

April 13, 2016

Beef Carcass Revisions  
Standardization Branch  
LPS Program, AMS, USDA  
1400 Independence Ave., SW., STOP 0258  
Washington, DC 20250

**Re: Request to Modernize the U.S. Standards for Grades of Carcass Beef**

The membership of the organizations represented appreciate the opportunity to request that AMS modernize the carcass maturity section of the current U.S. Standards for Grades of Carcass Beef. This opportunity was identified in a February 29, 2016 Notice to the Trade from USDA AMS Livestock, Poultry and Seed Program that three administrative updates to the Standards took effect on March 1, 2016.

Research on consumer preferences has documented a direct link between the eating quality of beef and a consumer's purchase behavior or willingness to pay<sup>1,2</sup>. Beef palatability is critical to consumers and their demand for beef products. Since 1965, beef quality and yield grade standards have been modified to reflect changes within the cattle industry. The ongoing collection of research data continues to be important to inform discussions around these modifications.

Cattle producers have invested well over 10 million checkoff dollars since 1993 in research to better understand palatability and the characteristics that drive consumer demand for beef products. Our members remain very involved in research to improve the quality of our beef products for consumers. We remain committed to working with all sectors of the beef industry, academia and USDA to identify areas within the U.S. Standards for Grades of Carcass Beef where relevant science can lead discussions to drive potential modifications to these Standards. As such, an industry working group was created in 2014 representing the cow/calf, feeder and packing sectors of the cattle industry. This working group has provided technical information to support the request of the AMS grade standards for carcass beef. Members of the working group have reviewed research specific to evaluation of current and potential carcass indicators that can be utilized to assign carcass maturity scores. This research has been shared with USDA AMS with the intention of requesting USDA to consider a modernization of the Standards to allow for age documentation - or dentition-based assignment of carcass maturity in fed steers and heifers.

Currently, dentition is utilized in U.S. federally inspected plants, with effective USDA Food Safety Inspection Service oversight, for the evaluation of cattle less than 30 months of age (MOA) to meet many export partner requirements. Carcasses of cattle are segregated, under the supervision of USDA-FSIS, into two age groups based on dentition. Carcasses produced by cattle with fewer than three permanent incisors are classified as less than 30 MOA, whereas carcasses from cattle with three or more permanent incisors are classified as 30 MOA or older. After chilling, these two groups of carcasses are graded separately; however, dental age is not considered when USDA quality grades are assigned. Instead, USDA graders use carcass indicators of skeletal and lean maturity to classify carcasses into maturity groups designated A through E<sup>3</sup>. These are physiological indicators of chronological age and include observation of the ossification of the bones and cartilages along the vertebral column of the split carcass. Premature ossification can render these observations inaccurate.

Most (> 95%) U.S. fed steers and heifers are less than 30 MOA based on dentition assessments at the time of slaughter<sup>4</sup> and, according to USDA<sup>5</sup>, cattle nine to 30 MOA are expected to produce A-maturity carcasses. However, due to premature skeletal ossification, many heifers and steers less than 30 MOA do not produce A-maturity carcasses as expected. According to fairly recent data<sup>6</sup>, as many as 7.2% of carcasses produced by U.S. fed steers and heifers are classified as B-maturity or older based on USDA carcass maturity indicators. A significant portion of these cattle are known to be less than 30 MOA but because of premature skeletal ossification, the carcasses from these cattle are classified as B-maturity or greater and therefore are significantly discounted and undervalued.

A recent study, funded by the Beef Checkoff, evaluated the relationship between USDA carcass maturity and eating quality of strip loin steaks produced by fed steers and heifers that had been classified as less than 30 MOA using dentition<sup>7</sup>. Results of that study showed that sensory panelists were unable ( $P > 0.05$ ) to detect any differences in tenderness, juiciness or flavor between steaks from carcasses classified by USDA graders as A-maturity and steaks from carcasses classified by graders as either B or C-maturity. Moreover, tenderness, measured using Warner-Bratzler or slice shear force, did not differ ( $P > 0.05$ ) between maturity groups. These findings challenged the validity of USDA's current maturity classification method when applied to carcasses of cattle with dental ages less than 30 MOA. This compares to previous data from several studies that show that when comparing steers and heifers less than 30 MOA, animal age has been shown to have little effect on longissimus muscle tenderness<sup>8,9,10,11</sup>. However, based on results of that study, no inferences could be made concerning the effectiveness of USDA maturity for identifying differences in sensory properties of beef from cattle with dental ages older than 30 months.

To add to the finding of the original study and to address a specific request of USDA AMS, a second Checkoff-funded study was conducted to determine the effects of USDA maturity classification on beef tenderness, juiciness, and flavor when applied to carcasses of steers and heifers in both dental age groups (less than 30 MOA and 30 MOA or older). Results of the second study were consistent with the findings of the first and showed that USDA maturity classification (A vs. B-D maturity) was not ( $P > 0.05$ ) associated with any detectable differences in tenderness, flavor or juiciness in either dental age group<sup>12</sup>. Advanced dental age ( $\geq 30$  MOA), however, was associated with greater ( $P < 0.05$ ) incidence of grassy and livery flavors. In addition, dental age interacted with marbling to affect beef tenderness. Among steaks with a Slight marbling, those originating from cattle less than 30 MOA were more tender ( $P < 0.05$ ) than steaks produced by cattle 30 MOA or older. Dental age did not affect ( $P > 0.05$ ) tenderness within the Small and Modest-Moderate marbling categories.

Results of the studies summarized above provide scientific support for industry stakeholders to request that USDA AMS modernize and improve the current U.S. Standards for Grades of Carcass Beef by including dentition and/or age documentation as alternative methods for determination of carcass maturity and assignment of cattle less than 30 months of age to the A-maturity category for USDA Quality Grading.

Therefore, the organizations represented request USDA AMS add the following language to section 54.104, paragraph k, of the Standards, which describes assessment of skeletal maturity:

***Carcasses of grain-fed steers and heifers determined to be less than 30 months old either by dentition (assessed at the time of slaughter under the supervision of USDA-FSIS) or by documentation of actual age (verified through a USDA Process Verified Program or USDA Quality System Assessment) are included in the youngest maturity group for carcasses recognized as "beef" (A-maturity) regardless of skeletal evidences of maturity.***

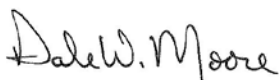
Science ensures beef quality will not be compromised with this change. Old, tough carcasses will not be grouped with young, tender carcasses. Rather, this is a request to modernize the beef grading system to take into account the most recent research available and more accurately assign carcass maturity based on available data. The data referenced in this letter demonstrates that dentition is a better indicator of chronological age than skeletal ossification and ensures that beef product quality is not compromised when using the dentition method to assign carcass age. Current maturity evaluation procedures as reflected in the Standards were based on a study involving 1,005 head of cattle in 1980. These two recent Checkoff-funded studies included 1,050 head representing the full age, sex and grade mix of fed cattle available in today's industry.

Further, there is a significantly negative economic impact to the beef industry when cattle known to be less than 30 MOA are classified as B-maturity instead of A-maturity because they exhibit some sign(s) of advanced skeletal ossification. Sampling of subcommittee member companies revealed a very conservative estimate of approximately 1% of fed steers and heifers that moved through representative packing facilities over a 12-month period from May 2014 to April 2015 were affected. Even using this conservative estimate of 1% of the 15,508,989 head of fed cattle represented in this sampling, and considering an average carcass weight of 831 lbs (as of 2/27/2016) and an average hardbone discount of \$33.00/cwt (as of 2/29/2016), this represents a per head discount of \$274.23 or an annual industry loss of more than \$42.5 million. Extrapolated to an annual fed cattle harvest of more than 21.7 million head, this represents an annual industry loss of more than \$59.5 million. The number of carcasses impacted could be considered small by some, but the potential return to the beef industry for tender, juicy and flavorful beef is very significant.

The organizations represented believe the USDA Standard dictating the value of today's beef carcasses should be continually evaluated for improvements to ensure it is current and relevant based on the best data available. New data justifies the need for a modernization of the U.S. Standards for Grades of Carcass Beef to allow for dentition and/or documentation of actual age to be permitted as a method to accurately predict carcass age. Science demonstrates this is a better indicator and ensures that product quality will not be compromised. Additionally, dentition is already used in place of skeletal ossification in other global grading systems such as those in Australia and South Africa<sup>13</sup>.

In closing, we appreciate the opportunity to work with USDA as the Agency considers input on potential changes to the beef carcass grade standards. It is of the utmost importance for science to determine changes that better represents today's cattle industry. We respectfully ask AMS to modernize the current U.S. Standards for Grades of Carcass Beef. The organizations represented agree this change is warranted because it is supported by sound science and the Standards should be nimble and reactive to the most current scientific information available. We look forward to working with USDA on this proposed modification to the Standards. Should you have any questions please contact Colin Woodall, NCBA's Senior Vice President of Government Affairs at [cwoodall@beef.org](mailto:cwoodall@beef.org) or 202-879-9123.

Sincerely,



Dale W. Moore, Exec. Director Public Policy  
American Farm Bureau Federation



Dr. Barbara P. Glenn, CEO  
National Association State Departments of Agriculture



Kendal Frazier, CEO  
National Cattlemen's Beef Association



Philip M. Seng, President & CEO  
U.S. Meat Export Federation

## References:

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## Additional Reference Items:

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NCBA, a contractor to the Beef Checkoff Program. 2015. Beef facts: Modernization of the U.S. standards for grades of carcass beef. [http://www.beefresearch.org/CMDocs/BeefResearch/PE\\_Fact\\_Sheets/Quality\\_Grades\\_Facts\\_FINAL.pdf](http://www.beefresearch.org/CMDocs/BeefResearch/PE_Fact_Sheets/Quality_Grades_Facts_FINAL.pdf).