

Beef Quality and Yield Grading

ASC 300

Beef Carcass Quality

- **USDA Quality Grade**
 - Skeletal Maturity
 - Marbling
- **USDA Yield Grade**
 - Ribeye Area
 - %KPH (kidney, heart, & pelvic fat)
 - Hot Carcass Weight
 - 12th Rib Fat Thickness



Relationship Between Marbling, Maturity, and Carcass Quality Grade*

Degrees of Marbling		Maturity**					Degrees of Marbling	
		A***	B	C	D	E		
Abundant								Abundant
Moderately Abundant	Prime							Moderately Abundant
Slightly Abundant								Slightly Abundant
Moderate			Commercial					Moderate
Modest	Choice							Modest
Small								Small
Slight	Select				Utility			Slight
Traces							Cutter	Traces
Practically Devoid	Standard							Practically Devoid

* Assumes that firmness of lean is comparably developed with the degree of marbling and that the carcass is not a "dark cutter."

** Maturity increases from left to right (A through E).

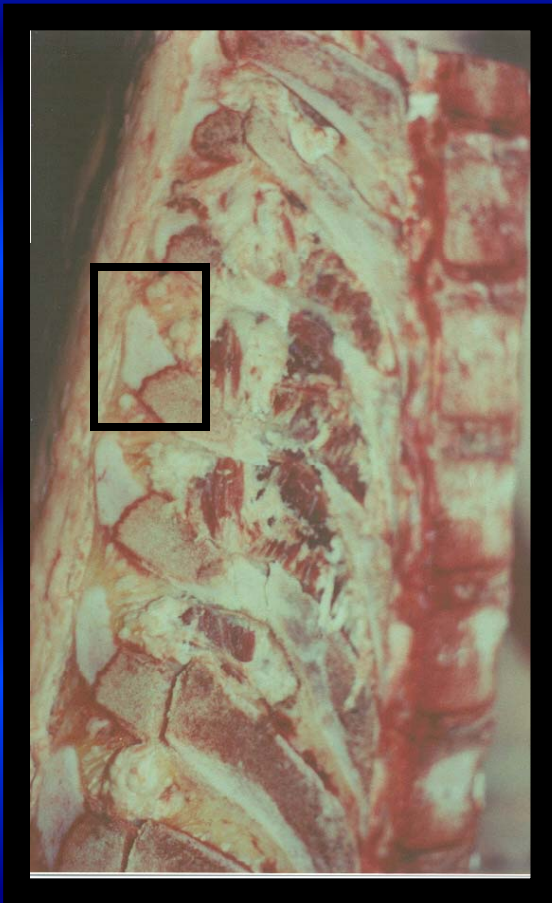
USDA (1997) Standards for Grades of Slaughter Cattle and Standards for Grades of Carcass Beef.

USDA Quality Grade

- Prediction of palatability (tenderness, juiciness, flavor)
- Skeletal Maturity
 - Forensic Indicators
 - Ossification of Chine Buttons
 - Color and Shape of Rib Bones
 - Fusion of Sacral Vertebrae
- Tenderness



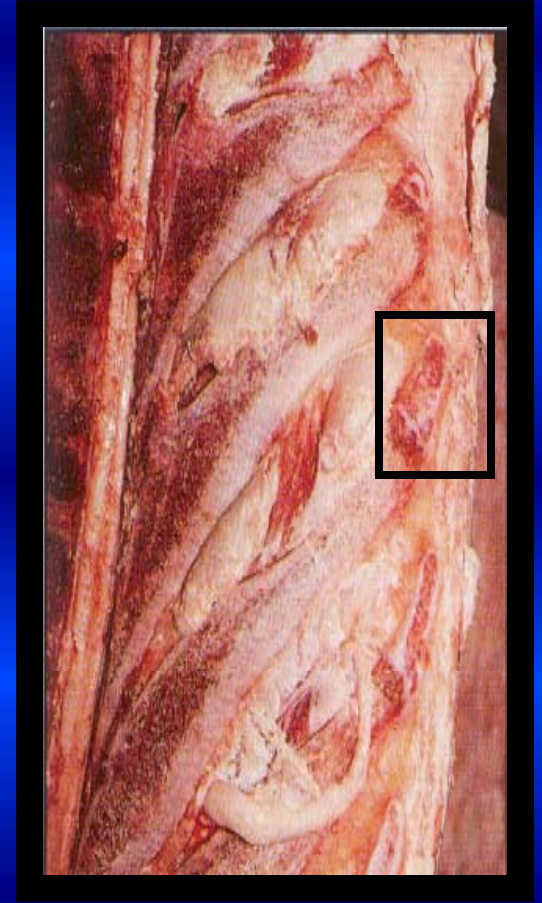
Skeletal Maturity



A Maturity



C Maturity



D Maturity

Color and Shape of Rib Bones



Fusion of Sacral Vertebrae



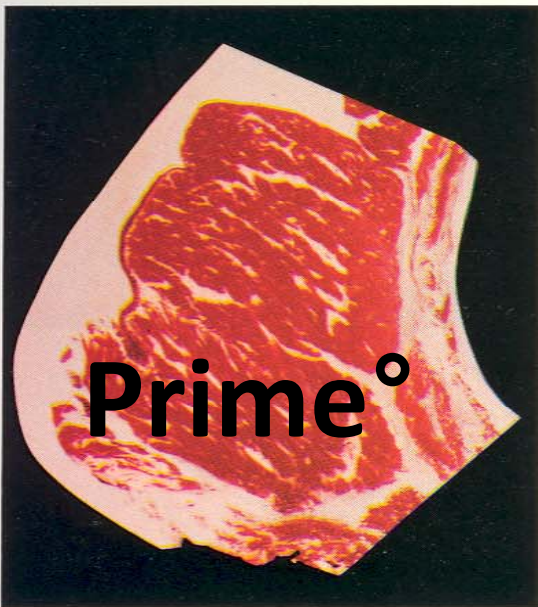
Skeletal Maturity

Maturity Classification

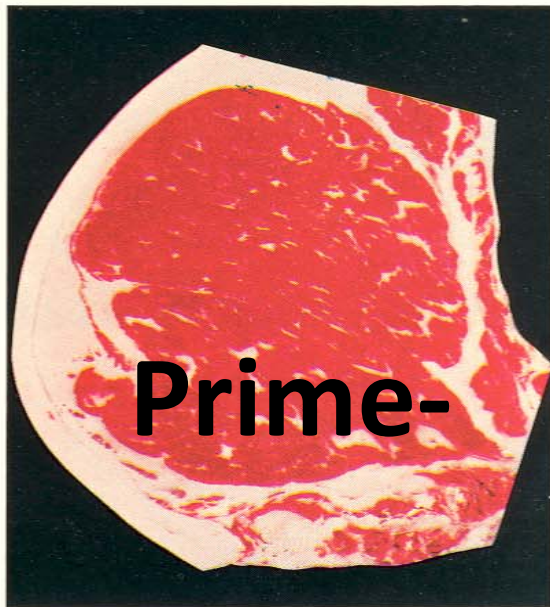
Months of Age**

A _____	9 to 30 months of age
B _____	30 to 42 months of age
C _____	42 to 72 months of age
D _____	72 to 96 months of age
E _____	Over 96 months of age

****These ages are only an estimation**



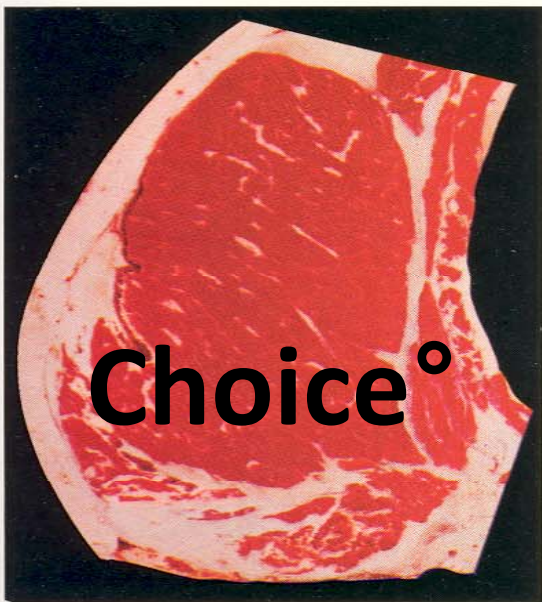
Moderately Abundant



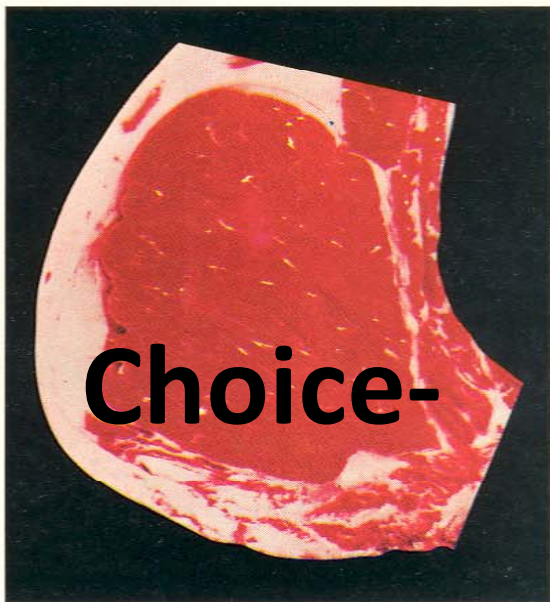
Slightly Abundant



Moderate



Modest

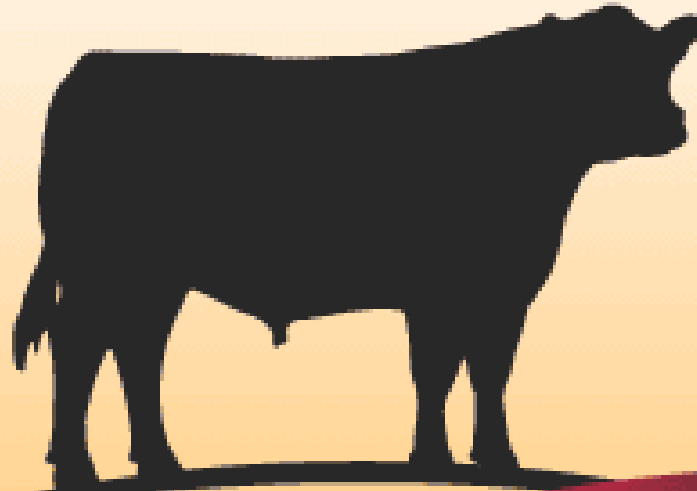


Small



Slight

SINCE 1978



CERTIFIED
ANGUS BEEF®
BRAND

Branded Beef Program

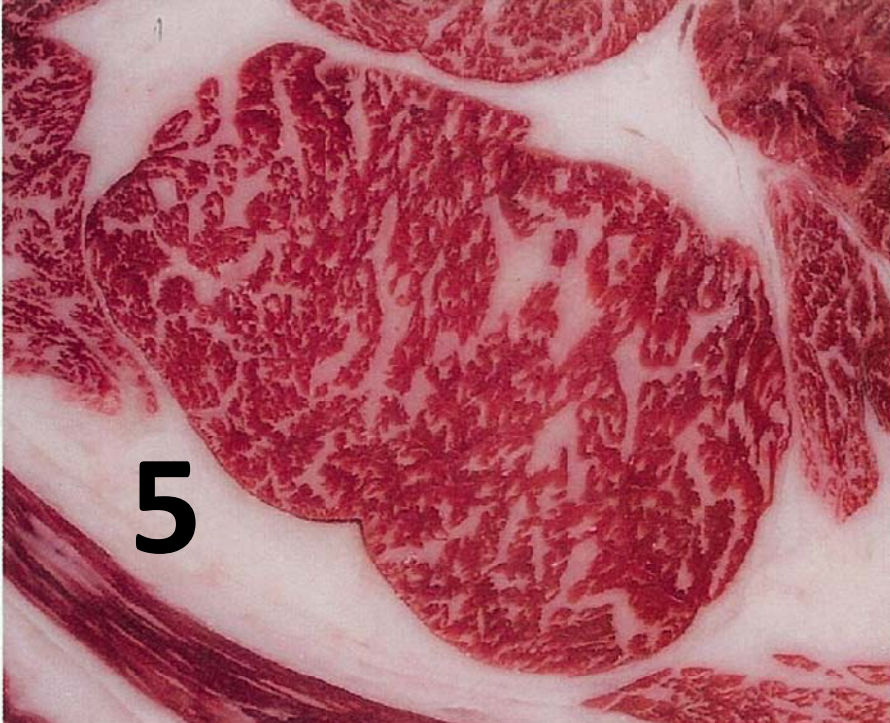
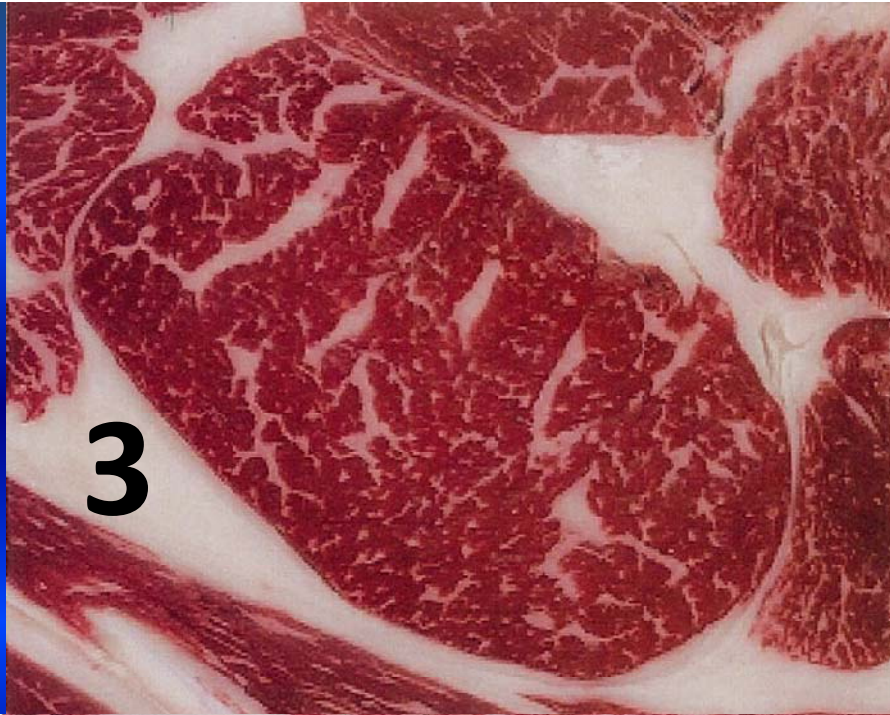
- The success of CAB has led to other branded beef programs
- Certified Hereford
- Black Angus Beef (several of these)
- Excel's Sterling Silver
- Tyson's Chairman's Reserve
- Nolan Ryan's Tender Aged Beef
- Laura's Lean
- Kroger's Private Selection

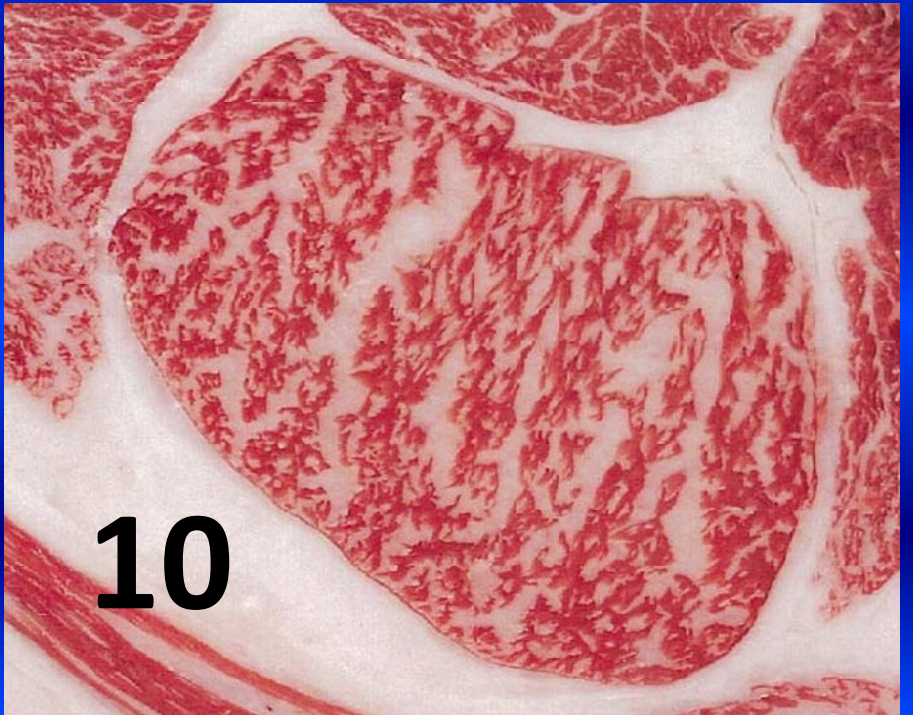
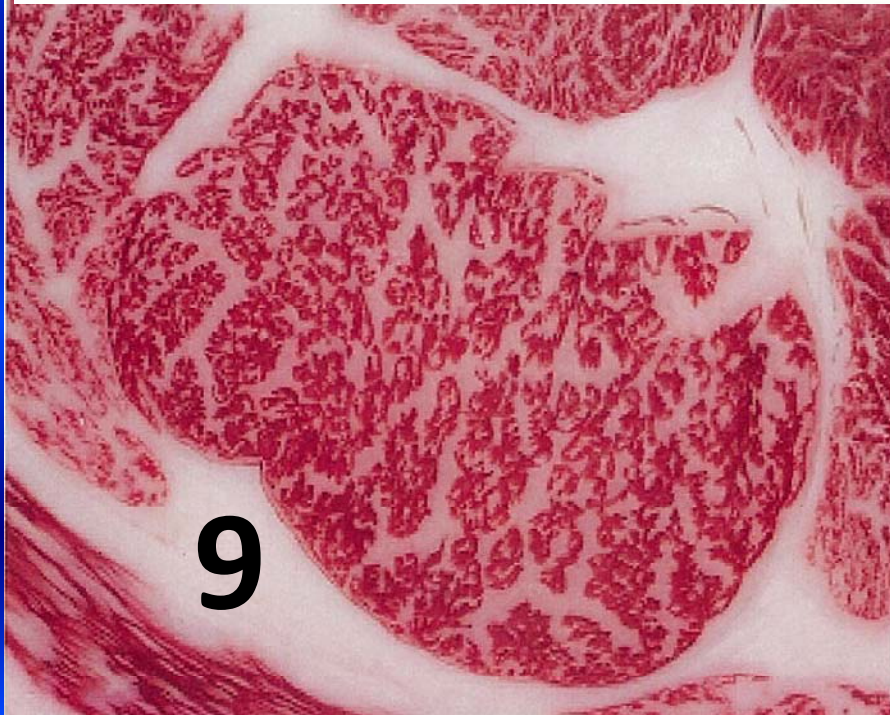
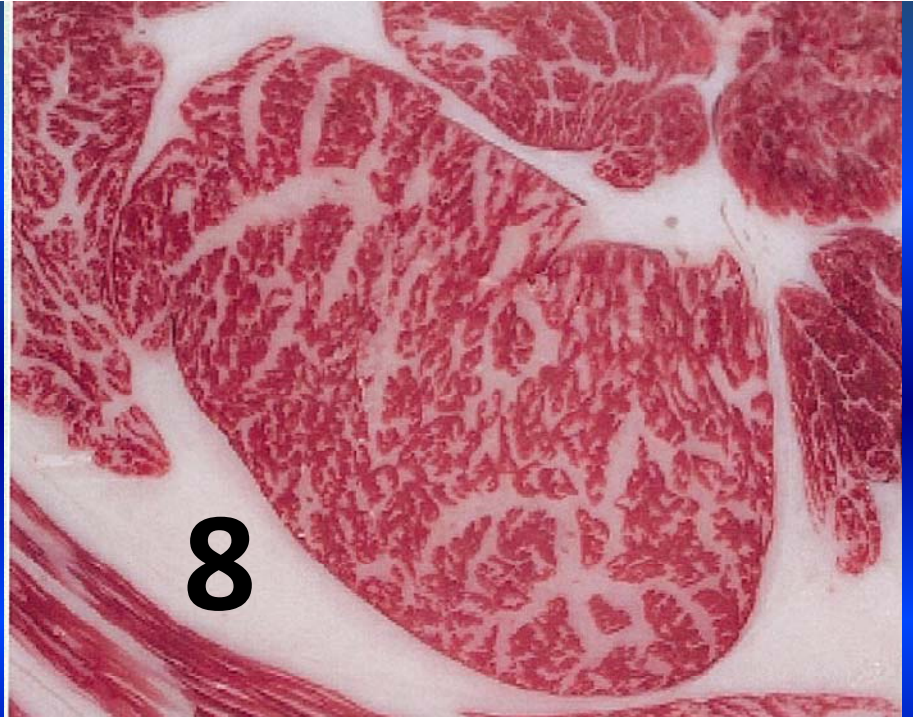


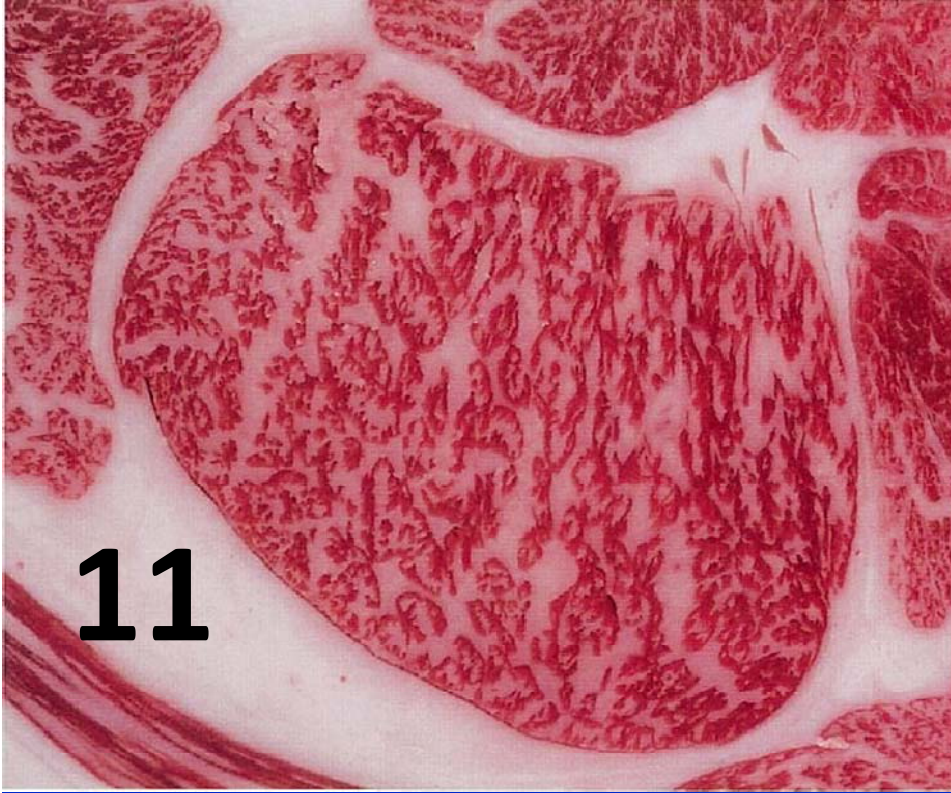
Kobe Beef











11



12

Japanese Grading System

Grade		BMS No.
5	Excellent	8 -12
4	Good	5-7
3	Average	3-4
2	Below Ave	2
1	Poor	1

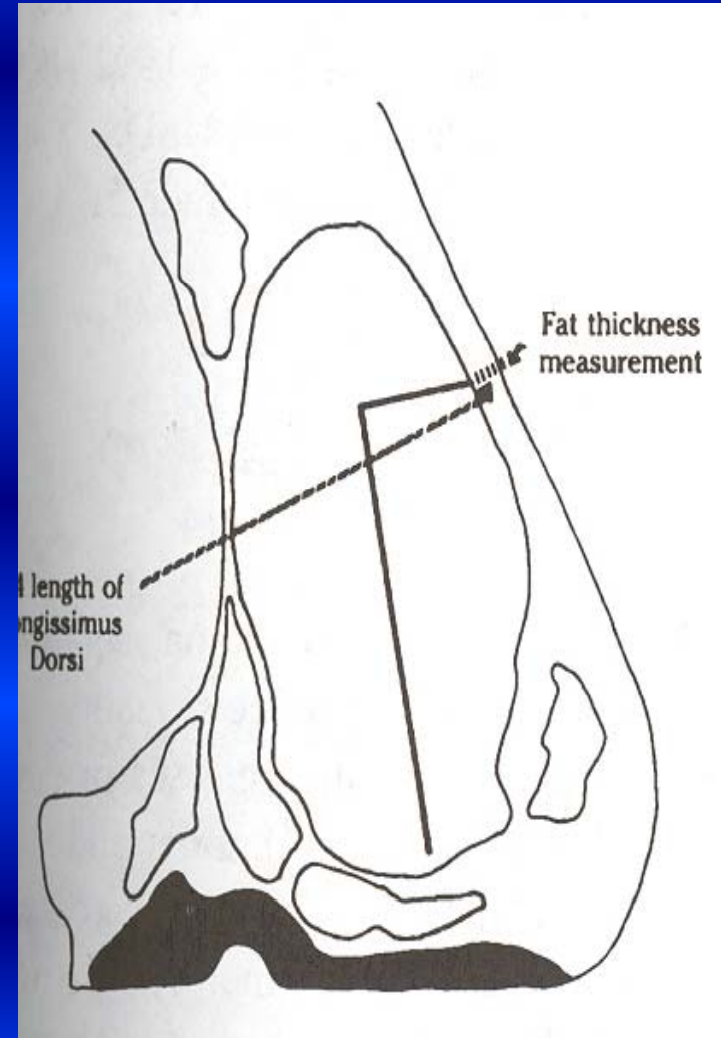
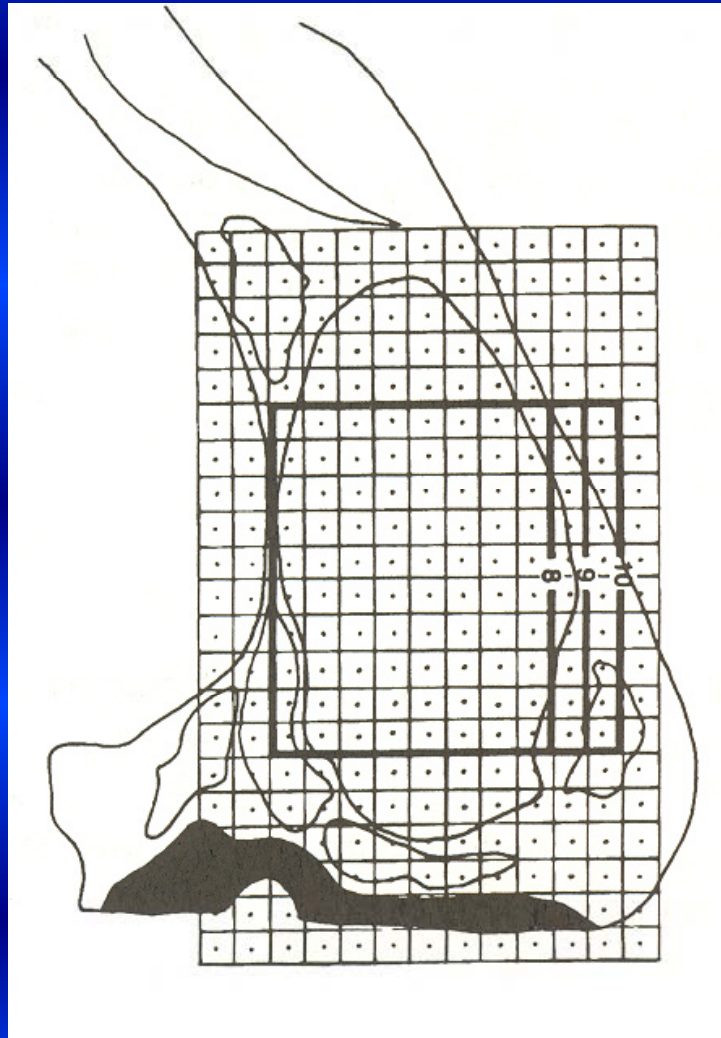
Comparing the grading systems

Japanese & USDA Beef Marbling Grade Comparison Chart			
USDA Quality Grade	USDA Marbling Grade*	Japanese BMS Number	Japanese Quality Grade
N/A	Extremely Abundant 50+	11 or 12	5
N/A	Extremely Abundant 0-49	10	5
N/A	Very Abundant 50-99	9	5
N/A	Very Abundant 0-49	8	5
Prime+	Abundant	7	4
Prime°	Moderately Abundant	6	4
Prime-	Slightly Abundant	5	3
Choice+	Moderate	4	3
Choice°	Modest	3	3
Choice-	Small		
Select	Slight		
Standard	Traces		

USDA Yield Grade

- Predicts the percentage of boneless, closely trimmed cuts from the ROUND, LOIN, RIB, and CHUCK
- 1, 2, 3, 4, & 5
- Factors:
 - Ribeye Area
 - Hot Carcass Weight
 - % Kidney, Heart, and Pelvic Fat
 - Fat Depth at 12th Rib

Ribeye Area and 12th Rib Fat Depth



% Kidney, Heart, and Pelvic Fat



USDA Yield Grade Equation

- Yield Grade

$$\begin{aligned} &= 2.5 + (2.5 \times \text{Fat thickness}) \\ &\quad + (0.2 \times \% \text{ KPH}) \\ &\quad + (0.0038 \times \text{HCW}) \\ &\quad - (0.32 \times \text{REA}) \end{aligned}$$

- Example

- Fat = 0.5 in
- KPH = 3%
- HCW = 800
- REA = 13.5

$$2.5 + (1.25) + (0.6) + (3.04) - (4.32) = 3.07$$

Final Yield Grade = 3



Short Cut Method

- Fat Thickness at 12th rib

<u>Fat thkns</u>	<u>PYG</u>
0.0	2.0
0.1	2.25
0.2	2.5
0.3	2.75
0.4	3.0
0.5	3.25

- Required Ribeye Area

<u>HCWT</u>	<u>REA</u>
600	11.0
625	11.3
650	11.6
675	11.9
700	12.2
725	12.5

Short Cut Method

- % KPH

<u>%KPH</u>	<u>Adj</u>
4.0	+0.1
3.5	0.0
3.0	-0.1
2.5	-0.2
2.0	-0.3
1.5	-0.4

- Equation

- Start with fat thickness
- Subtract Actual REA from Required REA and multiply by 0.3
- If Actual REA is larger than Required REA subtract from fat thickness, & vice versa
- Adjust for %KPH
- Final YG

Short Cut Method

Example:

Fat thickness = 0.3

HCWT = 700 lbs

Actual REA = 13.6

%KPH = 2.0%

Fat Thickness 0.3 = 2.75 PYG

700# Carcass = 12.2 Required REA

13.6 (Actual REA) – 12.2 (Required REA) = 1.4

1.4 x 0.3 = 0.42

2.75 – 0.42 – 0.3 (%KPH) = 2.03 or 2 (Final YG)

You try one:

Fat Thickness = 0.5

HCWT = 839#

Actual REA = 12.3

%KPH = 3.0

Beef Yield Grade

<u>YG</u>	<u>% Cuts</u>	<u>YG</u>	<u>% Cuts</u>
• 1.0	>54.6	• 4.0	47.7
• 1.5	53.5	• 4.5	46.6
• 2.0	52.3	• 5.0	45.4
• 2.5	51.2	• 5.5	44.3
• 3.0	50.0	• 5.9	<43.3
• 3.5	48.9		

How do they affect each other?

- **Ribeye area**
 - Larger ribeyes cause YG to go down
- **Fat Depth**
 - More fat higher YG
- **%KPH**
 - Below 3.5% YG will go down
- **Hot Carcass Weight**
 - Heavier carcasses will cause a higher YG

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