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Impact of Brahman Influence on Breeding Female Prices in South Texas: Results from a Special Sale in Bee County, Texas

Cattle with Brahman influence are of special interest in South Texas because crossbreeding them with British and European breed types typically produces offspring that tolerate heat better and are more resistant to insects and disease. Brahman influence also contributes to longevity, maternal ability, and maternal calving ease. Brahman cattle can be used as straightbreds, but are generally used as crosses to take advantage of the increased hybrid vigor they exhibit (heterosis), especially in the female.

From 2010 to 2014, a severe drought and sharply higher production costs dramatically reduced the cowherd in South Texas; cow inventory in the region declined 22.5 percent from 2010 to 2013. Favorable projections for calf prices and the potential for continued relatively low feed prices (compared to highs in 2012) indicate that herd rebuilding is likely to remain profitable over the next several years. This assumes that forage availability will improve with drought recovery. Given these circumstances, producers should consider the genetic, managerial, and market factors that increase the value of breeding cattle at auction. This study examines the effects of Brahman influence and other managerial and market factors on the price paid for breeding cattle in South Texas.

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Data and methods

The data used in this bulletin was collected at the Tri-County Commercial Female Sale in Beeville, Texas on April 4, 2014. The cattle sold in this auction were not precertified, but the auction staff prescreened ranchers selling livestock at the Special Sale. The Special Sale is organized through the Tri-County Commercial Heifer Sale Committee (Bee, Goliad and Refugio Counties) which is a subcommittee of the Texas A&M AgriLife Extension Service and in conjunction with Beeville Livestock Commission. Because this was a special sale and only represented 123 lots, the authors do not claim that this study represents the overall breeding stock in South Texas.

Table 1. Summary of South Texas Special Breeding Cattle Sale, 2014.

	No.	Percent of Total
Coat color*		
Solid black	31	25.6
Black with white face	21	17.4
Red brindle	20	16.5
Gray	15	12.4
Red with white face	13	10.7
Solid red	8	6.6
Dun	7	5.8
Brown	3	2.5
White	1	0.8
Smoky	1	0.8
Mottle faced	1	0.8
Brahman influence by lot**		
0 %	5	4.1
Up to 25 %	39	32.0
50 %	41	33.6
Greater than 50 %	21	17.2
100 %	16	13.1
Breeding status by lot***		
Open	11	8.9
Exposed	27	22.0
Bred	41	33.3
Pair	42	34.1
3-in-1	2	1.6

* 121 Lots; ** 122 Lots; *** 123 Lots

The following information was collected on each lot: number of head, coat color, frame size, condition, Brahman influence, physiological stage (open, bred, exposed, pairs, three-in-one), polledness, price per head, and weight. Four key variables are discussed ahead and summary statistics are presented in Tables 1 and 2.

A breakdown of coat color in Table 1 indicates that the influence of black-hided breeds dominate in the breeding stock, followed by red-with-white-face breeds. Of the 121 lots, 25.6 percent were black and 17.4 percent were black-with-white-face crosses. This indicates large influence of Angus, Brangus, and their crosses in the breeding stock. Hereford also has a large influence in the breeding stock. Of the cattle sold, 16.5 percent were red brindle or tiger-stripe and 10.7 percent were red with a white face. The gray-coated cattle were all purebred Brahman representing 12.4 percent of the lots. Cattle with solid red coats were 6.6 percent of the lots while dun coated cattle made up 5.8 percent of the lots. The remainder was brown, white, smoky, or mottle-faced. Just over 70 percent of the cattle had coat colors consistent with crosses that are popular in South Texas. It is likely that those cattle will command a premium over other breed types.

Table 2. Summary of Price and Weight From South Texas Special Sale Breeding Cattle, 2014.

	Average	Minimum	Maximum
Price (dollars per head)	$1,480	$910.00	$2,500.00
Average lot weight (lb per head)	1032	488	2270

Total number of lots: 123

Many studies examine Brahman influence as either all or none and most are based on feeder cattle or calf prices (see References). This study focuses on breeding stock and collects more detailed data about the effect of Brahman characteristics on their price. Brahman influence includes larger ears, a larger dewlap, and a larger hump on the shoulders. These characteristics were evident to some degree in nearly 96 percent of the lots (Table 1). Cattle exhibiting 25 percent or less Brahman influence made up 32 percent of the lots. Cattle with an estimated 50 percent Brahman influence made up 33.6 percent. Cattle with greater than 50 percent Brahman influence made up only 17.2 percent. Finally, 13.1 percent of the lots were purebred Brahman cattle.

Breeding status of cattle is highly relevant to a buyer who is restocking. Bred cattle and pairs dominated the status of females in the special sale at 33.3 and 34.1 percent respectively. Twenty-two percent of the lots were designated as exposed which means the females have been exposed to a bull but does not confirm that they are bred. Just fewer than 9 percent were open females and 1.6 percent were 3-in-1s. Because the buyer does not know whether the seller actually exposed the cow to a bull or if the cow bred, one would expect to see only a slight premium for exposed over open females. One might expect a significant premium for bred cows, pairs, and 3-in-1s over open cows since the calf and/or the potential for a calf both have value. However, bred cows are likely to have a smaller premium than pairs or 3-in-1s because of the risk of loss of the calf and the time discount associated with waiting for a calf.

Prices and weights from the sale show high variability given the relatively small sample (Table 2). Per-head price ranged from $910 to $2,500 (avg. $1,479.94) Per-female lot weight ranged from 488 to 2270 lb (avg. 1,032 lb).

A hedonic pricing model is one that seeks to estimate the extent to which internal and external factors affect sale prices. The data herein is used as such to model the impacts of various genetic, management, and marketing factors on the prices of breeding females. Using this model assumes that the price paid is based on observable differences—the calculated premiums and discounts, therefore, represent values for the cattle's differing characteristics.

Results

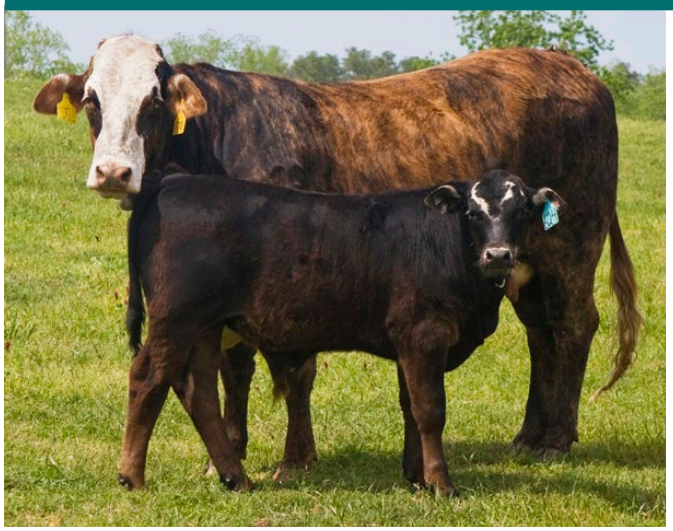
Table 3 shows several significant relationships between genetic, management, and marketing characteristics.

Coat color is important to the price of breeding cattle because it represents the breed, breeding, or some notion of genetics. Premiums and discounts are

Table 3. Price Premiums and Discounts for South Texas Special Sale Breeding Cattle, 2014.

Dollars per head		
Coat color		
(base is all other colors)	Solid black	$-110.65
	Solid gray	$-317.11
	Red brindle	$216.97*
	Black with white face	$23.92
	Red with white face	$68.80
Brahman influence		
(base is 0% Brahman)	Up to 25 % Brahman	$206.31*
	50% Brahman	$135.30
	More than 50% Brahman	$322.25*
	Purebred Brahman	$695.62*
Breeding status		
(base is open)	Exposed	$176.85*
	Bred	$348.05*
	Pair	$579.05*
	Three-in-one	$471.95*
Frame		
(base is medium frame)	Large frame	$-72.98
	Small frame	-184.59*
Condition		
(Base is average)	Fat/fleshy	$53.19
	Thin/very thin	$-64.69
Other variables		
	Lot size	$82.46*
	Horns	$-92.82
	Average lot weight per female	$0.09

* Indicates statistical significance at the 10 percent level



calculated for the five most prevalent coat colors in the sale—solid black, solid gray, red brindle, black-with-white-face, and red-with-white-face. These calculations are relative to all other coat colors in the sale—red, dun, white, brown, and smoky. Red brindle was the only color to show a statistically significant premium ($216.97 per head) over red, dun, white, brown, and smoky coated cattle.

Though coat color was important in determining the impact of breed type genetics on price, the degree of Brahman influence is also important. Cattle with less than 25 percent observed Brahman influence had a premium of $206.31 while cattle with greater than 50 percent Brahman influence had a premium of $322.25. The premium for 50 percent Brahman influence was not statistically significant due to the fact that most were red brindle cattle which did have a statistically significant premium. Purebred Brahman cattle had a net premium of $378.51, calculated by subtracting the $317.11 discount for gray coat color from the premium of $695.62 for purebred Brahman. This calculation is necessary since all gray-coat cattle in the study were purebred Brahman.

The breeding status of the cows in this sale contributed significantly to price differences when compared to open cows. Some of the cattle were designated as exposed, indicating that they had been exposed to a bull but were not confirmed as bred. The $176.85 premium for exposed females over open cows was statistically significant. Bred females brought $348.05 per head more than open females. Pairs also showed a statistically significant premium of $579.05 per head over open females. This premium, however, does not reflect the current full market value of a typical weaned calf at auction and may reflect uncertainty about current and future forage availability, future market prices, and the quality of the calf. There were not enough 3-in-1s to draw adequate conclusions about them.

Management and marketing factors also contribute to the value of breeding stock. Frame size had a significant impact only in the case of small-framed cattle. Bigger framed breeding cattle were more desirable than small framed cattle, which were discounted $184.59 per head relative to medium framed cattle. Condition or level of fatness did not have a significant impact on the prices of breeding stock in this auction. The presence of horns produced a discount of $92.82, but was not statistically significant. The insignificance of the horn discount may indicate that many of the cattle were of high enough quality that the discount for horns was not consistent in this sale.

The cattle lots ranged from 1 to 6 head, with an average of 2 head per lot. Larger lots had a significant premium over smaller ones. For each additional head in the lot, the seller could expect an $82.46 premium per head. Because lots in the sample did not exceed 6, the $82.46 premium per head may not extend to lots of 7 or more. The average lot weight per female did not have a significant effect on the lot price.

Brahman influence examples

It is useful to highlight the effect of Brahman influence on breeding stock prices. According to this analysis, an average-weight, polled, F1 (50 percent Brahman) red brindle female pair in a lot of 2 head would be expected to bring $200 per head more than the sale average for pairs. A polled gray purebred Brahman pair

would be expected to sell for $227 more than the average for pairs. A polled, solid-black pair with 25 percent or less Brahman influence would be expected to bring $56 less than average for pairs. A polled, solid black pair with more than 50 percent Brahman influence had an expected price $78 over the sale average. These examples show the degree to which crossbreeding with Brahman genetics can increase the sales revenue of breeding stock in South Texas.

Conclusion

Though Brahman influence typically decreases the price for feeder cattle in other regions, its well-known breed effects and hybrid vigor in crosses add significant value to breeding stock in South Texas. Brahman and British crossbreds with significant Brahman influence performed best in terms of sale price. Additionally, significant Brahman influence is expected to more than make up for the discount associated with black coat color, which is less adapted to the hot climate in South Texas. However, price premiums don't necessarily imply increased profit which can only be calculated against production cost data. It also worth noting that it takes all of these breeds to make some of the cross breeds that command a premium.

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