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USDA, AMS, LS, SAT
March 2007

ADDENDUM A

Procedures for Use of Approved Vision Based Beef Carcass Yield Grade Instrument Systems for Fat Thickness Measurements Livestock and Seed Program, Agricultural Marketing Service March 2005

BACKGROUND:

The Department of Agriculture (USDA), Agricultural Marketing Service (AMS), Livestock and Seed (LS) Program will accept beef carcass fat thickness (FatT) measurements made by approved instruments. To be approved by the LS Program for such a purpose, the instrument must meet certain performance requirements for accuracy and precision in the prediction of the carcass fat thickness at the 12th-13th rib interface. The fat thickness is a single measurement of fat over the ribeye three-fourths of the length of the ribeye from its chine bone end. Each 0.1 of a PYG equals 0.04 inch as the following schedule illustrates:

Fat Thickness	Preliminary Yield Grade
0.0 inch	2.0
0.2	2.5
0.4	3.0
0.6	3.5
0.8	4.0
1.0	4.5
1.2	5.0
1.4	5.5

The performance requirements outlined for fat thickness in this Addendum were based on the mathematical relationship of FatT to PYG, the unit equivalence between PYG and YG, and the high correlation between PYG and YG. This defined relationship provided equivalence to the Phase II requirements of the approved document "Procedures for Approval and Use of Vision Based Instrument Systems for Beef Carcass Yield Grade Measurement." Since the PYG may be subjectively adjusted, either upward or downward, as necessary, to reflect unusual amounts of fat on other parts of the carcass, additional requirements were added for FatT to take into account the objective nature of this assessment.

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Phase II: Operational measurements

The accuracy and precision will be evaluated by comparing (correlation and regression) the PYG and FatT observation to the actual expert measured PYG and FatT.

Preliminary Yield Grade and Fat Thickness Performance requirements for Phase II:

PYG Operational	R2 = 0.90 or greater; 95% of predicted PYG observations within 0.5 yield grade units of the actual expert PYG, and the residual standard deviation (RSD) shall not exceed 0.25 yield grade units.
FatT Operational	90% of predicted FatT observations within 0.1 inches of the actual expert FatT; the average residual between the predicted FatT observations and the actual expert FatT shall equal 0 ± 0.05 inches.

LS may change the performance approval criteria when technology improves.

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