

# Where's He Rank?

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When you're shopping for a bull, looking at the performance data in a salebook can be overwhelming. After all, how do you know if a +40 weaning weight (WW) expected progeny difference

(EPD) is good or bad? OK, the next bull in the salebook has a +60 WW EPD. That's more; but, you know optimums are better than maximums. Is +60 more optimum?

Let's continue this hypothetical scenario. You know from reading the "How to read this report" article in the *Sire Evaluation Report* that the bull with the +60 WW EPD, if mated to the same set

of cows managed in the same conditions, should sire calves that, on average, weigh 20 lb. more at weaning than the bull with the +40 WW EPD. With 550- to 600-lb. calves bringing \$1.70 per pound, that's \$34 a calf. That sounds good. Why not look for a bull with a +80 WW EPD?

Remember the number of open cows you had at preg-check last fall? When you shipped them, those girls averaged

1,380 lb. and two of them were closing in on 1,500. Doc suggested your cows were outsizing your feed resources. It takes a lot of 20-lb.-heavier calves to make up for that one that wasn't born.

Doc suggested you watch mature size EPDs on the bulls from which you save replacements. Since non-parent bulls don't have an associated breed-average EPD or percentile ranking for mature weight, we

**Table 1: Spring 2013 breed average EPD and \$Values, Jan. 11, 2013**

	Production								Maternal					Carcass				\$Values				
	CED	BW	WW	YW	RADG	YH	SC	Doc	HP	CEM	Milk	MW	MH	SEN	CW	Marb	RE	Fat	\$W	\$F	\$G	\$B
Current Sires <sup>1</sup>	+6	+1.7	+46	+85	+15	+4	+57	+9	+8.0	+8	+23	+31	+4	-3.36	+25	+41	+32	+010	+26.97	+28.69	+25.73	+61.21
Main Sires	+6	+1.6	+48	+88	+15	+4	+60	+10	+7.9	+8	+23	+30	+3	-3.66	+25	+40	+33	+011	+29.24	+32.33	+24.93	+60.88
Supplemental Sires	+6	+1.5	+51	+93	+16	+4	+73	+10	+8.3	+8	+25	+32	+4	-9.83	+29	+44	+40	+015	+29.01	+36.50	+26.57	+66.88
Current Dams <sup>1</sup>	+4	+2.1	+42	+77	+14	+5	+44	+8	+8.3	+7	+21	+31	+4	+1.38	+21	+37	+24	+007	+24.94	+21.42	+24.47	+56.00
Non-Parent Bulls	+5	+1.8	+46	+84	+15	+4	+57	+10		+8	+23			-4.00	+25	+44	+37	+009	+26.45	+28.04	+27.49	+62.93
Non-Parent Cows	+5	+1.8	+45	+83	+15	+4	+46	+9		+8	+23			-3.49	+24	+49	+42	+008	+26.20	+27.42	+28.27	+63.41

<sup>1</sup>At least one calf recorded in herd book within the past two years.

**Table 2: Spring 2013 EPD and \$Value percentile breakdowns for non-parent bulls, Jan. 11, 2013**

TOP PCT	Production								Maternal			Carcass				\$Values						
	CED	BW	WW	YW	RADG	YH	SC	Doc	CEM	Milk	SEN	CW	Marb	RE	Fat	\$W	\$F	\$G	\$QG	\$YG	\$B	
1%	+15	-2.3	+65	+116	+28	+1.1	+1.91	+30	+14	+35	+27.75	+54	+1.14	+1.04	-0.40	+39.46	+59.23	+50.83	+40.87	+14.27	+94.24	
2%	+13	-1.7	+63	+112	+26	+1.0	+1.72	+28	+14	+33	+22.70	+50	+1.04	+95	-0.34	+37.65	+55.30	+48.78	+39.19	+13.27	+91.04	
3%	+13	-1.4	+62	+110	+25	+1.0	+1.60	+27	+13	+33	+19.73	+48	+98	+89	-0.30	+36.59	+52.84	+47.28	+38.04	+12.65	+88.83	
4%	+12	-1.1	+61	+108	+24	+9	+1.52	+26	+13	+32	+17.62	+46	+93	+86	-0.28	+35.79	+51.14	+46.02	+37.26	+12.19	+87.22	
5%	+12	-.9	+60	+107	+23	+9	+1.46	+25	+12	+31	+15.94	+44	+89	+82	-0.25	+35.14	+49.79	+44.87	+36.27	+11.77	+85.92	
10%	+11	-.3	+57	+102	+22	+8	+1.25	+22	+11	+29	+10.82	+39	+76	+72	-0.18	+33.14	+44.95	+40.79	+33.45	+10.27	+81.20	
15%	+10	+1	+55	+99	+20	+7	+1.11	+20	+11	+28	+7.51	+36	+69	+65	-0.13	+31.87	+41.78	+38.11	+31.33	+9.29	+77.98	
20%	+9	+5	+53	+96	+19	+7	+1.01	+18	+10	+27	+5.19	+33	+63	+59	-0.09	+30.87	+39.25	+35.96	+29.86	+8.37	+75.28	
25%	+8	+7	+52	+94	+19	+6	+92	+17	+10	+26	+3.12	+31	+58	+55	-0.05	+30.04	+37.07	+34.13	+28.65	+7.64	+73.00	
30%	+8	+1.0	+51	+92	+18	+6	+84	+15	+9	+25	+1.46	+30	+54	+51	-0.02	+29.28	+35.13	+32.50	+27.35	+7.02	+70.92	
35%	+7	+1.2	+50	+90	+17	+5	+77	+14	+9	+25	-.09	+28	+50	+47	+0.01	+28.58	+33.35	+30.96	+26.02	+6.33	+69.00	
40%	+7	+1.4	+48	+88	+16	+5	+70	+13	+9	+24	-1.55	+27	+47	+43	+0.04	+27.91	+31.70	+29.58	+24.92	+5.76	+67.18	
45%	+6	+1.6	+47	+86	+16	+4	+63	+12	+8	+23	-3.00	+25	+44	+39	+0.06	+27.26	+30.07	+28.30	+24.21	+5.15	+65.39	
50%	+6	+1.8	+46	+85	+15	+4	+57	+11	+8	+23	-4.49	+24	+41	+36	+0.09	+26.62	+28.45	+27.06	+22.99	+4.61	+63.60	
55%	+5	+2.0	+45	+83	+15	+4	+50	+10	+8	+22	-5.84	+23	+39	+33	+0.12	+25.97	+26.77	+25.79	+21.84	+4.08	+61.80	
60%	+5	+2.2	+44	+81	+14	+3	+43	+9	+7	+22	-7.18	+22	+36	+29	+0.14	+25.29	+25.17	+24.56	+21.16	+3.44	+60.02	
65%	+4	+2.4	+43	+79	+13	+3	+36	+7	+7	+21	-8.57	+20	+33	+26	+0.17	+24.58	+23.40	+23.28	+19.87	+2.84	+58.09	
70%	+3	+2.7	+42	+77	+13	+2	+29	+6	+6	+20	-10.07	+19	+30	+22	+0.20	+23.82	+21.50	+21.97	+18.68	+2.18	+56.06	
75%	+3	+2.9	+40	+75	+12	+2	+22	+4	+6	+19	-11.74	+18	+27	+19	+0.23	+22.99	+19.44	+20.55	+17.83	+1.54	+53.82	
80%	+2	+3.2	+39	+72	+11	+1	+13	+2	+5	+18	-13.58	+16	+24	+15	+0.27	+22.05	+17.22	+19.02	+16.52	+69	+51.33	
85%	+1	+3.5	+37	+69	+10	+1	+03	+0	+5	+17	-15.81	+14	+20	+10	+0.32	+20.96	+14.43	+17.22	+14.69	-.30	+48.25	
90%	+0	+3.9	+34	+65	+09	+0	-.10	-.2	+4	+16	-18.56	+11	+16	+04	+0.37	+19.51	+10.82	+15.04	+12.88	-1.56	+44.06	
95%	-.2	+4.5	+30	+58	+07	-.2	-.29	-.7	+2	+14	-22.72	+7	+09	-.04	+0.45	+17.25	+5.17	+11.86	+10.05	-3.53	+37.61	
<b>Total</b>																						
<b>Animals</b>	<b>127,462</b>	<b>133,374</b>	<b>133,374</b>	<b>133,374</b>	<b>9,719</b>	<b>27,062</b>	<b>44,636</b>	<b>15,288</b>	<b>127,462</b>	<b>133,374</b>	<b>139,744</b>	<b>61,238</b>	<b>61,238</b>	<b>61,238</b>	<b>61,238</b>	<b>139,744</b>	<b>139,744</b>	<b>98,298</b>	<b>98,298</b>	<b>98,298</b>	<b>98,298</b>	
<b>Avg. EPD</b>	<b>+5</b>	<b>+1.8</b>	<b>+46</b>	<b>+84</b>	<b>+15</b>	<b>+4</b>	<b>+57</b>	<b>+10</b>	<b>+8</b>	<b>+23</b>	<b>-4.00</b>	<b>+25</b>	<b>+44</b>	<b>+37</b>	<b>+0.09</b>	<b>+26.45</b>	<b>+28.04</b>	<b>+27.49</b>	<b>+23.05</b>	<b>+4.44</b>	<b>+62.93</b>	

**Table 3: Accuracy and associated possible change**

Accuracy	Production								Maternal					Carcass			
	CED	BW	WW	YW	RADG	YH	SC	Doc	HP	CEM	Milk	MW	MH	CW	Marb	RE	Fat
.05	7.8	2.49	11.0	16.2	.082	.41	.70	14.7	6.0	9.3	9.2	38	.62	18	.28	.31	.041
.10	7.2	2.36	10.4	15.3	.078	.39	.66	13.9	5.7	8.8	8.7	36	.58	17	.26	.29	.039
.15	6.7	2.23	9.9	14.5	.074	.37	.62	13.2	5.4	8.3	8.2	34	.55	16	.25	.27	.037
.20	6.2	2.10	9.3	13.6	.069	.35	.59	12.4	5.0	7.8	7.8	32	.52	15	.24	.26	.035
.25	5.8	1.97	8.7	12.8	.065	.32	.55	11.7	4.7	7.3	7.3	30	.49	14	.22	.24	.033
.30	5.4	1.84	8.1	11.9	.061	.30	.51	10.9	4.4	6.8	6.8	28	.45	13	.21	.23	.030
.35	5.1	1.71	7.5	11.1	.056	.28	.48	10.2	4.1	6.3	6.3	26	.42	12	.19	.21	.028
.40	4.7	1.58	7.0	10.2	.052	.26	.44	9.4	3.7	5.8	5.8	24	.39	12	.18	.19	.026
.45	4.3	1.44	6.4	9.4	.048	.24	.40	8.6	3.4	5.4	5.3	22	.36	11	.16	.18	.024
.50	3.9	1.31	5.8	8.5	.043	.22	.37	7.9	3.1	4.9	4.9	20	.32	10	.15	.16	.022
.55	3.5	1.18	5.2	7.7	.039	.19	.33	7.1	2.8	4.4	4.4	18	.29	9	.13	.15	.020
.60	3.2	1.05	4.6	6.8	.035	.17	.29	6.4	2.5	3.9	3.9	16	.26	8	.12	.13	.017
.65	2.7	.92	4.1	6.0	.030	.15	.26	5.6	2.2	3.4	3.4	14	.23	7	.10	.11	.015
.70	2.4	.79	3.5	5.1	.026	.13	.22	4.8	1.9	2.9	2.9	12	.19	6	.09	.10	.013
.75	2.0	.66	2.9	4.3	.022	.11	.18	4.1	1.6	2.4	2.4	10	.16	5	.07	.08	.011
.80	1.6	.53	2.3	3.4	.017	.09	.15	3.3	1.3	2.0	1.9	8	.13	4	.06	.06	.009
.85	1.2	.39	1.7	2.6	.013	.06	.11	2.6	1.0	1.5	1.5	6	.10	3	.04	.05	.007
.90	.8	.26	1.2	1.7	.009	.04	.07	1.8	.7	1.0	1.0	4	.06	2	.03	.03	.004
.95	.4	.13	.6	.9	.004	.02	.04	1.1	.4	.5	.5	2	.03	1	.01	.02	.002

can look at the yearling weight (YW) EPD as an indicator. Our +40 WW bull has yearling weight (YW) EPD of +83; the +60 WW bull has a YW EPD of +88. So is 6 lb. more YW bad?

### Putting the numbers in context

Evaluating the two bulls in our hypothetical situation in light of breed-average EPDs and dollar values (\$Values) and percentile rankings can give us perspective. Breed average is pretty straightforward (see Table 1). Percentile rankings (see Table 2) provide a gauge of where an animal's genetics rank in the breed for a specified group of animals (current sires, current dams, non-parent bulls and non-parent cows).

Traditionally, the American Angus Association updates these tables twice a year, in July and December, as it publishes the biannual *Sire Evaluation Report*. This year, the Association was able to incorporate a recalibration of values for the Pfizer HD50K test with its Jan. 11, 2013, weekly national cattle evaluation (NCE). The economic assumptions (rolling three-year averages) used to calculate \$Values were also updated. As a result, the breed average and percentile tables for EPDs and \$Values were recalculated to reflect the Jan. 11 NCE. Tables 1 and 2 are reflective of the update, and the updated tables can be found online at [www.angussiresearch.com](http://www.angussiresearch.com).

By comparing our bulls to Table 1, we can see that the +40 WW is below average for non-parent bulls, while the +60 would be considerably greater. In fact, +60 WW would put that sire prospect in the top 5% (see Table 2). Good luck finding an +80 WW.

The +83 YW EPD for our +40 WW bull falls about the 55th percentile for non-parent bulls, so below average. Our +60 WW bull's +88 YW EPD falls about the 40th percentile — offering more growth potential than the average, but certainly not to the extreme.

### EPDs change with added data

Another overlooked resource is the possible change table (see Table 3, available online at [www.angus.org/Nce/Accuracy.aspx](http://www.angus.org/Nce/Accuracy.aspx)). This table was designed to help determine the possible change for each trait at various accuracy levels. Expressed as “+” or “-” units of the EPD, the possible change provides a measure of expected change or potential deviation between the EPD and the “true” progeny difference (which we never know). If accuracy increases, then the window of expected change narrows.

This confidence range depends on the standard error of prediction for an EPD. For a given accuracy, about two-thirds of the time an animal should have a “true” progeny difference within the range of the EPD, plus or minus the possible change value.

For example, if the +60 WW EPD in our example has an accuracy value of 0.15, we would expect the bull's “true” progeny value for weaning weight to fall within  $\pm 9.9$  of his current WW EPD

(between +50.1 and +69.9) about two-thirds of the time.

If the +40 WW EPD were at that same accuracy level, his “true” EPD would be expected to fall within  $\pm 9.9$  of his WW EPD — between 30.1 and 49.9 — two-thirds of the time.

Increasing accuracy by adding information (pedigree, performance, genomic and/or progeny data) can lessen

the possible change value, allowing you to have greater confidence in the EPD.

### Each case is unique

In the end, which bull is the best choice for your herd depends on a lot more than two EPDs. Structural soundness, docility, ability to acclimate to your environment and feed resources, along with a host of other EPDs and \$Values need to be

considered. However, noting where a bull falls in relation to breed average and percentile rank across a multitude of traits can provide perspective on where that set of EPDs is likely to move the genetics in your herd. Paying attention to the possible change values can help you determine how much confidence you want to place in the difference between two bull's EPDs.

