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## The USDA Beef Quality Grading System B-Maturity Grade Change

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### Background

Federal beef grading in the United States is a voluntary fee for service program, provided under the Agricultural Marketing Act of 1946, as amended, and administered by the U.S. Department of Agriculture-Agricultural Marketing Service (USDA). A primary purpose of marketing. Grades provide a simple, effective means of describing product that is easily understood by both buyers and sellers. By identifying meets their individual needs. At the same time, grades are important in transmitting information to cattlemen so that more informed production their production accordingly.

When beef is graded, the official grade consists of a quality and/or yield grade. The quality grades are intended to identify differences in the palatability or eating satisfaction of cooked beef principally through the characteristics of marbling and maturity. The maturity of beef carcasses is determined by evaluating the size, shape, and ossification of the bones and cartilages--especially the split chine bones--and the color posterior portion of the vertebral column (sacral vertebrae) and at progressively later stages of maturity in the lumbar and thoracic vertebrae. Of these principles, the standards recognize five different maturity groups and ten different degrees of marbling. The five maturity groups are are: Moderately abundant, abundant, moderately abundant, slightly abundant, moderate, modest, small, slight, traces, and practically devoid. The principal official USDA quality grades for young (maturity groups A and B) cattle and carcasses are Prime, Choice, Select, and Standard.

In developing and maintaining the grades, USDA follows the philosophy that, to be effective, beef grades should sort the supply of beel carcasses into homogeneous groups having a sufficiently narrow range of grade-determining factors so that carcasses within a given grade are essentially interchangeable. Another primary objective is to provide as uniform and consistent product as possible within a given grade.

USDA recognizes that the beef standards cannot be static--they must be dynamic to be of greatest value to the various users. In keeping with this philosophy, USDA has made changes in the standards as necessary to meet the changing needs of users of the system. Recommendations for changes in the standards may be initiated by the USDA or by interested parties. When it appears that a change would improve the standards, generally a proposal is published in the U.S. Federal Register and interested parties are provided an opportunity to comment. In such instances, a decision regarding adoption of the proposed change is made only after receipt and analysis of all comments.

Effective January 31, 1997, the official U.S. standards for grades of carcass beef and related standards for grades of slaughter cattle were revised in response to a June 1994 petition by the National Cattlemen's Association (currently named the National Cattlemen's Beef Association; NCBA) of the United States. This petition requested USDA to modify the beef quality grade standards by removing "B" maturity carcasses with small and slight marbling scores from the Choice and Select grades and to include such carcasses in the Standard grade.

The NCBA petition stated the modern beef animal today is typically marketed at 12 to 15 months of age when fed as calves and 18 to 24 months of age when fed as yearlings. These modern animals are the result of progressive breeders and feeders who produce faster growing, group (less than 30 months of age). Carcasses of "B" maturity are typically from cattle which are 30 to 42 months of age when marketed, however, many other factors besides chronological age can affect physiological maturity (Waggoner et al., 1995)...

Research conducted for USDA using trained taste panels indicated "B" maturity carcasses possessing a small or slight amount of marbling add to the variability of palatability within the Select and Choice grades and they do not epitomize the "modern beef carcass" (Smith et al., 1984). Permitting "B" maturity carcasses with small and slight degree of marbling to be graded Choice and Select when they have been shown to be considerably more variable in palatability than "A" maturity carcasses with slight and small marbling creates no incentives for the industry to decrease production and marketing of cattle which do not conform to consumer demand for quality and consistency.

Although the results of numerous research projects found that these carcasses comprised only a small percentage of the total U.S. fed beef supply, no significant study specifically evaluating the overall prevalence of "B" maturity carcasses or assessing differences between region of the country or gender had ever been conducted (Hale et al., 1995; Lorenzen et al., 1993). Therefore, USDA, in cooperation with the Colorado State University Department of Animal Sciences and NCBA, conducted an audit to identify the prevalence of "B" maturity carcasses being processed at federally inspected steer and heifer slaughter establishments.

#### **Materials and Methods**

Over the period of October 28 to December 4, 1996, 21 USDA Supervisory Meat Grading and Certification Branch personnel evaluated carcasses from 1,039 lots representing a commercial slaughter of 97,210 head in 40 geographically dispersed packing plants. Of the 40 packing plants surveyed, 17 process carcasses during two shifts per day. In these establishments, data were collected in each of the two shifts, therefore, a total of 57 total audits were performed. Data collected included animal lot size, packing plant and region of slaughter, and overall maturity, and marbling degree at the 12<sup>th</sup> rib interface were determined using USDA procedures established in the official United States and statistical means determined by Colorado State University using Microsoft Excel® (Version 7.0; Microsoft Corporation, Roselle, IL,  $\frac{d M}{d M} = \frac{d M}{d M} = \frac{d M}{d M} + \frac{d M}{d M} +$ 

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Of the 1,039 lots surveyed, 50.43% contained only steers, 32.43% consisted exclusively of heifers, and 17.15% were comprised of both <sup>suders.</sup> Results show that 2.21% of carcasses surveyed had overall B-maturity, and that 1.58% of carcasses were expected to be affected by <sup>the</sup> grade change [reduced from USDA Choice (0.48%) or Select (1.10%) to Standard; Table 1]. Within steer, heifer and mixed gender lots, <sup>1</sup>/1%, 3.03%, and 2.10%, respectively, were overall B-maturity, and 1.24%, 2.25%, and 1.31%, respectively, were predicted to be affected by the grade change (Table 1).

Table 2 presents the mean percentage "B" maturity carcasses affected by region where slaughtered. Results show that the Texas region Table 2 presents the mean percentage B maturity calcasses affected by region times bare and the Western region had the lowest the highest percentages affected (2.53%) and unaffected (0.94%) by the grade change and Kansas and the Western region had the lowest Percentages affected (1.05% and 1.02%, respectively) and unaffected (0.41% and 0.31%, respectively). Although not reported in tabular form, the 57 audits, 37 (65%) had less than 1% of USDA Select or less than 0.5% USDA Choice carcasses affected by the grade change, while  $u_y^2$  (4%) had greater than 3% of USDA Select or greater than 1.5% USDA Choice carcasses affected.

Although no mean separation procedures were performed, the results indicate that the incidence of "B" maturity carcasses varies by and the region where the animal is slaughtered. Although many factors may influence physiological maturity, the U.S. beef industry <sup>Aust continue to strive to identify means to remove these carcasses from the beef supply.</sup>

# References

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# able 1. Frequency of Maturity Scores by Gender

ender	Number	A Final <sup>1</sup>	B Final <sup>2</sup>	$\geq$ C Final <sup>3</sup>	Pr/Pr <sup>4</sup>	Ch/Ch <sup>5</sup>	Ch/St <sup>6</sup>	Se/St <sup>7</sup>	St/St <sup>8</sup>
er	49,019	97.54	1.71	0.75	0.01	0.17	0.32	0.92	0.29
ifer	31,522	94.25	3.03	2.73	0.05	0.40	0.71	1.53	0.34
xed	16,669	96.11	2.10	1.79	0.08	0.47	0.50	0.82	0.23
tal	97,210	96.22	2.21	1.57	0.03	0.30	0.48	1.10	0.30

A maturity carcasses

Percent B maturity carcasses ercent C maturity or older carcasses

Percent B maturity Prime carcasses

Percent B maturity Choice carcasses not affected by the grade change

ercent B maturity Choice carcasses reduced to Standard by the grade change

ercent B maturity Select carcasses reduced to Standard by the grade change ercent B maturity Standard carcasses before and after the grade change

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able 2.	Percent	"B" Mat	urity Ca	rcasses h	v Region
Unafr	a di dente	1 4 00	I La d	C L C	, region
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region	Number	Unaffected	Affected
astern	10,003	0.87	1.49
ebraska	24,504	0.75	1.85
ansas	25,417	0.41	1.05
exas	18,988	0.94	2.53
estern	18,298	0.31	1.02
Otal	97,210	0.63	1.58