BEEF CATTLE RESEARCH UPDATE

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Effects of Acclimation to Handling on Performance of Brahman-crossbred Females

Research has shown that excitable temperament negatively influences the reproductive performance of beef females and cattle with high Brahman influence typically exhibit excitable temperament. Recent University of Florida research evaluated the effects of acclimation to handling and/or human interaction on the temperament and reproductive performance of Brahman-crossbred cows[1] and heifers[2].

Cow Study

The Florida researchers used a 160 Braford and 235 Brahman X British (mostly Angus and containing about 25% Brahman breeding) cows in a two year study (2006 and 2007).[1] Approximately 45 days after weaning in year 1, the cows were weighed and evaluated for body condition score (BCS) and temperament. The cows were then assigned to receive or not receive the acclimation treatment. In year 2, the cows were weighed and reevaluated for BCS and temperament within 45 days after weaning. The cows received the same treatment assigned in year 1. The treated cows were acclimated to human interaction from August to January in each year. The acclimation process consisted of the same person visiting the cows twice weekly (walked among cows for 15 minutes) and hand-offering approximately 0.11 lb of range cubes per cow. Control cows remained undisturbed on pasture. In January of both years, the cows were weighed and BCS and temperament were reassessed and cows were exposed to a 90 day breeding season.

These researchers reported that the results of this study indicated that acclimation of Brahman-crossbred cows to human interaction did not affect temperament and physiological responses. They noted that cow body weight and BCS were affected by acclimation, although these outcomes were inconsistent among breeds, years, and treatment groups. However, acclimation did significantly increase pregnancy rates of the Braford cows during year 1 (Figure 1).

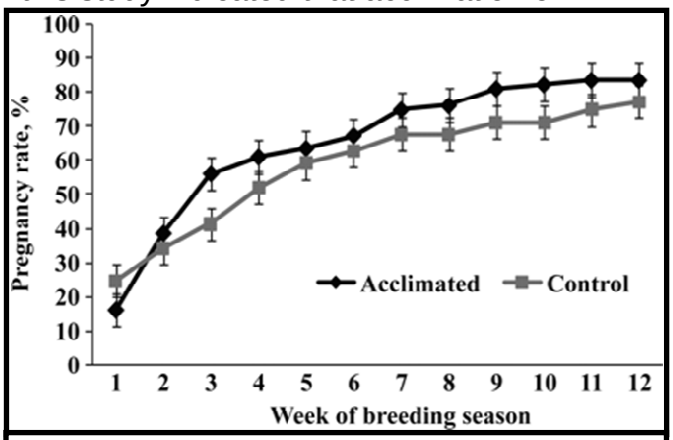

Figure 1. Pregnancy rates during the breeding season from yr 1 of the study of Braford cows exposed or not (control) to acclimation procedures. Date of conception was estimated retrospectively by subtracting gestation length (286 days) from the calving date. A treatment effect was detected ($P < 0.01$).
Source: Cooke et al., 2009.

Although positive effects of acclimation to human interaction were inconsistent among the responses measured during this study, the researchers recommended that management strategies that improve cow temperament should be enhanced and developed to maximize the reproductive performance of Brahman-crossbred cows.

Heifer Study

Research has shown that management that maximizes the number of heifers conceiving by 15 months of age improves profitability because heifers that calve as 2-yr-olds wean more and heavier calves during their productive lives. Studies have shown that most heifers reach puberty between 13 and 16 months of age if they are of sufficient size (~65% of mature size). However, Brahman-crossbred heifers may not reach puberty till 15 to 17 months of age.[3] As previously mentioned, research has also shown that excitable temperament negatively influences the reproductive performance of beef females and cattle with high Brahman influence typically exhibit excitable temperament.

The Florida researchers used Brahman-crossbred heifers to evaluate the effects of acclimation to handling on growth, temperament, and reproductive performance.[2] Over two consecutive years (2006 and 2007), 37 Braford and 43 Brahman x Angus heifers weaned at approximately 7 months of age were assigned to the experiment. The heifers were initially weighed and evaluated for puberty status and temperament within 30 days after weaning. Each experiment lasted 191 days and was divided into a sampling phase (days 0 to 130) and a breeding phase (days 131 to 191). On day 11 of the experiment, the heifers were randomly assigned to receive or not receive the acclimation treatment. The average weight and age of the heifers at the beginning of the experiment were, respectively, 558 lb and 269 days (~9 months). Thus, the average age of the heifers during the breeding season was approximately 13 to 15 months.

Acclimated heifers were exposed to a handling acclimation process 3 times weekly for 4 weeks (days 11 to 39 of the experiment). The acclimation treatment was applied individually to heifers by processing them through a handling facility. During the sampling phase, the heifers were weighed and assessed for puberty and temperament score on days 0, 10, 40, 50, 90, 120 and 130. Puberty was assessed via plasma progesterone concentrations.

Over the 191 day experiment, the acclimated heifers gained significantly slower than the control heifers (1.10 vs. 1.28 lb/day), although both treatment groups were provided similar pastures and supplements during the study. The researchers attributed the reduced gains to altered grazing behavior and the additional exercise that acclimated heifers were exposed to during the acclimation period. They noted that during each acclimation event, treated heifers had to walk nearly 1.25 miles in addition to the activity inside the handling facility, whereas control heifers remained undisturbed on pasture. No treatment effects were detected for temperament scores, but acclimated heifers had reduced chute scores (based on chute exit velocity) compared with control heifers after the acclimation period. Even though the control heifers gained faster, the acclimated heifers reached puberty sooner (Figure 2). This figure shows that about 65 to 70% of the

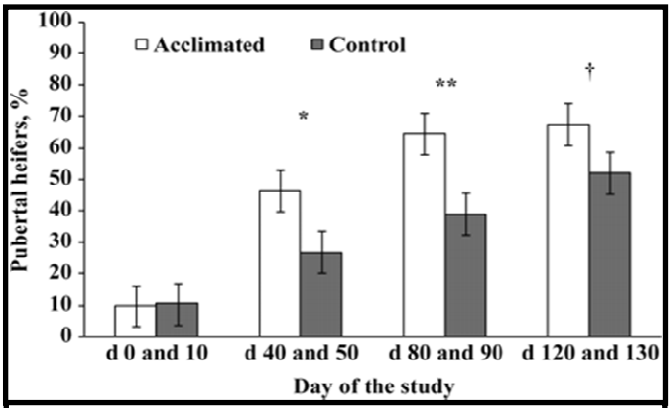

Figure 2. Puberty attainment, according to 10-day interval evaluations, of heifers exposed or not (control) to handling acclimation procedures. A treatment effect was detected (P = 0.02). Treatment comparison within sampling dates: **P < 0.01, *P = 0.03, ǂP = 0.10. Source: Cooke et al., 2009.

acclimated heifers had attained puberty by the beginning the breeding season as compared to only about 50% of the control heifers. In addition, the acclimated heifers became pregnant sooner (Figure 3).

In summary, the results of this research suggested that although acclimation to handling reduced gains, it resulted in decreased chute scores and enhanced reproductive performance of heifers. These researchers also concluded that acclimation of Brahman-crossbred replacement heifers to human handling after weaning may be an alternative to enhance their reproductive development and increase the efficiency of heifer development programs in cow-calf operations containing Brahman-influenced cattle.

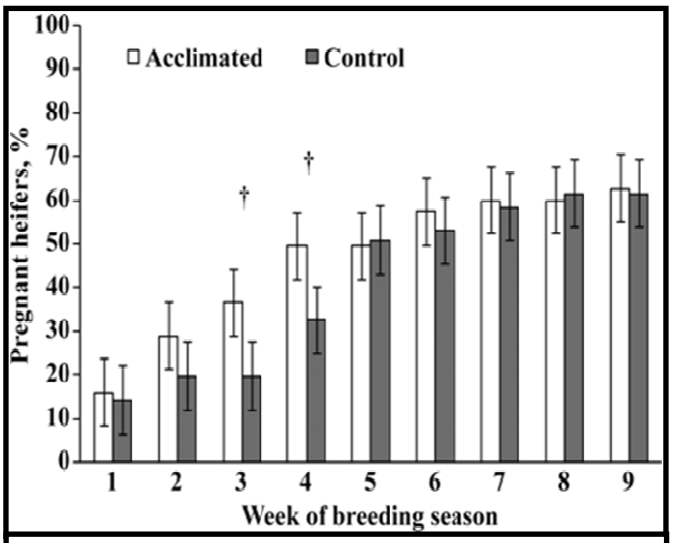

Figure 3. Pregnancy rates during the breeding season (d 131 to 191 of the study) of heifers exposed or not (control) to handling acclimation procedures. Date of conception was estimated retrospectively by subtracting gestation length (286 days) from the calving date. A treatment effect was detected (P = 0.04). Treatment comparison within weeks: †P = 0.10.
Source: Cooke et al., 2009.

Implications of Research

These recent Florida studies suggest that acclimation to handling and/or human interaction might improve the reproductive performance of Brahman-crossbred cows and replacement heifers. In year 1 of the cow study, acclimation increased pregnancy rates in Braford cows. In the heifer study, acclimation hastened the attainment of both puberty and pregnancy.

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[1] Cooke, R. F., J. D. Arthington, D. B. Araujo, and G. C. Lamb. 2009. Effects of acclimation to human interaction on performance, temperament, physiological responses, and pregnancy rates of Brahman-crossbred cows. J. Anim. Sci. 87: 4125-4132.

[2] Cooke, R. F., J. D. Arthington, B. R. Austin, and J. V. Yelich. 2009. Effects of acclimation to handling on performance, reproductive, and physiological responses of Brahman-crossbred heifers. J. Anim. Sci. 87: 3403-3412.

[3] Sprott, L. R., and T. R. Troxel. Management of replacement heifers for a high reproductive and calving rate. Texas AgriLife Extension. B-1213. Available: http://animalscience.tamu.edu/images/pdf/beef/beef-mgmt-replacement.pdf