Comparison of the Effects of Three Different Dehorning Techniques on Behavior and Performance in Feeder Cattle in a Western Kansas Feedlot

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Introduction

Removing the horns of cattle when they arrive at feeding facilities is a common practice to reduce injury to other cattle. Bruising on carcasses of cattle that have been housed in pens containing horned cattle increases noticeably. Horned feeder cattle marketed in Arkansas regional livestock auction barns received average discounts of $3.23/cwt in 2005, giving producers the incentive to dehorn their cattle before marketing.

Three common techniques (tipping, dehorning, and banding) are utilized in the field to remove or reduce horn length in beef cattle. Tipping is the practice of removing the tip of the horn such that the diameter of the horn is approximately 1 to 1.5 inches in diameter. Dehorning is mechanically cutting the horns off at the base of the horn near the head. The use of high-tension rubber bands to dehorn cattle has recently been implemented in some cattle feeding facilities. The band restricts blood circulation to the horns, resulting in necrosis, and the horns eventually fall off. This study was conducted to establish baseline data on behavior and feedlot performance in cattle dehorned using these techniques.

Experimental Procedures

Forty crossbred horned steers and heifers (body weight = 693 ± 10.5 lb) were identified at a commercial feedyard (Dodge City, KS) and used to determine the effects of dehorning methods on cattle behavior and performance. The cattle were blocked by weight and sex and randomly assigned to 1 of 4 treatments within the blocks (n = 10 animals per treatment): (1) non-dehorned control (CON), (2) banded using a high-tension elastic rubber (BAND), (3) mechanically removed (MECH), or (4) tipped horn (TIP). After arrival, cattle were processed and moved to a new home pen and were allowed a 14-day alimentation period after arrival and prior to initiation of treatments. Cattle were dehorned by their respective treatment assignment on d 0 of the trial and were housed together for the duration of the study.

A vocalization score and information on chute behavior were recorded during the dehorning process. Vocalization scores were assigned based on behavior: 0 = no vocalization; 1 = low volume, <1-second vocalization; and 2 = >1-second or greater volume intensity. After dehorning, cattle were placed in a feeding pen where all trial cattle were fed together. Cattle were individually weighed on days 0, 7, 14, 21, and 28. Behavior was evaluated and recorded daily (between 8:00 and 9:30 a.m., following the a.m. feeding) for depression, gait, and posture and lying for 28 days following treatment

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application. The depression scoring was assigned as follows: 0 = bright, alert, responsive, 1 = quiet but rouses only when approached, 2 = quiet but rouses only when pen was entered, 3 = did not move when pen was entered or had to be touched to get up. Cattle that scored 3 were evaluated by the attending veterinarian and treatment according to diagnosis was applied. Gait and posture were documented: 0 = normal; 1 = reluctant to move, stiff gait; 2 = mild incoordination when stimulated, hunched posture; 3 = obvious ataxia or head tilt, hunching, dragging of one or more limbs. Cattle lying down were documented and scored as follows: 0 = lying normally, head up, ruminating; 1 = lying with head down; 2 = lying with full or partial extension of hind legs; 3 = lying in lateral position.

Data were analyzed using the MIXED and GLIMMIX procedures of SAS (Cary, NC), and the independent variables used in the model were treatment and week for vocalization, depression, gait and posture, lying, and average daily gain.

Results and Discussion

Success of the banding technique over the 4-week time period was poor to inconclusive during the trial. Four of the bands fell off without removing the horn in the first 4 days of the trial. During the trial, only 3 horns that had been banded fell off during a 28-day period, leaving 13 out of the 20 horns at the end of the 4-week trial with the bands still attached.

MECH and BAND had greater vocalization scores than CON and TIP ($P < 0.05$; Figure 1). Cattle with the MECH treatment had the most extended vocalization, indicating the greatest discomfort during the procedure. The BAND group had lower vocalization scores than the MECH group at the time of dehorning but greater vocalization post-procedure. Vocalization scores for cattle treated with TIP and CON did not differ.

Cattle from the BAND group tended to have higher depression scores than cattle from other treatment groups ($P < 0.10$; Figure 2). No other differences were measured in depression scores in cattle dehorned by TIP, MECH, or CON.

Cattle in the BAND group tended to exhibit higher gait and posture scores than cattle in other dehorning treatment groups ($P < 0.10$; Figure 3). No other differences were observed in gait and posture due to dehorning methods.

Cattle dehorned with the banding technique had higher abnormal lying scores than cattle dehorned with other techniques ($P = 0.04$; Figure 4). No other lying score differences were observed between cattle dehorned with other methods ($P > 0.10$).

The amount of weight gained by cattle in all four dehorning treatment groups was similar across treatments ($P = 0.81$; Figure 5).

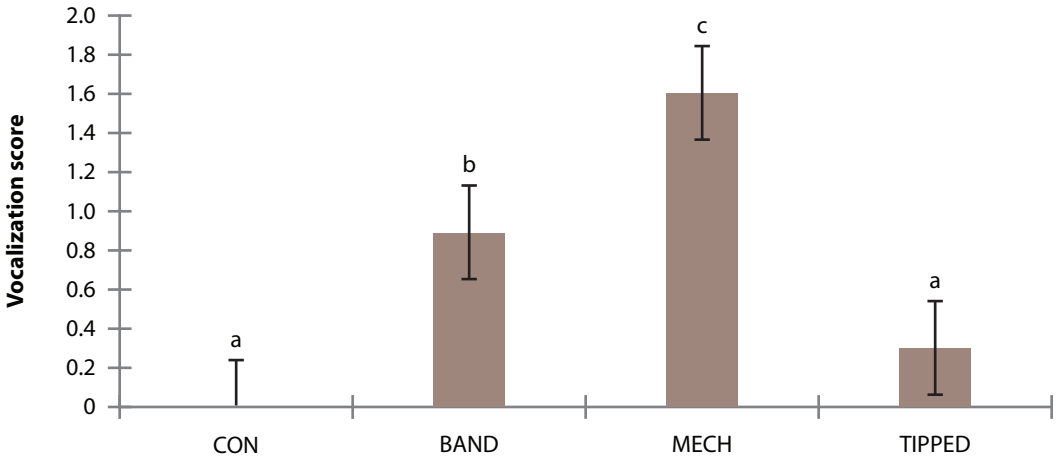
Based on treatment effects on vocalization, depression, abnormal gait and posture, and abnormal lying, banding appears to be a relatively painful process that has lasting effects. Mechanical dehorning is correlated with increases in vocalization ($P < 0.01$) at the time of the procedure, which can be associated with an increase in pain response. Tipping

the horns had the least amount of pain-associated behavior observed throughout the trial and was similar to not dehorning based on the evaluation of vocalization, depression, gait and posture, and lying; however, no difference was detected in performance between the different dehorning procedures ($P = 0.81$).

Other than vocalization during dehorning, mechanical dehorning caused no differences in behavior post-procedure compared with tipping or no dehorning, and tipping was not different than no dehorning with respect to behavior measures.

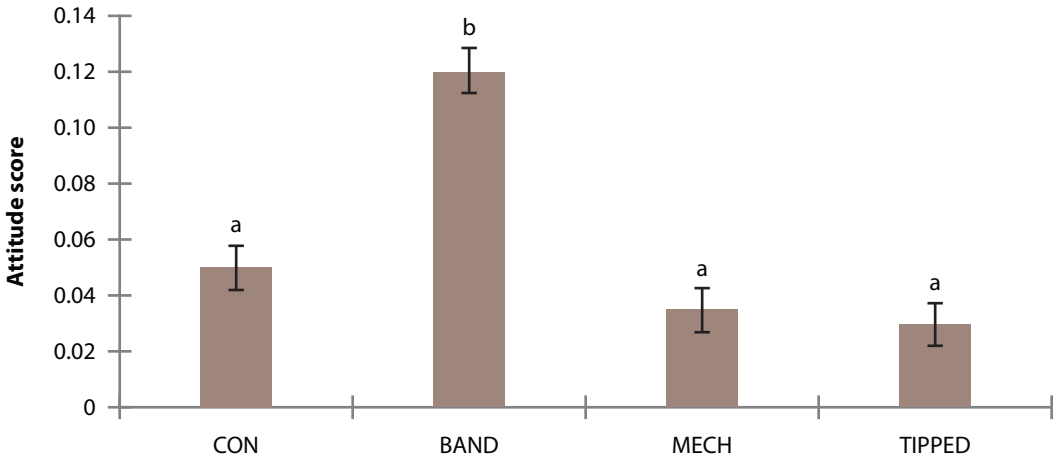
Implications

Dehorning can be a stressful procedure, but if done quickly and properly, stress response on feeder calves can be minimized.



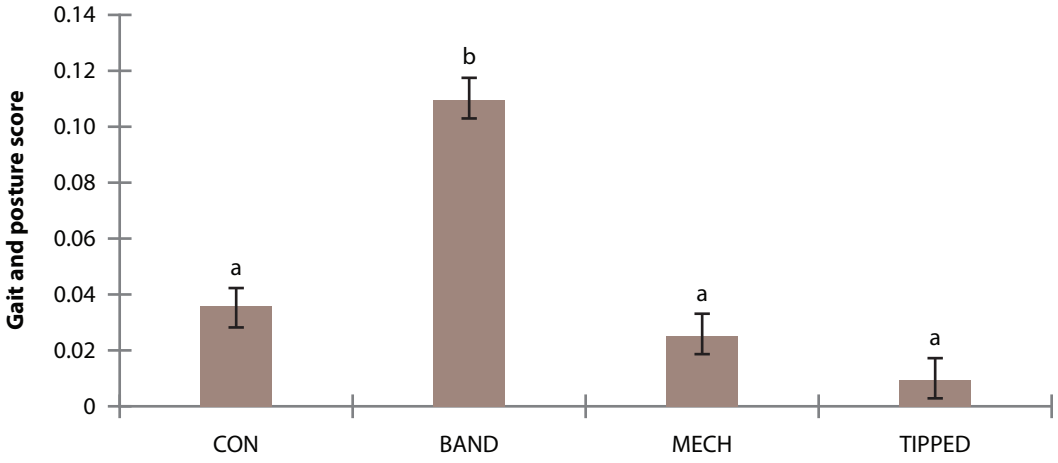
[abc] Means without a common superscript differ ($P < 0.05$).

Figure 1. Vocalization scores on day of treatment in the chute.



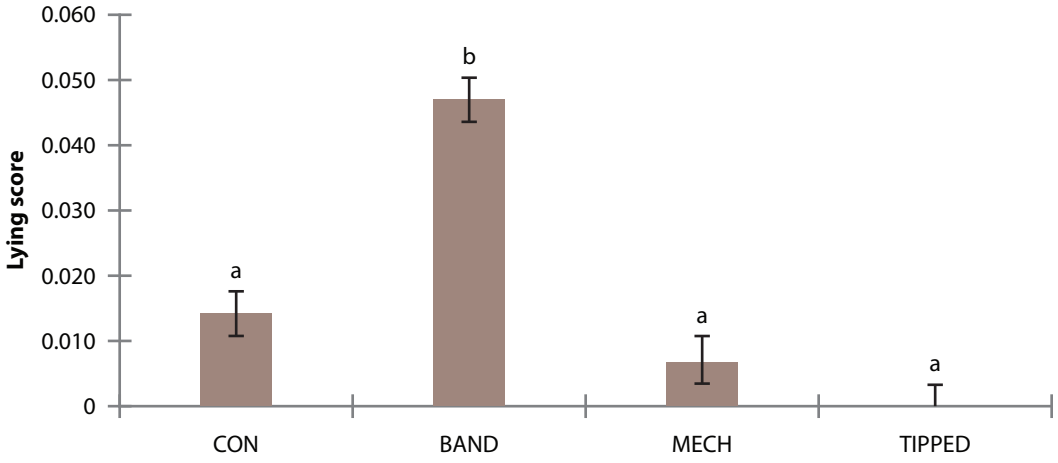
[ab] Means without a common superscript differ ($P < 0.10$).

Figure 2. Attitude score across the entire duration of the trial.



[ab] Means without a common superscript differ ($P < 0.10$).

Figure 3. Gait and posture score for the entire duration of the trial.



[ab] Means without a common superscript differ ($P < 0.10$).

Figure 4. Lying score for the entire duration of the trial.

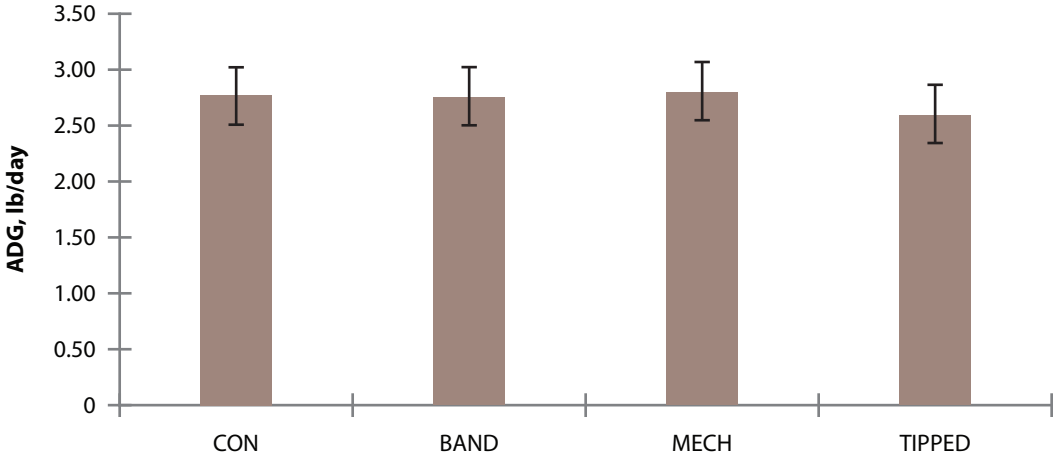


Figure 5. Average daily gain (ADG; lb/day) for the entire 28-day duration of the trial treatment (treatment effect, $P = 0.81$).