Evaluation of Mud Scores on Finished Beef Steers Dressing Percent

A.S. Leaflet R2292

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Summary

Over 12,000 head of cattle from two different data sets were evaluated for the influence that muddy hair coat would have on dressing percent at the harvest facility. In Tri-County Steer Carcass Futurity data as mud score went from no tag, clean hide to lumps of manure attached to the hide continuously on the underbelly and side of the animal from brisket to rear quarter the dressing percent dropped from 62.02 percent to 61.13 percent. Cattle fed at the Armstrong Research facility similarly decreased in dressing percent from 62.00 to 59.50. Both fat cover and ribeye area had significant impacts on dressing percent with fatter cattle dressing over 2 percent greater than lean cattle and heavier muscled cattle dressing over 2 percent greater than lighter muscled cattle.

Introduction

Environmental conditions such as cold and heat stress in the feedlot industry annually impact finishing gains, efficiency of gains and cost producers substantially in cost of gain. Additionally, muddy conditions brought on by excessive precipitation, poor feedlot drainage conditions and lack of mounds can decrease cattle performance. Besides these efficiency factors, muddy conditions can bring about excessively muddy hair coats potentially lowering yields at the harvest facility. How much yields can be lowered in the field has not been analyzed, therefore, the objective of this project was to score feedlot cattle for hair coat mud during the feeding period and just prior to harvest allowing for evaluation of mud score on dressing percent.

Material and Methods

Two data sets were utilized in evaluating the impact of mud score on dressing percent. One data set consisted of 133 groups of 11,175 head of steers and heifers with known sire breeds from 10 different feedlots in southwest Iowa in the Tri-County Steer Carcass Futurity program. The second data set was 4 groups of 941 cattle with unknown sire breeds finished at the Armstrong Outlying Research Farm at Lewis, Iowa. Within seven days or less of harvest all cattle were scored for mud. Mud scores were defined as follows: 1 = no tag, clean hide; 2 = small lumps of manure attached to the hide in limited areas of the legs and underbelly; 3 = small and large lumps of manure attached to the hide covering larger areas of the legs, side, and underbelly; 4 = small and large lumps of manure attached to the hide in even larger areas along the hind quarter, stomach, and front shoulder; and 5 = lumps of manure attached to the hide continuously on the underbelly and side of the animal from brisket to rear quarter.

Each data set was analyzed separately utilizing the General Linear Models of analysis of variance from PC-SAS 9.1. Independent variables fit in the model utilized in the Tri-County data set were feeding group, sex, fat cover, ribeye area, sire breed (Tri-County cattle only) and final mud score. Variables fit in the model for the Armstrong data set were feeding group, type of yard design (Hoop vs. Semi-confinement), fat cover, ribeye area and final mud score. Fat cover and ribeye area were converted into classes to assess the average impact that each trait had on dressing percent.

Results and Observations

Mud score varies a great deal from month to month based on analysis of the Tri-County data and certainly needs to be considered when evaluating feedlots for animal welfare. As Figure 1 shows average mud scores ranged from all being free of mud to especially wet conditions where an average score was over 3 for all feedlots during that particular time period.

All independent variables fit in the models for each data set significantly impacted dressing percent. Dressing percent least square means for are shown by final mud score in table 1. In the Tri-County analysis mud score caused a significant reduction of .9 percent in dress as cattle went from mud free to extremely muddy with the largest difference occurring between mud scores of 3 and 4. The Armstrong data set did not show significant difference in dress until cattle were scored a 5 for mud at which time there was nearly a 2 percent drop. However, it should be noted that cattle scoring a 4 were nearly .5 percent lower in dress than those with scores of 1-3.

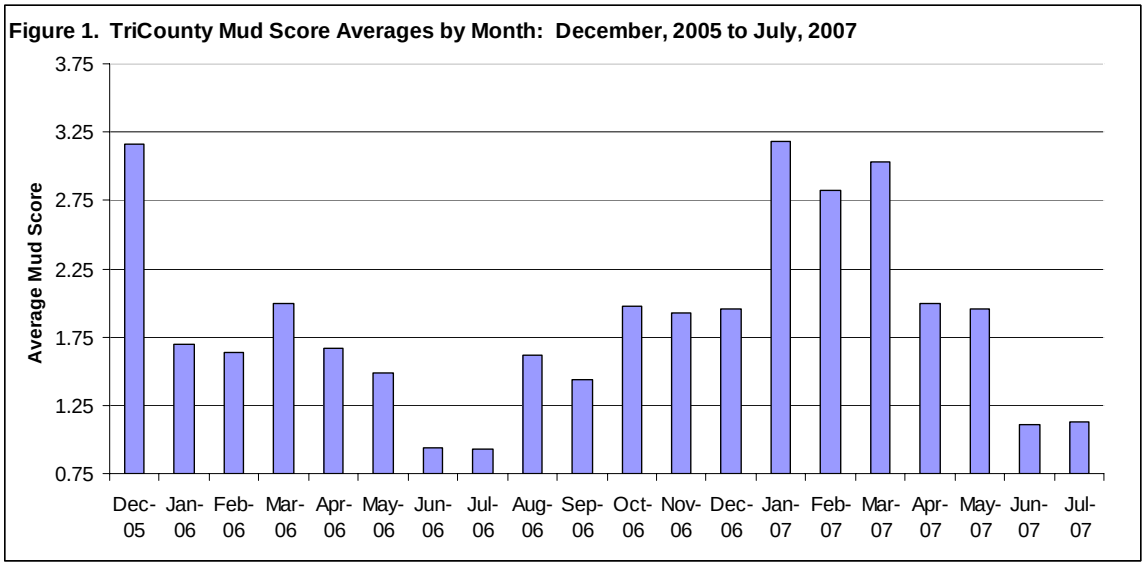

Table 1. Impact of mud score on dressing percent. Least Square Means.

Mud Score	Tri-County* Dressing Percent	Armstrong* Dressing Percent
1	62.02[a]	62.00
2	62.19[a,b]	62.02
3	61.91[b]	61.96
4	61.19[a,b,c]	61.59
5	61.13[a,b,c]	59.50[a]

* Column LS Means with similar superscripts are significantly different at P<.01.

Fat cover and ribeye area had significant impacts on dressing percent. Tables 2 and 3 show the least square averages by tenth of an inch for fat cover and by one square inch for ribeye area in both datasets. As cattle increased in fat cover from less than .2 inches to over .8 inches, dressing percent increased by over two percent. Similarly as muscling increased from less than 11 to over 15 square inches, dressing percent improved in excess of 2 percent.

From previous detailed research done at other research stations it was anticipated that these dressing percent differences would be greater. However, it may be that the scoring system utilized does not capture the intensity of mud caked to the hair coat and hide. Instead this mud scoring system tends to look more at coverage on the hide coat and does not capture differences in the thickness of mud coating the sides of the animal, on the underline or hanging from the tail. It would appear that a second observational study is needed utilizing a slightly different mud scoring system.

Implications

This analysis shows that a mud scoring system can partially account for differences in dressing percent at the feedlot. Additionally, this data would support that some level of price adjustments may be warranted in cases of excess hide muddiness. For instance, the .91% difference in dress in the Tri-County cattle between mud scores of 1 to 3 and 5's would mean an added 11.8 lbs of carcass weight in a 1300 finished steer and in the Armstrong data where when comparing mud scores 1 to 3 to 5's the difference in carcass weight would be 32 lbs. With a $1.45/lb carcass bid (or a live bid of $91.35/cwt) this would be a difference in value between clean and dirty cattle of $17.11/hd in the Tri-County cattle and $46.40/hd in the Armstrong cattle. The live price difference between clean and dirty cattle for the Tri-County Cattle would $1.32/cwt and $3.57/cwt for the Armstrong cattle.

Table 2. Impact of fat cover on dressing percent. Least Square Means.

Fat cover, inches	Tri-County* Dressing Percent	Armstrong* Dressing Percent
.1 to .19	60.02[a]	59.99[a]
.2 to .29	60.93[a,b]	60.90[b]
.3 to .39	61.27[a,b,c]	60.96[c]
.4 to .49	61.43[a,b,c,d]	61.12[d]
.5 to .59	61.65[a,b,c,d,e]	61.43[b,c,e]
.6 to .69	61.94[a,b,c,d,e]	61.54[a,b,c,f]
.7 to .79	62.12[a,b,c,d,e]	62.04[a,b,c,d,g]
.8 to .89	62.09[a,b,c,d,e]	63.33[a,b,c,d,e,f,g]
.9 to .99	62.64[a,b,c,d,e,f]	
Over 1	62.83[a,b,c,e]	

*Column LS Means with similar superscripts are significantly different at P<.05.

Table 3. Impact of ribeye area on dress, ADG in feedlot and marbling score.

Ribeye area, square inches	Tri-County* Dressing Percent	Armstrong* Dressing Percent
Less than 10	59.67[a]	
10 to 10.9	60.27[a,b]	59.57[a]
11 to 11.9	61.03[a,b,c]	60.52[b]
12 to 12.9	61.51[a,b,c,d]	61.19[a,b,c]
13 to 13.9	61.86[a,b,c,d,e]	61.69[a,b,c,d]
14 to 14.9	62.15[a,b,c,d,e,f]	61.91[a,b,c,e]
15 to 15.9	62.49[a,b,c,d,e,f,g]	62.13[a,b,c]
16 to 16.9	62.90[a,b,c,d,e,f,g,h]	62.87[a,b,c,d,e]
17 and over	63.33[a,b,c,d,e,f,g,h]	

*Column LS Means with similar superscripts are significantly different at P<.05.

Acknowledgements

The authors wish to thank all the feedlot operators in the Tri-County Steer Carcass Futurity program for the allowance of data collection at their lots and Dallas Maxwell, Manager of the Armstrong Research Center for cooperation in this study.