



# Cattle & Carcass TRAINING

Fall 2020 Webinar Series- Part III  
December 8, 2020

# WELCOME

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- This session is being recorded live
- Participants are in listen-only mode
- Question and Answer segments– *Use “Q&A” icon*
- Audience Interactive Elements – *Use “Poll” feature*
- Follow up e-mail and participant’s survey

[www.ams.usda.gov/grades-standards/beef/cattle-carcass-training-centers](http://www.ams.usda.gov/grades-standards/beef/cattle-carcass-training-centers)



# Slaughter Cattle Evaluation

Dr. Ty Lawrence

Director, Beef Carcass Research Center at  
West Texas A&M University



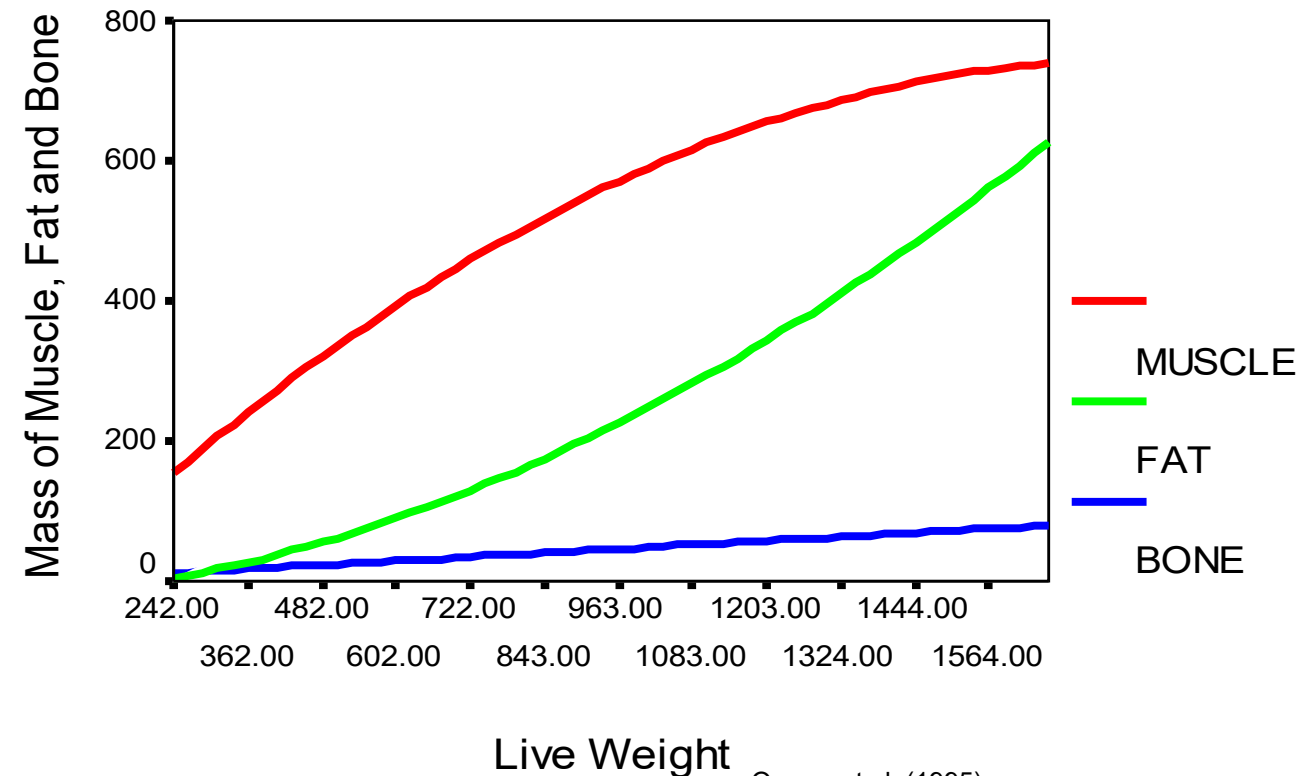
# Growth curve of bone, muscle, fat

Muscle growth increases at a decreasing rate

Fat growth increases at an increasing rate

Bone growth is constant and proportional to live weight

Relationship Between Live Animal Growth and increase of Muscle, Fat and Bone Mass





# Principles of live cattle evaluation

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## Estimation of carcass characteristics

- Dressed yield
  - Fill, Muscle, Fat, Genetic type, Pregnancy
- Yield grade
  - Carcass weight
  - Fat thickness
  - Ribeye area
  - Kidney, Pelvic, and Heart Fat (KPH)
- Quality grade
  - Marbling
  - Maturity

# Dressed Carcass Yield

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$(\text{Carcass weight} \div \text{Live weight}) \times 100$

- **Example:**

- $(828 \text{ lb carcass} \div 1300 \text{ lb live animal}) \times 100 = 63.7\%$
- Also known as carcass yield, dress, dressing percentage
  - Normal range of 55 – 70%
  - Current national average = 63.24%

# Dressed Carcass Yield

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DP influenced by:

1. Amount of fill
  - More GI tract contents at slaughter = lower dressing percent
  - Less GI tract contents at slaughter = higher dressing percent
2. Degree of muscling
  - Light muscled cattle = lower dressing percent
  - Heavy muscled cattle = higher dressing percent
3. Hide weight
  - Heavy hided cattle (Brahman) = lower dressing percent
  - Light hided cattle (Dairy) = higher dressing percent
4. Degree of finish (FATNESS)
  - Extremely fat cattle have a higher dressing percent than extremely lean cattle

# Which factor has the greatest influence on dressed carcass yield?

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<b>A</b>	<b>Fatness</b>
<b>B</b>	<b>Fill</b>
<b>C</b>	<b>Hide weight</b>
<b>D</b>	<b>Muscling</b>



# Yield Grading

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Hot Carcass Weight

- Weight of the freshly dressed carcass immediately prior to chilling

Fat Thickness

- Linear measure of backfat

Rib eye Area

- Cross-section area of longissimus muscle

Estimated % of Kidney Pelvic and Heart Fat

- Subjective evaluation of weight of internal fat in relation to carcass weight



# Which component of the yield grade has the greatest influence on final yield grade?

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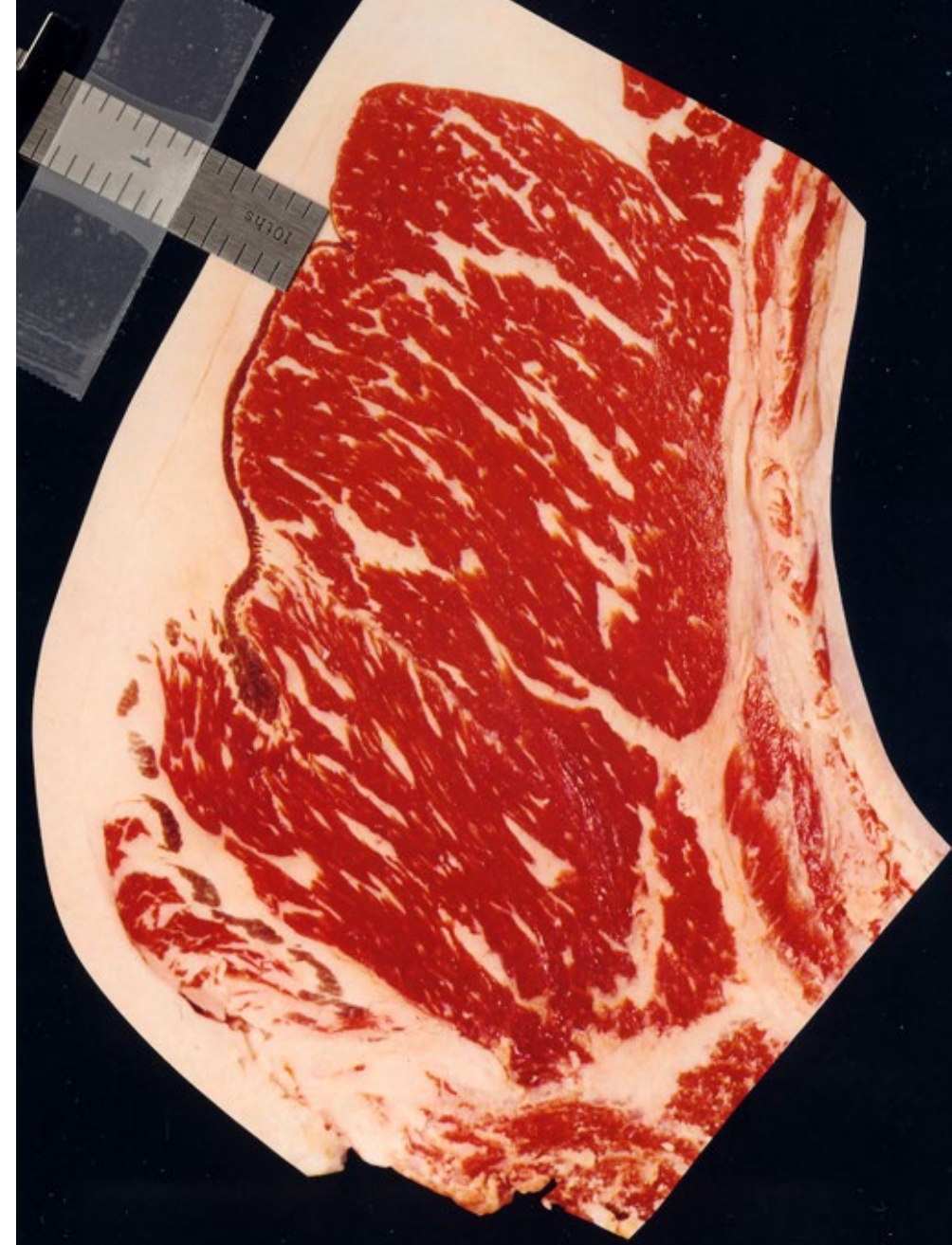
<b>A</b>	<b>Estimated % kidney-pelvic-heart fat</b>
<b>B</b>	<b>12<sup>th</sup> rib fat thickness</b>
<b>C</b>	<b>Hot carcass weight</b>
<b>D</b>	<b>Ribeye area</b>

# Fat thickness

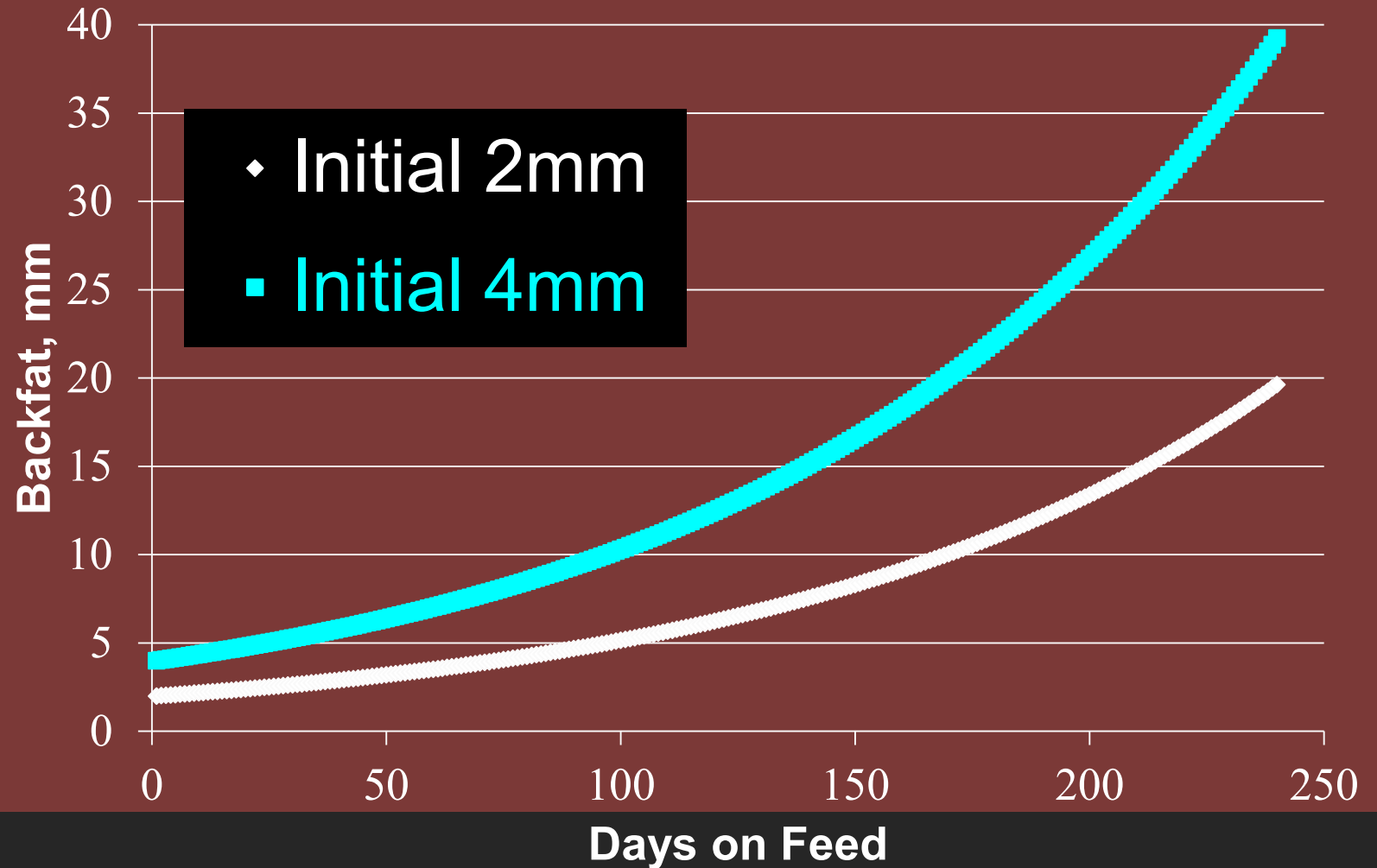
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Estimation of **backfat** over the 12<sup>th</sup> rib

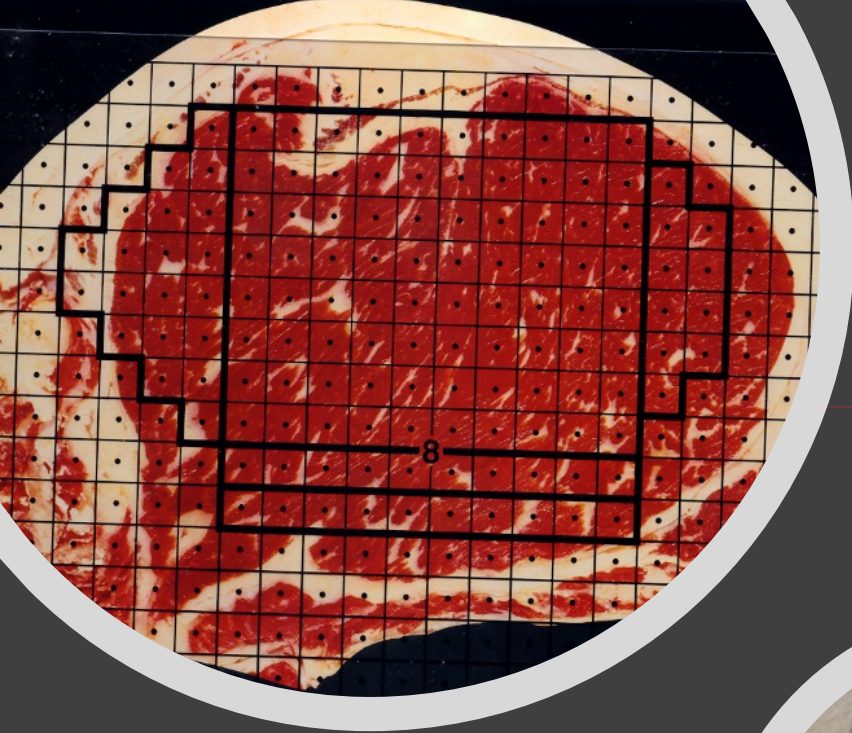
- Normal range of 0.12 to 1.0 inches
  - As fat thickness increases, numerical yield grade increases, but cutability and retail yield decreases



# Subcutaneous fat deposition - exponential







# Ribeye area

- Cross-section area of the *longissimus* muscle at the 12<sup>th</sup> rib
  - Normal range of 10.0 to 18.0 square inches
    - As ribeye area increases, numerical yield grade decreases, but cutability and retail yield increase
      - Heifer will have ~1.0 in<sup>2</sup> less REA than steers
- Light muscled cattle
  - Estimate ~ 0.9 in<sup>2</sup>./100 lb. of live weight
- Average muscled cattle
  - Estimate ~ 1.1 in<sup>2</sup>./100 lb. of live weight
- Heavy muscled cattle
  - Estimate ~ 1.3 in<sup>2</sup>./100 lb. of live weight



# Kidney, Pelvic, and Heart Fat (KPH)

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Expressed as percentage of HCW:

- (1) kidney, (2) kidney fat, (3) pelvic fat, (4) heart fat
- Normal range 1.0% to 4.5%
  - As KPH increases, numerical yield grade increases, but cutability and retail yield decrease
  - Estimate 0.5% for every 0.1 inch of backfat thickness
    - Heifers have ~1.0% more than steers
    - Small framed cattle have ~1.0% more
    - Large framed cattle have ~1.0% less
    - Dairy type cattle have ~1.5-6.0% more

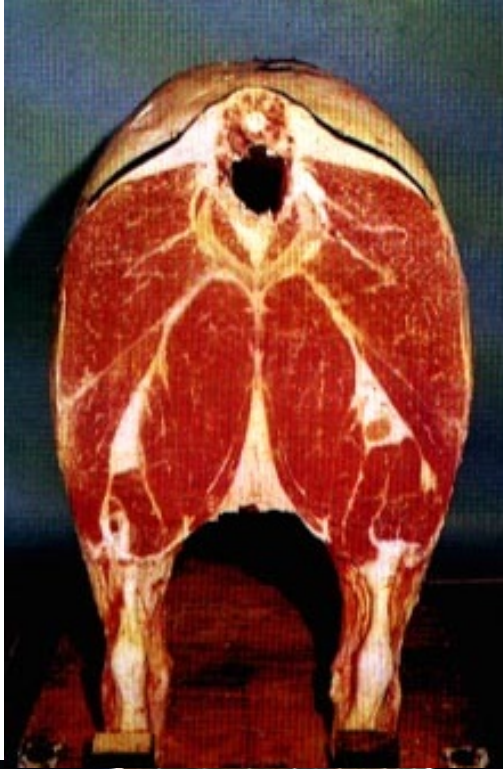


# Which finished steer would you expect to have the greatest percentage of KPH?

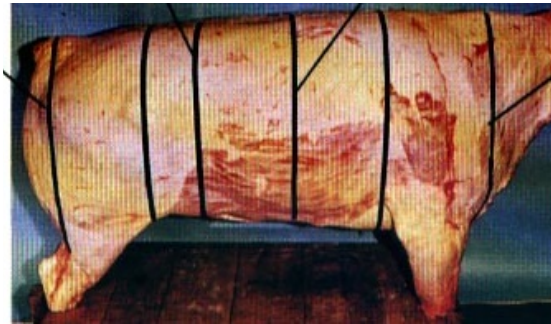
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<b>A</b>	<b>Braford</b>
<b>B</b>	<b>Charolais x Angus</b>
<b>C</b>	<b>Hereford</b>
<b>D</b>	<b>Jersey</b>

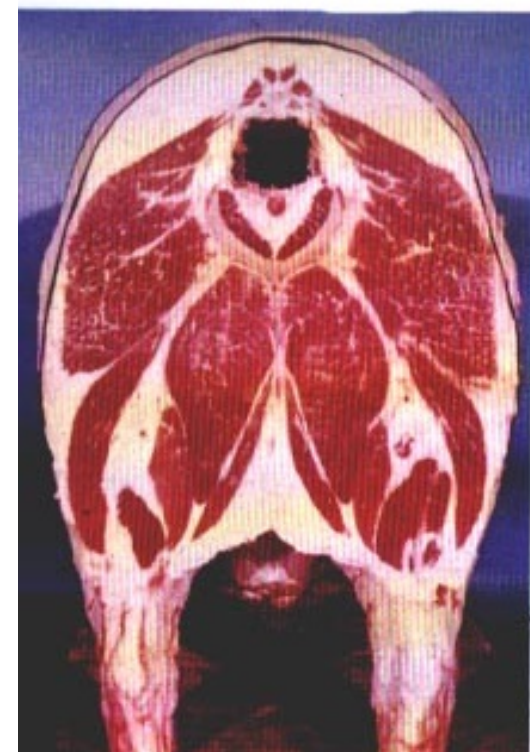




**Y  
G  
2**



**Y  
G  
5**







**Y  
G  
2**



**Y  
G  
5**







**Y  
G  
2**



**Y  
G  
5**



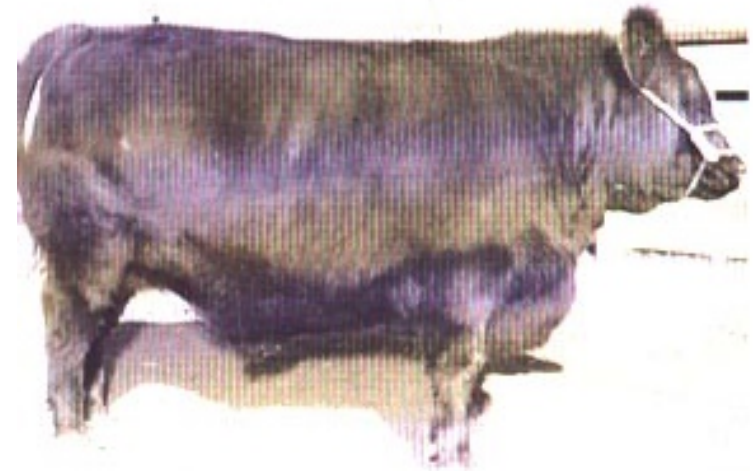
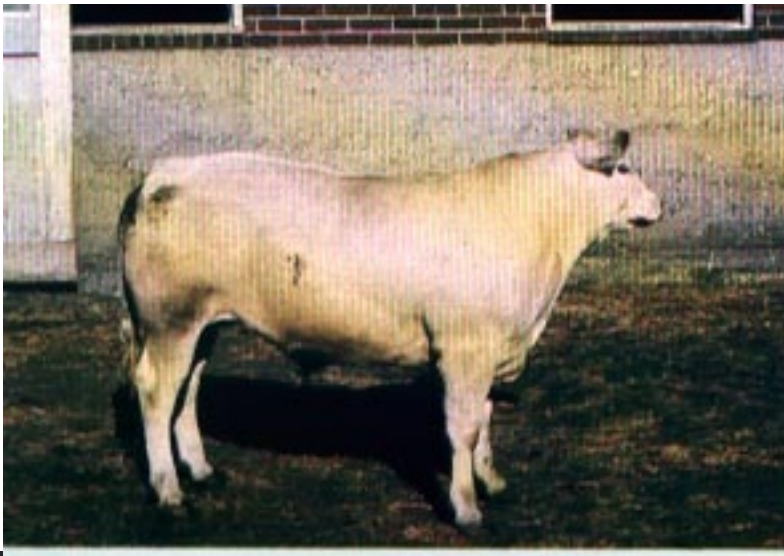
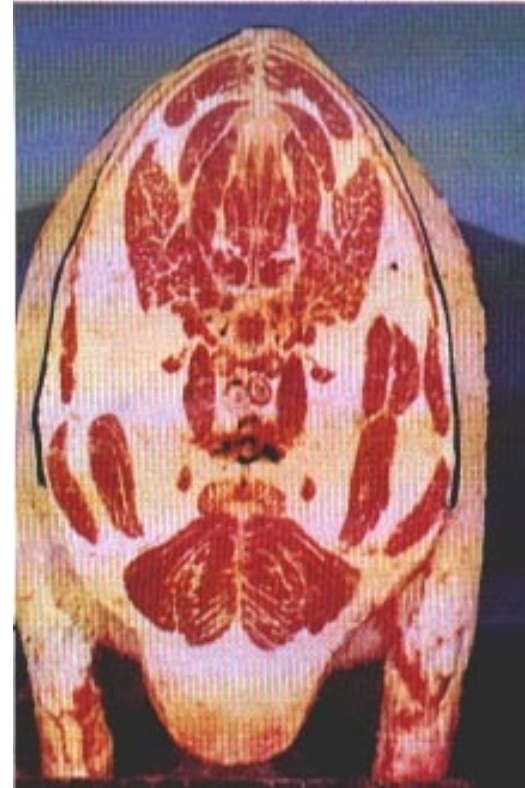


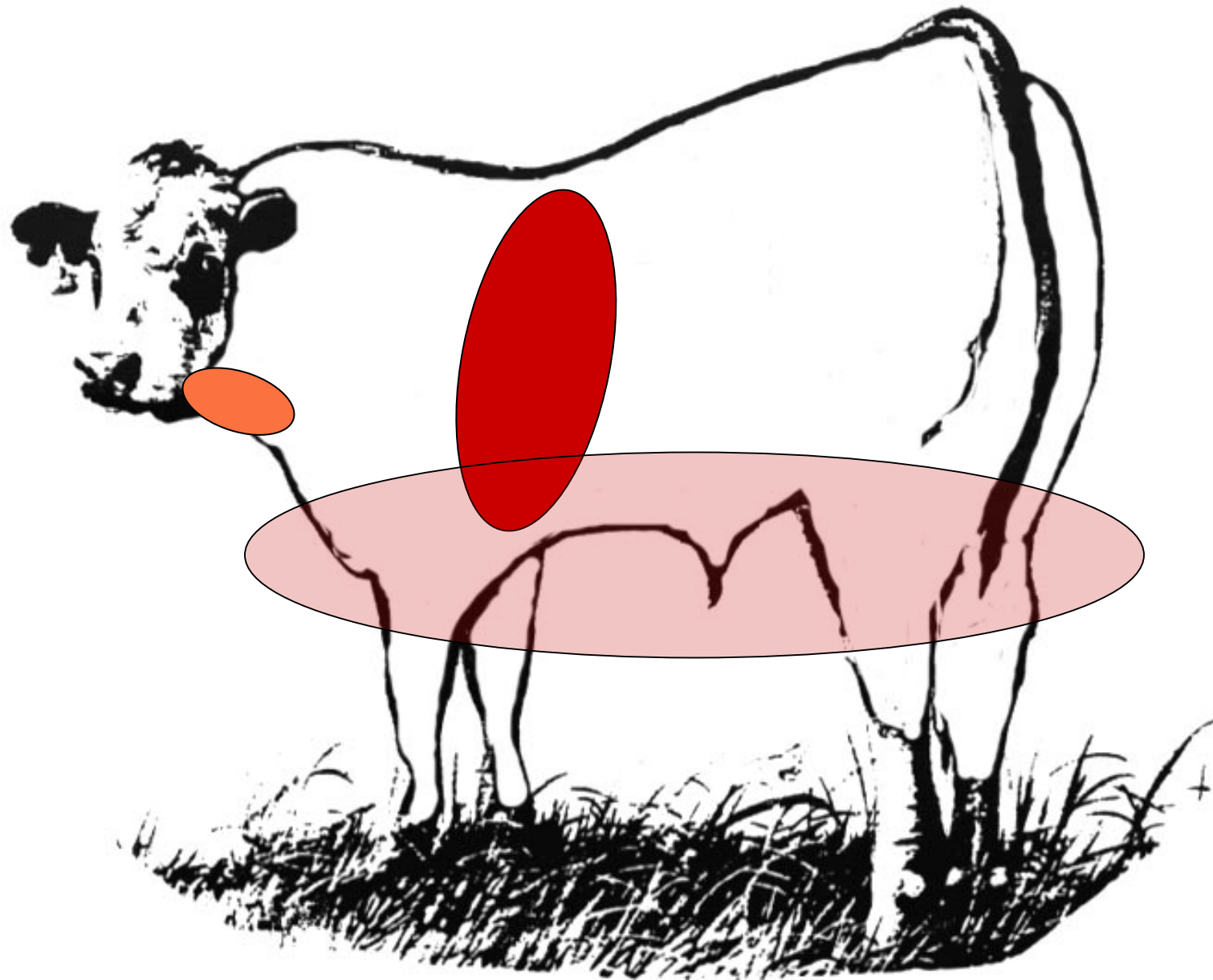


**Y  
G  
2**



**Y  
G  
5**









YG 1





YG 2





YG 3





YG 4





YG 5





# Quality Grading

- **Marbling**

- subjective evaluation of the quantity of intramuscular fat in the *longissimus* muscle between the 12<sup>th</sup> and 13<sup>th</sup> ribs

PRIME



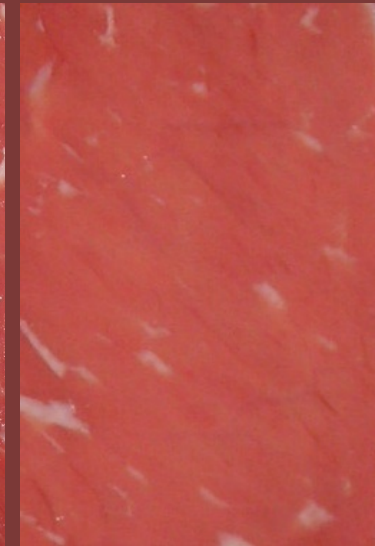
PREMIUM  
CHOICE



CHOICE



SELECT



NO ROLL



- **Maturity**

- primarily a subjective evaluation of the extent of ossification (conversion of cartilage to bone) of the vertebral column

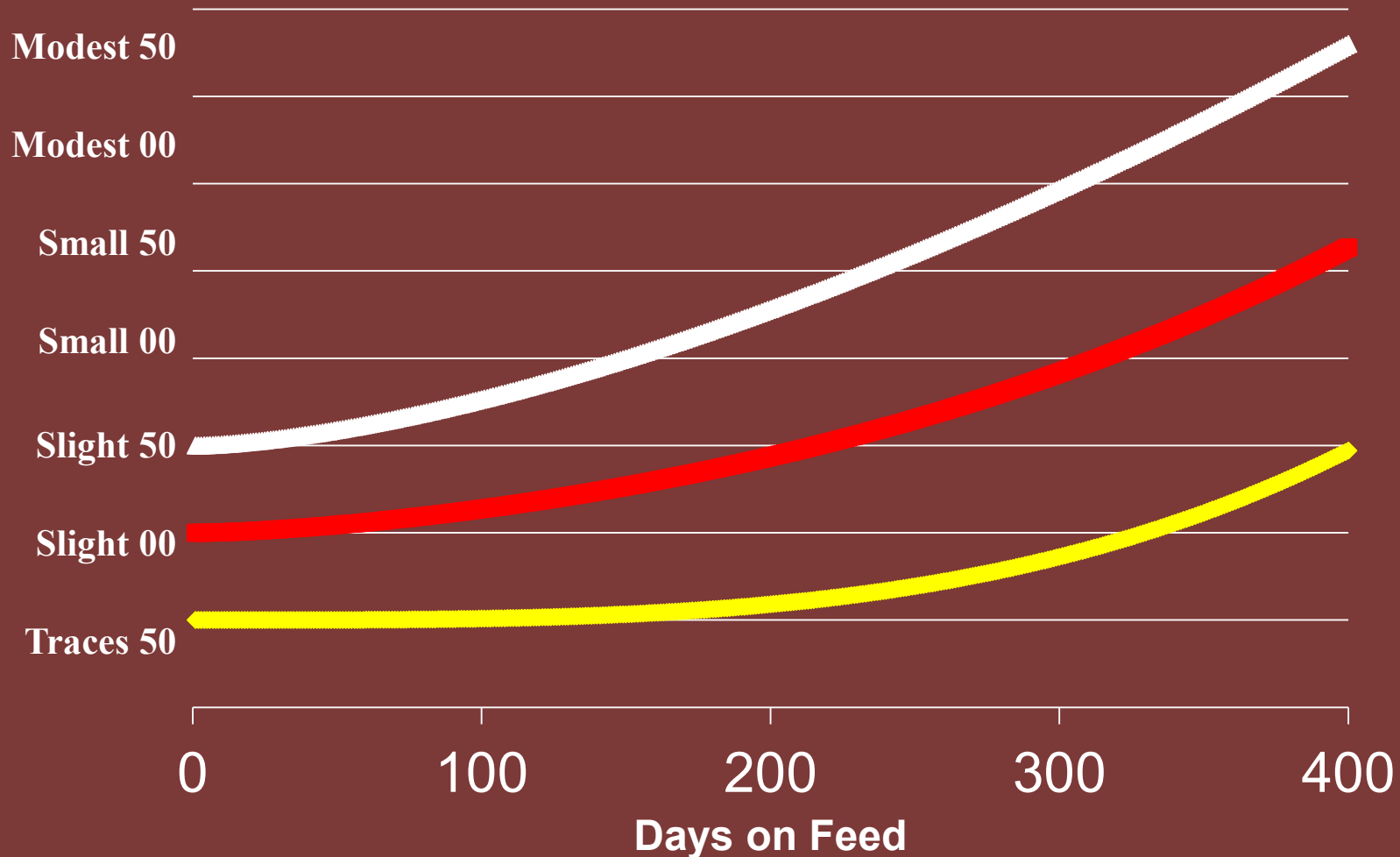
# Which quality grade occurs in lowest quantity?

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<b>A</b>	<b>Choice</b>
<b>B</b>	<b>Prime</b>
<b>C</b>	<b>Select</b>
<b>D</b>	<b>Standard</b>



# Intramuscular fat deposition – power curve





<25% EBF  
USDA Standard





25% EBF  
USDA Select





28.6% EBF  
USDA Choice





37% EBF  
USDA Prime



**MUSCLE  
AND  
FAT  
ARE ANTAGONISTS**

# Distribution matrix of USDA QG x YG - 2019

**Cumulative = 100%**

	Prime	Choice	Select	Standard	Commercial	Utility
YG 1	0.06	2.20	2.68	0.00	0.00	0.00
YG 2	1.27	22.49	9.75	0.00	0.01	0.14
YG 3	5.20	37.09	5.49	0.01	0.04	0.36
YG 4	2.02	8.46	0.65	0.00	0.04	0.17
YG 5	0.51	1.22	0.08	0.00	0.01	0.04

UNITED STATES DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE  
LIVESTOCK AND SEED PROGRAM



## SLAUGHTER CATTLE EVALUATION

TRAIT	English	Exotic	Brahman	Dairy	English X Exotic	English X Brahman	Exotic X Brahman	TRAIT
Fat thickness	0.3 in. Standard 0.4 in. Select 0.45 in. Choice 0.8 in. Prime	0.2 in. Standard 0.4 in. Select 0.55 in. Choice	0.4 in. Standard 0.5 in. Select 0.6 in. Choice	0.2 in. Select 0.35 in. Choice	0.4 in. Select 0.5 in. Choice	0.5 in. Select 0.6 in. Choice	0.5 in. Select 0.6 in. Choice	Fat thickness
Pones	X	MOST		MOST	X	MOST	MOST	Pones
Lower round 1/4	MOST		X		MOST	MOST	X	Lower round 1/4
Cod/udder	MOST	MOST	MOST	NO	X			Cod/udder
Brisket	X	MOST	X	MOST	MOST	X	X	Brisket
Flank	X			MOST	X	MOST	X	Flank
Cheeks/jowls	MOST	X	X	X		NO	X	Cheeks/jowls
Turn over the top	MOST	NO		NO		MOST	X	Turn over the top
Round creases- heifers only	MOST		MOST	NO			MOST	Round creases- heifers only
Disposition		X	X	NO				Disposition
Dew claws	Black English- MOST	NO		NO				Dew claws
Thickness	X	NO	X	NO				Thickness

MOST = Most important factor to consider when determining final quality grade

X = Very important factor to consider when determining final quality grade

NO = Does not assist when determining final quality grade



# Cattle & Carcass TRAINING

Market Steer Evaluation Practice





**Live  
weight =  
1257 lbs.**





**880 HCW**  
**69.9% Dress**  
**Standard**  
**YG 0.5**  
**EBF 22.0%**







**Live  
weight  
=  
1162 lbs.**





**753 HCW**  
**64.8% Dress**  
**Select**  
**YG 3.2**  
**EBF 28.4%**





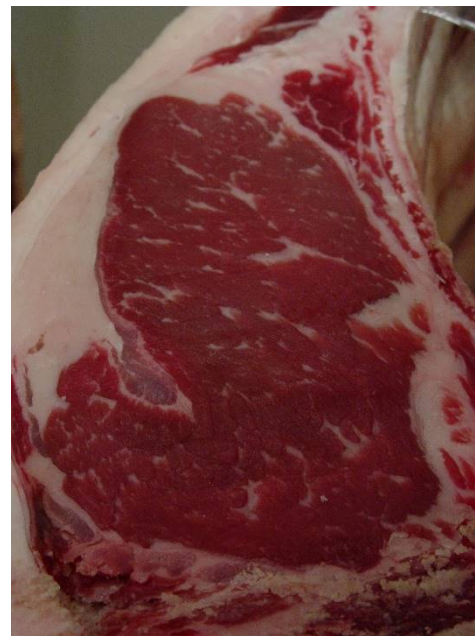


**Live  
weight  
=  
1094 lbs.**





**715 HCW**  
**65.3% Dress**  
**Choice**  
**YG 3.7**  
**EBF 32.1%**







**Live  
weight =  
1315 lbs.**





**827 HCW**  
**62.8% Dress**  
**Choice -**  
**YG 4.2**  
**EBF 34.1%**







**Live  
weight =  
1300 lbs.**



# Which is the quality and yield grade of this steer?



<b>A</b>	<b>Choice – 1.9</b>
<b>B</b>	<b>Prime – 3.9</b>
<b>C</b>	<b>Select – 2.4</b>
<b>D</b>	<b>Standard – 1.5</b>



- 
- HCW = 825
  - Dress = 66.1%
  - QG = Choice-
  - YG = 1.9
  - EBF = 26.1%







**Live  
weight =  
1600 lbs.**



# Which is the quality and yield grade of this steer?



<b>A</b>	<b>Choice – 3.9</b>
<b>B</b>	<b>Prime – 4.2</b>
<b>C</b>	<b>Select – 2.8</b>
<b>D</b>	<b>Standard – 3.5</b>



- 
- HCW = 992
  - Dress = 64.6%
  - QG = Choice+
  - YG = 3.9
  - EBF = 35.2%







**Live  
weight =  
1680 lbs.**



# Which is the quality and yield grade of this steer?



<b>A</b>	<b>Choice – 4.4</b>
<b>B</b>	<b>Prime – 5.6</b>
<b>C</b>	<b>Select – 3.8</b>
<b>D</b>	<b>Standard – 3.7</b>



- 
- HCW = 1048
  - Dress = 65.0%
  - QG = Choice-
  - YG = 4.4
  - EBF = 35.5%







# Cattle & Carcass TRAINING

Live Cattle Videos



# Lot 5019



In weight	DOF	ADG	Shrunk Out Weight
773	137	3.61	1264



# Which is the quality and yield grade of this steer?

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<b>A</b>	<b>Choice – 2.9</b>
<b>B</b>	<b>Prime – 3.2</b>
<b>C</b>	<b>Select – 2.0</b>
<b>D</b>	<b>Standard – 1.9</b>



- HCW = 819
- Dress = 64.8%
- QG = Select-
- YG = 2.0
- EBF = 25.5%





# Lot 4828



In weight	DOF	ADG	Shrunk Out Weight
356	280	3.08	1112



# Which is the quality and yield grade of this steer?



<b>A</b>	<b>Choice – 2.5</b>
<b>B</b>	<b>Prime – 3.2</b>
<b>C</b>	<b>Select – 2.9</b>
<b>D</b>	<b>Standard – 1.7</b>



- HCW = 697
- Dress = 62.7%
- QG = Select-
- YG = 2.9
- EBF = 24.7%





# Lot 5016



In weight	DOF	ADG	Shrunk Out Weight
874	140	3.33	1473



# Which is the quality and yield grade of this steer?



<b>A</b>	<b>Choice – 3.6</b>
<b>B</b>	<b>Prime – 5.2</b>
<b>C</b>	<b>Select – 2.8</b>
<b>D</b>	<b>Standard – 2.4</b>



- HCW = 933
- Dress = 63.3%
- QG = Choice<sup>0</sup>
- YG = 3.6
- EBF = 32.9%





# Lot 4708



In weight	DOF	ADG	Shrunk Out Weight
677	337	2.20	1292



# Which is the quality and yield grade of this steer?

---



<b>A</b>	<b>Choice – 3.4</b>
<b>B</b>	<b>Prime – 5.8</b>
<b>C</b>	<b>Select – 4.1</b>
<b>D</b>	<b>Standard – 2.5</b>



- HCW = 898
- Dress = 69.5%
- QG = Prime -
- YG = 5.8
- EBF = 39.5%





# Chicago Mercantile Exchange (CME) Live Deliveries

Jodie Pitcock

USDA Agricultural Marketing Service

Livestock and Poultry Program, Market News Division

[Jodie.Pitcock@usda.gov](mailto:Jodie.Pitcock@usda.gov)





# USDA's Responsibility

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Unbiased Third  
Party

Apply USDA Live  
Slaughter Cattle  
Grade Standards

Certify Contract  
Specifications

# Terms

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- **Delivery Point** – Location where the delivery process will occur.
- **Long** – Created an open position, owns the cash commodity, willing to take possession.
- **Short** – Sold an open position, entered contract as a seller, has possession of the commodity.
- **Specifications** – outlines the criteria of the contract.



# Who determines if a contract will be delivered on a live or carcass basis?

---

<b>A</b>	<b>The Long</b>
<b>B</b>	<b>The Short</b>
<b>C</b>	<b>USDA</b>
<b>D</b>	<b>CME</b>

# Who determines if a contract will be delivered on a live or carcass basis?

---

<b>A</b>	<b>The Long</b>
<b>B</b>	<b>The Short</b>
<b>C</b>	<b>USDA</b>
<b>D</b>	<b>CME</b>



# Live Delivery Locations

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- Sterling, CO
- Wray, CO
- Worthing, SD
- Burwell, NE
- Kearney, NE
- Lexington, NE
- Ogallala, NE
- West Point, NE
- Syracuse, KS
- Dodge City, KS
- Dalhart, TX
- Tulia, TX
- Amarillo, TX
- Texhoma, OK
- Clovis, NM



# Who determines which Delivery Location the live contract will be delivered to?

---

<b>A</b>	<b>The Long</b>
<b>B</b>	<b>The Short</b>
<b>C</b>	<b>USDA</b>
<b>D</b>	<b>CME</b>



# Who determines which Delivery Location the live contract will be delivered to?

---

<b>A</b>	<b>The Long</b>
<b>B</b>	<b>The Short</b>
<b>C</b>	<b>USDA</b>
<b>D</b>	<b>CME</b>

# Live Contract Specification





# Live Contract Specification

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- Par Delivery Unit: 65% Choice, 35% Select, Yield Grade 3 (through Dec 2020)
  - 40,000 pounds (variation between 38,000 and 42,000 pounds)
- USDA Grading Standards for Live Cattle
- Born/Raised exclusively in the United States
  - Sellers must sign Exchange Affidavit
    - Part of the Certificate of Delivery
    - Must always accompany the Certificate

# Live Contract Specification

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- Weight
  - Steers
    - 1,050 to 1,550 pounds. Cattle over 1,500 up to 1,550 receive a weight discount.
    - Feb. 2021. 1,050 to 1,600 pounds, with cattle over 1,550 up to 1,600 receiving a discount.
  - Heifers
    - 1,050 to 1,350 pounds.







# Live Contract Specification

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- All cattle shall be HEALTHY.
- Unmerchantable cattle are NOT allowed: crippled, sick or bruised.
- No predominance of dairy breeding or prominent humps.
- Heiferettes, cows or bred heifer are NOT allowed.
- Dressing Percent greater than 60% – Applied to the load.



## Live Contract Specification - Arrival

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- Delivered to approved Delivery Point
- Confined in a secured pen by 9:00AM
- Can the “Certification Process” occur prior to 9:00AM?
- Is Feed and Water allowed?



# Certification Process

- The Short must ensure cattle are penned, sorted and ready.
- The Delivery Point usually represents the Short.
- Cattle are presented in groups of 3 to 5 head.



# Live Contract Specification – Grading Process

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## USDA Grader:

- Determines that animals are in good condition (Healthy).
- Determines contract specification for health, age, physical conditions and weight are met.
- Applies USDA Live Quality and Yield Grade Standards.
- Calculates the Estimated Dressing Percent of the lot.





# Live Contract Specification – Grading Card

STEERS				
No Head	_____	Date	_____	
Total Wt		_____	Ld#	_____
Avg Wt		_____	DR%	_____
		# of Overs	_____	
				(1500-1550 LBS)
PRIME	_____	YG 1	_____	
CHOICE	_____	YG 2	_____	
SELECT	_____	YG 3	_____	
STND	_____	YG 4	_____	
SUB ST	_____	YG 5	_____	
Pen No(s)		Seal No(s)		
Accept <input type="checkbox"/>		Reject <input type="checkbox"/>		
Reason for Rejection _____				
Firm _____				
Feedlot _____				
Grader _____				



## Live Contract Specification – Dressing Percent

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- Par is 63%
- Greater than 60% acceptable
- Factors that affect Dressing Percent:
  - Muscling and Fat Cover
  - Breed, Gender, Diet and Seasonal
  - Fill
  - MUD





## Live Contract Specification – Weighing

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- Lots must weigh between 38,000 to 42,000 pounds.
  - Load can be weighed as a split load, if the scale size at Delivery Point will not handle a full load.
  - Number of animals in each load can vary from 26 to 32 head.
- Load must be weighed within one hour of grading.

# Live Contract Specification – Change of Ownership

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- After each lot is weighed, they go to a “sealed pen”.
- USDA submits grading results electronically to CME on a Certificate.
- CME Clearinghouse changes livestock ownership to the Long.
- Lot is released by CME to be loaded on the Long’s truck.
- Certification Process is complete.



# Live Contract Specification – Rejected

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If a load is rejected?

- It is the Short's responsibility to work out an alternative with CME.
- USDA has no control at this point.
- CME will contact USDA once a solution have been resolved.

# Live Contract Specification – USDA Rights

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- If the Short fails to present suitable cattle, they are subject to a fine.
- If the Short presents a load that is not properly sorted and unnecessarily slows down the grading process- they are subject to a fine.
- If the Long or their agent delays, disrupts, or interferes with the delivery- they are subject to a penalty.
- In Summary: *Bring deliverable cattle and let USDA do their job.*



# Live Contract Specification – Accept or Reject?



Reject –  
Due to weight.





# Live Contract Specification –

Accept or  
Reject?





Accept





Live Contract  
Specification –

Accept or  
Reject?





Reject –  
Due to belly  
rupture.





Live Contract  
Specification –

Accept or  
Reject?



Reject –  
Hump





Live Contract  
Specification –

Accept or  
Reject?





Accept







# Live Contract Specification – Settlement

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- National Boxed Beef Cutout – Negotiated Sales
  - [https://www.ams.usda.gov/mnreports/ams\\_2453.pdf](https://www.ams.usda.gov/mnreports/ams_2453.pdf)
- USDA By-Product Drop Value
  - [https://www.ams.usda.gov/mnreports/nw\\_ls447.txt](https://www.ams.usda.gov/mnreports/nw_ls447.txt)
- 5-Area Weekly Weighted Average Direct Slaughter Cattle – Premium and Discounts
  - [https://www.ams.usda.gov/mnreports/lm\\_ct169.txt](https://www.ams.usda.gov/mnreports/lm_ct169.txt)



# My Market News – Public Data

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- My Market News
  - <https://mymarketnews.ams.usda.gov/>
- Market Analysis & Reporting Services (MARS)
- Public Data
- Standard Report Format
- Application Programming Interface (API)





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