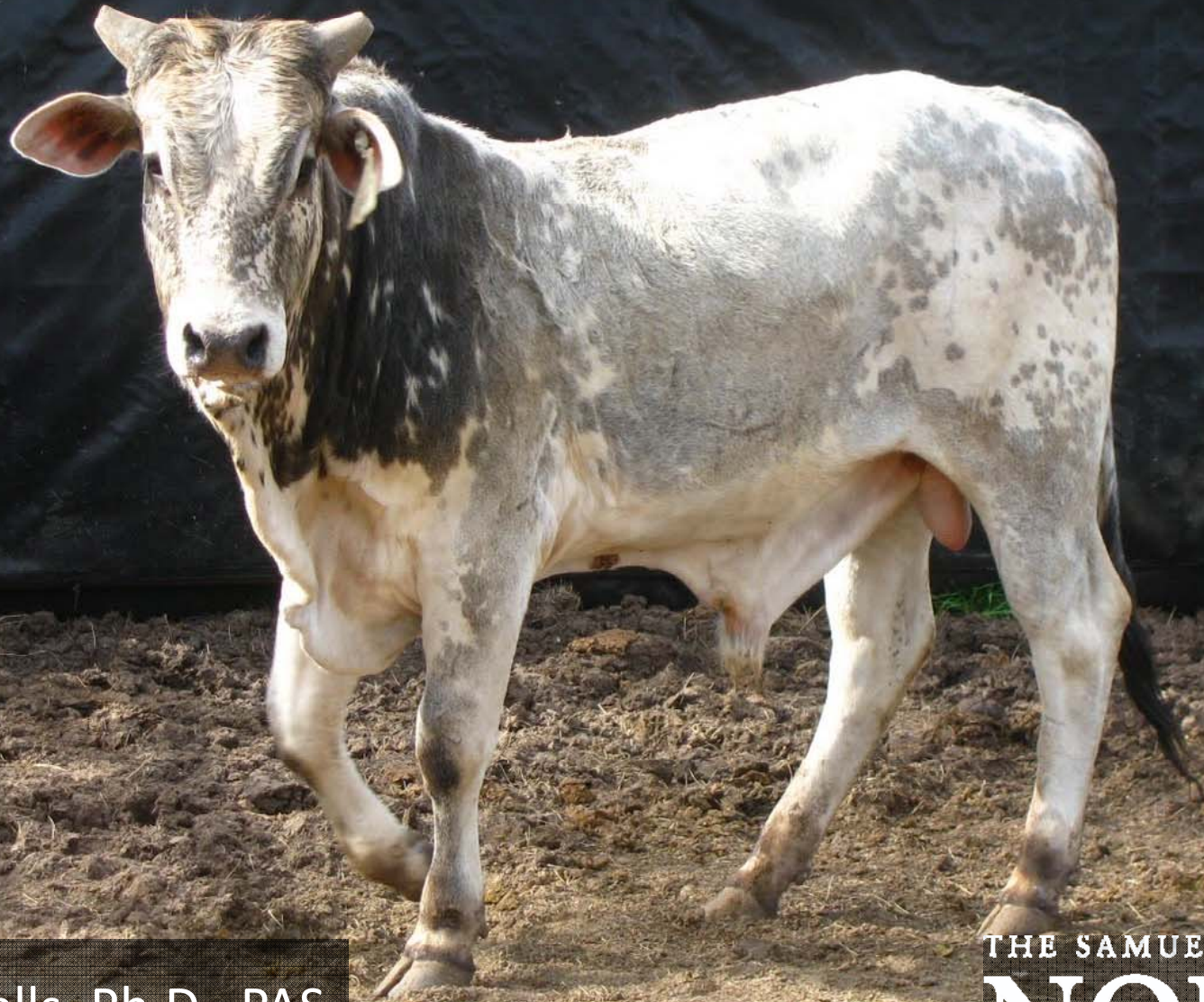


Selecting the Right Replacement



Robert S. Wells, Ph.D., PAS
Livestock Consultant

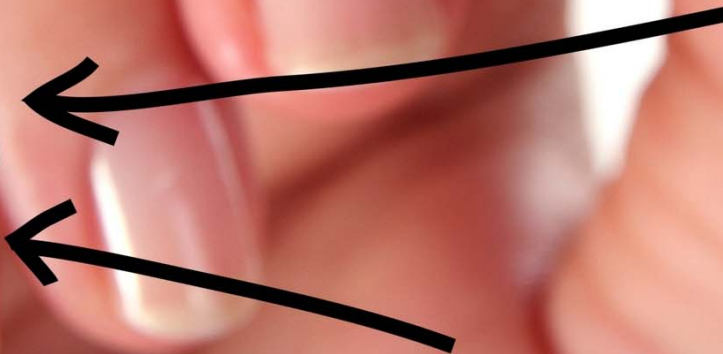
THE SAMUEL ROBERTS
NOBLE
FOUNDATION

Develop a Plan



Start with the End in sight.

Goal



When are you going to market the cattle?



Sell at Weaning...







Replacement Heifers



A photograph of two men in cowboy hats standing in a cattle pen. The man on the left is wearing a tan jacket and is looking at a clipboard. The man on the right is wearing a dark jacket and is looking away. They are standing behind a metal fence. In the background, there are more pens and a cloudy sky.

- **What Breeds Should you consider?**

- Types

- Heterosis

- Complementarity effects

- Marketing goals

- **What is the Right Cow Type?**

- **What is the Right Bull?**

- **Where to buy cattle?**

2 Subspecies of Cattle

- ***Bos taurus***
 - British breeds (Angus, Hereford)
 - Continental breeds (Charolais, Simmental, Limousin, Gelbvieh, etc.)
- ***Bos indicus* (Zebu, humped cattle)**
 - Brahman
 - Nelore
 - Gir, etc.

Pure Breeds

Angus (British)

Reputation: Carcass and Maternal



Hereford (British)

Reputation: Maternal, easy fleshing, longevity

Agriculturerroud.com



Simmental (Continental)



Reputation: Maternal and growth

Simmental (Continental)



Gelbvieh (Continental)

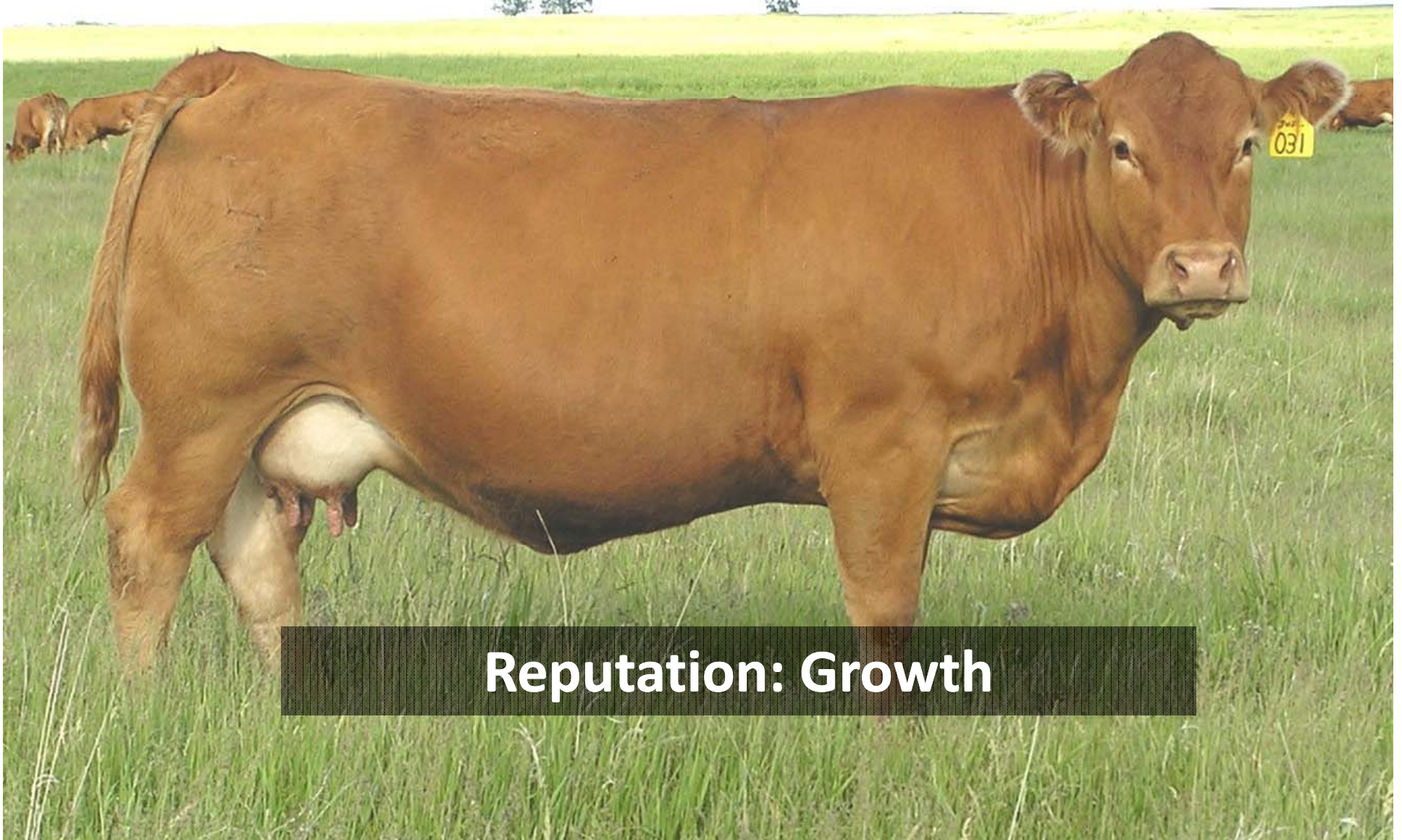


Reputation: Maternal and growth

Gelbvieh (Continental)



Limousin (Continental)



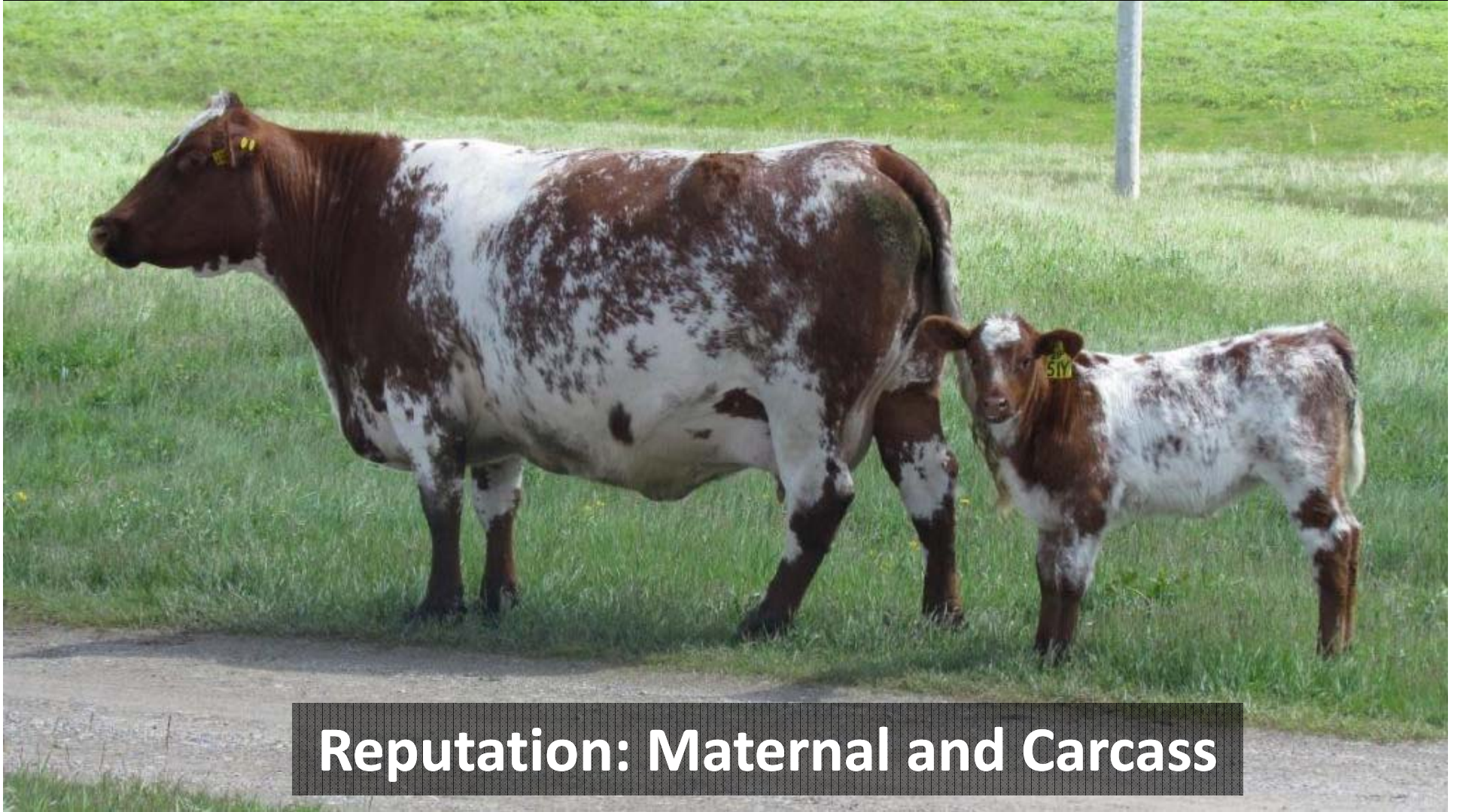
Reputation: Growth

Charolais (Continental)



Reputation: Growth

Shorthorn



Reputation: Maternal and Carcass

Longhorn



Reputation: Hardiness, Lean beef

Corriente



Reputation: Hardiness, roping stock

Composites *or* Cross Breeds

Black Baldy



Super Baldy



Commercial Angus



Ultra Black



Balancer



LimFlex



Morris

Hybrid vigor = Heterosis

Hybrid Vigor

- The increase/decrease in a particular trait when compared to the average of that trait for each parent.
- Maternal hybrid vigor increases calving rate (6%), weaning rate (8%), weaning weight (6%), and birth weight (2%).

Maximum Heterosis

F1 x F1 Cross

Parents are from 4 unrelated breeds



LimFlex Bull:
Angus x Limousin



Tiger Stripe Cow:
Brahman X Hereford

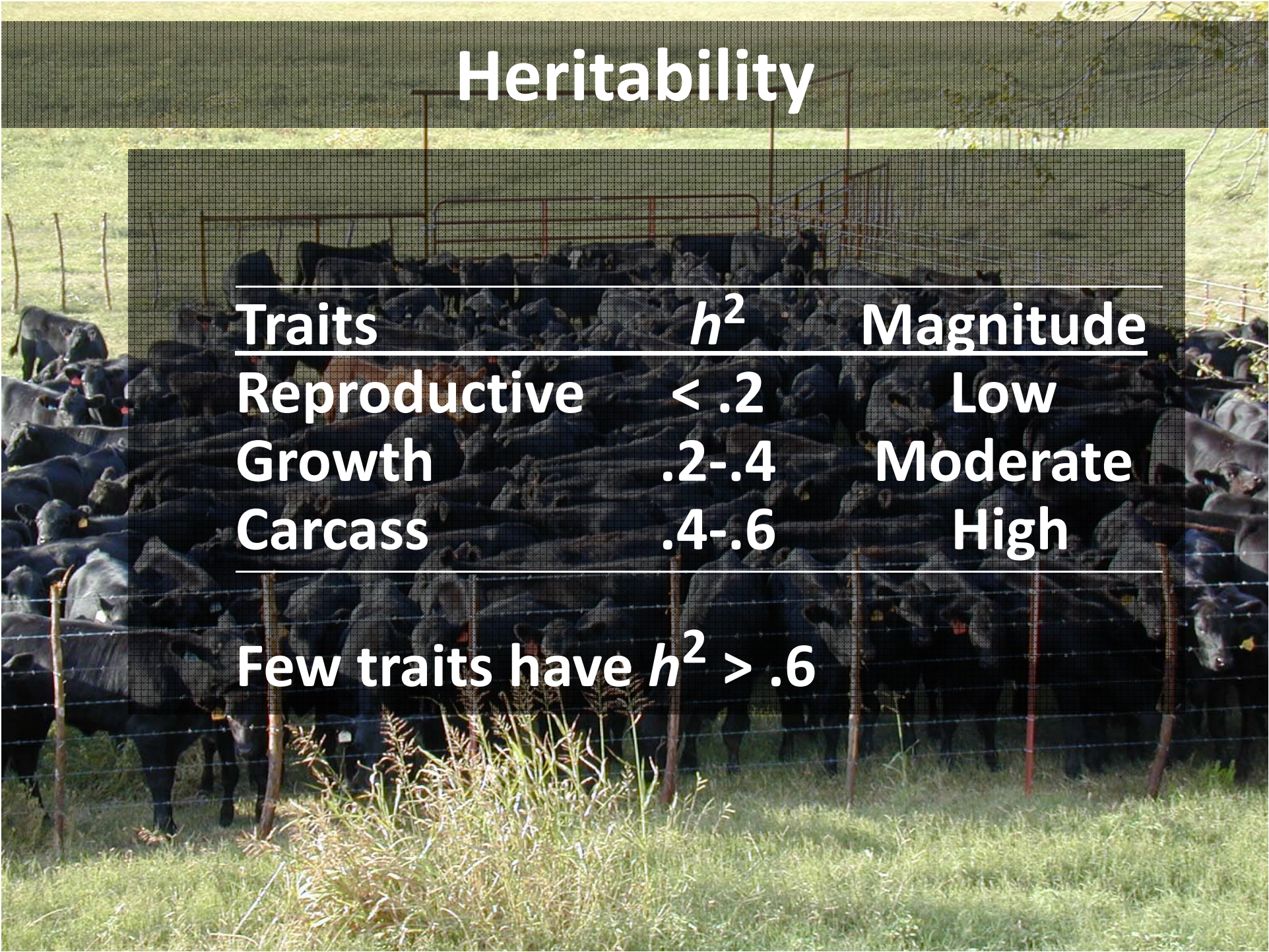
**Decreases Uniformity,
especially in multiple
bull herds.**

$$(2+2)/2 = 3.5$$

Levels of Heterosis

Trait	Individual Heterosis, %	Maternal Heterosis, %	Total Heterosis, %
Weaning rate	0	8	8
Age @ Puberty	-3		-3
Birth weight	4	2	6
Weaning weight	5	6	11
Yearling weight	4		4
Cow Condition	-4		-4
Carcass weight	3		3
USDA quality grade	2		2
Rib eye area	2		2
Feed conversion, (F:G)	-2		-2
Days on feed	-4		-4
Calf WW/exposed cow			18
Cow longevity			38
Cow lifetime productivity			25

Heritability



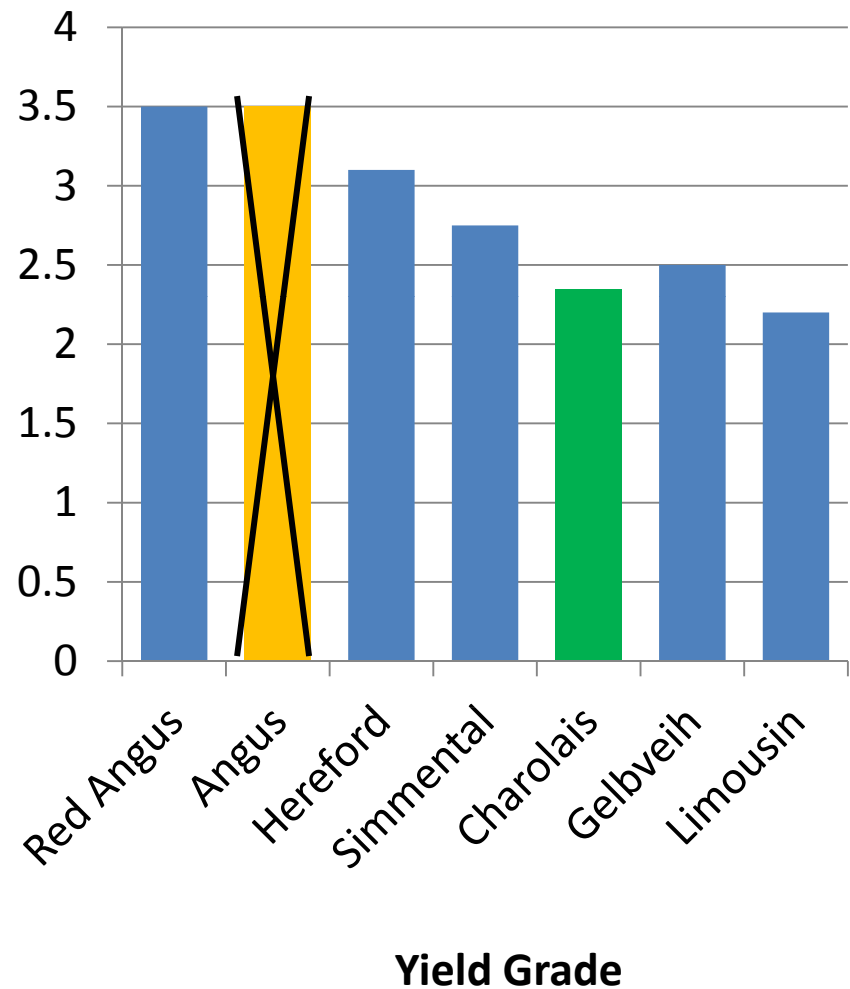
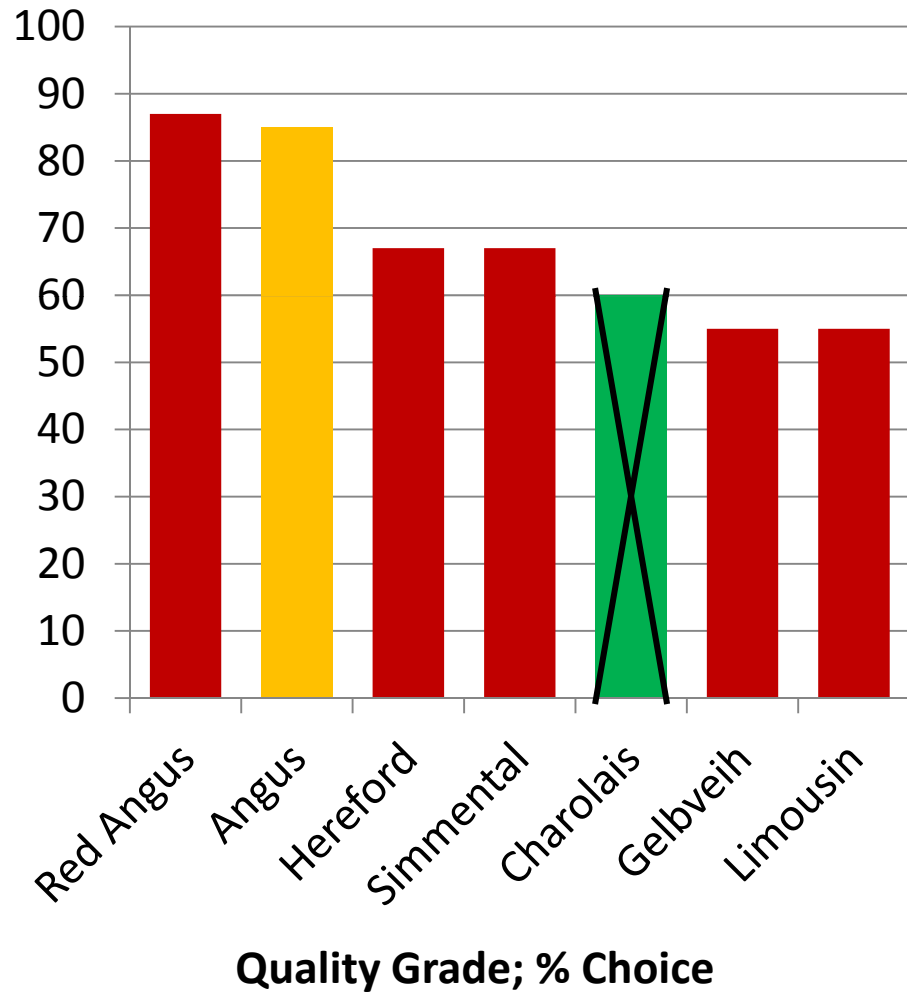
<u>Traits</u>	h^2	<u>Magnitude</u>
Reproductive	$< .2$	Low
Growth	$.2-.4$	Moderate
Carcass	$.4-.6$	High

Few traits have $h^2 > .6$

Breed Complementarity



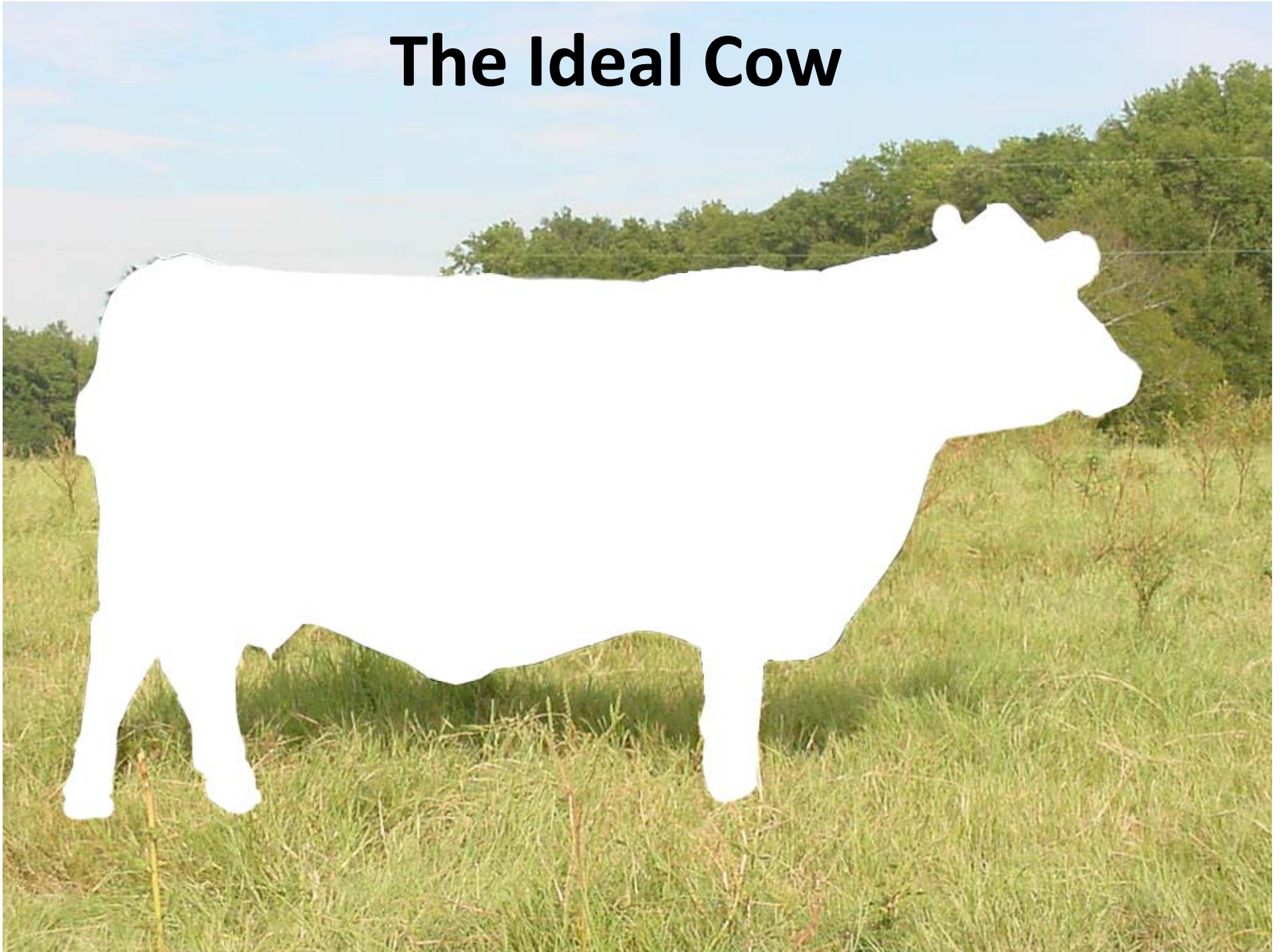
Breed Complementarity



Breed Complementarity

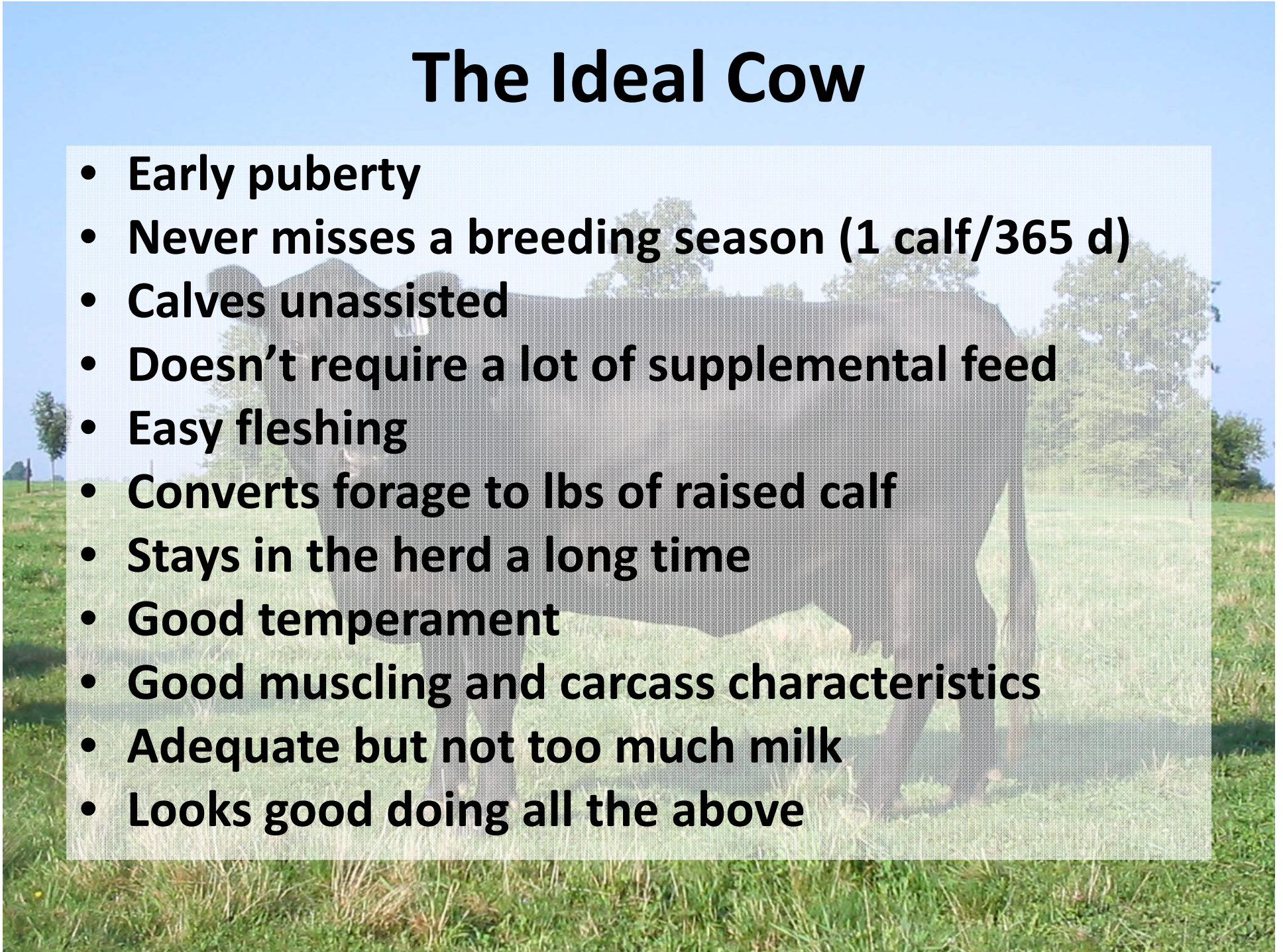


The Ideal Cow

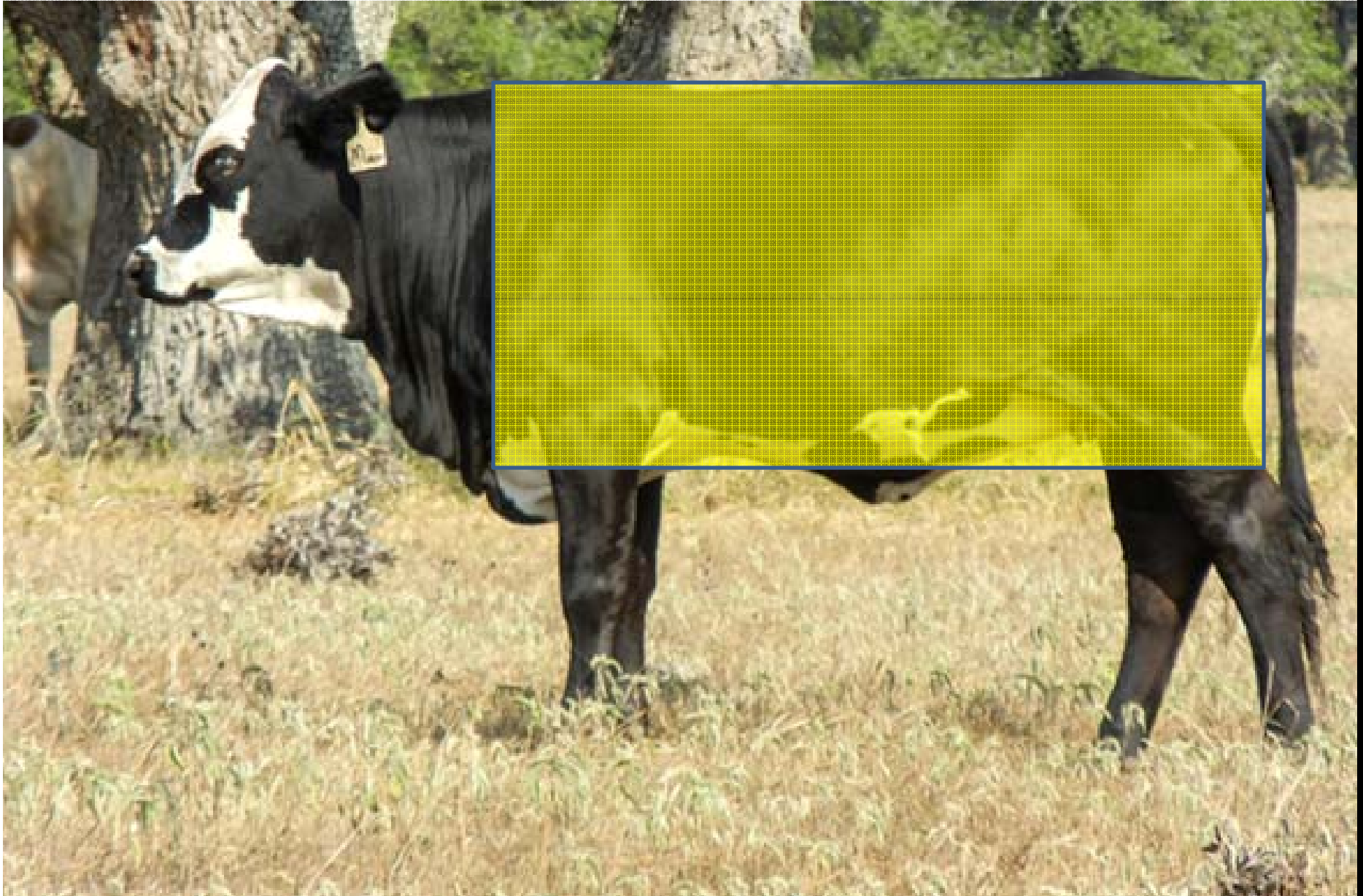


The Ideal Cow

- Early puberty
- Never misses a breeding season (1 calf/365 d)
- Calves unassisted
- Doesn't require a lot of supplemental feed
- Easy fleshing
- Converts forage to lbs of raised calf
- Stays in the herd a long time
- Good temperament
- Good muscling and carcass characteristics
- Adequate but not too much milk
- Looks good doing all the above



The Ideal Cow



Easy fleshing



Good Udder



Broken Down Udder

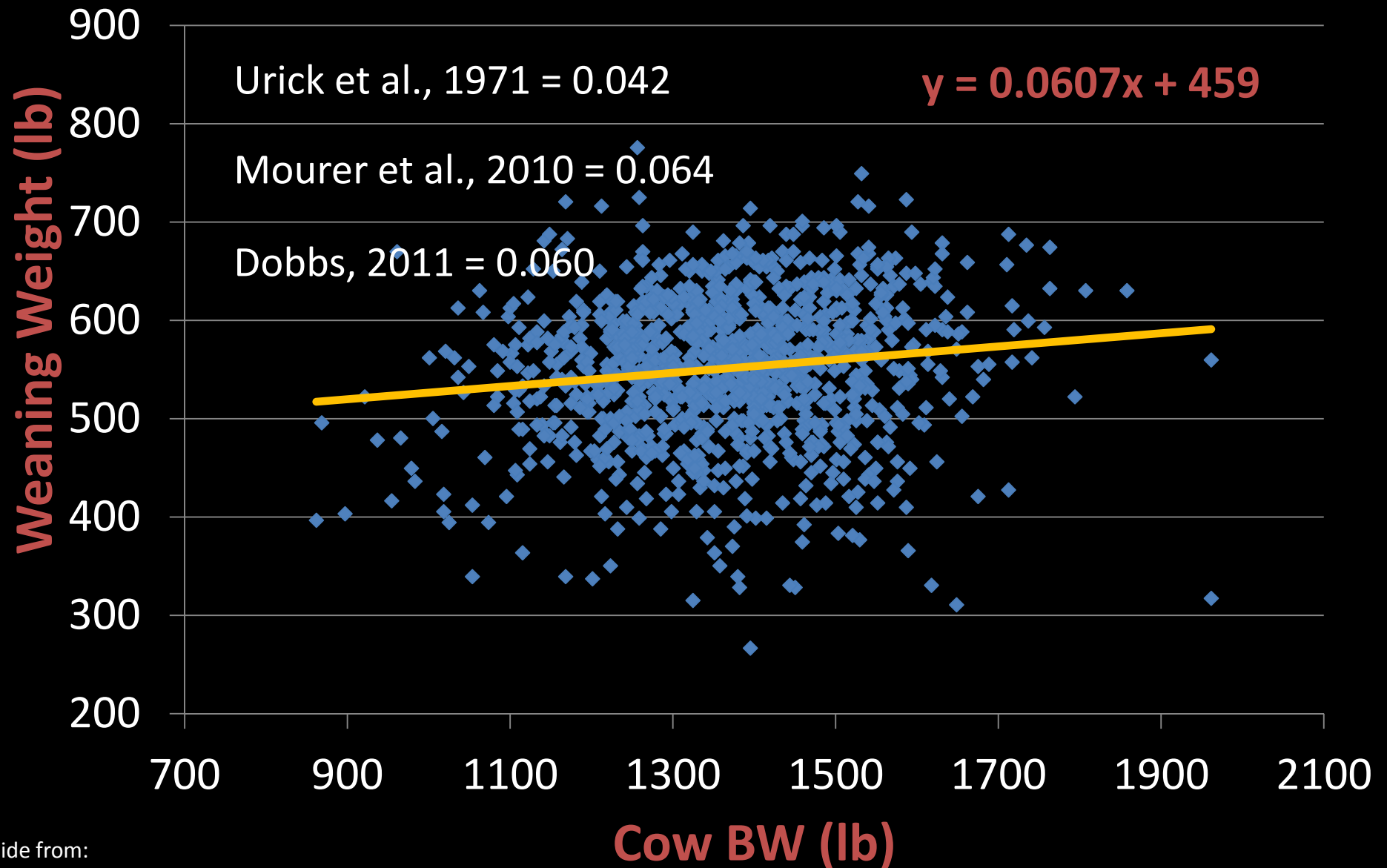




Cow Size



Calf WW vs Cow BW



Sensitivity Analysis

Value of Added Gain (\$/cwt)	Value of Added Income ¹ (\$/cwt)
0.80	4.86
1.00	6.07
1.20	7.28

Annual cost / 100 lb of additional cow BW = \$42
(Doye and Lalman, 2011)

Summary

- **Every 100 lb increase in additional cow BW resulted in 6.07 lb increase in weaning weight**
- **Every 1 lb increase in birth weight resulted in 2.07 lb increase in weaning weight**
- **The response determined (6.07 lb) was only 11%-17% needed to breakeven to offset the cost of the larger cow size**

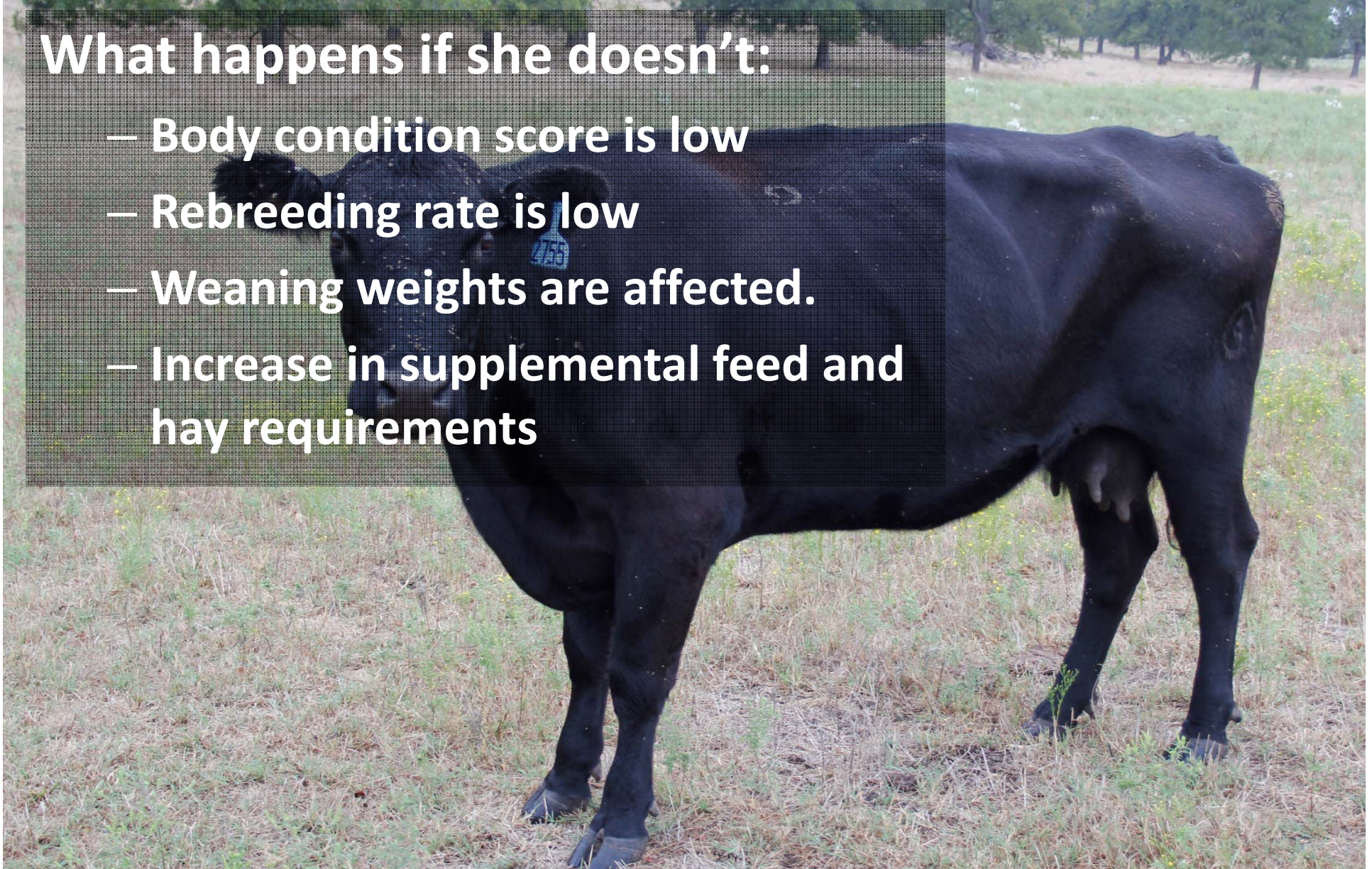
The cow should fit her environment



The cow should fit her environment

What happens if she doesn't:

- Body condition score is low
- Rebreeding rate is low
- Weaning weights are affected.
- Increase in supplemental feed and hay requirements



Perfect Bull



The Bull should fit the Market



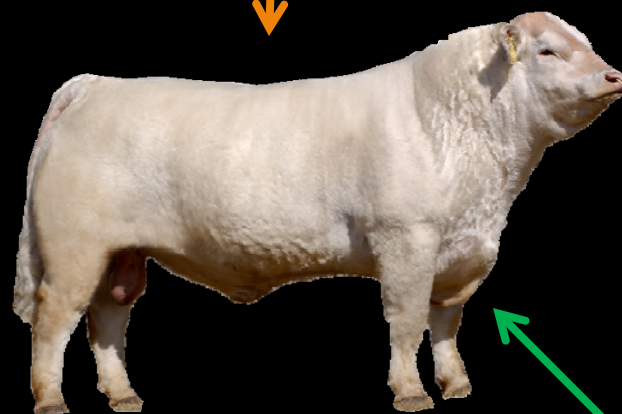
Make 'em **all one color!**



Breed

Performance

Age



Mr. Perfect 001 PLD ET

EPDs

Pedigree

Phenotype

Phenotype

Structurally correct

Balanced

Thick, long, tall

Lots of guts and butt!

Heavy muscle

Correct angles

Testicle size and shape

Barnyard
©

Use Registered Bulls



Things are not
always what it
appears to be



Expected Progeny Difference (EPD)

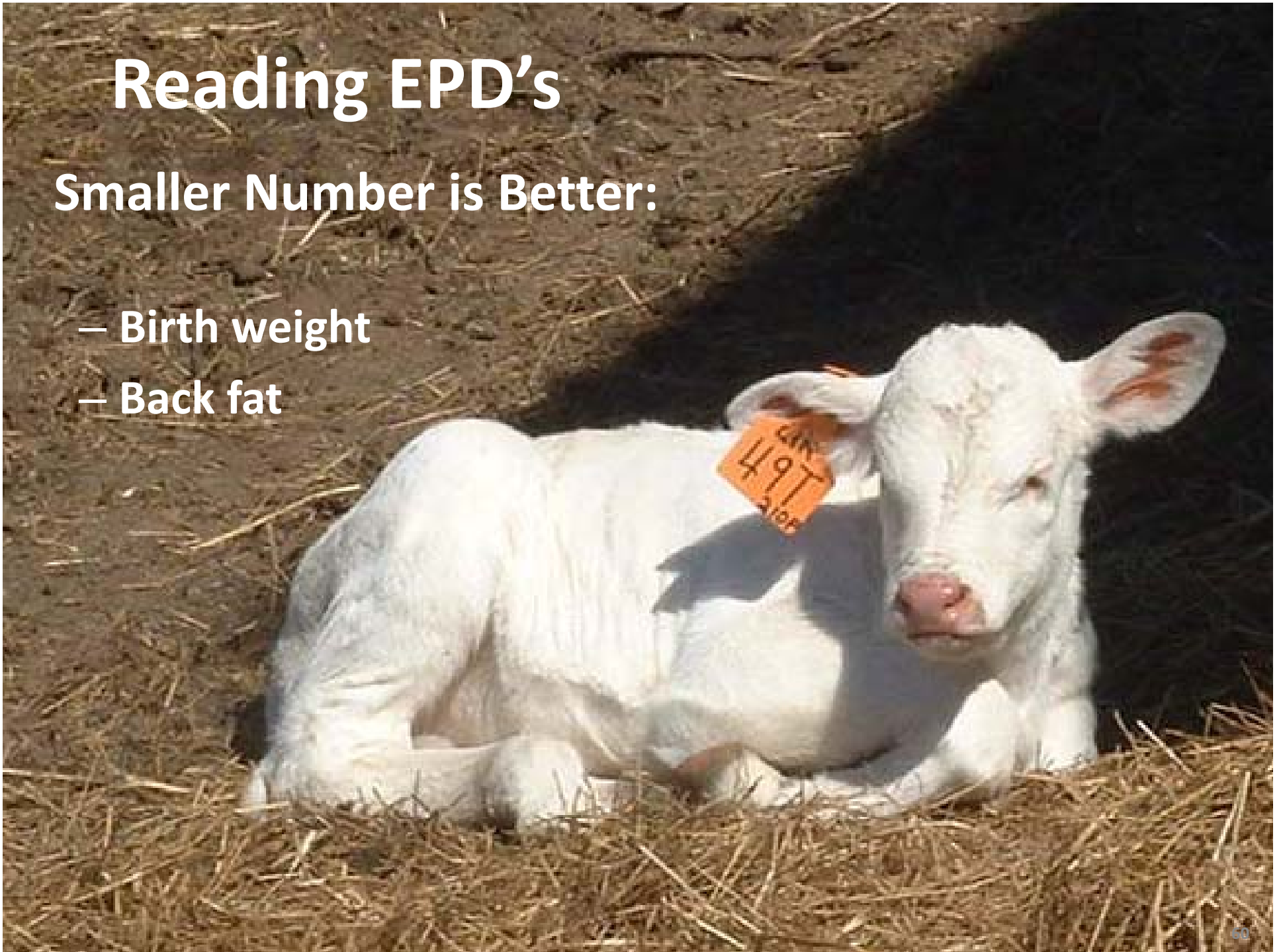


An Estimate of how future progeny of each sire are expected to perform relative to the progeny of other sires listed in the database.

Reading EPD's

Smaller Number is Better:

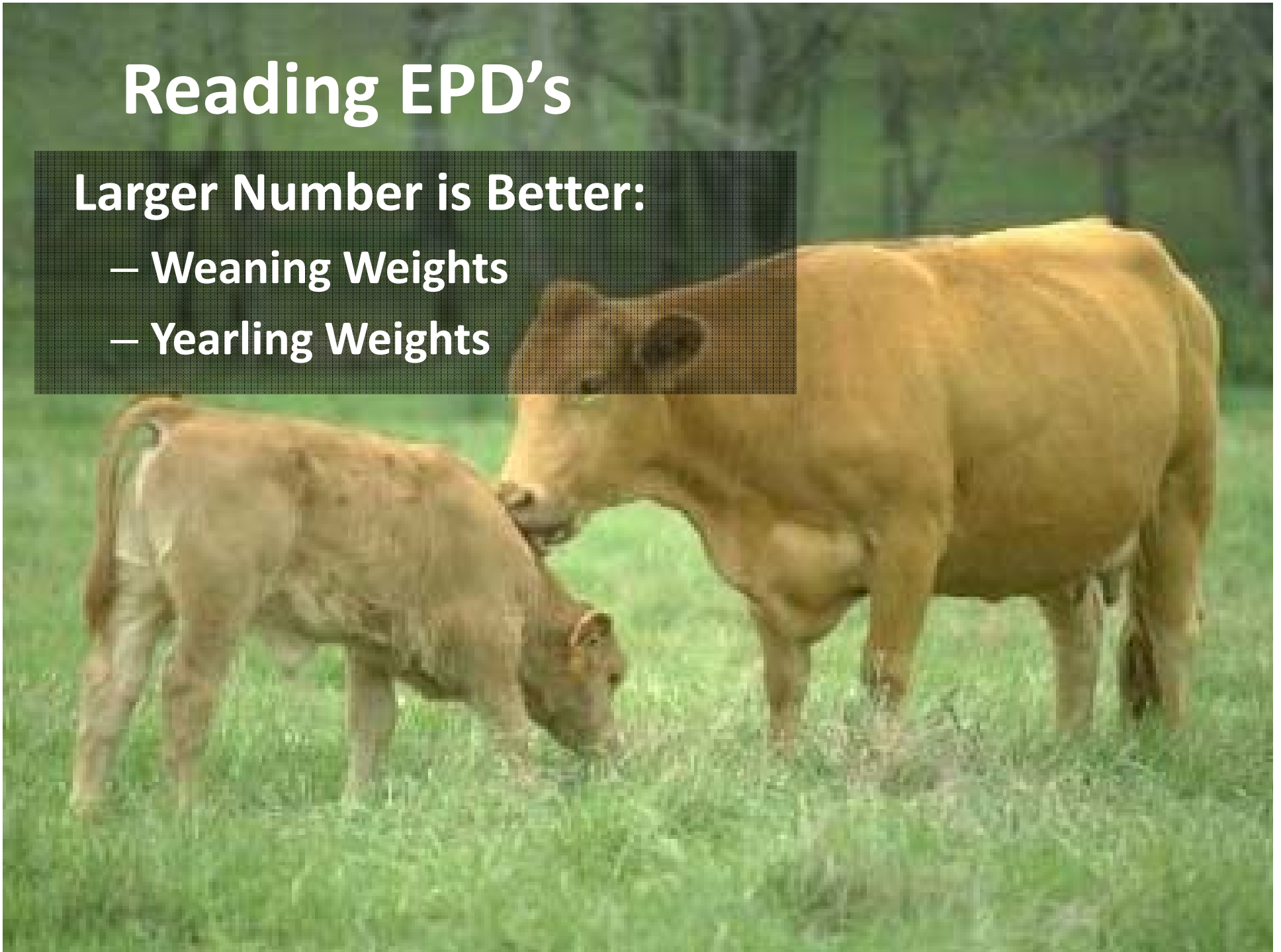
- Birth weight
- Back fat



Reading EPD's

Larger Number is Better:

- Weaning Weights
- Yearling Weights



Reading EPD's

Larger Number is Better:

- Calving Ease
- Maternal traits
- Milk
- Calving Ease Maternal

Reading EPD's

Larger Number is Better:

- Carcass weight
- Rib Eye Area
- Marbling

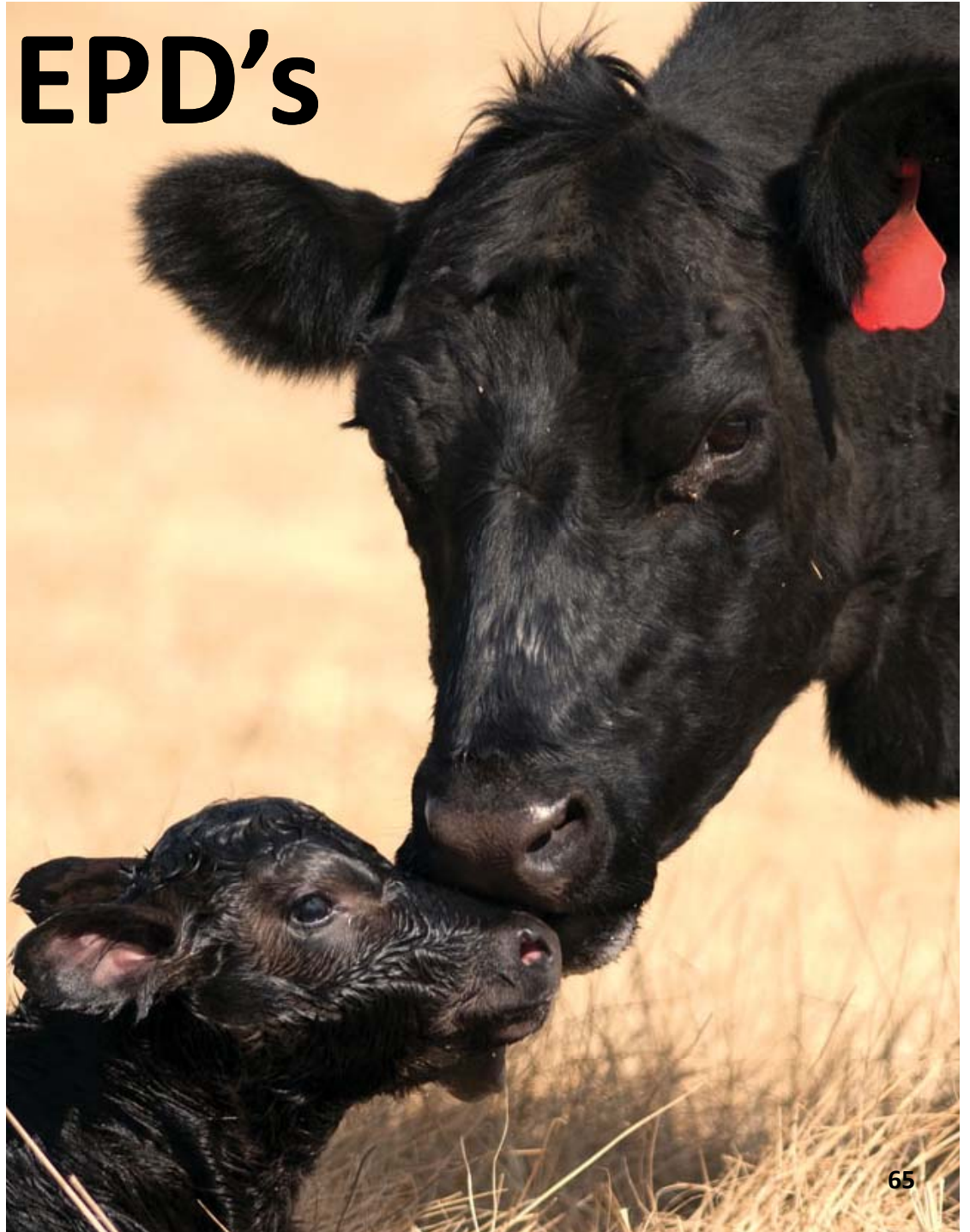


Which EPD's should I use????



Suggested EPD's

- Birth
 - Top 50%



Suggested EPD's

- Top 20%
 - Weaning weight
 - Yearling weight



Suggested EPD's

- **Carcass:**
 - **Top 50%**
 - **Rib Eye Area**
 - **Marbling**



**EPD's are not currently
available for disposition.**



If you can't hold him you don't need him

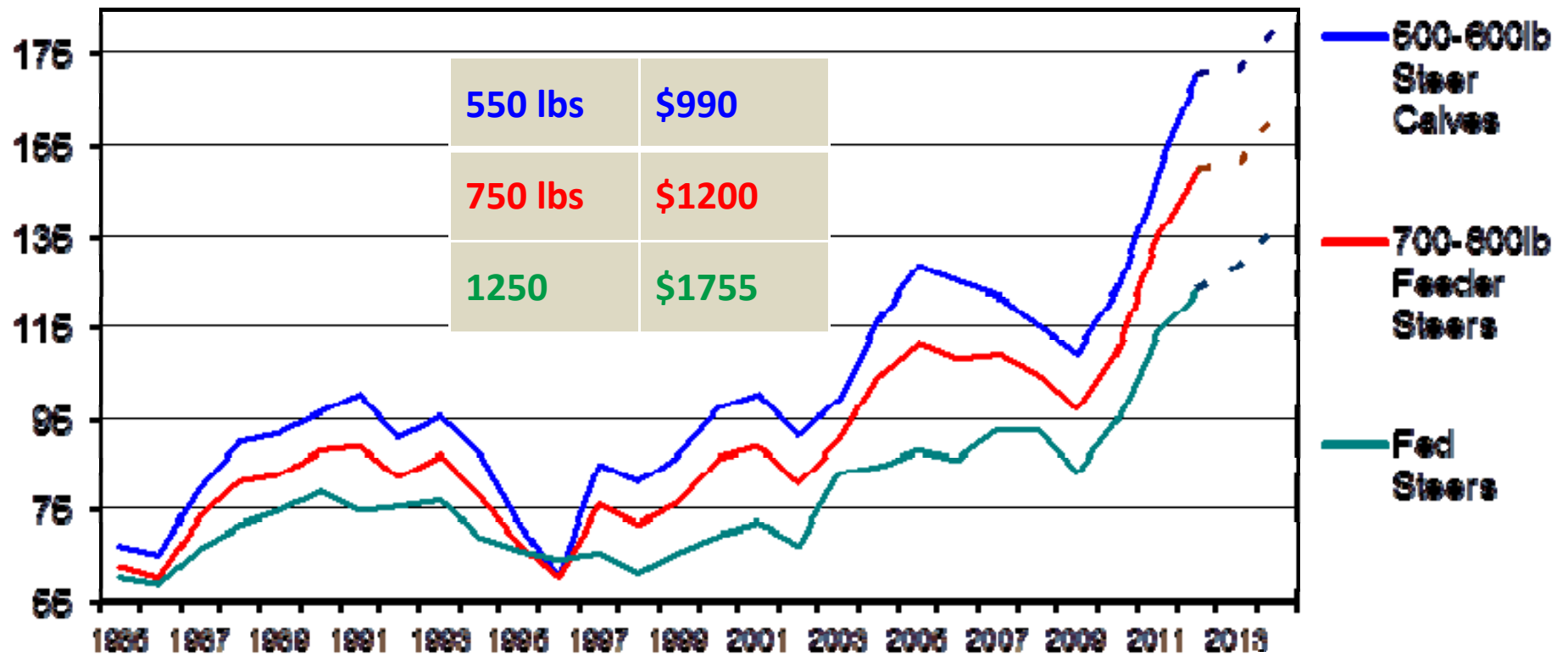
Value of Known Bull Genetics



ANNUAL AVERAGE CATTLE PRICES

Southern Plains

\$ Per Cwt



Livestock Marketing Information Center

Data Source: USDA-AMS, Compiled & Analysis by LMIC

C-P-06
02/14/13

Bull # 1

- Neighbor or Friend
- Individual Performance Information
 - No EPD's
 - No known or reliable ancestral history

Bull # 1



Purchase price	\$2500
Salvage weight of Bull	1850 lbs
Salvage price of bull	\$1.00 / lb
Salvage value of bull	\$1836
(-1% death loss)	
Cost of bull	\$133
(5 yr life span in herd)	

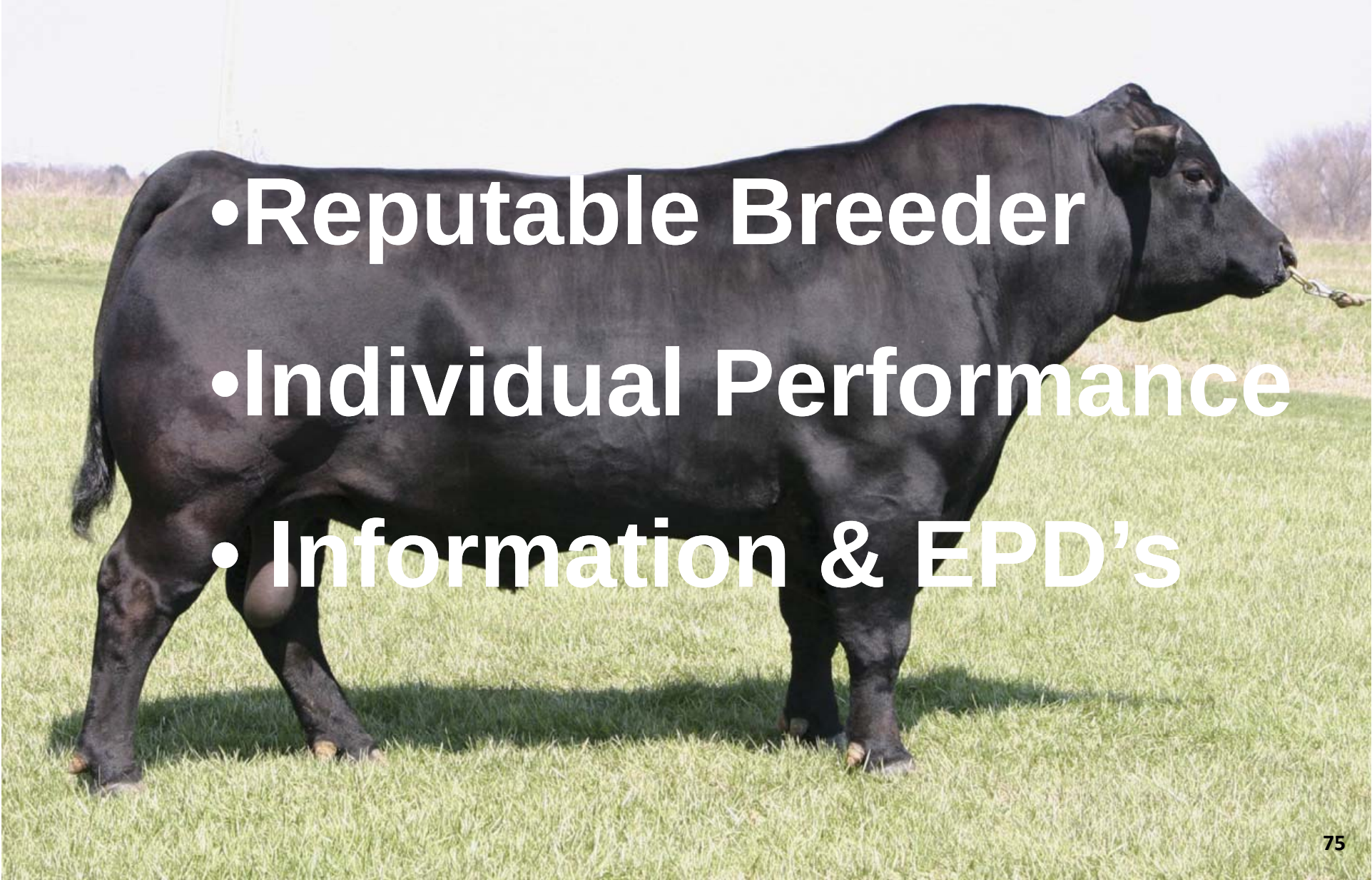
Bull # 1

Cost of bull (5 yr life span in herd)	\$133
Cash maintenance cost, /yr	\$ 80
Total cash cost of bull, /yr	\$213
Cows/yr bred	25
Cash cost, /cow/yr	\$ 8.51

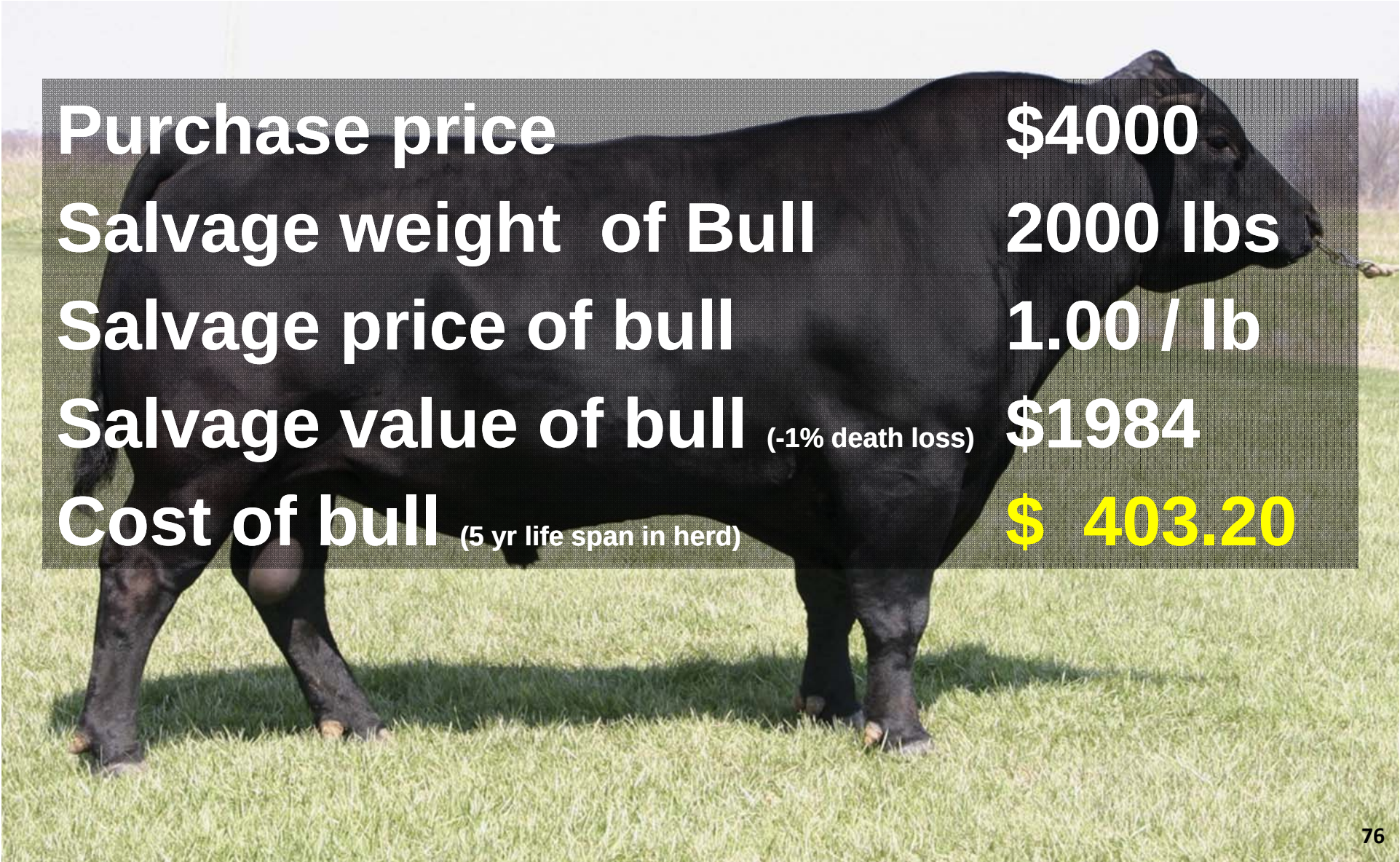
Bull # 2



Bull # 2

- 
- A black bull is shown in profile, standing in a green grassy field. The bull is facing right and has a chain around its nose. The background is a clear sky and some distant trees.
- Reputable Breeder
 - Individual Performance
 - Information & EPD's

Bull # 2



Purchase price	\$4000
Salvage weight of Bull	2000 lbs
Salvage price of bull	1.00 / lb
Salvage value of bull (-1% death loss)	\$1984
Cost of bull (5 yr life span in herd)	\$ 403.20

Bull # 2

Cost of bull (5 yr life span in herd) **\$403.20**

Cash maintenance cost, /yr **\$100**

Total cash cost of bull, /yr **\$503.20**

Cows/yr bred **25**

Cash cost, /cow/yr **\$ 20.12**

Yearly Per Cow Bull Cash Costs

	Bull # 1	Bull #2
Bull Purchase Price	\$2500	\$4000
Total Annual Bull Cash Costs/cow	\$8.51	\$20.12
Bull #1/Cow Advantage	XX	(11.61)

Increased Value at Weaning

(October 2013)

	Bull #1 520 lbs @ Weaning	Bull #2 585 lbs @ weaning
Selling price, \$/cwt	\$170.90	\$ 164.26
Value of calf	\$888.68	\$ 960.92
Bull #1/Cow Advantage	XX	(\$11.61)
Adjusted Calf Value	\$888.68	\$ 949.31
Difference	XX	\$ 60.63
Increased Revenue \$/25 cows/yr	XX	\$1,515.75
Net increase revenue \$/bull (5 yr) (-\$290.25)	XX	\$7,578.75

Increased Value after Backgrounding

(Dec. 2013)

	Bull #1 646 lbs @ Backgrounding	Bull #2 738 lbs @ Backgrounding
Selling price, \$/cwt	\$ 162.27	\$ 157.99
Value of calf	\$1,048.26	\$1,165.97
Bull #1/Cow Advantage	XX	(\$11.61)
Adjusted Calf Value	\$1,048.26	\$1,154.36
Difference	XX	\$ 106.10
Increased Revenue \$/25 cows/yr	XX	\$2,652.50
Net increase revenue \$/bull (5 yr)	XX	\$13,262.50

Now add the price you were willing to pay for the Neighbor's bull (\$2,500) to the increased revenue the better bull provides (\$13,262) = **\$15,762**



Take Home Message



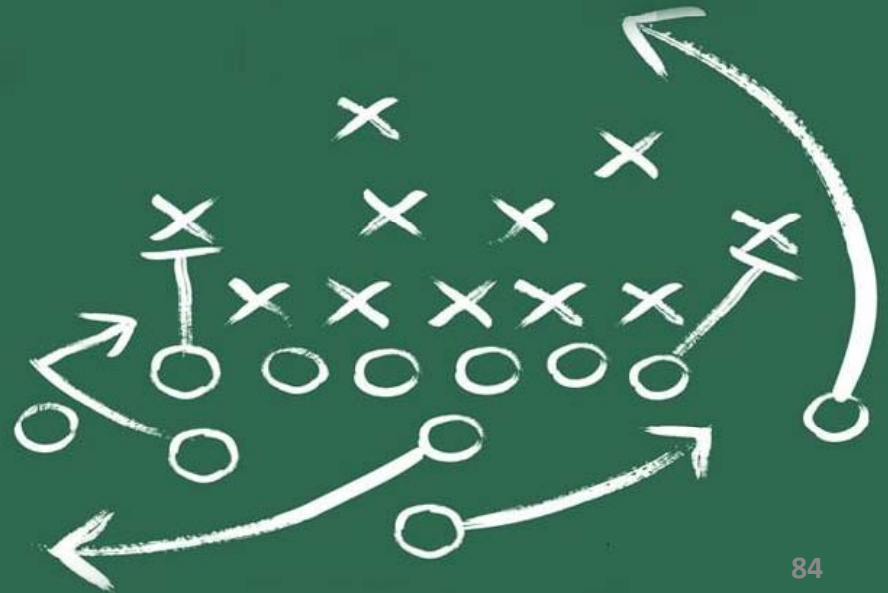
The more expensive bull that has high quality performance traits will typically make you more money in the long run.

**BUY
NOW!**

A 3D rendering of a red, oval-shaped button with a glossy finish. The button is mounted on a silver, metallic-looking base that has a brushed texture. The text "BUY NOW!" is written in a bold, white, sans-serif font with a slight drop shadow, making it stand out against the red background. The button is positioned at an angle, showing its top and side, and casting a soft shadow on the white surface below it.

Make a Game Plan

- Select breed
 - Develop a mindset that you are going to buy an *individual* within the breed of choice rather than buying the breed of choice.
- Review the Data
- Evaluate physically
- Set a purchase price



HERD BULL PROSPECTS



Magnum 1628 /
Lot 113

112

Magnum 1565

Birth Date: 9-7-2011

Bull +16987172

Tattoo: 1565

B/R Magnum 399

#Basin Max 602C

Magnum 8563

#B/R Blackcap Empress 8183

16060112

B/R Lantz Blackcap 6203

#B/R Destination 727-928

B/R Lantz Blackcap 3209

#B/R Destination 727

#GAR Traveler 1489

B/R Blackcap Empress 127

B/R Ruby of Tiffany 5113

13879676

#B/R Blackcap Empress 8183

#B/R New Design 323

B/R Blackcap Empress 558

CED	BW	WW	YW	DOC	MILK	CWT	MRB	RE
I+5	+3.1	+58	+104	I+19	+22	+47	+1.07	+51
ACT BW	205 WT	365 WT	ADJ IMF	IMF RATIO	ADJ REA	REA RATIO	ADJ SC	
83	701	973	4.79	124	10.3	95	35.07	
\$W	+26.29	\$F	+42.46	\$G	+39.10	\$B	+87.33	

Non-Parent Males

- Top 1% \$B
- Top 1% Marb
- Top 2% CW

- Top 10% \$F
- Top 10% \$G
- Top 10% WW

- Top 10% YW

• NUMBER 3 MB EPD • NUMBER 5 ADJ IMF Fall Yearling

113

Magnum 1628

Birth Date: 9-12-2011

Bull +16992135

Tattoo: 1628

B/R Magnum 399

#Basin Max 602C

Magnum 8563

#B/R Blackcap Empress 8183

16060112

B/R Lantz Blackcap 6203

#B/R Destination 727-928

B/R Lantz Blackcap 3209

#B/R Destination 727

#GAR Traveler 1489

B/R Blackcap Empress 127

B/R Ruby of Tiffany 5113

13879676

#B/R Blackcap Empress 8183

#B/R New Design 323

B/R Blackcap Empress 558

CED	BW	WW	YW	DOC	MILK	CWT	MRB	RE
I+5	+3.4	+61	+112	I+19	+22	+52	+92	+47
ACT BW	205 WT	365 WT	ADJ IMF	IMF RATIO	ADJ REA	REA RATIO	ADJ SC	
85	746	1114	3.39	88	10.5	97	41.23	
\$W	+25.32	\$F	+50.33	\$G	+35.80	\$B	+86.27	

Non-Parent Males

- Top 1% \$B
- Top 1% CW
- Top 2% \$F

- Top 2% YW
- Top 3% Marb
- Top 3% WW

- Top 20% \$G

Review the Data

Breakdown		Age as of (Months)					
ID	DOB	5/1/2009	BWRank	BW	WW	WWRank	YW
7589 P	9/29/07	19	15%	-0.9	34	10%	
595 P	10/22/07	19	20%	-0.7	34	10%	
5 P	9/26/07	19	30%	0	41	2%	
7597 P	9/21/07	20	35%	0.2	42	2%	
04 P	10/19/07	19	35%	0.2	35	8%	
045 P	10/25/07	18	35%	0.2	31	20%	
7119 P	10/5/07	19	35%	0.2	31	20%	
73003	9/18/07	20	40%	0.4	40	3%	
0010 P	10/19/07	19	40%	0.4	28	30%	
7016 P	9/27/07	19	45%	0.6	39	4%	
	10/8/07	19	50%	0.8	40	3%	
3 P	10/5/07	19	55%	1.1	43	1%	
0 P	10/8/07	19	55%	1.1	43	1%	
3 P	9/17/07	20	55%	1.1	38	4%	
7N71 P	9/21/07	20	55%	1.1	38	4%	
63 P	10/2/07	19	60%	1.3	42	2%	
035 P	10/4/07	19	60%	1.2	39	4%	
819 P	10/26/07	18	60%	1.3	37	6%	
0	10/11/07	19	60%	1.3	33	15%	

Performance Basics

- SEP ▶
- Terminal Profit Index▶
- Fall EPD Statistics ▶
- Monthly Column ▶
- Articles
- Ultrasound
- Seedstock Tour

[Performance](#) > [Fall EPD Statistics](#) > Percentile Rank

PERCENTILE RANK TABLES

Non-Parent Percentile Ranking

Percent	BW EPD	WW EPD	YW EPD	MAT EPD	TOTMAT	SC EPD
1	<= -5.0	>= 45.6	>= 80.1	>= 21.7	>= 36.4	>= 1.5
2	-4.0	42.3	75.4	19.5	34.0	1.3
3	-3.5	40.5	71.8	18.2	32.6	1.2
4	-3.1	38.8	68.5	17.5	31.6	1.2
5	-2.7	37.9	66.3	16.8	30.7	1.1
6	-2.5	37.1	64.6	16.2	30.0	1.1
7	-2.3	36.2	63.4	15.6	29.4	1.1
8	-2.0	35.4	62.0	15.1	28.7	1.0
9	-1.9	34.7	60.9	14.8	28.1	1.0
10	-1.7	34.2	59.7	14.4	27.5	1.0
15	-1.1	31.7	55.3	12.8	25.4	0.9
20	-0.6	29.7	51.7	11.6	23.6	0.8
25	-0.2	28.1	48.8	10.5	22.2	0.8
30	0.1	26.6	46.3	9.6	21.0	0.7
35	0.4	25.3	44.0	8.8	20.0	0.7
40	0.7	24.0	41.8	7.9	19.0	0.6
45	0.9	22.7	39.9	7.1	18.0	0.6
50	1.2	21.3	37.8	6.3	17.0	0.5
55	1.5	20.0	35.8	5.5	16.0	0.5

Evaluate in person



UGA13742

Replacement Females

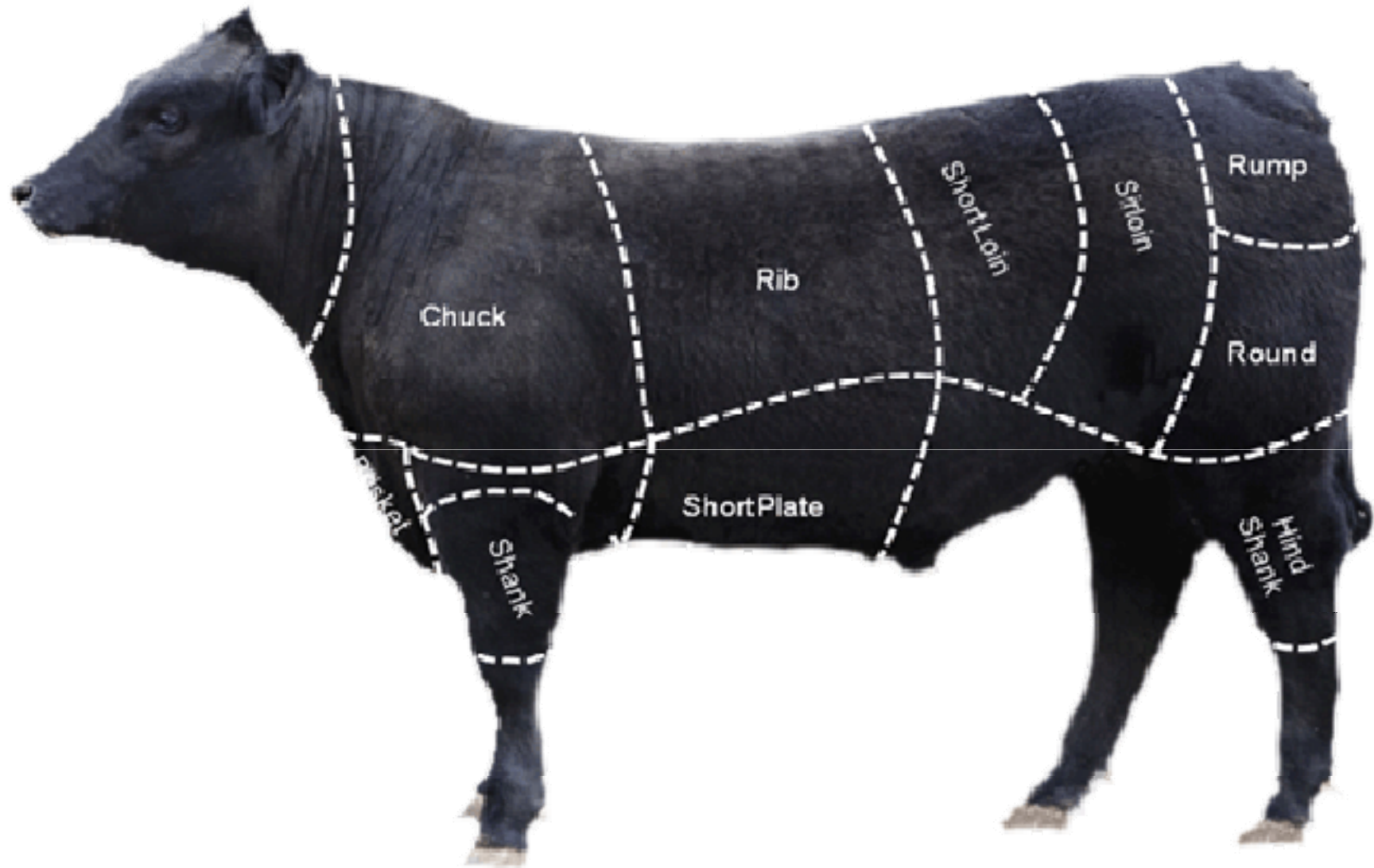




Don't go to the weekly cattle sale



In business to produce **Beef**



THE SAMUEL ROBERTS
NOBLE
FOUNDATION

Robert S. Wells, Ph.D. PAS
rswells@noble.org
580-224-6434

- January 21st to talk about selection. We would like to cover bull, cow and replacement selection. I think it would be important to cover the different breeds of cattle, the benefits of each breed and a (very basic) discussion on heterosis. I think it would start with a discussion about the goals of their operation and how that determines what they buy. I would also like to include how and where to buy animals (livestock market vs. private treaty).