



# Tennessee



# *Master Beef Producer*



Tennessee Beef Cattle

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# Factors Affecting Beef Carcass Value





# Why Carcass Merit?

- Tennessee is known as a feeder calf producing state



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- **Feeder calf production initiates the beef chain**



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- Tennessee is known as a feeder calf producing state
- Feeder calf initiates the beef chain
- **Proper genetics, management and nutrition necessary to produce beef for the market**





# Why Carcass Merit?

- Tennessee feeder calf production is actually producing, steaks, roasts and ground beef



# Factors Affecting Beef Carcass Value

- Yield Grade
- Quality Grade
  - Hardbone Carcasses
- Hot Carcass Weight
- Dairy Type
- Bullocks/Stags
- Dark Cutters
- Bruises/  
Trim Loss
- Blood Splash
- Callused Eyes

# USDA Yield Grades

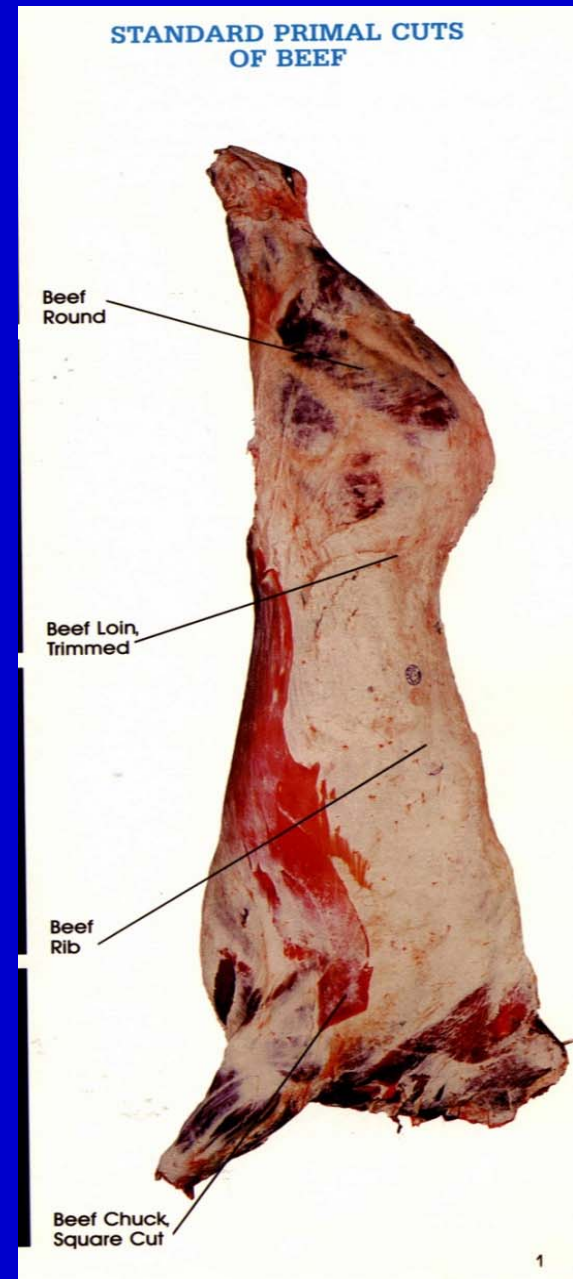
- A number that represents the percent cutability
- Yield Grades are numbered 1, 2, 3, 4 & 5





# USDA Yield Grades

- A number that represents the percent cutability
- **Cutability is the percentage of closely trimmed, boneless retail cuts from the round, loin, rib and chuck**



# USDA Yield Grades

Yield Grade	% Cutability
1	52.4 or greater
2	50.1 - 52.3
3	47.8 – 50.0
4	45.5 – 47.7
5	45.4 or less

# Yield Grade Factors

- **External Fat**
  - Measured between 12th & 13th ribs
  - Fat measurement often “adjusted” to reflect total carcass fatness
  - Most important Yield Grade factor





# Yield Grade Factors

- External Fat
- % Kidney , Pelvic & Heart
  - Expressed as percentage of carcass weight



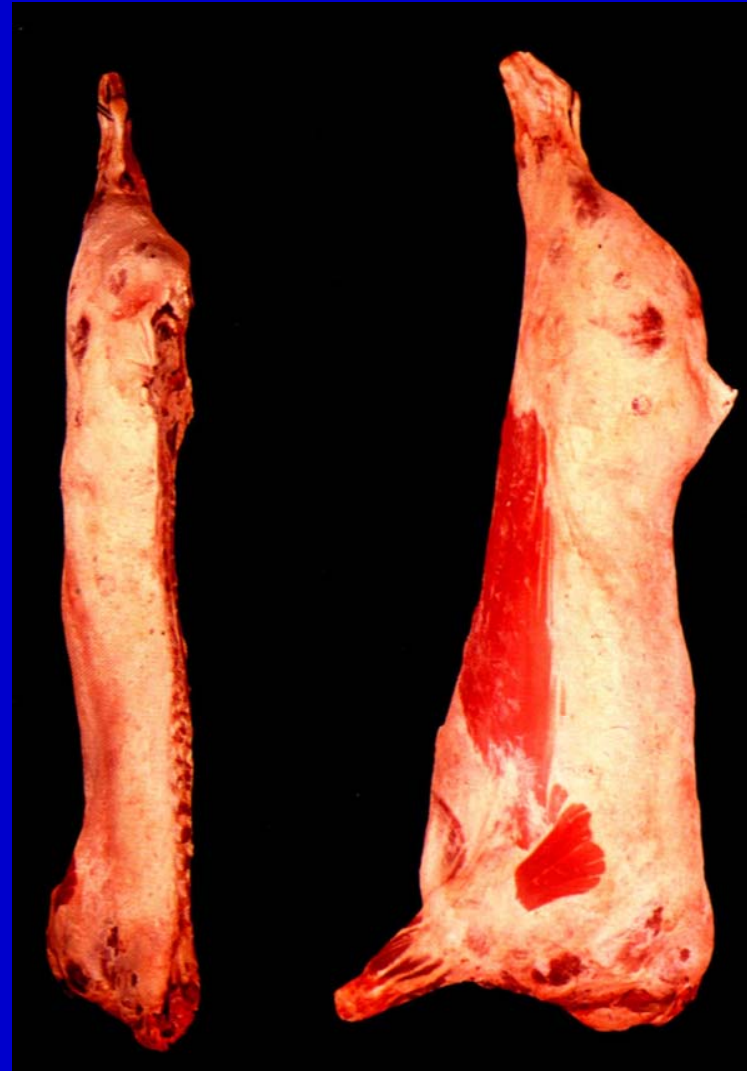
# Yield Grade Factors

- External Fat
- % Kidney , Pelvic & Heart
- Ribeye Area
  - Measured between 12th & 13th ribs
  - For Yield Grade determination, related to hot carcass weight



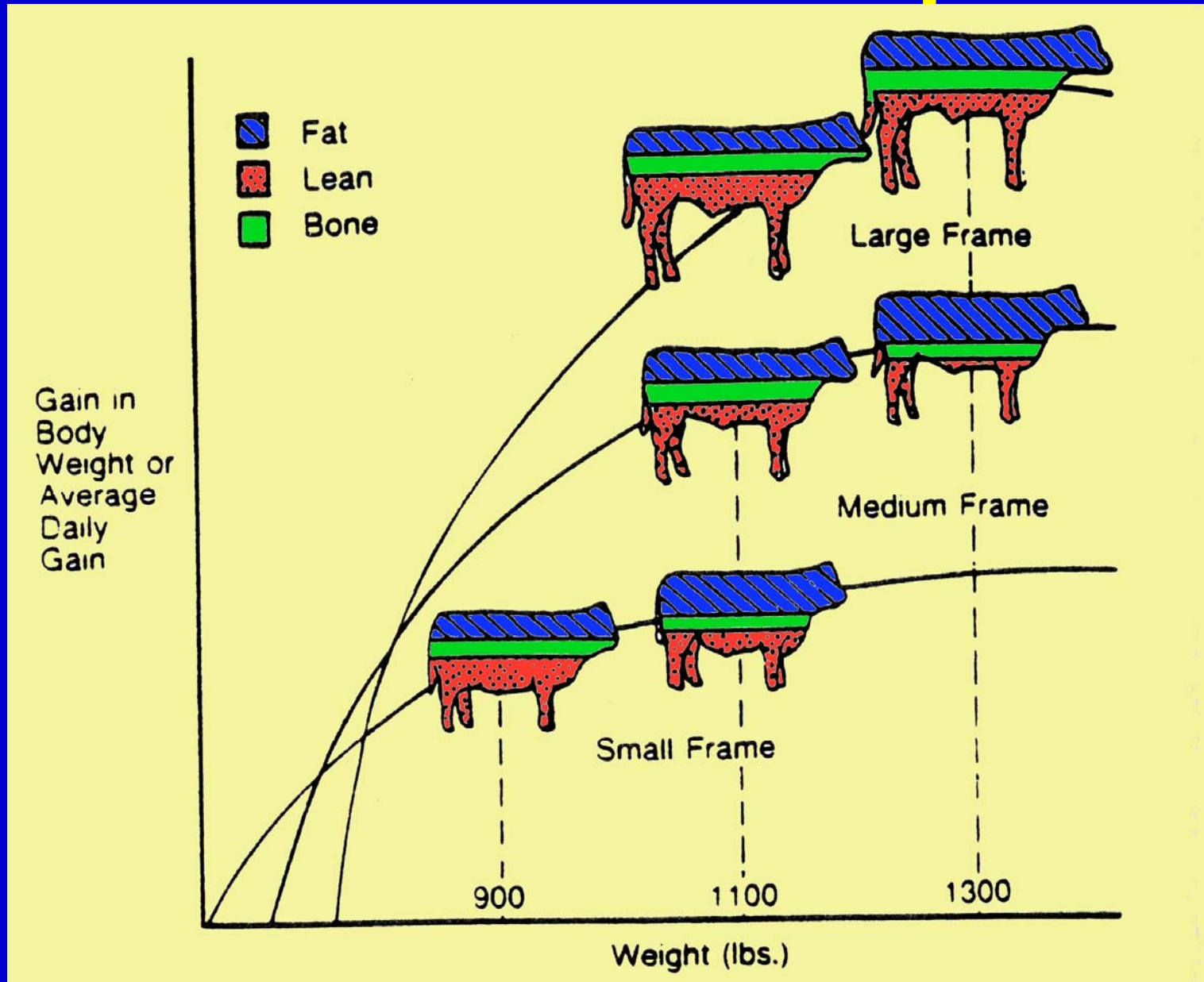
# Yield Grade Factors

- External Fat
- % Kidney , Pelvic & Heart
- Ribeye Area
- Hot Carcass Weight





# HCW & Carcass Composition



# Yield Grade Determination

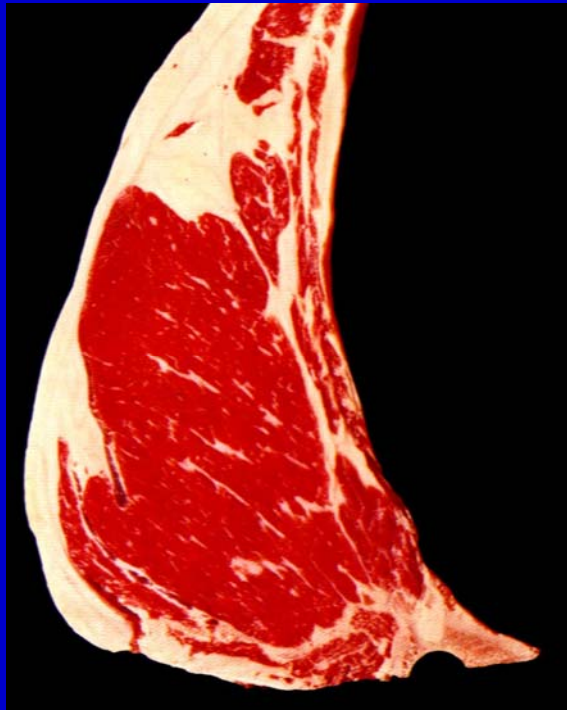
## 1) Formula:

$$\begin{aligned} \text{YG} = & 2.50 + (2.50 \times \text{Adj. Fat Thickness}) \\ & + (0.20 \times \% \text{ KPH}) \\ & + (0.0038 \times \text{Hot Carcass Wt.}) \\ & - (0.32 \times \text{Ribeye Area, sq. in.}) \end{aligned}$$

## 2) Short Cut Method:

- a) Fat Thickness to Preliminary Yield Grade
- b) Adjustment for Ribeye Area based on Hot Carcass Wt.
- c) Adjustment for %KPH

# Yield Grade 1

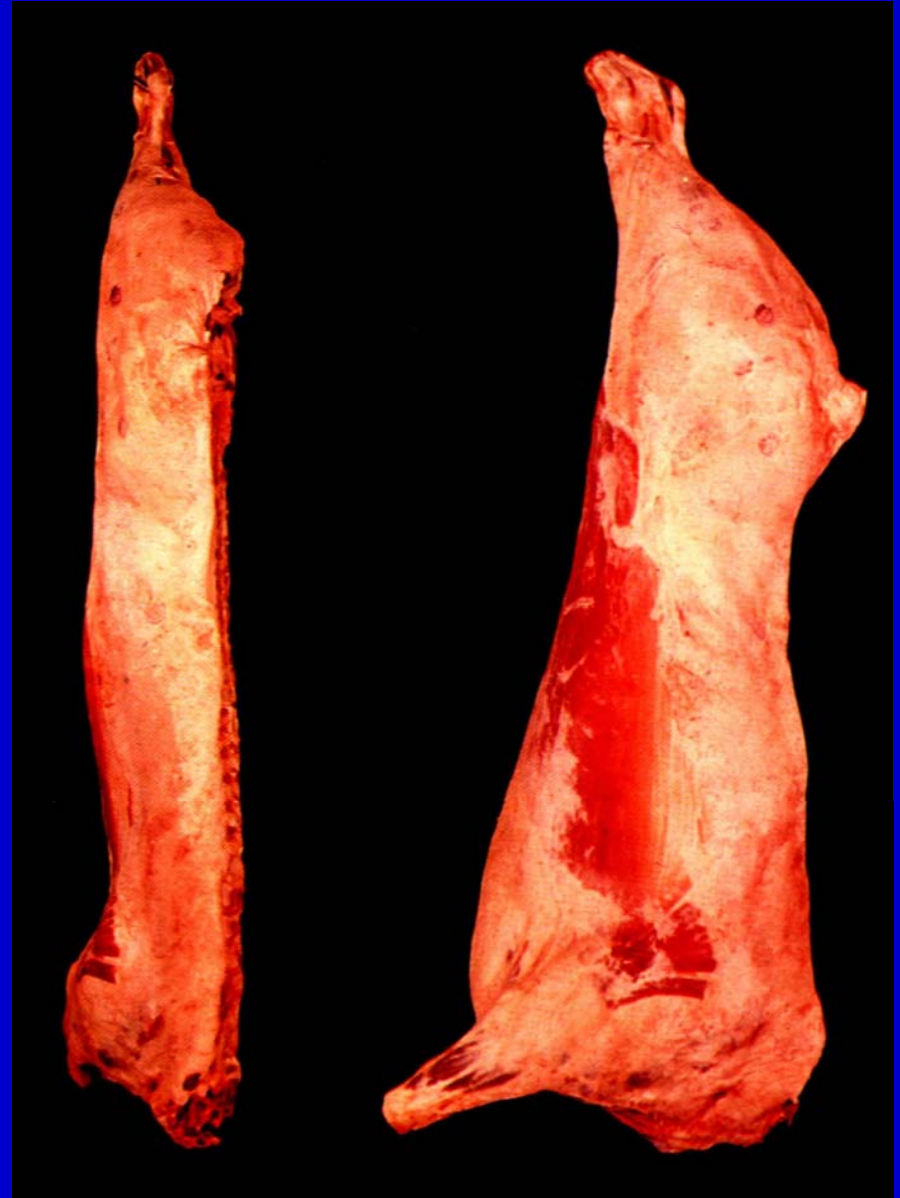
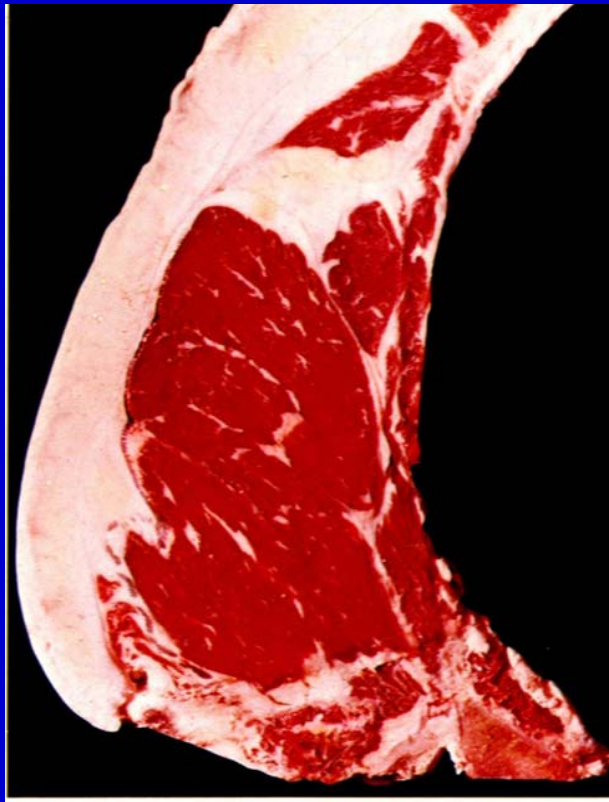




# Yield Grade 2



# Yield Grade 3



# Yield Grade 4





# Yield Grade 5



# Effect of Yield Grade on Carcass Value (8/10)

Yield Grade	Premium/Discount
YG 1	+ \$3.00
YG 2	+ \$2.00
YG 3	Base
YG 4	- \$12.00
YG 5	- \$19.00

# What production factors affect yield grade?

- **Feeder Calf Grades**

- **Frame Size**

- Large frame will finish 1100-1200 pounds
    - Medium frame will finish 1000-1100 pounds
    - Small frame will finish 900-1000 pounds
    - Feeding to heavier weights will result in over fat carcasses

- **Muscle Thickness**

- Muscle score of 1 results in higher muscle to bone ratios and a more desirable yield grade

# USDA Quality Grades

- **Indication of palatability**
  - **Flavor, Juiciness and Tenderness**





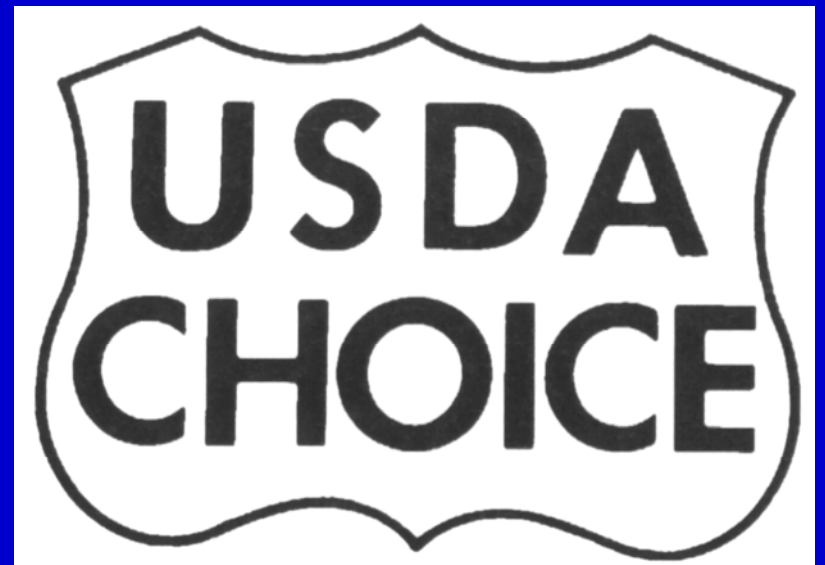
# USDA Quality Grades

- Indication of palatability
- **Beef Quality Grades include:**
  - Prime, Choice, Select, Standard, Commercial, Utility, Cutter and Canner



# USDA Quality Grades

- Indication of palatability
- Beef Quality Grades include:
  - Prime, Choice, Select, Standard, Commercial, Utility, Cutter and Canner
- Quality Grades for steer and heifer carcasses include:
  - Prime, Choice, Select, Standard, and Utility

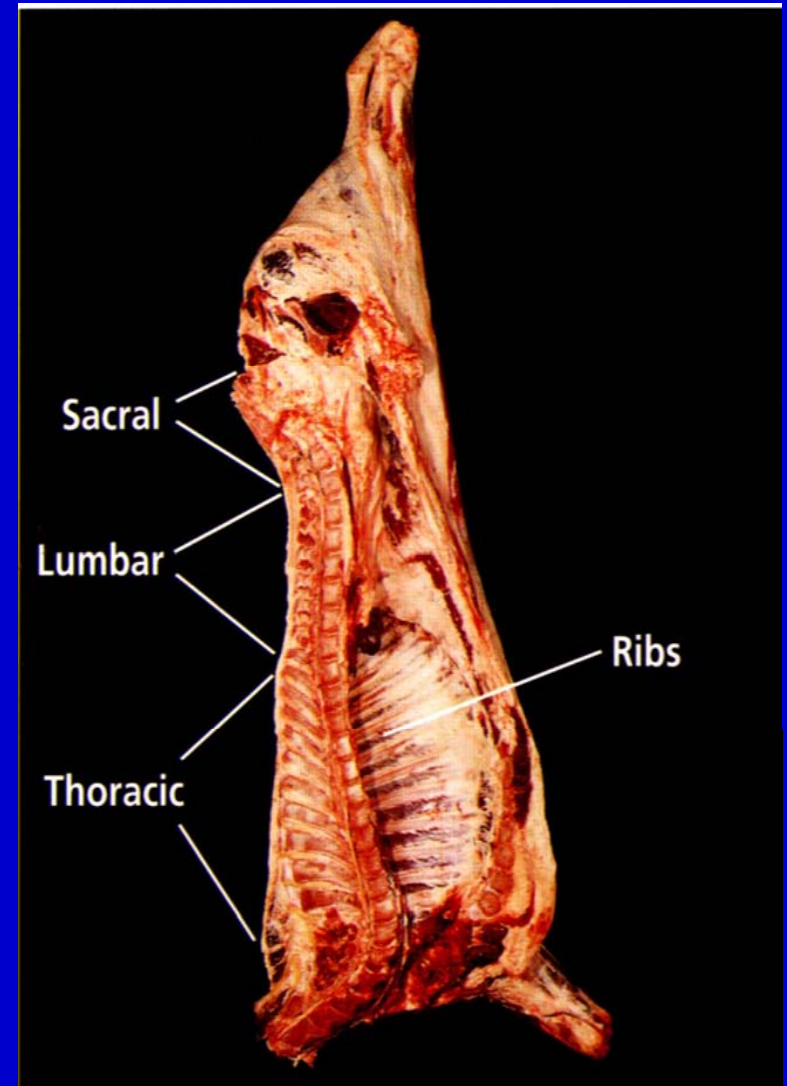


# Quality Grade Factors

- **Maturity – indication of physiological age not necessarily chronological age**
  - **Five maturity groups:**
    - 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: greater than 96 months**

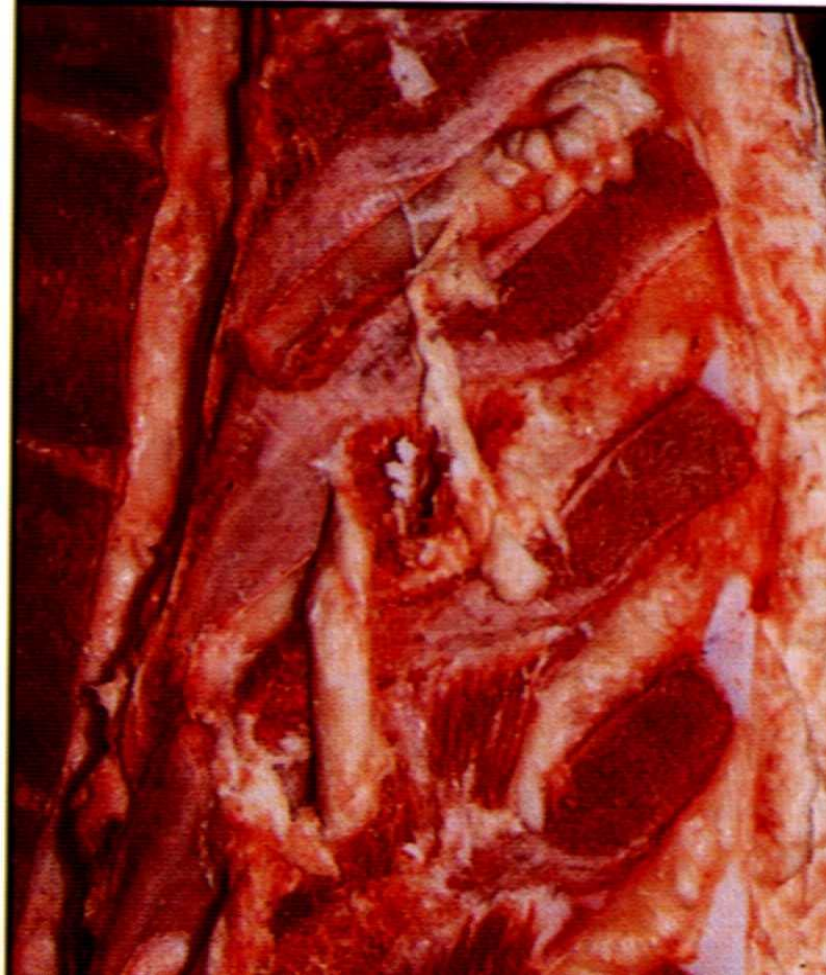
# Determination of Carcass Maturity

- Ossification of the backbone
- Color and shape of rib bones
- Lean color

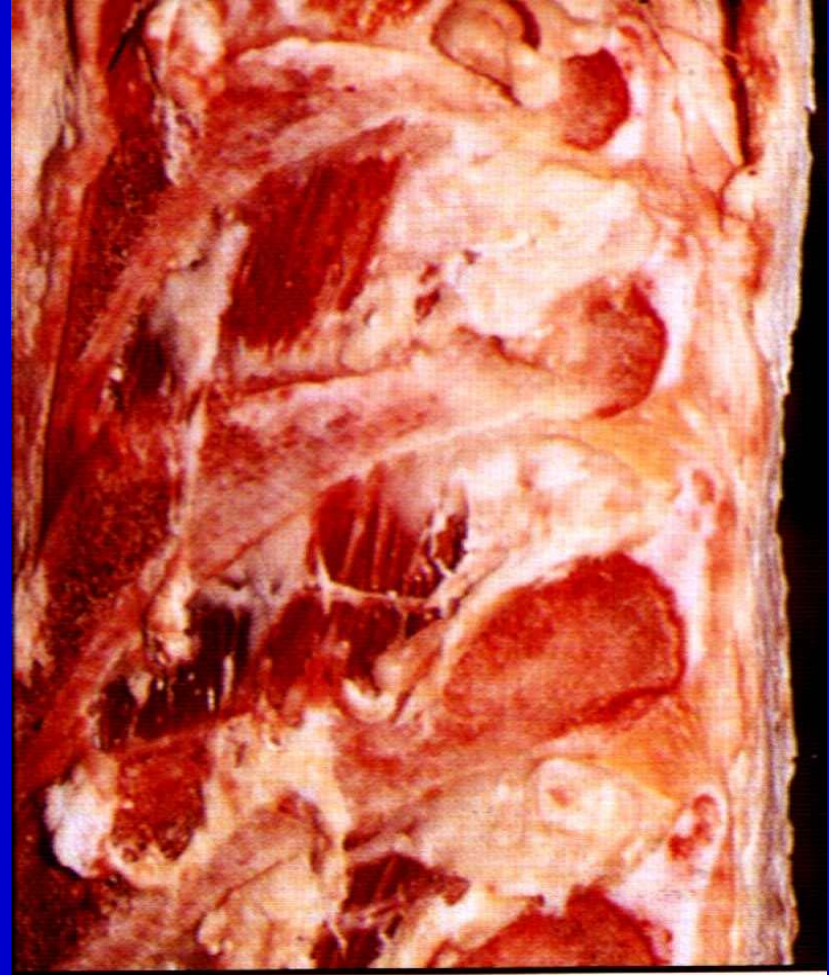




# Carcass Maturity Groups



**A Maturity**



**B Maturity**



# Carcass Maturity Groups

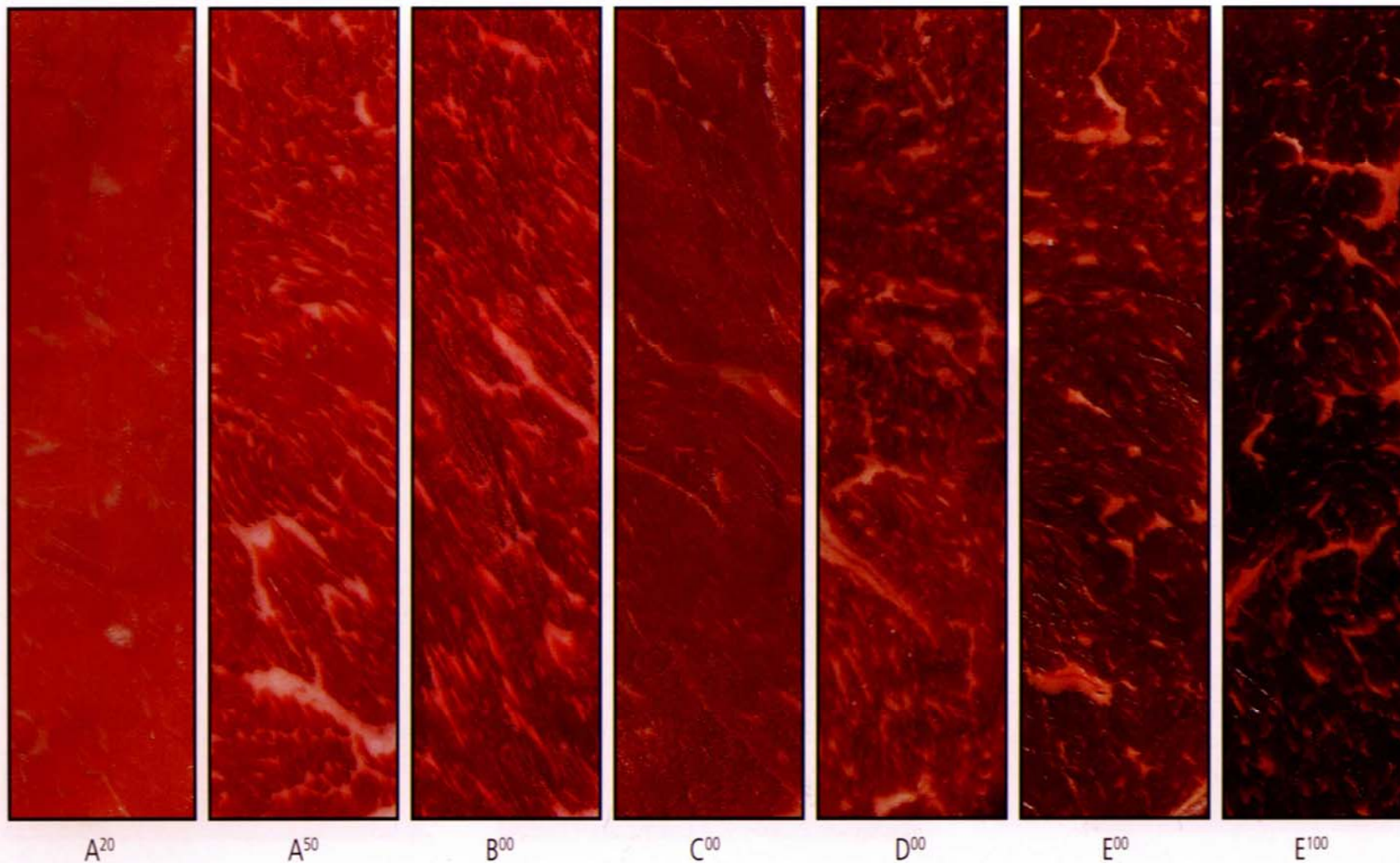


**C Maturity**



**D Maturity**

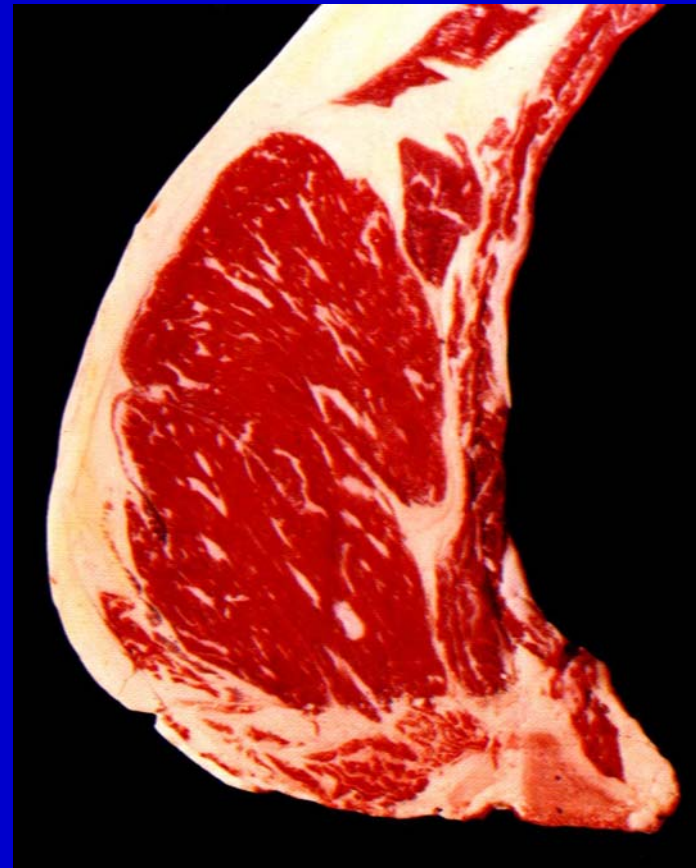
# Lean Color of Various Maturity Groups





# Quality Grade Factors

- **Marbling – flecks of fat within the muscle**





# Quality Grade Factors

- Marbling – flecks of fat within the muscle
- **Most important factor in determining Quality Grade because most of the cattle going to market are “A” maturity**



# Quality Grade Factors

- Marbling – flecks of fat within the muscle
- Most important factor
- **Marbling accounts for only about 10% of the variation in tenderness**



# Quality Grade Factors

- Marbling – flecks of fat within the muscle
- Most important factor
- Marbling accounts for only about 10% of the variation in tenderness
- **Marbling affects the beef flavor and juiciness**



# Quality Grade Factors

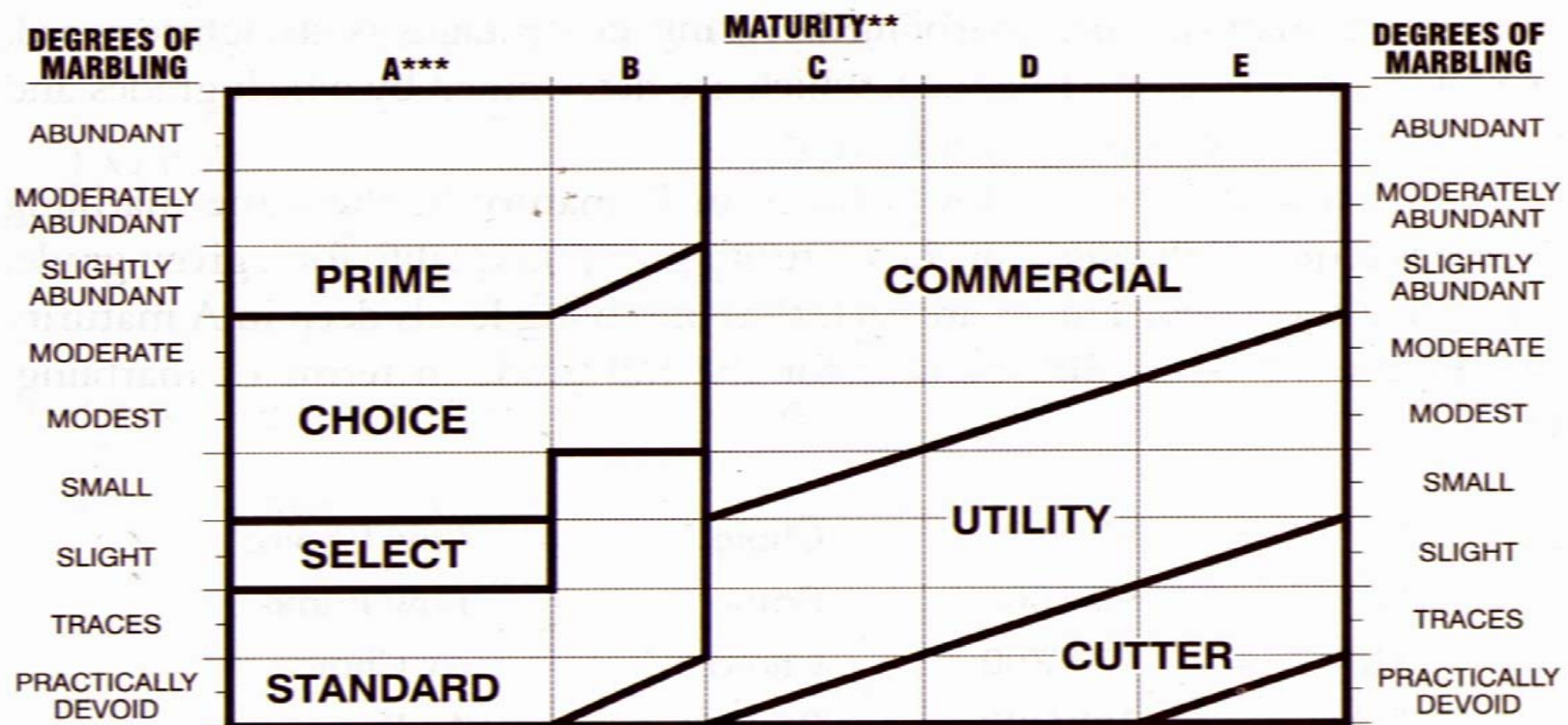
- **Degrees of marbling are:**
  - **Abundant**
  - **Moderately Abundant**
  - **Slightly Abundant**
  - **Moderate**
  - **Modest**
  - **Small**
  - **Slight**
  - **Traces**
  - **Practically Devoid**





# Quality Grade Determination

**RELATIONSHIP BETWEEN MARBLING, MATURITY, AND CARCASS QUALITY GRADE\***



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

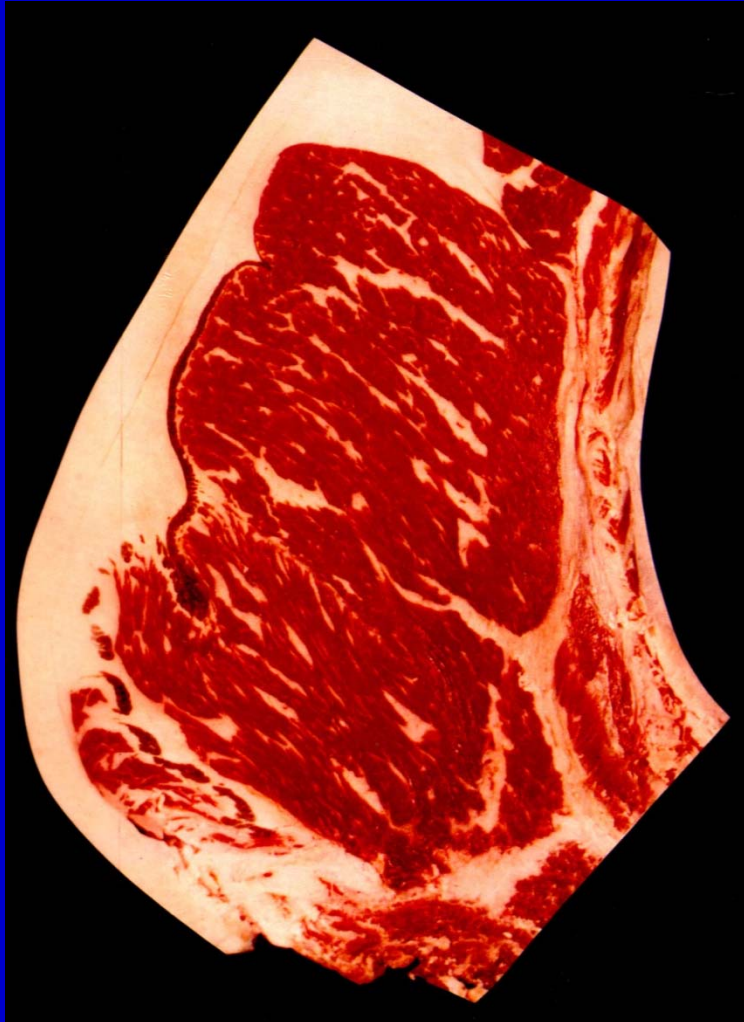
\*\* Maturity increases from left to right (A through E).

\*\*\* The A maturity portion of the Figure is the only portion applicable to bullock carcasses.

# Quality Grade Determination

<b>DEGREES OF MARBLING</b>	<b>A***</b>
ABUNDANT	<b>PRIME</b>
MODERATELY ABUNDANT	
SLIGHTLY ABUNDANT	
MODERATE	<b>CHOICE</b>
MODEST	
SMALL	<b>SELECT</b>
SLIGHT	
TRACES	<b>STANDARD</b>
PRACTICALLY DEVOID	

# USDA Prime



**Moderately Abundant  
Average Prime**



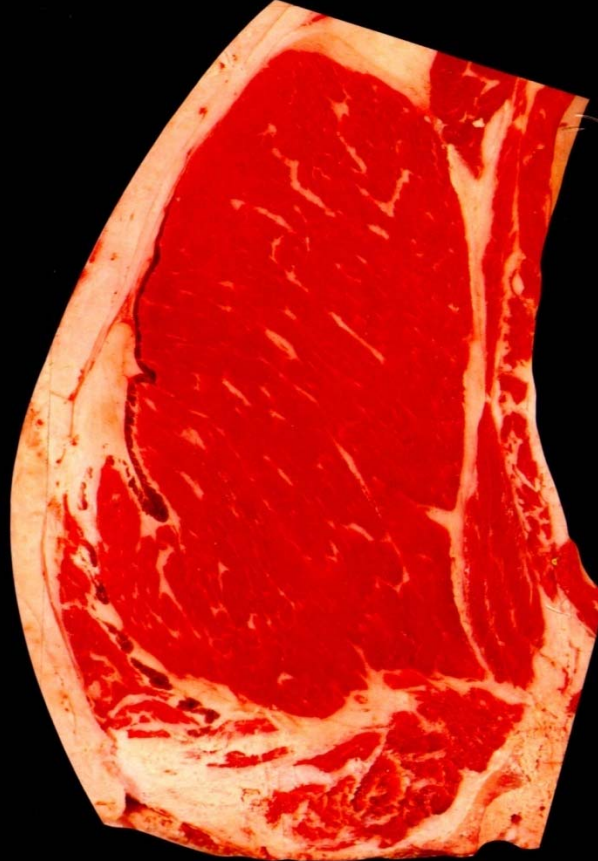
**Slightly Abundant  
Low Prime**



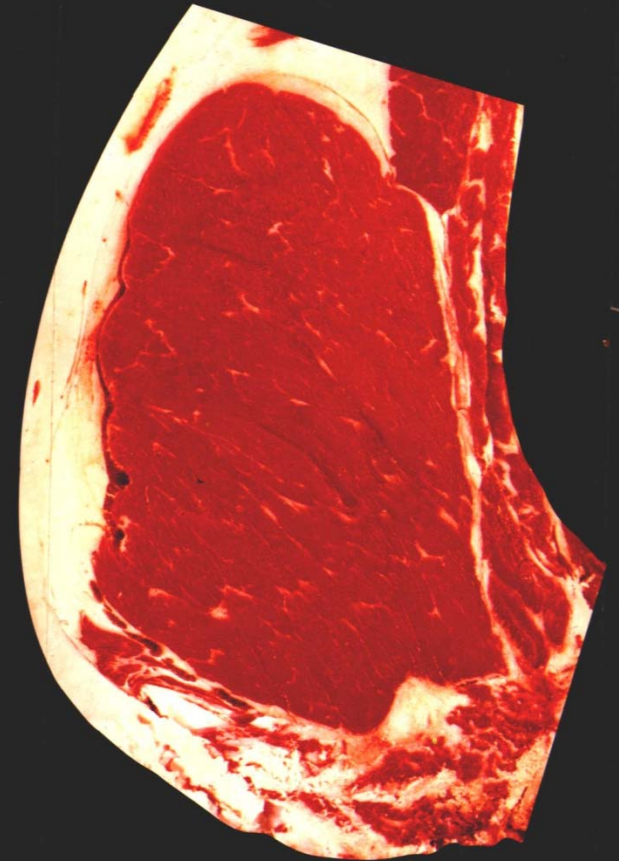
# USDA Choice



**Moderate**  
**High Choice**



**Modest**  
**Average Choice**

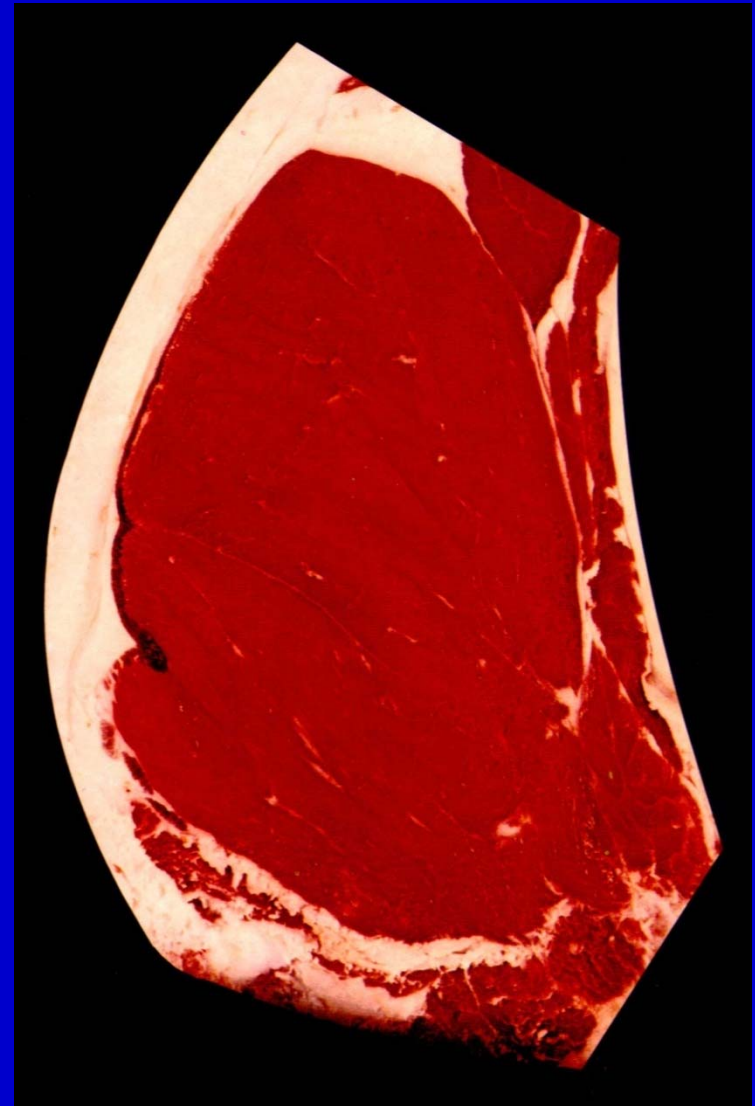


**Small**  
**Low Choice**



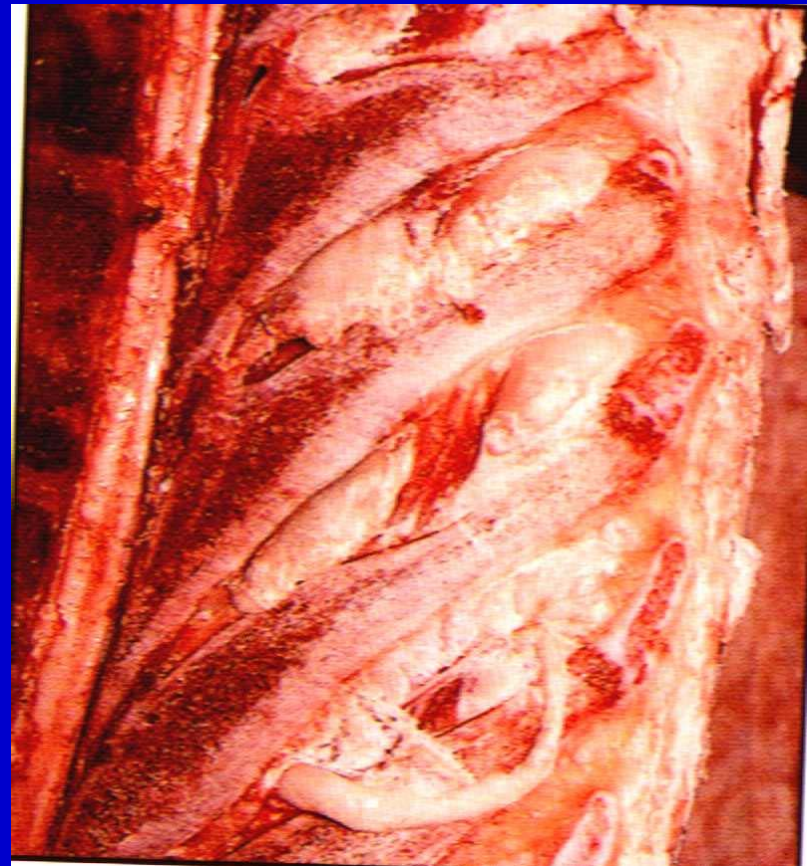
# USDA Select

- Select is comprised of the Slight degree of marbling
- Standard is comprised of the Traces and Practically Devoid degrees of marbling



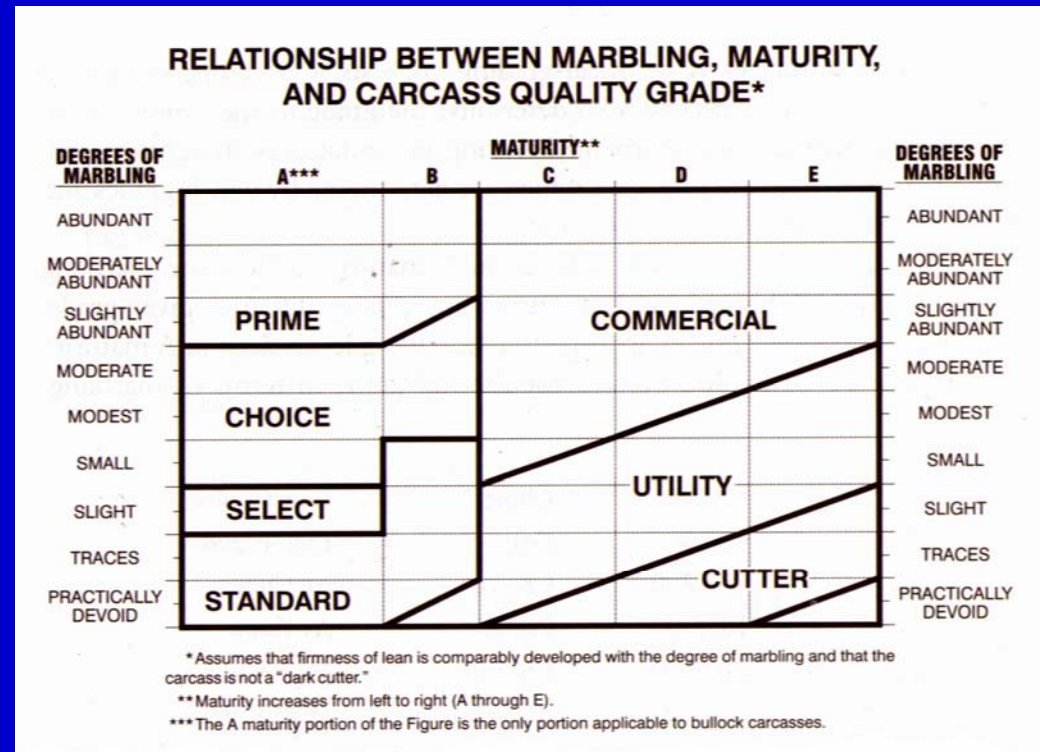
# Hardbone Carcasses

- Comprised of the C, D and E maturity carcasses



# Hardbone Carcasses

- Comprised of the C, D and E maturity carcasses
- Similar marbling to Select, Choice and Prime
- Tend to be less tender



# Effect of Quality Grade on Carcass Value (8/10)

Quality Grade	Premium/Discount
Prime	+ \$9.00
Premium Choice (Ch <sup>+</sup> , Ch <sup>o</sup> )	+ \$2.00
Choice	Base
Select	-\$7.00
Standard	- \$19.00
Hardbone	- \$27.00

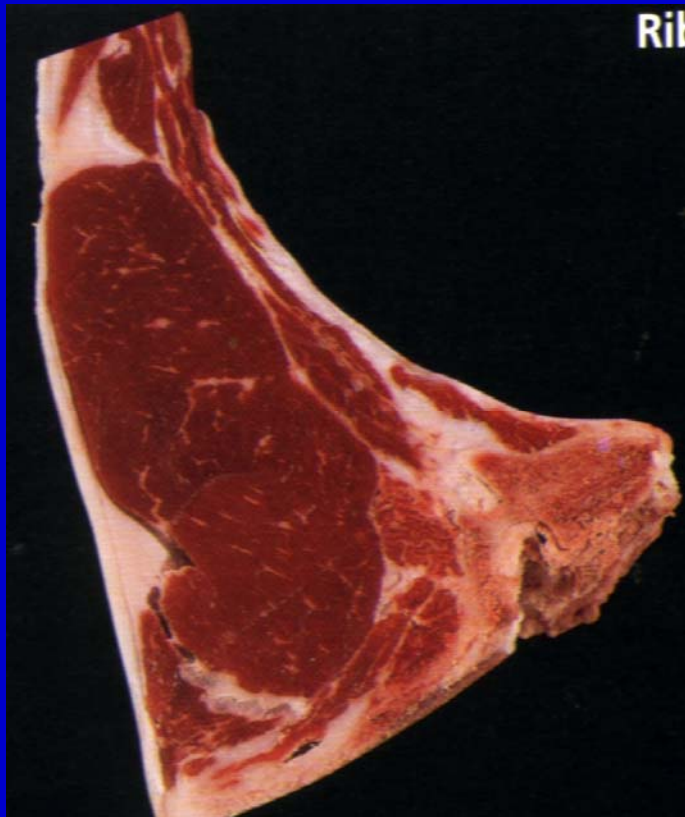
# Effect of Hot Carcass Weight on Carcass Value (8/10)

Hot Carcass Weight	Discount
400-500 lbs.	- \$27.00
500-550 lbs.	- \$16.00
550-600 lbs.	- \$4.00
600-900 lbs.	Base
900-950 lbs.	- \$2.00
950-1000 lbs.	- \$3.00
Over 1000 lbs.	- \$18.00



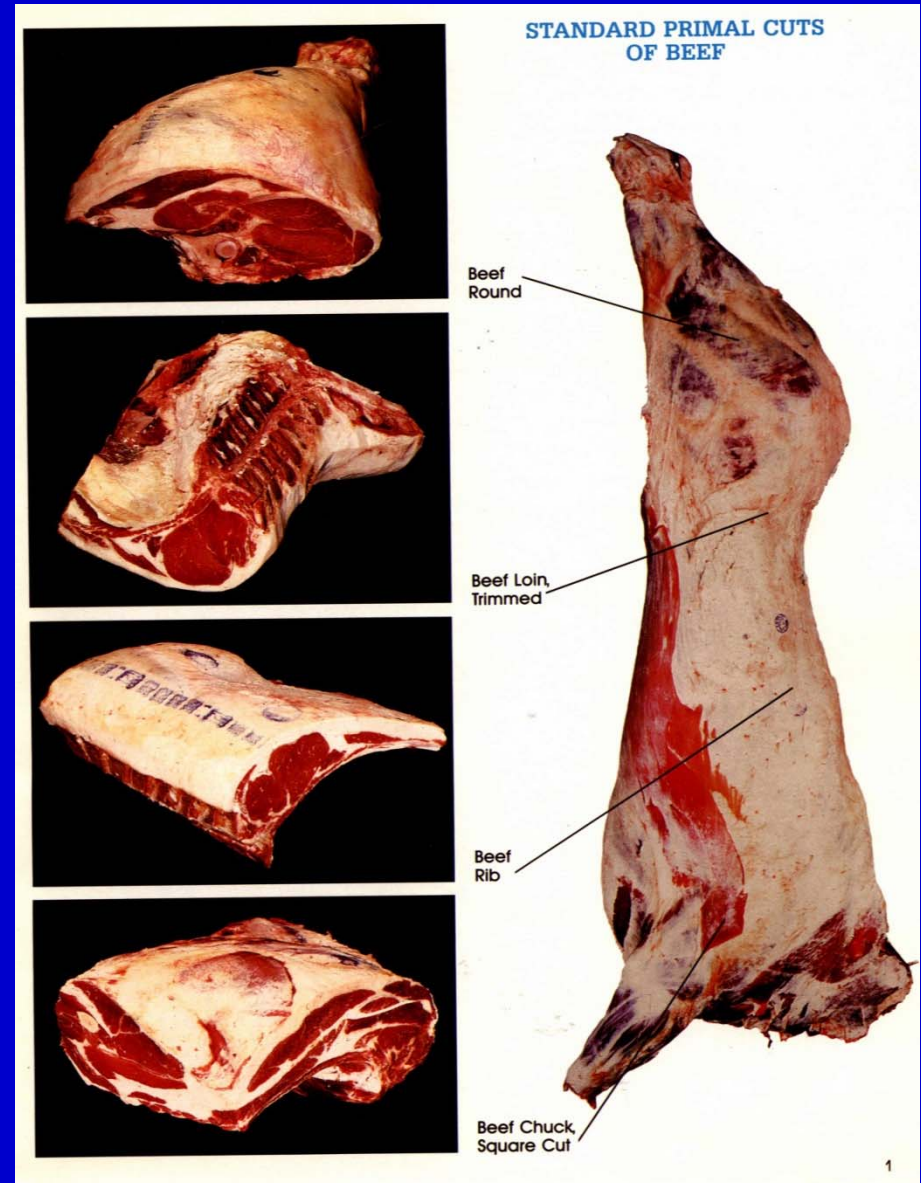
# Dairy Type

- Less desirable cutability
- Discount of \$1.00



# Bruises/Trimming Loss

- Discounts vary due to location and extent of damage



# Bruises/Trimming Loss

- Discounts vary due to location and extent of damage
- Caused by:
  - Movement and handling
  - Injection sites





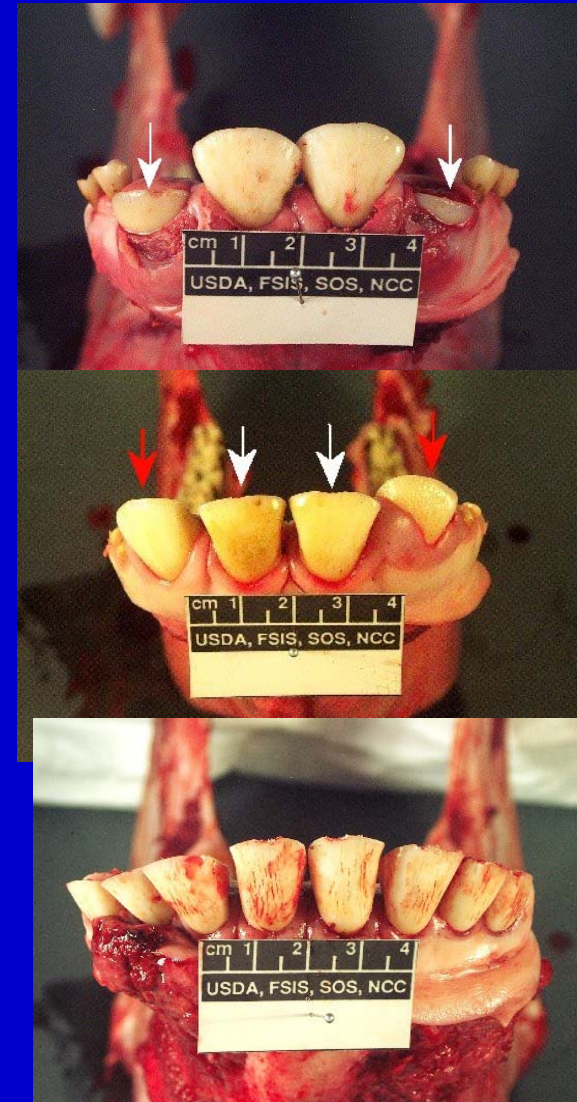
# Bruises/Trimming Loss





# Over 30 Months of Age

- Due to the federal regulations intended to prevent the BSE or "Mad Cow" from entering the food chain
- Carcass items must be removed during processing
- Discount of \$18.00

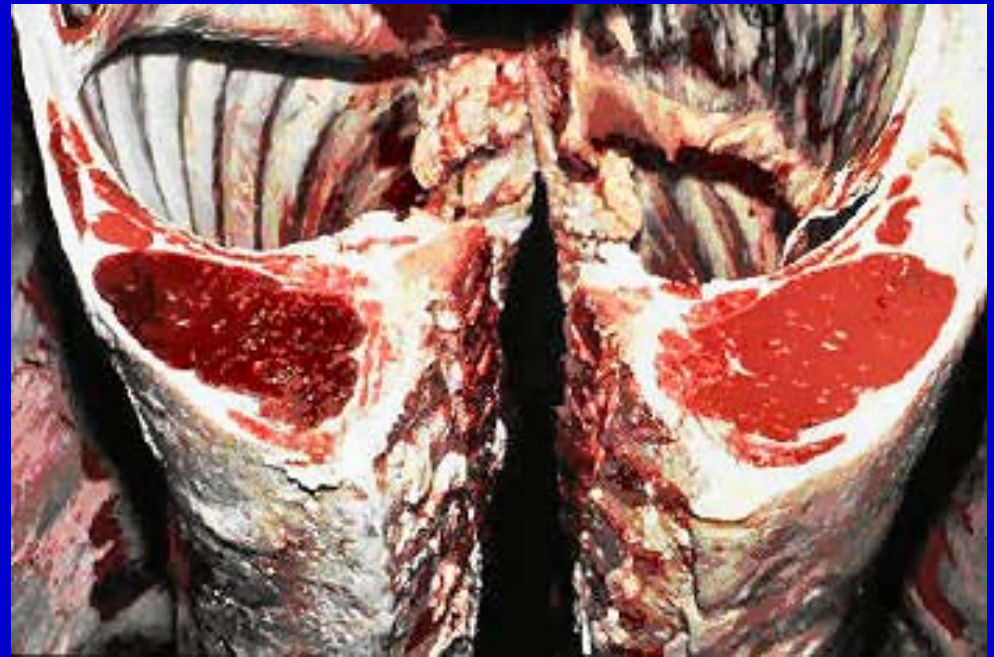


# Bullocks/Stags

- **Bullocks are “A” maturity carcasses that have developed secondary sex characteristics**
- **Stags also show secondary sex characteristics**
- **Discount of \$29.00**

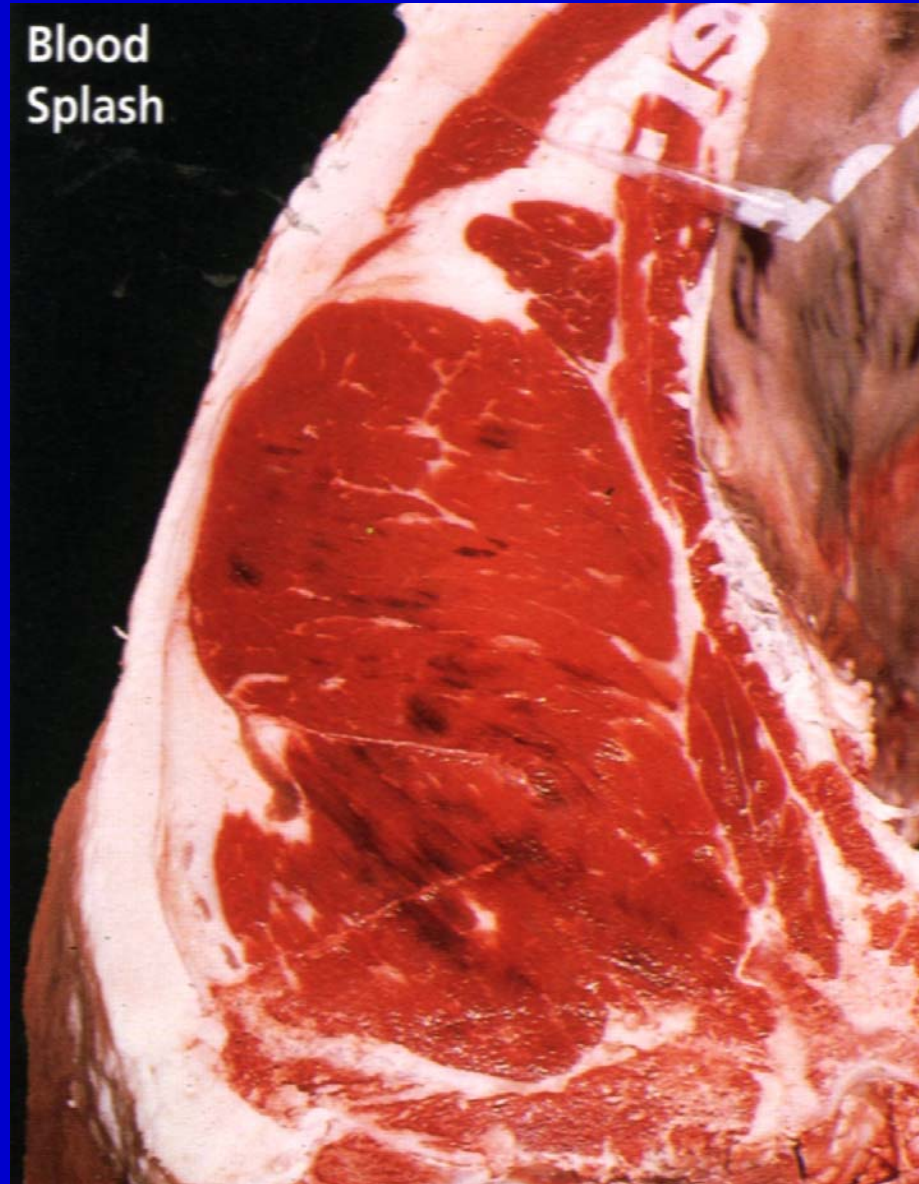
# Dark Cutters

- Lean quality defect usually due to stress
  - **Physical stress**
  - **Psychological stress**
  - **Nutritional stress**
- High muscle pH results in dark color
- Discount of \$31.00



# Blood Splash

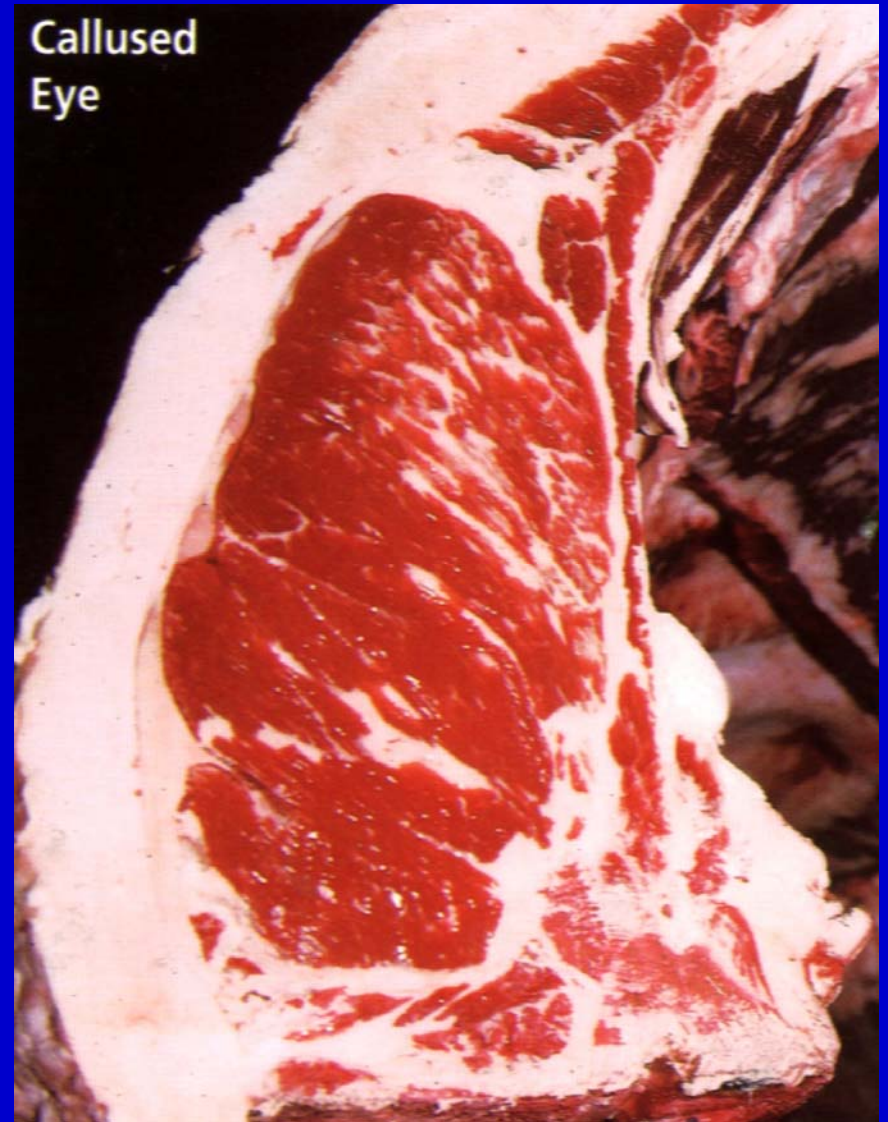
- Pin-point bruising
- Value loss depends on location and extent





# Callused Eye

- Fatty infiltration of muscle
- Nerve damage
- Injury
- Injection site damage



# Value Based Pricing

- **Consist of:**
  - **Base price**
  - **Premiums**
  - **Discounts**
- **Base price, premiums and discounts vary with market situations**
- **Cattle price based on carcass merit**

# Value Based Pricing Example

Carcass Trait	Carcass 1	Carcass 2
Yield Grade	2.7	4.3
Quality Grade	Select	High Choice
HCW	722	972
Carcass Defect	Dark Cutter	None

# Effect of Yield Grade on Carcass Value (8/10)

Yield Grade	Premium/Discount
YG 1	+ \$3.00
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YG 3	Base
YG 4	- \$12.00
YG 5	- \$19.00



# Value Based Pricing Example

Carcass Trait	Carcass 1	Carcass 2
Base (Ch, YG3)	\$139.00	\$139.00
Yield Grade	\$2.00	(\$12.00)
Quality Grade		
HCW		
Carcass Defect		
Carcass Value		

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Carcass Trait	Carcass 1	Carcass 2
Base (Ch, YG3)	\$139.00	\$139.00
Yield Grade	\$2.00	(\$12.00)
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HCW		
Carcass Defect		
Carcass Value		



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Base (Ch, YG3)	\$139.00	\$139.00
Yield Grade	\$2.00	(\$12.00)
Quality Grade	(\$7.00)	\$2.00
HCW	No Adj.	(\$3.00)
Carcass Defect		
Carcass Value		

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Yield Grade	2.7	4.3
Quality Grade	Select	High Choice
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# Value Based Pricing Example

Base (Ch, YG3)	\$139.00	\$139.00
Yield Grade	\$2.00	(\$12.00)
Quality Grade	(\$7.00)	\$2.00
HCW	No Adj.	(\$3.00)
Carcass Defect	(\$31.00)	No Adj.
Carcass Value		

# Value Based Pricing Example

Base (Ch, YG3)	\$139.00	\$139.00
Yield Grade	\$2.00	(\$12.00)
Quality Grade	(\$7.00)	\$2.00
HCW	No Adj.	(\$3.00)
Carcass Defect	(\$31.00)	No Adj.
Carcass Value	\$ 103.00	\$ 126.00

# **Summary of Factors Affecting Beef Carcass Value**

- **Quality Grade**
- **Yield Grade**
- **Hot Carcass Weight**
- **Over 30 months of age**
- **Dairy Type**
- **Bullocks/Stags**
- **Carcass Defects: Dark Cutters, Trim Loss, Blood Splash, Callused Eyes**

# Summary

- **Tennessee is a feeder calf producing state**
- **Your breeding, feeding, management and health practices can affect carcass merit and carcass value**
- **Your decisions are important because you as a feeder calf producer initiate the beef production chain.**