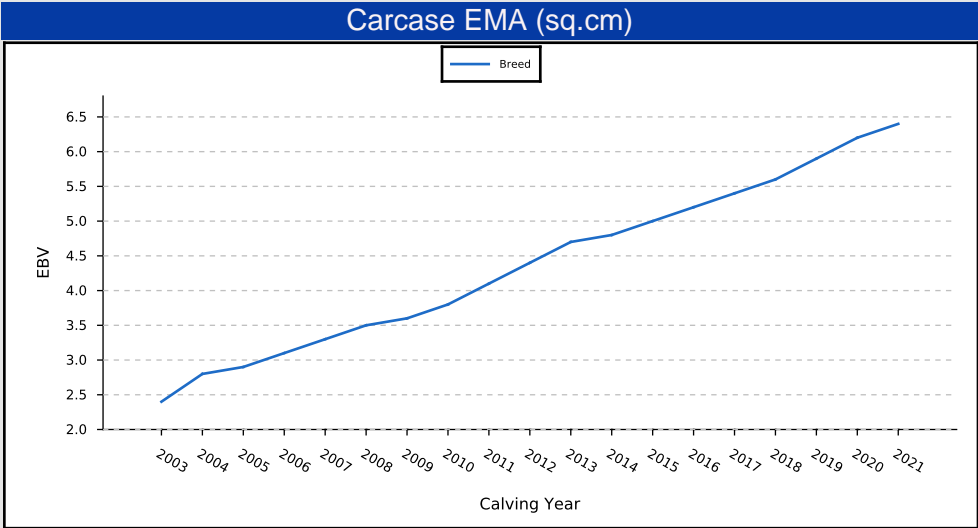


Genetic Progress By Trait

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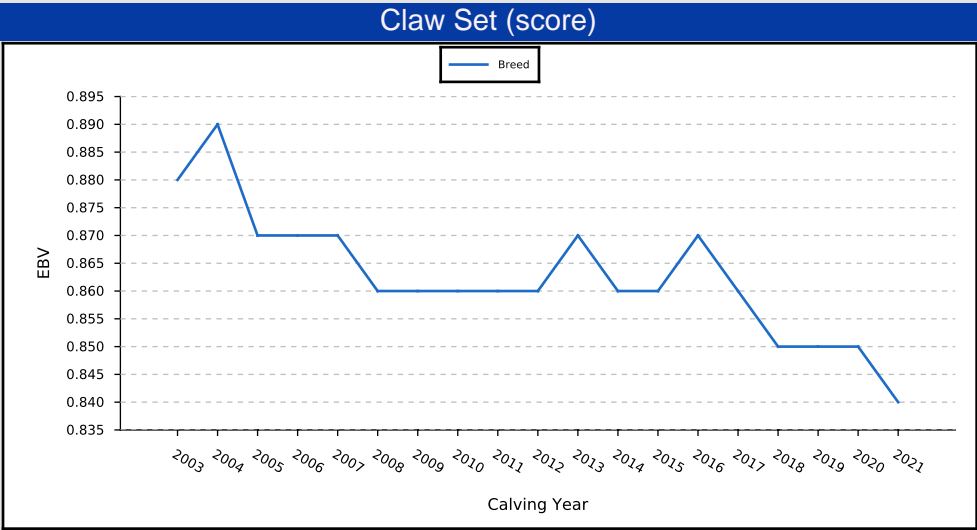
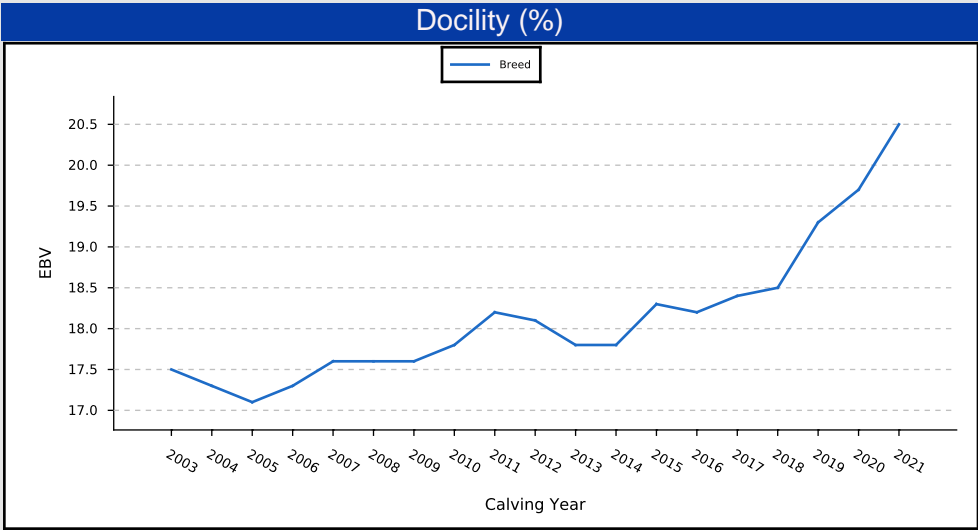
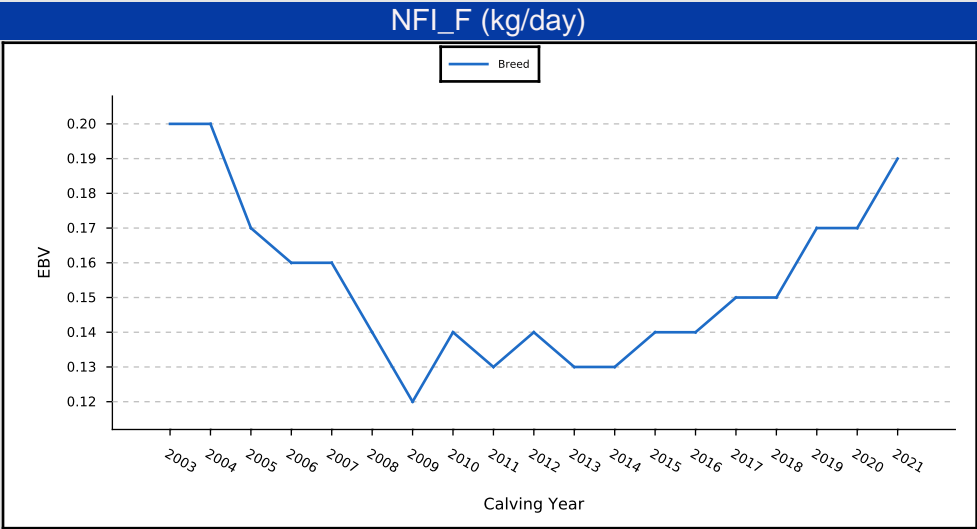
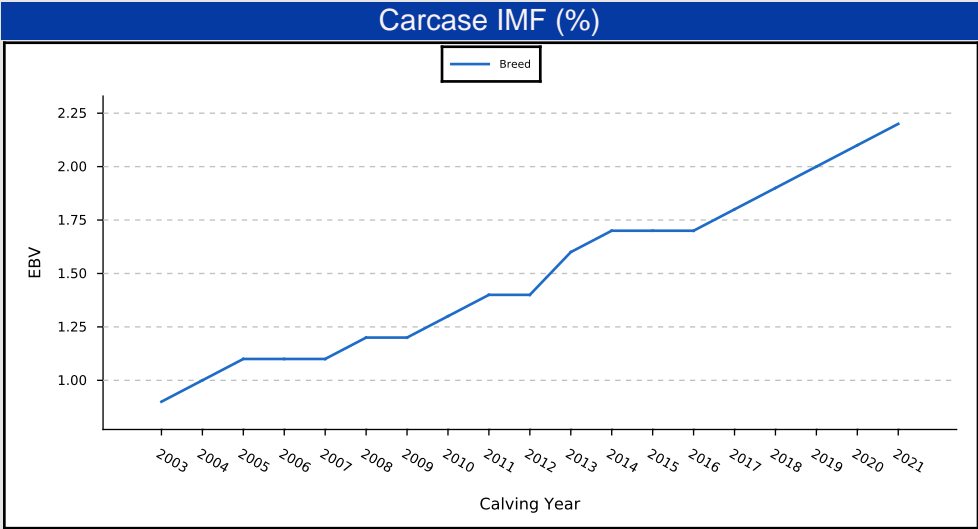


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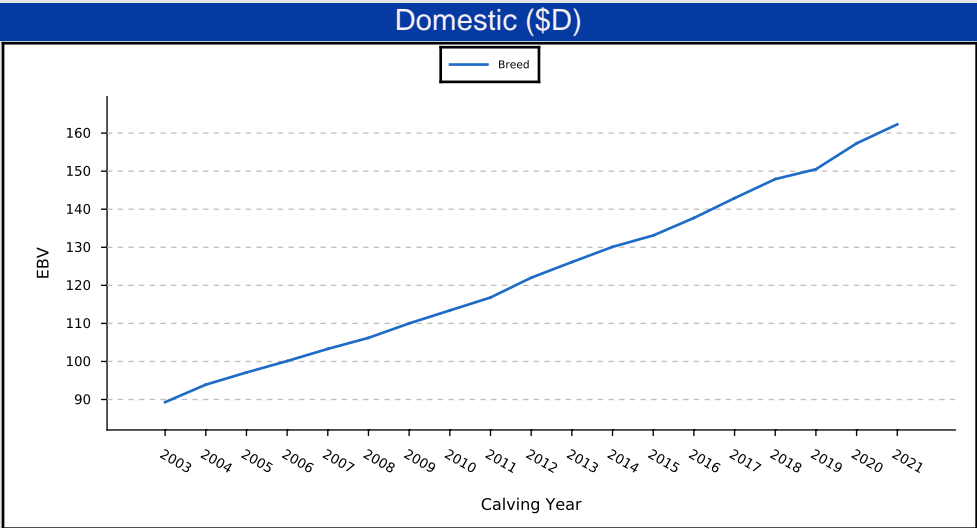
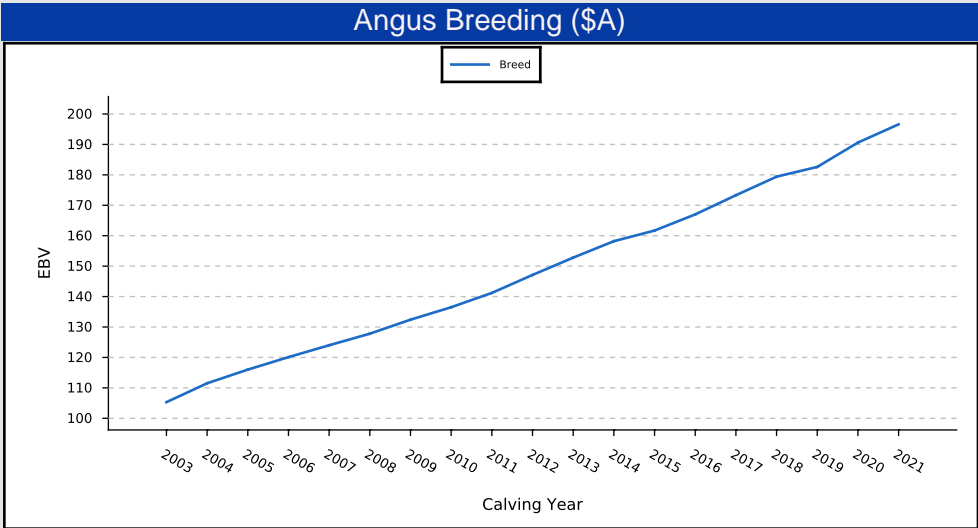
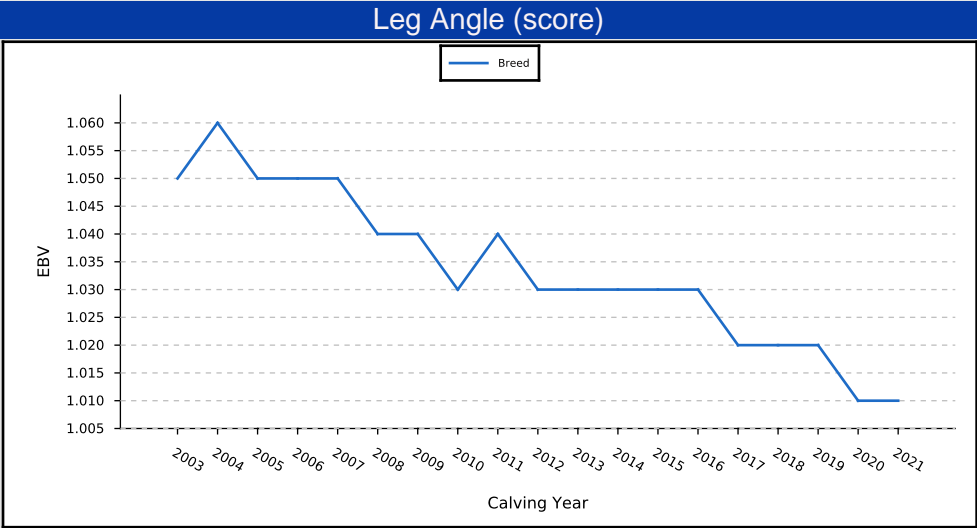
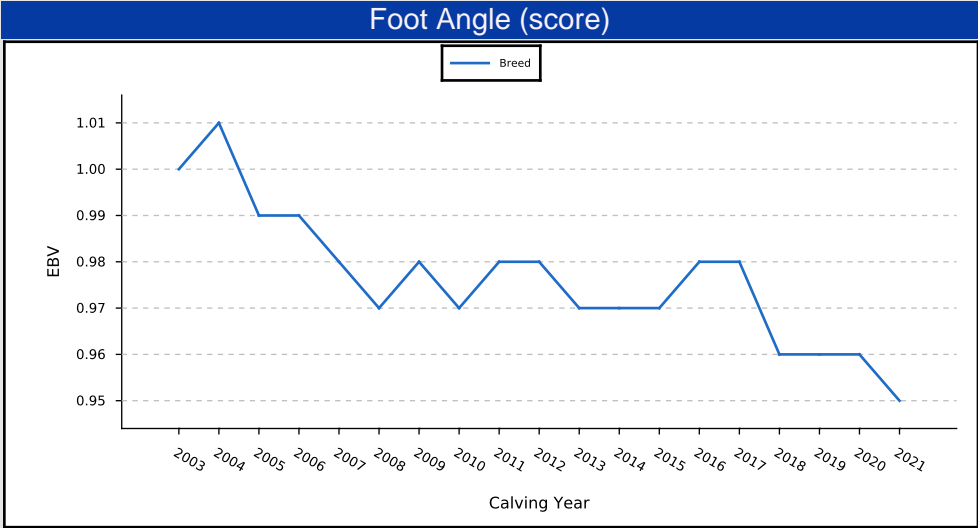


Genetic Progress By Trait

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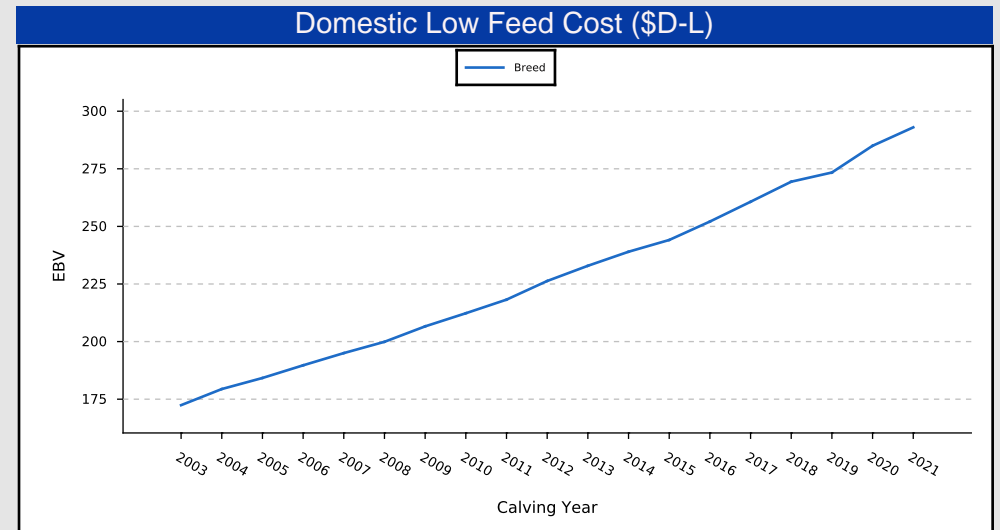
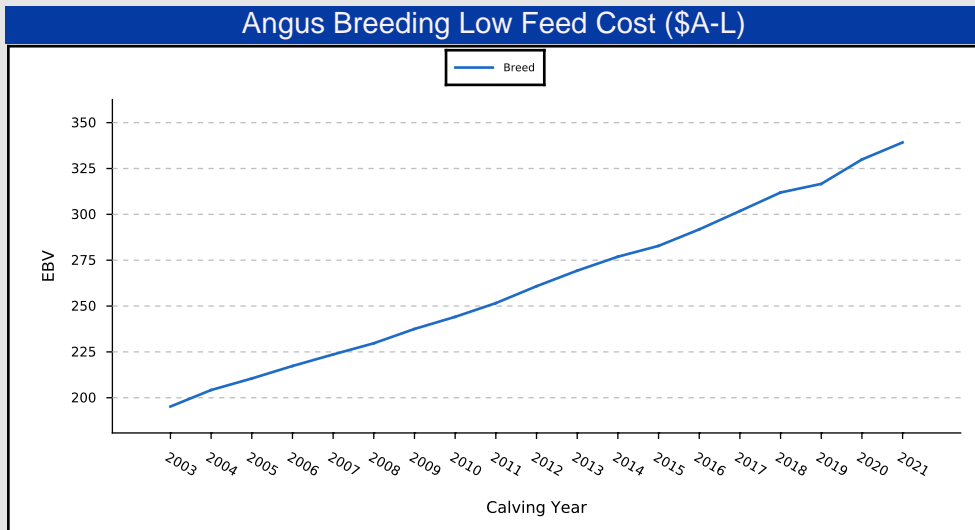
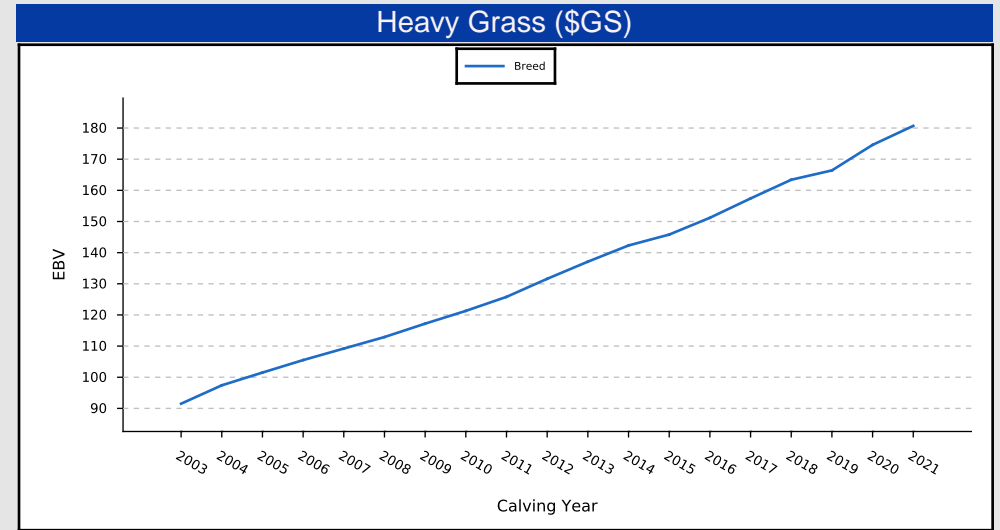
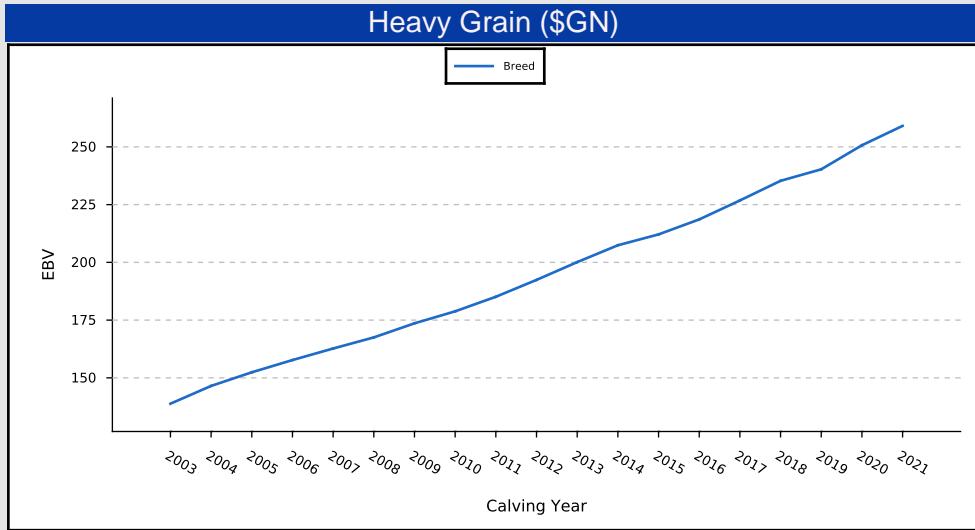


Genetic Progress By Trait

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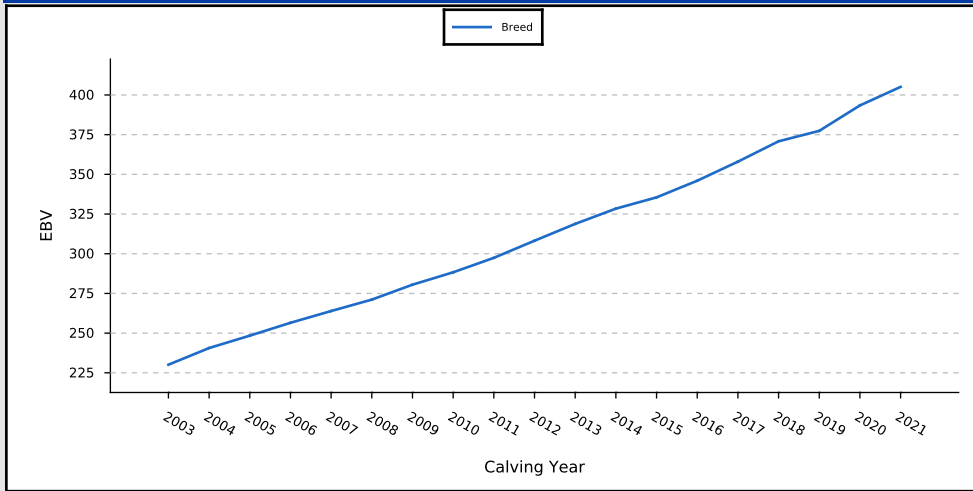
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The reports below assess the change in the average EBVs of Angus seedstock animals born in each year for each respective trait.

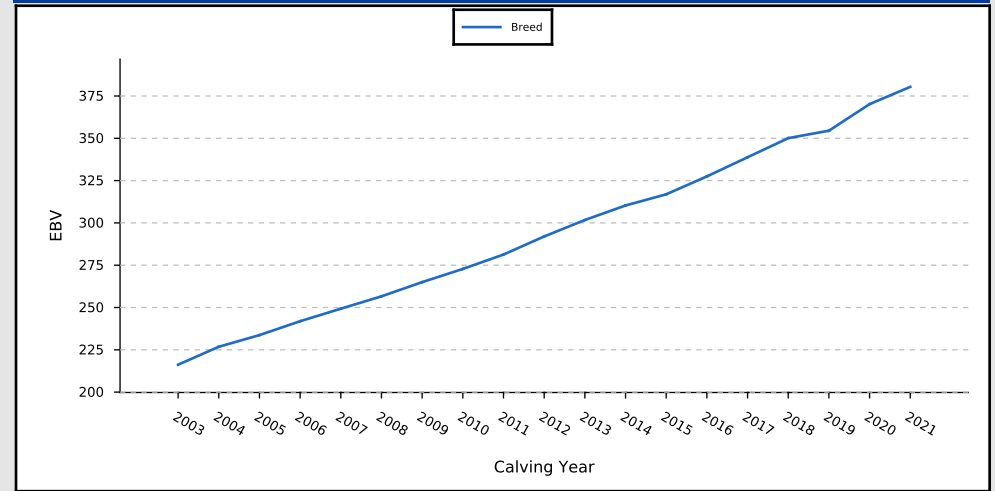


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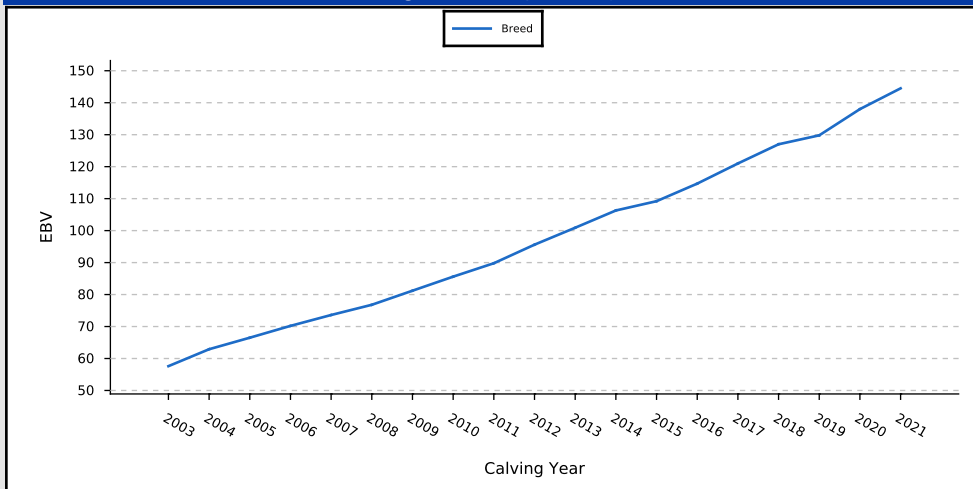
Heavy Grain Low Feed Cost (\$GN-L)



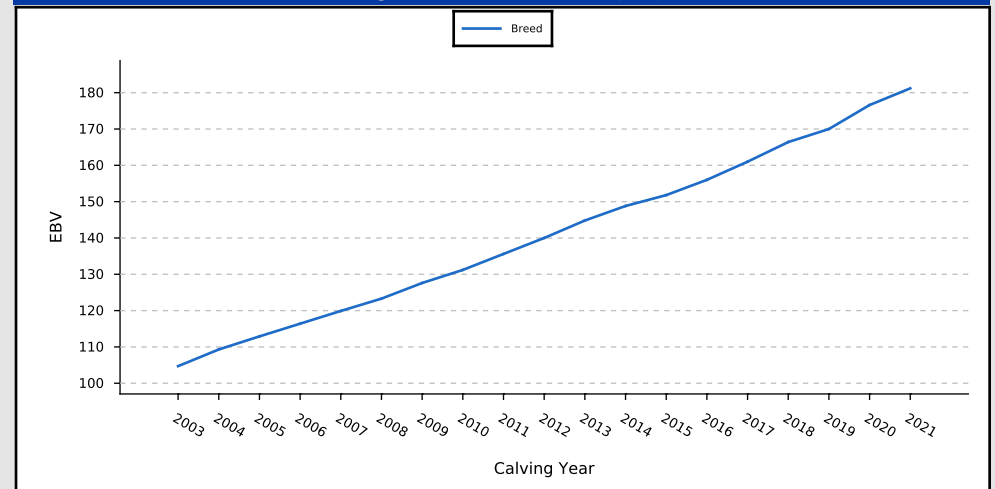
Heavy Grass Low Feed Cost (\$GS-L)



AngusPRO (\$PRO)

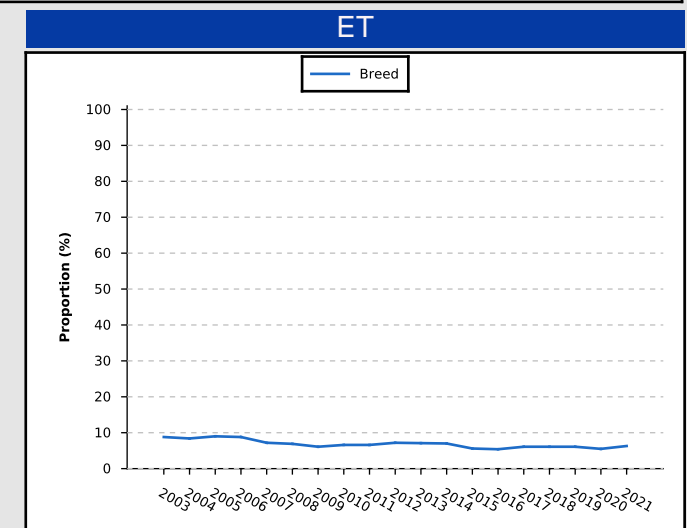
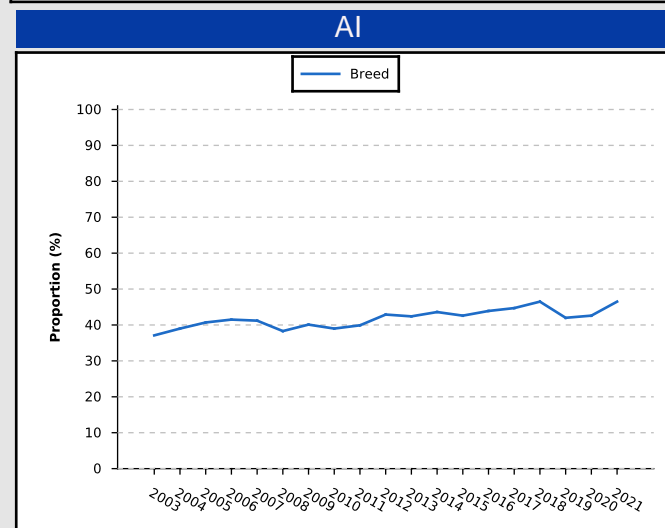
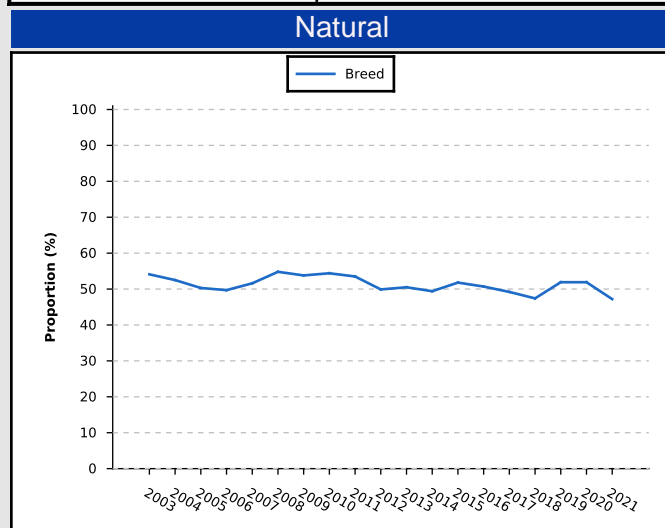
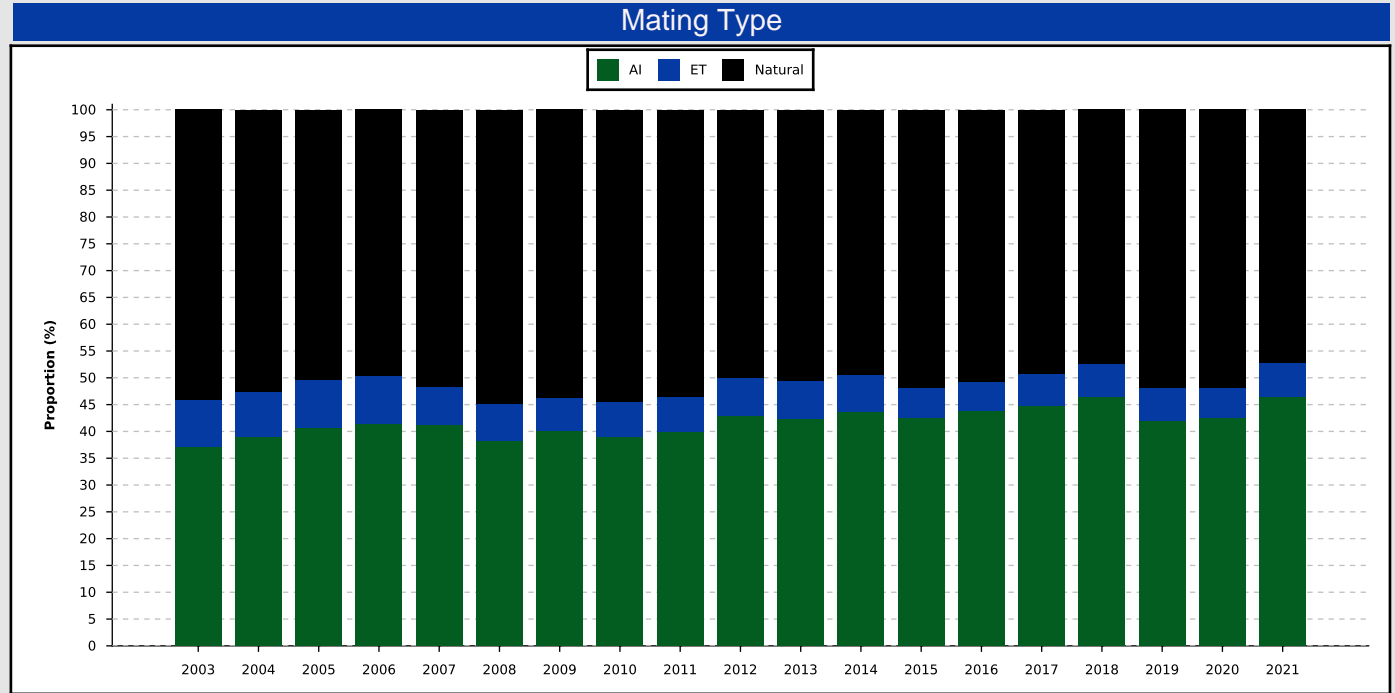


Angus Terminal Sire (\$T)



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	65110	35232	24167	5711
2004	67038	35218	26168	5652
2005	69659	35033	28349	6277
2006	70724	35126	29342	6256
2007	67408	34793	27757	4858
2008	67815	37133	25999	4683
2009	66611	35855	26692	4064
2010	67263	36581	26263	4419
2011	73374	39223	29279	4872
2012	79429	39621	34096	5712
2013	81695	41270	34634	5791
2014	80563	39818	35103	5642
2015	81102	42046	34542	4514
2016	82048	41603	36049	4396
2017	85550	42065	38227	5258
2018	85471	40498	39780	5193
2019	84850	44008	35674	5168
2020	81561	42365	34711	4485
2021	91221	43041	42402	5778



Generation Length

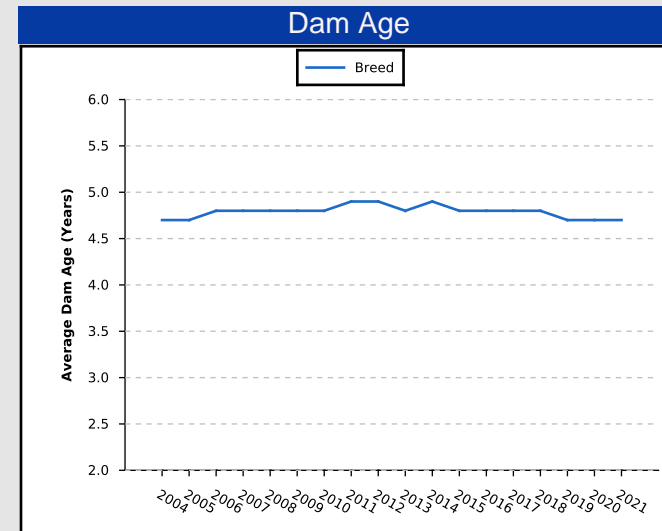
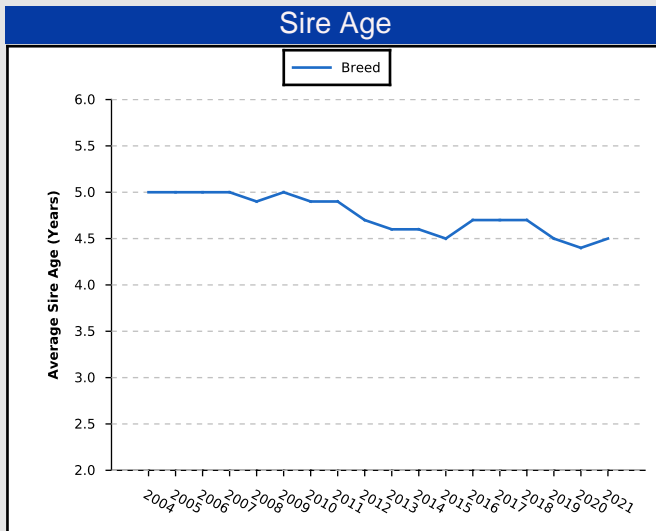
Average Sire and Dam Age By Year

Date: February 28,

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	61476	5.0	3.6	6.3	8.0	4.7	4.6	4.4	6.4
2005	63443	5.0	3.6	6.3	7.9	4.7	4.6	4.5	6.3
2006	64550	5.0	3.7	6.2	7.7	4.8	4.7	4.4	6.4
2007	62600	5.0	3.7	6.3	7.6	4.8	4.7	4.4	6.4
2008	63336	4.9	3.7	6.4	7.8	4.8	4.8	4.4	6.7
2009	62859	5.0	3.7	6.5	7.9	4.8	4.7	4.5	6.9
2010	63336	4.9	3.7	6.1	7.6	4.8	4.8	4.5	6.5
2011	69541	4.9	3.7	6.1	7.6	4.9	4.9	4.5	6.8
2012	74873	4.7	3.7	5.6	6.7	4.9	4.9	4.5	6.7
2013	77049	4.6	3.7	5.4	6.4	4.8	4.8	4.5	6.8
2014	75965	4.6	3.7	5.4	6.7	4.9	4.9	4.5	6.9
2015	77486	4.5	3.7	5.3	6.7	4.8	4.8	4.5	6.9
2016	78052	4.7	3.8	5.5	6.7	4.8	4.9	4.5	6.8
2017	80628	4.7	3.8	5.5	6.6	4.8	4.8	4.5	6.8
2018	80801	4.7	3.7	5.5	6.5	4.8	4.8	4.5	6.9
2019	80424	4.5	3.6	5.3	6.8	4.7	4.7	4.4	6.5
2020	78014	4.4	3.6	5.2	6.0	4.7	4.7	4.3	6.8
2021	86659	4.5	3.5	5.2	6.5	4.7	4.7	4.3	6.9



Genetic Diversity

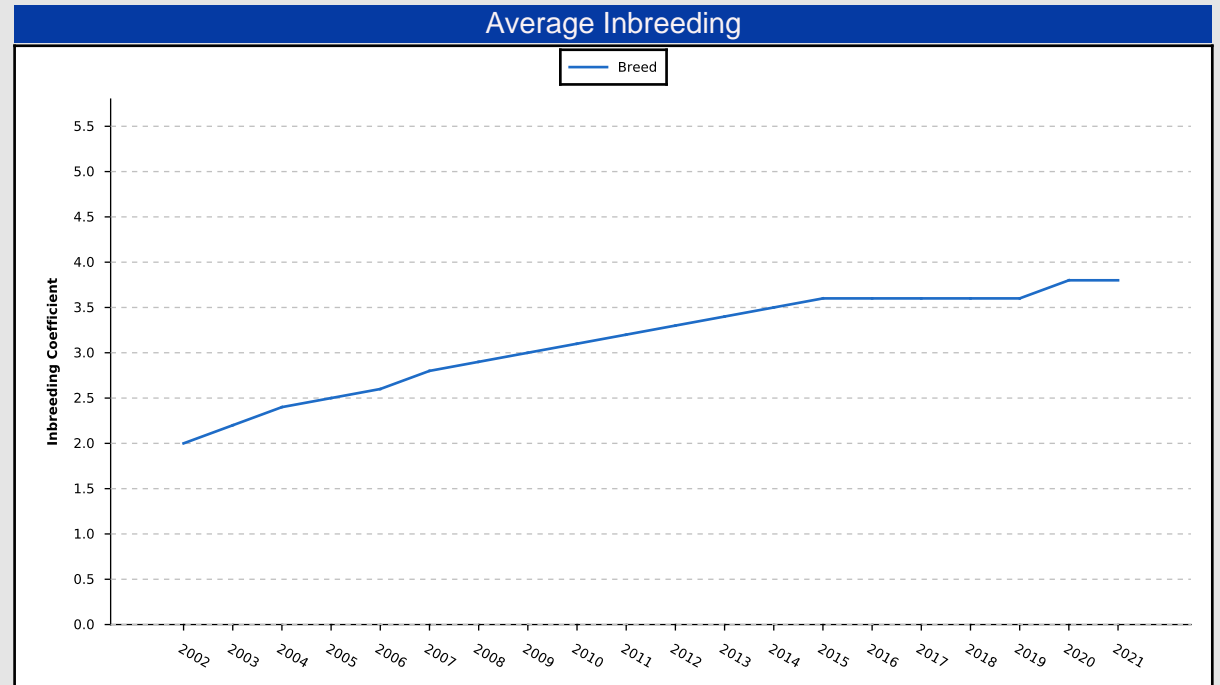
Average Inbreeding By Year

Date: February 28,

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	63188		2.0
2003	59481		2.2
2004	61476		2.4
2005	63443		2.5
2006	64550		2.6
2007	62600		2.8
2008	63336		2.9
2009	62859		3.0
2010	63336		3.1
2011	69541		3.2
2012	74873		3.3
2013	77049		3.4
2014	75965		3.5
2015	77486		3.6
2016	78052		3.6
2017	80628		3.6
2018	80801		3.6
2019	80424		3.6
2020	78014		3.8
2021	86659		3.8



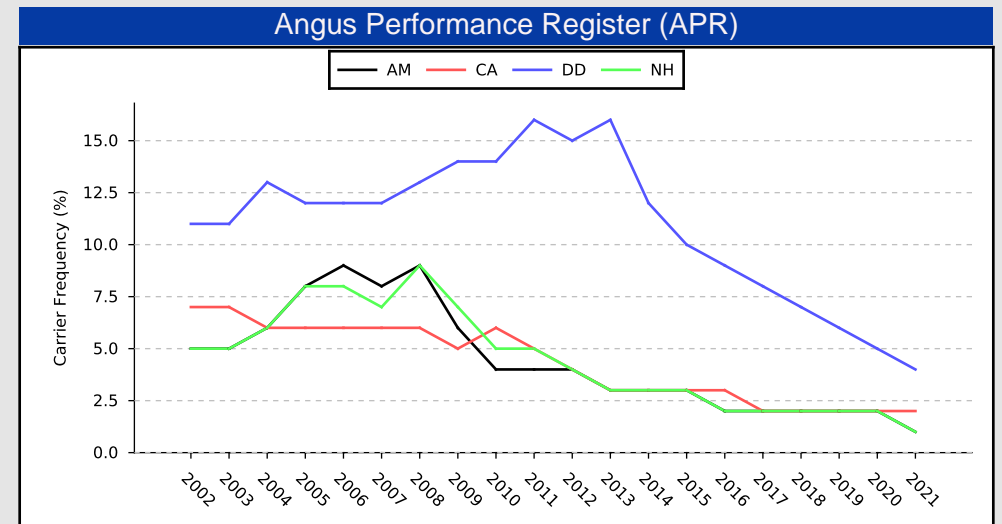
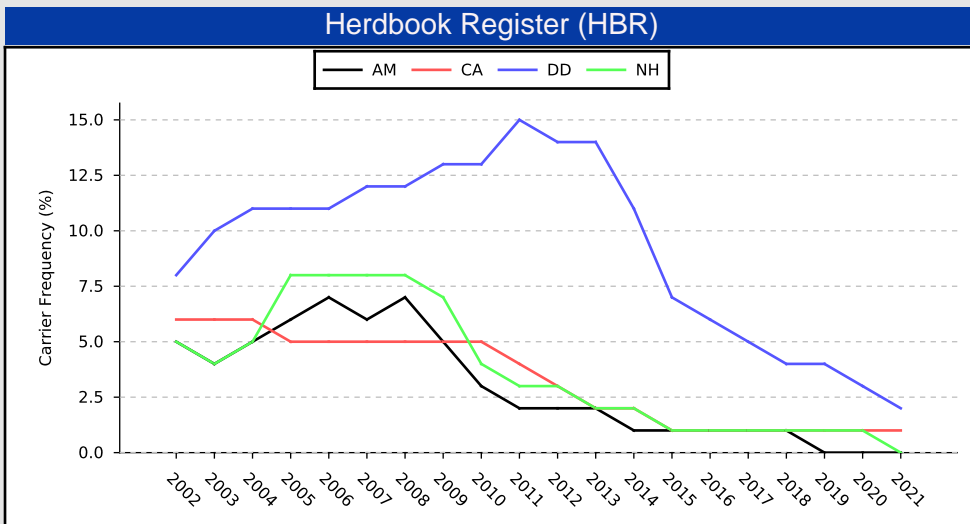
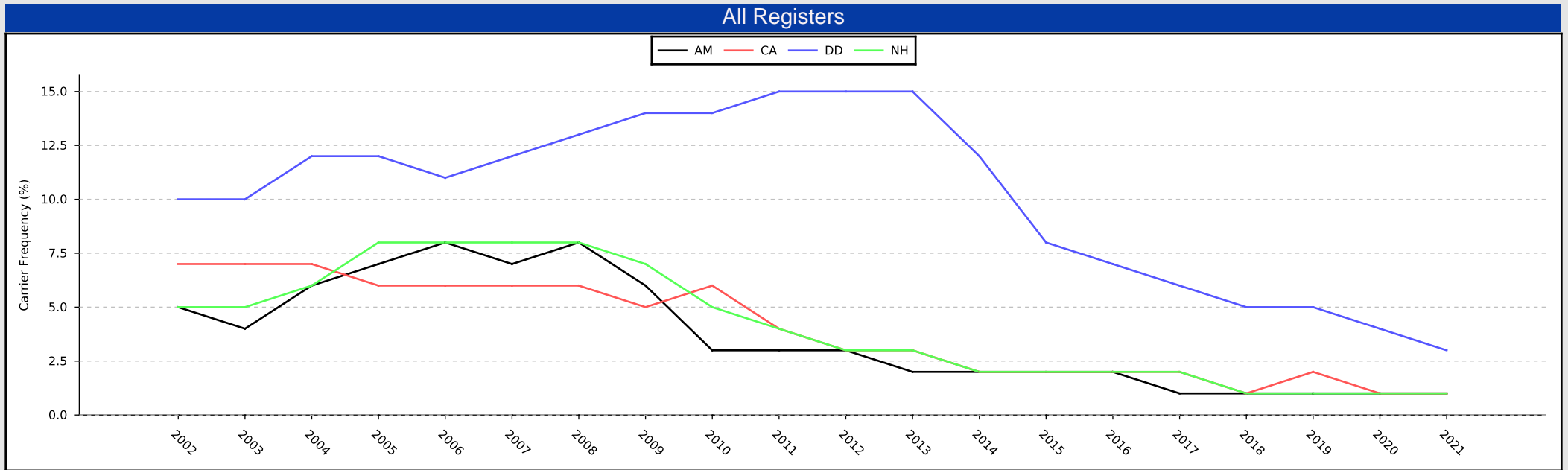
Genetic Conditions

Carrier Frequency By Register

Date: February 28,

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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: February 28,

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	59481	-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	+18	+0.88	+1.00	+1.05	+105	+89	+139	+92	+195	+172	+230	+216	+58	+105
2004	61476	-0.2	-0.3	-2.4	+4.1	+31	+58	+76	+70	+12	+1.1	-3.4	+40	+2.8	+0.4	+0.4	+0.8	+1.0	+0.20	+17	+0.89	+1.01	+1.06	+112	+94	+147	+97	+204	+179	+241	+227	+63	+109
2005	63443	-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	+152	+102	+211	+184	+248	+234	+67	+113
2006	64550	-0.1	+0.1	-2.7	+4.2	+34	+62	+81	+73	+13	+1.2	-3.5	+43	+3.1	+0.2	+0.2	+0.8	+1.1	+0.16	+17	+0.87	+0.99	+1.05	+120	+100	+158	+106	+217	+190	+257	+242	+70	+116
2007	62600	-0.3	+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	+0.87	+0.98	+1.05	+124	+103	+163	+109	+224	+195	+264	+249	+74	+120
2008	63336	-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	+0.86	+0.97	+1.04	+128	+106	+168	+113	+230	+200	+271	+257	+77	+123
2009	62859	-0.2	+0.3	-2.9	+4.3	+37	+68	+89	+79	+14	+1.4	-3.6	+48	+3.6	-0.1	-0.1	+0.7	+1.2	+0.12	+18	+0.86	+0.98	+1.04	+132	+110	+174	+117	+238	+207	+281	+265	+81	+128
2010	63336	-0.2	+0.2	-3.0	+4.4	+38	+69	+91	+81	+14	+1.5	-3.7	+50	+3.8	-0.1	-0.1	+0.7	+1.3	+0.14	+18	+0.86	+0.97	+1.03	+137	+113	+179	+121	+244	+212	+288	+273	+86	+131
2011	69541	-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	+0.98	+1.04	+141	+117	+185	+126	+252	+218	+297	+281	+90	+136
2012	74873	-0.2	+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	+0.98	+1.03	+147	+122	+192	+132	+261	+226	+308	+292	+96	+140
2013	77049	+0.0	+0.4	-3.3	+4.4	+42	+75	+99	+87	+15	+1.6	-4.0	+55	+4.7	-0.2	-0.3	+0.7	+1.6	+0.13	+18	+0.87	+0.97	+1.03	+153	+126	+200	+137	+269	+233	+319	+302	+101	+145
2014	75965	+0.3	+0.5	-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	+158	+130	+207	+142	+277	+239	+328	+310	+106	+149
2015	77486	+0.3	+0.9	-3.7	+4.3	+43	+78	+102	+90	+16	+1.7	-4.2	+57	+5.0	-0.2	-0.3	+0.6	+1.7	+0.14	+18	+0.86	+0.97	+1.03	+162	+133	+212	+146	+283	+244	+336	+317	+109	+152
2016	78052	+0.6	+1.1	-3.9	+4.3	+44	+80	+105	+92	+16	+1.8	-4.3	+59	+5.2	-0.1	-0.3	+0.6	+1.7	+0.14	+18	+0.87	+0.98	+1.03	+167	+138	+219	+151	+292	+252	+346	+328	+115	+156
2017	80628	+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	+0.98	+1.02	+173	+143	+227	+157	+302	+261	+358	+339	+121	+161
2018	80801	+1.3	+1.9	-4.2	+4.2	+47	+84	+110	+96	+17	+1.9	-4.5	+62	+5.6	-0.1	-0.3	+0.6	+1.9	+0.15	+19	+0.85	+0.96	+1.02	+179	+148	+235	+163	+312	+269	+371	+350	+127	+166
2019	80424	+1.5	+2.1	-4.3	+4.2	+47	+86	+112	+96	+17	+2.0	-4.3	+63	+5.9	+0.0	-0.3	+0.5	+2.0	+0.17	+19	+0.85	+0.96	+1.02	+183	+151	+240	+166	+317	+273	+377	+355	+130	+170
2020	78014	+1.7	+2.2	-4.6	+4.2	+49	+89	+115	+100	+17	+2.1	-4.5	+65	+6.2	-0.1	-0.4	+0.5	+2.1	+0.17	+20	+0.85	+0.96	+1.01	+191	+157	+251	+175	+330	+285	+393	+370	+138	+177
2021	86659	+2.2	+2.7	-4.8	+4.1	+50	+90	+117	+101	+17	+2.1	-4.6	+66	+6.4	+0.0	-0.3	+0.5	+2.2	+0.19	+21	+0.84	+0.95	+1.01	+197	+162	+259	+181	+339	+293	+405	+380	+145	+181

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