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Effect of sorting and feeding management practices on finished lamb shrink loss

K. Manthei, J.E. Held, A. Kolthoff, K. Bruns

BACKGROUND

In the Upper Midwest public auction sale barns and direct marketing (packer buying stations) are the primary methods to sell sheep and lambs. They are generally sold on a live weight basis (lbs) with prices reported in dollars per hundred weight (\$/cwt). Therefore the economic return to the producer is based on the live weight at the point of sale. Typically sheep are transported to a location and weighed immediately before being sold, referred to as the pay weight, or final weight. For public auction barns there is typically a time lag between delivery and weighing, which ranges from an overnight stand to a few hours after arrival at the sale facility. With packer buying stations the animals are off-loaded then moved directly to a weigh scale. Using either marketing option is expected to result in a fair market value of the animal, “price discovery”. Yet another common denominator between these marketing options is a natural phenomenon called shrink loss. Further defined, shrink loss is the difference measured between the initial body weight at the farm and the pay weight. Since pay weight is used to compute the value of the animal, minimizing loss is imperative to maximize animal market value. The sources of shrink loss include excrement, body fluids and tissue dehydration.

Industry experts estimate shrink loss for market ready lambs (120-150 lbs) at approximately 4%, but a wide array of factors results in a range of 1 to 6 percent. Studies focused on livestock shrink loss have determined that distance traveled is a significant factor, with most shrink loss expected to occur in the initial 25 to 50 miles of transport. Yet little information is published evaluating the impact of common pre-marketing sorting, comingling and feed management practices on shrink loss for finished weight lambs. Thus, a study was designed to measure the effect of common pre-marketing management practices on shrink loss in finished weight lambs before and after transport.

OBJECTIVES

To determine the effect of common pre-marketing sorting and feeding management practices on finished lamb shrink loss.

MATERIALS AND METHODS

A study was conducted at the South Dakota State University sheep unit on March 14-15, 2013 to evaluate shrink loss with finished weight, fall born Hampshire sired and Polypay lambs (n = 44). All lambs were offered a finishing lamb diet ad libitum and comingled for more than 60 days before the pre-trial weight was recorded and lambs designated to treatment. On March 14 at

5:00PM (CST) lambs were weighed, pre-trial weight, then were randomly allocated by weight and sex of animal (wether and ewe) to treatment: control (C; n = 14), sorted on feed (SF; n = 15) and sorted on hay (SH; n = 15). These treatments correspond to common sheep industry finished lamb marketing management practices. The control lambs were housed in the original pen they had occupied for more than 60 days with ad libitum access to a finishing lamb diet and water, SF lambs were weighed then moved to a different pen and had ad libitum access to the lamb finishing diet and water, the SH lambs were also moved to a different pen with ad libitum access to hay and water. On March 15 at 8:00AM (CST) all lambs were weighed to record a post-sort weight then loaded onto a livestock trailer (8' x 24') and hauled for 50 miles. Following the transportation process lambs were off-loaded and weighed to determine a final weight.

Differences in shrink loss resulting from sorting, comingling and feed management treatments were analyzed by the GLM (general linear model) procedure of SAS. Differences in least square means for shrink loss were separated using the PDIFF option of SAS.

RESULTS AND DISCUSSION

Results for shrink loss associated with sorting and comingling are reported in Table 1. Total shrink loss and shrink due to sorting were greater ($P < 0.01$) for the lambs in the sorted on feed (SF) treatment compared to control lambs. The lambs in the control group (C) had less than 1% body weight change during the trial. In contrast, the lambs in the SF group had 3.5% total shrink loss. The SF treatment resulted in a 7 fold increase in total shrink loss, the majority of body weight loss ($> 75\%$ of total shrink loss) occurred in the 15 h period before transport. It is a common management practice for producers to sort market ready finished lambs into a different pen overnight prior to transport to direct marketing or public auction sale barn marketing options. Based on our data the ideal management practice to minimize shrink loss and subsequently improve economic return is to sort finished weight lambs from the feeding pen immediately before transport.

Results for shrink loss due to changes in sorting and feed management are shown in Table 2. No difference ($P = 0.73$) was shown for total shrink loss in lambs that were sorted to different pens then given access to the lamb finishing diet ad libitum (SF) compared to those with ad libitum access to hay (SH). The total shrink loss was 3.5% vs. 3.7% for SF and SH lambs, respectively. Since the SF lamb finishing diet was identical to that offered for the past 60 d with proven nutritional qualities and high palatability characteristics compared to the modest quality hay offered to SH lambs, it was surprising to find no difference due to feed management treatment.

A summary of the economic relevance of the total shrink loss can be illustrated by computing the effect on lamb return (\$/head). Using current live finished lamb prices at \$106/cwt the SF and SH lambs would return \$4 to \$5 less per head, respectively, than C lambs due to differences in shrink loss. Another method to express the economic impact of shrink loss is to determine the finished lamb prices for SF (\$113/cwt) and SH (\$117/cwt) lambs that equals the return when C lambs are priced at \$106/cwt.

Based on data from this study, the management practice that results in the least lamb shrink loss is sorting and loading immediately prior to transportation to a marketing destination. Conversely,

when lambs are sorted into a different pen overnight expect substantially higher shrink loss independent of feed management decisions. Although transport is an important source of shrink loss we have shown that on-farm management decisions can have the greatest impact.

Table 1. Effect of sorting and comingling on shrink loss

Item	Control n = 14	Sorted on feed n = 15	P <
Pre-trial wt (lb)	136.8	137.4	0.88
Post sort wt (lb)	136.5	133.7	0.49
Shrink from sorting (%) ^a	0.2	2.7	< 0.01
Wt. after hauling (lb)	135.9	132.6	0.42
Total shrink (%) ^b	0.6	3.5	< 0.01

^aShrink from sorting = (1 - (Post sort wt / Pre-trial wt)) * 100

^bShrink from sorting and hauling = (1 - (After hauling wt / Pre-trial wt)) * 100

Table 2. Effect of sorting and feed management on shrink loss

Item	Sorted on feed n = 15	Sorted on hay n = 15	P <
Pre-trial wt (lb)	137.4	135.7	0.71
Wt. after hauling (lb)	132.6	130.7	0.67
Total shrink (%) ^a	3.5	3.7	0.73

^aShrink from sorting and hauling = (1 - (After hauling wt / Pre-trial wt)) * 100