

GE-EPDs Powered by HD 50K



Pfizer Animal Health
Animal Genetics

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Outline

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- AGI and HD 50K for Angus
 - New Features
- Genomic-Enhanced Expected Progeny Differences (GE-EPDs) Powered by HD 50K
 - Impact on EPD and Accuracy Values
 - Selection and Mating Opportunities

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HD 50K for Angus – New Features

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- SNP parentage automatically included as feature of HD 50K for Angus at no additional cost
 - Authenticated parentage reduces liability
 - Favorably impacts EPDs, index values and accuracy
 - Ensures better management of inbreeding and mating decisions
 - Important element for managing genetic abnormalities
 - Enables downstream parentage verification of offspring
- SNP parentage also available as a stand-alone test



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AAA EPD/Pedigree Lookup - Public Site

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AMERICAN ANGUS ASSOCIATION™ - THE BUSINESS BREED
 5201 Frederick Avenue • St. Joseph, MO 64506 • (816) 383-5100 • Fax: (816) 233-9033 • Email: web@aaapub.org
System Start 6228 Reg: AAA 15354674 Bull

Parentage – HD 50K

Traits – HD 50K

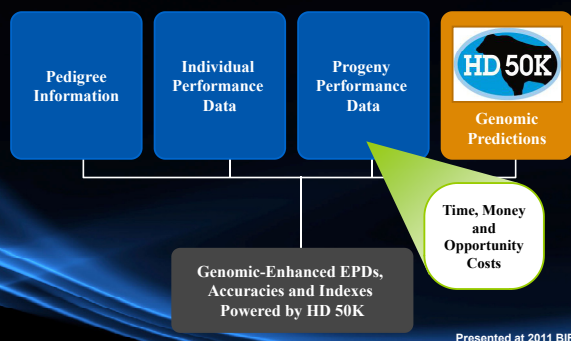
- Calving Ease Direct
- Birth Weight
- Weaning Weight
- Average Daily Gain
- Yearling Weight
- Dry Matter Intake
- Residual Feed Intake
- Calving Ease Maternal
- Milking Ability
- Carcass Weight
- Fat Thickness
- Ribeye Area
- Marbling Score
- Tenderness

Production										Maternal									
EPD	Acc	EPD	Acc	EPD	Acc	EPD	Acc	EPD	Acc	EPD	Acc	EPD	Acc	EPD	Acc				
84	92	53	88	33	81	52	87	14	79	100	95	100	95	100	95				

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Sources of information for EPDs

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Genomic-Enhanced Expected Progeny Differences (GE-EPDs) and Accuracy Values

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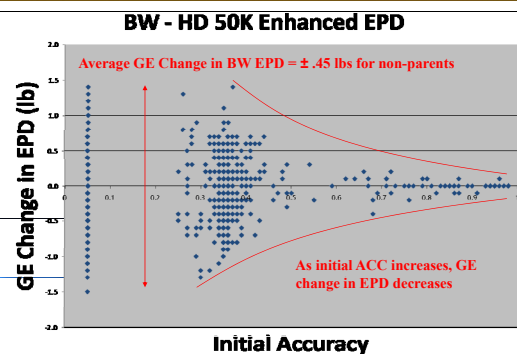
A before and after look at GE-EPDs powered by HD 50K

Approximately 475 animals of varying initial accuracy tested by customers

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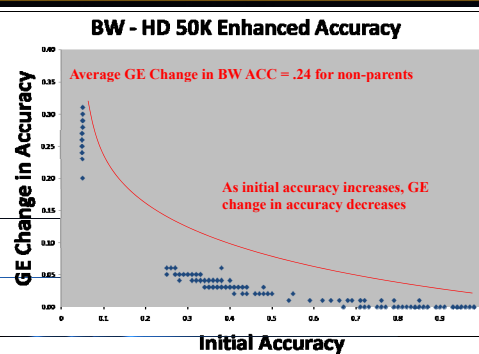
Change in Birth Weight (BW) EPD with HD 50K

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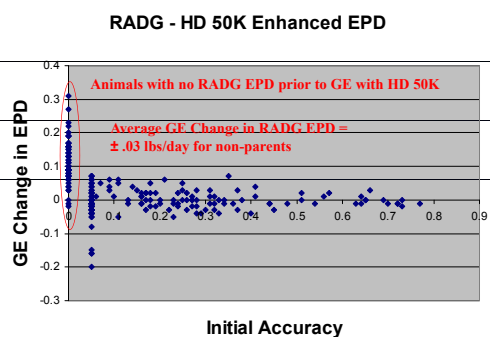
Change in BW Accuracy with HD 50K

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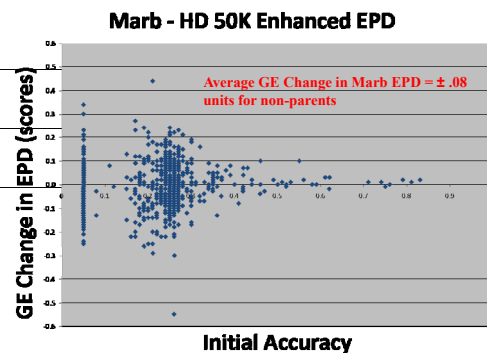
Change in RADG EPD with HD 50K

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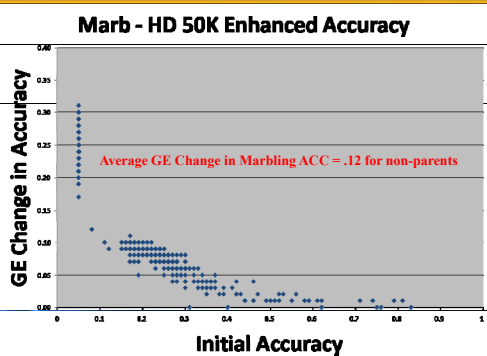
Change in Marb EPD with HD 50K

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Change in Marbling ACC with HD 50K

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Average Change in EPD and ACC for Angus Animals with $\leq .30$ initial ACC

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Trait	Average Change in EPD with HD 50K	Average Change in ACC with HD 50K
Birth Weight	$\pm .45$ lb	.24
Weaning Weight	± 2.2 lbs	.14
Yearling Weight	± 3.1 lbs	.17
Residual ADG	$\pm .03$ lbs/day	.30
Milk	± 1.2 lbs	.08
Carcass Weight	± 4.1 lbs	.07
Marbling	$\pm .08$ units	.12
Ribeye Area	$\pm .10$ in ²	.10
Fat	$\pm .01$ in	.13

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GE-EPDs and Approximate Progeny Equivalents



	AGI Heritability	AGI HD 50K Correlation	Avg. 50k Change in ACC - from .05 ¹	Approximate Progeny Equivalents
BW	0.42	0.51	0.25	8
WW	0.20	0.52	0.23	16
YW ²	0.20	0.64	0.27	20
RADG ³	0.31	0.65	0.27	13
Milk	0.14	0.32	0.15	12
CW	0.31	0.48	0.17	7
Marb ⁴	0.26	0.57	0.24	12
RE ⁴	0.32	0.60	0.23	9
FAT ⁴	0.26	0.56	0.23	11

¹These changes are less for higher initial accuracy values

²Post-weaning ADG

³Dry matter intake

⁴Carcass progeny, not scanned progeny

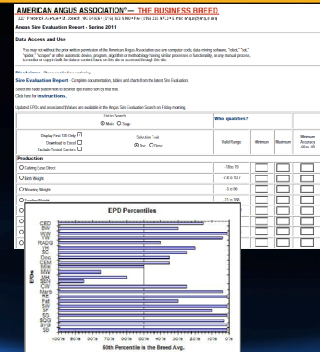
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Methods of Multiple-Trait Selection



Independent Culling Levels

- Minimum standards for traits undergoing multiple-trait selection
- Animals failing to meet any one standard are rejected regardless of merit in other traits



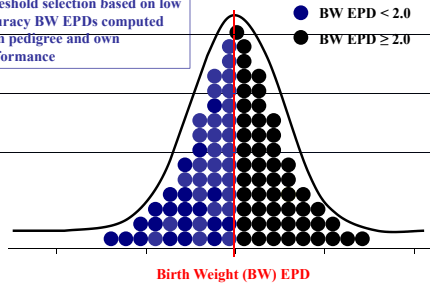
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Independent Culling Levels

– Impact of GE-EPDs Powered by HD 50K



Threshold selection based on low accuracy BW EPDs computed from pedigree and own performance



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Independent Culling Levels

– Impact of GE-EPDs Powered by HD 50K



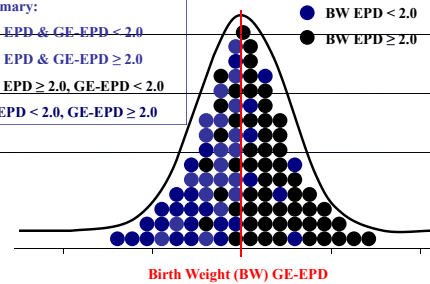
GE-EPDs – Re-ranking Summary:

39% EPD & GE-EPD < 2.0

42% EPD & GE-EPD ≥ 2.0

11% EPD ≥ 2.0, GE-EPD < 2.0

7% EPD < 2.0, GE-EPD ≥ 2.0



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Methods of Multiple-Trait Selection



Economic Selection Indexes

- Predict aggregate breeding value in units of dollars – simplify selection
- Economic weights applied to each trait included in the breeding objective
- Accuracy not included

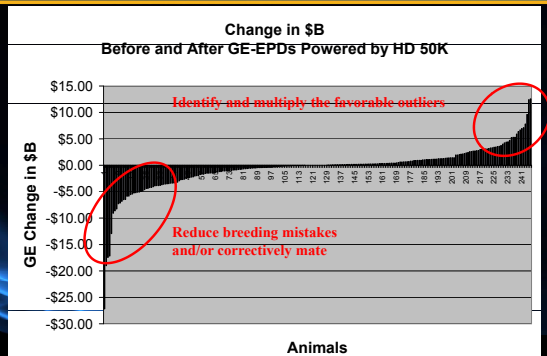


\$ Values					
\$W	\$F	\$G	\$QG	\$YG	\$B
+36.20	+42.07	+44.25	+31.94	+12.31	+73.94

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Selection Index - \$B

– Impact of GE-EPDs Powered by HD 50K



Lead Today with 50K for Angus

GE-EPDs and indexes powered by HD 50K enable more dependable decisions

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