

From Phenotypes to EPDs ...

EPD Calculation in Cowboy Language



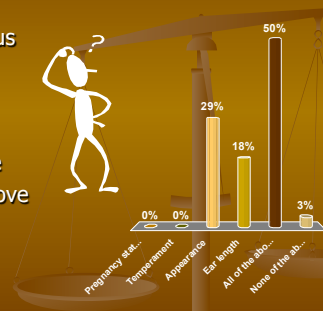
Understanding
the Genetic Model



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Which of these is considered a phenotype?

1. Pregnancy status
2. Temperament
3. Appearance
4. Ear length
5. All of the above
6. None of the above



What is a Phenotype?



Phenotype = Anything We Can Measure

Breaking Down Phenotype ...

Introducing the Genetic Model

Phenotype = Avg + Breeding Value + Environment
EPD = $\frac{1}{2}$ Breeding Value

ID	WW	Avg	BV	Env
1)	850	= 725 +	10	+ 115
2)	720	= 725 -	5	+ 0
3)	600	= 725 +	25	- 150
...	...	...	...	...
1,000,000)	680	= 725 +	20	- 65



The Genetic Model ...

Breaking Down Environment

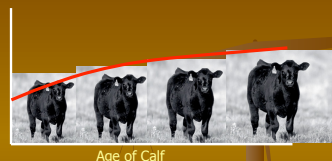
Phenotype = Avg + Breeding Value + Environment

Environment = Age

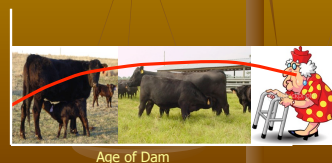
Environmental Factors ...

Age

Weaning
Weight



Weaning
Weight



The Genetic Model ... Breaking Down Environment

Phenotype = Avg + Breeding Value + Environment

Environment = Age +
Heterosis

Environmental Factors ... Heterosis

Weaning
Weight



Heterozygosity of calf

Weaning
Weight



Heterozygosity of dam

The Genetic Model ... Breaking Down Environment

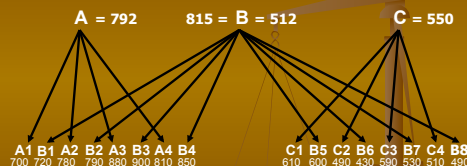
Phenotype = Avg + Breeding Value + Environment

Environment = Age +
Heterosis +
Contemporary Group

Environmental Factors ... Contemporary Group



Charles Henderson

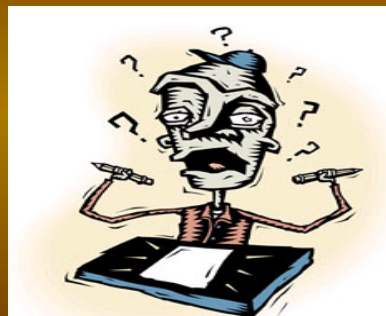


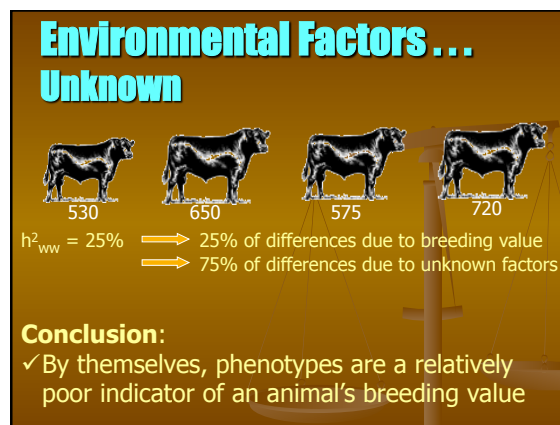
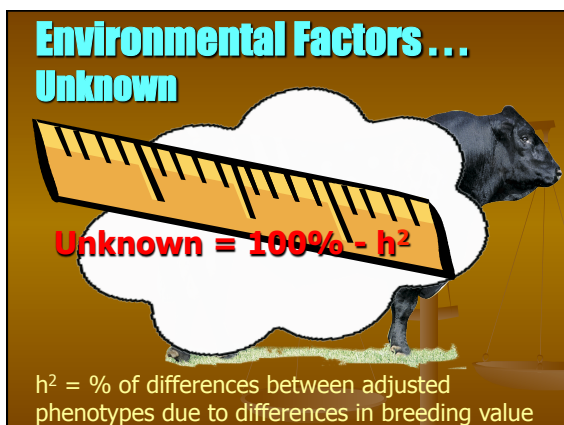
The Genetic Model ... Breaking Down Environment

Phenotype = Avg + Breeding Value + Environment

Environment = Age +
Heterosis +
Contemporary Group +
Unknown

Environmental Factors ... Unknown







**The Genetic Model ...
Calculating EPDs**

Phenotype = Avg + Breeding Value + Environment

Expanding environmental effects

Phenotype = Avg + Breeding Value + Age + Heterosis + Contemporary Group + Unknown

Rearrange to solve for breeding value

Breeding Value = Phenotype - Avg - Age - Heterosis - Contemporary Group - Unknown

