

Footscore Research EPD

01/30/2018

Registration No.	Name	Birth Yr	Claw Set EPD / Acc	Foot Angle EPD / Acc
10776479	N Bar Emulation EXT	1986	+ .57 .58	+ .54 .56
10858958	D H D Traveler 6807	1986	+ .54 .45	+ .53 .44
11104267	Bon View Bando 598	1988	+ .49 .41	+ .48 .40
11418151	B/R New Design 036	1990	+ .39 .51	+ .41 .49
11520398	G A R Precision 1680	1990	+ .51 .44	+ .54 .42
12048084	B C C Bushwacker 41-93	1993	+ .47 .45	+ .47 .42
12310707	Sitz Alliance 6595	1995	+ .40 .51	+ .47 .49
12350821	S A F 598 Bando 5175	1995	+ .50 .46	+ .46 .45
12452829	B A R Ext Traveler 205	1995	+ .61 .41	+ .62 .40
12493607	C A Future Direction 5321	1995	+ .56 .54	+ .63 .52
12514348	O C C Emblazon 854E	1995	+ .50 .49	+ .44 .47
12530601	Rito 6I6 of 4B20 6807	1996	+ .58 .51	+ .55 .48
12618076	S A F Focus of E R	1996	+ .57 .44	+ .61 .42
12760345	S A Neutron 377	1997	+ .43 .43	+ .56 .42
12783540	Bon View New Design 1407	1997	+ .47 .55	+ .48 .52
12810693	Vermilion Dateline 7078	1997	+ .68 .43	+ .58 .40
13009379	C R A Bextor 872 5205 608	1998	+ .51 .56	+ .56 .55
13026916	Connealy Freightliner	1997	+ .49 .53	+ .67 .52
13050780	Boyd New Day 8005	1998	+ .46 .47	+ .35 .46
13062750	Bon View New Design 878	1998	+ .54 .58	+ .49 .57
13066860	Rito 707 of Ideal 3407 7075	1997	+ .33 .47	+ .34 .43
13235197	O C C Homer 650H	1998	+ .44 .43	+ .33 .43
13254554	G A R Grid Maker	1998	+ .69 .47	+ .68 .46
13395329	G A R Retail Product	1999	+ .43 .58	+ .59 .55
13395344	G A R Predestined	1999	+ .41 .66	+ .44 .63
13433023	WAR Alliance 9126 6006	1999	+ .54 .42	+ .55 .41
13447282	Connealy Lead On	1999	+ .55 .56	+ .59 .54
13512009	S A V 8180 Traveler 004	2000	+ .35 .64	+ .38 .62
13592905	S A V Final Answer 0035	2000	+ .50 .80	+ .54 .78
13728513	G A R New Design 5050	2000	+ .52 .59	+ .45 .57
13739532	H A Image Maker 0415	2000	+ .28 .46	+ .35 .43
13776378	S S Objective T510 0T26	2000	+ .49 .66	+ .55 .64
13793826	Rito 1I2 of 2536 Rito 6I6	2001	+ .75 .48	+ .57 .45
13880818	Mytty In Focus	2001	+ .54 .73	+ .45 .69
13896250	H S A F Bando 1961	2001	+ .45 .48	+ .38 .46
13936986	Woodhill Foresight	2001	+ .51 .45	+ .41 .44
14216491	Connealy Onward	2002	+ .35 .43	+ .47 .42
14237017	TC Gridiron 258	2002	+ .63 .51	+ .49 .49

Breed average EPDs for Foot Angle and Claw Set EPD are 0.5. Therefore animals with values less than 0.5 are a "breed improver" for that trait. Lower numbers are more desirable for either trait.

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14528330	Connealy Reflection	2003	+ .46 .52	+ .41 .50
14560689	ALC Big Eye D09N	2003	+ .58 .47	+ .50 .45
14675445	B/R New Day 454	2004	+ .52 .64	+ .43 .62
14691231	GDAR Game Day 449	2004	+ .48 .71	+ .41 .70
14739204	S A V Net Worth 4200	2004	+ .42 .59	+ .41 .56
14777016	MCC Daybreak	2004	+ .55 .51	+ .50 .51
14844711	TC Total 410	2004	+ .55 .50	+ .54 .47
14850409	Summitcrest Complete 1P55	2004	+ .51 .47	+ .52 .40
14963730	Sitz Upward 307R	2005	+ .47 .73	+ .41 .70
15084004	PCC OH Pledge 2357P	2004	+ .48 .43	+ .44 .51
15098880	GAR-EGL Protege	2004	+ .69 .48	+ .55 .42
15109865	S A V Bismarck 5682	2005	+ .66 .69	+ .71 .66
15142281	Rito Revenue 5M2 of 2536 F	2005	+ .45 .52	+ .51 .50
15148659	Connealy Thunder	2005	+ .46 .66	+ .44 .64
15150605	Connealy Contrast	2005	+ .52 .51	+ .53 .48
15169496	TC Friction 5130	2005	+ .62 .43	+ .45 .42
15192082	PCC MH Rebel 2009	2005	+ .42 .45	+ .34 .46
15313140	HARB Pendleton 765 J H	2005	+ .54 .45	+ .50 .44
15330743	SydGen C C & 7	2006	+ .55 .71	+ .45 .70
15332022	Basin Payweight 107S	2006	+ .60 .41	+ .45 .40
15354674	SydGen Trust 6228	2006	+ .49 .52	+ .62 .50
15511451	S Chisum 6175	2006	+ .44 .52	+ .56 .50
15513367	Connealy Consensus	2006	+ .48 .68	+ .50 .67
15543702	Connealy Impression	2006	+ .49 .63	+ .44 .59
15656868	Sitz Dash 10277	2007	+ .51 .62	+ .56 .61
15688351	S A V Priority 7283	2007	+ .42 .48	+ .47 .47
15688392	S A V Pioneer 7301	2007	+ .50 .55	+ .46 .52
15719841	AA R Ten X 7008 S A	2007	+ .67 .80	+ .52 .77
15748572	Yon Future Focus T219	2006	+ .50 .78	+ .47 .76
15832714	Connealy Mentor 7374	2007	+ .32 .54	+ .73 .53
15832750	Connealy Right Answer 746	2007	+ .42 .59	+ .48 .56
15840414	TC Aberdeen 759	2007	+ .46 .55	+ .48 .50
15848422	Connealy Final Product	2007	+ .47 .66	+ .64 .64
15871256	SCAR 7N88 by 4E3 4N9	2007	+ .61 .55	+ .53 .55
15892972	Schaff Net Income 7024	2007	+ .40 .45	+ .46 .40
15914297	S V F New Design T252	2007	+ .44 .44	+ .40 .42
16004857	Werner War Party 2417	2007	+ .37 .54	+ .58 .51
16036822	MF Net Return 8197	2008	+ .43 .52	+ .46 .51

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Registration No.	Name	Birth Yr	Claw Set EPD / Acc	Foot Angle EPD / Acc
16047404	Basin Excitement	2008	+ .76 .72	+ .35 .71
16047469	D R Sierra Cut 7404	2007	+ .46 .46	+ .56 .45
16073564	W H S Limelight 64V	2007	+ .68 .41	+ .70 .41
16101291	PCC Ruger 1042T	2007	+ .47 .42	+ .50 .47
16107741	S A V Birthstone 8258	2008	+ .66 .43	+ .65 .40
16107774	S A V Brilliance 8077	2008	+ .41 .53	+ .54 .51
16115617	S A V Iron Mountain 8066	2008	+ .46 .56	+ .48 .54
16124994	Hoover Dam	2008	+ .39 .74	+ .42 .72
16134394	Cole Creek Cedar Ridge 1V	2008	+ .44 .49	+ .53 .46
16198796	EF Complement 8088	2008	+ .39 .70	+ .61 .67
16205003	Connealy Response	2008	+ .50 .53	+ .67 .50
16205004	Connealy Stimulus 8419	2008	+ .49 .50	+ .44 .49
16207085	Benfield Substance 8506	2008	+ .36 .58	+ .37 .56
16270429	Sitz Upside 547W	2009	+ .56 .49	+ .54 .47
16295688	G A R Prophet	2008	+ .50 .76	+ .55 .75
16381311	PA Power Tool 9108	2009	+ .42 .72	+ .52 .69
16396519	S A V Brand Name 9115	2009	+ .45 .46	+ .56 .45
16413257	Ellingson Identity 9104	2009	+ .55 .54	+ .55 .50
16430795	K C F Bennett Absolute	2009	+ .62 .57	+ .53 .52
16433346	S Summit 956	2009	+ .63 .43	+ .55 .41
16447771	Connealy Consensus 7229	2009	+ .70 .73	+ .60 .71
16447791	Connealy Final Solution	2009	+ .42 .46	+ .51 .40
16456514	JAR Total Package 903	2009	+ .70 .50	+ .66 .49
16476949	Baldrige Waylon W34	2009	+ .74 .71	+ .50 .68
16482454	MCATL Pure Product 903-55	2009	+ .42 .49	+ .63 .47
16491438	Schiefelbein Zeus 3609	2009	+ .55 .58	+ .66 .51
16496980	G A R Composure	2009	+ .59 .69	+ .59 .68
16524794	Yon Final Answer W494	2009	+ .46 .77	+ .51 .75
16541214	EXAR Upshot 0562B	2010	+ .41 .61	+ .37 .60
16568189	Soo Line Motive 9016	2009	+ .55 .46	+ .49 .44
16588885	PCC Scat 1000W	2009	+ .50 .46	+ .51 .55
16651533	Riverbend Peerless 0016	2010	+ .54 .43	+ .47 .41
16687543	Hoover Headliner J32	2010	+ .52 .48	+ .27 .46
16687592	S A V Platinum 0010	2010	+ .47 .45	+ .43 .41
16687737	S A V Harvester 0338	2010	+ .41 .61	+ .57 .59
16692552	Plattemere Weigh Up K360	2010	+ .57 .61	+ .56 .55
16710494	Koupals B&B Extra 0011	2010	+ .37 .44	+ .59 .43
16748826	Jindra Double Vision	2010	+ .58 .66	+ .50 .64

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16752262	Connealy Capitalist 028	2010	+ .41 .70	+ .48 .71
16761479	Connealy Confidence 0100	2010	+ .41 .73	+ .42 .69
16761497	Connealy Counselor	2010	+ .32 .76	+1.20 .74
16772185	PA Safeguard 021	2010	+ .50 .53	+ .47 .51
16777360	PCC SSCC Mojo 1704X	2010	+ .47 .41	+ .52 .44
16805884	PVF Insight 0129	2010	+ .48 .50	+ .58 .51
16822472	EF Authentic 0829	2010	+ .38 .57	+ .49 .55
16829413	SandPoint Butkus X797	2010	+ .52 .65	+ .50 .64
16858775	Bruin Uproar 0070	2010	+ .48 .50	+ .43 .50
16895931	Connealy Consensus 014E	2010	+ .56 .42	+ .61 .41
16896296	Connealy Uptown 098E	2010	+ .45 .51	+ .53 .49
16897926	Connealy Direct Deposit	2010	+ .70 .65	+ .79 .63
16899059	Musgrave Boulder	2011	+ .41 .42	+ .45 .40
16916944	V A R Reserve 1111	2011	+ .45 .57	+ .44 .55
16924687	Hoover Emperor	2010	+ .52 .52	+ .27 .50
16925771	Quaker Hill Rampage 0A36	2010	+ .65 .49	+ .54 .46
16933958	G A R Sunrise	2010	+ .54 .52	+ .48 .46
16944751	GDAR Heisman 1705	2011	+ .61 .55	+ .71 .52
16944760	GDAR CJD Justice 1717	2011	+ .33 .49	+ .31 .48
16969555	Connealy Earnan 076E	2010	+ .51 .62	+ .55 .57
16981588	PA Full Power 1208	2011	+ .52 .63	+ .57 .61
16984170	R B Tour Of Duty 177	2011	+ .40 .64	+ .52 .60
16990022	Hoover Electrify	2011	+ .60 .66	+ .48 .64
16992096	Vision Unanimous 1418	2011	+ .45 .45	+ .43 .45
17016597	S A V Resource 1441	2011	+ .26 .68	+ .37 .66
17016630	S A V Angus Valley 1867	2011	+ .56 .48	+ .58 .46
17028963	Connealy Black Granite	2011	+ .43 .78	+ .57 .76
17029809	Connealy Front & Center	2011	+ .46 .45	+ .45 .43
17031441	Connealy United 1116	2011	+ .55 .59	+ .53 .57
17031465	Connealy Comrade 1385	2011	+ .52 .73	+ .54 .71
17038724	Basin Payweight 1682	2011	+ .52 .61	+ .46 .59
17049836	HA Program 1742	2011	+ .22 .46	+ .39 .45
17065105	Schiefelbein Effective 61	2011	+ .44 .57	+ .57 .53
17065277	Schiefelbein HD 1241	2011	+ .52 .58	+ .42 .53
17082311	EF Commando 1366	2011	+ .40 .59	+ .68 .50
17102085	Mogck Bullseye	2011	+ .71 .78	+ .47 .78
17131890	Rito 12E7 of 5F56 Rito 5M2	2011	+ .59 .50	+ .58 .49
17145326	Barstow Cash	2011	+ .53 .53	+ .64 .53

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17171587	V A R Generation 2100	2012	+ .65 .54	+ .66 .53
17228402	GDAR Leupold 298	2012	+ .47 .45	+ .32 .43
17262374	JMB Traction 292	2012	+ .50 .56	+ .47 .54
17262835	V A R Discovery 2240	2012	+ .58 .61	+ .46 .55
17264260	Yon Profit Driven Z228	2011	+ .47 .44	+ .41 .43
17264322	Yon Future Force Z77	2011	+ .47 .63	+ .48 .57
17287383	S S Warrior Z20	2012	+ .43 .42	+ .66 .40
17287387	S S Niagara Z29	2012	+ .40 .52	+ .44 .51
17292558	Mohnen Substantial 272	2012	+ .45 .48	+ .50 .43
17302235	Connealy Greeley	2012	+ .51 .52	+ .45 .51
17302304	Connealy Courage 25L	2012	+ .61 .62	+ .61 .61
17304232	Connealy Western Cut	2012	+ .39 .48	+ .52 .47
17306288	Hoover Inspiration	2012	+ .67 .58	+ .68 .56
17307074	Deer Valley All In	2012	+ .59 .71	+ .51 .69
17314326	Koupal Advance 28	2012	+ .49 .45	+ .44 .44
17314528	Connealy Arsenal 2174	2012	+ .56 .43	+ .53 .42
17318795	S A V International 2020	2012	+ .36 .70	+ .42 .69
17318919	S A V West River 2066	2012	+ .45 .49	+ .59 .46
17318928	S A V Registry 2831	2012	+ .52 .59	+ .44 .55
17318946	S A V Hesston 2217	2012	+ .36 .66	+ .30 .65
17328461	G A R Sure Fire	2012	+ .61 .47	+ .51 .43
17362475	Schiefelbein Protocol 392	2012	+ .53 .50	+ .52 .45
17399875	KG High Regard 2073	2012	+ .48 .43	+ .60 .42
17418539	PA Fortitude 2500	2011	+ .50 .47	+ .53 .46
17467126	Sitz Reinvested 636a	2013	+ .47 .59	+ .34 .58
17513381	V A R Index 3282	2013	+ .49 .52	+ .57 .51
17526276	GDAR Regulator 364	2013	+ .40 .59	+ .32 .58
17577916	Deer Valley Patriot 3222	2013	+ .41 .54	+ .49 .54
17585502	Connealy Power Surge 3115	2013	+ .49 .48	+ .52 .47
17585550	Connealy Trooper 3682	2013	+ .52 .45	+ .59 .43
17585576	Connealy Confidence Plus	2013	+ .45 .50	+ .43 .49
17585606	Connealy Impact	2013	+ .51 .67	+ .37 .66
17585764	Connealy Commander	2013	+ .58 .65	+ .41 .64
17603620	Hoover Elation M123	2013	+ .78 .58	+ .54 .56
17603627	Hoover Hawkeye	2013	+ .63 .61	+ .67 .60
17633839	S A V Renown 3439	2013	+ .41 .64	+ .44 .62
17680548	Bruns Top Cut 373	2013	+ .56 .69	+ .37 .67
17880784	Pine View Rock Solid P234	2013	+ .40 .53	+ .63 .51

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17882682	Hoover No Doubt	2014	+.54 .48	+.33 .46
17906918	Vintage Legacy 4409	2014	+.58 .54	+.58 .53

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EPDs reflect data sent in on or before 01/04/2018

Foot Score Research Report

Introduction

In 2015, the American Angus Association began collecting foot scores on yearling age and mature cattle. This system was put in place to identify and track issues with poor feet in the population of Angus cattle in hopes of moving towards a selection tool to help make genetic progress. Two scores claw set and foot angle have been advised to be collected. Both scores are based on a 1 to 9 scale with five being ideal for both traits.

For claw set, a five depicts toes which are basically straight and symmetrical; whereas, animals with widely open and divergent toes would score a one. Animals scoring 7 or 8 would have toes tending to curl inward with a score of 9 identifying animals with toes completely curling over one another.

An ideal animal for foot angle would have a 45 degree set to its pastern. A score of 9 would include animals with extremely weak pastern set and minimal heel depth. A score of 1 identifies animals with no set to their pasterns and as a result are very straight through their toes and front end.

When scoring animals at a year of age be sure to use the same age window as yearling collection (320-440 days of age). Producers should remember to score prior to trimming hooves, and score the worst front and rear foot. Scores are easiest to take when animals are on a hard, level surface and can be taken while exiting the chute or milling in a pen. Basic ration information should be submitted alongside the scores. Scores are then submitted through your AAA Login.

Preliminary Analysis

A preliminary analysis of a subset of the foot score database was done in spring 2017. The goal of this project was to investigate alternative analysis models and determine the heritability of the foot structure traits as evaluated by Angus breeders. Initial objectives were to explore alternative genetic evaluation approaches for these traits and estimate genetic parameters using 5,722 records collected on yearling bulls and heifers ranging from 320 to 460 days of age. Frequency of observations in the 1-9 categories, respectively, were 0, 1, 6, 197, 3845, 1468, 166, 34 and 5 for foot angle and 0, 0, 5, 263, 3251, 1883, 270, 45 and 5 for claw set.

In addition to using all phenotypes (1-9) in the analysis, both foot angle and claw set were also analyzed as two independent traits, depending on where the reported score fell on the 1-9 scale. This was done to investigate whether foot angle scores ranging from 1-5 (steep) are different from scores ranging from 5-9 (weak), and also if claw set scores ranging from 1-5 (spread) are different from 5-9 scores (scissor) with 5 being ideal for each trait. Heritability estimates were 0.34 and 0.21, respectively, for foot angle and claw set. When scores were split into steep and weak foot angle categories, the heritability of each of these components was 0.22 and 0.37, respectively. Likewise, when splitting the claw set into spread and scissor, the heritability was 0.16 and 0.25, respectively. In both cases, the heritability was higher for the group of scores (weak and scissor, 5-9) with the most records. Cattle are more likely to have a weak foot angle or scissor claw set. A low genetic correlation between claw set and foot angle (0.22) was determined, indicating these are actually independent traits. Therefore, placing selection pressure on correcting claw set may not automatically correct foot angle and vice versa.

Research EPD

Once the preliminary analysis was done a prototype evaluation was run. Due to the frequency of scores and estimated heritabilities and genetic correlations, only scores ranging in the 5 through 9 scoring categories were used in this research evaluation. Foot score contemporary groups were based on yearling contemporary group criteria, diet information, and scoring date. Information on mature females was utilized as repeated measures in the estimation of foot score EPDs. Meaning every score taken on an individual animal can be utilized to add accuracy to these EPDs. For this reason, multiple scores on individual females as yearlings and as mature females are encouraged.

Two foot structure research EPDs have been predicted, foot angle and claw set. Animals published in the research EPD report had a predicted 0.40 accuracy for both foot angle and claw set EPD and are classified as an AI sire. Because only 5-9 scores for both foot angle and claw set are used in this research EPD evaluation, a lower or more negative number will indicate a better foot score.

For example, Bull A has a 0.0 claw set EPD and Bull B has a +0.5 claw set EPD. This means Bull A's progeny, on average, would be predicted to score a half a score better on the 5-9 scale for claw set compared to Bull B's progeny.

Future Discussion

A *research EPD* is a prelude to a *production EPD*. It is a one-time analysis to be delivered to the membership enabling the Association to get feedback from the membership as a trait is under development and prior to going to "production". These *research EPDs* will not get updated weekly but may be updated, periodically, as more data flows into the database.

Members must remember the research EPDs reflect only the current data included in the database. For instance, currently not enough phenotypes (records) have been reported in the 1-4 categories for either foot angle or claw set to be valuable for the genetic evaluation. However, its important producers continue to use the whole 1-9 scale when scoring feet to make sure we are characterizing animals correctly. In the future enough data in those 1-4 categories may merit inclusion into the evaluation.

Once more data is collected and the evaluation adds robustness the research EPD can be moved into production. Over the next 12 months, the Association will gather member feedback and collect additional phenotypes. At that time, the release of production foot angle and claw set EPDs will be evaluated.