



By the Numbers

► by *Sally Northcutt*, director of genetic research, American Angus Association

Back to EPD basics

The Angus breed is more popular than ever, and with this popularity comes an increase in the number of new breeders and Angus bull buyers calling the American Angus Association office with questions about expected progeny differences (EPDs). A common thread in these questions is typically the quest to know what the calves of a particular sire will weigh. When faced with an EPD for weaning weight (WW), for example, reported in pounds (lb.), why would this not be the first logical question a new follower of Angus performance programs would ask?

What will my calves weigh?

EPDs are a prediction of how future offspring are expected to perform when compared to the progeny of other animals. If focusing on sires, for example, the EPDs are genetic values to allow a relative ranking of sires for genetic merit in the particular trait. Without a focus on the term *difference*, the EPD loses its value as a selection tool to use in making directional genetic progress in the beef herd.

As an example, when faced with a sire WW EPD of +40, the first assessment is the breed database from which it was calculated. So, an Angus EPD is directly comparable to all other Angus EPDs published in print or online through the American Angus Association. Next, the Angus EPD of +40 lb. for weaning weight is comparable to other animals or to the breed averages reported by the Association. A sometimes overlooked resource available in comparing the EPD to a benchmark is the breed average summary table presented in Table 1.

Table 1: Breed avg. summary, Spring 2008 Sire Evaluation Report

	PRODUCTION					MATERNAL				CARCASS				ULTRASOUND			SVALUES					
	CED	BW	WW	YW	YH	SC	CEM	Milk	MW	MH	SEN	CW	Marb	RE	Fat	IMF	RE	Fat	\$W	\$F	\$G	\$B
Current Sires ¹	+5	+2.2	+40	+75	+3	+33	+6	+20	+32	+5	+6.05	+5	+16	+16	-.001	+12	+23	+0.005	+23.30	+18.78	+14.98	+31.32
Main Sires	+5	+2.2	+43	+80	+3	+35	+6	+20	+34	+5	+4.89	+6	+18	+17	+0.000	+11	+22	+0.005	+24.20	+22.67	+14.17	+32.00
Supplemental Sires	+6	+2.0	+44	+82	+3	+46	+7	+22			+2.16	+8	+24	+23	-.001	+15	+33	+0.008	+25.38	+24.48	+15.38	+35.46
Current Dams ¹	+4	+2.4	+36	+66	+4	+21	+5	+18	+32	+5	+10.11					+0.6	+11	+0.003	+21.44	+11.71	+13.32	+24.92
Non-Parent Bulls	+5	+2.2	+42	+77	+3	+34	+6	+20			+4.73					+1.6	+27	+0.006	+24.22	+20.56	+15.79	+34.20
Non-Parent Cows	+5	+2.2	+41	+76	+3		+6	+20			+5.07					+1.8	+28	+0.006	+24.09	+20.04	+16.13	+34.44

¹at least one calf recorded in herd book within the past two years

Table 2: Percentile breakdown, non-parent bulls, spring 2008

Spring 2008 Current Sires	Percentile Breakdowns																					
	Current Dams					Non-Parent Bulls							Non-Parent Cows				Sire Evaluation Main Menu					
Top Pct	Production											Maternal			Ultrasound			\$Values				
	CED	BW	WW	YW	YH	SC	CEM	Milk	SEN	IMF	RE	Fat	SW	\$F	\$G	\$B						
1%	+13	-1.8	+61	+108	+1.0	+1.62	+12	+32	+21.95	+67	+85	-.028	+33.53	+45.08	+32.12	+55.00						
2%	+12	-1.3	+58	+104	+9	+1.46	+11	+30	+19.58	+61	+77	-.024	+32.51	+42.04	+30.56	+52.82						
3%	+12	-1.0	+57	+102	+9	+1.36	+11	+30	+18.07	+56	+73	-.021	+31.86	+40.20	+29.47	+51.40						
4%	+11	-7	+56	+100	+8	+1.28	+11	+29	+17.04	+53	+69	-.019	+31.38	+38.66	+28.63	+50.34						
5%	+11	-5	+55	+99	+8	+1.22	+10	+28	+16.18	+50	+66	-.017	+30.99	+37.74	+27.93	+49.42						
10%	+10	+1	+52	+94	+7	+1.02	+10	+27	+13.34	+42	+57	-.012	+29.59	+33.98	+25.30	+46.30						
15%	+9	+6	+50	+91	+6	+88	+9	+25	+11.59	+36	+51	-.009	+28.62	+31.45	+23.40	+44.05						
20%	+8	+9	+49	+88	+5	+78	+9	+25	+10.21	+31	+46	-.006	+27.85	+29.46	+21.87	+42.28						
25%	+8	+1.2	+47	+86	+5	+69	+8	+24	+9.04	+28	+42	-.004	+27.20	+27.76	+20.55	+40.77						
30%	+7	+1.4	+46	+84	+5	+61	+8	+23	+8.02	+24	+39	-.002	+26.60	+26.26	+19.29	+39.41						
35%	+7	+1.6	+45	+82	+4	+54	+7	+22	+7.08	+21	+35	0	+26.04	+24.90	+18.19	+38.15						
40%	+6	+1.8	+44	+81	+4	+47	+7	+22	+6.16	+18	+32	+0.002	+25.50	+23.51	+17.18	+36.94						
45%	+6	+2.1	+43	+79	+3	+40	+7	+21	+5.32	+16	+29	+0.004	+24.99	+22.13	+16.23	+35.77						
50%	+5	+2.3	+42	+77	+3	+34	+6	+20	+4.49	+14	+26	+0.005	+24.47	+20.85	+15.30	+34.66						
55%	+5	+2.4	+41	+76	+3	+27	+6	+20	+3.68	+11	+23	+0.007	+23.94	+19.55	+14.43	+33.50						
60%	+4	+2.6	+40	+74	+2	+20	+6	+19	+2.85	+9	+20	+0.009	+23.39	+18.13	+13.58	+32.29						
65%	+4	+2.8	+39	+72	+2	+14	+5	+18	+1.97	+7	+17	+0.011	+22.83	+16.71	+12.70	+31.06						
70%	+3	+3.1	+38	+70	+1	+07	+5	+18	+1.12	+4	+14	+0.013	+22.21	+15.21	+11.82	+29.72						
75%	+2	+3.3	+36	+68	+1	-.01	+5	+17	+2.0	+2	+11	+0.015	+21.52	+13.60	+10.87	+28.24						
80%	+2	+3.6	+35	+66	+1	-.09	+4	+16	-.89	-.01	+7	+0.018	+20.76	+11.74	+9.83	+26.56						
85%	+1	+3.9	+33	+63	+0	-.19	+3	+15	-2.17	-.03	+3	+0.021	+19.82	+9.57	+8.65	+24.55						
90%	+0	+4.2	+31	+59	-.1	-.31	+3	+14	-3.71	-.07	-.03	+0.025	+18.59	+6.82	+7.15	+21.85						
95%	-2	+4.9	+28	+53	-.2	-.50	+2	+12	-6.02	-.12	-.11	+0.031	+16.65	+2.49	+4.96	+17.52						
100%	-20	+11.6	-6	-10	-1.5	-2.17	-11	-10	-23.36	-.49	-.94	+0.099	-4.28	-38.95	-13.48	-51.44						
Total Animals	130,621	132,840	135,948	135,948	21,593	43,744	130,621	135,948	148,109	73,706	73,706	73,706	147,069	148,109	113,274	113,274						
Avg	+5	+2.2	+42	+77	+3	+34	+6	+20	+4.73	+16	+27	+0.006	+24.22	+20.56	+15.79	+34.20						

This table shows the +40 WW EPD for the bull can be viewed as a bull that is similar to the Angus breed average. If this bull were purchased at a sale this past spring, it is probably most meaningful to compare him to the non-parent bull average. Is he much different from the average non-parent Angus bulls in the breed? No, since the expected difference in future progeny from the +40 WW EPD bull and a breed average non-parent bull of +42 is only 2 lb. (42-40 = 2).

Where does my animal rank in the Angus breed?

Ranking of an EPD in the breed is another popular question among Angus breeders. The percentile tables available for current sires, current dams, non-parent bulls and non-parent cows, respectively, are another sometimes overlooked resource, as depicted in Table 2.

If a yearling bull's Milk EPD is equal to +24 lb., then by locating that EPD in the table and associating it with the percentile in the first column, the relative ranking to all non-parent bulls in the breed can be assessed. In this case, the bull's Milk EPD is in the top 25th percentile.

Taking this example a step further, it's

important to note the meaning of the Milk EPD. It is expressed in pounds of weaning weight, not pounds of milk. It refers to the prediction of how future calves out of daughters of this +24 Milk EPD sire are expected to weigh relative to calves from daughters of another sire. Calf weaning performance of future daughters as affected by these females' mothering ability is the target of the Milk EPD as a selection tool. If replacement females are not retained, then its application is not the emphasis.

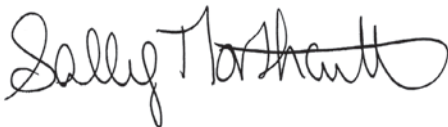
It is sometimes misunderstood that the top percentile is the ultimate level. With a trait such as maternal milk, the optimal level of maternal performance must be matched to the production environment. To learn more about this concept, see page 139 in this issue and visit the Angus Optimal Milk Module at www.angus.org/tools/optmilk/index.html.

Where are the EPD resources?

It is important to use the most up-to-date breed average and percentile tables, since these tables are updated biannually in conjunction with the National Cattle Evaluation (NCE) released each July and December by the Association. These tables are available in the printed *Sire Evaluation Report* or online at www.angussiresearch.com.

Also, the EPDs on the animals change as new performance records are reported to the Association. If a bull was purchased as a yearling two years ago, then his current EPD may not numerically match the EPD on his original registration certificate. The simplest resource for EPDs is to check online at www.angus.org/registeredangus/index.html.

Consider the various resources and educational materials that may be of help in using and understanding the available selection tools. Also, remember that any questions you may have on the subject can be answered by contacting the Association's Performance Programs staff or your Association regional manager.



E-MAIL: snorthcutt@angus.org

Editor's Note: "By the Numbers" is a column by Association performance programs staff to share insights with Angus members about data collection and interpretation, the National Cattle Evaluation (NCE), genetic selection, and relevant technology and industry issues. If you have questions or would like to suggest a topic for a future column, contact Sally Northcutt, director of genetic research, or Bill Bowman, director of performance programs, at 816-383-5100.