



HOUSTON LIVESTOCK SHOW AND  
**RODEO**<sup>TM</sup>

# CATTLE 101



# BEEF INDUSTRY OVERVIEW

- Most unique and complex life cycle of any food
  - Multiple steps, sectors, and processes from pasture to plate
- Takes 2-3 years to bring beef from farm to fork
  - Gestation periods:
    - Cattle – 280-291 days (1 calf)
    - Pigs – 112-120 days (~ 10 piglets)
    - Chickens – 21 days (1 egg)
- Average age of a principle beef cattle rancher is 58.3



# BEEF INDUSTRY OVERVIEW (CONT.)

- 913,246 total cattle & calf operations
  - 727,906 are beef farms and ranches
    - 91% are family-owned or individually-operated
    - 11% are owned by women
  - 26,586 are engaged in cattle feedlot production
    - 80% are family-owned or individual operated
    - 5% are operated by women
  - 64,098 are milk cow operations



Source: USDA

# STATE RANKINGS

- All Cattle

- Texas: 12.5 million
- Nebraska: 6.8 million
- Kansas: 6.3 million
- California: 5.2 million
- Oklahoma: 5.1 million

- Cows & Heifers that have Calved

- Texas: 5.1 million
- California: 2.4 million
- Missouri: 2.25 million
- Oklahoma: 2.17 million
- Nebraska: 1.97 million



# STATE RANKINGS

- Beef Cows that have Calved

- Texas: 4.59 million
- Missouri: 2.17 million
- Oklahoma: 2.13 million
- Nebraska: 1.91 million
- South Dakota: 1.8 million

- Cattle on Feed

- Nebraska: 2.77 million
- Texas: 2.65 million
- Kansas: 2.45 million
- Iowa: 1.26 million
- Colorado: 1 million



# WHERE DOES MY OPERATION FIT?

- Integrated industry
  - Multiple steps, sectors, and processes from pasture to plate



# SECTORS OF THE BEEF INDUSTRY

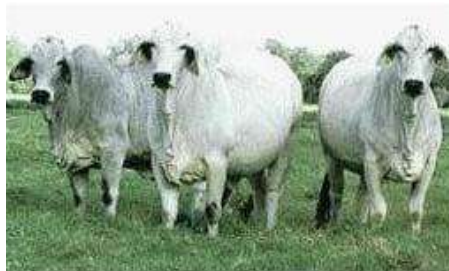
- Pre-Harvest
  - Purebred/Seedstock
  - Commercial Cow/Calf (400-700 lbs.)
  - Stocker (600-900 lbs.)
  - Feedlot (1000-1450+ lbs.)
- Post-Harvest
  - Packer
  - Processor
  - Retail Operators
  - Consumers





# SEEDSTOCK OPERATORS

Superior traits are identified so that these seedstock or purebred breeding animals can be used to improve commercial herd performance.



# COW-CALF OPERATORS

In the commercial cow/calf herd gestation is just over 9 months. Most calves are weaned at 6-8 months although some calves weaned at heavier weights may go straight to the feedyards, while the lighter calves go to the stocker phase.



# Spade Ranches, New Mexico

Avg. Rainfall 13"-- 35-50 ac./cow





# Kilgore, TX Cow/Calf Operation



**Avg. Rainfall ~45 in**  
**- 2-5 ac./cow**



# STOCKER OPERATORS

Stocker calves are placed on winter or summer forage pastures from 4-5 months before going to feedlots as yearlings





# FEEDYARD OPERATORS

Feeder calves and yearlings are on feed approximately 100-200 days depending on their beginning weight to ensure top quality meat yield.



# BOS INDICUS AND BOS TAURUS SPECIES

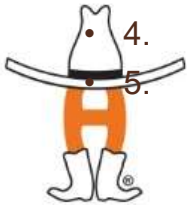
- *Bos indicus*

- 1. Originated from Zebu cattle from India
- 2. Loose skin
- 3. Large ears
- 4. Humped
- 5. Heat resistant
- 6. Insect resistant

- 

- *Bos taurus*

- 1. Originated in Europe
- 2. Tight hides
- 3. Small ears
- 4. No humps
- 5. More tolerant of cold weather



# BREED TYPES

- British
- American
- Continental
- Specialty
- Dairy





# BRITISH BREEDS

- Angus
- Hereford
- Red Angus
- Shorthorn



# BRITISH BREEDS OF CATTLE

- Angus

- First imported from Scotland by George Grant of Kansas in 1873
- Black
- Polled
- Maternal
- High quality carcasses with a large degree of marbling

- Red Angus



- Red due to a recessive gene in Black Angus
- Same characteristics of Black Angus

## Angus



## Red Angus



# BRITISH BREEDS OF CATTLE (CONT.)

- Hereford
  - Imported from England by Henry Clay in 1817
  - Red with white face and chest; also white on the neck, feet, and switch
  - Horned but used to develop Polled Hereford breed
  - Excellent foragers
  - Tolerant of cold weather



# Hereford



# NOT A REAL HEREFORD, LEE!!!



# BRITISH BREEDS OF CATTLE (CONT.)

- Shorthorn
  - Originated in England
  - Imported in the late 1700s
  - Red, white, red and white, or roan in color
  - Horned or polled
  - Highly maternal
  - Gentle
  - High-quality carcasses





# Shorthorn





# AMERICAN & BRAHMAN TYPE BREEDS

- Beefmaster
- Brangus
- Brahman
- Santa Gertrudis



# AMERICAN & BRAHMAN TYPE BREEDS (CONT.)

- Beefmaster
  - Developed in Texas in 1931 by Tom Lasater
  - $\frac{1}{4}$  Hereford,  $\frac{1}{4}$  Shorthorn,  $\frac{1}{2}$  Brahman
  - Red
  - Horned or polled
  - Good growth rate
  - Hardy
  - Maternal
  - Fertile



# Beefmaster



# AMERICAN & BRAHMAN TYPE BREEDS (CONT.)

- Brangus
  - Developed in the United States in the early 20<sup>th</sup> century
  - 5/8 Angus, 3/8 Brahman
  - Black
  - Polled
  - Maternal
  - High growth rate
  - Thick carcasses with a minimum of excess fat



# Brangus



# AMERICAN & BRAHMAN TYPE BREEDS (CONT.)

- Brahman
  - Developed from Zebu cattle from India crossed with several European breeds
  - Gray to black in color
  - Loose hides
  - Large ears
  - Humped
  - Horned
  - Heat resistant
  - Insect resistant



# Brahman



# AMERICAN & BRAHMAN TYPE BREEDS (CONT.)

- Santa Gertrudis
  - Developed on the King Ranch in Texas in the early 20th century
  - 5/8 Shorthorn, 3/8 Brahman
  - Dark red
  - Horned or polled
  - Easy calving
  - Good foraging ability





# Santa Gertrudis



# CONTINENTAL BREEDS

- Limousin
- Charolais
- Simmental
- Gelbvieh
- Maine Anjou
- Chianina



# CONTINENTAL BREEDS (CONT.)

- Limousin
  - Originated in France
  - First introduced into the United States in the late 1960s
  - Light red to dark red or black
  - Horned or polled
  - Lean
  - Heavily muscled



# Limousin



# CONTINENTAL BREEDS (CONT.)

- Charolais
  - Introduced into the United States by the King Ranch in the 1930s
  - Originally developed in France
  - White
  - Horned or polled
  - Large
  - Heavily muscled
  - Fast growing



# Charolais



# CONTINENTAL BREEDS (CONT.)

- Simmental
  - Originally from Switzerland
  - First imported in 1969
  - Solid red, red and white, yellow, black, or black and white in color
  - Horned or polled
  - Large
  - Fast growing
  - Maternal
  - High milk production



# Simmental





# CONTINENTAL BREEDS (CONT.)

- Gelbvieh
  - Originated in Germany
  - Imported in the early 1970s
  - Red to golden or black in color
  - Horned or polled
  - Gentle
  - Very maternal



# Gelbvieh



# CONTINENTAL BREEDS (CONT.)

- Maine Anjou
  - Originated in France
  - Introduced to the United States around 1970
  - Red and white, solid red, black, or black and white in color
  - Horned or polled
  - Heavily muscled
  - Gentle
  - Fast growing



# Maine Anjou



Maine-Anjou  
bull  
France



# CONTINENTAL BREEDS (CONT.)

- Chianina
  - Originated in Italy
  - First used in the United States in the early 1970s
  - Used to produce show steers and as a terminal breed
  - Almost any color
  - Horned or polled
  - Fast growing
  - Extremely large



# Chianina



# SPECIALTY BREEDS

- Texas Longhorn
- Other various breeds



# SPECIALTY BREEDS (CONT.)

- Longhorn
  - Originally from Spain
  - Brought to Mexico and then Texas in the early 1500s
  - Extremely hardy
  - Almost any color or combination of colors
  - Horned (spreading to four or more feet)
  - Lean meat
  - Adaptable to harsh environmental conditions
  - Resistant to many diseases and parasites





# Longhorn



# FACTORS THAT INFLUENCE BREED SELECTION

- Needs of the producer
- Breeds used in the past
- Available feed and labor resources
- Goals of the operation
- Market trends
- The environment
- Traits of the breeds



# CRITERIA USED IN SELECTION OF BREEDING CATTLE

- Skeletal—ease of movement
  - Taking long strides off both ends of the skeleton
  - Filling its track
  - Setting feet down square and wide
- Volume/capacity
  - Deep sided
  - Wide ribbed
  - Spring or curvature of rib cage
- Muscling—Heavily muscled
- Balance
  - Long bodied
  - Level topped
  - Uniform in depth
  - Stout boned
  - Clean fronted



# CRITERIA USED IN SELECTION OF BREEDING CATTLE

- Performance values
  - Actual weights—birth weight, weaning weight, yearling weight
  - Feed to gain ratios
- Frame score—height in relation to age
  - Males larger than females
  - Range from one to ten, with five to seven considered ideal
- EPDs—expected progeny differences
  - Birth weight (BW) EPD—prediction in pounds of the difference in birth weights
  - Weaning weight (WW) EPD—prediction of the difference in pounds in weaning weights
  - Yearling weight (YW) EPD—difference in pounds at one year of age
  - Milk (M) EPD—difference in pounds in the weaning weights of the calves produced by the parent's female offspring due to the milk production of the cow



# TOP 10 SEEDSTOCK OPERATORS 2018

- Express Ranches, OK – 5,500 Angus and Hereford
- Gardiner Angus Ranch, KS – 1,002 Angus
- 44 Farms, TX – 2,500 Angus
- Leachman Cattle, CO – 8,803 Angus, Red Angus, Charolais
- Ludvigson Stock Farms, MT – 1,600 Red Angus and Composites
- Circle A Angus, MO – 1,556 Angus
- Thomas Angus Ranch, OR – 1,496 Angus and Red Angus
- Vermilion Ranch, MT – 2,325 Angus
- Sitz Angus Ranch, MT – 2,420 Angus
- DeBruycker Charolais, MT – 2,300 Charolais





# CROSSBRED AND PUREBRED BREEDING SYSTEMS

- Crossbred

- Crossbreeding is mating in their herd animals of different breeds to take advantage of their different characteristics and produce offspring that display heterosis, or hybrid vigor.
- Producers buy purebred bulls to use.
- Most producers sell feeder calves or retain ownership through the feedlot.
- Daughters of bulls are kept as replacements.



- Purebred

- Breeders use registered bulls and females of the same breed to produce bulls and females that will be purchased by other purebred breeders and commercial producers.

# TOP 10 COW/CALF OPERATORS 2018

- Deseret Cattle & Citrus –FL
- J.R. Simplot – ID, NV, OR, UT
- King Ranch –FL, TX
- Silver Spur Land and Cattle – CO, NE, NM, WY
- Lykes Bros. -- FL
- Rollins Ranches – FL, GA, TX
- Padlock Ranch Company – MT, WY
- Matador Cattle Company – KS, MT, TX
- Ellison Ranching Co. – ID, NV
- Lightsey Cattle Co. – FL, GA



# CRITERIA USED IN SELECTION OF FEEDER CATTLE

- Frame size

- Frame size is determined by looking at height in relation to age.
- Feeder steers and heifers may have a large, medium, or small frame.
- Frame size is based on a prediction of what the live weight of the calf will be when it has 1/2 inch of external fat in the 12th and 13th rib area.



- Muscling

- Feeder steers and heifers may have a muscle score of 1, 2, or 3, with the lower number indicating the more muscular animal.
- Scores depend on the animal's thickness.



# CRITERIA USED IN SELECTION OF SLAUGHTER CATTLE

- Muscling
  - Thicker cattle have more muscle thickness and width along their top line and through their rump and stifle.
    - Observe the size of the forearm, the thickness along the top of the calf, and thickness and depth of the quarter.
- Size
  - Size suggests the potential carcass weight of the animal.
  - Packers prefer a carcass weight of 600 to 850 pounds with a live weight between 1,000 and 1,450 pounds.
- External Fat
  - Cattle must have 1/2 inch or less of external fat at the 12th and 13th rib area to have the potential to reach choice-quality grade.
  - Steers and heifers will have a smooth appearance along the ribs, pones of fat opposite the pin bones, and evidence of fat on the cod or udder region and through the brisket.



# TOP 10 FEEDLOTS 2018

- Five Rivers Cattle Feeding (900,000 hd) – 11 yards in AZ, TX, OK, KS, CO, ID
- Cactus Feeders ( 527,000 hd) – 10 yards in TX, KS
- Friona Industries (450,000 hd) – 6 yards in TX
- Irsik & Doll Feed Services (260,000 hd) – 7 yards in KS
- Green Plains Cattle Co. (258,000 hd) – 4 yards in TX, KS, CO
- Foote Cattle Co. (240,000 hd) – 5 yards in KS, NE
- J.R. Simplot (230,000 hd) – 2 yards in ID, WA
- Oppliger Feedyard (230,000) – 6 yards in TX, NE, NM
- Innovative Livestock Services (200,000 hd) – 8 yards in KS, NE
- Gottsch Cattle Co. (195,500) – 3 yards in NE



# MARKETING OPTIONS AVAILABLE FOR PUREBRED PRODUCERS

- Private treaty sale—a producer and customer privately negotiate the terms of the sale
- Consignment auction—a producer entrusts a group of animals to another party, such as a breed association or video auction, to be sold for a commission
- Production sale—one producer or small group of producers sells their animals at an auction that takes place on a ranch



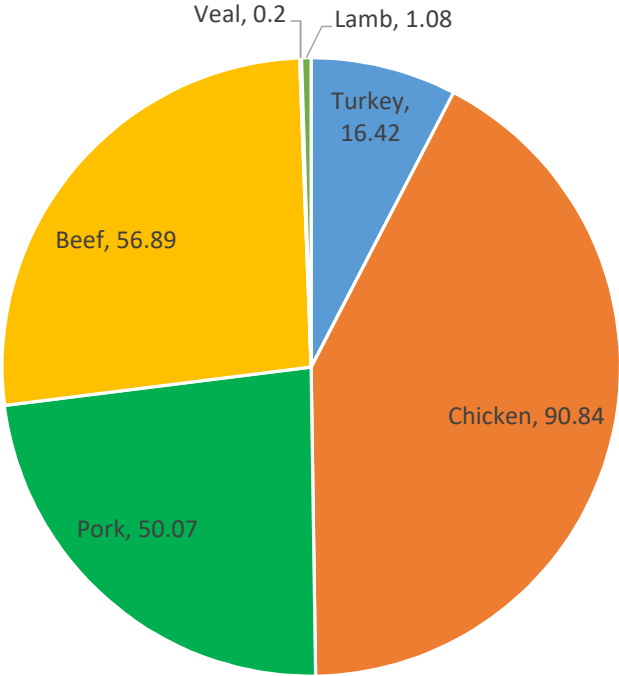
# MARKETING OPTIONS AVAILABLE FOR COW/CALF PRODUCERS

- Auctions, including video auctions
- Retained ownership—the cow/calf producer owns the cattle through the feedlot until slaughter
- Livestock order buyer—buyers purchase cattle directly from producers
- Alliance/marketing group—producers form groups to market like sets of cattle together as a branded or labeled product
- Cattle futures market—futures contracts are bought and sold to help manage the financial risk involved in production



# PER CAPITA MEAT CONSUMPTION

2017 Per Capita Consumption



# USDA Beef Quality Grades

- USDA Prime
- USDA Choice
- USDA Select
- USDA Standard
- USDA Commercial
- USDA Utility
- USDA Cutter
- USDA Canner

Most Desirable



Least Desirable

- Beef quality refers to the expected palatability of the final cooked product
- USDA Quality Grades are used to reflect differences in expected eating quality among slaughter cattle and their carcasses





**Moderately Abundant  
(USDA Prime)**

**Moderate  
(USDA Choice)**

**Slight  
(USDA Select)**



# Yield Grades



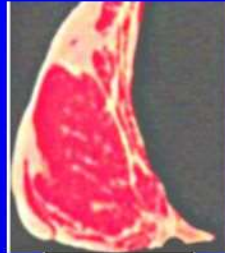
Yield grades specify how much usable lean meat there is on the carcass. Beef with higher grades have more marbling and usually come from younger cows. Yield grades range from 1 to 5.

Yield 1 is the highest possible grade, while the lowest is 5. Beef graded Yield 1 has the greatest lean to fat ratio.





# USDA Yield Grades



USDA  
1



USDA  
2



USDA  
3



USDA  
4



USDA  
5



# QUALITY AND YIELD GRADE EXAMPLE



# CONSUMER CONCERNS ABOUT THE BEEF INDUSTRY

- Food safety — Consumers are becoming increasingly concerned with bacterial and chemical contaminants and residues from growth hormones and antibiotics left in meat.
- Environmental concerns — The American public is concerned with environmental issues, such as the pollution of groundwater and the overgrazing of public lands in the west.
- Ethics — Cases of unethical showing practices, especially centering around ownership and the illegal use of performance-enhancing steroids, have attracted attention.
- Animal rights — Some groups feel that animals have the same rights as humans.



# DIFFERENCE BETWEEN ANIMAL RIGHTS AND ANIMAL WELFARE

- Animal rights

- Animal rights activists feel that animals have rights and should not be used for food or research.
- Castration, dehorning, and vaccinations are all viewed as inhumane because they alter the animal from its original state and because many of them are done without anesthetics.



- Animal welfare

- Animal welfare is a concern for the well-being of animals used by humans.
- Producers are responsible for providing the food and shelter necessary for the animal.
- Most producers are in fact concerned with animal welfare.

# HOW THE BEEF INDUSTRY IS ADDRESSING CONSUMER CONCERNS

- Food safety
  - Local, state, and national cattlemen's associations have developed programs that focus on correcting practices that might trouble consumers.
    - The Texas Beef Council sponsors the Beef Quality Assurance Program with the goal of making producers aware of the issues that affect the safety and wholesomeness of beef.
    - The Beef Quality Assurance Program aims at educating producers about proper management practices, proper record keeping for drug usage, details about various growth hormones and vaccines used in beef cattle production, and correct usage, dosage, and withdrawal times for hormones and vaccines.



USDA inspection program to reduce bacterial contamination focuses on bacterial counts rather than visual inspection.

# HOW THE BEEF INDUSTRY IS ADDRESSING CONSUMER CONCERNS

- Environment
  - The National Cattlemen's Beef Association presents several Environmental Stewardship Awards annually to producers who use innovative methods to protect natural resources.
  - The Association's publications for consumers emphasize that beef production is environmentally friendly.





# HOW THE BEEF INDUSTRY IS ADDRESSING CONSUMER CONCERNS

- Ethics
  - A major focus of many 4-H and FFA leaders has been to educate young people and their parents on the damaging impact of unethical showing practices.



# HOW THE BEEF INDUSTRY IS ADDRESSING CONSUMER CONCERNS

- Animal welfare
  - The Beef Quality Assurance Program gives guidelines on how to handle and care for animals.
  - Producers have relied on industry associations to get the word out to consumers that beef producers care for the welfare of their animals.



**BEEF**

**IT'S WHAT'S FOR DINNER**





HOUSTON LIVESTOCK SHOW AND

RODEO™