COMPARISON OF TRAITS AT SEXUAL MATURITY OF RECENTLY INTRODUCED BREEDS TO ANGUS AND BRAHMAN BULLS

S.R. Tatman, C.C. Chase, T.W. Wilson, D.A. Neuendorff, A.W. Lewis, C.G. Brown, and R.D. Randel

Background: The Brahman (*Bos indicus*) has been the primary breed used in the southern United States to enhance production by providing a genetic source for tropical adaptation. However, despite the benefits the Brahman provides, Brahman and Brahman influenced cattle are later maturing, have lower quality, less palatable carcasses, and are therefore discounted at market. The Angus (*Bos taurus*) on the other hand, is an early maturing breed with highly acceptable carcass characteristics, but is not tropically adapted. Recent importations of tropically adapted cattle into the United States which do not have *Bos indicus* influence have occurred. These newly introduced breeds may provide a source of tropically adapted germplasm, while maintaining acceptable carcass merit. However, research regarding these breeds is lacking, particularly in comparison to breeds common to U.S. production systems. This trial investigated the growth and reproductive development of some of these recently introduced breeds and compared them to two breeds common to U.S. production systems (Angus and Brahman). Angus (n=7), Brahman (n=10), Bonsmara (n=8), Romosinuano (n=10), Tuli (n=10), and Wagyu (n=10) bulls were maintained together and fed a corn/soybean meal (3:1) ration supplemented with 200 mg lasalocid/hd/day fed at 1.5% of body weight. Bulls had free access to water, Coastal bermudagrass hay, and a salt/mineral supplement. Measurements regarding growth (body weight [BW], body condition score [BCS], hip height [HH]) and reproduction (scrotal circumference [SC], paired testis volume [PTV], sperm concentration) were taken at biweekly intervals. Measurements began prior to attainment of a 21 cm SC. Upon attaining a 21 cm SC, bulls were electroejaculated for semen analysis. Measurements continued through sexual maturity which was classified as an ejaculate containing $\geq 500 \times 10^6$ sperm with $\geq 50\%$ motility.

Research Findings: As was expected, Brahman bulls were the oldest at sexual maturity which allowed them to also be the heaviest and tallest. Surprisingly, Angus bulls were the second oldest at sexual maturity (also the shortest) with the Bonsmara bulls clearly being the youngest of all breeds compared. The trend for older bulls to also be heavier was followed in all breeds with the exception of the Bonsmara. Although the youngest bulls at sexual maturity, they were not the lightest, being the fastest growing as evidenced by the greatest weight per day of age of any of the breeds. Angus, Bonsmara, and Brahman bulls all had larger scrotal circumferences and paired testicular volumes than did the Romosinuano and Wagyu bulls, with Tuli bulls falling

intermediate. It is worth noting that as a breed, Wagyu bulls fail to meet current BSE standards for scrotal circumference.

Table 1. Comparison of traits at sexual maturity.

	Angus	Bonsmara	Brahman	Romosinuano	Tuli	Wagyu
Age (days)	441±15^{b}	343±14^{c}	481±12^{a}	418±12^{bd}	390±12^{d}	387±12^{d}
BW (lb)	820±35^{b}	754±33^{bd}	981±31^{a}	734±31^{bc}	694±31^{cde}	664±31^{ce}
Wt/DOA	1.9±.07^{b}	2.2±.07^{a}	2.0±.07^{a}	1.8±.07^{b}	1.8±.07^{b}	1.7±.07^{b}
BCS	5.8±.7^{a}	5.7±.7^{a}	5.9±.6^{a}	5.5±.6^{a}	5.8±.6^{a}	7.2±.6^{a}
HH (in)	46±.6^{d}	49±.5^{bc}	55±.5^{a}	49±.5^{bc}	50±.5^{b}	48±.5^{c}
SC (cm)	30.8±1^{ab}	30.3±.9^{ac}	31.5±.8^{a}	28.7±.8^{bc}	29.8±.8^{ab}	26.4±.8^{d}
PTV (cc)	483±36^{a}	441±34^{ab}	451±30^{a}	355±30^{bcd}	425±30^{ac}	306±30^{d}

Rows with different superscripts differ ($P < 0.05$).

Application: The tropically adapted breeds of Bonsmara, Romosinuano, and Tuli bulls outperformed their Brahman and Angus counterparts in this subtropical environment. They reached sexual maturity at an earlier age, lighter body weight, and smaller testicular size. Use of these tropically adapted breeds alone or in crossbreeding systems should not result in a delayed period of sexual development. These results indicate that these newly introduced breeds are competitive with breeds in current southern U.S. production systems.