

# Understanding Expected Progeny Differences (EPD's)

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April 29, 2014



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# What Are Your Production Goals?

- How quickly do you need to get there?
- What will you sacrifice, or NOT sacrifice to get there?
- Avoid “Train Wrecks”!
  - Don’t lose overall performance by focusing on one goal



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# EPD by Definition

- The difference in performance to be expected from progeny of a particular sire compared to the expected progeny of the average bull in the same breed



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# Why Use EPD's?

- “EPD's are the most current and accurate means to select cattle for the traits for which they are calculated. It has been suggested that selection based upon EPD's is **five** to **nine** times more accurate than selection based upon performance indexes and ratios...”

Joel Cowley, Extension Beef Specialist, Department of Animal Science,  
Michigan State University



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# How are EPD's Determined?

- EPD's are actually numbers that are determined by using complex statistical equations
- Information Includes:
  - Performance data on the animal itself
  - Information on its ancestors such as the sire, dam, grandsire, great grandsire, maternal grandsire, etc.
  - EPD's include information on relatives (brothers & sisters) and



# How are EPD's Determined? (cont'd)

- Information on progeny (including individuals that are parents themselves)
- EPD performance records are adjusted for several factors to allow fair comparisons.
  - Age, genetic merit of mates, climate, nutrition, geographical location and more effects are factored in.



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# How can this be possible?

- Effects can be estimated due to widespread use of artificial insemination
- The same bull can be used in many herds with differing environments creating a genetic link for evaluation of the performance data across herds



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# What Do EPD's Do?

- EPD's provide estimates of the genetic value of an animal as a parent.
- More Specifically – the EPD's between two individuals of the same breed predict differences in future offspring.



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# How do you use EPD's?

- Comparison
  - Using EPD's a producer can estimate how the future progeny of a bull will compare to other bulls within a breed.
  - EPD's are most useful to compare individuals for a trait of interest.
  - EPD's can be compared to benchmarks in the breed to gain better understanding.



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# Breed Benchmark Comparison

	CE	BW	WW	YW	CEM	Milk	MWW
Top 10%	10.3	-0.9	41.8	72.7	5.6	10	27.3
Top 25%	8.5	0.1	37.3	65.3	4	7.5	24.2
Top 50%	6.5	1.3	32.2	57	2.3	4.6	20.7



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# Categories & Traits Recorded

- Production
  - Calving Ease Direct
  - Birth Weight
  - Weaning Weight
  - Yearling Weight
  - Yearling Height
  - Scrotal Circumference
- Maternal
  - Calving Ease Maternal
  - Maternal Milk
  - Mature Weight
  - Mature Height
  - Cow Energy Value



# Categories & Traits Recorded (cont'd)

- Carcass
  - Carcass Weight
  - Marbling
  - Ribeye Area
  - Fat Thickness
- \$ Values
  - Weaned Calf Value
  - Feedlot Values
  - Grid Values
  - Beef Value



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# Example #1

	Calving Ease CE	Birth Wt. BW	Weaning Wt. WW	Yearling Wt. YW	Maternal Milk MM
<b>Bull 1</b>	+3	+5.2	+25.4	+45.3	+10.2
<b>Bull 2</b>	+6	+1.2	+27.3	+35.6	-3.2
<b>Bull 3</b>	+4	+2.3	+18.3	+35.1	+2.3

Producer A – Minimize calving difficulty in first calf heifers, while maintaining growth to weaning

Producer B – Increase milking ability in replacement females and increase post weaning weight in all calves



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# Example #2

Dam	Sire	CE	BW	WW	YW	CEM	Milk	MWW
BLACKMAN	DREAM ON	6.65	1.05	30.4	54.7	4.8	3.4	18.6
BLACKMAN	BRANDO	7.2	0.45	25.1	46.8	6.5	7.6	20.2
BLACKMAN	MAJESTIC	5.7	1.2	31.9	68	4.3	5.7	21.7
DOZER	DREAM ON	10.7	0.45	31.5	56.4	5.4	2.2	18
DOZER	BRANDO	11.3	-0.15	26.3	48.5	7	6.4	19.6
DOZER	MAJESTIC	9.75	0.6	33	69.7	4.9	4.5	21.1
FENTON	DREAM ON	11.7	0.2	37.3	64.9	6	3.15	21.8
FENTON	BRANDO	12.2	-0.4	32.1	57.0	7.6	7.35	23.4
FENTON	MAJESTIC	10.7	0.35	38.8	78.1	5.5	5.45	24.9
<b>Top 50%</b>	<b>of the breed</b>	<b>6.5</b>	<b>1.3</b>	<b>32.2</b>	<b>57</b>	<b>2.3</b>	<b>4.6</b>	<b>20.7</b>