

Strategies to Improve Production Efficiency and Calf Value in the Southern Plains

2013 BIF Advancement in Selection Decisions

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Where are the Southern Plains?

- Wikipedia defines them as the southern part of the Great Plains
- USDA/ARS – Texas, Oklahoma, New Mexico, Arkansas
- NOAA – Texas, Oklahoma, New Mexico, Arkansas, Louisiana and parts of Colorado
- FAS – Texas, Oklahoma, New Mexico, Kansas, Nebraska and Colorado
- Geographers – all the above plus Northern Mexico



Strategies

- Strategy is also about attaining and maintaining a position of advantage over adversaries through the successive exploitation of known or emergent possibilities rather than committing to any specific fixed plan designed at the outset.

Production Efficiency

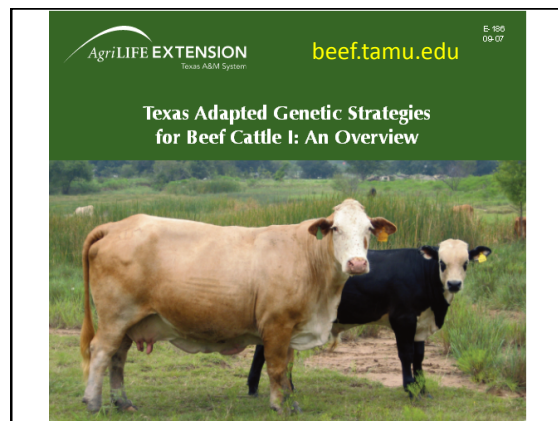
- Many definitions of efficiency
 - It is not always low cost production
- Productive efficiency occurs when production of one [good](#) is achieved at the lowest resource (input) cost possible, given the level of production of the other good(s).
- Productive efficiency requires that all firms operate using best-practice technological and managerial processes.

Calf Value

- Price per pound is often mistaken as calf value
- In reality calf value is determined before marketing
- It is the sum of genetic and management decisions and costs that affect the calf up to that point

Management Decisions

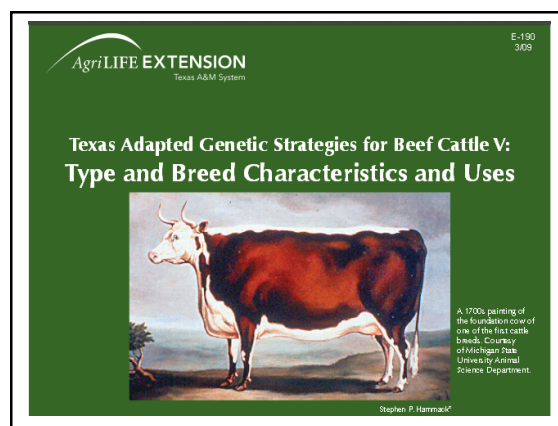
- Genetics
 - Sire and dam breed type
 - Individual selection/traits
- Reproductive
 - Breeding/calving season/timing/length
 - AI/NS
 - Pregnancy detection
- Preweaning
 - Health/castration/implants
- Weaning
 - Stress of weaning/transport/marketing
- Marketing
 - Timing/method



Matching Genetics to Environment

Forage Availability	Environmental Stress	Milking Ability	Mature Size	Ability to Store Energy	Stress Tolerance	Calving Ease	Lean to Fat ratio
High	Low	M to H	M to H	L to M	M	M to H	H
	High	M	L to H	L to H	H	H	M to H
Med	Low	M to H	M	M to H	M	M to H	M to H
	High	L to M	M	H	H	H	M
Low	Low	L to M	L to M	H	M	M to H	M
	High	L	L	H	H	H	L to M
Maternal		M to H	L to H	M to H	M to H	H	L to M
Paternal		L to M	H	L	M to H	M	H

Note: L=Low, M=Medium, H=high 2011 Beef Improvement Federation Guidelines, 9th Ed.

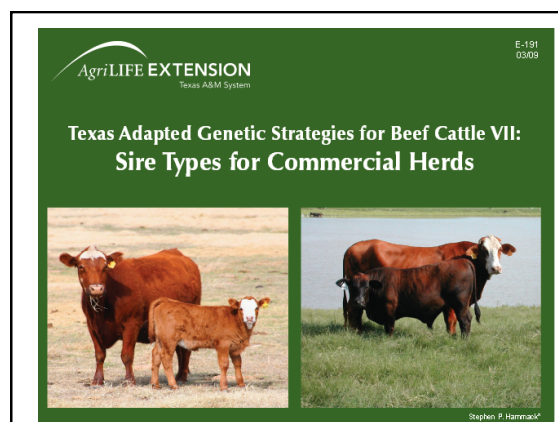


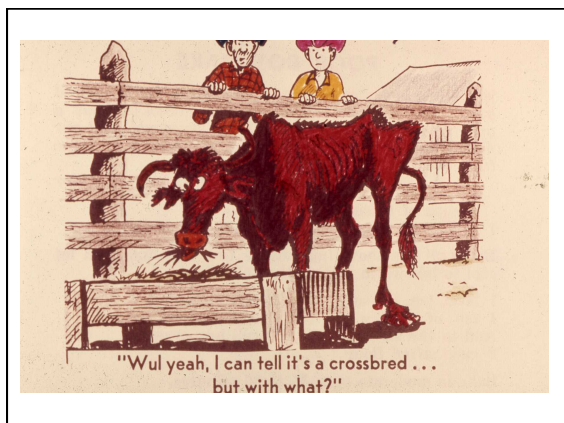
Functional Levels of Production of Major Breedtypes in Texas

(Hammack, 2009, TAGS V E-190)

Breed group	Body size	Milk potential	Age at puberty	Hot climate adapted	Fleshing ability	Muscle expression	Cutability	Marbling
British	H	L-M	E-M	L	H	M	L	M-H
Continental beef	H-VH	L-VL	L	L-M	L-M	H-VH	VH	L-VL
Continental dual purpose	H-VH	M-H	E-M	L-M	M	H	H	L-M
Dairy (H-J)	VH-VL	EH-VH	E-VE	L-M	L-M	L-VL	H-VL	M-VH
Bos indicus	H	H	VL	VH	H	M	M	L
American	M-H	M-H	M	H	M-H	M	M	L-M
Specialty	VL	L	M	M	M	L	M	L

Note: VL = very low, L=low, M=medium, H=high, VH=very high, and EH=extremely high except for age at puberty where VE=very early, E=early, M=medium, L=late and VL=very late.





Breed Combinations for Commercial Beef Herds

(Hammack 2009, TAGS VII E-191)

Cow breed or cross	Sire breed types				
	British	Bos indicus	American	Continental	Heifer
British	M, R (XB)	(R)	M, R	M	(R)
Bos indicus	(R)				(R)
Bos indicus-British	M, R		(R)	M	(R)
American	M, R		(R) (XB or PB)	M	(R)
American cross	M, R		M, R	M (No AXC dams)	(R)
Continental - British	M, R	(R)	M, R	M	R
Continental-Bos indicus	M, R		(R)	M	R
Heifers	S		S		S

AgriLIFE EXTENSION
Texas A&M System

E-189
01/11

Texas Adapted Genetic Strategies for Beef Cattle IV: Breeding Systems

Angus cow in a straightbred system.

F1 Bos taurus-Bos indicus cow in a terminal sired system.

Stephen P. Hammack*

Breeding Systems

- Straightbred
 - Includes purebred
 - Produces own replacements
 - Uniform (in color and genetics)
 - Not all breeds fit all marketing situations or environments
 - Selection to correct faults
 - No hybrid vigor
 - Simple
- Crossbred
 - Mongrelization vs planned
 - Some produce own replacements
 - Some lack of uniformity in phenotype but not genetics within cross
 - Breeds can be combined to fit multiple marketing situations and environments
 - Add or change breeds to correct faults
 - Hybrid vigor
 - Simple to complex

Table 1. Features of breeding systems.

Breeding system	Calf heterosis	Cow heterosis	Complementarity	No. breeds/ breeding groups	Calf uniformity (11)
Straightbred (1)	None	None	None	1 / 1	Very high
Straightbred (2)	Low	Low	None	1 / 1	High
Rotation	Med-High	Med-High	None	2-3 / 1-3 (9)	Low-Med
Terminal only (3)	Very high	None-Low	High	2 / 1	High
Terminal only (4)	Very high	Very high	High	3 / 1	Med-High
Complete terminal (5)	Medium	None-Low	Medium	2 / 2	Low-Med (12)
Complete terminal (6)	High	Medium	Medium	3 / 3	Low (12)
Rotation + terminal	High	Med-High	High	3 / 2 or 3 (10)	Medium
Multiple sire-breed (7)	Low-Med	Low-Med	None	2 / 1	Low-Med
Multiple sire-breed (8)	Med-High	Low-Med	Medium	3 / 1	Low
Composite	Med-High	Med-High	None	2-4 / 1	Med-High

- (1) Breeds with no retained heterosis
(2) Combination breeds, containing some retained heterosis
(3) Using straightbred females purchased or produced in another herd (cow heterosis is Low if females are a combination breed containing some retained heterosis)
(4) Using F₁ females purchased or produced in another herd
(5) Producing straightbred females in one group for terminal cross in another group (cow heterosis is Low if females are a combination breed containing some retained heterosis)
(6) Producing straightbred females in one group to create F₁ females in another group for terminal cross in another group
(7) Using two general-purpose sire breeds concurrently
(8) Using two general-purpose sire breeds concurrently or rotated over time, and one terminal sire breed
(9) One group if sire rotation; two or three groups depending on number of breeds if true rotation
(10) Two groups if sire rotation; three groups if true two-breed rotation
(11) Across all breeding groups in the system
(12) Uniformity within breeding groups is High to Very High

Angus Cows



Hereford



Hereford Cows with Angus Calves



Hereford and F1 Heifers



Hereford Sired F1 Calves



F1 Cow with a Herford Sired Calf



F1 Cow with a Brahman Sired Calf



Brahman x Hereford Bred to Angus Sires



F1 Brahman x Hereford Cow
with Angus Sired Calf



Hereford Bull on Brangus Cows



Red Angus Bulls on Brahman Cows



Red Angus x Brahman F1 Calf



Charolais



Charolais x Angus Crosses



Braford Cows with Simmental Bulls



Brangus Heifers



Brangus Cow with Angus calf



Brangus Cow with Hereford Calf



Red Brangus



Beefmaster Pairs



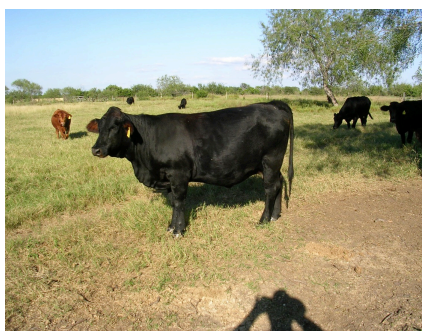
Charolais x Beefmaster



Santa Gertrudis Pair



Maine Anjou x Santa Gertudis



Beefmaster Cow with Angus Calf



Santa Gertrudis x Hereford Cows



Santa Cruz



Simbrah Cow



Fleckvieh Cows Bred to Brahman Sires



Brahman Cow with Fleckvieh Calf



Fleckvieh x Angus Heifer



In the Feedyard



In the Feedyard



In the Feedyard



In the Cooler



Functional Cows Don't Have to be Pretty!



Questions?

