

A survey of gross pathologic conditions of cattle presented for slaughter in the southeastern United States

Daniel L Mudd, BS¹; Marc Caldwell, DVM, PhD, DACVIM¹; Samantha Collins, DVM, MPH¹ University of Tennessee College of Veterinary Medicine, 2407 River Dr. Knoxville TN 37996

Introduction

According to the United States Department of Agriculture, cattle slaughtered in 2017 totaled 32.2 million animals and approximately 6.4 million animals were adult cull cattle (USDA 2016; USDA-NASS 2016). This harvest accounts for an estimated 5.4 billion pounds of beef or 20.7% of the 2017, US beef production. In the Southeastern US, the production of beef from cull cattle included 583,300 animals or approximately 90% of the total animals harvested in the region. Establishing the prevalence of diseases within this population is necessary for improving the quality and profitability of this sector of the industry. The objectives of this study were; 1) determine the prevalence of gross pathologic conditions, 2) characterize the type and frequency of conditions eliciting carcass condemnation, and 3) evaluate the extent of carcass bruising in cull cattle presented to slaughter and originating from farms in the southeastern United States.

Materials and Methods

Adult cull cattle (n=2,345) presented for slaughter at a single abattoir in northeastern Tennessee from July-August 2017 were evaluated based on an estimated regional population of 12.5 million adult cattle, a respiratory disease prevalence of 10%, and a desired absolute precision of +/- 2%, and a 95% CI. Only cattle with legible back tag identification and verifiable origin were enrolled and both beef and dairy breeds were recorded. Investigators were positioned throughout the slaughter facility to observe specific areas of processing for data collection. Data collected from animals included: type, breed, sex, estimated age, feet abnormalities, and lesions within organ systems. The number, location and estimated area of bruising was recorded and a bruising score as described by Rezac, et al (2014) was assigned. The attendant USDA inspector determined and reported to the investigators the condemnation of carcasses. Frequency distributions for demographic traits, pathologies observed, and carcassbruising scores were collated and analyzed descriptively using JMP software.

Results

Animals enrolled in the study originated from 149 livestock markets in 16 states. The number of cattle classified as beef or dairy were 1,440 animals (61.36%) and 905 animals (38.64%), respectively. The majority of cattle presented were female (2,157 animals, 91.98%), while 140 animals (5.97%) were bulls, and 48 animals (2.05%) were steers. Age was recorded for 2,335 of the 2,345 animals observed. Seventy-five percent (1,870 animals) were ≥5 years of age and 19.8% (464 animals) were ≥10 years of age. Animals between 2 – 5 years accounted for 12.3% (289 animals), and animals ≤ 2 years of age accounted for 11.4% (267 animals). The two most prevalent lesions were abnormalities of the feet and limbs (41.07%; 963/2,345) and lesions within the respiratory tract (12.13%; 284/2,345). Of 2,345 carcasses observed, 3.24% (76/2,345) were condemned. The three most prevalent conditions eliciting condemnation included neoplasia (38.1%; 29/76), respiratory disease (25.6%; 19/76), and sepsis (14.0%; 10/76). The percentage of carcasses exhibiting at least mild bruising was 45.72%.

Significance

The study presented here provides an estimate of the pathology present among adult cull cattle located in the southeastern US. Sale of cull cattle represent approximately 15 – 30% of gross annual revenue of cow-calf operations. Identifying the most common disorders of this population is critical to expanding profitability. Moreover, the care and handling of adult cattle at the end of their productive life is receiving increased consumer awareness. This study provides a foundation for improving the health, value and well-being of cull cattle in the Southeastern US.