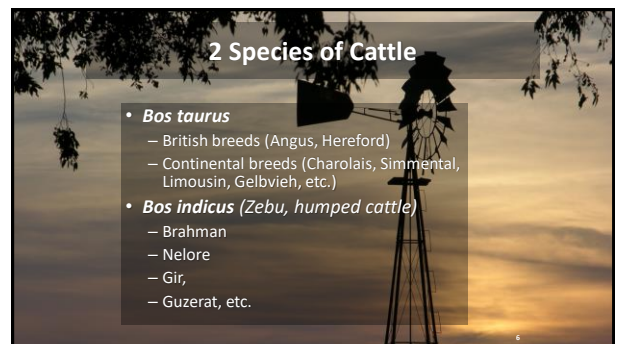
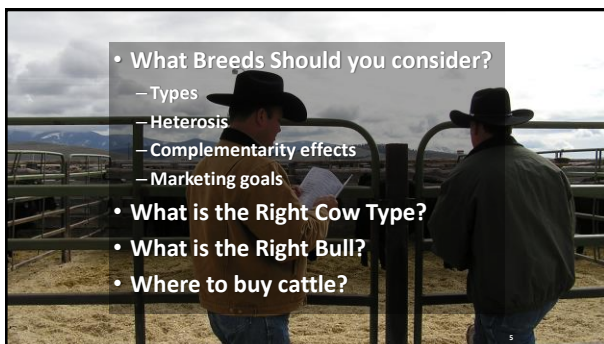
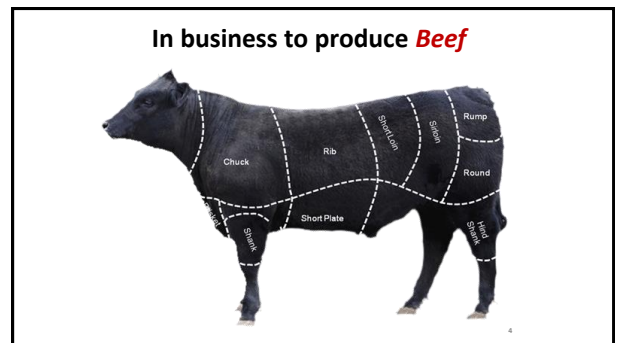
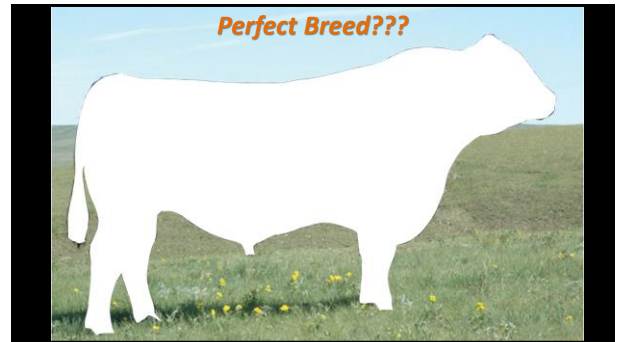
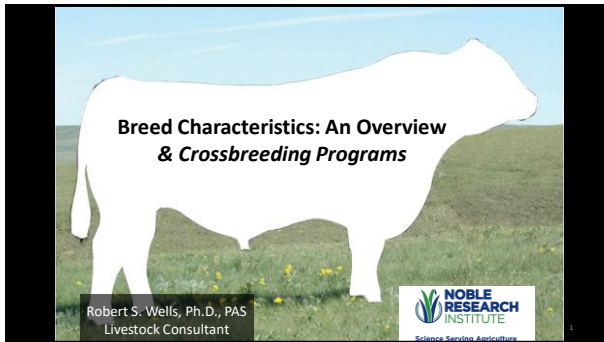




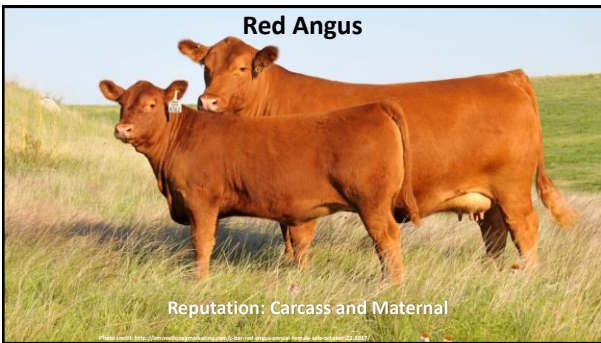
Pure Breeds

Angus (British)



Reputation: Carcass and Maternal, *Growth???*

Red Angus



Reputation: Carcass and Maternal

Hereford (British)



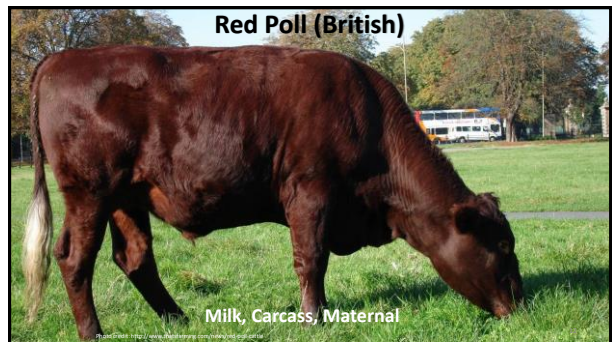
Reputation: Maternal, easy fleshing, longevity

Shorthorn (British)

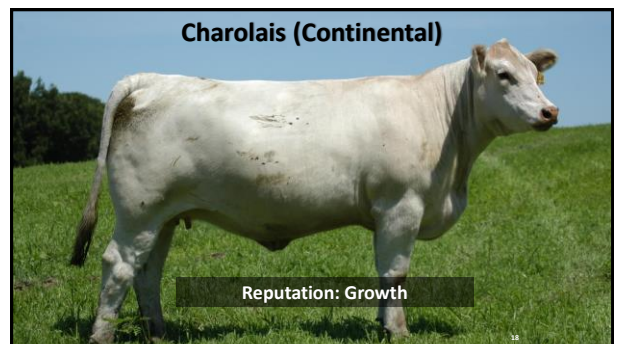


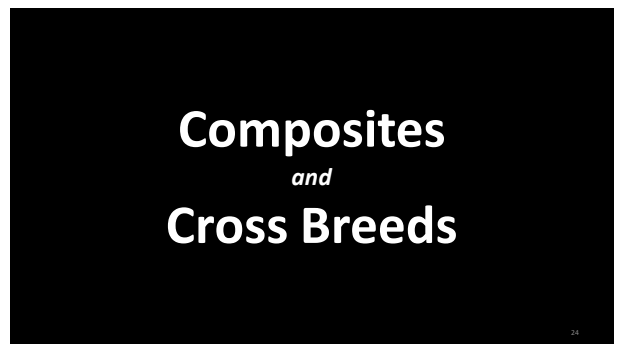
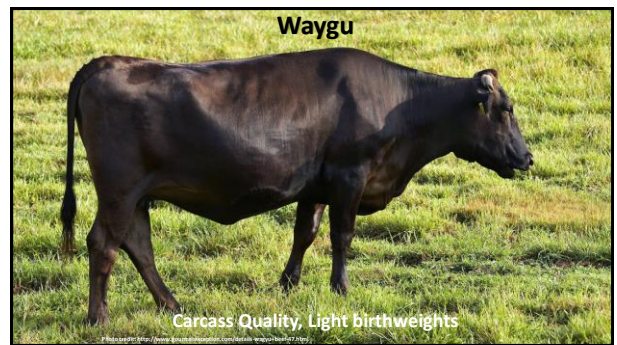
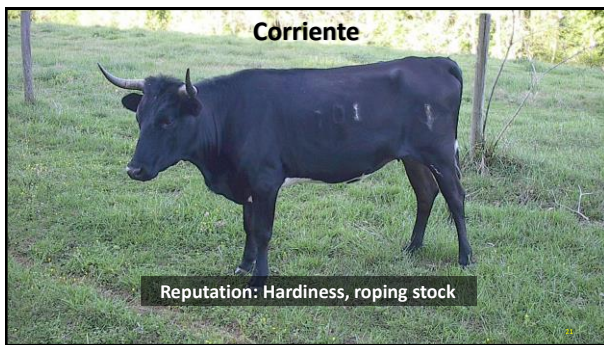
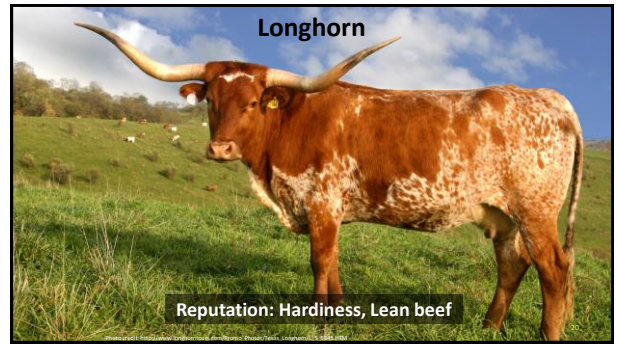
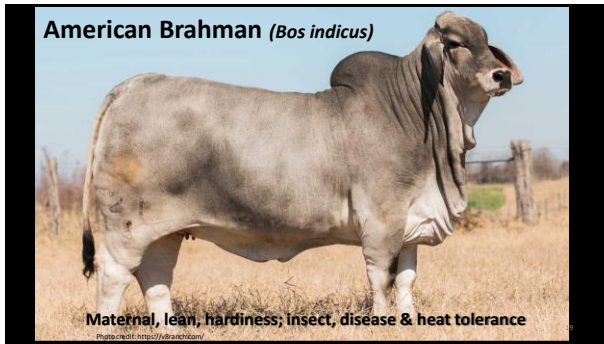
Reputation: Maternal and Carcass

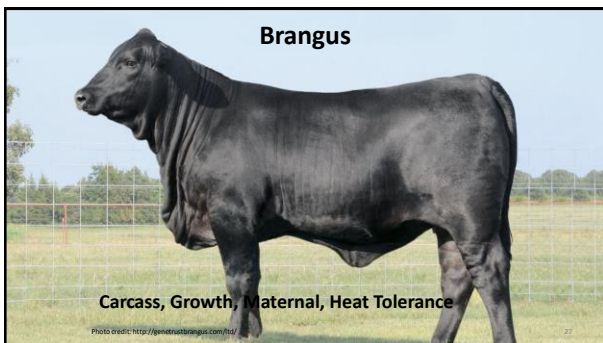
Red Poll (British)

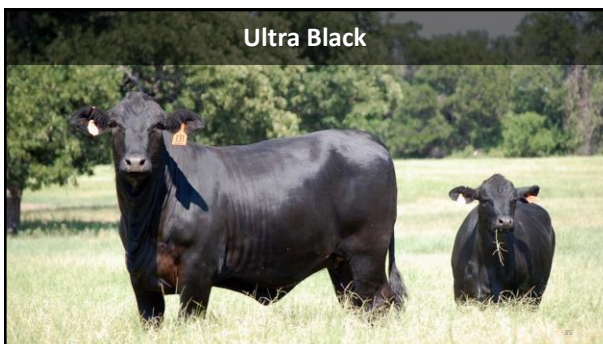
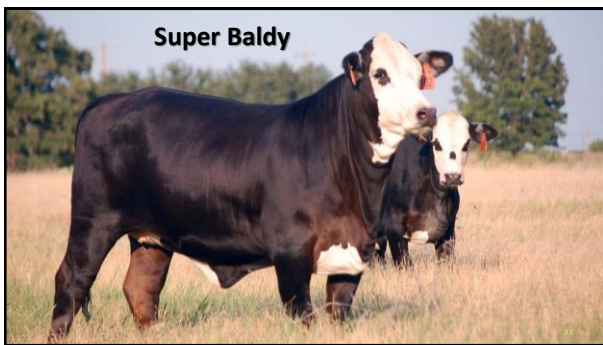


Milk, Carcass, Maternal



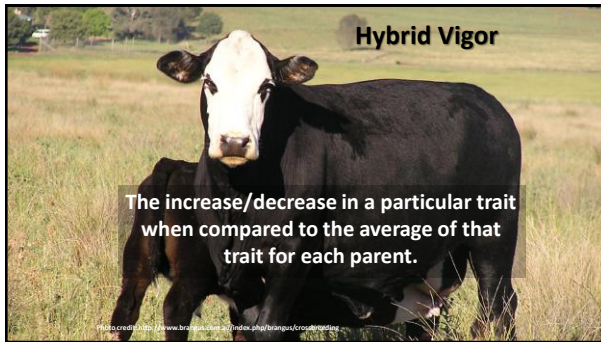




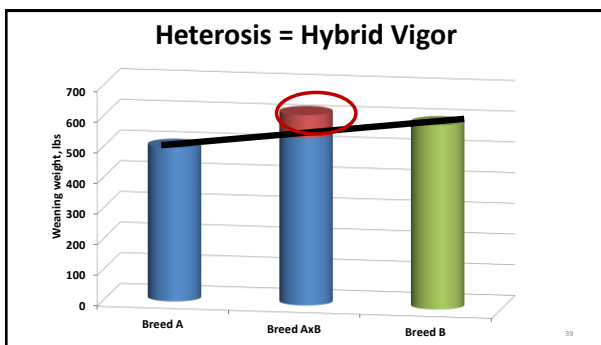


Crossbreeding

Hybrid vigor = HETEROSIS



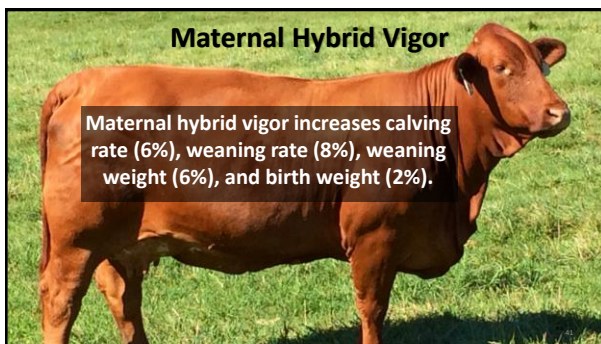
$$(2+3)/2 = 3.5$$



Maximum Heterosis

F1 x F1 Cross
Parents are from 4 unrelated breeds

May decrease uniformity, especially in multiple bull herds.



Levels of Heterosis

Trait	Individual Heterosis, %	Maternal Heterosis, %	Total Heterosis, %
Weaning rate	0	8	8
Age @ Puberty	-3	-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 cost/100 lbs BW
- Milk production
 - ~1.5 % increase in energy requirement/lb of milk
 - ~2.7 % increase in CP requirement/lb of milk
- Make sure she fits your environment
 - Stocking rate
 - Supplemental feed

Economics of Heterosis – Cow Breed A x Terminal bull

Original Scenario:

- 100 cows; Cow Breed A x Bull Breed A
- 525 lb weaning weight
- Average weaning rate 82%
- 43,050 lbs marketed

Switch to

- Cow Breed A x Bull Breed B
- 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:

- Cow Breed A x Bull Breed A
- 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

Brett Barham, Univ. of Arkansas

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Economics of Heterosis - F1 cow x Terminal bull

Original Scenario:

- Cow Breed A x Bull Breed A
- 525 lb weaned calf
- Average weaning rate 82%
- 43,050 lbs marketed

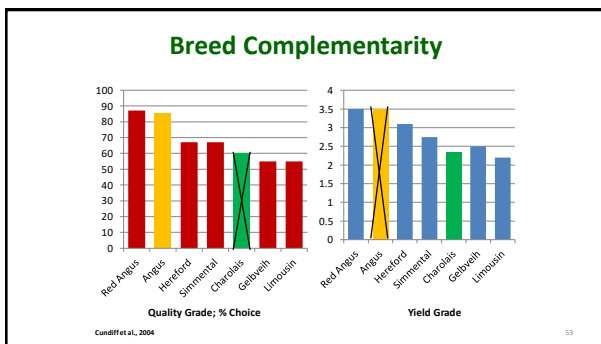
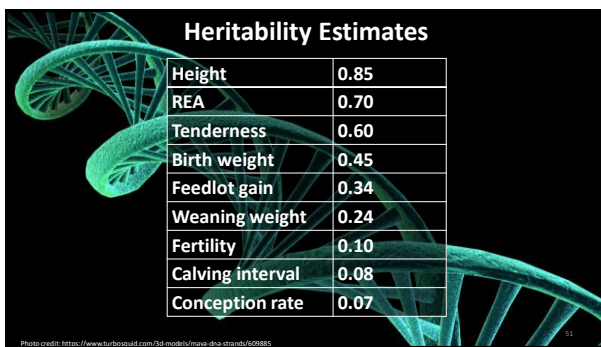
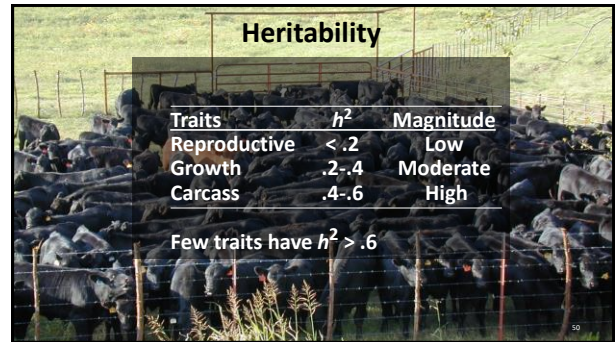
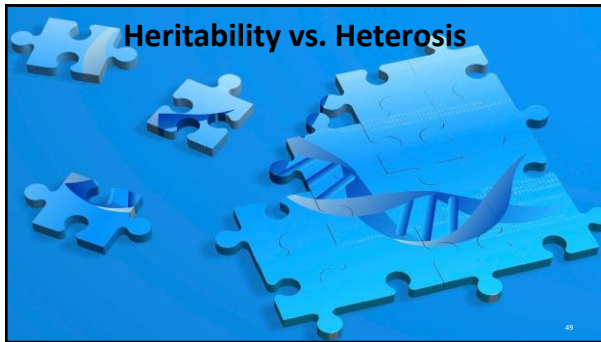
Switch to

- 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

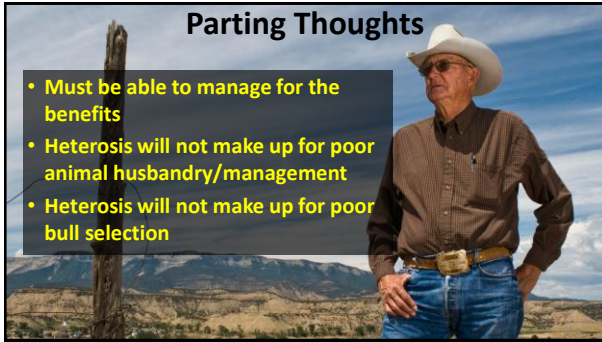
- **+\$5,725.65** increased weaning weight (**Bull Affect**)
 - Breed A cow x terminal bull
 - (½ Breed A x ½ Terminal bull breed calf)
- **+\$40,295** increase in weaning rate & weight
 - F1 cow x terminal bull breed
 - (½ F1 x Terminal bull breed calf)
- *Keep after weaning and \$\$\$ increase as you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

OK weighted average weights on 10-24-16, USDA NHTS 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



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