NATIONAL BEEF QUALITY AUDIT-2016: FACTORS AFFECTING QUALITY AND VALUE OF CATTLE, CARCASSES, AND BY-PRODUCTS

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Abstract – The National Beef Quality Audit-2016 (NBQA-2016) assessed current quality characteristics of U.S. fed cattle. Predominant hide color and apparent breed type were black (57.8%) and Holstein (20.4%). There were 61.1% of carcasses without bruises. Offal condemnations were livers (30.8%), lungs (18.2%), viscera (16.3%), hearts (11.1%), heads (2.7%), and tongues (2.0%). Compared to NBQA-2011, fewer cattle were black-hided, a greater number were Holstein, more with no brands and no horns, fewer without bruises, more liver, lung, and viscera condemnations, and fewer heads and tongues were condemned. The NBQA remains an influential survey for continued improvement of beef quality.

Key Words – audit, beef quality, carcass

I. INTRODUCTION

The National Beef Quality Audit (NBQA) is conducted about every 5 years to assess and benchmark characteristics associated with producer-related beef quality. Findings are utilized by the beef industry to set strategic plans for continued improvement. Objectives of NBQA-2016 included measuring specific quality characteristics of cattle and carcasses that impact the value of beef and by-products.

II. MATERIALS AND METHODS

Slaughter cattle/carcasses (≈ 25,000) were sampled at 17 U.S. beef processors. Cattle were evaluated for: (1) hide color or apparent breed type (i.e., Holstein); (2) hide brands; and (3) horn presence and approximate length. Carcasses were evaluated for: (1) bruise presence, location, and severity; and (2) offal, head, and tongue condemnations were recorded.

Frequency distributions were evaluated using the distribution function of JMP. Comparisons of specific traits from NBQA-2011 and NBQA-2016 were tested for significance ($P < 0.05$) using χ^2 analysis.

III. RESULTS AND DISCUSSION

Hide Color

Black-hided cattle represented 57.8% of total cattle surveyed followed by, Holstein (20.4%), then predominately red (10.5%), yellow (4.8%), gray (2.9%), brown (1.3%), and white (1.1%) cattle. The percentage of black-hided cattle steadily increased from NBQA-2000 to NBQA-2011; however, it declined by 3.3 percentage points from NBQA-2011

to NBQA-2016 [1]. Additionally, Holstein-influenced increased 14.9 percentage points from the previous audit. Changes in relative abundance of black-hided and Holstein cattle were likely due to recent shifts in cattle supply.

Hide Brand Assessment

Frequencies of 0, 1, 2, or 3 brands present were 74.3%, 24.1%, 1.4%, and 0.2%, respectively. Additionally, 18.6% of hide-on cattle had a brand on the butt, 6.3% on the side, and 1.3% on the shoulder. Compared to NBQA-2011, hide-on carcasses without a brand increased by 19.1 percentage points in 2016 [1]. Mean hot-iron brand sizes were 173.8 cm^2 for butt brands, 584.1 cm^2 for side brands, and 226.6 cm^2 for shoulder brands. Overall incidence of hot-iron brands has drastically decreased from NBQA-2011.

Horn Evaluation

There were 16.7% of cattle with horns and 83.3% without horns. Horn lengths were < 2.54 cm (5.6%), 2.54 to 12.7 cm (8.3%), and > 12.7 cm (2.9%). Cattle with horns has decreased by 7.1 percentage points from NBQA-2011 [1].

Carcass Bruises

There were 61.1% of carcasses without bruises, whereas 28.2% had 1, 8.2% had 2, 2.1% had 3, and 0.3% had 4. Bruises were located on the loin (29.7%), round (27.8%), chuck (16.4%), rib (14.4%), and brisket/plate/flank (11.6%). Furthermore, 77.1% of bruises were categorized as minimal, 20.6% as major, 1.7% as critical, and 0.7% as extreme. Carcasses without a bruise have decreased by 15.9 percentage points from NBQA-2011 [1]. Transportation duration and distance, area allotted per animal during transport, presence of horns, animal handling practices, and many other factors may influence the presence and severity of bruising in cattle at slaughter [2].

Offal and By-Product Condemnations

Offal condemnations were livers (30.8%), lungs (18.2%), viscera (16.3%), hearts (11.1%), heads (2.7%), and tongues (2.0%). Livers were condemned due to minor abscesses (11.8%), major abscesses (6.0%), flukes (1.1%), contamination (10.1%), and other reasons (1.8%). Lungs were condemned for mild pneumonia (4.0%), moderate pneumonia (2.3%), severe pneumonia (1.1%), contamination (8.7%), and other reasons (2.0%). Viscera condemnations were a result of contamination (13.4%) and abscesses (2.8%).

IV. CONCLUSION

Trends observed in NBQA-2016 include fewer black-hided cattle and more Holstein cattle; more cattle without a brand and no horns; fewer carcasses without bruises; more liver, lung, and viscera condemnations; and fewer head and tongue condemnations. Data can be utilized to improve upon current management practices and implement innovative techniques to enhance beef quality and consistency in the U.S. supply.

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