BEEF CATTLE RESEARCH UPDATE

Britt Hicks, Ph.D., PAS
Area Extension Livestock Specialist
Oklahoma Panhandle Research & Extension Center

June 2009

Impact of BRD Complex on Feedlot Cattle Performance and Carcass Traits

Bovine respiratory disease (BRD) is the most common and costly beef cattle disease in the United States. Research from 2006 showed that the economic loss associated with lower gains and treatment cost for BRD infection in a 1,000 head feedlot was $13.90 per animal, not including labor and associated handling costs.[1] Recent Iowa State University research investigated the effects of the bovine respiratory disease (BRD) complex on economically important production traits with the use of health records in combination with lung lesion scores obtained at slaughter.[2] This study utilized 5,976 cattle which entered 10 different Midwestern feedlots between 2003 and 2006. These cattle originated from herds across the Midwest and Southeast United States. The performance measures monitored were average daily gain for three different feeding periods (acclimation: 4 to 6 week receiving period, on-test, and overall test) and final body weight. The carcass traits measured were hot carcass weight, ribeye area, fat thickness, and marbling.

These researchers reported that the average body weight of these cattle upon entering the feedlot was 635 lb with an average on-test weight of 756 lb. The incidence of BRD in this study was 8.2%, which is similar to 8.7% previously reported in feedlots of similar size.[3] A total of 488 head were treated for BRD (53% treated once, 34% treated twice, and 13% treated three or more times). The average day of first treatment was 40 days after entering the feedlot and 75% of the treated cattle had been treated by day 55.

The lungs of 1,665 cattle were observed at slaughter, with 61.9% of the lungs having lesions present. It was noted that lung lesions were found in 60.6% of cattle that were never treated for BRD. These researchers speculated that this possibly occurred because feedlot observation simply missed a large number of cattle that suffered from BRD, many of these cattle suffered from subclinical disease, that lesions observed were from instances of BRD exposure before arrival to the feedlot, or a combination of these. Lung lesions were also observed in most (74%) cattle that had been treated at least once. In the cattle that were scored for lung lesions, the overall incidence of BRD, which was defined as cattle that had lung lesions and/or were treated for BRD, was 64.4%.

Cattle treated for BRD had significantly lower average daily gains during the acclimation period (2.51 vs. 3.33 lb/day) and overall test (3.02 vs. 3.18 lb/day) than cattle never treated. Treatment for BRD reduced final body weight by 24 lb (1147 vs. 1171 lb). These data indicated that the cattle suffered the largest losses in performance during the early feeding period and appeared to compensate later in the feeding period. In addition, treatment for BRD significantly reduced hot carcass weight, ribeye area, fat thickness and marbling scores. Greater than 71% of the cattle that were never treated graded Choice or better, whereas cattle treated once, twice, and three or more times graded Choice or greater 57, 55, and 52% of the time, respectively. It was also reported that the adverse effects on production traits tended to increase as the number of treatments increased. These results are similar to that reported by other researchers.[4,5]

These potential decreases in performance and carcass merit observed in this study were associated with a decline of $23.23, $30.15, and $54.01 in carcass value when comparing cattle never treated with cattle treated once, twice, or 3 or more times, respectively (Figure 1). It was reported that these value estimates only reflect differences within a specific marketing scheme. Thus, an analysis of economic value due to performance and quality grade separately was conducted. Differences in value due to differences in gain were $15.76, $22.09, and $46.70 when comparing cattle that were never treated for BRD with cattle treated once, twice, or 3 or more times, respectively. The

decreased economic values attributed to differences in quality grade when compared with cattle that were never treated were $7.48, $9.58, and $7.70 for cattle treated once, twice, or 3 or more times, respectively. It was noted that these values underestimate total economic losses associated with BRD in this study as they do not account for the extra cost of treatment associated with medicine cost, labor, veterinarian fees, and death loss.

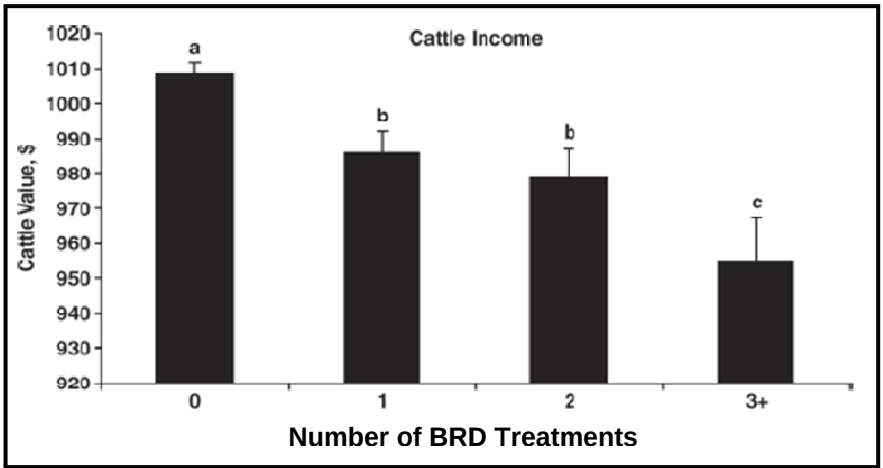

Figure 1. Least squares means for actual cattle gross income.
[a–c]Least squares means with different letters are statistically different ($P < 0.10$).
Source: Schneider et al., 2009.

In summary, the results of this study indicated that BRD morbidity and the extent of treatment have major consequences on feedlot performance and carcass traits. Substantial losses in animal income with BRD treatment can be attributed to reduced performance and carcass quality. In this study, the presence of lung lesions had little influence on performance or carcass traits. This observation contrasts with Oklahoma research which showed that the presence of lung lesions markedly depressed performance and carcass quality.[4] However, there was an association between the presence of active bronchial lymph nodes and less productivity of feedlot cattle in this Iowa study.

---

[1] Snowder, G. D., L. D. Van Vleck, L. V. Cundiff, and G. L. Bennett. 2006. Bovine respiratory disease in feedlot cattle: Environmental, genetic, and economic factors. J. Anim. Sci. 84:1999-2008.

[2] Schneider, M. J., R. G. Tait Jr., W. D. Busby, and J. M. Reecy. 2009. An evaluation of bovine respiratory disease complex in feedlot cattle: Impact on performance and carcass traits using treatment records and lung lesion scores. J. Anim. Sci. 87: 1821-1827.

[3] USDA-APHIS. 2001. Treatment of respiratory disease in U. S. feedlots. Info sheet APHIS Veterinary Services. Available: www.aphis.usda.gov/vs/ceah/ncahs/nahms/feedlot/feedlot99/FD99treatresp.pdf

[4] Gardner, B. A., H. G. Dolezal, L. K. Bryant, F. N. Owens, and R. A. Smith. 1999. Health of finishing steers: Effects on performance, carcass traits, and meat tenderness. J. Anim. Sci. 77: 3168-3175.

[5] Montgomery, S. P., J. J. Sindt, M. A. Greenquist, W. F. Miller, J. N. Pike, E. R. Loe, M. J. Sulpizio, and J. S. Drouillard. 2009. Plasma metabolites of receiving heifers and the relationship between apparent bovine respiratory disease, body weight gain, and carcass characteristics. J. Anim. Sci. 87: 328-333.