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L. M. Kovarik
University of Nebraska - Lincoln

Matt K. Luebbe
University of Nebraska - Lincoln, mluebbe2@unl.edu

Joshua R. Benton
University of Nebraska - Lincoln, jbenton2@unl.edu

Galen E. Erickson
University of Nebraska - Lincoln, gerickson4@unl.edu

Richard J. Rasby
University of Nebraska - Lincoln, rrasby1@unl.edu

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Effects of Time of Transporting Prior to Sale Date on Selling Weight of Weaned Steer Calves

L. M. Kovarik*, M. K. Luebbe, J.R. Benton, G. E. Erickson, and R. J. Rasby
University of Nebraska-Lincoln

ABSTRACT: Eighty-eight crossbred weaned steer calves (250 ± 26 kg) were used to evaluate weight loss (shrink) when transported to a mock sale barn on differing days prior to sale. The calves were weaned 14 days and fed free choice grass hay and 0.9 kg of DDGS at UNL's Dalbey-Halleck Research Unit. Two days before initiation of treatments all calves were fed grass hay ad libitum and initial BW were recorded on two consecutive days. Calves were assigned randomly to treatment as a completely randomized design. On d 2, 1d restricted and 1d ad libitum treatments were transported 150 km to UNL ARDC feedlot near Mead, Nebraska. 0d treatment remained at the Dalbey-Halleck Research Unit. All treatments were allowed free choice grass hay and water. At 0800 on d 3, 0d treatment was loaded into trailers and transported to the ARDC feedlot. At 0800 on d 3, 1d restricted treatment was withheld from grass hay and water. At 1000 on d 3, all calves were co-mingled and processed to obtain a sale BW. The mixed procedures of SAS were used for statistical analysis, with steer as the experimental unit. No differences were observed in final BW (P=0.98) or percent shrink (P=0.80) with 2.2%, 1.7%, and 0.6% shrink for 1d restricted, 1d ad libitum and 0d treatments, respectively. Total weight loss from two days pre-mock sale date to the mock sale date was 7.0, 6.0, and 1.8 kg for 1d restricted, 1d ad libitum and 0d treatments, respectively. Transporting date prior to sale date did not significantly affect selling weight when calves were allowed access to feed and water at the sale facility and had been trained to eat hay prior to the sale date. However, a numerical difference was observed between shipping cattle prior to sale date.

Key Words: Shipping, Shrink, Weaning

Introduction

Sale weight has a large impact on the price received for the livestock traded. Many factors such as diet, age, weaning status, and pen conditions can affect sale weight. In a study conducted by Self and Gay (1972) cattle were shipped from 53 different locations and the distances varied from 240 to 1,824 km with the average being 1,024 km. Cattle were either shipped directly from the ranch or from a sale barn. The average amount of shrink was 7.2% and 9.1% respectively and significantly different (P= 0.05). The objective of this study was to evaluate the effects of time of transporting prior to sale date on selling weight of weaned steer calves.

Materials and Methods

Eighty-eight crossbred steers were randomly assigned to one of three treatments. Steer calves were weaned for 14 d at UNL's Dalbey-Halleck Research Unit near Virginia, Nebraska. Calves received 0.9 kg of DDGS and free choice grass hay during the weaning phase. Initial weights were taken on d 1. Day 2 second day weights were recorded and calves were randomly assigned to treatment. 1d restricted (n=29), and 1d ad libitum (n=29) were transported 150 km to ARDC research feedlot near Mead, Nebraska. 0 d calves (n=30) remained at the Dalbey-Halleck Research Unit. All three treatments received free choice grass hay. On d 3 at 0800 d 1 restricted were removed from hay and water. 1 d ad libitum was allowed access to feed and water. Also, 0 d were transported to ARDC research feedlot in stock trailers. Upon arrival calves were co-mingled and processed. The weights recorded at processing were used as sale weights. Data were analyzed using the mixed procedures of SAS.

Results

Initial BW did not differ (P = 0.07) and was 256, 251, and 241 kg for 1d restricted, 1d ad libitum, and 0d treatments, respectively. No differences were observed in final BW (P=0.33) with 249, 245, and 239 kg or percent shrink (P=0.80) with 2.2%, 1.8%, and 0.6% shrink for 1d restricted, 1d ad libitum and 0d treatments, respectively. Total weight loss from two days pre-mock sale date to the mock sale date was 7.0, 6.0, and 1.8 kg for 1d restricted, 1d ad libitum and 0d treatments, respectively. No statistical differences were observed when comparing treatments.

Discussion

Shrink is a highly variable physiological process with the contents of the digestive system being highly affected. Sixty steers were slaughtered pre and post-shipment to provide information on the source of shrink (Self and Gay 1972). Slightly less than half of total shrink was from loss of digestive tract contents. The mean time required to regain shipping shrink was 10.7 days. However, the time required to regain shrink ranged from 3 to 30 days with over half the shipments only requiring 7 days or less. Also, environmental stressors such as high ambient temperatures and excessive handling increases shrink by up to 2% (Coffey et al. 2001).

In a study conducted by Coffey et al. (1997) they found that yearling steers gathered at 6 a.m. vs. 9 a.m. had 2.9% greater shrink at 3 p.m. Researchers attributed this

finding to the extra time that cattle remained on the pasture and their opportunity to graze and consume water. In addition to time of gathering, diet can play an important role on shrink. Cravey et al. (1991) compared shrink when cattle where grazing wheat pasture or were eating hay in a dry-lot. After four hours, wheat pasture cattle had shrunk 5.1% vs 3.9% for cattle consuming hay in the dry-lot.

Also, in recently weaned and transported calves, low feed intake is common and may persist for up to 2 weeks (Hutchinson and Cole, 1986).

According to Barnes et al. (1990) shrink was greatest in calves weaned the day before the sale when compared to calves weaned the day of the sale or 22 days preconditioned: 4.9, 3.4, and 2.3% respectively. In review conducted by Coffey et al. (2001) it was stated that the primary factor affecting shrink is the length of time feed and water are restricted. The average shrink is 1%/hr during the initial 3-4 hours but then decreases to as low as 0.1%/hr after 10 hr or more.

In our trial the objective was to discover the amount of shrink recovered or lost in twenty-four hours at a new location with weaned calves that are preconditioned to eating hay. We hypothesized that calves shipped on 1d would gain back the shrink incurred in the shipping process. However, in our data, the 1d calves continued to shrink in the new environment. The 1 d restricted calves shrunk more than 1 d ad libitum calves. The 0 d calves lost numerically the least amount of weight.

Implications

Our data were not statistically different between treatments but the numerical differences in our shipping procedures could have an economic importance. Shipping date prior to the sale does not statistically affect sale weight. Other economic variables need to be accounted for to decide the date to ship cattle prior to sale date.

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Table 1. Effects shipping time prior to sale.

	Treatment[1]				
Performance Characteristics	1 d restricted	1 d ad libitum	0 d	SEM	*P*-VALUE
Initial BW, kg	256.7	251.7	241.3	10.5	0.07
Final BW, kg	249.7	245.7	239.5	10. 7	0.33
% shrunk, (1- (FBW / ItBW))	2.2	1.8	0.6	0.02	0.80

[1]Ttreatments: 1 d restricted = transported 1 day prior to sale and restricted for 2 hours; 1 day ad libitum = transported 1 day prior to sale and allowed ad libitum access to feed and water; 0 day = Transported the day of the sale.