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Texas Adapted Genetic Strategies

Sire Types for Commercial Beef Herds

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Choosing types of sires is one of the most important genetic decisions facing beef producers. That choice depends on: (1) environmental and management conditions and number of production phases involved; (2) breeding systems used; (3) breeds or types and individual performance levels; and (4) types of cows currently in the herd.

Production conditions must be assessed accurately to avoid incompatibility caused by too much or too little genetic production potential. For a discussion of two important genetic factors, see the Texas Agricultural Extension Service publication, "Body Size and Milking Level for Beef Production." Genetic considerations may not be the same for marketing at weaning as for retained ownership, especially all the way to the carcass.

Breeding systems are crucial in choosing breed types and selecting individuals. Commercial breeding systems comprise two types, terminal and continuous. In terminal systems, females from the herd **are not** retained for breeding. Continuous systems (breed rotations and most straightbreeding) **do** retain females. Terminal systems can use specialized sire and maternal types, but continuous systems should use cattle that are moderate in most production characteristics. For more information, see the Texas Agricultural Extension Service Publication, "Breeding Systems for Beef Production."

Finally, breed types and individuals within breeds must be compatible with production conditions and breeding systems for efficient production. Most cattle can be classified, based on species content (either Bos taurus, humpless cattle; or Bos indicus, Indian or humped), and on breed averages of body size, milking potential and body composition, into one of six breed types:

1. British — Angus, Red Angus, Hereford, Shorthorn
2. Bos indicus — Brahman
3. American (part Bos indicus) — Beefmaster, Braford, Brangus, Red Brangus, Santa Gertrudis, Simbrah
4. Higher milking Continental — Braunvieh, Gelbvieh, Maine-Anjou, Salers, Simmental
5. Lower milking Continental — Charolais, Chianina, Limousin
6. Dairy — Holstein, Jersey

Of cattle in Texas, the breeds listed are thought to be most numerous. Other applicable breeds are in all groups. For a more complete discussion of breeds, see the Texas Agricultural Extension Service Publication, "Characterization and Utilization of Cattle Types and Breeds."

Producers who document and merchandise true genetic merit or, particularly, retain ownership can be most flexible in choosing breed types. Those who market through traditional methods are subject to biases and perceptions, often resulting in price differences that may not be justified but are real. These traditional producers can maximize production efficiency and avoid or minimize severe price differences by producing medium- to large-frame crossbred calves of at least 1/4 British, no more than 1/2 Continental, no more than 1/4 Bos indicus and no more than 1/4 Dairy. Some price difference exists even within these ranges that: (1) varies over time as to the exact breed-type percentages favored; (2) is usually small and short-term compared to differences for cattle falling outside these ranges; and (3) is partially or totally offset by considerations of production efficiency. Cow-calf producers should certainly keep these industry preferences in mind, but place primary genetic emphasis on biological and economic efficiency of production to weaning.

It is important to note that in saving replacement females, some breed-type combinations not preferred as stocker-feeders may be useful, particularly 3/8 to 1/2 Bos indicus. Under many Texas conditions, part-Bos indicus cows have advantages too important to ignore, including calving ease, maximum hybrid vigor and environmental and forage adaptability. Also, Bos indicus genetics makes bulls more adaptable to tropical or subtropical environments.

Applicable sire types for commercial cow herds of various breed types include:

1) Basically British cows — Straightbreeding is applicable using the same breed of sire as the cows but with loss of hybrid vigor and probably some price discount. Crosses within the British group are desirable, producing such types as "black-baldies." Continental sires can be used to increase growth and muscle of stocker-feeder calves. American sires add a "touch of ear" for either stocker-feeder or replacement female buyers. Brahman (Bos indicus) sires (not recommended

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on heifers) produce the highly regarded Brahman F1 female, which should be developed at least to breeding age to capture market potential. Realize that half-Bos indicus steers probably will be price discounted. The main cautions with British-type cows are to exclude small-frame sires, which may produce highly discounted "shorts," and avoid high-birth-weight sires to reduce calving problems.

2) Straight Bos indicus cows — For commercial production, pure Bos indicus or Brahman cows should produce F1 replacements, mostly by British-type sires. Bos indicus or American sires should not be used on straight Bos indicus commercial cows, since calves will be discounted for being over half-blood. Bos indicus sires could be used here **only** to obtain straight Bos indicus females for F1 creation, but straight Bos indicus steers will be severely price discounted.

3) Bos indicus base cows — This includes part but not pure Bos indicus, that is, true F1 or other Bos indicus base, including American-type cows. Terminal cross sires are excellent, often Continental types but also higher growth sires of British type. These Continental or British sires also reduce Bos indicus percentage in replacement females if that is applicable. Especially under hot and humid conditions, American sires are applicable to maintain 3/8- to 1/2-Bos indicus replacements unless cows are high-percentage (over 1/2) Bos indicus. Straightbreeding of American breeds also can be used, primarily for replacements. Never use pure Bos indicus sires on part-Bos indicus cows for commercial production.

4) Continental cross cows — British sires produce desirable slaughter offspring. These British-Continental crosses also are high-producing replacements if production conditions are suitable, especially if the operator wants no Bos indicus genetics in the herd. American-type sires add Bos indicus for environmental adaptability. Bos indicus sires give Bos indicus-Continental heifers, which may be applicable where forage quantity and quality are adequate. Continental sires should generally be avoided on part-Continental cows, except when targeting the lean-beef market, as high-percentage Continental calves may be price discounted. Also, high-percentage Continentals generally are undesirable as brood cows as they can be too big, too muscular or produce excessive milk (leading to low body condition and poor reproduction) for many Texas pasture and range conditions.

5) First calf heifers — Most applicable are sire types and individuals of known low birth weight and calving ease. These are most easily found in smaller British, some American or other tropically adapted breeds, small dairy or dual-purpose breeds and Texas Longhorns. Female offspring from these "heifer sires" also may be used as replacements where consistently severe nutritional limitations dictate smaller cow size.

These guidelines are summarized in the table below.

In commercial beef sire selection, we mainly want to avoid: (1) body size and muscling too low or too high for production efficiency and market desirability; (2) milk production too low or too high for production efficiency; (3) levels of Bos indicus too high for market calves or too low where needed for cow herd adaptability; and (4) calving difficulty. Many genetic combinations exist to avoid these problems and result in profitable or optimum production.

MATCHING SIRES TO THE COW HERD

DAMS	SIRES				
	British	Bos indicus[1]	American	Continental	Heifer[2]
British[3]	M[6]	R	M	M	R[8]
Bos indicus[1]	R			R	R[8]
Bos indicus-British[4]	M		R	M	R[8]
American	M		R[6]	M	R[8]
American-Cross[5]	M		M	M[7]	R[8]
Continental-British	M	R	M	M[9]	R
Continental-Bos indicus	M		R	M[9]	R
Heifers (1st breeding)	S		S		S

M= Market: Meets preferred market breed-type formula (minimum 1/4 British, maximum 1/2 Continental, maximum 1/4 Bos indicus, maximum 1/4 dairy). Heifers also applicable for replacements when genetic type is matched with conditions.

R = Replacement: Primarily for replacement females (steers usually discounted).

S = Smaller, low birth weight individual sires.

1 = Straight Bos indicus, such as Brahman.

2 = Small dairy or Dual purpose, small tropically adapted non-Bos indicus, Texas Longhorn.

3 = Straightbred or British crosses.

4 = Brahman X British F1, also American X Brahman - British.

5 = American X British or American X Continental.

6 = Crossbred unless desiring straightbred replacements.

7 = Not on American X Continental dams, except for targeted lean-beef market.

8 = Only to produce relatively small body-size replacements.

9 = Only for targeted lean-beef market, no replacements saved.

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