Selecting the Right Replacement

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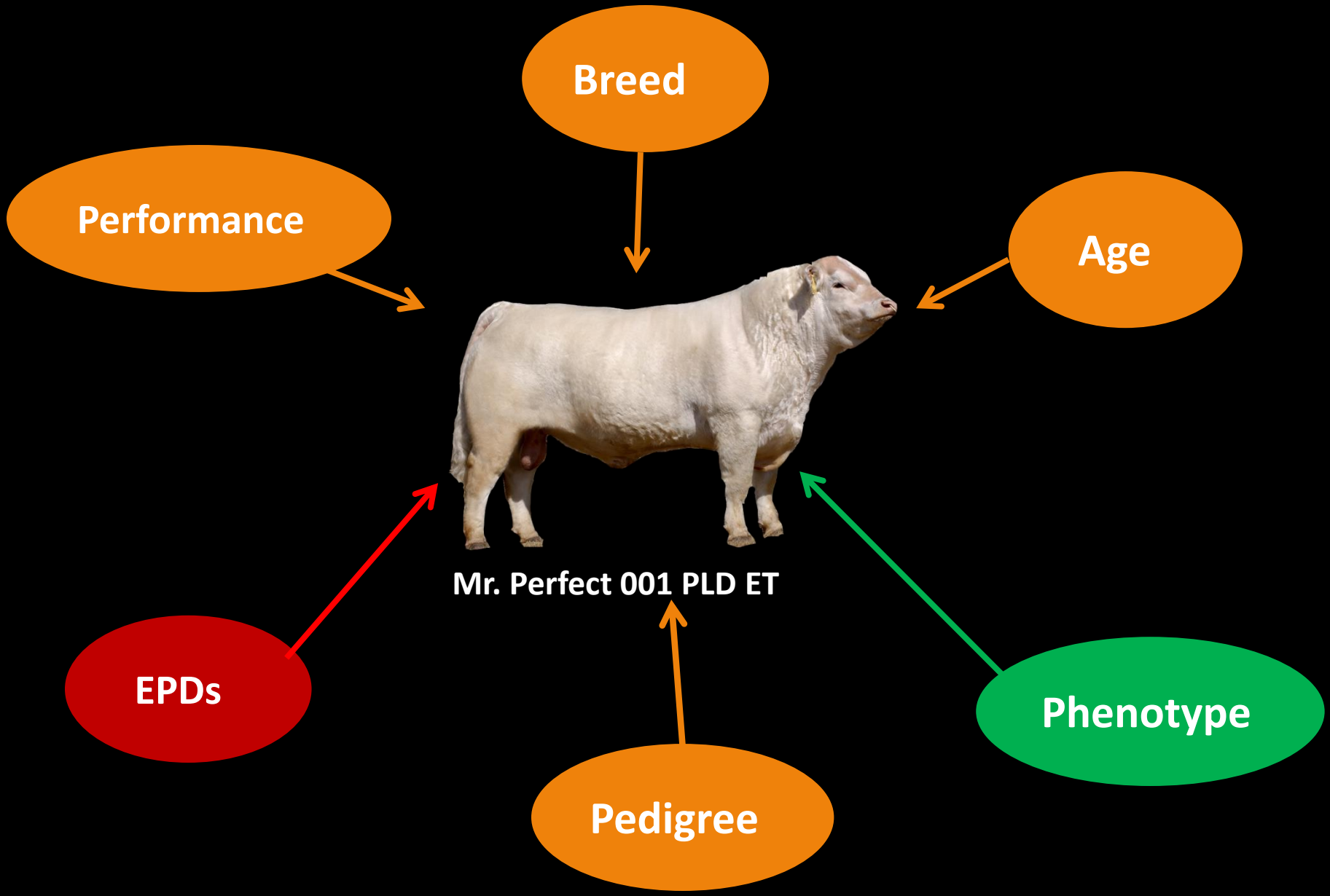
Livestock Consultant

THE SAMUEL ROBERTS
NOBLE
FOUNDATION

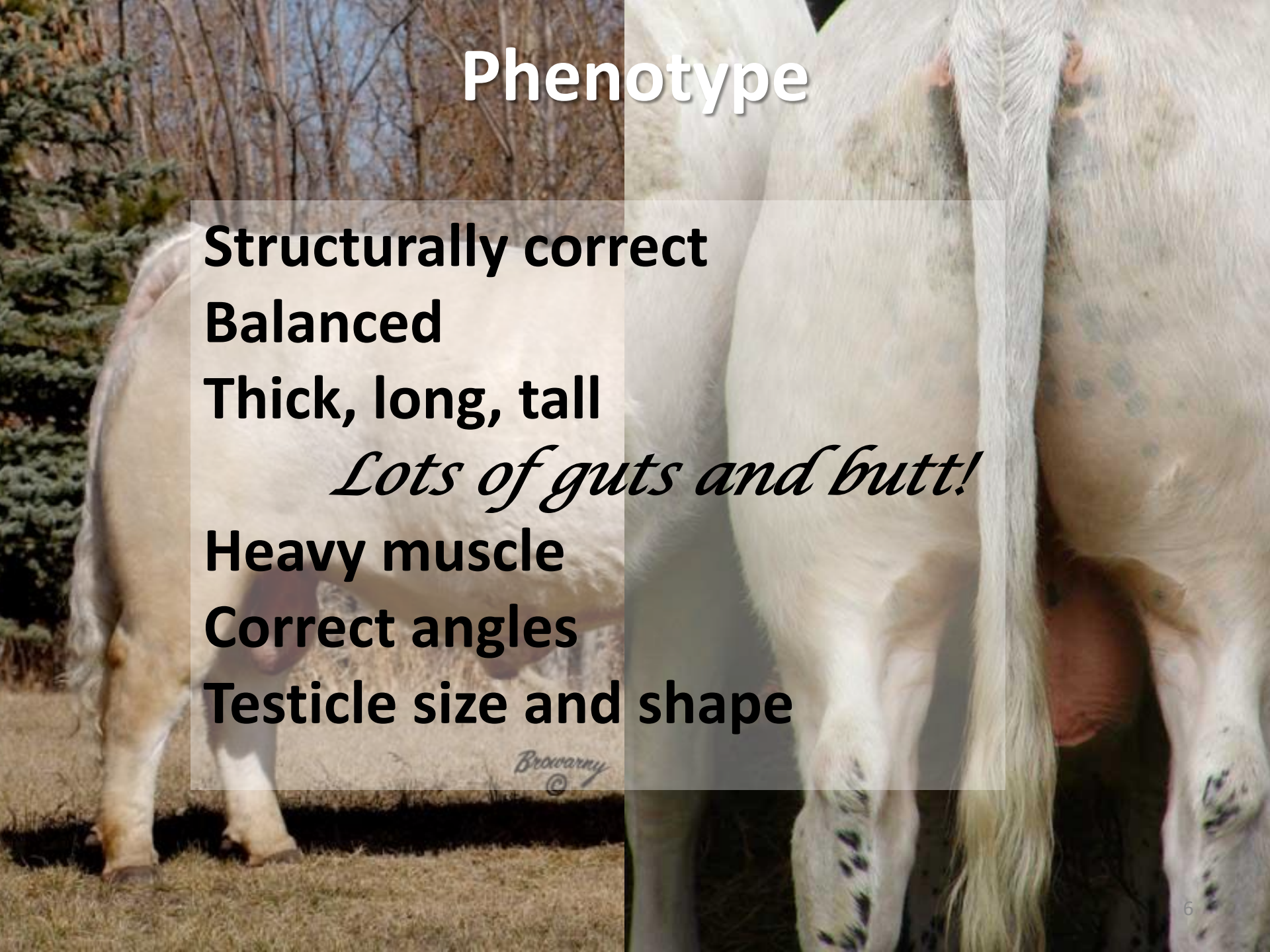
Perfect Bull

The Bull should fit the Market

Make ‘em all one color!


Breed
Performance
Age
Mr. Perfect 001 PLD ET
EPDs
Phenotype
Pedigree

Phenotype



Structurally correct
Balanced
Thick, long, tall

Lots of guts and butt!

Heavy muscle
Correct angles
Testicle size and shape

Use Registered Bulls


Things are not always what it appears to be

Expected Progeny Difference (EPD)

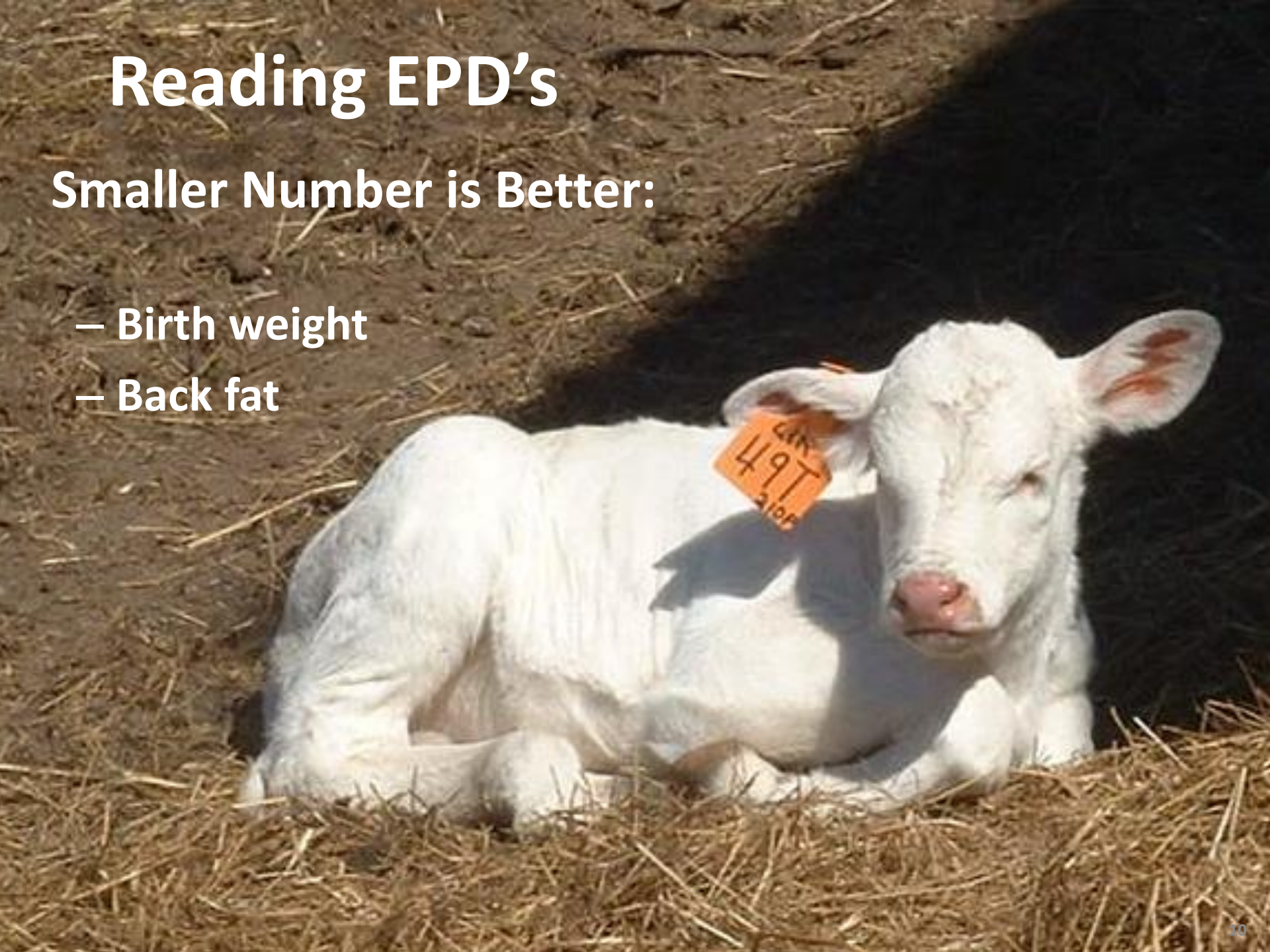
An Estimate of how future progeny of each sire are expected to perform relative to the progeny of other sires listed in the database.

Reading EPD's

Smaller Number is Better:

– Birth weight

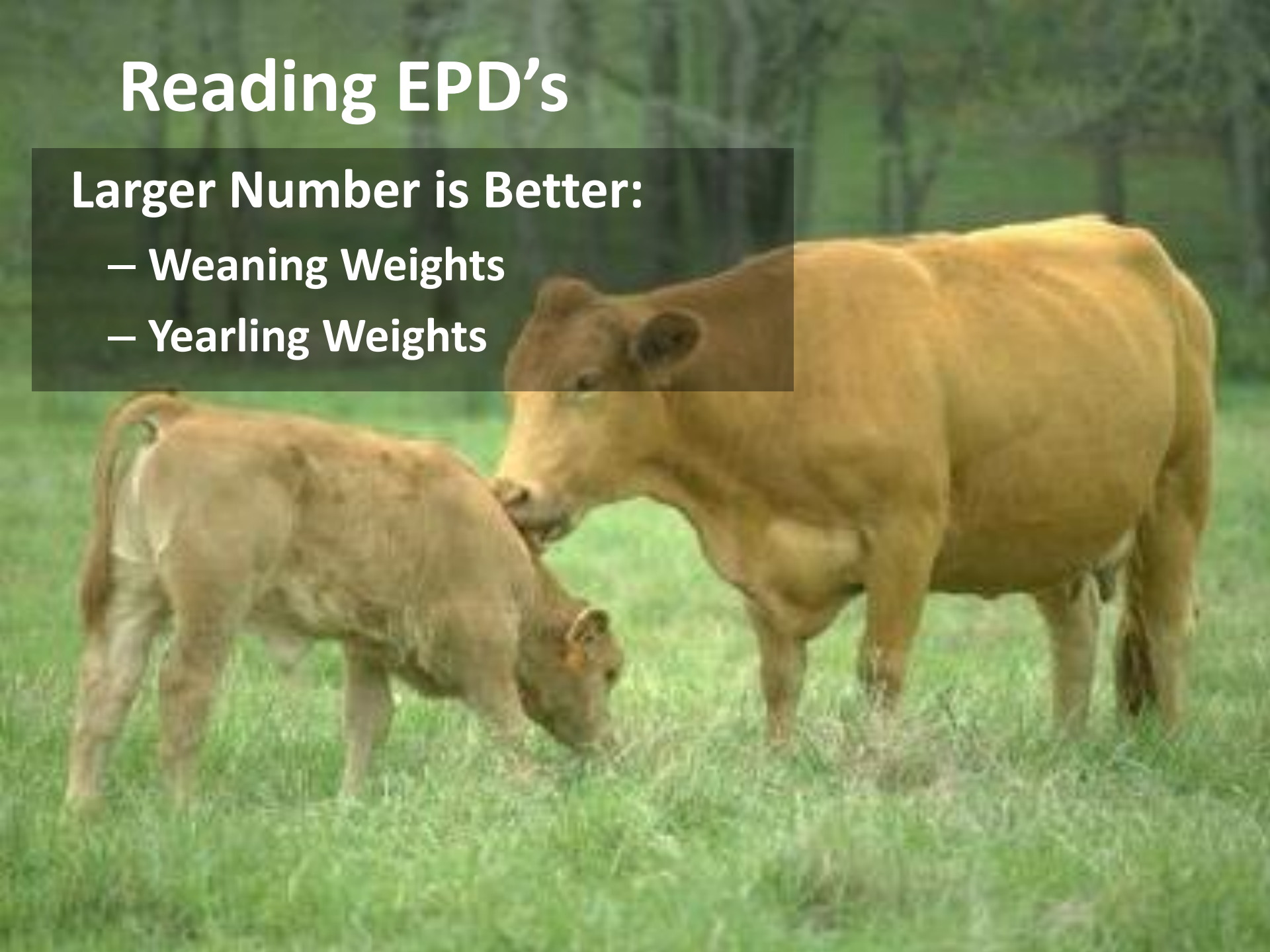
– Back fat



Reading EPD's

Larger Number is Better:

- Weaning Weights
- Yearling Weights



Reading EPD's

Larger Number is Better:

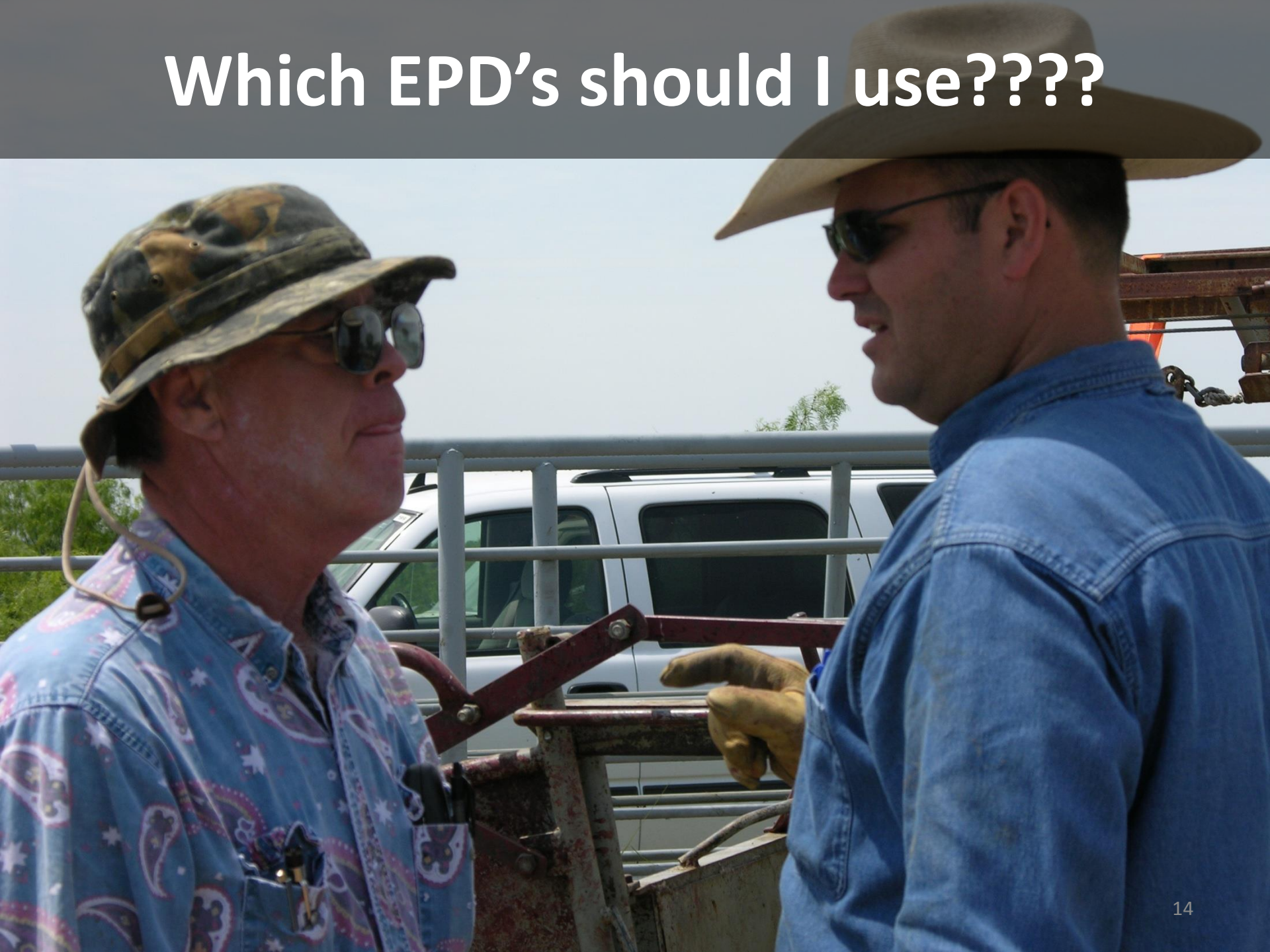
- Calving Ease
- Maternal traits
- Milk
- Calving Ease Maternal

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

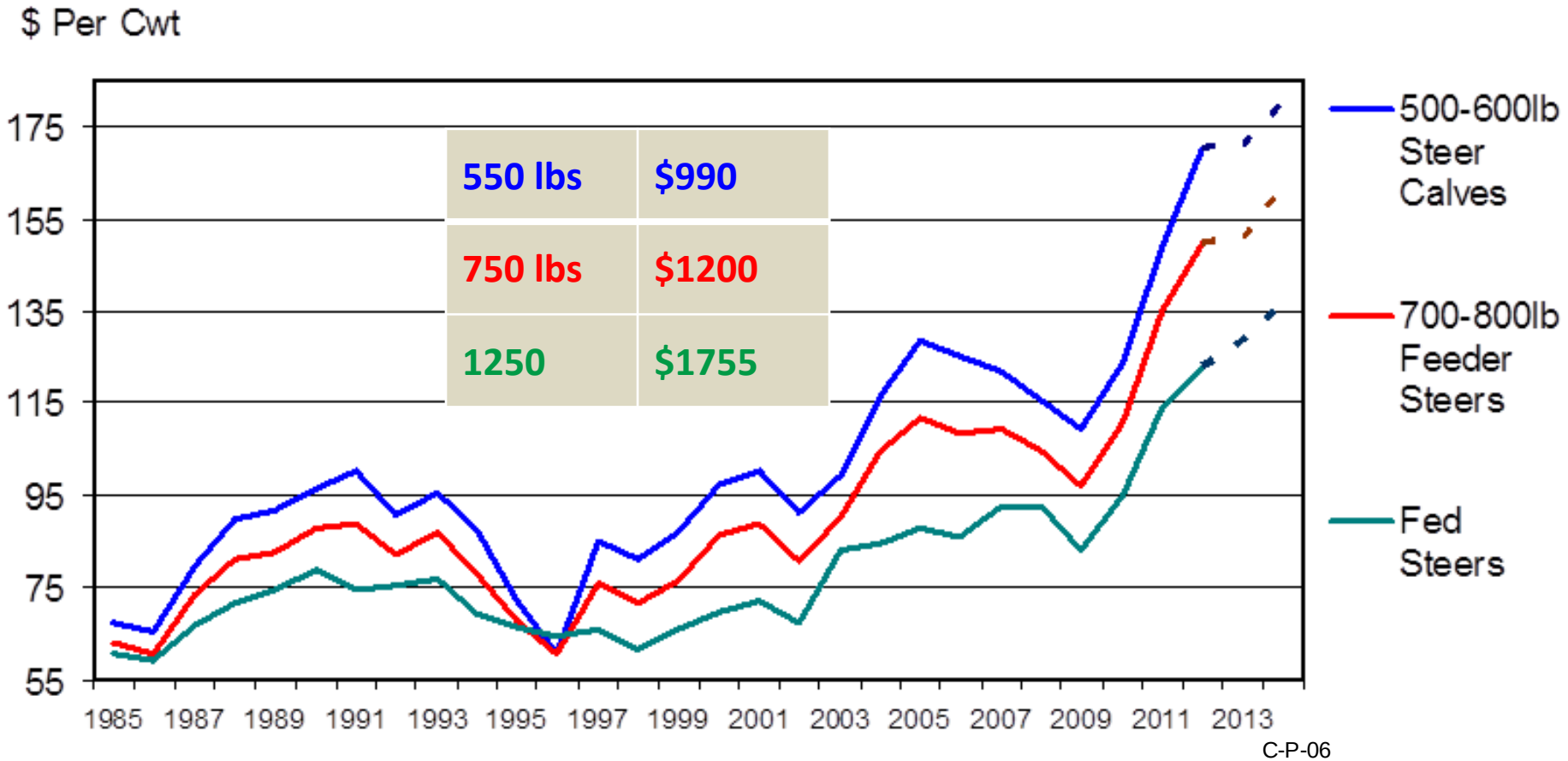
- **Carcass:**
  - **Top 50%**
    - **Rib Eye Area**
    - **Marbling**


EPD's are not currently available for disposition (except Angus).
If you can't hold him you don't need him

Value of Known Bull Genetics

ANNUAL AVERAGE CATTLE PRICES

Southern Plains

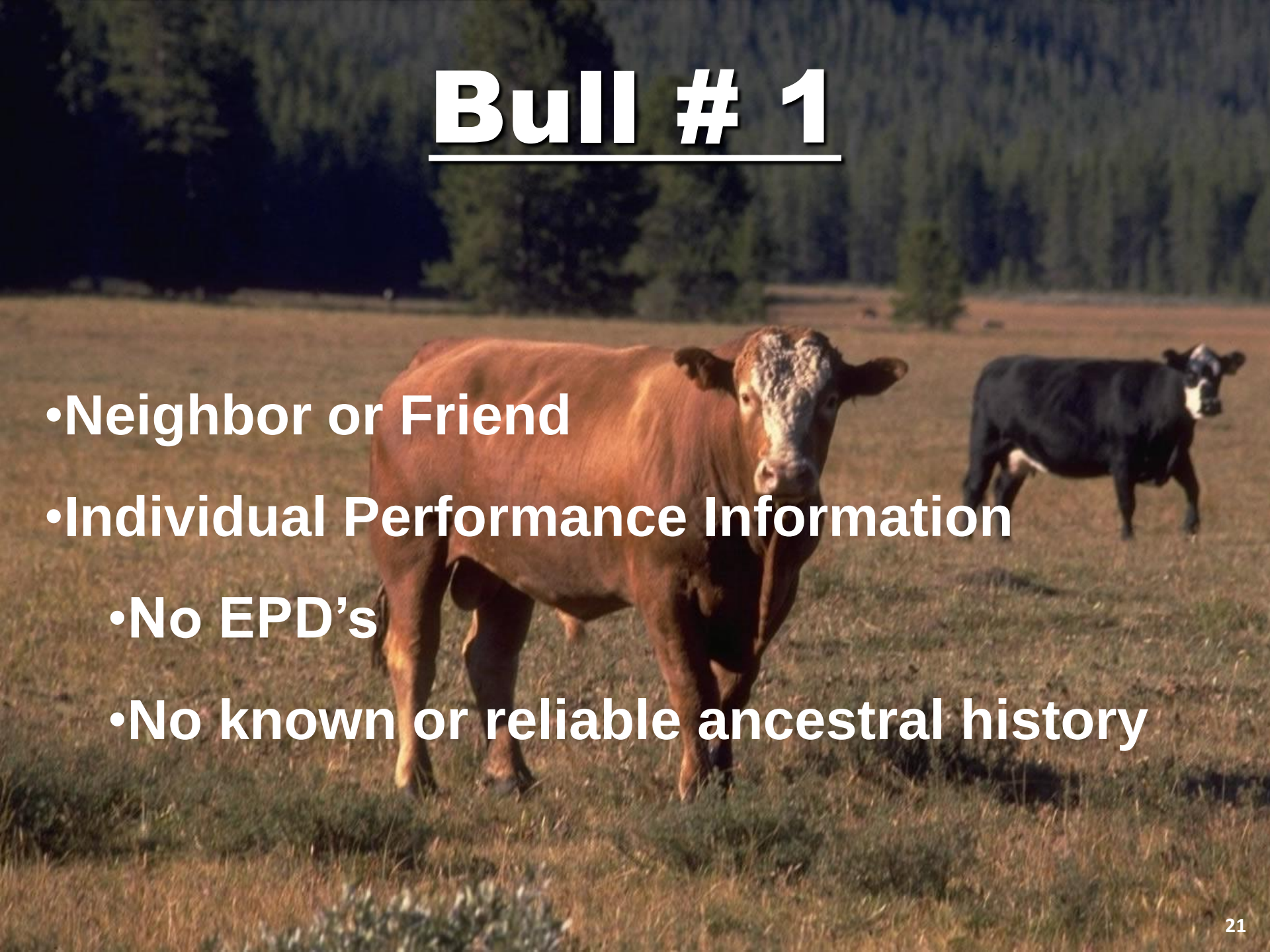


C-P-06
02/14/13

Livestock Marketing Information Center

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

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	$0.80 / lb
Salvage value of bull (-1% death loss)	$1465.20
Cost of bull, yr (5 yr life span in herd)	$ 206.96

Bull # 1

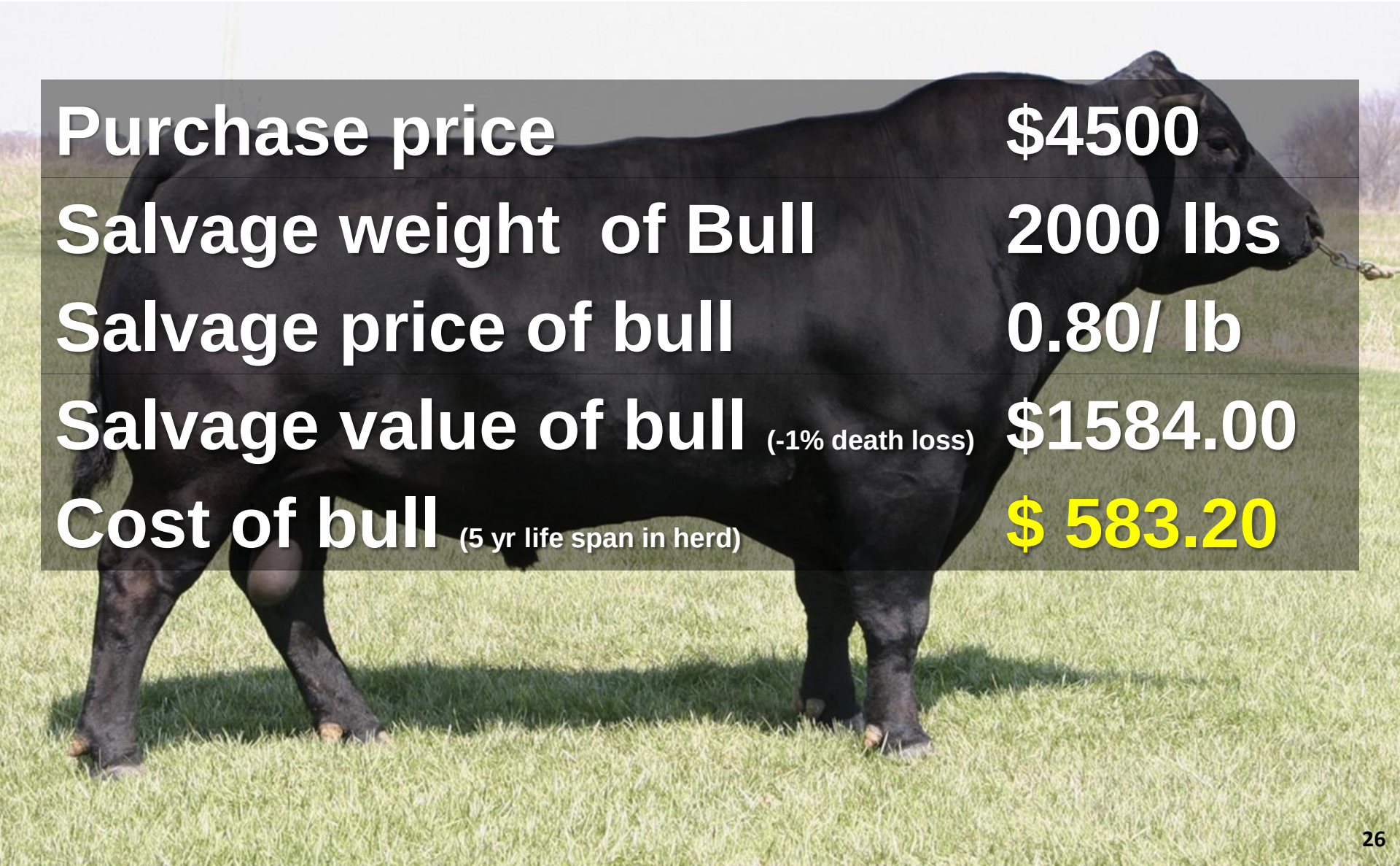
Cost of bull (5 yr life span in herd)	$206.96
Cash maintenance cost, /yr	$400.00
Total cash cost of bull, /yr	$606.96
Cows/yr bred	25
Cash cost, /cow/yr	$ 24.28

Bull # 2

Bull # 2

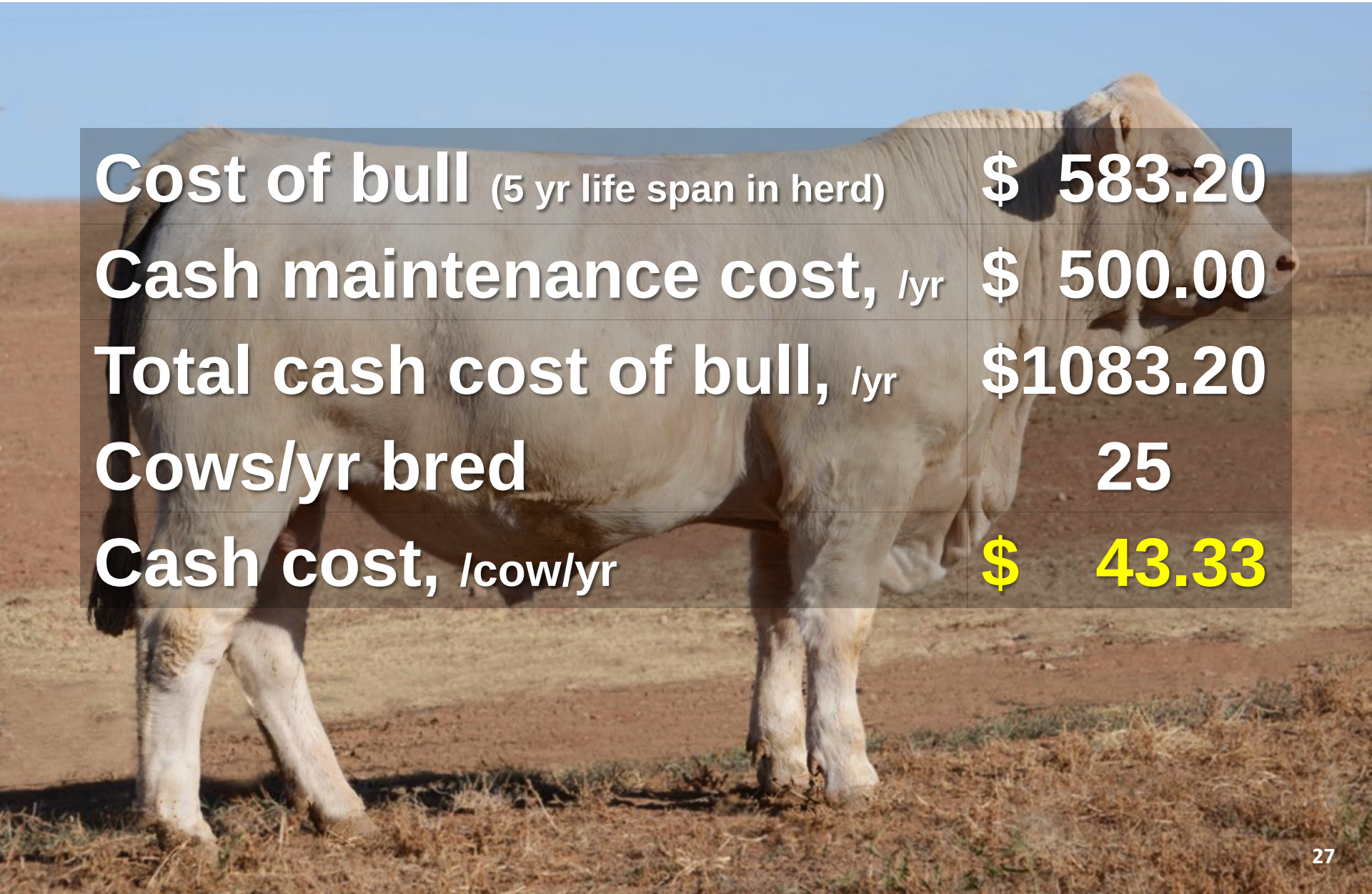
- Reputable Breeder
- Individual Performance
- Information & EPD's

Bull # 2



Purchase price	$4500
Salvage weight of Bull	2000 lbs
Salvage price of bull	0.80/ lb
Salvage value of bull (-1% death loss)	$1584.00
Cost of bull (5 yr life span in herd)	$ 583.20

Bull # 2



Cost of bull (5 yr life span in herd)	$ 583.20
Cash maintenance cost, /yr	$ 500.00
Total cash cost of bull, /yr	$1083.20
Cows/yr bred	25
Cash cost, /cow/yr	$ 43.33

Yearly Per Cow Bull Cash Costs

	Bull # 1	Bull #2
Bull Purchase Price	$2500	$4500
Total Annual Bull Cash Costs/cow	$24.28	$43.33
Bull #1/Cow Advantage	XX	($19.05)

Increased Value at Weaning

(October 2017, projected)

	Bull #1 520 lbs @ Weaning	Bull #2 585 lbs @ weaning
Selling price, $/lb	$ 1.4374	$ 1.3634
Value of calf	$ 754.64	$ 818.04
Bull #1/Cow Advantage	XX	($19.05)
Adjusted Calf Value	$ 754.64	$ 798.99
Difference	XX	$ 44.35
Increased Revenue $/25 cows/yr	XX	$1,108.75
Net increase revenue $/bull (5 yr) (-$290.25)	XX	$5,544.43

Increased Value after Backgrounding

(Dec. 2017, projected)

	Bull #1 655 lbs @ Backgrounding	Bull #2 779 lbs @ Backgrounding
Selling price, $/lb	$ 1.2536	$ 1.2036
Value of calf	$ 821.11	$ 937.30
Bull #1/Cow Advantage	XX	($ 19.05)
Adjusted Calf Value	$ 821.11	$ 918.25
Difference	XX	$ 97.14
Increased Revenue $/25 cows/yr	XX	$2,428.50
Net increase revenue $/bull (5 yr)	XX	$12,143.24

Bull Expense

	Purchase price	yrs of service	Mature weight	Salvage price; $/lb	Salvage value	Salvage value, (1% death loss)	Annual Ownership Cost	Depreciation	Depreciation + Annual Costs	# cows/bull	Bull cost/cow/ yr	difference	Difference/ cow/yr
bull 1	$2,500.00	5	1850	$0.80	$1,480.00	$1,465.20	$400.00	$206.96	$607	25	$24.28		
bull 2 (better bull)	$4,500.00	5	2000	$0.80	$1,600.00	$1,584.00	$500.00	$583.20	$1,083	25	$43.33	($476)	($19.05)

Bull Income (weaning)

	weaning wt/lbs	$/lb; Oct 2017	$/hd	revenue/ bull/yr	Income difference/yr	difference in expenses	total difference; $/hd	additional value; 5 yr life of bull at weaning
bull 1	525	$1.44	$754.64	$18,866				
bull 2 (better bull)	600	$1.36	$818.04	$20,451	$63.41	($19.05)	$44.36	**$5,544.43**

Bull Income (After Preconditioning)

	ADG	days of preconditioning	sale wt/lbs	$/lb; Dec 2017	$/hd	revenue/ bull/yr	Income difference/yr	difference in expenses; $/yr	total difference	additional value; 5 yr life of bull after preconditioning
bull 1	2	65	655	$1.25	$821.11	$20,528				
bull 2 (better bull)	2.75	65	779	$1.20	$937.30	$23,433	$116.20	($19.05)	$97.15	**$12,143.24**

www.beefbasis.com

Wean Date	10/2/2017
Preconditioning marketing date	12/6/2017

Now add the price you were willing to pay for the Neighbor's bull ($2,500) to the increased revenue the better bull provides ($5,544.43) = *$8,044.43*

Bull Breakeven price at weaning.

Now add the price you were willing to pay for the Neighbor's bull ($2,500) to the increased revenue the better bull provides ($12,143.24) = *$14,643.24*

Bull Breakeven price after a preconditioning program.

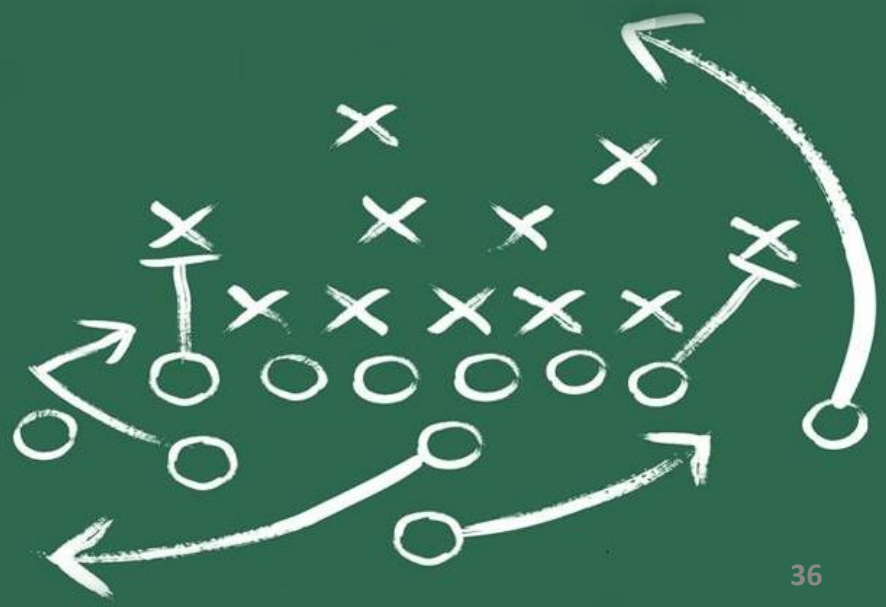
Take Home Message

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


BUY
NOW!

Make a Game Plan

- Select breed
  - Develop a mindset that you are going to buy an *individual* within the breed of choice rather than just 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
Magnum 8563
16060112 B/R Lantz Blackcap 6203

#Basin Max 602C
#B/R Blackcap Empress 8183
#B/R Destination 727-928
B/R Lantz Blackcap 3209

#B/R Destination 727
B/R Blackcap Empress 127
13879676 #B/R Blackcap Empress 8183

#GAR Traveler 1489
B/R Ruby of Tiffany 5113
#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	$F	$G	$B
+26.29	+42.46	+39.10	+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
Magnum 8563
16060112 B/R Lantz Blackcap 6203

#Basin Max 602C
#B/R Blackcap Empress 8183
#B/R Destination 727-928
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#GAR Traveler 1489
B/R Ruby of Tiffany 5113
#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	$F	$G	$B
+25.32	+50.33	+35.80	+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

eakdown l ID	DOB	Age as of (Months) 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%	
7045 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%	
3010 P	10/19/07	19	40%	0.4	28	30%	
s 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%	
53 P	9/17/07	20	55%	1.1	38	4%	
7N71 P	9/21/07	20	55%	1.1	38	4%	
53 P	10/2/07	19	60%	1.3	42	2%	
035 P	10/4/07	19	60%	1.2	39	4%	
319 P	10/26/07	18	60%	1.3	37	6%	
P	10/11/07	19	60%	1.3	33	15%	

Performance Basics
SEP
Terminal Profit Index
Fall EPD Statistics
Monthly Column
Articles
Ultrasound
Seedstock Tour

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

Replacement Females

Don’t go to the weekly cattle sale

In business to produce *Beef*

Develop a Plan

Start with the <u>End</u> in sight.

When are you going to market the cattle?

Sell at Weaning…

Replacement Heifers

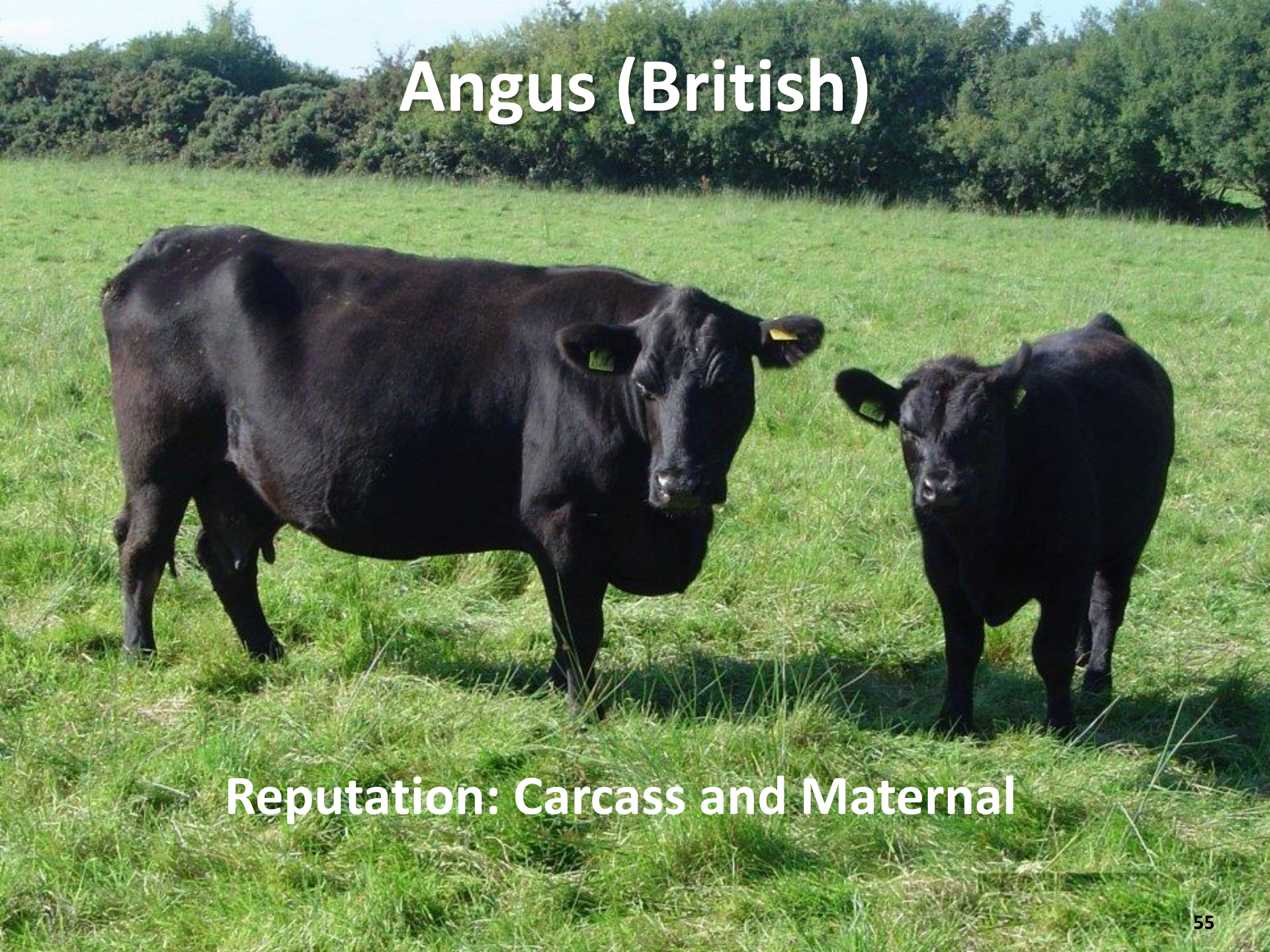
- What Breeds Should you consider?
  - Types
  - Heterosis
  - Complementarity effects
  - Marketing goals
- What is the Right Cow Type?
- What is the Right Bull?
- Where to buy cattle?

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

Simmental (Continental)

Reputation: Maternal and growth

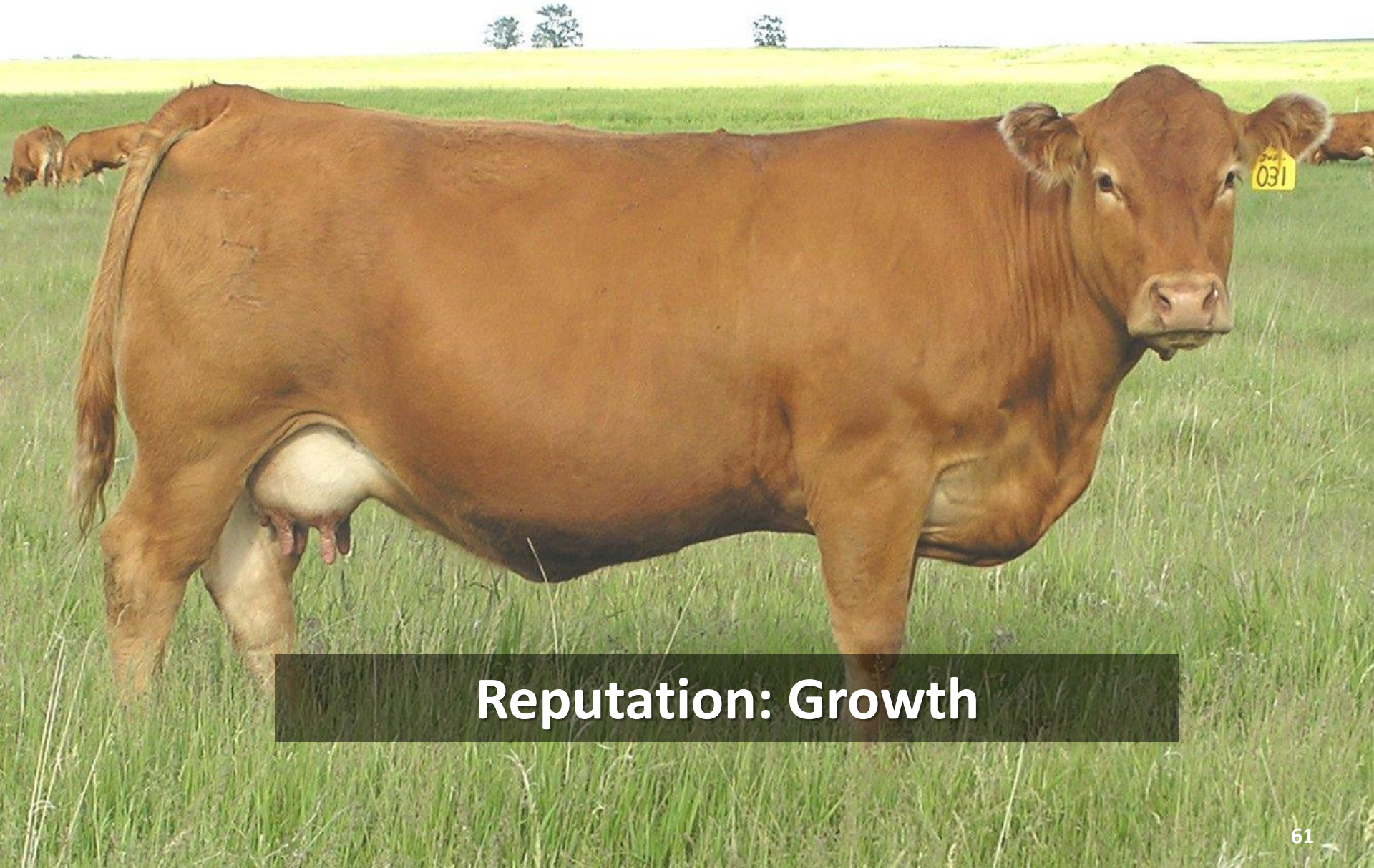
Simmental (Continental)

Gelbvieh (Continental)

Reputation: Maternal and growth

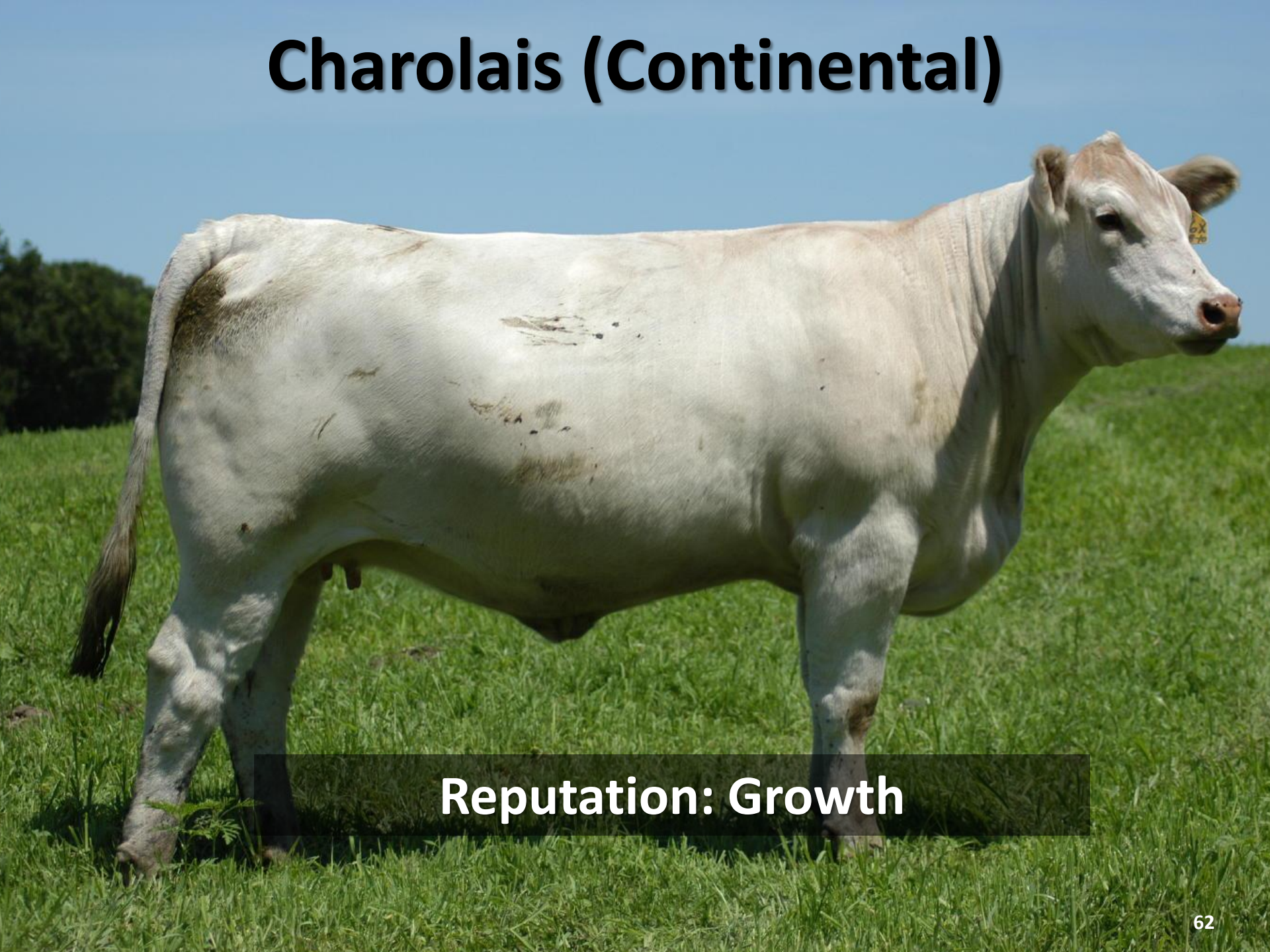
Gelbvieh (Continental)

Limousin (Continental)

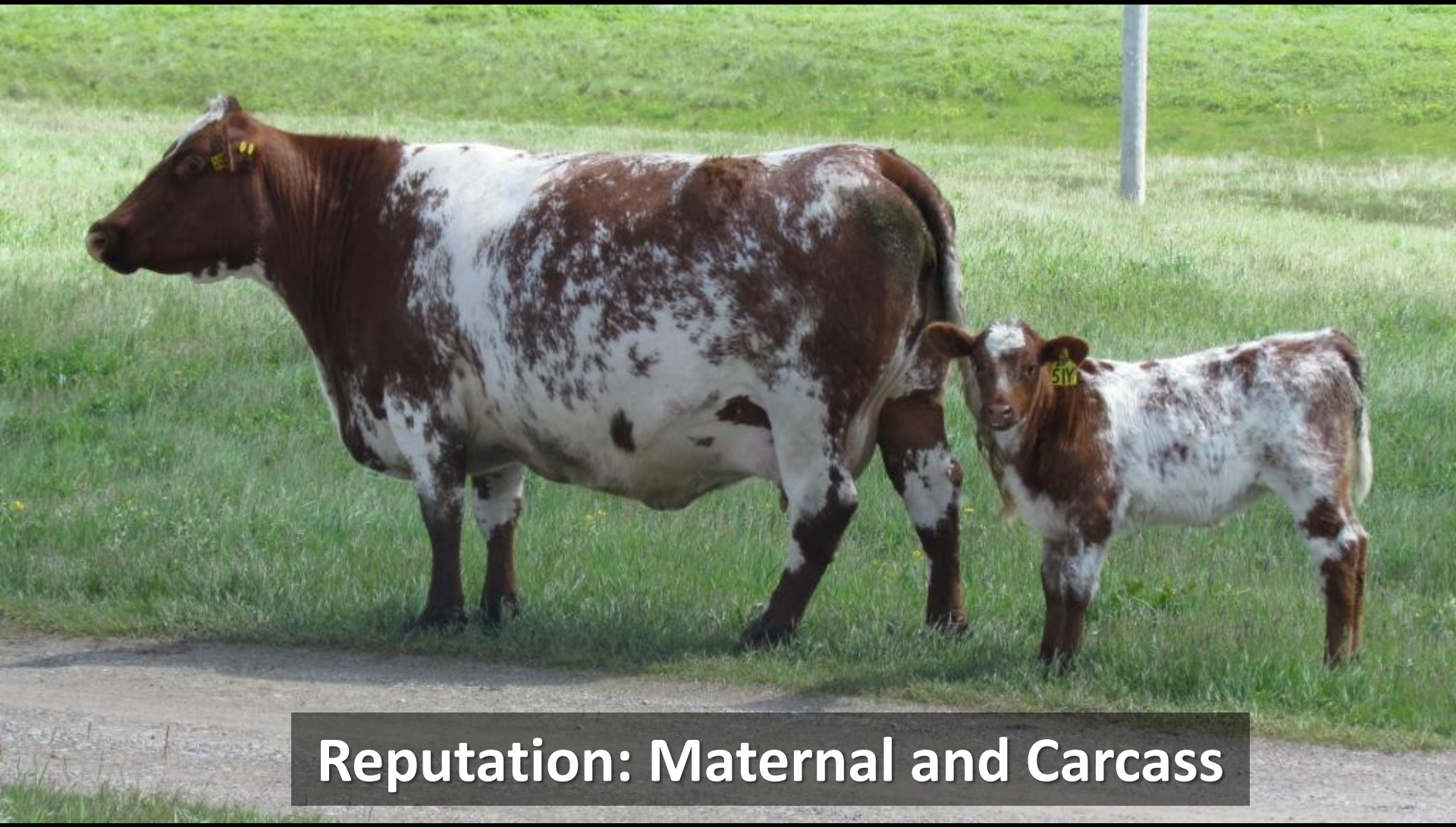


Reputation: Growth

Charolais (Continental)



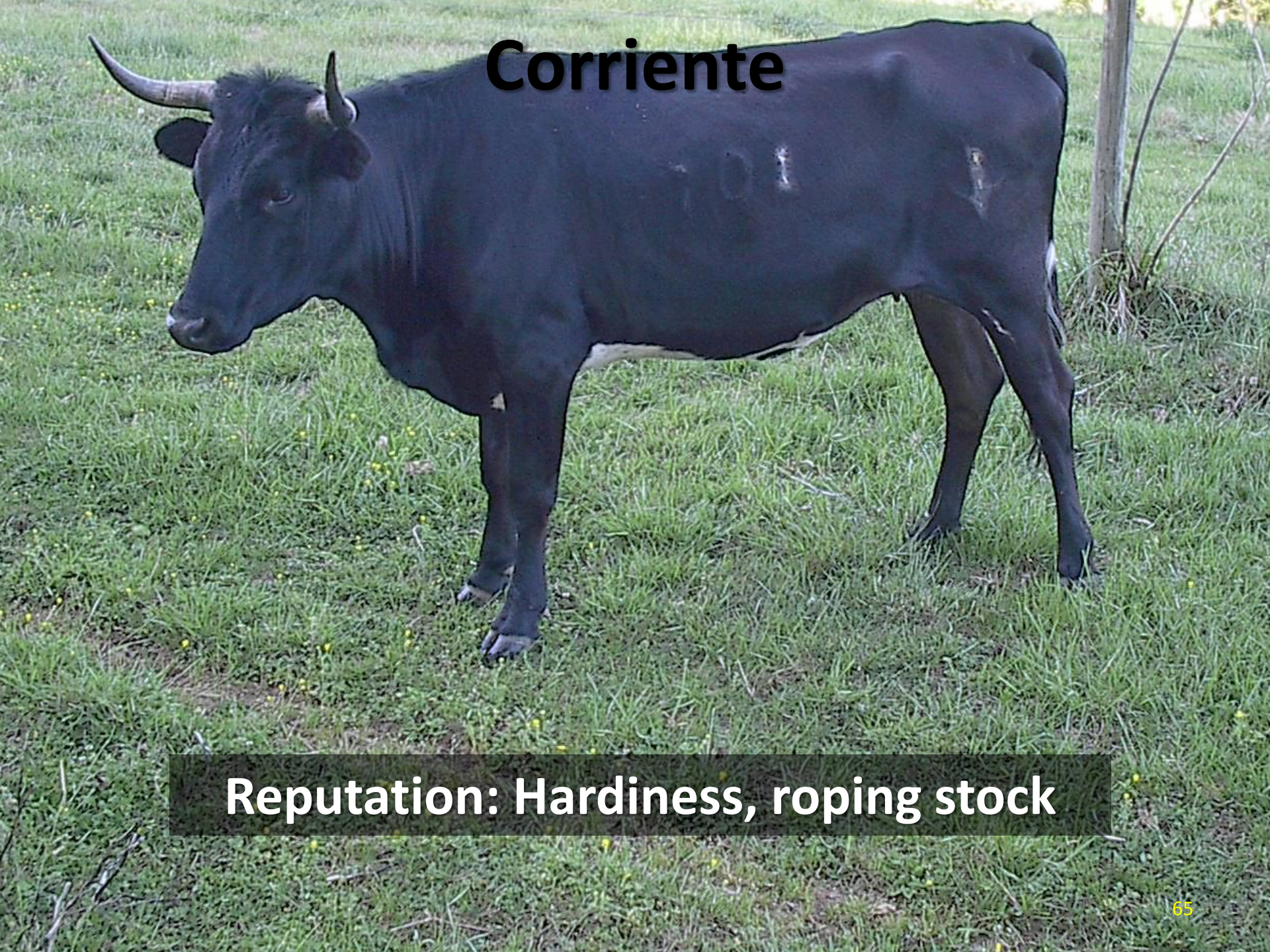
Shorthorn



Reputation: Maternal and Carcass

Longhorn

Corriente



Reputation: Hardiness, roping stock

Composites

or

Cross Breds

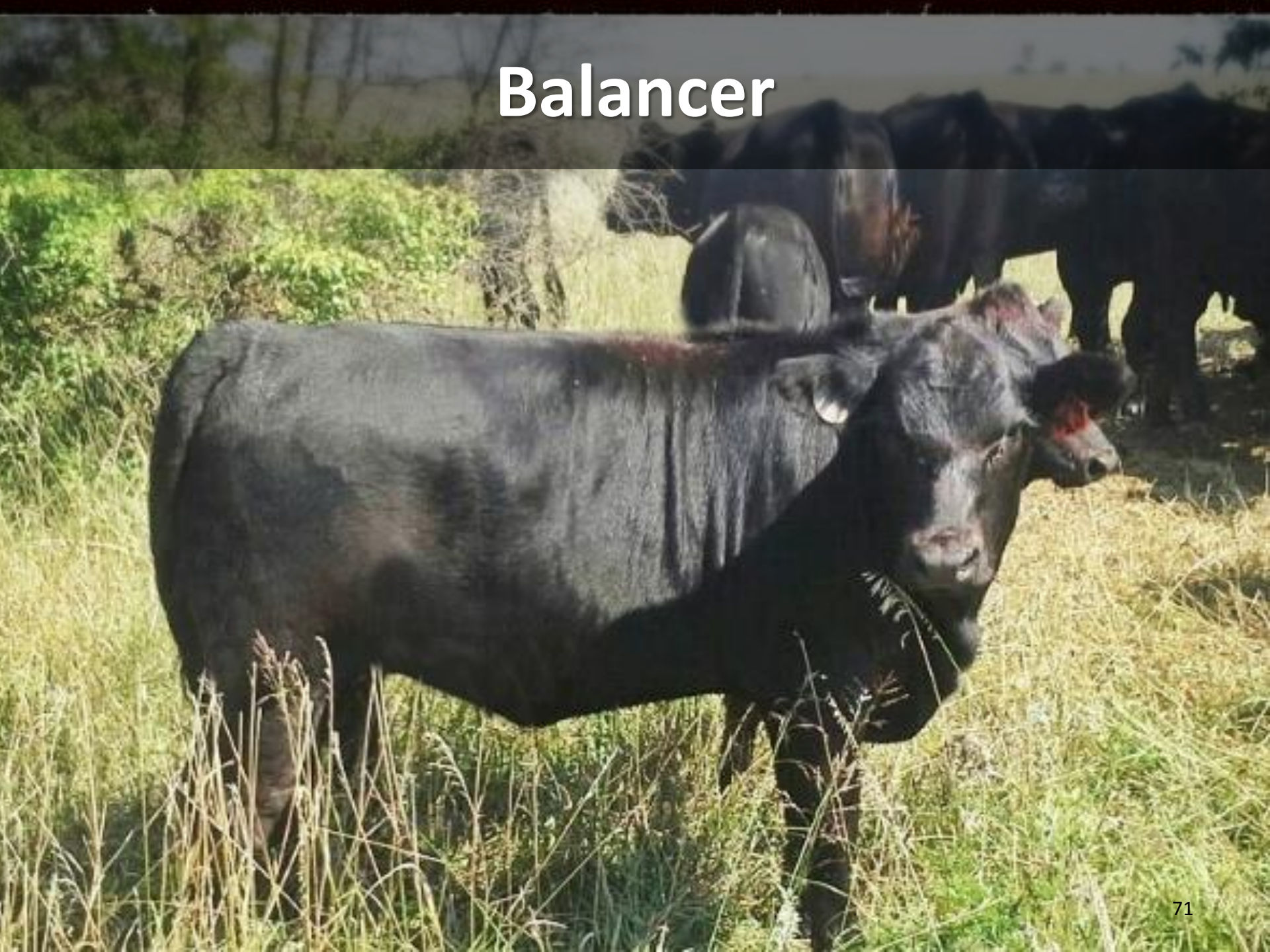

Black Baldy

Super Baldy

Commercial Angus

Ultra Black

Balancer



LimFlex

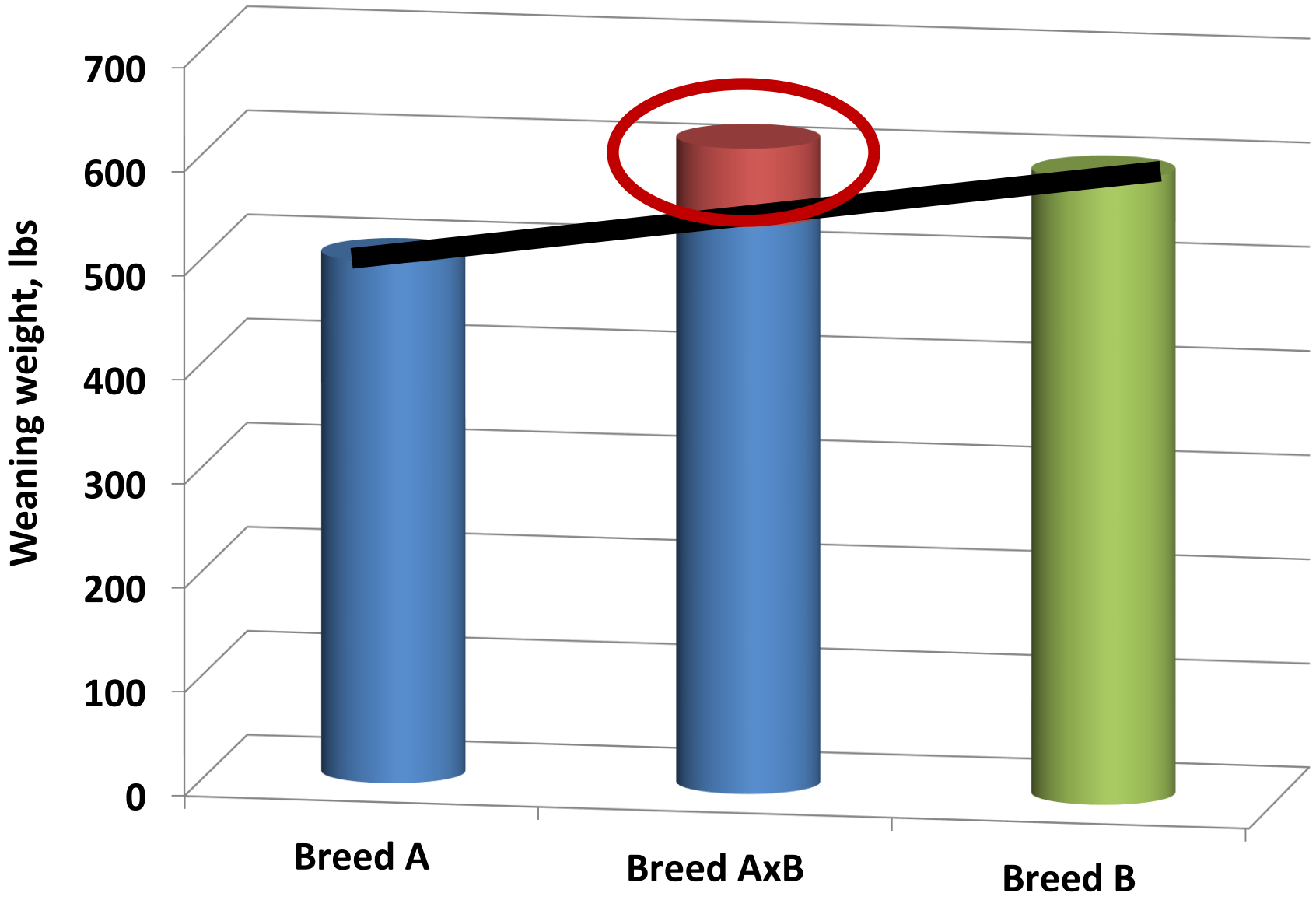
Hybrid vigor = Heterosis

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%).

Heterosis = Hybrid Vigor



Maximum Heterosis

F1 x F1 Cross

Parents are from 4 unrelated breeds


Tiger Stripe Cow:
Brahman X Hereford


LimFlex Bull:
Angus x Limousin

Decreases Uniformity, especially in multiple bull herds.

$$(2+3)/2 = 3.5$$

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

Economics of Heterosis

- What does it cost?
- It depends.
- Cow size
  - About 6 % increase/100 lbs BW
- Milk production
  - ~1.5 % increase in energy/lb of milk
  - ~2.7 % increase in CP/lb of milk
- Make sure she fits your environment
  - Stocking rate
  - Supplemental feed

Economics of Heterosis- Angus cow x Terminal bull

Original Scenario:

- 100 cows; Angus cow x Angus Bull
- 525 lb weaning weight
- Average weaning rate 82%
- 43,050 lbs marketed

Switch to

- Angus cow x Beefmaster bull
- Individual heterosis (+5%)
  - 551 lb weaning weight F1 calf
- 45,203 lbs marketed
- +2152 lbs/year = +$5,725.65/year

Economics of Heterosis- F1 cow x Terminal bull

Original Scenario:

- Angus cow x Angus bull
- 525 lb weaned calf
- Average weaning rate 82%
- 43,050 lbs marketed

Switch to

- F1 cow X (Terminal Bull Breed C)
- +WW total heterosis +25% {↑ Weaning rate (90%) & weight(11%)}

Capturing Heterosis

System	% Max Heterosis	% Increase in Calf Wt./Cow Exposed
Pure breeds	0	0
2 breed rotation	67	16
3 breed rotation	86	20
2 breed composite	50	12
3 breed composite	63	15
Term. Sire/purch. F1 female	100	23-28

Economics of Heterosis- F1 cow x Terminal bull

Original Scenario:

- Angus cow x Angus bull
- 525 lb weaned calf
- Average weaning rate 82%
- 43,050 lbs marketed

Switch to

- F1 cow X (Terminal Bull Breed C)
- +WW total heterosis +25% {↑ Weaning rate (90%) & weight(11%)}
- 656 lb calf
  - +131 lbs
- 59,040 lbs
- +15,990 lbs = +$40,295

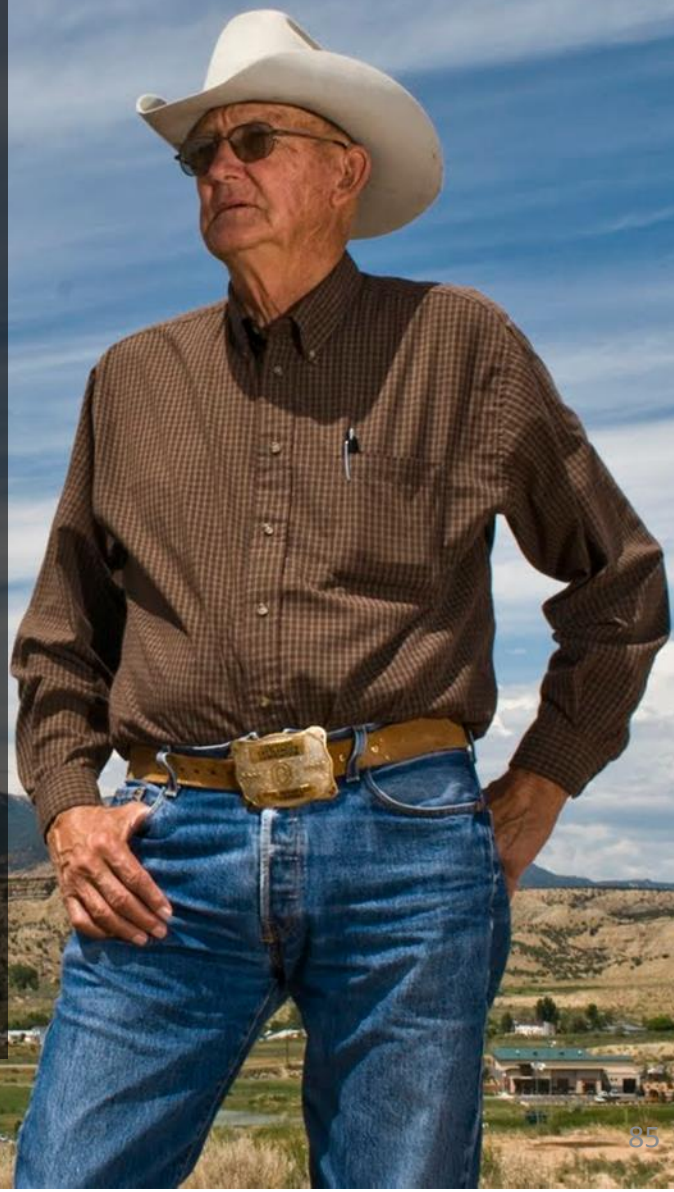
Economics of Heterosis

- +$5,725.65 increased weaning weight *(Bull Affect)*
  - *Angus cow x terminal bull*
  - *(½ Angus Calf x ½ Terminal bull breed calf)*
- +$40,295 increase in weaning rate & weight
  - *F1 cow x terminal bull breed*
  - *(½ F1 x Terminal bull breed calf)*
- *Keep after weaning and $$$ increase as you can take advantage of additional heterotic effects of improved growth rates*

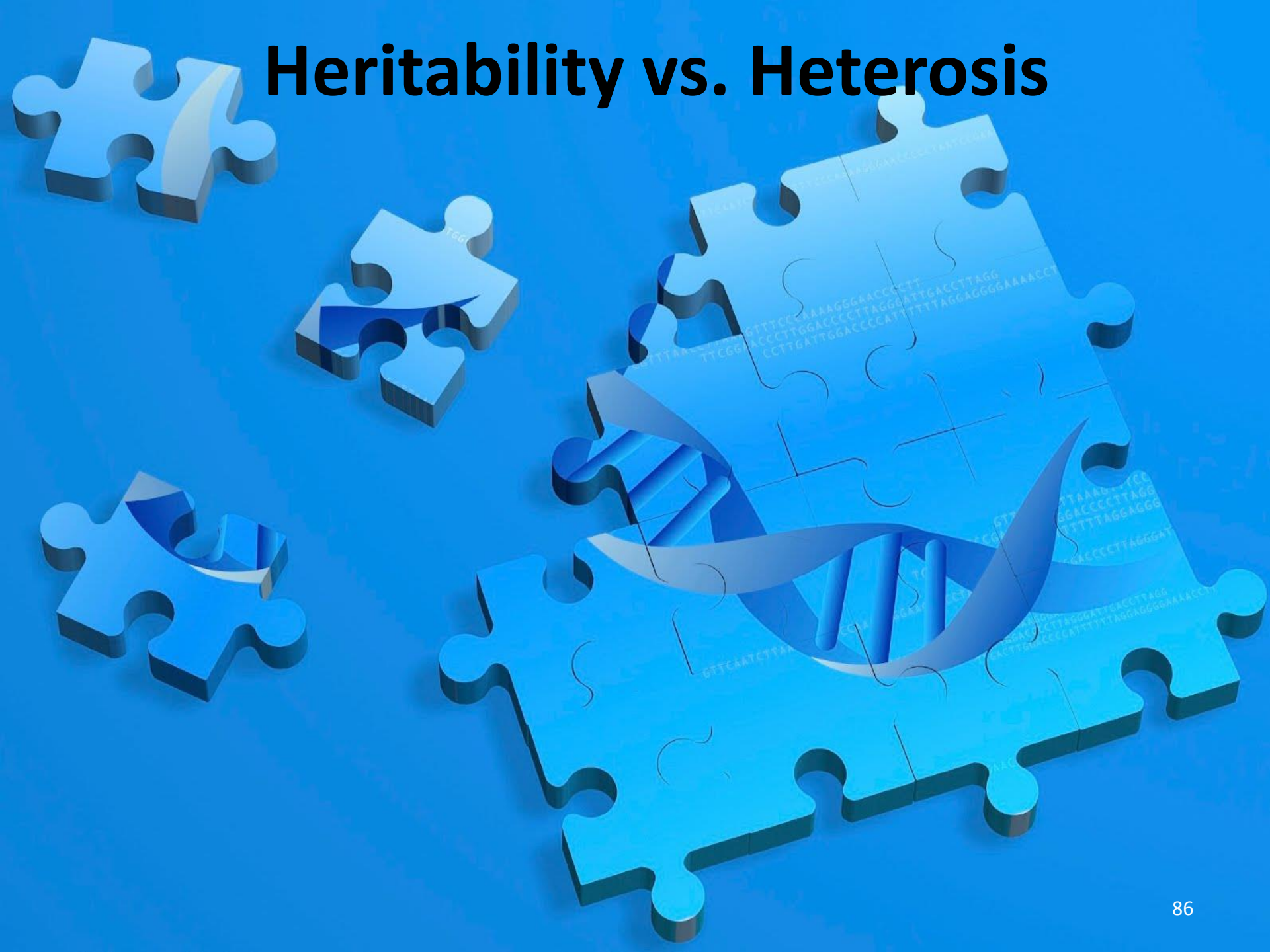
OK weighted average weights on 10-24-14, USDA-AMS data

Parting Thoughts

- Must be able to manage for the benefits
- Heterosis will not make up for poor animal husbandry/management
- Heterosis will not make up for poor bull selection



Heritability vs. Heterosis



Heritability

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

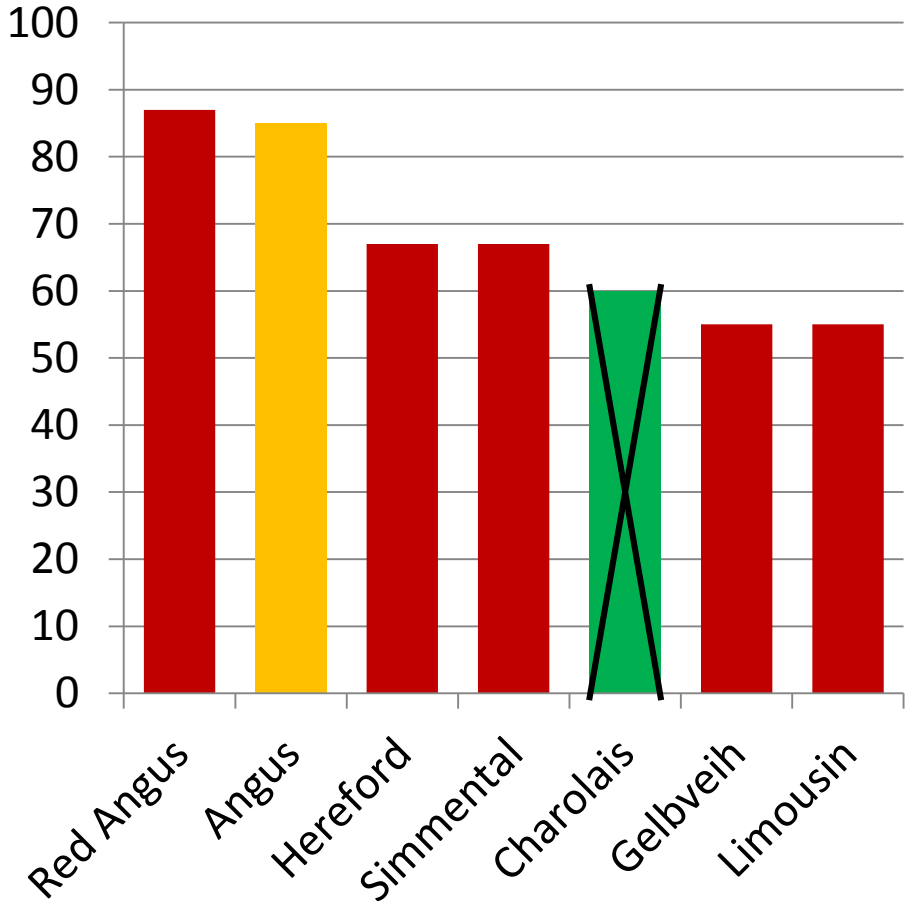
Few traits have h^2 > .6

Heritability Estimates

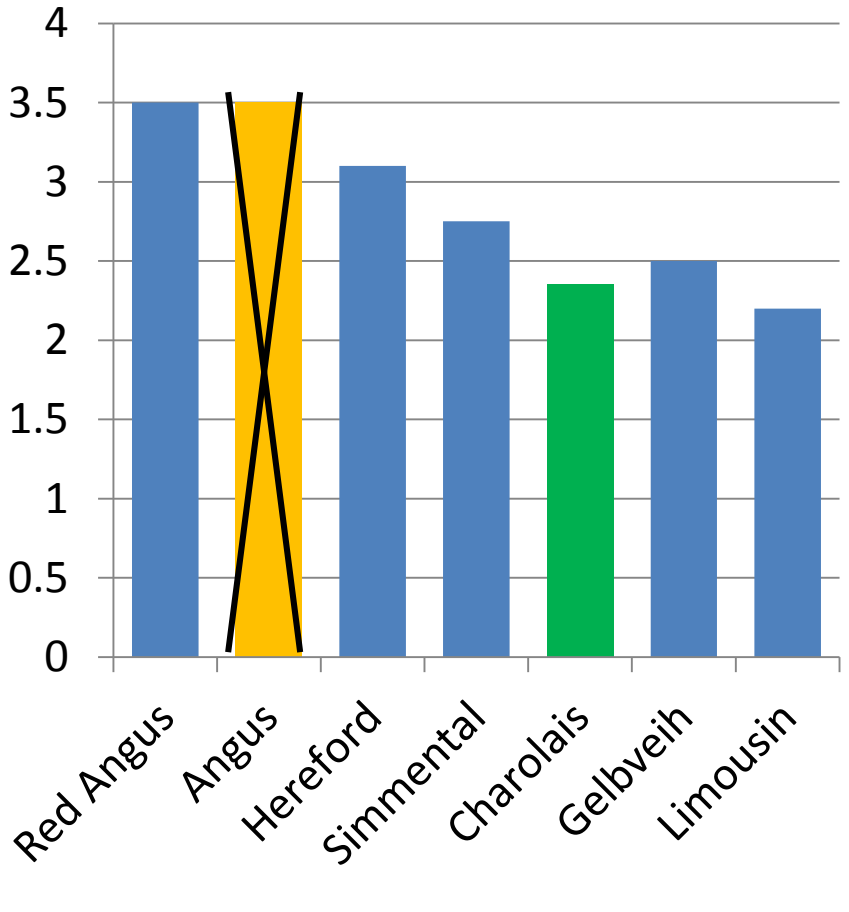
Height	0.85
REA	0.70
Tenderness	0.60
Birth weight	0.45
Feedlot gain	0.34
Weaning weight	0.24
Fertility	0.10
Calving interval	0.08
Conception rate	0.07

Breed Complementarity

Breed Complementarity

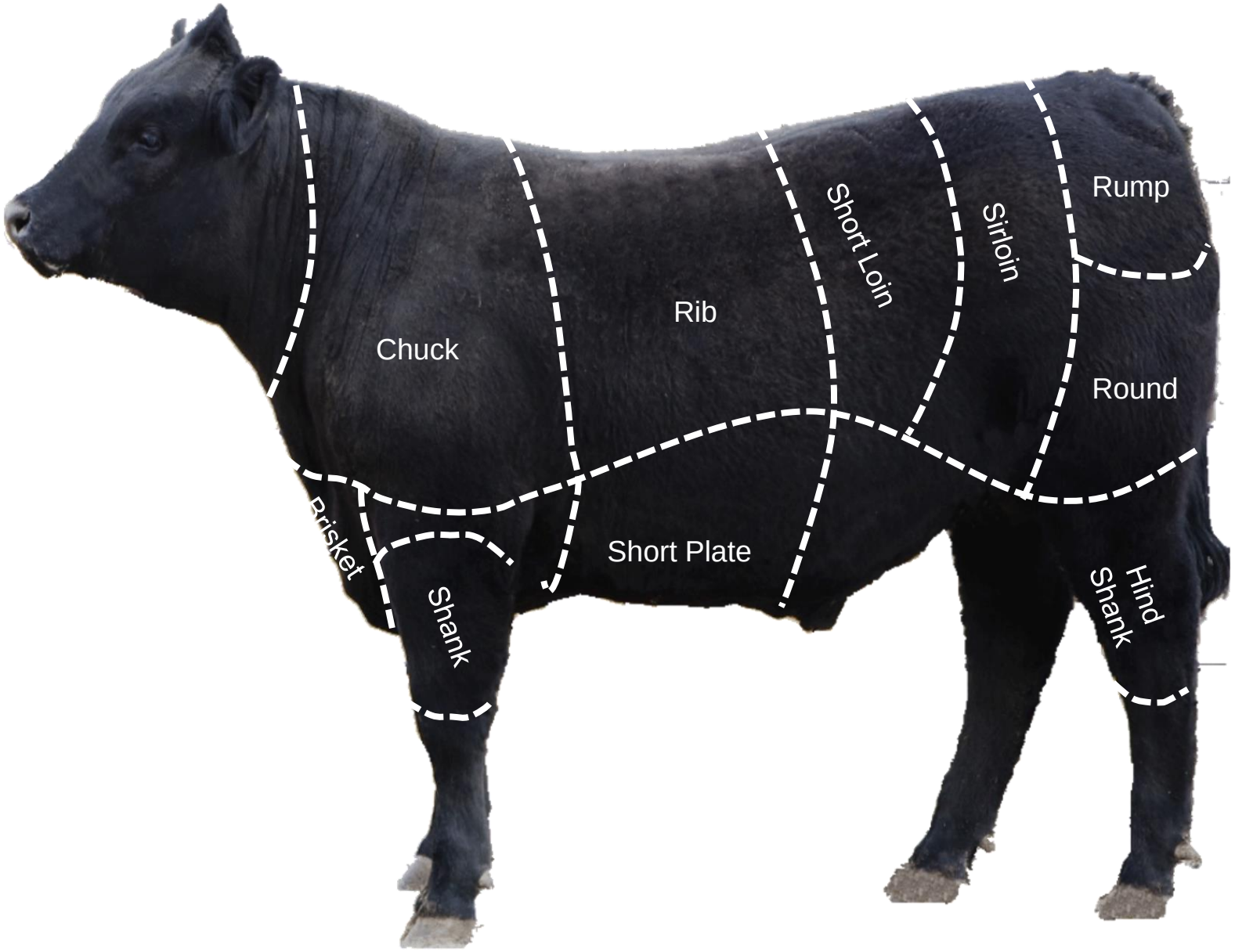


Quality Grade; % Choice



Yield Grade

Cundiff et al., 2004


Chuck
Rib
Short Loin
Sirloin
Rump
Round
Brisket
Shank
Short Plate
Hind Shank

Lost Opportunities

Quality Grade		-$25.25
Yield Grade	-$37.77	-$5.77
Carcass Weight		-$6.75
Offal		-$5.15
Hide/Branding		-$0.74
Total		-$43.66

NBQA 2011

USDA Quality and Yield Grade Distribution

USDA Yield Grade	Prime, %	Choice, %	Select, %	Other, %
1	0.0	3.6	7.3	1.4
2	0.4	22.8	15.3	2.4
3	1.8	25.9	8.0	1.5
4	0.5	6.3	1.4	0.4
5	0.1	1.3	0.1	0.1

NBQA 2011

Table 1. Example Grid, as Presented by a Packer ($/dressed cwt.)

Choice YG3 550-950 lbs.	Base Price
Prime-Choice Price Spread	+6.00
Choice-Select Price Spread	-6.00
Select-Standard Price Spread	-10.00
Yield Grade 1	+5.00
Yield Grade 2	+3.00
Yield Grade 4	-20.00
Yield Grade 5	-25.00
Dark Cutters	-20.00
Light Carcasses (<550 lbs.)	-10.00
Heavy Carcasses (>950 lbs.)	-20.00

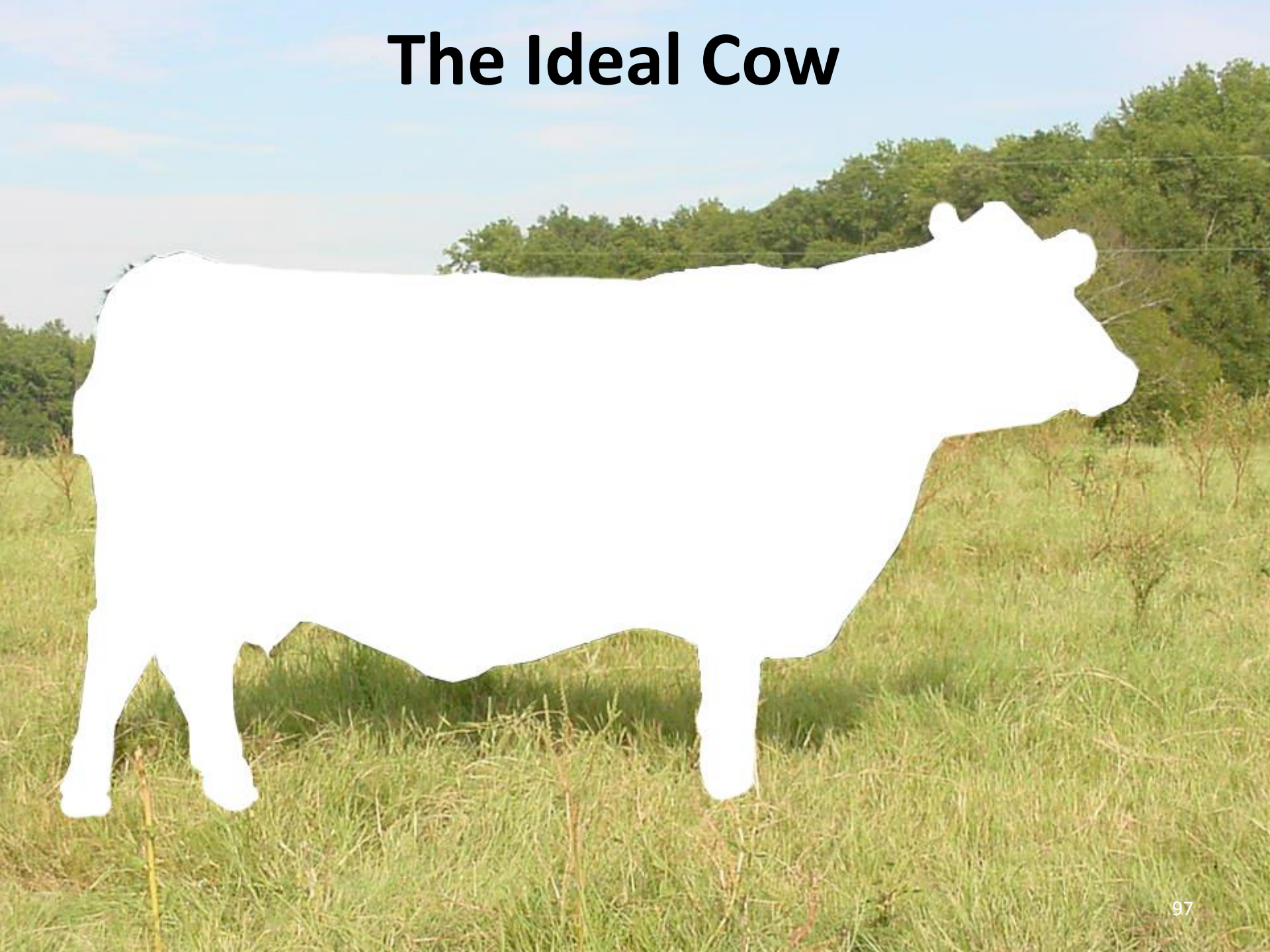
Carcass Grid

USDA Yield Grade	Prime, %	Choice, %	Select, %
1	$11	$5	-$1
2	$9	$3	-$3
3	$6	$0	-$6
4	-$14	-$20	-$26
5	-$19	-$25	-$31

Dark Cutter =-$20; Light Carcass (<550 lbs) = -$10; Heavy Carcass (>1000 lbs) = -$20

Breed Complementarity

The Ideal Cow



The Ideal Cow

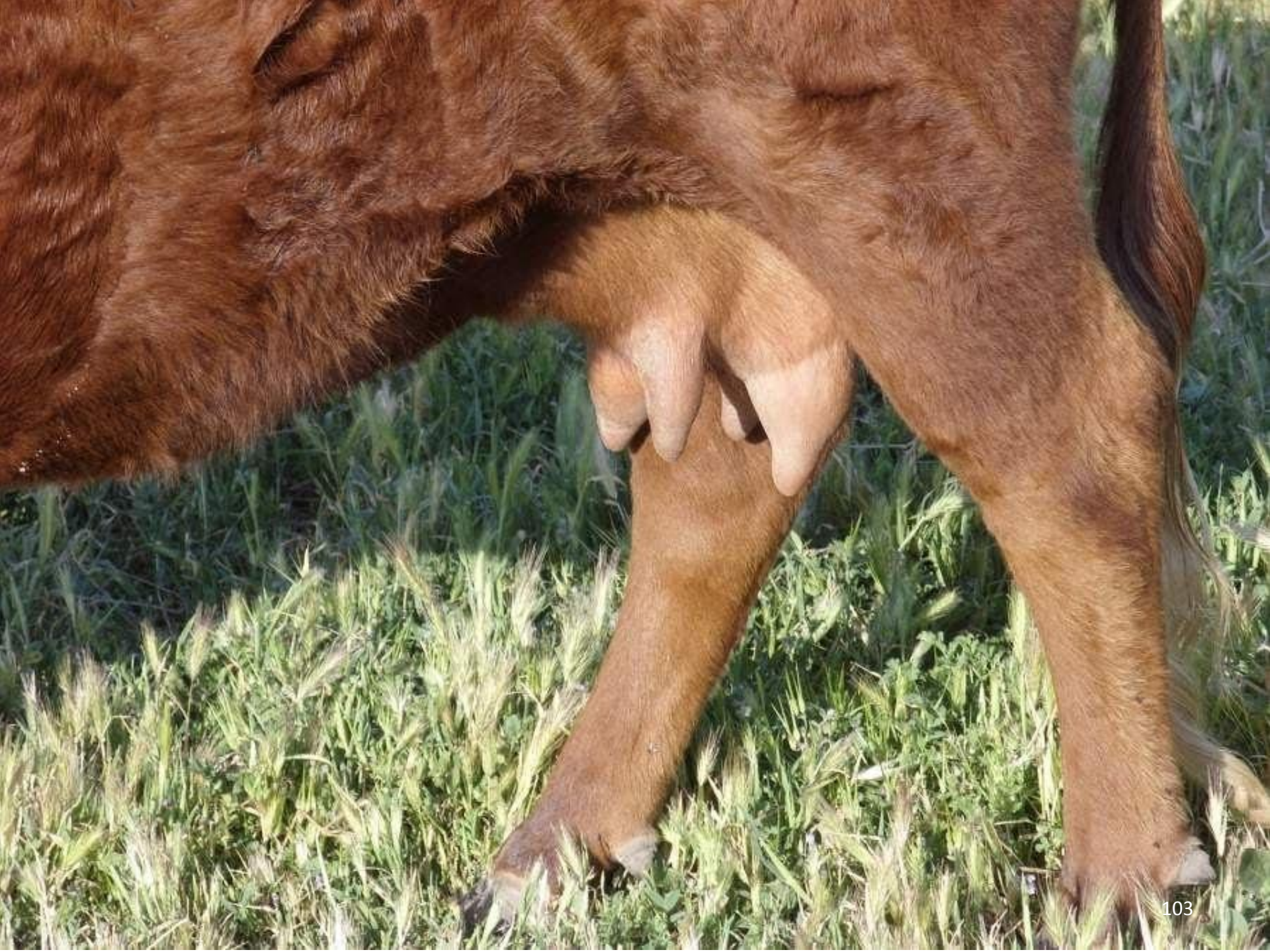
- Early puberty
- Never misses a breeding season (1 calf/365 d)
- Calves unassisted
- Doesn’t require a lot of supplemental feed
- Easy fleshing
- Converts forage to lbs of raised calf
- Stays in the herd a long time
- Good temperament
- Good muscling and carcass characteristics
- Adequate but not too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

The Ideal Cow

Easy fleshing

Good Udder

Broken Down Udder



Cow Size

Match cow to Environment

Function efficiently in *My* environment

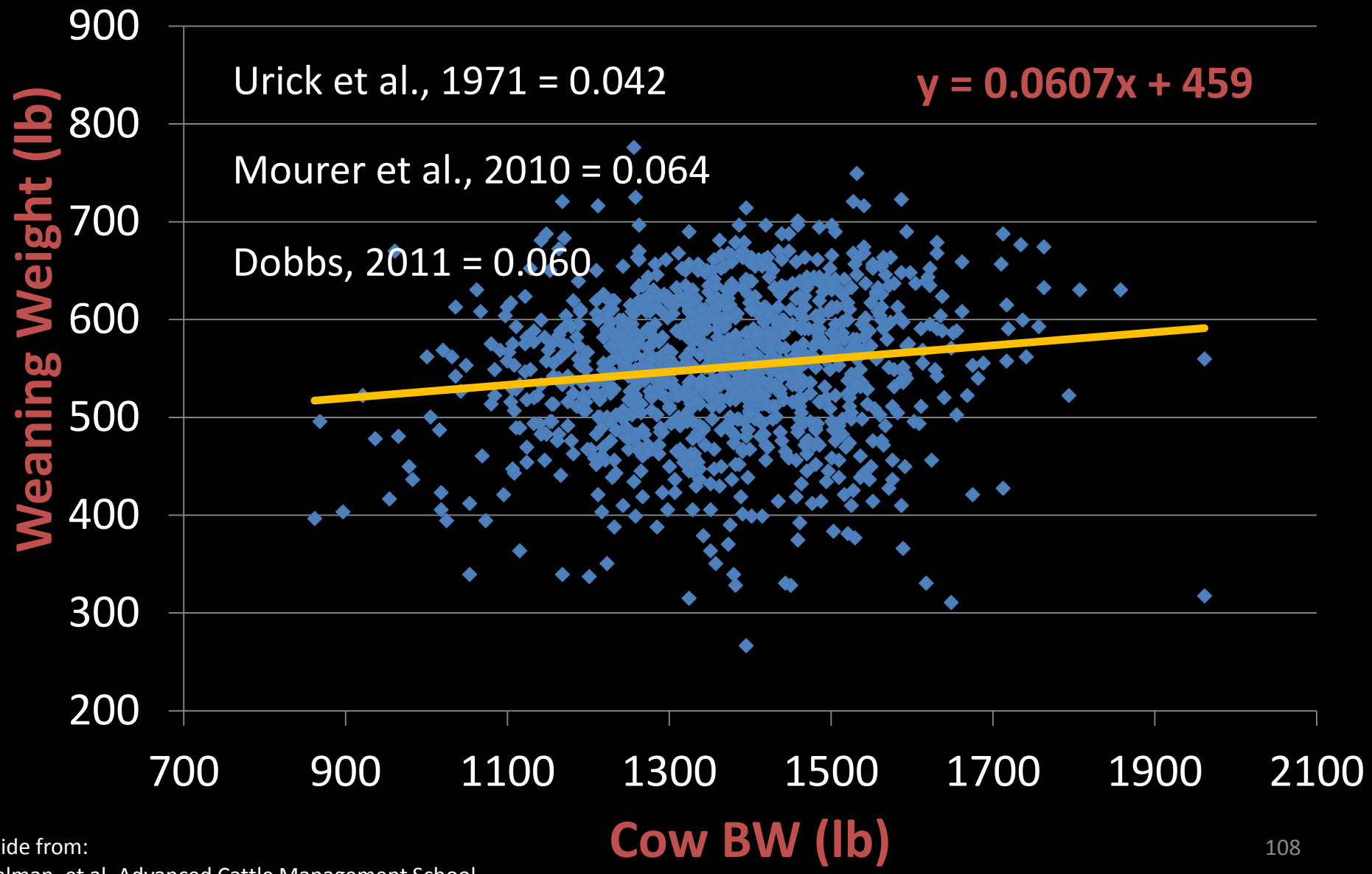
- Climate
- Management
- Forage base
- Terrain
- Pasture size
- Distance to water

Function efficiently in *My* environment

Cow Size

Milk production

Calf WW vs Cow BW



Slide from:
Lalman, et al. Advanced Cattle Management School

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)

Slide from:
Lalman, et al. Advanced Cattle Management School

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**

Slide from:
Lalman, et al. Advanced Cattle Management School

Function efficiently in *My* environment

Cow Size

Milk production

Nutrient Requirements

1100# Cow vs 1300# Cow

Average Milk

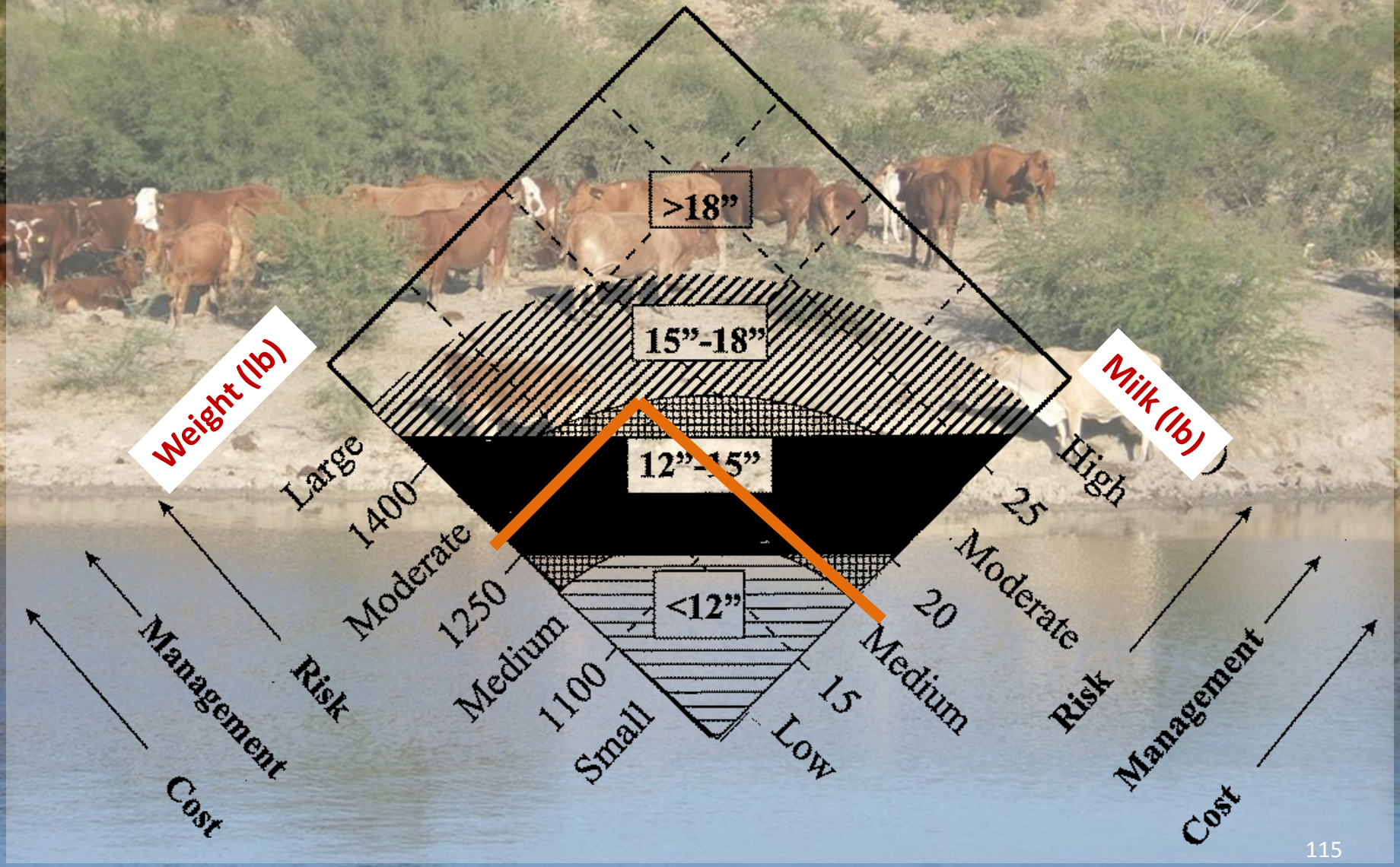
	Calving to Breeding		Breeding to Weaning		Weaning to Last 1/3		Last Trimester	
Dry Matter, lbs	26.4	29.1	25.5	28.5	21.4	24.2	22.7	25.8
CP, lbs	2.75	3.06	2.18	2.5	1.41	1.6	1.93	2.03
TDN/Energy, lbs	15.5	17.3	14.3	15.7	10.1	11.4	11.9	13.57

How does cow size affect stocking rate?

- 500 acre property
  - (100 grazable, no brush)
- Forage production (2300 lbs/ac.)
  - Average/good production 115 lbs/ac. in.
  - 30% utilization = 690 lbs edible forage/ac (as fed)
  - **550 lbs dry matter basis**
  - 550 lbs/ac * 500 ac = 275,000 lbs available forage
- 1100 lb. cow consumes 26.4 lbs/d (9,636 lbs/yr)
  - **28.5 1100 lb cows on the 500 ac.**
- 1300 lb. cow consumes 29.1 lbs/d (10,621 lbs /yr)
  - **25.8 1300 lb cows on the 500 ac.**

The cow should fit her environment

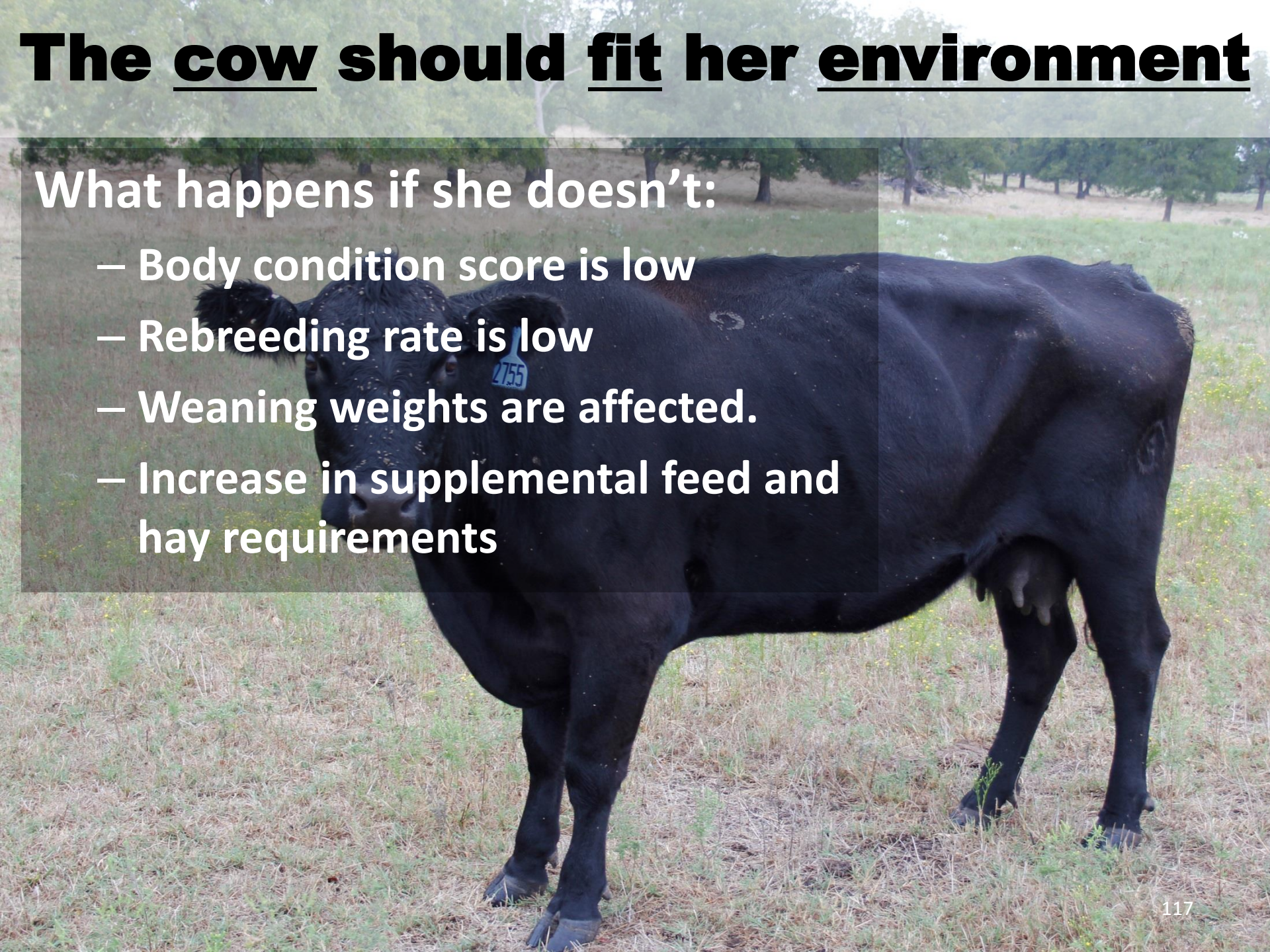
Match cow and environment



Weaning a calf is 5x more important than growth

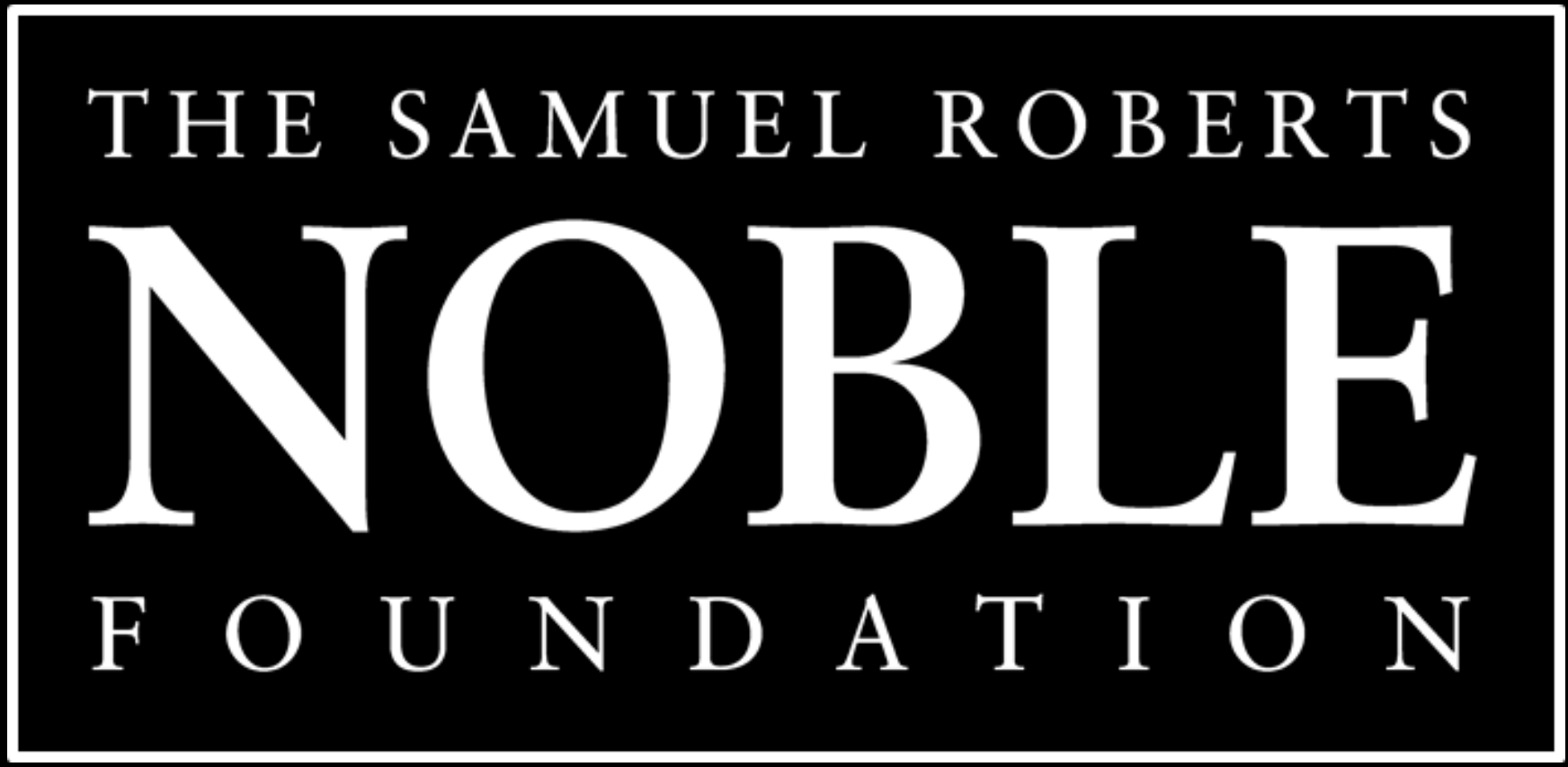
A cow's ability to wean a calf (reproductive performance) is directly related to how well she fits my environment.

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



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