

Review of Instrument Augmented Assessment of USDA Beef Carcass Quality Grades

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Instrument assessed grading has been a desired technology for evaluating value determining factors used in the beef industry for over 30 y. Technology companies, industry partners, academicians, and government officials have worked closely to develop instruments that can accurately and effectively augment the application of official USDA Yield and Quality grades under commercial processing conditions.

In response to an official audit conducted by the USDA Office of the Inspector General (OIG), this review outlines the USDA-Agriculture Marketing Service (AMS) Grading and Standardization branch findings and responses to questions posed by OIG on the appropriateness and implementation of instrument grading in the U.S. Beef Industry and summarizes key studies and major milestones achieved in the implementation of instrument beef quality grading.

The OIG audit report listed specific recommendations to the Administrator of AMS. Below are abbreviated versions of the recommendations this committee was tasked to provide input, comments, and suggestions, along with committee response.

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Form an ad hoc committee of independent and objective third party experts to review current methodologies and propose improvements to the instrument image-grading systems.

- Committee formed by the American Meat Science Association (AMSA) investigated the thought processes and studies conducted by USDA to arrive at current automated grading procedures, evaluated instrument performance, grader performance, and appropriateness of current standards, and finally, provided recommendations to USDA-AMS to effectively manage and review instrument grading.

Consult with ad hoc committee to reassess when human graders should override cameras.

- AMSA committee agrees with current override protocol with the addition of other gross image capture issues which would include improper camera placement, debris on ribeye surface in excess of ½ square inch, and mis-ribbing.

Clearly define in current policies and procedures what it means to fail an acceptable quality level verification check.

- AMSA Committee has determined Grading and Verification Instruction 500 and 515 should continue to be utilized and guidelines given in each should be fully implemented by USDA-AMS.

Consult with the committee to determine whether to limit the number of times industry can request that a carcass be re-graded.

- AMSA Committee has determined the industry should be involved in re-grading policy and procedure decisions but believes these policies should be harmonized between facilities using instruments and those using traditional grading (human graders).

Consult with the committee to determine whether establishments using camera grading systems should be allowed to request traditional grading for certified programs.

- Systems grading and certifying carcasses using only traditional grading, only instrument systems, or processes that utilize a combination of both humans and instruments should be equal. However, based on observed trends in certified programs defects relative to different systems, the AMSA committee recommends that AMS evaluate the three approaches, as well as review instrument assessment of the Modest marbling line and determine if adjustments to the instrument assessed Modest line are needed.

Consult with the committee to determine the feasibility and need for AMS to purchase a portable instrument grading system.

- AMSA Committee determined that this would be beneficial for the industry and for the agency to have a dedicated portable grading system for

the purposes of human grader and supervisor correlations and for evaluating the consistency and uniformity of grade application among plants grading carcasses with and without the assistance of instrument.

The AMSA committee, after analyzing data provided by AMS, has determined that instruments are performing well and are much more consistent than traditional visual assessment of marbling score to determine USDA Quality Grade. Instruments also reduce grader-to-grader and plant-to-plant variation. Additionally, instruments are effectively sorting carcasses into expected palatability groups, the major goal of USDA Beef Carcass Quality Grades. Responses have been developed and provided to AMS for presentation to OIG based on specific recommendations presented in their audit report. Instrument grading should continue to be utilized by the industry as it is well documented that it is effective for assessing marbling score and augmenting USDA Quality Grade application.