

Selecting the Right Replacement



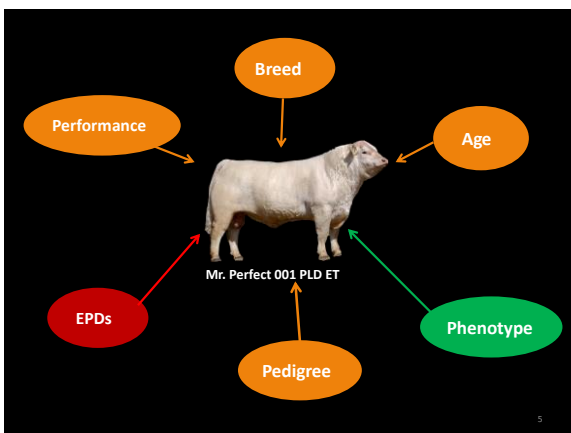
Perfect Bull



The Bull should fit the Market

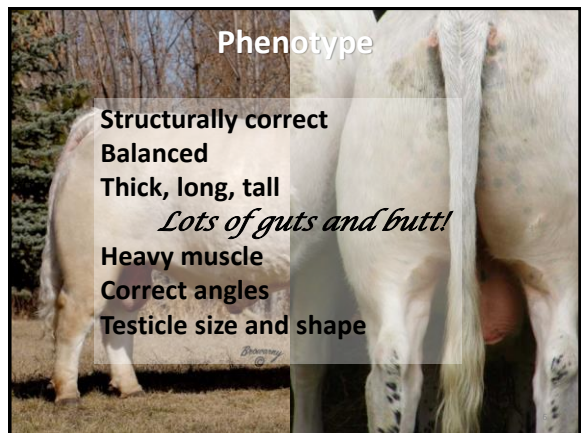


Make 'em **all** **one** **color**!



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)

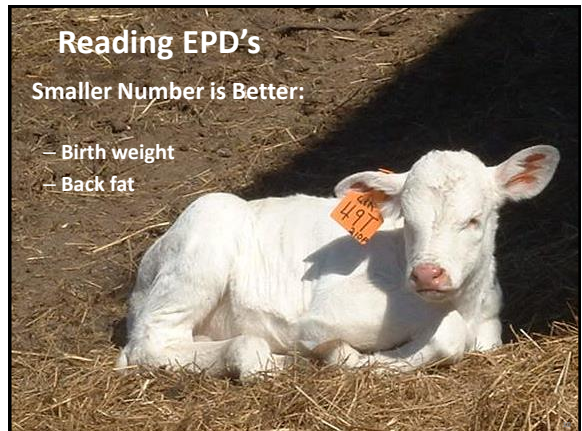


An Estimate of how future progeny of each sire are expected to perform relative to the progeny of other sires listed in the database.

Reading EPD's

Smaller Number is Better:

- Birth weight
- Back fat



Reading EPD's

Larger Number is Better:

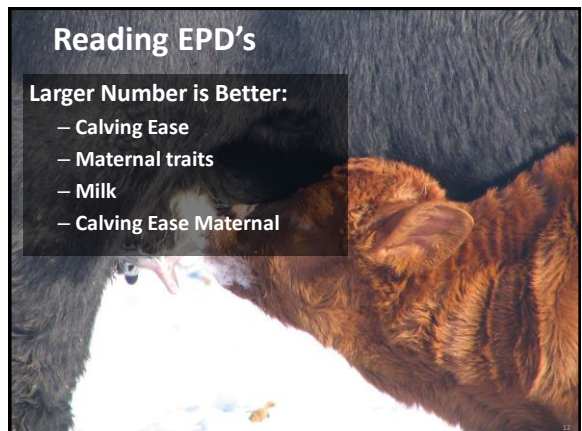
- Weaning Weights
- Yearling Weights



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

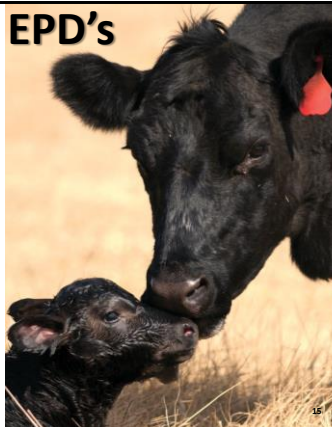


Which EPD's should I use????



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).



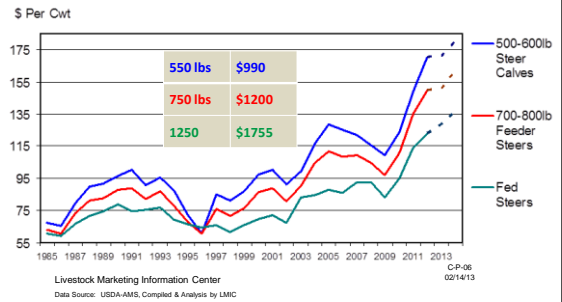
If you can't hold him you don't need him

Value of Known Bull Genetics



19

ANNUAL AVERAGE CATTLE PRICES Southern Plains



20

Bull # 1

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

21

Bull # 1

Purchase price	\$2500
Salvage weight of Bull	1850 lbs
Salvage price of bull	\$0.80 / lb
Salvage value of bull	\$1465.20
(-1% death loss)	
Cost of bull, yr	\$ 206.96
(5 yr life span in herd)	

22

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

23

Bull # 2



24

Bull # 2

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

25

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

26

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

27

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)

28

Increased Value at Weaning

(October 2017)

	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) (-\$250.25)	XX	\$5,544.43

29

Increased Value after Backgrounding

(Dec. 2017)

	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

30

Review the Data

Backdown ID	DOB	Age as of (Months) 5/1/2009	BVRank	BV	V/V	V/VRank	V/V
7589 P	9/29/07	19	15%	-0.9	34	10%	
85 P	10/22/07	19	20%	-0.7	34	10%	
9 P	9/28/07	19	30%	0	41	2%	
7597 P	9/21/07	20	35%	0.2	42	2%	
8 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%	
8010 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%	
P	10/5/07	19	55%	1.1	43	1%	
P	10/8/07	19	55%	1.1	43	1%	
9 P	9/17/07	20	55%	1.1	38	4%	
7171 P	9/21/07	20	55%	1.1	38	4%	
3 P	10/2/07	19	60%	1.3	42	2%	
035 P	10/4/07	19	60%	1.2	39	4%	
19 P	10/26/07	18	60%	1.3	37	6%	
	10/11/07	19	60%	1.3	33	15%	

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

Performance > Fall EPD Statistics > Percentile Rank

Non-Parent Percentile Ranking

Percentile	≤ -5.0	≥ 45.6	≤ -5.0	≥ 45.6	≤ -5.0	≥ 45.6
1	≤ -5.0	≥ 45.6	≤ -5.0	≥ 45.6	≤ -5.0	≥ 45.6
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	26.4	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



In business to produce **Beef**



44

Develop a Plan



45

Start with the End in sight.



46

When are you going to market the cattle?



47

Sell at Weaning...



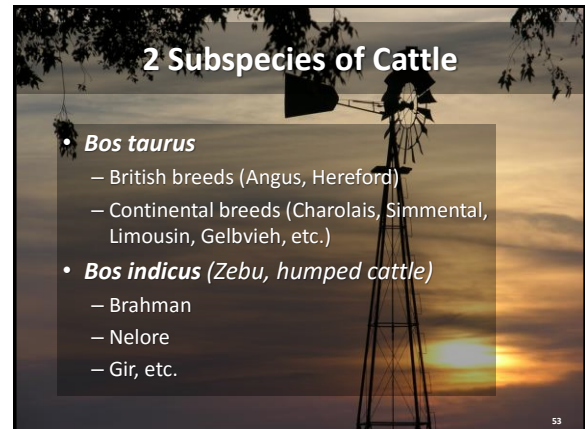
48



49

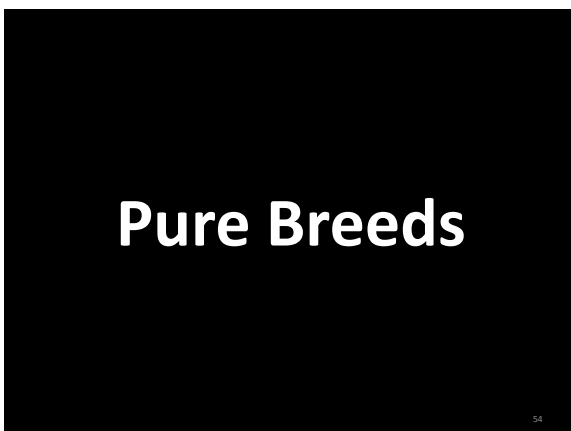


- What Breeds Should you consider?
 - Types
 - Heterosis
 - Complementarity effects
 - Marketing goals
- What is the Right Cow Type?
- What is the Right Bull?
- Where to buy cattle?



2 Subspecies of Cattle

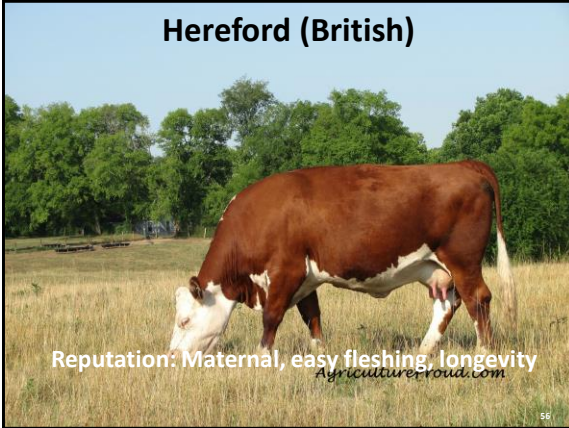
- *Bos taurus*
 - British breeds (Angus, Hereford)
 - Continental breeds (Charolais, Simmental, Limousin, Gelbvieh, etc.)
- *Bos indicus* (Zebu, humped cattle)
 - Brahman
 - Nelore
 - Gir, etc.



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)

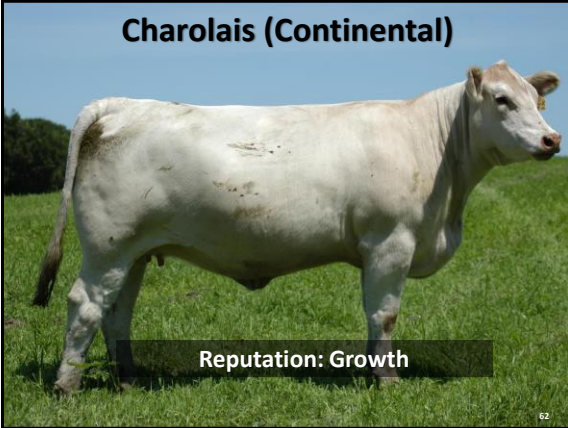


Limousin (Continental)



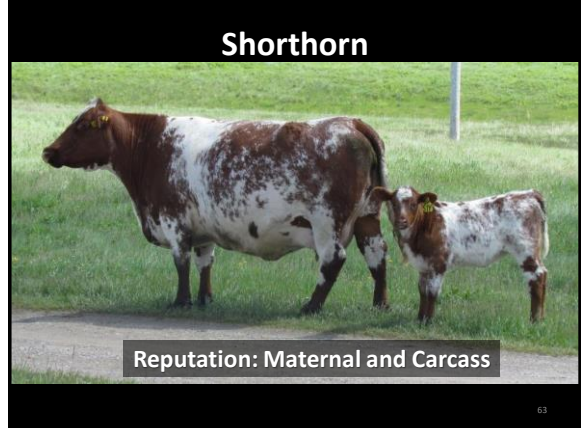
Reputation: Growth

Charolais (Continental)



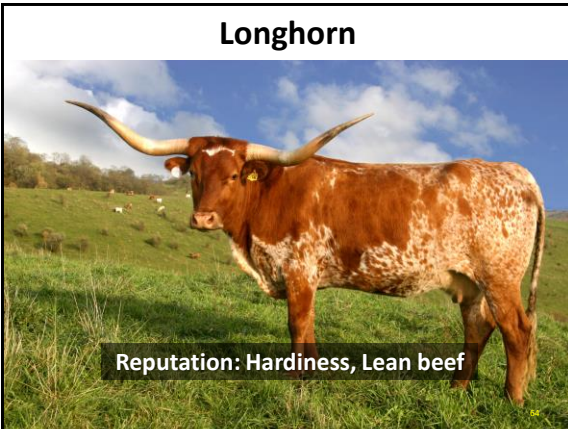
Reputation: Growth

Shorthorn



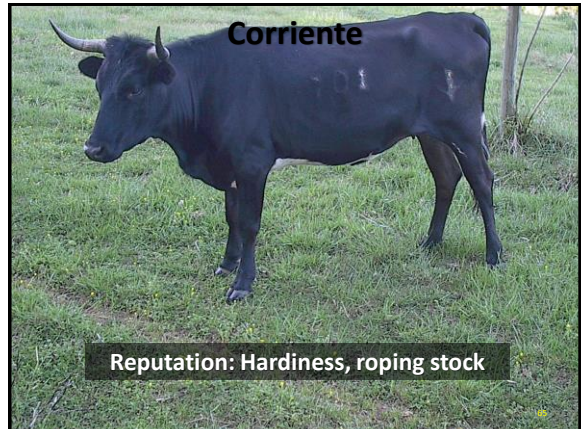
Reputation: Maternal and Carcass

Longhorn



Reputation: Hardiness, Lean beef

Corriente



Reputation: Hardiness, roping stock

Composites
or
Cross Breds

Black Baldy



Super Baldy



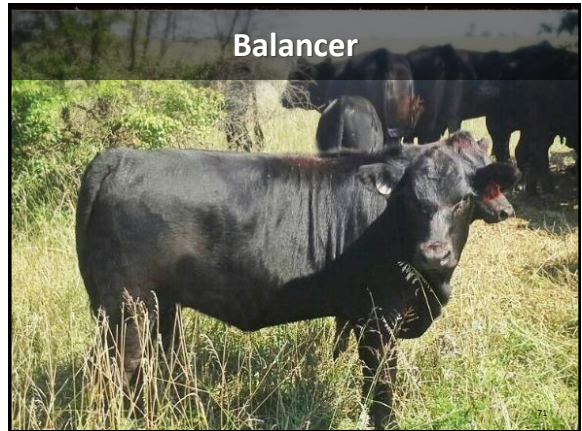
Commercial Angus



Ultra Black



Balancer



LimFlex



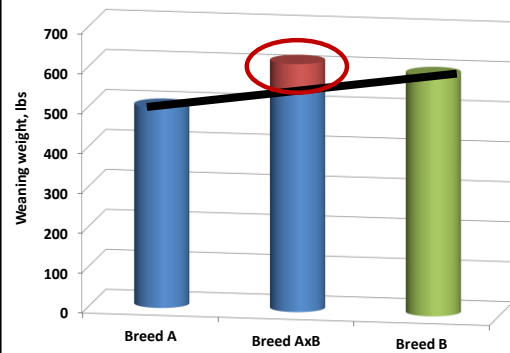
Hybrid vigor = Heterosis

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%).

74

Heterosis = Hybrid Vigor



75

Maximum Heterosis

F1 x F1 Cross

Parents are from 4 unrelated breeds



Decreases Uniformity, especially in multiple bull herds.

76

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

77

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

78

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

79

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

80

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%)}

81

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

82
Brett Barham, Univ. of Arkansas

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

83

Economics of Heterosis

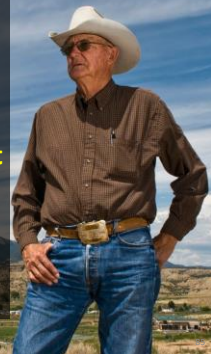
- **+\$5,725.65 increased weaning weight (Bull Affect)**
 - Angus cow x terminal bull
 - (½ Angus Calf x ½ Terminal bull breed calf)
- **+\$40,295 increase in weaning rate & weight**
 - F1 cow x terminal bull breed
 - (½ F1 x Terminal bull breed calf)
- *Keep after weaning and \$\$\$ increase as you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

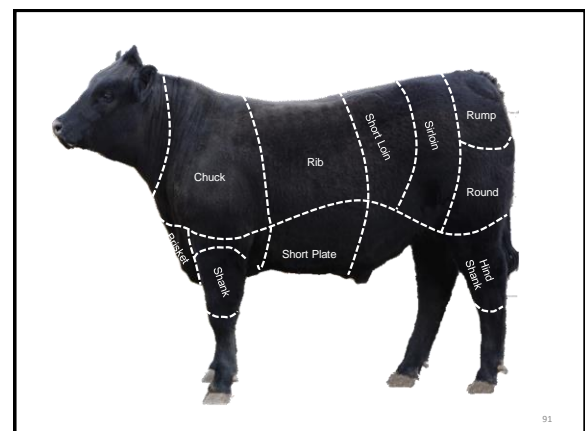
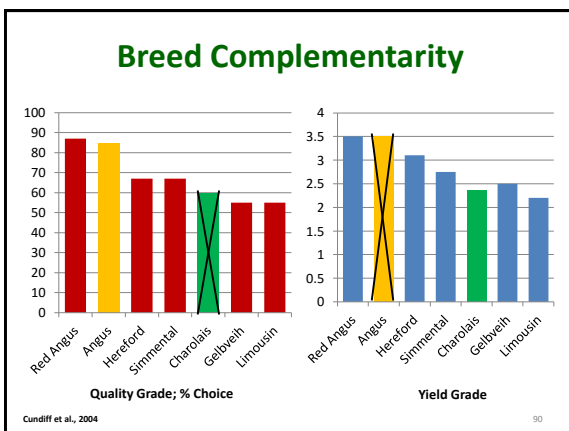
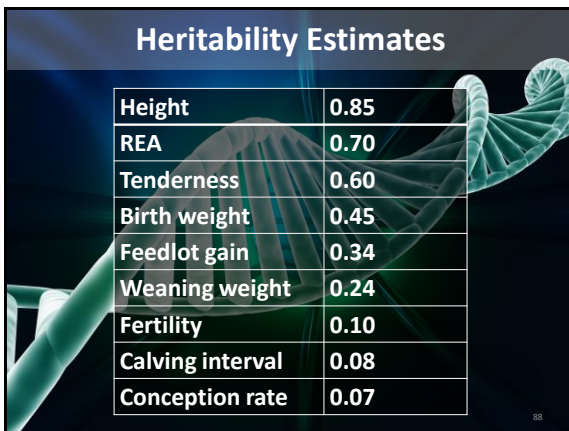
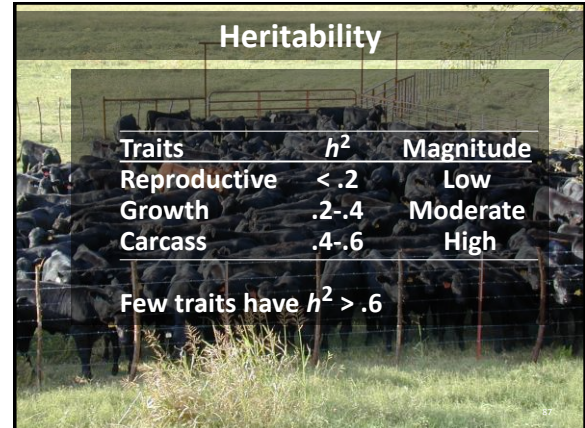
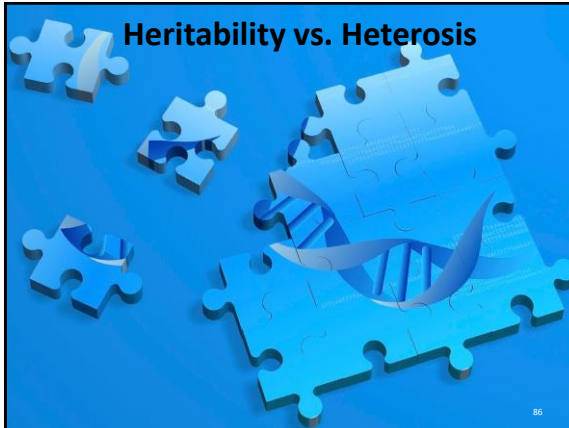
OK weighted average weights on 10-24-14, USDA-AMS data

84

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**





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

92

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

93

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

94

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

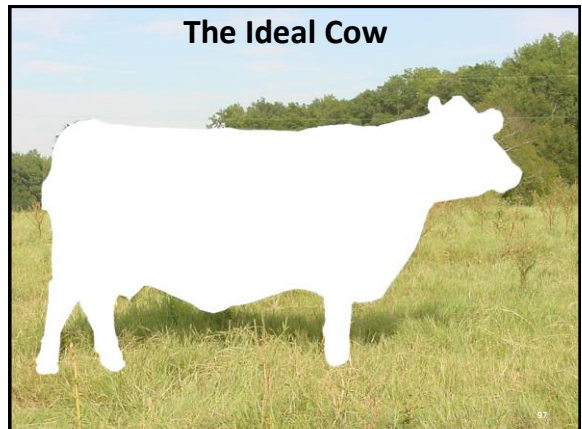
Dark Cutter = -\$20; Light Carcass (<550 lbs) = -\$10; Heavy Carcass (>1000 lbs) = -\$20

95

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



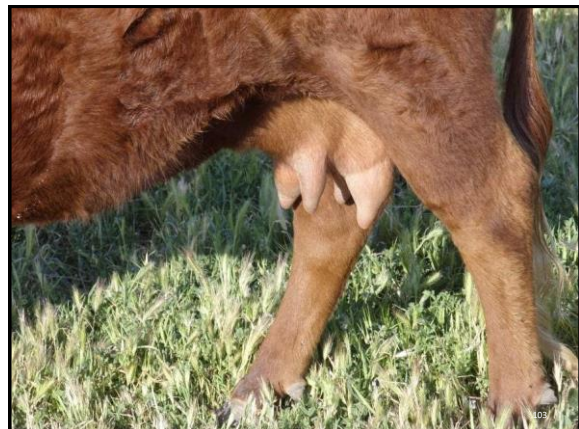
Easy fleshing

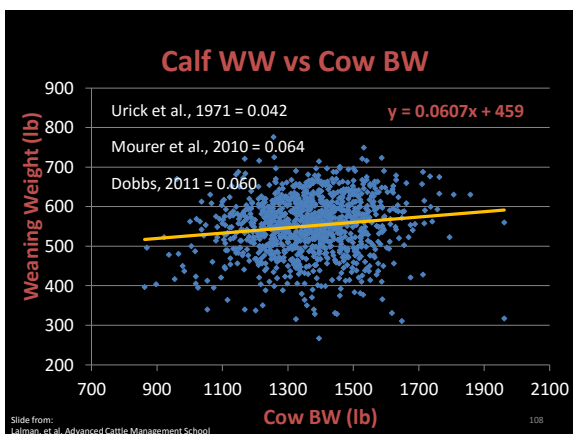
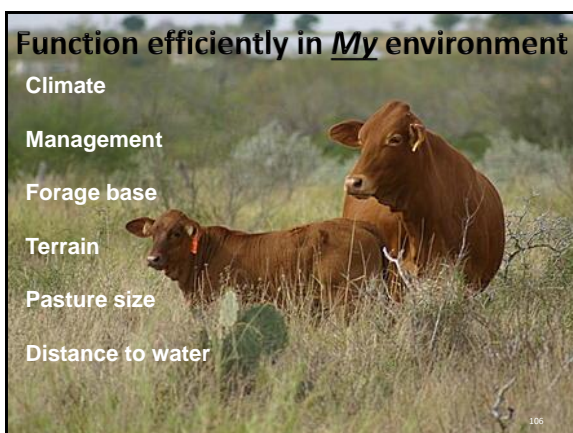


Good Udder



Broken Down Udder





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

109

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

110

Function efficiently in My environment

Cow Size

Milk production



111

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

112

How does cow size affect stocking rate?

- 500 acre property
 - (350 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 = 193,200 lbs available forage
- 1100 lb. cow consumes 26.4 lbs/d (9,636 lbs/yr)
 - **20; 1100 lb cows on the 500 ac.**
- 1300 lb. cow consumes 29.1 lbs/d (10,621 lbs /yr)
 - **18; 1300 lb cows on the 500 ac.**

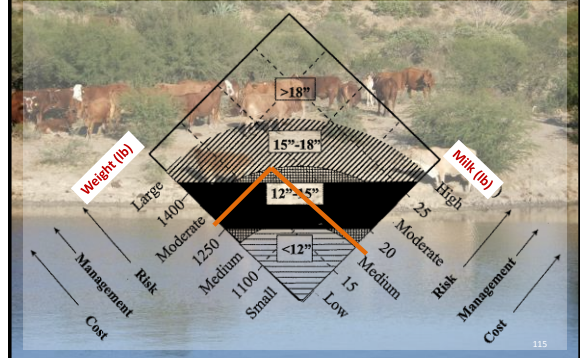
113

The cow should fit her environment



114

Match cow and environment



115

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.

116

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



117



Science Serving Agriculture

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