Liver Abnormalities Lead to Decreased Cattle Performance and Lost Monetary Value

Observations from two large databases on the relationship between liver diseases and carcass outcomes are presented in a new study in Applied Animal Science

Champaign, IL, June 10, 2024—Liver abscesses in cattle reduce productivity and result in losses for the fed-beef industry. Applied Animal Science published a Special Issue on this topic that features recent research focused on understanding and preventing this costly disease. One study in the Special Issue provides an overview of multiple liver-health problems and resulting carcass performance across time. “This excellent report characterizes associations of various liver abnormalities with carcass outcomes using two large databases collected from 2010 through 2021,” said David K. Beede, PhD, Editor in Chief of the journal.

Much information is available on liver abscesses, but other liver abnormalities are researched less frequently. Scientists from West Texas A&M University and Huvepharma investigated several liver-health problems, including abscesses, congestive heart failure, flukes, and telangiectasis, and how these issues affect carcass characteristics and value.

The researchers assessed an extensive amount of data from two independent databases from the West Texas A&M University–Beef Carcass Research Center (Canyon, TX, USA). Database 1 contained individual liver outcomes and matching carcass data for 371,476 carcasses from 2010 to 2021, and database 2 contained liver outcome data collected on 1,166,056 carcasses on a lot basis from 2013 to 2021.

With this quantity of data, the researchers were able to make many observations, and their article presents their findings on liver abnormalities by location, season, year, and cattle type and sex. “The greatest liver abnormality rates were observed in the Pacific Northwest, Midwest, and the state of Texas,” said lead author Ty E. Lawrence, PhD (Department of Agricultural Sciences, Beef Carcass Research Center, West Texas A&M University, Canyon, TX, USA). Increased rates were also observed in beef × dairy crossbreds compared with Holstein cattle. Lawrence added, “Rates of prevalence of liver abscesses
across years within this large database suggest that the liver abscess problem is not improving, and—if anything—it is increasing in prevalence."

Caption: Liver abnormalities in cattle lead to decreased performance while the animal is alive and additional trim loss and liver and offal condemnation at slaughter (Credit: T. E. Lawrence).

Many effects of liver abnormalities on carcass performance are discussed in the article. The scientists detail their findings on carcass weight; longissimus muscle area; marbling score; carcass muscling; kidney, pelvic, and heart fat; 12th-rib fat thickness; yield grade; and hot carcass weight. The article discusses that liver abscesses, congestive heart failure, and liver flukes were often found to have detrimental effects on carcass performance, although telangiectasis was found to have minimal effects. Lawrence said, “Across all carcass outcomes, hot carcass weight was determined to be greatly affected by liver abnormalities, especially abscessed and congestive heart failure–affected livers.”

The article also presents the ultimate effect of liver diseases on carcass value. The researchers present their varied observations regarding discounts and premiums based on hot carcass weight, quality grade, and yield grade. Lawrence stated, “The lowest value carcass was determined to occur from congestive heart failure–affected livers.” He added “Compared with carcasses with edible livers, as liver abscess severity increased, gross carcass value diminished.” The authors point out that these losses in value are a combination of diminished performance of the live animal and additional trim loss at slaughter. Lawrence concluded, “The results of the present study indicate control of liver abscesses and understanding the development of congestive heart failure are important to prevent losses in beef industry value.”

The article appears in the June issue of Applied Animal Science.

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Notes for editors

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To schedule an interview with the author(s), please contact Ty E. Lawrence at tlawrence@wtamu.edu.

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