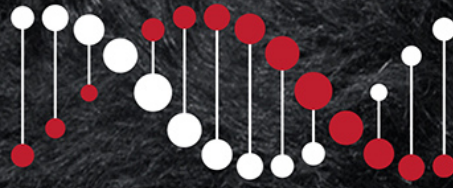


TACE



TransTasman Angus Cattle Evaluation

GENETIC BENCHMARKING REPORT

Angus Australia

DECEMBER 2022

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Genetic Progress Summary

2016 to 2021

Date: November 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	%	+1.6	+0.3
Calving Ease Daughters	%	+1.6	+0.3
Gestation Length	days	-0.9	-0.2
Birth Weight	kg	-0.2	+0.0
200 Day Growth	kg	+5.8	+1.2
400 Day Weight	kg	+10.5	+2.1
600 Day Weight	kg	+12.4	+2.5
Mature Cow Weight	kg	+9.3	+1.9
Milk	kg	+1.3	+0.3
Scrotal Size	cm	+0.4	+0.1
Days to Calving	days	-0.2	+0.0
Carcase Weight	kg	+7.6	+1.5
Carcase EMA	cm.sq	+1.2	+0.2
Carcase Rib Fat	mm	+0.0	+0.0
Carcase Rump Fat	mm	-0.1	+0.0
Retail Beef Yield	%	-0.1	+0.0
Carcase IMF	%	+0.5	+0.1
Docility	%	+2.4	+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)	\$	+29.5	+5.9
Domestic (\$D)	\$	+24.5	+4.9
Heavy Grain (\$GN)	\$	+40.5	+8.1
Heavy Grass(\$GS)	\$	+29.3	+5.9
Angus Breeding Low Feed Cost (\$A-L)	\$	+47.4	+9.5
Domestic Low Feed Cost (\$D-L)	\$	+40.9	+8.2
Heavy Grain Low Feed Cost (\$GN-L)	\$	+59.4	+11.9
Heavy Grass Low Feed Cost (\$GS-L)	\$	+52.8	+10.6
AngusPRO (\$PRO)	\$	+29.4	+5.9
Angus Terminal Sire (\$T)	\$	+25.7	+5.1

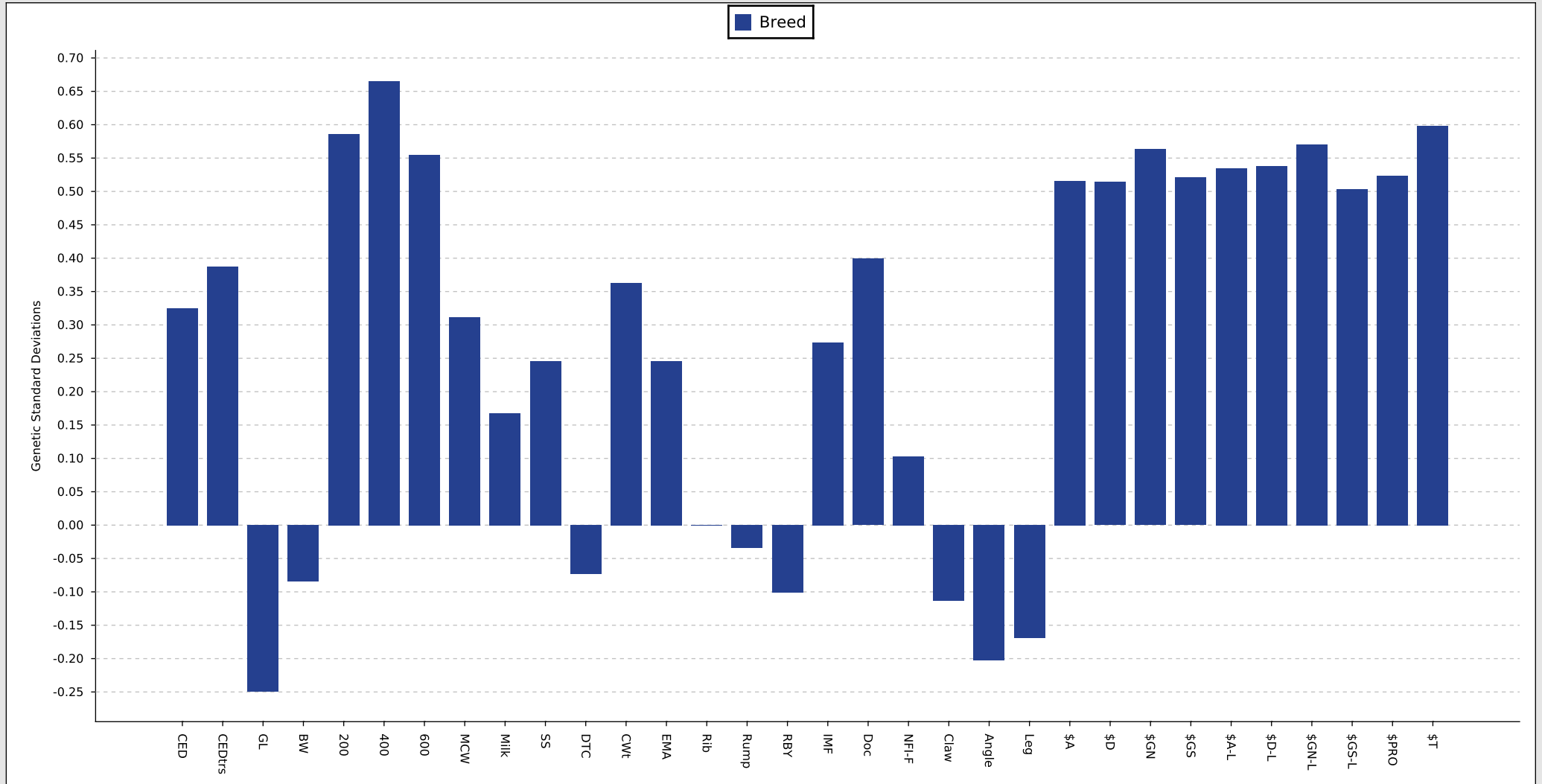
Genetic Progress Summary

Date: November 28,

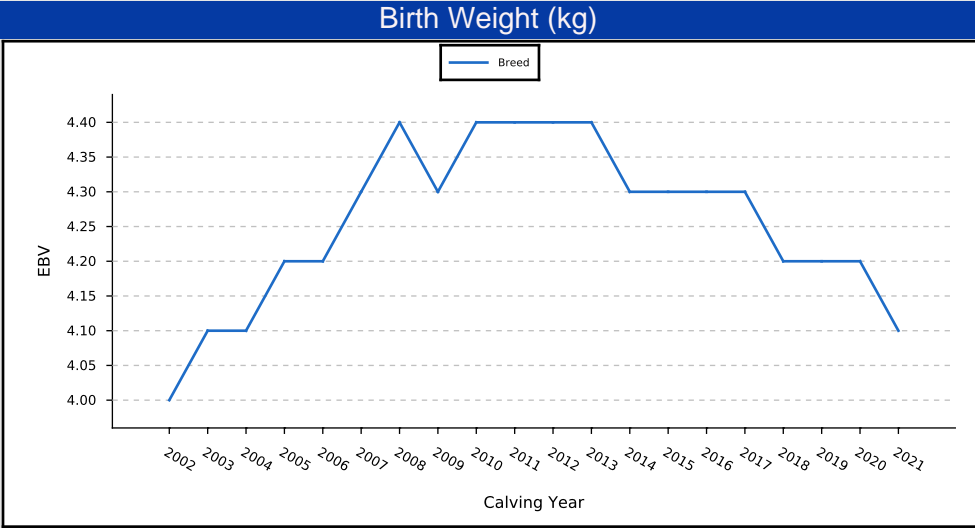
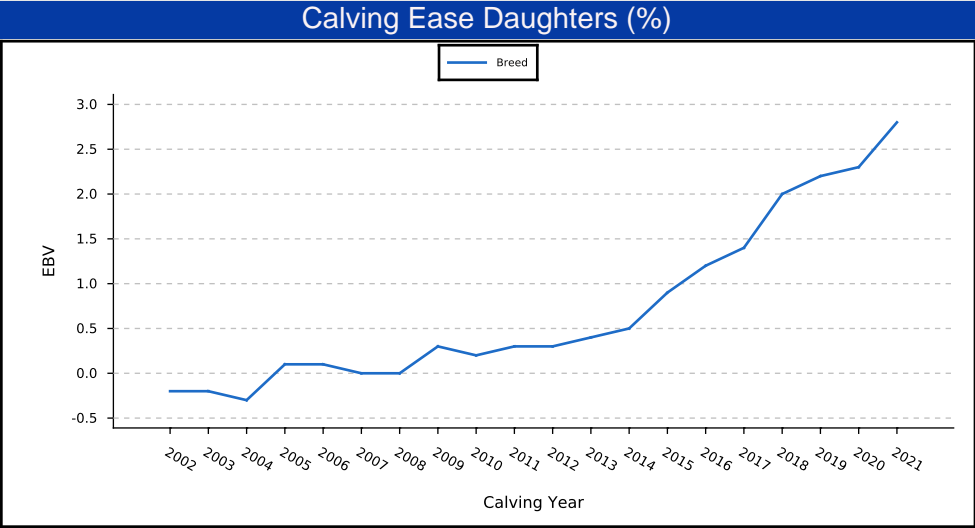
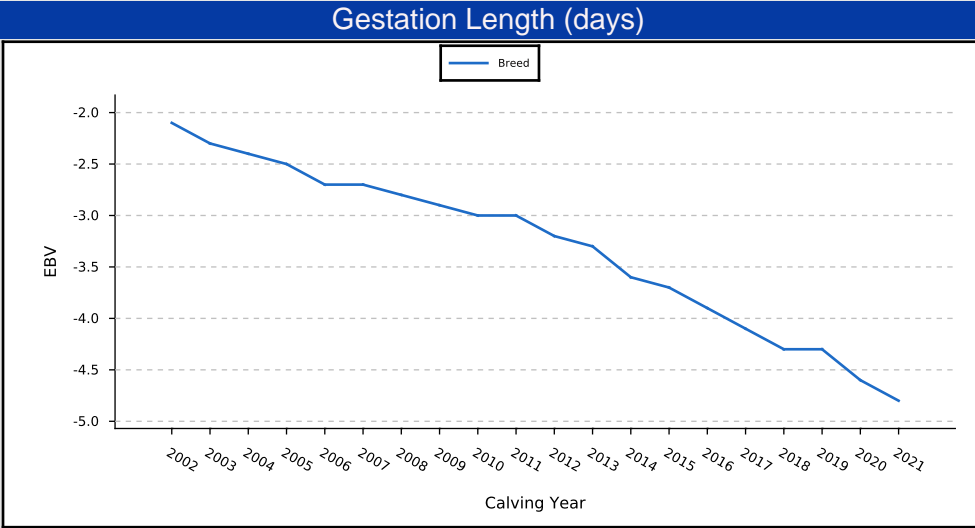
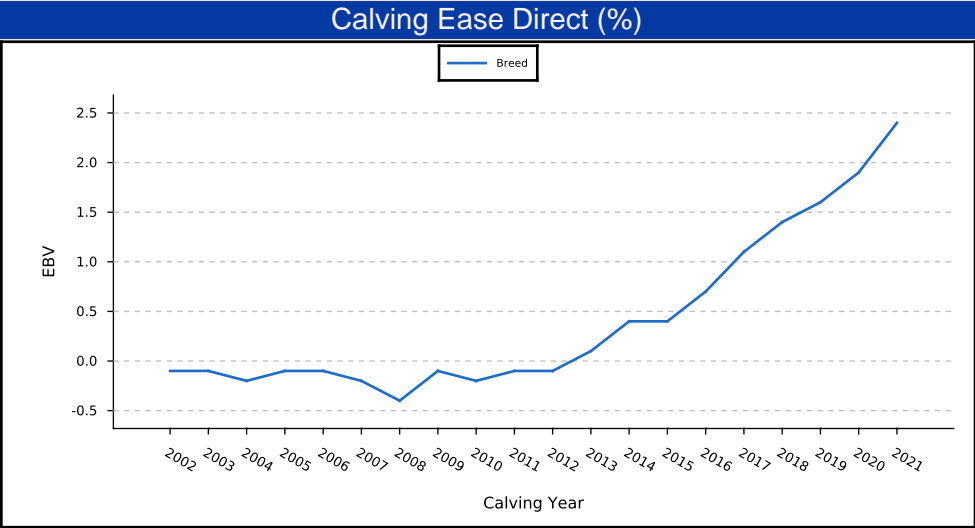
Relative Change in Each Trait - 2016 to 2021

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.

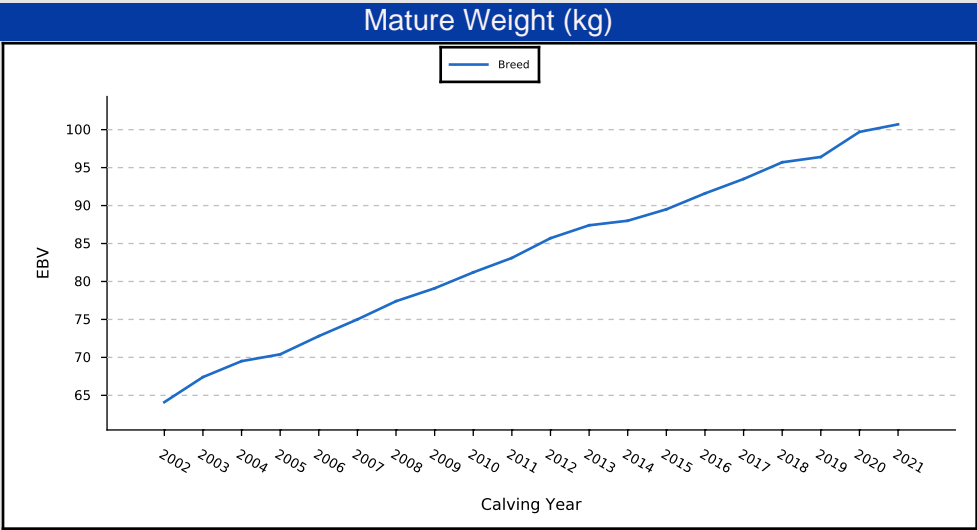
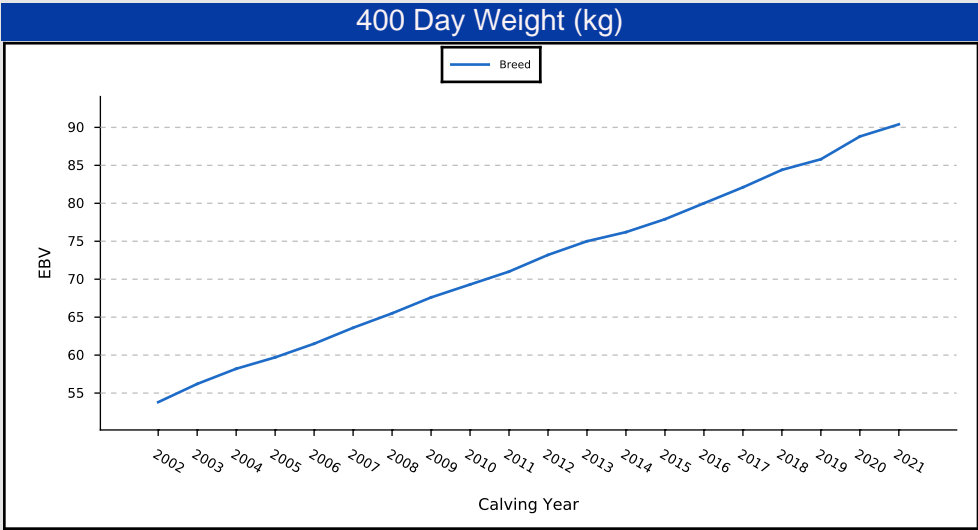
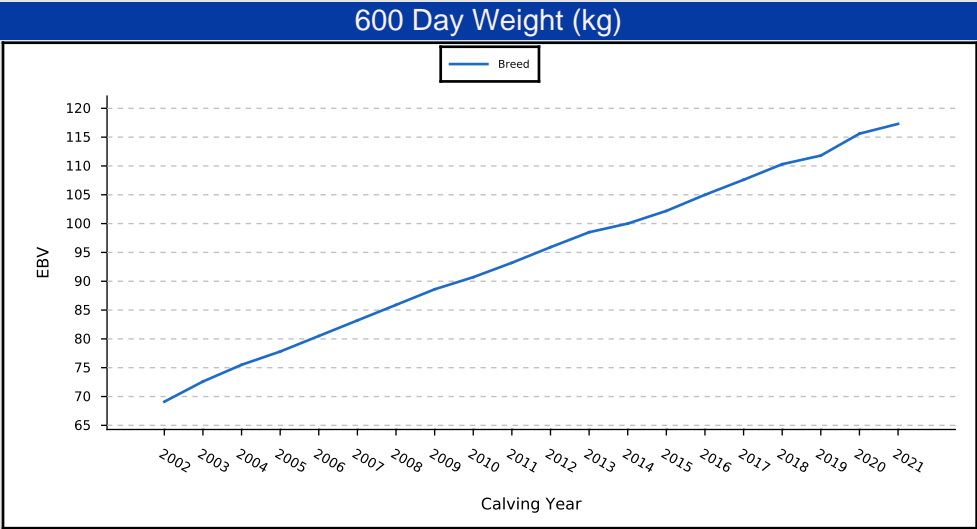
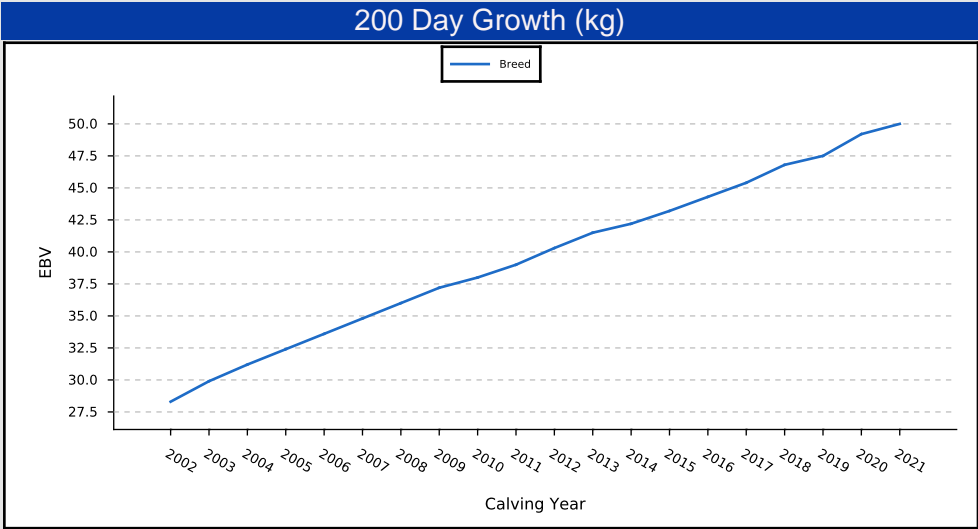


The reports below assess the change in the average EBVs of Angus seedstock animals born in each year for each respective trait.



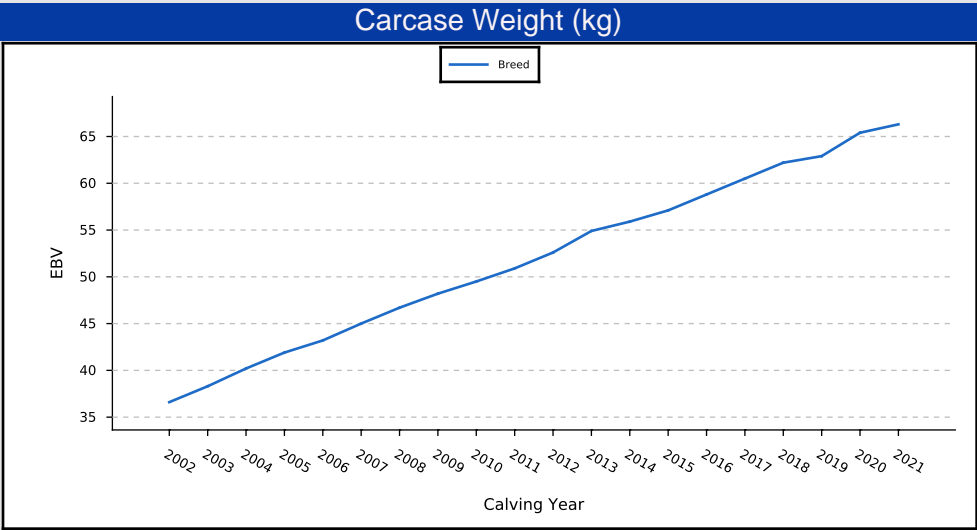
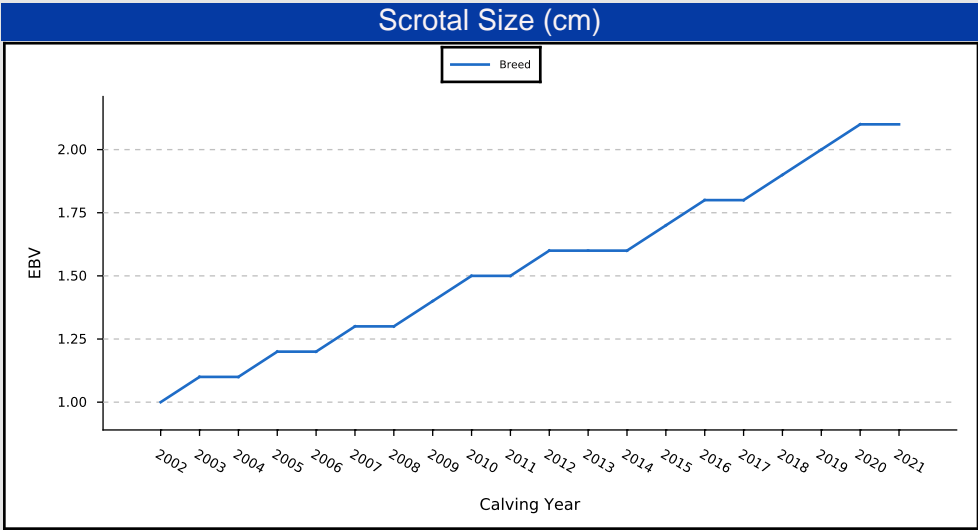
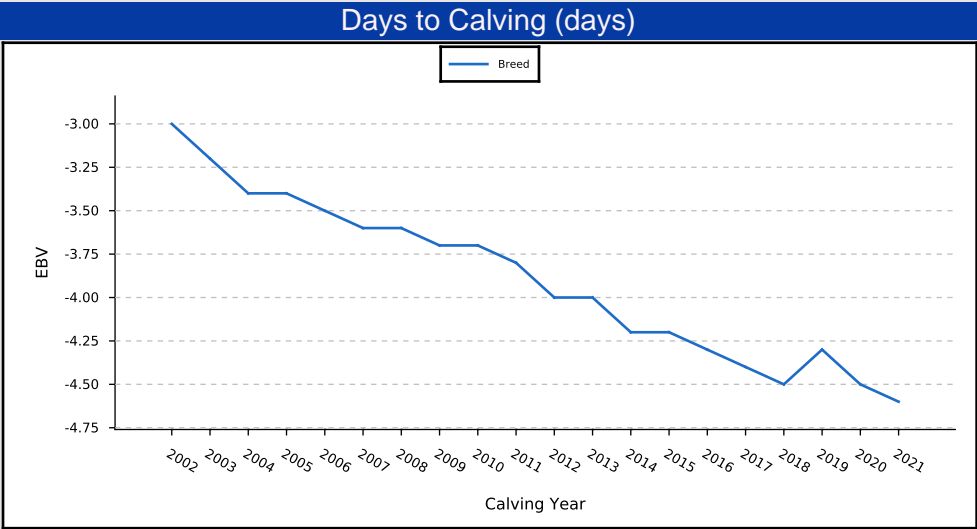
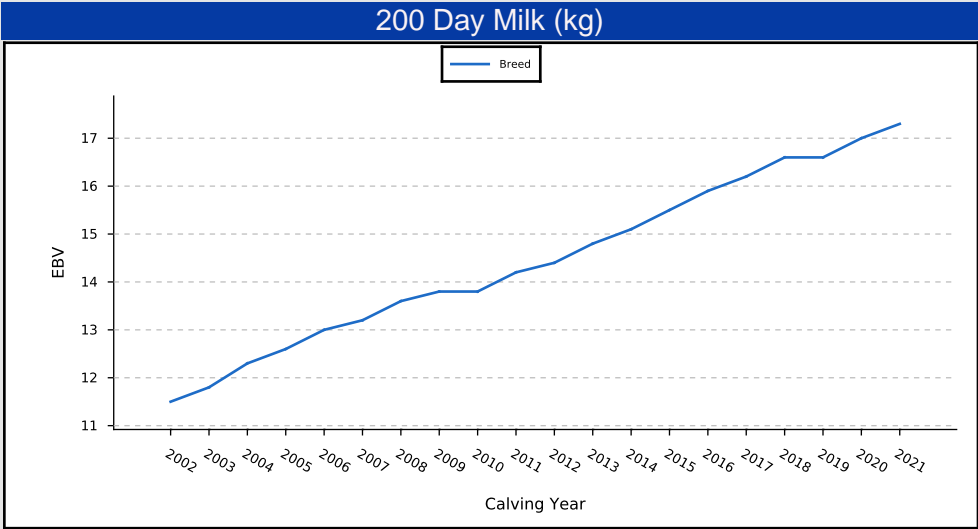
Genetic Progress By Trait

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

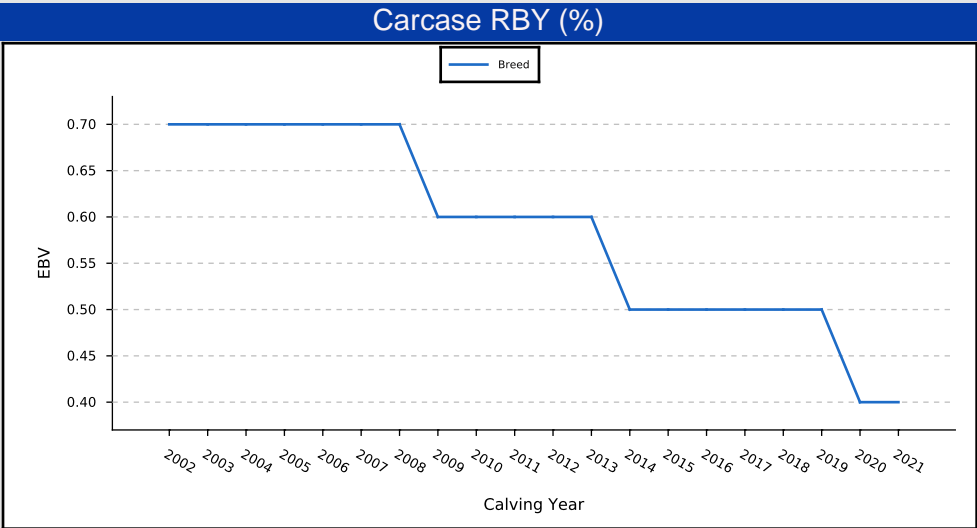
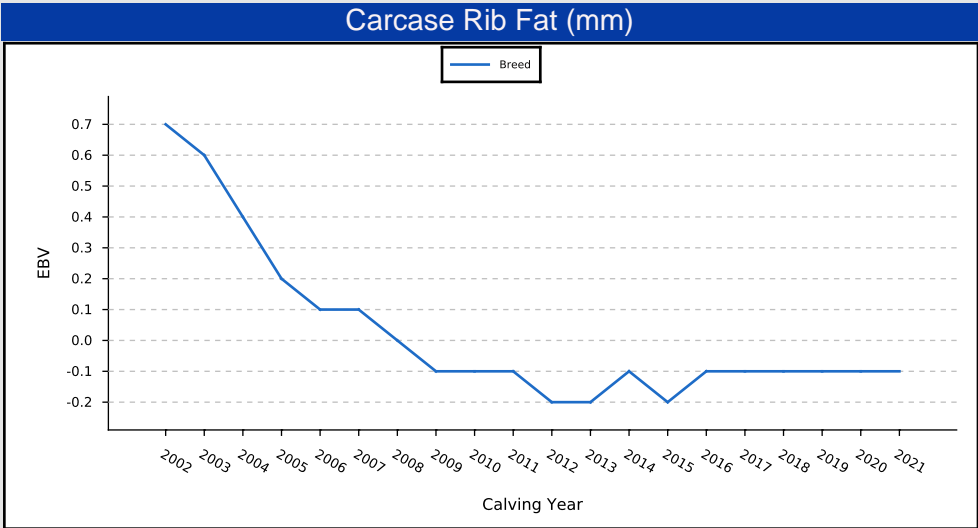
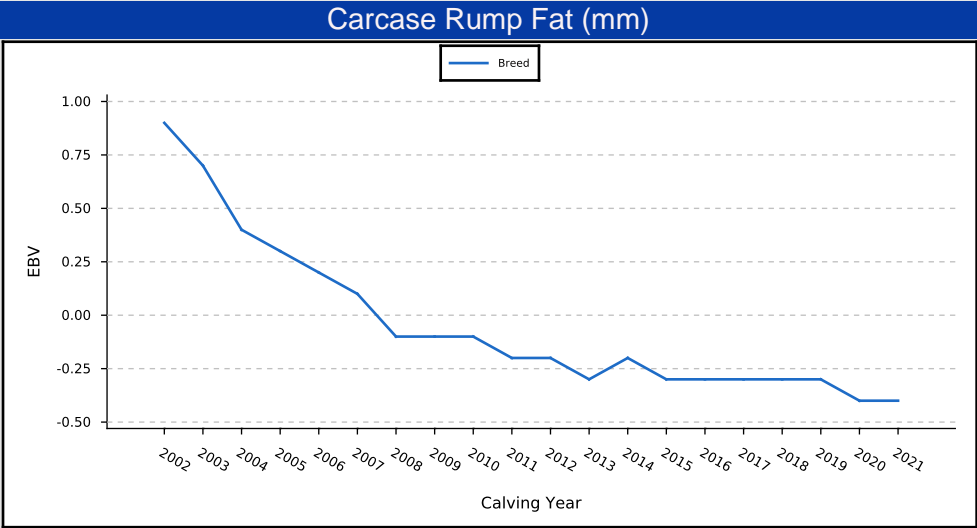
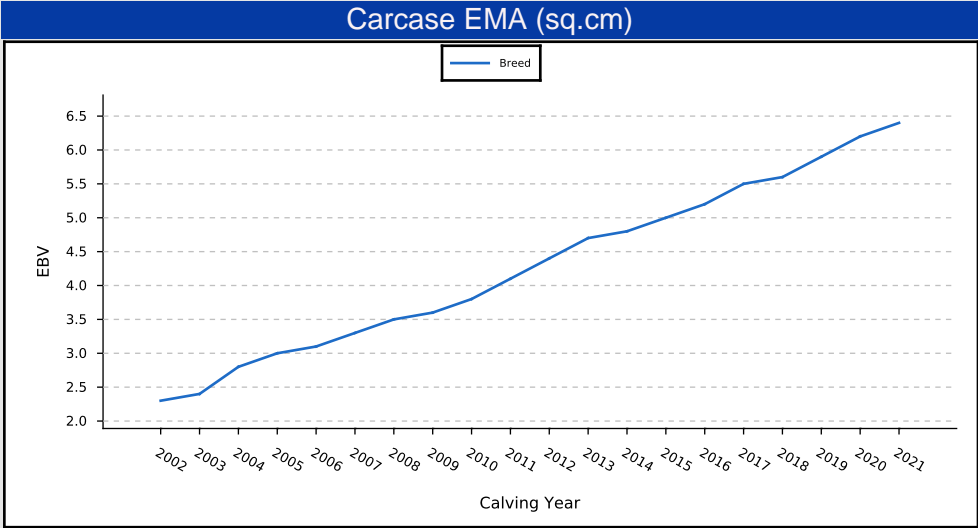


Genetic Progress By Trait

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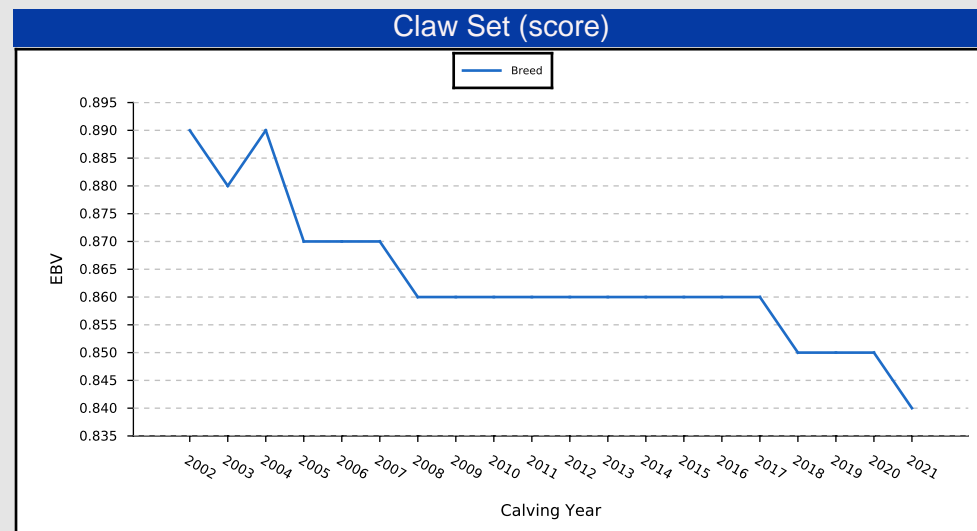
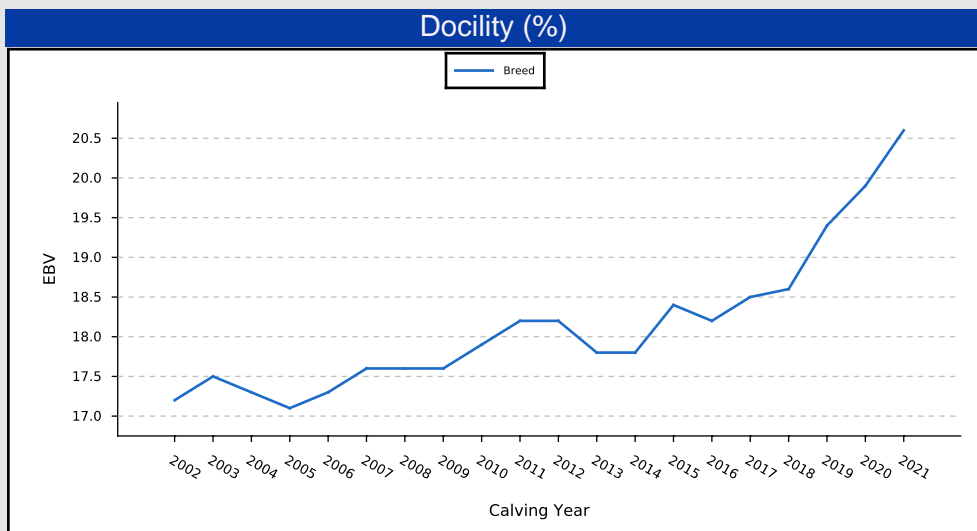
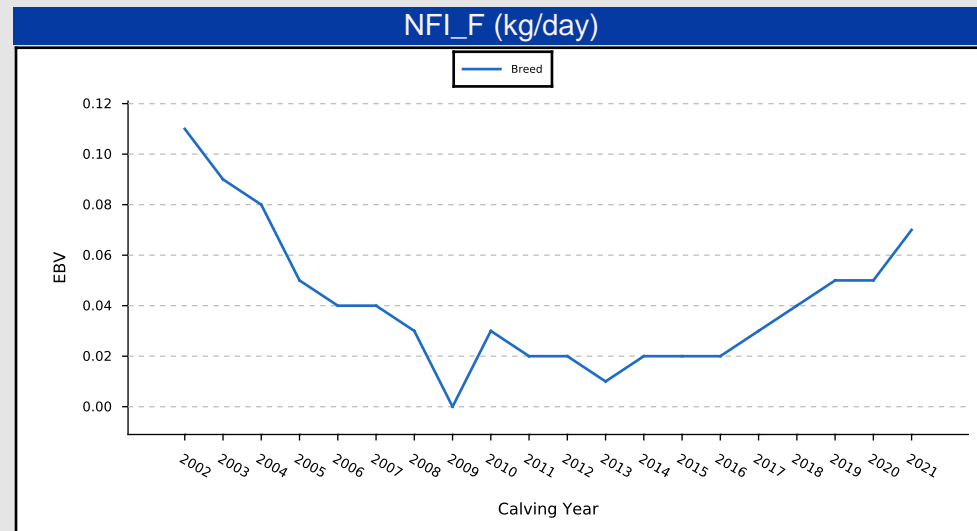
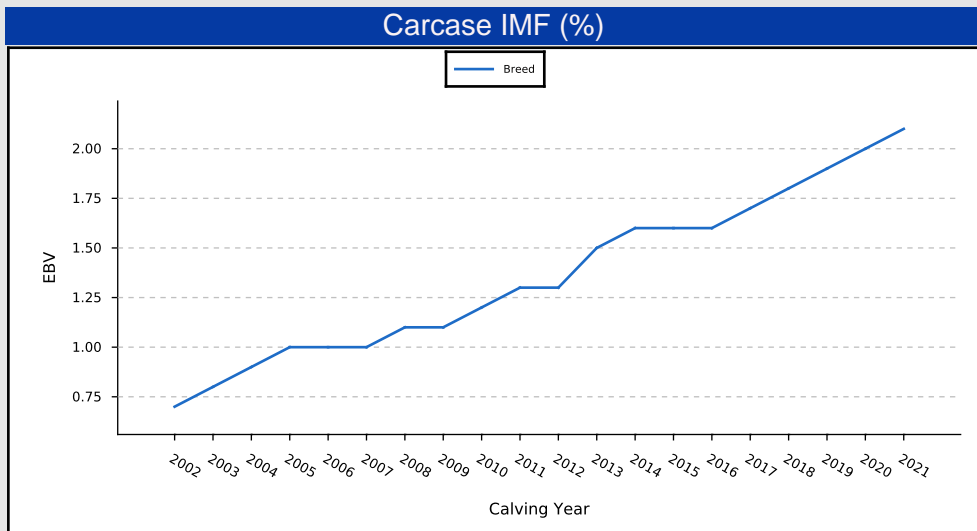


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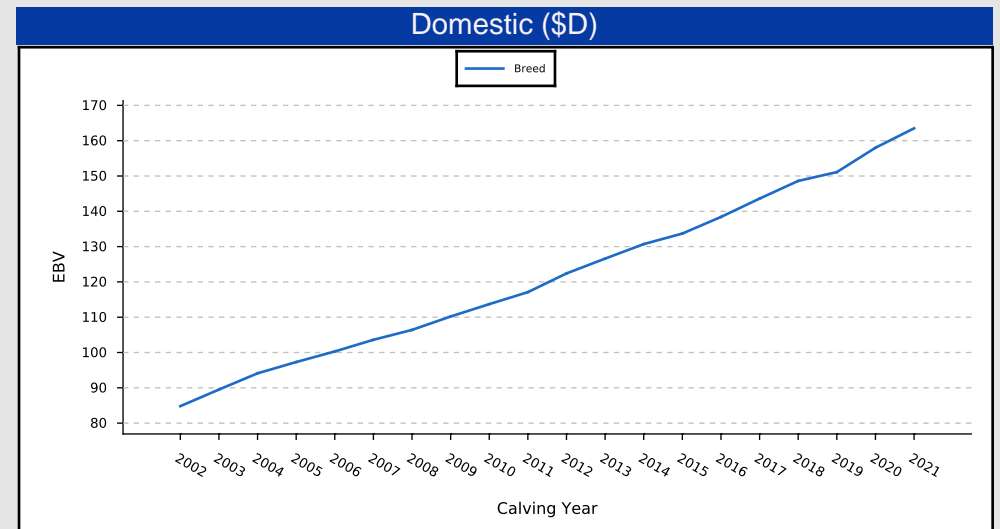
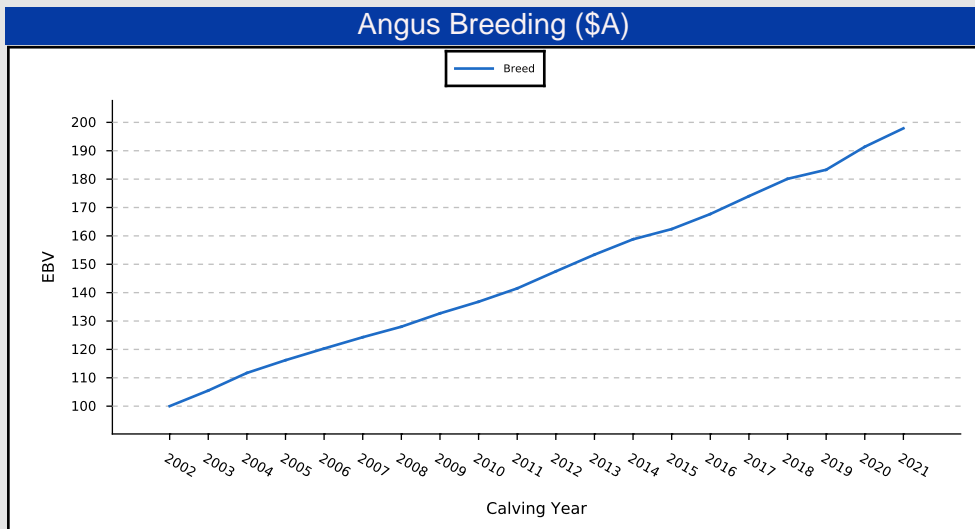
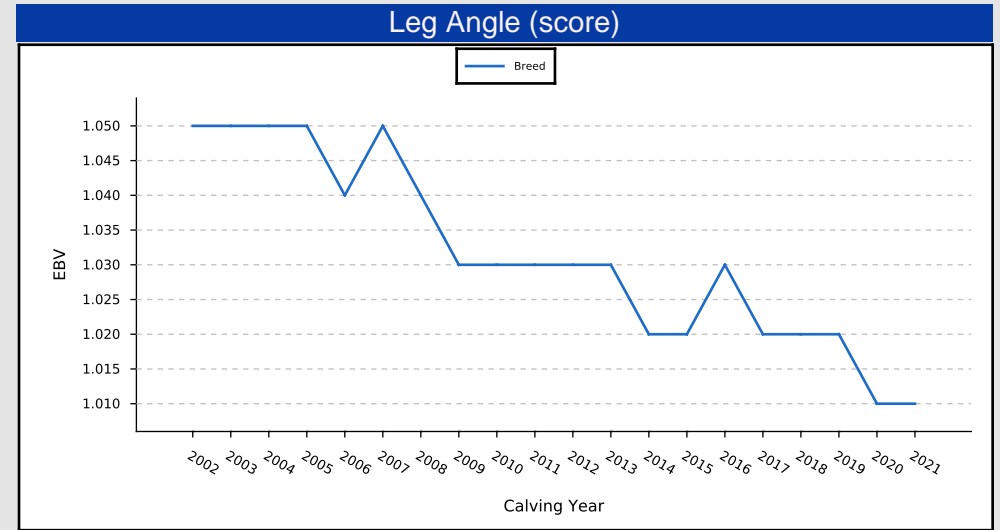
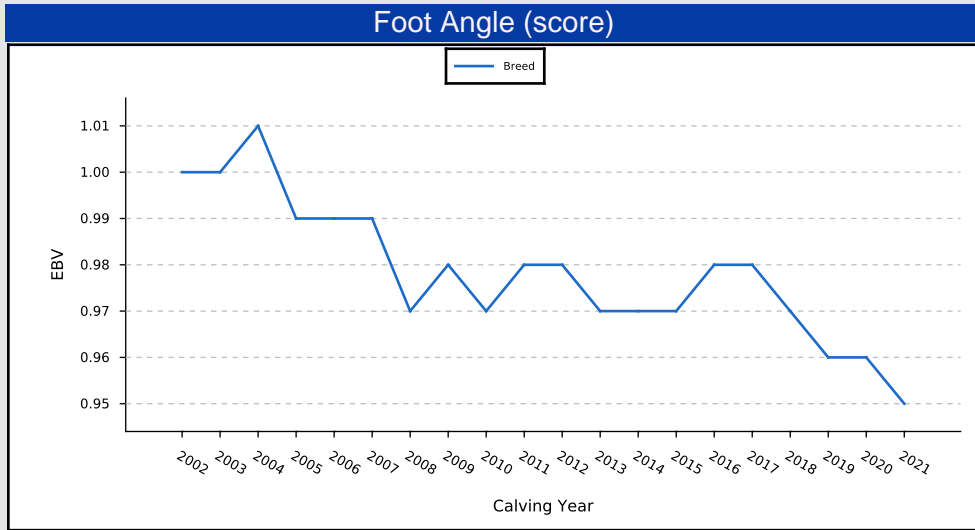


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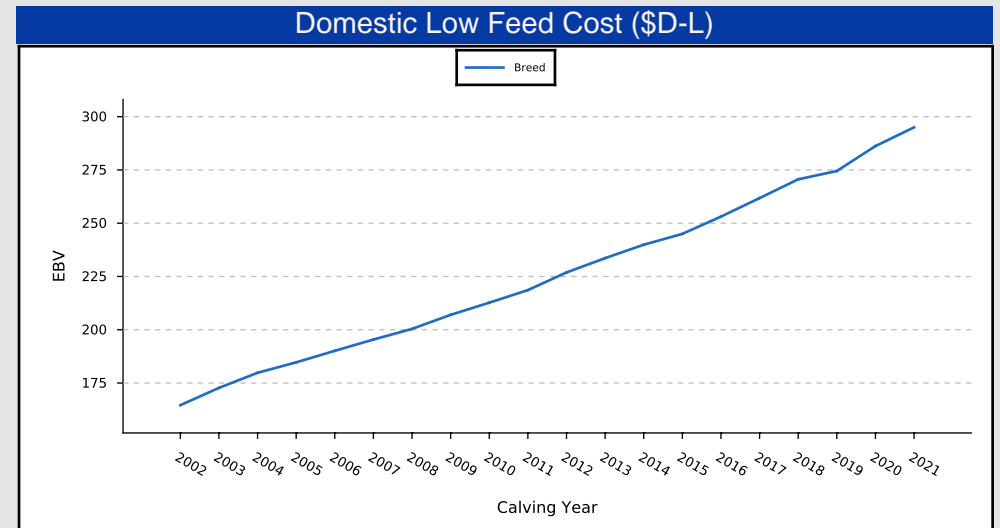
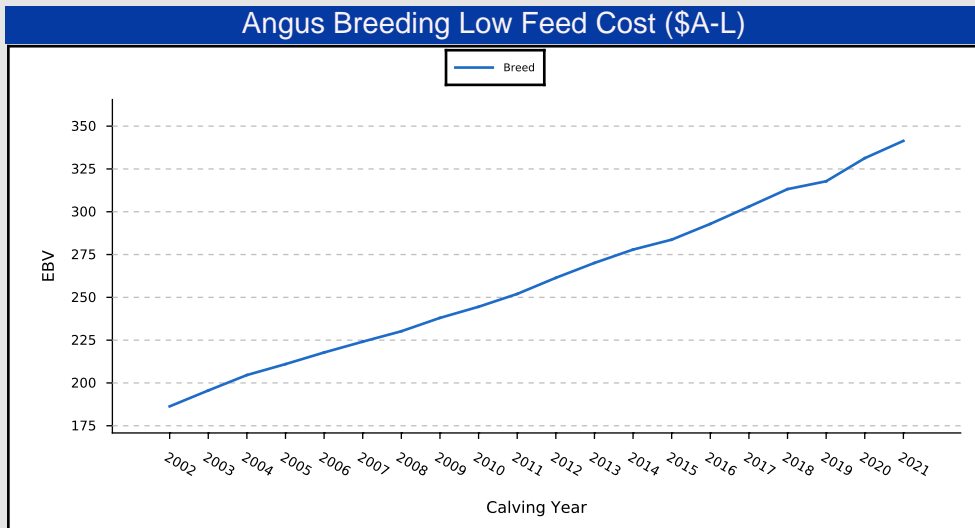
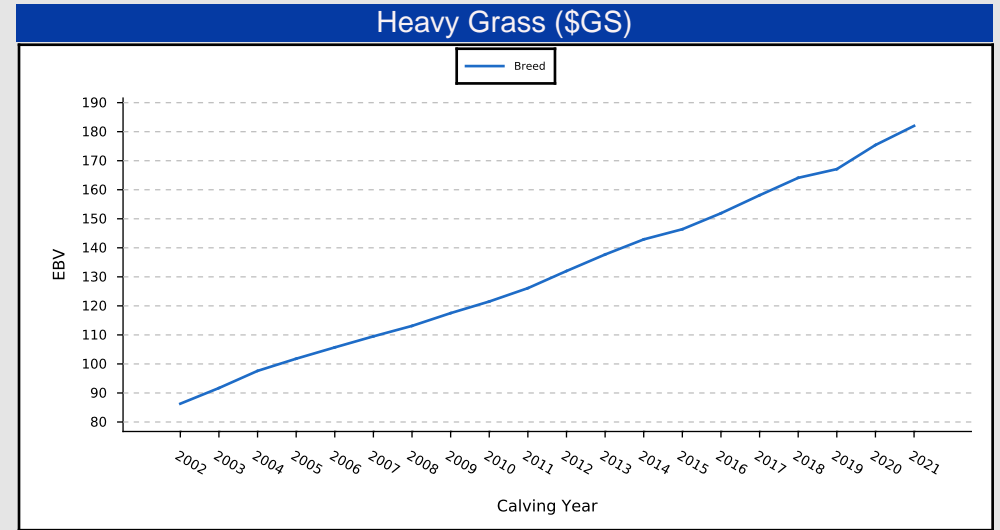
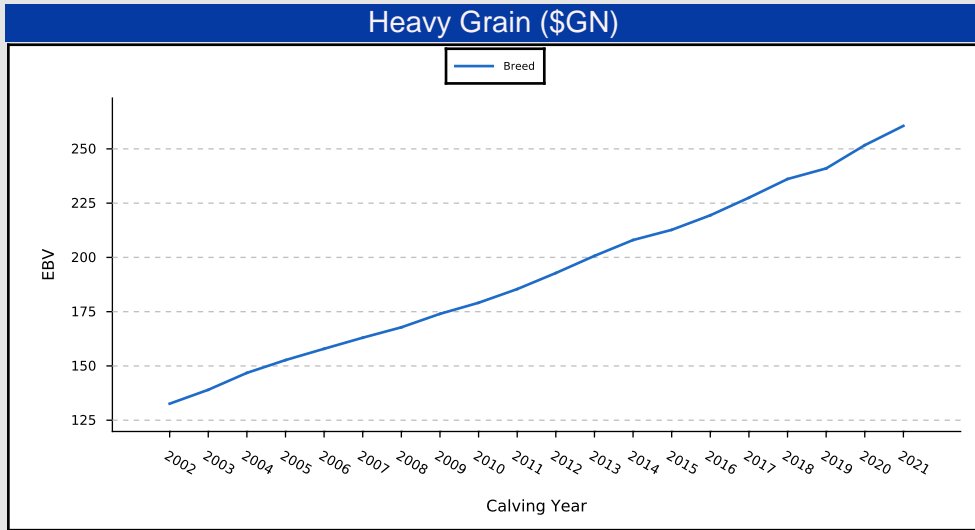


Genetic Progress By Trait

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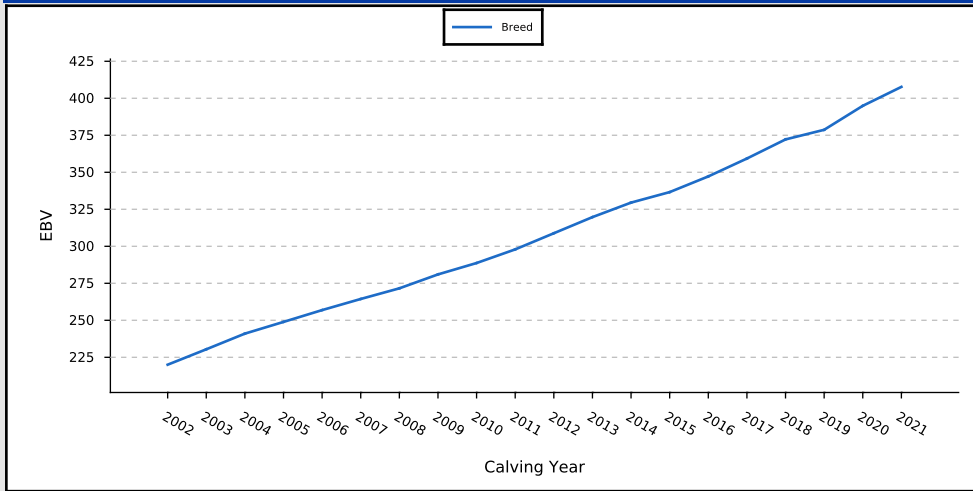
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The reports below assess the change in the average EBVs of Angus seedstock animals born in each year for each respective trait.

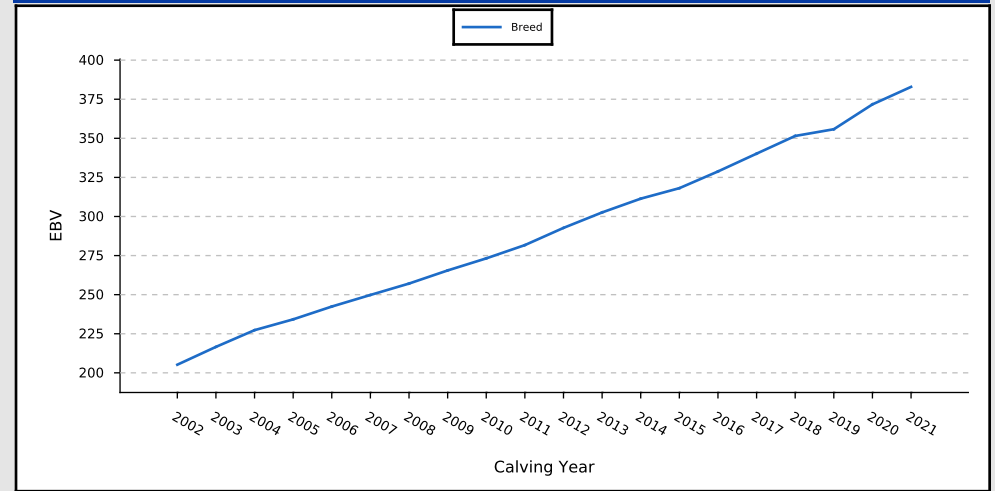


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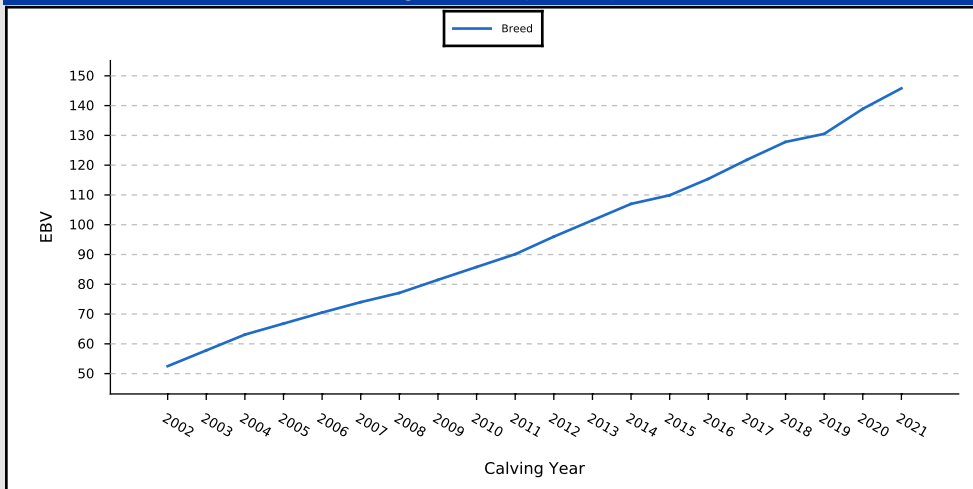
Heavy Grain Low Feed Cost (\$GN-L)



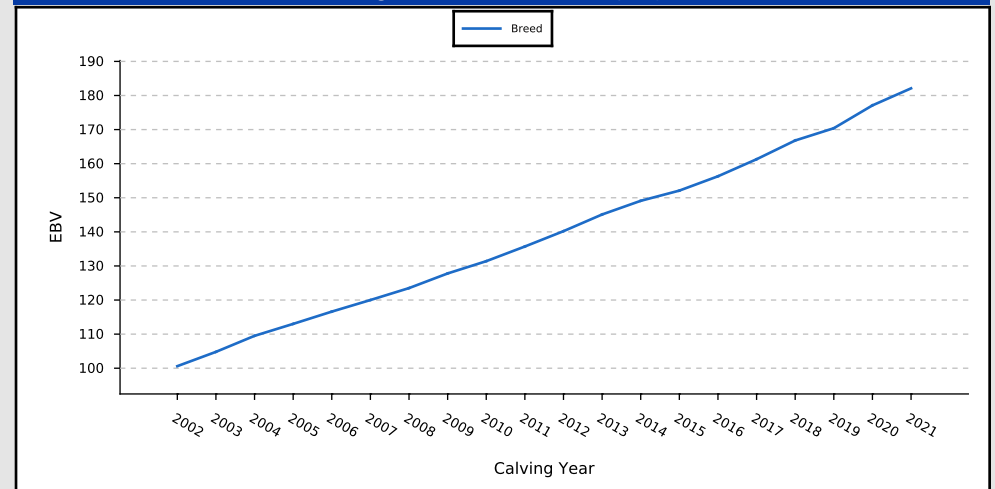
Heavy Grass Low Feed Cost (\$GS-L)



AngusPRO (\$PRO)

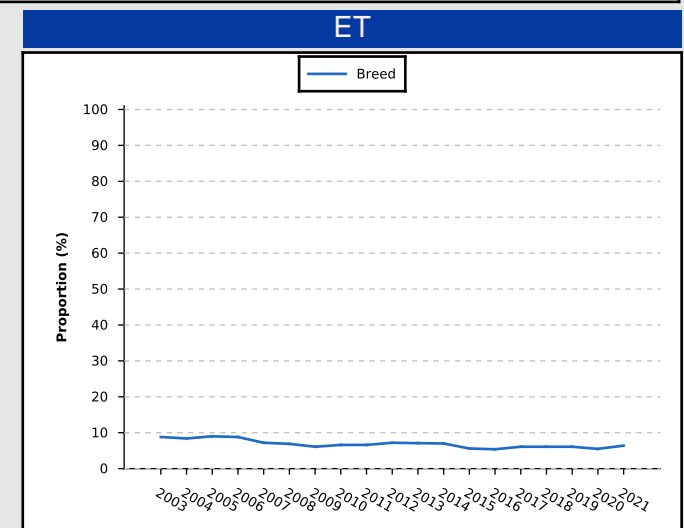
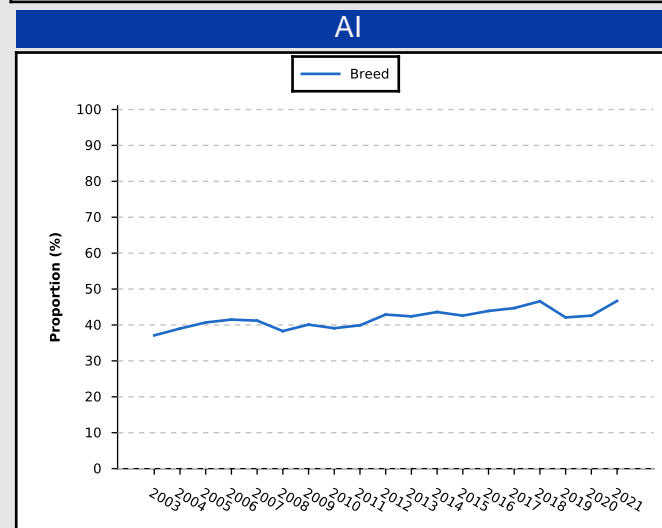
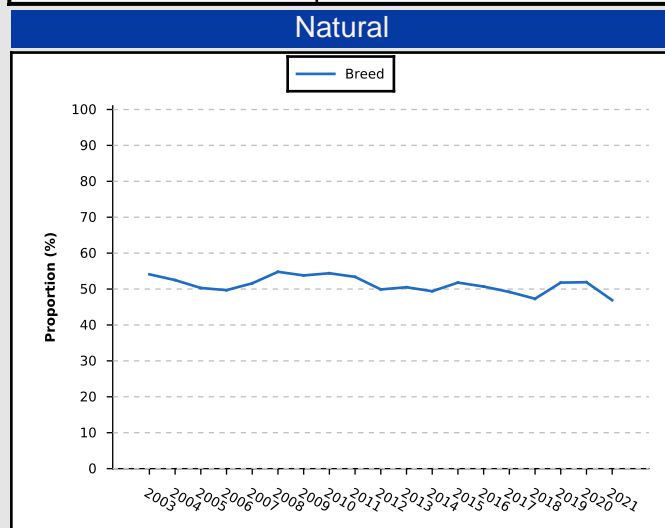
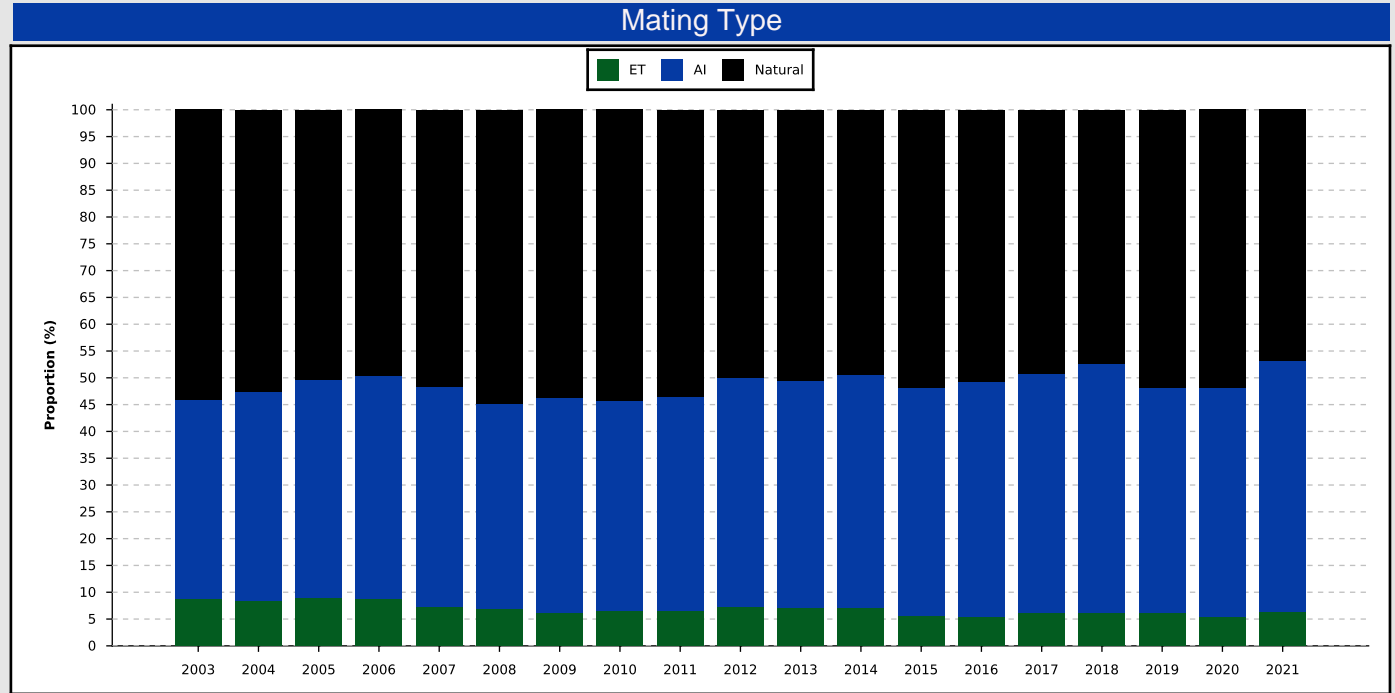


Angus Terminal Sire (\$T)



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	65109	35231	24167	5711
2004	67037	35217	26168	5652
2005	69656	35030	28349	6277
2006	70716	35118	29342	6256
2007	67403	34789	27757	4857
2008	67809	37127	25999	4683
2009	66603	35847	26692	4064
2010	67253	36571	26263	4419
2011	73358	39208	29279	4871
2012	79415	39607	34096	5712
2013	81669	41249	34629	5791
2014	80536	39795	35099	5642
2015	81045	41995	34538	4512
2016	81956	41553	36015	4388
2017	85453	42004	38194	5255
2018	85277	40369	39718	5190
2019	84555	43808	35587	5160
2020	81294	42223	34602	4469
2021	88951	41757	41518	5676



Generation Length

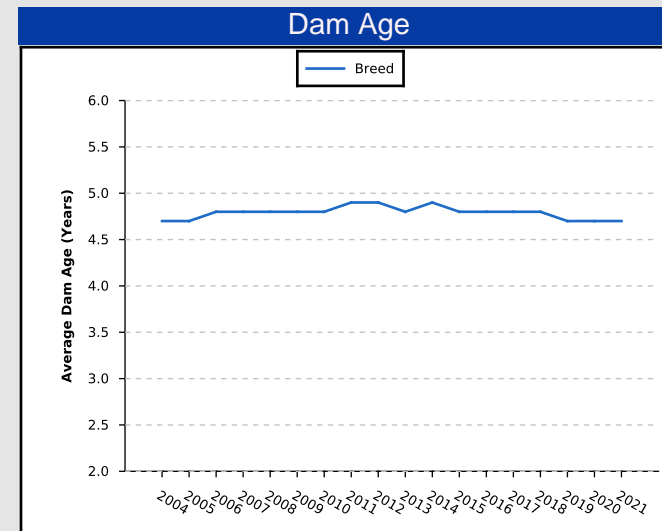
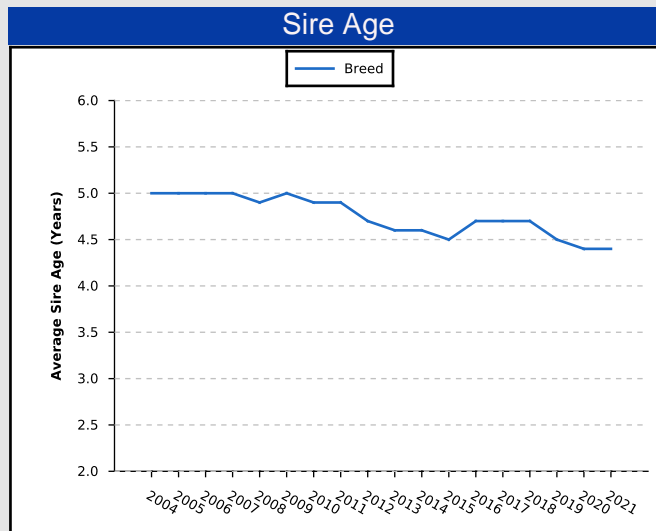
Average Sire and Dam Age By Year

Date: November 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	61475	5.0	3.6	6.3	8.0	4.7	4.6	4.4	6.4
2005	63440	5.0	3.6	6.3	7.9	4.7	4.6	4.5	6.3
2006	64542	5.0	3.7	6.2	7.7	4.8	4.7	4.4	6.4
2007	62595	5.0	3.7	6.3	7.6	4.8	4.7	4.4	6.4
2008	63330	4.9	3.7	6.4	7.8	4.8	4.8	4.4	6.7
2009	62851	5.0	3.7	6.5	7.9	4.8	4.7	4.5	6.9
2010	63326	4.9	3.7	6.1	7.6	4.8	4.8	4.5	6.5
2011	69525	4.9	3.7	6.1	7.6	4.9	4.9	4.5	6.8
2012	74859	4.7	3.7	5.6	6.7	4.9	4.9	4.5	6.7
2013	77023	4.6	3.7	5.4	6.4	4.8	4.8	4.5	6.8
2014	75938	4.6	3.7	5.4	6.7	4.9	4.9	4.5	6.9
2015	77431	4.5	3.7	5.3	6.7	4.8	4.8	4.5	6.9
2016	77967	4.7	3.8	5.5	6.7	4.8	4.9	4.5	6.8
2017	80533	4.7	3.8	5.5	6.6	4.8	4.8	4.5	6.8
2018	80609	4.7	3.7	5.5	6.5	4.8	4.8	4.5	6.9
2019	80132	4.5	3.6	5.3	6.8	4.7	4.7	4.4	6.5
2020	77762	4.4	3.6	5.2	6.0	4.7	4.7	4.3	6.8
2021	84503	4.4	3.5	5.2	6.5	4.7	4.7	4.3	6.9



Genetic Diversity

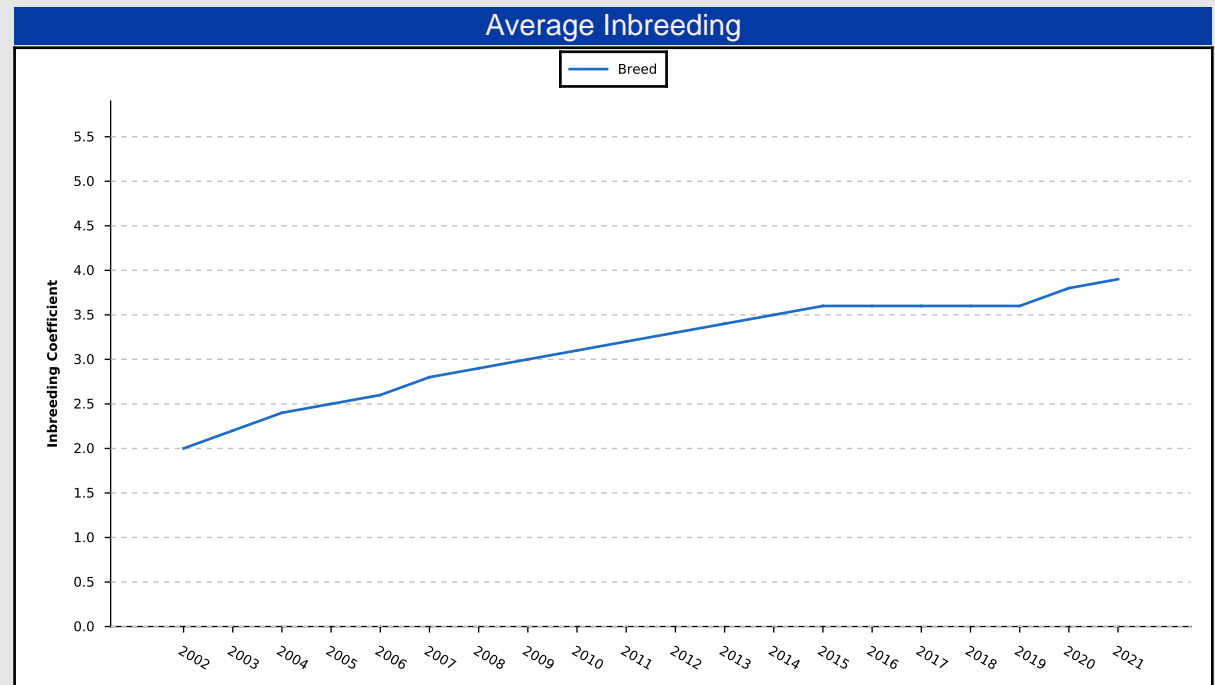
Average Inbreeding By Year

Date: November 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	59480		2.2
2004	61475		2.4
2005	63440		2.5
2006	64542		2.6
2007	62595		2.8
2008	63330		2.9
2009	62851		3.0
2010	63326		3.1
2011	69525		3.2
2012	74859		3.3
2013	77023		3.4
2014	75938		3.5
2015	77431		3.6
2016	77967		3.6
2017	80533		3.6
2018	80609		3.6
2019	80132		3.6
2020	77762		3.8
2021	84503		3.9



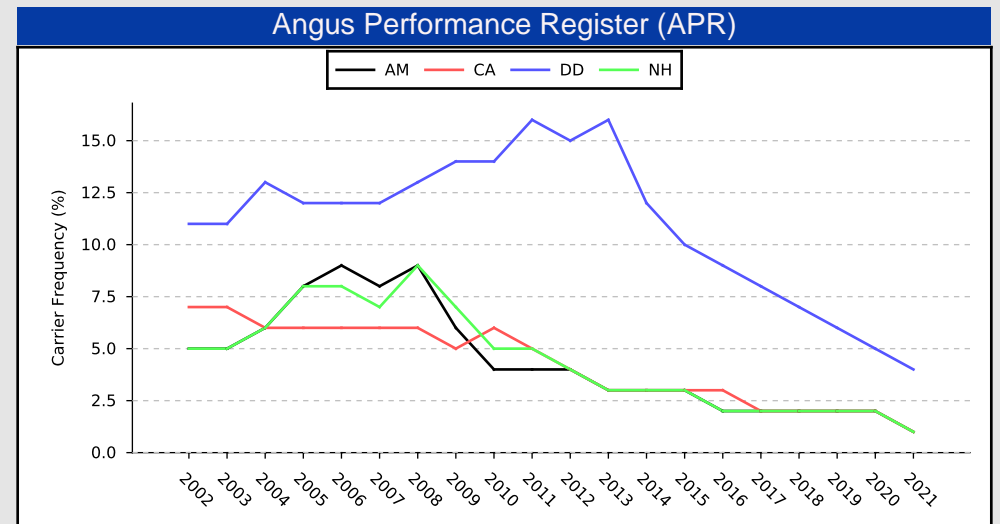
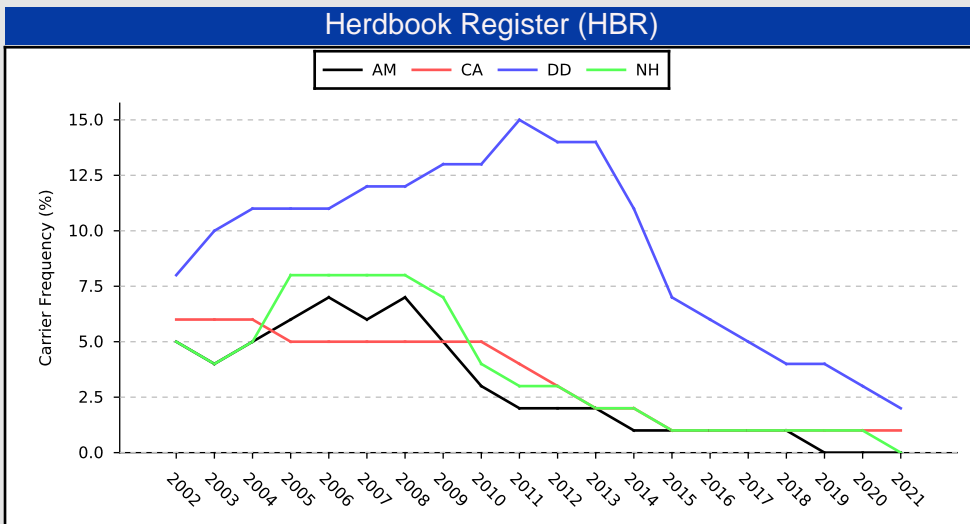
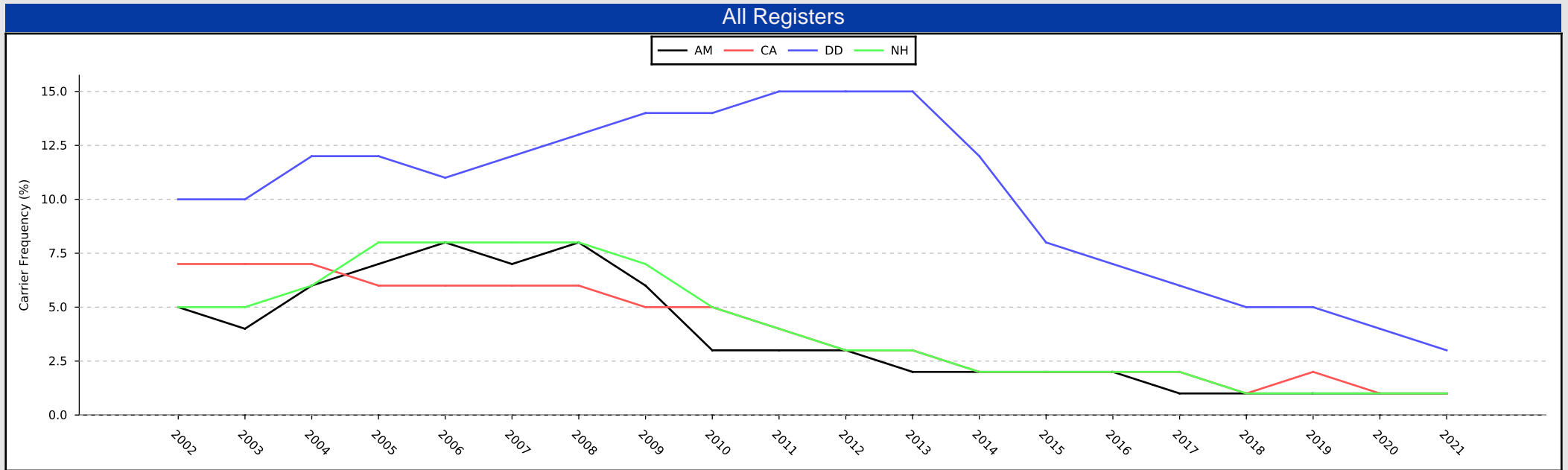
Genetic Conditions

Carrier Frequency By Register

Date: November 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: November 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	RBY	IMF	NFI-F	DOC	Claw	Angle	Leg	\$A	\$D	\$GN	\$GS	\$A-L	\$D-L	\$GN-L	\$GS-L	\$PRO	\$T
2002	63188	-0.1	-0.2	-2.1	+4.0	+28	+54	+69	+64	+12	+1.0	-3.0	+37	+2.3	+0.7	+0.9	+0.7	+0.7	+0.11	+17	+0.89	+1.00	+1.05	+100	+85	+133	+86	+186	+165	+220	+205	+53	+101
2003	59480	-0.1	-0.2	-2.3	+4.1	+30	+56	+73	+67	+12	+1.1	-3.2	+38	+2.4	+0.6	+0.7	+0.7	+0.8	+0.09	+18	+0.88	+1.00	+1.05	+106	+90	+139	+92	+196	+173	+230	+217	+58	+105
2004	61475	-0.2	-0.3	-2.4	+4.1	+31	+58	+76	+70	+12	+1.1	-3.4	+40	+2.8	+0.4	+0.4	+0.7	+0.9	+0.08	+17	+0.89	+1.01	+1.05	+112	+94	+147	+98	+205	+180	+241	+227	+63	+110
2005	63440	-0.1	+0.1	-2.5	+4.2	+32	+60	+78	+70	+13	+1.2	-3.4	+42	+3.0	+0.2	+0.3	+0.7	+1.0	+0.05	+17	+0.87	+0.99	+1.05	+116	+97	+153	+102	+211	+185	+249	+234	+67	+113
2006	64542	-0.1	+0.1	-2.7	+4.2	+34	+62	+81	+73	+13	+1.2	-3.5	+43	+3.1	+0.1	+0.2	+0.7	+1.0	+0.04	+17	+0.87	+0.99	+1.04	+120	+100	+158	+106	+218	+190	+257	+242	+71	+117
2007	62595	-0.2	+0.0	-2.7	+4.3	+35	+64	+83	+75	+13	+1.3	-3.6	+45	+3.3	+0.1	+0.1	+0.7	+1.0	+0.04	+18	+0.87	+0.99	+1.05	+124	+104	+163	+110	+224	+195	+264	+250	+74	+120
2008	63330	-0.4	+0.0	-2.8	+4.4	+36	+66	+86	+77	+14	+1.3	-3.6	+47	+3.5	+0.0	-0.1	+0.7	+1.1	+0.03	+18	+0.86	+0.97	+1.04	+128	+106	+168	+113	+230	+200	+272	+257	+77	+124
2009	62851	-0.1	+0.3	-2.9	+4.3	+37	+68	+89	+79	+14	+1.4	-3.7	+48	+3.6	-0.1	-0.1	+0.6	+1.1	+0.00	+18	+0.86	+0.98	+1.03	+133	+110	+174	+118	+238	+207	+281	+266	+82	+128
2010	63326	-0.2	+0.2	-3.0	+4.4	+38	+69	+91	+81	+14	+1.5	-3.7	+50	+3.8	-0.1	-0.1	+0.6	+1.2	+0.03	+18	+0.86	+0.97	+1.03	+137	+114	+179	+122	+245	+213	+289	+273	+86	+131
2011	69525	-0.1	+0.3	-3.0	+4.4	+39	+71	+93	+83	+14	+1.5	-3.8	+51	+4.1	-0.1	-0.2	+0.6	+1.3	+0.02	+18	+0.86	+0.98	+1.03	+142	+117	+185	+126	+252	+219	+298	+282	+90	+136
2012	74859	-0.1	+0.3	-3.2	+4.4	+40	+73	+96	+86	+14	+1.6	-4.0	+53	+4.4	-0.2	-0.2	+0.6	+1.3	+0.02	+18	+0.86	+0.98	+1.03	+148	+122	+193	+132	+261	+227	+309	+293	+96	+140
2013	77023	+0.1	+0.4	-3.3	+4.4	+42	+75	+99	+87	+15	+1.6	-4.0	+55	+4.7	-0.2	-0.3	+0.6	+1.5	+0.01	+18	+0.86	+0.97	+1.03	+153	+127	+201	+138	+270	+234	+320	+303	+102	+145
2014	75938	+0.4	+0.5	-3.6	+4.3	+42	+76	+100	+88	+15	+1.6	-4.2	+56	+4.8	-0.1	-0.2	+0.5	+1.6	+0.02	+18	+0.86	+0.97	+1.02	+159	+131	+208	+143	+278	+240	+330	+311	+107	+149
2015	77431	+0.4	+0.9	-3.7	+4.3	+43	+78	+102	+90	+16	+1.7	-4.2	+57	+5.0	-0.2	-0.3	+0.5	+1.6	+0.02	+18	+0.86	+0.97	+1.02	+162	+134	+213	+146	+284	+245	+337	+318	+110	+152
2016	77967	+0.7	+1.2	-3.9	+4.3	+44	+80	+105	+92	+16	+1.8	-4.3	+59	+5.2	-0.1	-0.3	+0.5	+1.6	+0.02	+18	+0.86	+0.98	+1.03	+168	+138	+219	+152	+293	+253	+347	+329	+115	+156
2017	80533	+1.1	+1.4	-4.1	+4.3	+45	+82	+108	+94	+16	+1.8	-4.4	+61	+5.5	-0.1	-0.3	+0.5	+1.7	+0.03	+19	+0.86	+0.98	+1.02	+174	+144	+228	+158	+303	+262	+359	+340	+122	+161
2018	80609	+1.4	+2.0	-4.3	+4.2	+47	+84	+110	+96	+17	+1.9	-4.5	+62	+5.6	-0.1	-0.3	+0.5	+1.8	+0.04	+19	+0.85	+0.97	+1.02	+180	+149	+236	+164	+313	+271	+372	+352	+128	+167
2019	80132	+1.6	+2.2	-4.3	+4.2	+48	+86	+112	+96	+17	+2.0	-4.3	+63	+5.9	-0.1	-0.3	+0.5	+1.9	+0.05	+19	+0.85	+0.96	+1.02	+183	+151	+241	+167	+318	+275	+379	+356	+131	+170
2020	77762	+1.9	+2.3	-4.6	+4.2	+49	+89	+116	+100	+17	+2.1	-4.5	+65	+6.2	-0.1	-0.4	+0.4	+2.0	+0.05	+20	+0.85	+0.96	+1.01	+191	+158	+252	+175	+331	+286	+395	+372	+139	+177
2021	84503	+2.4	+2.8	-4.8	+4.1	+50	+90	+117	+101	+17	+2.1	-4.6	+66	+6.4	-0.1	-0.4	+0.4	+2.1	+0.07	+21	+0.84	+0.95	+1.01	+198	+164	+261	+182	+341	+295	+408	+383	+146	+182

For further information, please contact staff at:

Angus Australia
Phone: 02 6773 4600
Email: office@angusaustralia.com.au
Website: www.angusaustralia.com.au

