

Beef Cattle Kit Curriculum



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Table of Contents

Author	4
Curriculum Structure.....	5
Lesson Structure.....	5
Lesson One – Breeds.....	6
FOCUS: Intro to Different Breeds	7
LEARN: 10 Breed Visual Characteristics and Physical Traits	10
REVIEW: Breed Identification and Traits	20
Lesson Two – Feeding and Management.....	23
FOCUS: What is in Your Beef Patty?.....	24
LEARN: Caring for Beef Cattle.....	27
REVIEW: Feed and Management Recap.....	35
Lesson Three – Diseases and Parasites	38
FOCUS: Oh, I Do Not Feel Well	39
LEARN: Common Diseases and Parasites.....	42
REVIEW: Common Diseases and Parasites Recap	48
Lesson Four – Reproduction	51
FOCUS: Gestation Length	52
LEARN: Reproductive System of Both Sexes.....	54
REVIEW: Reproduction Systems Recap	65
Lesson Five – Body Systems	74
FOCUS: Intro to Beef Cattle Body Systems.....	75
LEARN: How do these systems work?.....	78
REVIEW: Recap of Beef Body Systems	85
Lesson Six – Selection and Judging.....	88
FOCUS: Intro to Selection and Judging of Beef.....	89
LEARN: Selection and Judging of Beef	92
REVIEW: Recap of Selection and Judging of Beef Cattle	100
Lesson Seven – Intro to Careers in Beef Production	103
FOCUS: Intro to Careers in Beef Production.....	104
LEARN: Careers in Beef Production	107
REVIEW: Recap of Beef Production Careers.....	116
Sources	119

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Curriculum Structure

The *Beef Cattle Kit* curriculum is composed of the following lessons. Approximate lesson times are included.

Lesson	Title	Approximate Time
One	Breeds	45-60 minutes
Two	Feeding and Management	45-60 minutes
Three	Diseases and Parasites	45-60 minutes
Four	Reproduction	45-60 minutes
Five	Body Systems	45-60 minutes
Six	Selection and Judging	45-60 minutes
Seven	Marketing/Careers/Training	45-60 minutes
	Total	7 hours

Lesson Structure

Each lesson begins with a Lesson Overview, Lesson Objectives, and a Lesson at a Glance table that lists lesson activities, materials required, suggested preparation steps, and approximate class time.

Lesson Sections

The actual lesson follows the overview, which contains some of the sections described below.

FOCUS

Every lesson begins with a FOCUS activity intended to capture participants' attention. This may be in the form of a small or large class discussion, a game, a demonstration, or a review of previous lesson information. During this activity, participants are introduced to the topic of the lesson.

LEARN

The LEARN activity in each lesson varies in its presentation mode. It may be a slide presentation, group activity, or demonstration.

REVIEW

The majority of lessons end with a REVIEW activity intended to briefly review the lesson's key messages or main points.

Lesson One – Breeds

Lesson Overview

This lesson will present 10 common beef cattle breeds that are found in North America with physical description and beef marketing traits.

Lesson Objectives

After completing this lesson, participants will be able to:

- List the 10 common beef cattle breeds found in North America
- Visually identify these breeds
- Explain why each breed is important
- Explain why there are different breeds

Lesson at a Glance

Activity	Materials	Preparation	Approximate class time
FOCUS	• Ad for Angus Beef from grocery store or fast food restaurant • A piece of steak that has marbling (optional) • <i>10 Popular Beef Breeds</i> slide presentation • <i>Identifying Marbling on Steak</i> worksheet • <i>Identifying Marbling on Steak</i> – Answer Key	1. Print/photocopy <i>Identifying Marbling on Steak</i> (one per participant) 2. Prepare <i>10 Popular Beef Breeds</i> slide presentation for viewing	10 minutes
LEARN	• <i>10 Most Popular Beef Breeds</i> slide presentation • <i>Beef Breeds Student Notes</i> worksheet • <i>Beef Breeds Student Notes</i> – Answer Key	1. Print/photocopy <i>Beef Breeds Student Notes</i> (one per participant) 2. Prepare <i>10 Popular Beef Breeds</i> slide presentation for viewing	35 minutes
REVIEW	• Breed Identification Cards • <i>10 Popular Beef Breeds</i> slide presentation • <i>Breeds Quiz</i> • <i>Breeds Quiz</i> – Answer Key	1. Print/photocopy <i>Breeds Quiz</i> (one per participant) 2. Prepare <i>10 Popular Beef Breeds</i> slide presentation for viewing	15 minutes

Lesson One – Breeds

FOCUS: Intro to Different Breeds

10 minutes

Purpose:

Participants will recognize why Angus beef is so expensive and why a restaurant would use it to market a product.

Materials:

- *10 Popular Beef Breeds* slide presentation
- *Identifying Marbling on Steak* worksheet
- *Identifying Marbling on Steak* – Answer Key

Facilitation Steps:

1. Distribute the *Identifying Marbling on Steak* worksheet.
2. Present slides 1-6 of the *10 Popular Beef Breeds* slide presentation.

Slide 1: Introduction Slide

Ask participants why they think Angus beef is so expensive or why restaurants use it as marketing.

Slide 2: What is Marbling?

Introduce the concept of flavor and the marbling of the meat.

Note that the left-side picture is a piece of meat that lacks a lot of marbling. The picture on the right is one that is marbled. Also mention that marbling means flavor.

Show participants a steak with marbling or fat running through the flesh of the steak and/or identify marbling on the picture of steak on the *Identifying Marbling on Steak* worksheet.

Explain that the flavor of meat comes from marbling and this is why Angus beef is so expensive.

Slide 3-4: Meat Grades and Marbling

Discuss the grades of meat and how they are tied into marbling.

Slide 5: Why are Breeds of Beef Cattle Mentioned in Ads?

Explain the higher cost of black angus beef and that marbling is just one characteristic that is valued when it comes to beef cattle.

Slide 6: Why Are There Different Breeds of Beef Cattle?

Ask participants which answer is correct.

- To serve different qualities of beef
- To make sure that beef cattle can live in different environments
- Increase the variety of animals
- All of the above
- None of the above

Answer: All of the above

3. Instruct participants to complete the *Identifying Marbling on Steak* worksheet.
4. Participants will trade papers and grade as a group.

Name: _____ Class: _____

Identifying Marbling on Steak

Directions: Looking at the picture of the steak, describe what marbling means when it comes to steak.



Identifying Marbling – Answer Key

Directions: Looking at the picture of the steak, describe what marbling means when it comes to steak.



Answer: **White lines running through the red flesh of the meat**

Lesson One – Breeds

LEARN: 10 Breed Visual Characteristics and Physical Traits

35 minutes

Purpose:

Participants will learn the 10 common beef breeds found in North America along with characteristics of each.

Materials:

- *10 Popular Beef Cattle Breeds* slide presentation
- *Beef Breeds Student Notes*
- *Beef Breeds Student Notes – Answer Key*

Facilitation Steps:

1. Distribute the *Beef Breeds Student Notes*.
2. Present slides 7-38 of the *10 Popular Beef Cattle Breeds* slide presentation. Discuss some outstanding visual characteristics for each breed. Example: Black Angus is black. Discuss the physical traits that make each breed important. Example: Black Angus and the marbling of the meat.

Slide 7: Black Angus

Note the black color.

Slide 8 – 9: Black Angus Characteristics

Note how black angus body gets the most out of the feed for growth. Mention that calves are most often born without human help. Mention that there are four genetic disorders that are recessive, and calves with disorders will need to be put down before they mature.

Slide 10: Charolais

Note the white or creamy white color.

Slide 11 – 12: Charolais Characteristics

Note that heavier weight means more meat and that this breed does well in both cold and warm climates.

Slide 13: Hereford

Note that they always have a white face, but the fur can be dark red to yellow.

Slide 14 – 15: Hereford Characteristics

Note that “matures quickly” means you can take them to market sooner. Mention that calves are most often born without human help. Mention that this breed produces a higher calf crop and has economically lower labor and overwintering costs.

Slide 16: Simmental

Note the red and white coat.

Slide 17 – 18: Simmental Characteristics

Note that this breed has long-term fertility and mention that calves are most often born without human help.

Slide 19: Red Angus

Note the solid red coat color.

Slide 20 – 21: Red Angus Characteristics

Review the concept of marbling.

Slide 22: Texas Longhorn

Note the large horns. Coats can be different colors.

Slide 23 – 24: Texas Longhorn Characteristics

Mention that calves are most often born without human help. Note that meat will have less marbeling, which is a leaner and healthier cut of meat.

Slide 25: Gelbvieh

Note the red coat.

Slide 26 – 28: Gelbvieh Characteristics

Note that this breed reaches puberty the quickest which means more calves. Mention

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that calves are most often born without human help. Note that this breed produces lean meat with little marbeling and that when mature produces the largest cut sizes of any beef breed.

Slide 29: Holstein

Note the black and white coat.

Slide 30 – 31: Holstein Characteristics

Note that this breed is a source of veal which are young bulls that are slaughtered when they reach 20 – 60 pounds.

Slide 32: Limousin

Note the golden-red coat.

Slide 33 – 35: Limousin Characteristics

Note that sometimes the older the animal the tougher the meat or lower quality. Mention that meat has little waste and produces lean meat.

Slide 36: Highland

Note the horns and tan coat that has long hair.

Slide 37 – 38: Highland Characteristics

Note that this breed produces lean meat with some marbeling with highest level of iron content.

Name: _____ Class: _____

Beef Breeds Student Notes

Directions: Take notes for each breed presented in the slide show.

1. Black Angus

- Traits:
- Size:
- Horns/Features:
- Other Characteristics:
- Health and Temperament:
- Other Stats:

2. Charolais

- Traits:
- Size:
- Horns/Features:
- Other Characteristics:
- Region/Living Conditions:
- Health and Temperament:
- Other Stats:

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3. Hereford

- Traits:
- Size:
- Horns/Features:
- Other Characteristics:
- Health and Temperament:
- Other Stats:

4. Simmental

- Traits:
- Size:
- Horns/Features:
- Other Characteristics:
- Region/Living Conditions:
- Health and Temperament:
- Other Stats:

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5. Red Angus

- Traits:
- Size:
- Horns/Features:
- Other Characteristics:
- Region/Living Conditions:
- Health and Temperament:
- Other Stats:

6. Texas Longhorn

- Traits:
- Size:
- Horns/Features:
- Other Characteristics:
- Region/Living Conditions:
- Health and Temperament:
- Other Stats:

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7. Gelbvieh

- Traits:
- Size:
- Horns/Features:
- Other Characteristics:
- Region/Living Conditions:
- Health and Temperament:
- Other Stats:

8. Holstein

- Traits:
- Size:
- Horns/Features:
- Other Characteristics:
- Region/Living Conditions:
- Health and Temperament:
- Other Stats:

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9. Limousin

- Traits:
- Size:
- Horns/Features:
- Other Characteristics:
- Region/Living Conditions:
- Health and Temperament:
- Other Stats:

10. Highland

- Traits:
- Size:
- Horns/Features:
- Other Characteristics:
- Region/Living Conditions:
- Health and Temperament:
- Other Stats:

Beef Breeds Student Notes – Answer Key

Directions: Take notes for each breed presented in slide show.

1. Black Angus

- Traits: Black no other markings
- Size: Cows 1200 pounds, Bulls 1870 pounds
- Horns/Features: No horns
- Other Characteristics: Good mothers, deliver without human help, maximum use of feed
- Health and Temperament: Good natured, dark skin color protects the eyes from cancer along with protecting the udders from sun and snow burn, carries four recessive genetic traits that cause calves to be put down
- Other Stats: Very marbled meat, good flavor

2. Charolais

- Traits: White in color with a pink muzzle and light colored hooves
- Size: Cows 1250 to 1600 pounds, bulls 2000 to 2500 pounds
- Horns/Features: Horned
- Other Characteristics: Large frame
- Region/Living Conditions: Does well in cold and warm climates, Found in the United States
- Health and Temperament: Does well in cross-breeding,
- Other Stats: Is adaptable to any feeding program

3. Hereford

- Traits: Color is dark red to red yellow with a white face, top of head, stomach, and chest
- Size: Cows 1200 pounds, bulls 1800 pounds
- Horns/Features: Has horns that curl down toward the head but there is a variety that is naturally polled
- Other Characteristics: Good mothers, calves born without help, live a long time, easy going, males continue to reproduce up to the age of 12 while females continue to reproduce up to the age of 15
- Health and Temperament: Easy going, matures quickly,
- Other Stats: Produces a higher calf crop, lower labor and overwintering cost, higher price received for breeding stock

4. Simmental

- Traits: Color can vary but the Fleckvieh variety can be gold to red and white splotches placed on a white background. The head is white with a white band of color that goes across the shoulder area. There is also a pigment that goes around the eyes for sun protection. The American Simmental are solid black or red.
- Size: Cows 1543 to 1984 pounds, bulls 2866 pounds
- Horns/Features: Can be horned or polled. When horned, the horns curve upward.
- Other Characteristics: Large body shape, gains weight easily, long term fertility, gives birth with no human aid, short periods between calving

- Region/Living Conditions: Found in the United States and four other continents
- Health and Temperament: Easy to handle
- Other Stats: None

5. Red Angus

- Traits: Coat is red in color along with a red pigment in the skin. When cross breed, the calves will keep the red coat.
- Size: Cows 1200 pounds, bulls 1800 pounds
- Horns/Features: Naturally polled or hornless
- Other Characteristics: Can tolerate heat better than black angus, females mature early, long life, greater semen production due to a larger scrotal size, is known for its heterosis or hybrid vigor, which simply put means that the offspring produce better characteristics compared to the parents. This includes size, growth rate and fertility
- Region/Living Conditions: Distributed globally for meat production but the United States is the top in beef breed semen exports
- Health and Temperament: Easy to work with, good mothers
- Other Stats: Good marbling of meat

6. Texas Longhorn

- Traits: Appearance is so varied that no Texas Longhorn looks like any other, known for their horns
- Size: Cows 600 to 1400 pounds, bulls 1400 to 2200 pounds
- Horns/Features: Known for their horns
- Other Characteristics: Utilizes browse which means less supplementing of feed
- Region/Living Conditions: Found in the United States
- Health and Temperament: Resistant to many cattle diseases and parasites, are heterosis, easy to work with and can even be trained, matures quickly when it comes to reproduction, matures slower when it comes to meat production, lives a long time, deliver calves without aid
- Other Stats: Provides value-added products in the sale of their hide, horns, and skull, Less marbling, which means a leaner and healthier cut of meat

7. Gelbvieh

- Traits: Reddish gold to russet and sometimes black fur that is fine in nature with pigmented skin
- Size: Cows 1763 pounds, bulls 2645 pounds
- Horns/Features: Naturally polled due to breeding
- Other Characteristics: Good mothers, calves born without aid, very fertile, calves gain weight quickly, puberty reached the soonest for any beef breed (means more calves and sooner), Males with large testicles tend to produce daughters with a higher than average fertility rate, Bulls in this breed produce sperm with the highest viable sperm count of any beef breed
- Region/Living Conditions: Found in the United States
- Health and Temperament: Are tick resistant and heat tolerant, good mothers, quiet and good nature so there is less bruising of meat
- Other Stats: Produces lean meat with little marbling, when mature this breed produces the largest meat cuts of any beef breed, a good source of high quality, tender young beef

8. Holstein

- Traits: The fur is either black and white or red and white, the white areas of the skin are not pigmented, which is referred to as piebald
- Size: Mature weight is 1500 pounds
- Horns/Features: Horned
- Other Characteristics: Used for both beef and milk production
- Region/Living Conditions: Found in the United States
- Health and Temperament: Life span is four years
- Other Stats: First cattle breed to be cloned, slaughter for ground beef and roast beef, used for veal production, meat produced is of constant quality, Pauline Wayne was the only presidential cow that grazed on the White House lawn for President William Howard Taft

9. Limousin

- Traits: Skin is not pigmented. Fur is golden red and lighter under the stomach between the legs, around the anus, the end of the tail, around the eyes and muzzle. Head is small with a broad forehead. The neck is short and the muzzle is wide
- Size: Cows 1433 pounds, bulls 2244 pounds
- Horns/Features: Have horns that are yellow at the base and darken toward the ends. Horns start growing out horizontally and then curve forwards and upwards
- Other Characteristics: Matures early for slaughter, older animal slaughtered still produce a good meat product
- Region/Living Conditions: Found in the United States, Can utilize marginal land as pasture, uses all feed effectively
- Health and Temperament: Gives birth without aid, very fertile females and males
- Other Stats: Known as "The Carcass Breed" or "Butcher's Breed", produces lean meat, meat has little waste

10. Highlands

- Traits: Come in a range of colors from black, brown, red, and yellow but are known for their large head with a fringe of hair that appears to cover their eyes, Have a two layer coat. The first layer or undercoat is fluffy for warmth. The second layer or outercoat is long and can reach up to 13 inches.
- Size: Cows 1100 pounds, bulls 1800 pounds
- Horns/Features: Have horns with black tips
- Other Characteristics: The outercoat is oily so that it sheds rain and snow
- Region/Living Conditions: Found in the United States, regardless of conditions does not need shelter, can survive diverse conditions, can utilize poor pasture, do not require feed supplements or grain
- Health and Temperament: Good mothers, can continue to breed past the age of 18, pink eye and cancer of the eye uncommon
- Other Stats: Lean meat with some marbling, meat has the highest iron content

Lesson One – Breeds

REVIEW: Breed Identification and Traits

15 minutes

Purpose:

Participants work in pairs to test their knowledge of the 10 beef breeds covered.

Materials:

- Breed Identification Cards
- *10 Popular Beef Breeds* slide presentation
- *Breeds Quiz*
- *Breeds Quiz* – Answer Key

Facilitation Steps:

1. Break participants into pairs.
2. Demonstrate how to use the *Beef Identification Cards* by showing that one side shows the picture of the breed and the back contains the name and breed details.
3. Participants will return the cards after reviewing.
4. Distribute the *Breeds Quiz* and give participants 10 minutes to complete.
5. Use slides 39-48 of the *10 Popular Beef Breeds* slide presentation to show each breed for the quiz. Please note that the goal is for the participants to know the traits.

Name: _____ Class: _____

Breeds Quiz

Directions: For each slide of beef cattle, provide the name and 2 traits that make the animal useful for beef production

1. Name:

Traits:

6. Name:

Traits:

2. Name:

Traits:

7. Name:

Traits:

3. Name:

Traits:

8. Name:

Traits:

4. Name:

Traits:

9. Name:

Traits:

5. Name:

Traits:

10. Name:

Traits:

Breeds Quiz – Answer Key

1. Name: **Black Angus**
Traits: well marbled meat, meat tastes excellent, good mothers and deliver calves without much help, use their feed to the maximum
2. Name: **Charolais**
Traits: does well in both cold and warm weather, large frame, heavier in weight compared to British beef breeds
3. Name: **Hereford**
Traits: mature quickly, live long, good mothers, do not need much help giving birth
4. Name: **Simmental**
Traits: large body shape, can gain weight easily, give birth without problems
5. Name: **Red Angus**
Traits: great marbling of meat, easy going, good mothers, can tolerate heat better than black angus
6. Name: **Texas Longhorn**
Traits: produces lean meat, matures quickly, eats a wide range of grasses, resistant to common cattle diseases and parasites
7. Name: **Gelbvieh**
Traits: very fertile, calves born easily, great mothers, calves gain weight quickly
8. Name: **Holstein**
Traits: raised for both dairy and beef production, meat produced is always of good quality
9. Name: **Limousin**
Traits: meat has little waste, all types of feeds are used effectively for meat production, very fertile, gives birth with little help, mature early for slaughter, old beef cattle still produce quality meat
10. Name: **Highland**
Traits: lean meat, marbled, can take diverse climates, does not require shelter, feed supplements, grain, pink eye and eye cancer uncommon

Lesson Two – Feeding and Management

Lesson Overview

Participants will be introduced to the diet of beef cattle and the required management of this species.

Lesson Objectives

After completing this lesson, participants will be able to:

- List food sources for this animal
- Describe the difference between grass fed and grain fed
- List the additional items required for beef production

Lesson at a Glance

Activity	Materials	Preparation	Approximate class time
FOCUS	• <i>What do Beef Cattle Eat?</i> worksheet • <i>What do Beef Cattle Eat?</i> – Answer Key	1. Print/photocopy <i>What do Beef Cattle Eat?</i> worksheet (one per participant)	10 minutes
LEARN	• Grass vs. Grain Fed Beef Cattle Poster • <i>Feeding and Management</i> slide presentation • <i>Basic Needs of Cattle</i> worksheet • <i>Basic Needs of Cattle</i> – Answer Key	1. Print/photocopy <i>Basic Needs of Cattle</i> worksheet (one per participant) 2. Prepare <i>Feeding and Management</i> slide presentation for viewing	40 minutes
REVIEW	• Grass vs. Grain Fed Beef Cattle Poster • <i>Feed and Management Quiz</i> • <i>Feed and Management Quiz</i> – Answer Key	1. Print/photocopy <i>Feed and Management Quiz</i> (one per participant)	10 minutes

Lesson Two – Feeding and Management

FOCUS: What is in Your Beef Patty?

10 minutes

Purpose:

Participants will be introduced to what beef cattle eat.

Materials:

- *What do Beef Cattle Eat?* worksheet
- *What do Beef Cattle Eat?* – Answer Key

Facilitation Steps:

1. Ask participants what they think beef cattle eat.
2. Pass out the *What do Beef Cattle Eat?* worksheet
3. Have participants match the food with the description on the worksheet.
4. Once completed, have participants trade papers and grade as you go over the answers.

Name: _____ Class: _____

What Do Beef Cattle Eat?

Directions: Place the number of the food item on the left and match it to the description on the right.

FOODS BEEF CATTLE EAT

1. Hay
2. Silage
3. Grain
4. Grass
5. Forage
6. Local ingredients

DESCRIPTION

- _____ A simple yard or pasture
- _____ Dried grass in bales
- _____ Corn, oats, barley
- _____ Sugar beets and/or potato skins
- _____ Grass, shrubs, leaves, and herbs
- _____ Fresh plants wrapped in plastic

What Do Beef Cattle Eat? – Answer Key

Directions: Place the number of the food item on the left and match it to the description on the right.

FOODS BEEF CATTLE EAT

1. Hay
2. Silage
3. Grain
4. Grass
5. Forage
6. Local ingredients

DESCRIPTION

- | | |
|----------|----------------------------------|
| 4 | A simple yard or pasture |
| 1 | Dried grass in bales |
| 3 | Corn, oats, barley |
| 6 | Sugar beets and/or potato skins |
| 5 | Grass, shrubs, leaves, and herbs |
| 2 | Fresh plants wrapped in plastic |

Lesson Two – Feeding and Management

LEARN: Caring for Beef Cattle

40 minutes

Purpose:

Participants will learn different rations and best management requirements for beef cattle.

Materials:

- *Feeding and Management* slide presentation
- *Basic Needs for Beef Cattle* worksheet
- *Basic Needs for Beef Cattle* – Answer Key

Facilitation Steps:

1. Distribute the *Basic Needs for Beef Cattle* worksheet and give directions on how to complete it.
2. Present the *Feeding and Management* slide presentation while students take notes.

Slide 4: What is Hay?

- Broken down into several categories. Includes grass, legumes, and cereal grain straw
- Given during times when fresh grass or pasture is not available, such as the winter

Slide 5: Types of Hay

- Type depends on location and part of the country
- Some grasses include bluegrass, timothy, country fescue, or orchard grass
- Hay can also be wild hay or tame hay
 - Wild hay – grass without human intervention
 - Tame hay – grass planted for hay production
- Hay is cut while it is young or after it is matured.

Slide 7: Plants that are Legumes

- Legumes are plants that capture nitrogen and return it to the soil when they die

- Includes:

- Alfalfa
- Soybeans
- Cowpeas
- Different types of clover
- Vetch

Slide 8: Harvesting Legumes for Hay

- Can be cut right when blooms appear before opening or after opening depending on the protein level desired

Slide 10: What is Mixed Hay

- Type of hay that has both grass and legume

Slide 11: Cereal Grain Hay

- This type of hay is normally oat and harvested while the plant is still growing.
- This is a great type of hay when legumes are grown with the oats
- Creates a hay that has the best of both worlds (cereal and legumes)

Slide 12 – 13: Nutritional Value of Hay

- Leaves of grass are more nutritious when young and still growing; more fiber when plant is mature
- Leaves of legumes remain the same nutritiously throughout the plants' growth cycle. What differs is the amount of stem on the plant when harvested
- The younger the legume when cut, the more nutrition it contains
- 2/3 the energy and 3/4 of the protein is found in young leaves
- Stems of older legumes provide more fiber compared to grass stems

Slide 14: When is Hay Used in Beef Production

- When fresh grass is not available
- If hay is harvested when planted young, it is fed to young calves whose mouths cannot handle dried material
- Beef cattle eat grass, hay, or straw in the winter due to roughage; breakdown of grass creates straw
- Creates energy and heat. This helps keep the animal warm

Slide 15: What is Straw

- Straw consists of the stems left on the plant after the grain has been harvested
- Includes:
 - Barley
 - Rice
 - Wheat
 - Oats
 - Rye
- Fed to beef cattle as roughage in the winter
- Straw is not high in protein, a protein source such as a legume is added to the straw

Slide 16: What is Grass

- Grass is any plant that is in the family of Poaceae

Slide 17: What is Forage?

- Includes anything other than separated grain
- Includes;
 - Browse
 - Mast
 - Herbage
- Can be eaten green in the field or harvested while green and cured
- Examples include:
 - Corn
 - Sorghum
- Can be planted or come from grazing in the natural environment

Slide 19: What is Silage?

- Silage is grass that has been harvested green and fermented in a silo

- It is more nutritious compared to hay that is dried
- Due to it being nutritiously dense, a smaller amount is required compared to hay
- Fed to cattle during times that rain is lacking
- Hay is dried in the field and then baled up. Silage is cut green and either processed in silo or “baled” in plastic to aid in the fermentation process

Slide 21: Types of Grain

- Corn, barley, wheat, oat
- Cheaper to feed grain when finishing off cattle before slaughtering
- Feeding grain produces more marbling compared to grass-fed finishing

Slide 22: Local Ingredients

- Many commercial industries have foodstuffs that can be given to beef cattle to eat
- Includes potato skins and sugar beet waste that would end up in a landfill or compost bin

Slide 24: Grass-Fed Beef Cattle

- Term grass-fed refers to what cattle are fed four to six months prior to slaughter, called finishing off, a time where weight is put on through muscle and fat
- Grass-fed finishing is more expensive due to cost of grass
- Meat will contain less marbling (fat)
- Produces a healthier cut of meat

Slide 25: Grain-Fed Beef Cattle

- These animals are fed grains to fatten them up before slaughter
- Grain-fed beef cattle are cheaper to produce
- Meat will contain more marbling

- Due to fat content, meat from grain-fed beef cattle is viewed as less healthy

Slide 26 – 27: Other Needs of Beef Cattle

- Haltering not required unless showing
- Cattle moved via men on horseback
- Beef cattle do not require shelter; feedlot shelter is nice to keep food dry
- Ear tagging is a way of identifying each animal using a plastic tag with a number on it. The number is recorded and used to keep track of health
- Dehorning is a process which the horns of cattle are removed, especially important when dealing with herds
- Castration is the process where the testicles are removed surgically from male beef cattle; animal is

called a steer; makes the animal easy-going and aids in weight gain

- Beef cattle are not required to get FDA-approved antibiotics to prevent, treat, and control disease

Name: _____ Class: _____

Basic Needs for Beef Cattle

Directions: Answer the questions below.

1. Define hay.
2. When is hay used as feed?
3. List the grasses that are used for hay
4. What is the difference between wild hay and tame hay?
5. When is hay cut?
6. What are legumes?
7. List plants that are considered to be legumes.
8. What are the two times when legumes are cut for cattle?
9. Define mixed hay.
10. What is hay made from cereal grain? How can it be made more nutritious?

Beef Cattle Kit

11. Leaves of grass are _____ nutritious when young.
12. Leaves of legumes remain nutritionally the _____ regardless of the age.
13. When is hay given to beef cattle?
14. Define the term straw.
15. When is straw given to beef cattle?
16. How is straw made more nutritious?
17. Define grass.
18. What is forage?
19. What is silage?
20. When is silage feed to cattle?
21. Silage is cut green and goes through a _____ process in a silo or in a _____ sealed bale.
22. List examples of grain.
23. Grain is _____ to feed beef cattle when finishing off before slaughter.
24. Feeding grain _____ marbling of meat.
25. _____ ingredients are those feed to beef cattle that are organic scraps from other food industries, such as _____ skins and sugar beets.

Beef Cattle Kit

26. Grass-fed animals eat _____ as part of the finishing off process.
27. The meat of grass-fed animals contains _____ marbling, which makes it _____.
28. _____-fed cattle are _____ to produce.
29. Grain-fed beef produce meat that has _____ marbling.
30. Meat from grain-fed animals is viewed _____ healthy.
31. True or False Beef cattle require a halter.
32. True or False Shelter for beef cattle is required.
33. _____ tagging is a form of identification for each animal.
34. _____ is done to protect the animal and man from being injured.
35. _____ removes the testicles and makes the male easier going and helps the male gain weight _____.
36. True or False All cattle are required to get FDA-approved antibiotics.

Basic Needs for Beef Cattle – Answer Key

Directions: Answer the questions below.

1. Define hay. **Hay is broken down into several categories. This includes grass, legumes, mixed hay (grass and legumes), and cereal grain straw.**
2. When is hay used as feed? **Hay is given during times when fresh grass or pasture is not available, such as the winter.**
3. List the grasses that are used for hay. **Some grasses include bluegrass, timothy, country fescue or orchard grass.**
4. What is the difference between wild hay and tame hay? **Wild hay consists of any grass that comes up without human intervention. Tame hay is grass that was planted for hay production.**
5. When is hay cut? **Hay is cut either while it is young and still growing or after it has matured.**
6. What are legumes? **Legumes are plants that capture nitrogen and return it to the soil when they die.**
7. List plants that are considered to be legumes. **Alfalfa, soybeans, cowpeas, different types of clover, and vetch**
8. What are the two times when legumes are cut for cattle? **Can be cut right when the blooms appear before opening or after opening depending on the protein level desired.**
9. Define mixed hay. **This type of hay has both grass and legume**
10. What is hay made from cereal grain? How can it be made more nutritious? **This type of hay is normally oat and harvested while the plant is still growing. This is a great type of hay when legumes are grown in with the oats. Creates a hay that has the best of both worlds (cereal and legumes).**
11. Leaves of grass are **more** nutritious when young.
12. Leaves of legumes remain nutritiously the **same** regardless of the age.
13. When is hay given to beef cattle? **When fresh grass is not available. If hay is harvested when the plant is young, it is feed to young calves whose mouths cannot handle dried material. Beef cattle eat grass hay or straw in the winter due to the roughage. The breakdown of the grass hay or straw Creates energy and heat. This helps keep the animal warm.**
14. Define the term straw. **Straw consists of the stems left on the plant after the grain has been harvested**
15. When is straw given to beef cattle? **Fed to beef cattle as roughage in the winter.**
16. How is straw made more nutritious? **Since straw is not high in protein, a protein sources such as a legume is added to the straw as feed.**
17. Define grass. **Grass is any plant that is in the family Poaceae.**
18. What is forage? **Forage includes anything other than separated grain. This includes browse, mast, and herbage.**
19. What is silage? **Silage is grass that has been harvested green, and fermented in a silo.**

Beef Cattle Kit

20. When is silage feed to cattle? **It is fed to cattle during times that rain is lacking.**
21. Silage is cut green and goes through a **fermentation** process in a silo or in a **plastic** sealed bale.
22. List examples of grain. **Corn, barley, wheat, oat**
23. Grain is **cheaper** to feed beef cattle when finishing off before slaughter.
24. Feeding grain **produces more** marbling of meat.
25. **Local** ingredients are those feed to beef cattle that are organic scraps from other food industries, such as **potato** skins and sugar beets.
26. Grass-fed animals eat **grass** as part of the finishing off process.
27. The meat of grass-fed animals contains **less** marbling, which makes it **healthier**.
28. **Grain**-fed cattle are **cheaper** to produce.
29. Grain-fed beef produce meat that has **more** marbling.
30. Meat from grain-fed animals is viewed **less** healthy.
31. True or **False** Beef cattle require a halter.
32. True or **False** Shelter for beef cattle is required.
33. **Ear** tagging is a form of identification for each animal.
34. **Dehorning** is done to protect the animal and man from being injured.
35. **Castration** removes the testicles and makes the male easier going and helps the male gain weight **quicker**.
36. True or **False** All cattle are required to get FDA-approved antibiotics.

Lesson Two – Feeding and Management

REVIEW: Feed and Management Recap

10 minutes

Purpose:

Participants will be tested on their knowledge of feed and management of beef cattle.

Materials:

- Beef Cattle Feed and Management Poster
- *Feed and Management Quiz*
- *Feed and Management Quiz – Answer Key*

Facilitation Steps:

1. Discuss the information on the Beef Cattle Feed and Management Poster.
2. Distribute the *Feed and Management Quiz* and give participants 5 minutes to complete.
3. Have participants trade quizzes to grade while you read the answers from the answer key.
4. Collect the quizzes.

Name: _____ Class: _____

Feed and Management Quiz

Directions: Circle the correct answer.

1. True or False Hay is green plant material that is cut fresh, baled and wrapped in plastic without drying.
2. True or False Beef cattle can eat corn.
3. True or False Grass in your yard can be eaten by beef cattle.
4. True or False Silage is cut grass that is dried and baled.
5. True or False Cattle can eat small shrubs, leaves and herbs.
6. True or False All cattle eat grain.
7. True or False Bulls or male cattle are the only ones that get dehorned.
8. True or False Tagging beef cattle is a way of record keeping for the farmer.
9. True or False Beef cattle only shelter in barns.
10. True or False Both male and female cattle are castrated.

Feed & Management Quiz – Answer Key

Directions: Circle the correct answer

1. True or **False** Hay is green plant material that is cut fresh, baled and wrapped in plastic without drying.
2. **True** or False Beef cattle can eat corn.
3. **True** or False Grass in your yard can be eaten by beef cattle.
4. True or **False** Silage is cut grass that is dried and baled.
5. **True** or False Cattle can eat small shrubs, leaves and herbs.
6. True or **False** All cattle eat grain.
7. True or **False** Bulls or male cattle are the only ones that get dehorned.
8. **True** or False Tagging beef cattle is a way of record keeping for the farmer.
9. True or **False** Beef cattle only shelter in barns.
10. True or **False** Both male and female cattle are castrated.

Lesson Three – Diseases and Parasites

Lesson Overview

Participants will be introduced to common beef cattle diseases and parasites.

Lesson Objectives

After completing this lesson, participants will be able to:

- List the common diseases beef cattle get along with symptoms, causes, and prevention
- List the common parasites that beef cattle can get along with symptoms, causes, and prevention
- Describe common preventative measures that can be taken to keep the beef cattle healthy

Lesson at a Glance

Activity	Materials	Preparation	Approximate class time
FOCUS	• <i>How Do You Feel When You Are Sick?</i> worksheet • <i>How Do You Feel When You Are Sick?</i> – Answer Key	1. Print/photocopy <i>How Do You Feel When You Are Sick?</i> worksheet (one per participant)	10 minutes
LEARN	• <i>Beef Cattle Diseases</i> slide presentation • <i>Cattle Diseases and Parasites</i> worksheet • <i>Cattle Diseases and Parasites</i> – Answer Key	1. Print/photocopy <i>Cattle Diseases and Parasites</i> (one per participant) 2. Prepare <i>Beef Cattle Diseases</i> slide presentation	35 minutes
REVIEW	• Common Cattle Diseases and Parasites Trivia cards • <i>Common Diseases and Parasites Quiz</i> • <i>Common Diseases and Parasites Quiz</i> – Answer Key	1. Print/photocopy <i>Common Diseases and Parasites Quiz</i> (one per participant)	15 minutes

Lesson Three – Diseases and Parasites

FOCUS: Oh, I Do Not Feel Well

10 minutes

Purpose:

Participants will be introduced to beef cattle diseases and parasites by becoming aware that there are signs of sickness.

Materials:

- *How Do You Feel When You Are Sick?* worksheet
- *How Do You Feel When You Are Sick?* – Answer Key

Facilitation Steps:

1. Ask participants what are some symptoms that you may have when you do not feel well. Write these on the board.
2. After a few items are on the list, discuss that when cattle do not feel well they can show some of the same symptoms.
3. Distribute the *How Do You Feel When You Are Sick?* worksheet and clarify directions as needed.
4. Have participants exchange papers to grade.

Name: _____ Class: _____

How Do You Feel When You Are Sick?

Directions: Unscramble the following words.

1. _____ Ariardhe
2. _____ Tesgconnio
3. _____ Dad oomd
4. _____ Eighwtssol
5. _____ Kweassen
6. _____ Ssol fo etaitepp

How Do You Feel When You Are Sick? – Answer Key

Directions: Unscramble the following words.

- | | |
|----------------------------|------------------|
| 1. <u>Diarrhea</u> | Ariardhe |
| 2. <u>Congestion</u> | Tesgconnio |
| 3. <u>Bad mood</u> | Dad oomd |
| 4. <u>Weightloss</u> | Eighwtssol |
| 5. <u>Weakness</u> | Kweassen |
| 6. <u>Loss of appetite</u> | Ssol fo etaitepp |

Lesson Three – Diseases and Parasites

LEARN: Common Diseases and Parasites

35 minutes

Purpose:

Participants will learn about common diseases and parasites of beef cattle.

Materials:

- *Beef Cattle Diseases and Parasites* slide presentation
- *Basic Needs for Beef Cattle* worksheet
- *Basic Needs for Beef Cattle – Answer Key*

Facilitation Steps:

1. Distribute the *Basic Needs for Beef Cattle* worksheet and provide instruction on how to fill it out.
2. Present the *Beef Cattle Diseases and Parasites* slide presentation while the participants take notes.

Slide 1: Introduction Slide

Slide 2: Common Beef Cattle Diseases

Slide 3: Bloat

- Symptoms: Left side swollen, stomping ground, going to the bathroom frequently
- Cause: Eating a lot of legumes and/or grain that is ground too fine
- Prevention: Allow the legumes to dry before letting cattle out into a new pasture, have a variety in diet
- Treatment: A tube run down into stomach to release gas

Slide 4: Grass Tetany

- Symptoms: Very nervous, odd gait, muscle spasms
- Cause: Magnesium deficiency in grass and forage
- Prevention: Add magnesium as a mineral supplement from May to October

- Treatment: Epsom salt solution given under the skin, magnesium treatment given by veterinarian

Slide 5: Prussic Acid Poisoning

- Symptoms: Labored breathing, increased weakness, diarrhea, urinating often, death like cyanide poisoning
- Cause: High nitrates in plant material, soils high in nitrogen, eating young leaves
- Prevention: Provide diverse food sources, waiting to put animals in a pasture until plants have matured
- Treatment: Call veterinarian immediately

Slide 6: Hardware Disease

- Symptoms: Loss of appetite, reduced cud chewing, swelling of neck
- Cause: Swallowing metal found on the ground, posts, trees
- Prevention: Check the grazing and eating area
- Treatment: Removed by veterinarian, magnet sent into the stomach

Slide 7: White Muscle Disease

- Symptoms: Two types one causes heart defect of calves and dies within two days. Second causes problems with heart and skeletal muscles
- Cause: Deficiency of selenium and/or vitamin E
- Treatment: Giving animals sodium selenite and vitamin E in an emulsion as a shot

Slide 8: Foot Rot Disease

- Symptoms: Swelling of foot, redness of tissue above hoof, loss of appetite, temperature, loss of weight, bad smell coming from foot
- Cause: Bacteria, and fungi in the soil causing an infection in a cut or sore on the foot
- Prevention: Walk through foot baths, keep hooves trimmed, make sure the animals are receiving enough vitamin A, calcium, and phosphorus
- Treatment: Examine hooves often, shot of antibiotic by veterinarian

Slide 9: Parasites

- There are two types, which are internal, and external

Slide 10: Hairworm

- Internal parasite
- Settles in the stomach
- Cattle drop fecal matter that is diluted with water, which exposes the eggs
- Eggs are consumed when cattle eat wet grass in the field

Mention this is cattle poop and take ideas as to what this has to do with hairworm.

Slide 11: Lung Worms

- Internal parasite
- Transmitted by waste that has eggs in it
- Settles in lungs
- Causes lung disease
- Symptoms like allergies

Ask participants what allergy symptoms are like.

Slide 12: Liver Flukes

- Internal parasite
- Cattle, deer, and rabbits go to the bathroom. When it drops into water, eggs hatch

- Cattle then eat grass, which can contain the cysts that cause liver flukes
- Attacks the liver
- Symptoms like malnutrition and hairworms appear

Slide 13: Coccidia

- Internal parasite
- Caused by cattle waste that contains the cysts
- Attacks 3-month-old calves all the way to 2-years-old

Slide 14: Treatments for Internal Parasites

Mention to participants that wet conditions create the environment in which cysts survive.

Mention that once the environment dries up, cattle should go through worming.

Mention that the worming process is like what is done for a dog or cat.

Slide 15: External Parasites

Ask participants what the cause is for external parasites.

Answer: Flies

Slide 16: Blood Suckers

- Black flies
- Horn flies
- Horse and deer flies
- Biting causes discomfort
- Can cause blood loss, weakness, secondary infections

Mention that secondary infections take hold when one is weak. Relate it to getting a cold when you are not eating right.

Slide 17: Non-Blood Sucking Flies

- Cattle grubs
- Fly maggots
- Take hold in open wounds or sores

Slide 18: Lice and Mites

Beef Cattle Kit

- There are six type of lice, five bite and one that sucks
- Causes irritation, scratching, and sores
- Mites bite and inject a fluid into the skin that causes sores
- Scratching and scabs appear
- Both transferred from animal to animal

Slide 19: Ticks

- Bite and attach to animal to feed
- Once full with blood, the ticks will fall off

Ask if anyone has found a tick on their pet.
What did they do?

Slide 20: Treatment

- All are caused by wet conditions and infected animals
- Dusting with pesticide, sprays, or dips can help treat the problem.

Slide 21: Ways to Reduce the Chances of Sickness

- Reduce stress
- Feed a healthy diet
- Monitor the environment for moisture levels and pests present
- Monitor the animals and address issues when they arise

Ask how many of these tips are the same for humans.

3. Collect the worksheet once the slide presentation is complete if desired.

Name: _____ Class: _____

Cattle Diseases and Parasites

Directions: Fill in the blank for each disease and parasite.

1. _____ causes the stomach to swell and the animal goes to the bathroom a lot. Cause is eating a lot of _____ and _____ ground too small. To prevent it, allow the legumes to dry before letting cattle graze and have an assortment of _____ to eat. Treatment comes from running a _____ into the stomach.
2. Grass tetany cause an odd _____. A deficiency in _____ in grass and forage. Prevention is adding a _____ supplement. Treatment is _____ salt.
3. _____ poisoning shows up as _____, going to the bathroom a lot, weakness, and possible death. Cause of this disease is eating young plant material and high _____. Prevention comes from not letting the cattle out _____ early and provide a _____ of food.
4. _____ disease is caused by eating _____ found in the field. Prevention comes from checking the _____ for metal. This will need to be removed by a _____.
5. _____ disease is caused by not enough _____ and/or _____. Treatment is a _____ of sodium selenite vitamin E.
6. _____ rot disease can be seen as a swollen area on the leg above the _____ and bad smell. Caused by bacteria or fungal infection from a _____ on the leg. The easiest ways to control this is to monitor _____ health and foot _____.
7. Hairworms are _____ parasites that settle in the _____. Caused by consuming eggs from _____ with hairworms.
8. _____ are internal parasites that settle in the _____. Animals act like they have _____.

9. Internal parasite _____ are carried by _____, and _____. Cattle get this parasite by _____ grass that contains cysts. This parasite settles into the _____. Will cause _____ and _____.
10. _____ is an internal parasite that attacks cattle up to _____ years of age.
11. Treatments for internal parasites is to monitor the _____ grass and _____.
12. External parasites can be _____ suckers and non blood suckers. The blood suckers include _____, _____, _____ and _____ flies. Cause discomfort, and _____ loss. Can lead to secondary _____.
13. Non sucking blood parasites include _____, and _____. Take up in open _____.
14. _____ and _____ either suck or bite. There are _____ types of lice. One _____ and five _____. Mites bite and inject fluid _____ the skin and causes sores. Transferred from _____ to animal.
15. _____ bite, drink _____ and fall off.
16. Treatment for external parasites include _____ with pesticide along with _____ and dips.
17. Reduce animal sickness by reducing _____, _____ diet, monitor both the _____ and _____.

Cattle Diseases and Parasites – Answer Key

Directions: Fill in the blank for each disease and parasite.

1. **Bloat** causes the stomach to swell and the animal goes to the bathroom a lot. Cause is eating a lot of **legumes** and **grain** ground too small. To prevent it, allow the legumes to dry before letting cattle graze and have an assortment of **foods** to eat. Treatment comes from running a **tube** into the stomach.
2. Grass tetany cause an odd **gait**. A deficiency in **magnesium** in grass and forage. Prevention is adding a **mineral** supplement. Treatment is **Espom** salt.
3. **Prussic acid** poisoning shows up as **labored breathing**, going to the bathroom a lot, weakness, and possible death. Cause of this disease is eating young plant material and high **nitrates**. Prevention comes from not letting the cattle out **too** early and provide a **variety** of food.
4. **Hardware** disease is caused by eating **metal** found in the field. Prevention comes from checking the **field** for metal. This will need to be removed by a **veterinarian**.
5. **White muscle** disease is caused by not enough **selenium** and/or **vitamin E**. Treatment is a **shot** of sodium selenite vitamin E.
6. **Foot** rot disease can be seen as a swollen area on the leg above the **hoof** and bad smell. Caused by bacteria or fungal infection from a **cut** on the leg. The easiest ways to control this is to monitor **hoof** health and foot **bathes**.
7. Hairworms are **internal** parasites that settle in the **stomach**. Caused by consuming eggs from **animals** with hairworms.
8. **Lung worms** are internal parasites that settle in the **lungs**. Animals act like they have **allergies**.
9. Internal parasite **liver flukes** are carried by **cattle, deer**, and **rabbits**. Cattle get this parasite by **eating** grass that contains cysts. This parasite settles into the **liver**. Will cause **malnutrition** and **hairworms**.
10. **Coccidia** is an internal parasite that attacks cattle up to **2** years of age.
11. Treatments for internal parasites is to monitor the **wet** grass and **worming**.
12. External parasites can be blood suckers and non blood suckers. The blood suckers include **black flies, horn flies, house** and **deer** flies. Cause discomfort, and **blood** loss. Can lead to secondary **infections**.
13. Non sucking blood parasites include **cattle grubs**, and **fly maggots**. Take up in open **wounds**.
14. **Lice** and **mites** either suck or bite. There are 6 types of lice. One **sucks** and five **bite**. Mites bite and inject fluid into the skin and causes sores. Transferred from **animal** to animal.
15. **Ticks** bite, drink **blood** and fall off.
16. Treatment for external parasites include **dusting** with pesticide along with **sprays** and dips.
17. Reduce animal sickness by reducing **stress**, **healthy** diet, monitor both the **environment** and **animal**.

Lesson Three – Diseases and Parasites

REVIEW: Common Diseases and Parasites Recap

15 minutes

Purpose:

Participants will review the common diseases and parasites in small groups using trivia cards

Materials:

- Common Cattle Diseases and Parasites Trivia Cards
- *Common Diseases and Parasites Quiz*
- *Common Diseases and Parasites Quiz – Answer Key*

Facilitation Steps:

1. Break the participants into groups of two.
2. Pass out the trivia cards. Explain that each pair will take turns asking the question on the trivia cards.
3. Collect the trivia cards after five minutes
5. Distribute the *Common Diseases and Parasites Quiz* and give participants 5 minutes to complete.
6. Have participants trade quizzes to grade while you read the answers from the answer key.
7. Collect the quizzes.

Name: _____ Class: _____

Common Diseases and Parasites Quiz

Directions: Choose true or false for each statement below.

1. True or False Stress can cause increase the chance of cattle developing diseases and/or parasites.
2. True or False A tick is considered a parasite.
3. True or False Many types of parasites can come from cattle waste (manure).
4. True or False Bloat is treated by place a tube in the stomach to release gas.
5. True or False Grass tetany is caused by not enough magnesium in the diet.
6. True or False Hardware disease is caused when cattle eat something made of metal.
7. True or False Flies can cause external parasites of cattle.
8. True or False Cattle get lice and mites by eating grass with the cysts.
9. True or False Liver flukes can be carried by cattle, deer, and rabbits.
10. True or False Foot rot disease can be prevent by maintaining the hoof and foot baths.

Common Diseases and Parasites Quiz – Answer Key

1. **True** or False Stress can cause increase the chance of cattle developing diseases and/or parasites.
2. **True** or False A tick is considered a parasite.
3. **True** or False Many types of parasites can come from cattle waste (manure).
4. **True** or False Bloat is treated by place a tube in the stomach to release gas.
5. **True** or False Grass tetany is caused by not enough magnensium in the diet.
6. **True** or False Hardware disease is caused when cattle eat something made of metal.
7. **True** or False Flies can cause external parasites of cattle.
8. True or **False** Cattle get lice and mites by eating grass with the cysts.
9. **True** or False Liver flukes can be carried by cattle, deer, and rabbits.
10. **True** or False Foot rot disease can be prevent by maintaining the hoof and foot baths.

Lesson Four – Reproduction

Lesson Overview

Participants will learn about the basic reproductive system of the cow and bull.

Lesson Objectives

After completing this lesson, participants will be able to:

- Define the gestation period of cattle.
- Define words associated with reproduction

Lesson at a Glance

Activity	Materials	Preparation	Approximate class time
FOCUS	• <i>Mammal Gestation Game Sheet</i> • Whiteboard/Blackboard • Whiteboard Markers/Chalk	1. Access <i>Mammal Gestation Game Sheet</i>	5 minutes
LEARN	• <i>Cow Reproduction</i> slide presentation • <i>Bull Reproduction</i> slide presentation • <i>Cow and Bull Reproduction Student Notes</i> • <i>Cow and Bull Reproduction Student Notes – Answer Key</i>	1. Prepare to present the <i>Bull Reproduction</i> and <i>Cow Reproduction</i> slide presentations 2. Print/Photocopy <i>Cow and Bull Reproduction Student Notes</i> (one per participant)	30-35 minutes
REVIEW	• <i>Cow Reproduction Quiz</i> • <i>Bull Reproduction Quiz</i> • <i>Cow Reproduction Quiz – Answer Key</i> • <i>Bull Reproduction Quiz – Answer Key</i>	3. Print/Photocopy <i>Cow Reproduction Quiz</i> and <i>Bull Reproduction Quiz</i> (one per participant)	15 minutes

Lesson Four – Reproduction

FOCUS: Gestation Length

5 Minutes

Purpose: Participants will compare and contrast the gestation periods of different mammals in order to gain an understanding of cow gestation in relation to other mammals.

Materials:

- *Mammal Gestation Game Sheet*
- Whiteboard
- Marker

Facilitation Steps:

1. Write a column on the whiteboard labeled “Mammals”.
2. Write the following mammals underneath the column on the whiteboard: cow, dog, horse, cat, human.
3. In another column, write down the word “gestation.”
4. Have the participants define gestation, then guess how long each gestation period lasts.
5. Write the participants’ correct answers on the board as they come up.

Mammal Gestation Game Sheet

Species	Gestation
Horse (Equine)	11 Months
Cow (Bovine)	9 Months
Human	9 Months
Pig (Porcine)	3 Months & 3 Weeks & 3 Days
Dog (Canine)	2 Months
Cat (Feline)	2 Months

Lesson Four – Reproduction

LEARN: Reproductive System of Both Sexes

30-35 Minutes

Purpose: Participants will learn the male and female reproductive systems, along with the function of each reproductive part.

Materials:

- *Cow Reproduction* slide presentation
- *Bull Reproduction* slide presentation
- *Cow and Bull Reproduction Student Notes*
- *Cow and Bull Reproduction Student Notes – Answer Key*

Facilitation Steps:

1. Prepare the *Cow Reproduction* slide presentation and the *Bull Reproduction* slide presentation.
2. Distribute the *Cow and Bull Reproduction Student Notes*.
3. Start with the *Cow Reproduction* slide presentation, then move to the *Bull Reproduction* slide presentation.
4. Have participants fill out the *Cow and Bull Reproduction Student Notes* as you go over the slide presentations.

Cow Reproduction Slide Presentation

Slide 1: Introduction Slide
Slide 2 – 3: Basic Reproduction Terms

- Puberty – sexual maturity
- Ovulation – release of ovum (egg) from ovary
- Copulation – the act of mating
- Fertilization – union of male and female sex cells
- Conception – becoming pregnant
- Estrus – the time of receptivity to mating during the estrous cycle; also termed “heat”

- Estrous Cycle – the interval between two estrus periods
- Gestation – pregnancy
- Parturition – the act of giving birth

Slide 5: Estrous – Time in Heat

- Bovine – 15 hours
- Canine – 2-4 weeks
- Caprine – 12-36 hours
- Equine – 5-7 days
- Feline – 1-7 days
- Ovine – 24-36 hours
- Procine – 2-3 days

Slide 6: Reproductive Cycle Timetable

- Share with participants the Reproductive Cycle Timetable.

Slide 7: Female Reproductive Tract

Slide 9: Vulva

- Consists of the external genital organ
 - The clitoris, the organ of stimulation

Slide 10: Vagina

- Female organ of copulation
- Birth canal
- Dual role of reproductive and urinary systems
- Structure external to the cervix; accepts penis of male for mating

Slide 11: Cervix

- Muscular opening between uterus and vagina

- This is made of many folds, in part, to keep bad bacteria out of the uterus
- Remains reasonably constricted except for dilation to allow birth

Slide 12 – 13: Uterus

- Varies in shape by animal
 - Sow – long slender left and right horns
 - Embryos develop in uterine horn
 - Mare – fused body with short horns
 - Embryo develops in body of uterus
 - Inward outlet of uterus is the cervix
 - Gateway between uterus and vagina
 - Pregnancy checks
- Body of the uterine structure between cervix and horns
- Site of implantation

Slide 14: Uterine Horn

- Leads from oviduct to body of uterus

Slide 15: Oviducts

- After ovulation, ova (egg) caught by fallopian tubes, associated with each ovary; captures the ova after ovulation
- Sperm from natural or artificial insemination meet ova (egg) in oviducts and fertilization takes place, connection to uterus

Slide 16 – 17: Ovaries

- Paired and will produce ova (egg)
- Female sex hormones
 - Estrogen
 - Progesterone
- Each ovum is the largest single cell in the body
- Ovum develops inside follicle

- Some follicles reach 0.8 – 1.5in in size
- Growing follicles produce estrogen
- Mature follicles (Graafian) rupture releasing ovum (ovulation)
- After rupture, follicle becomes corpus luteum or yellow body
- Corpus luteum produces progesterone
 - Progesterone is important in maintaining pregnancy

Slide 18: Major Hormone of Reproduction

- Estrogen
 - Produced in cells lining mature ovarian follicles
 - Induces estrus, mammary duct growth, and development of secondary sex character
- Progesterone
 - Important in maintaining pregnancy

Bull Production Slide Presentation

Slide 1: Introduction Slide

Slide 2 – 3: Basic Reproduction Terms

- Puberty – sexual maturity
- Ovulation – release of ovum (egg) from ovary
- Copulation – the act of mating
- Fertilization – union of male and female sex cells
- Conception – becoming pregnant
- Estrus – the time of receptivity to mating during the estrous cycle; also termed “heat”
- Estrous Cycle – the interval between two estrus periods
- Gestation – pregnancy
- Parturition – the act of giving birth

Slide 6: Male Reproductive Tract

- Typical male farm mammal parts
 - Scrotum
 - Testis (2)
 - Epididymis
 - Vas deferens
 - Urethra
 - Penis

Slide 7: Scrotum

- Contains testicles
- External to the body
- Functions in the temperature regulation
- Keeps testicles lower than body temperature
- Extremely high temps, may result in temporary infertility
- Cool testis with shade or even air conditioning

Slide 8: Testis

- Paired (2) within the scrotum
- Sperm production factory
 - Sperm cells to fertilize ova
 - Hormone testosterone produced in Leydig cells or interstitial cells
- If castrated
 - Animal becomes sterile
 - Loses some male characteristics
 - Remaining organs stop developing and shrink

Slide 9: Epididymis

- Long slender tubule encased and lying along the surface of the testis
- Tight storage site for sperm cells
- Sperm packed so they can't swim
- Sperm mature while passing through
- Sperm degenerate and absorbed if not moved into vas deferens

Slide 10: Vas Deferens

- Simple tubule carrying sperm from epididymis to the ampulla or urethra, by peristaltic action

Slide 11: Ampulla

- Widened area at juncture of vas deferens and urethra for sperm storage prior to ejaculation; not found in all species

Slide 12: Urethra

- Single tube leading from vas deferens through penis to exit
- Extends from urinary bladder through full length of penis

Slide 13 – 14: Penis

- Passage for semen and urine
- Organ of copulation
- In bull, ram, and boar the penis is S-shaped when relaxed
 - S curve is called the sigmoid flexure
- Sigmoid flexure – curvature in the penis structure of bull and boar allowing for extension during mating
- Retractor muscle – pulls penis back into normal position following elongation
- Seminal vesicles – provide thrusting motion

Slide 15: Accessory Glands

- Prostate – adds volume to sperm
- Cowper's Glands – adds nutrients to sperm

Slide 16: Testosterone

- Major hormone of reproduction
- Produced in cells of Leydig in testis
- Causes growth of reproductive tract, development of male physical character and onset of sexual drive

Slide 17: Male Reproduction Changes

- Castration – removal or destruction of the testis by surgical or other physical or chemical methods
- Cryptorchid – male mammal with one or both testicles failing to descend into the scrotum

Cow and Bull Reproduction Student Notes

Name _____

1. Define the following:

- a. Puberty
- b. Ovulation
- c. Copulation
- d. Fertilization
- e. Conception
- f. Estrous Cycle
- g. Estrus
- h. Gestation
- i. Parturition

2. Complete the chart for each of the following farm animals.

Animal Estrous	Estrous Cycle Length	Estrus Length	Gestation
Bovine			
Canine			
Equine			
Feline			

3. Label the following diagram for male reproductive parts:



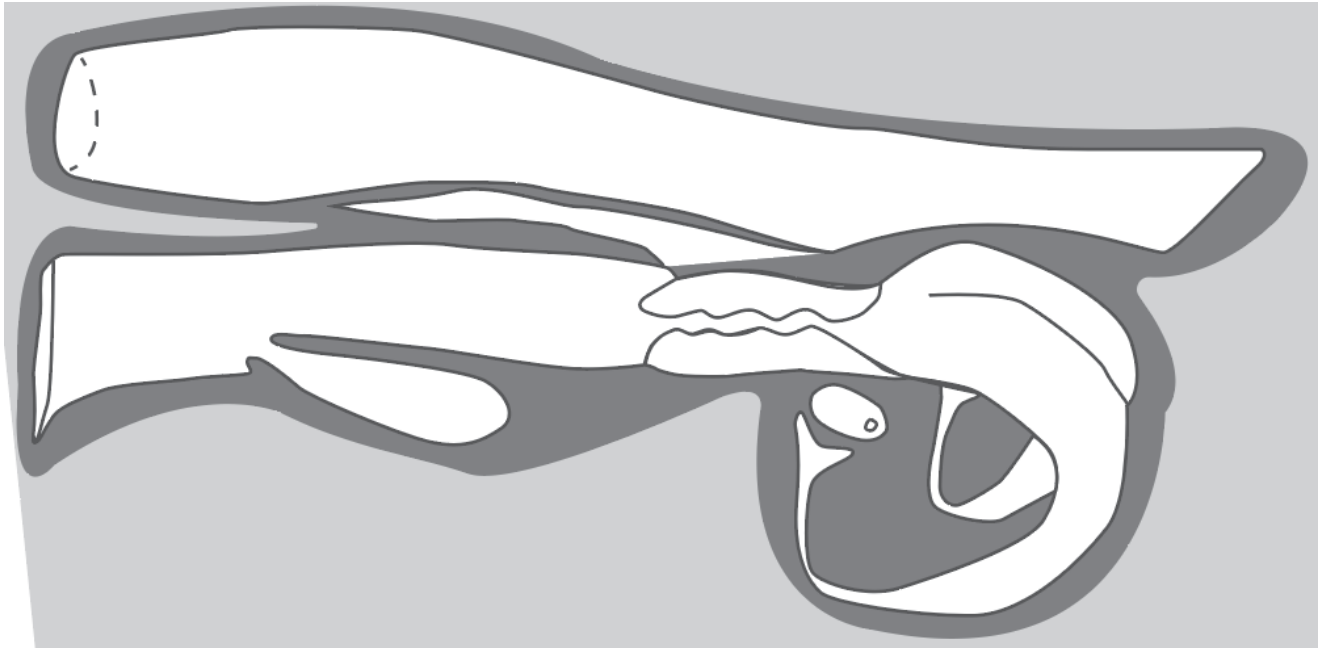
KEY:

- Scrotum
- Tail of Epididymis
- Testis
- Head of Epididymis
- Sigmoid Flexure
- Retractor Muscle
- Vas Deferens
- Bladder
- Ampulla
- Prostate
- Seminal Vesicles
- Rectum
- Cowper's Glands

4. Define the following male reproductive terms:

- a. Scrotum
- b. Testis
- c. Epididymis
- d. Vas deferens
- e. Ampulla
- f. Urethra
- g. Sigmoid flexure
- h. Retractor muscle
- i. Accessory glands
- j. Prostate
- k. Cowper's glands

5. Label the following diagram for female reproductive parts:



KEY:

Anus	Vulva	Cervix	Oviducts
Rectum	Bladder	Uterine Horn	Ovaries
Body of Uterus	Vagina	Fallopian Tubes	

6. Define the following female reproductive terms:

- a. Vulva
- b. Vagina
- c. Cervix
- d. Uterus
- e. Uterine Horn
- f. Oviducts
- g. Infundibulum
- h. Ovaries

Cow and Bull Reproduction Student Notes – Answer Key

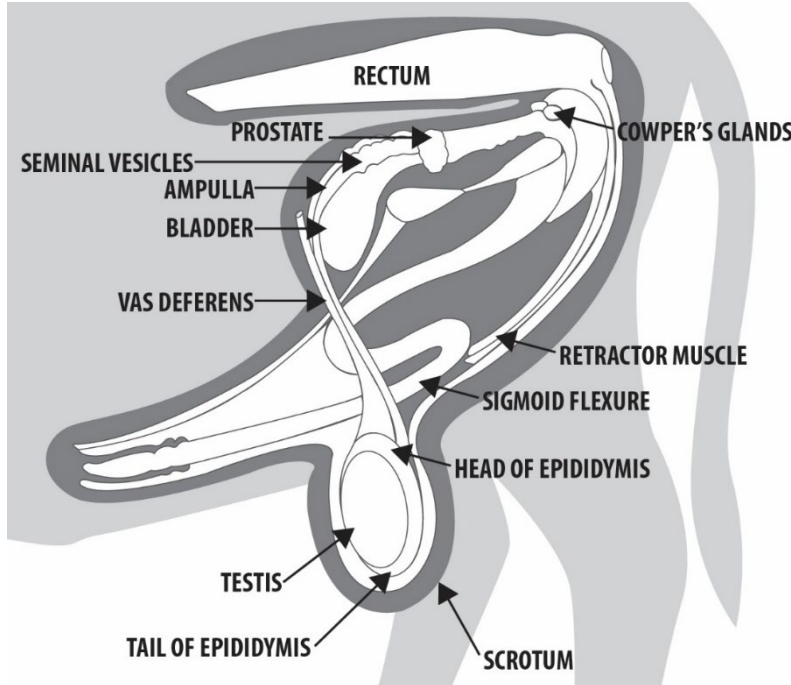
1. Define the following:

- a. Puberty: Sexual maturity
- b. Ovulation: Release of ovum (egg) from ovary
- c. Copulation: The act of mating
- d. Fertilization: Union of male and female sex cells
- e. Conception: Becoming pregnant
- f. Estrous Cycle: Period from one estrus (heat) to the next estrus
- g. Estrus: Actual time animal is in heat, receptive to fertilization
- h. Gestation: Pregnancy
- i. Parturition: The act of giving birth

2. Complete the chart for each of the following farm animals:

Animal	Estrous Cycle Length	Estrus Length	Gestation
Bovine	19-21 days	15 hours	9 months
Canine	6-12 months	2-4 weeks	2 months
Equine	19-21 days	5-7 days	11 months
Feline	14-21 days	1-7 days	2 months

3. Label the following diagram for male reproductive parts:



KEY:

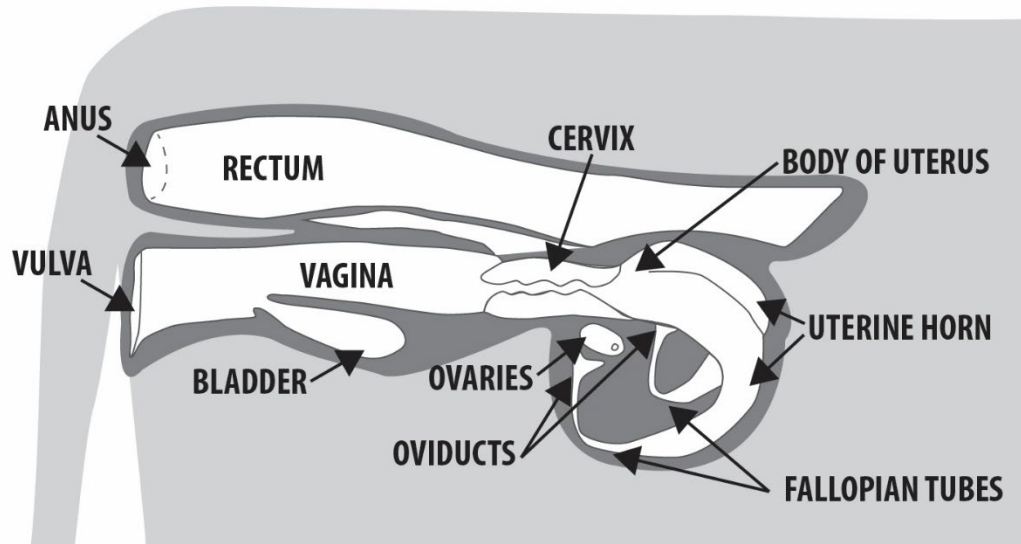
- Scrotum
- Tail of Epididymis
- Testis
- Head of Epididymis
- Sigmoid Flexure
- Retractor Muscle
- Vas Deferens
- Bladder
- Ampulla
- Prostate
- Seminal Vesicles
- Rectum
- Cowper's Glands

4. Define the following male reproductive terms:

- Scrotum: Container for the testes external to the body; regulates temperature
- Testes: Paired within the scrotum, sperm production factory
- Epididymis: Long slender tubule encased - lying along surface of the testes, tight storage, sperm is packed so it can't swim
- Vas deferens: Simple tubule carrying sperm from the epididymis to ampulla or urethra by peristaltic action
- Ampulla: Widened area at juncture of vas deferens and urethra for sperm storage prior to ejaculation; not found in all species
- Urethra: Single tubule leading from vas deferens through penis to exit
- Sigmoid flexure: Curvature in penis structure of bull and boar, allowing for extension to mate
- Retractor muscle: Pulls penis back into normal position following elongation

- i. Accessory Glands: (Cowper's and Prostate) glands associated with the male reproductive tract to provide fluids for nutrient source, volume, and protection of the sperm
- j. Prostate: Gland surrounding the neck of the bladder in male mammals and releasing prostatic fluid
- k. Cowper's: Small glands that open into the urethra at the base of the penis and secrete a constituent of seminal fluid

5. Label the following diagram for female reproductive parts:



KEY:

Anus	Vulva	Cervix	Oviducts
Rectum	Bladder	Uterine Horn	Ovaries
Body of Uterus	Vagina	Fallopian Tubes	

6. Define the following female reproductive terms:

- a. Vulva: Consists of the external genital organs of a female
- b. Vagina: Structure external to the cervix; accepts male penis for mating; birth canal
- c. Cervix: Muscular opening between uterus and vagina; remains reasonably constricted except for relaxation to allow birth
- d. Uterus: Body of uterine structure between cervix and horns; site of implantation
- e. Uterine Horn: Leads from the oviduct to body of uterus

Beef Cattle Kit

- f. Oviducts: Tubules connecting infundibulum to the uterine structure; fertilization site
- g. Ovaries: Structure containing the reproductive cells (ova)

Lesson Four – Reproduction

REVIEW: Reproduction Systems Recap

15 Minutes

Purpose: Participants will have quiz on the reproductive systems of a bull and cow.

Materials:

- *Cow Reproduction Quiz*
- *Bull Reproduction Quiz*
- *Cow Reproduction Quiz – Answer Key*
- *Bull Reproduction Quiz – Answer Key*

Facilitation Steps:

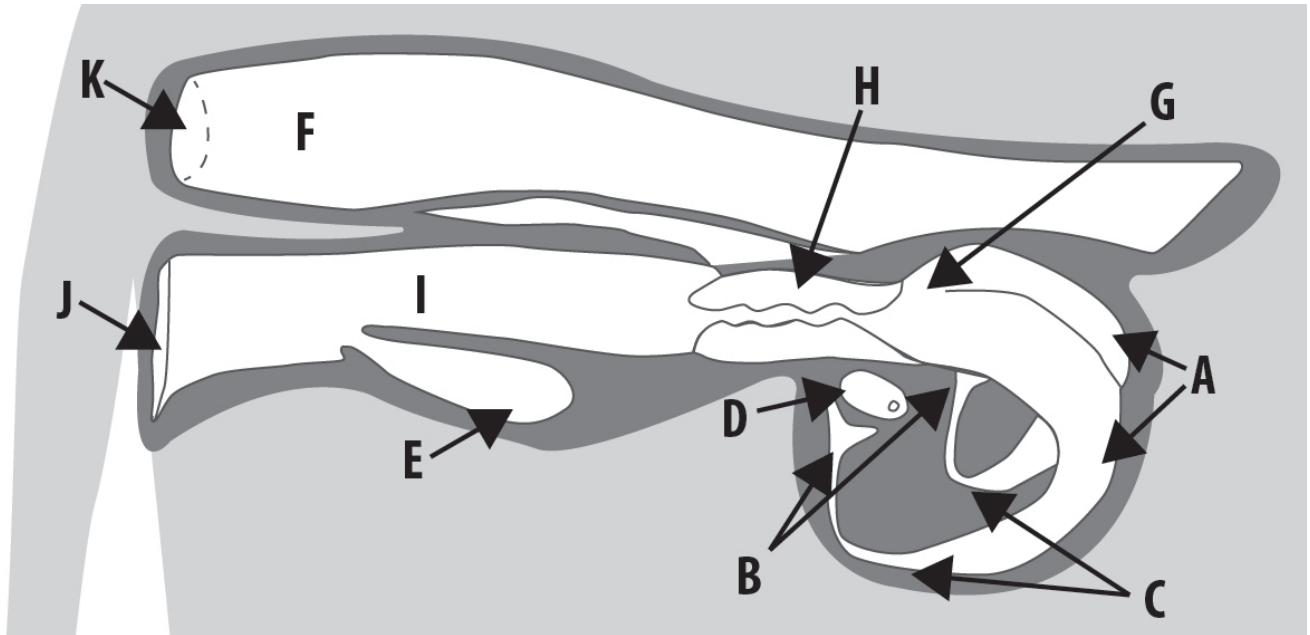
1. Distribute the *Cow Reproduction Quiz* and *Bull Reproduction Quiz*.
2. Have participants complete the quizzes.
3. Collect to correct (or correct in class).

Optional: Allow *Cow and Bull Reproduction Student Notes* to be used with quizzes

Cow Reproduction Quiz

Name _____

Label and match the following reproductive parts:



1) ____ Vagina

2) ____ Uterine Horns

3) ____ Rectum

4) ____ Vulva

5) ____ Fallopian Tubes

6) ____ Cervix

7) ____ Bladder

8) ____ Body of Uterus

9) ____ Ovary

10) ____ Oviducts

11) ____ Anus

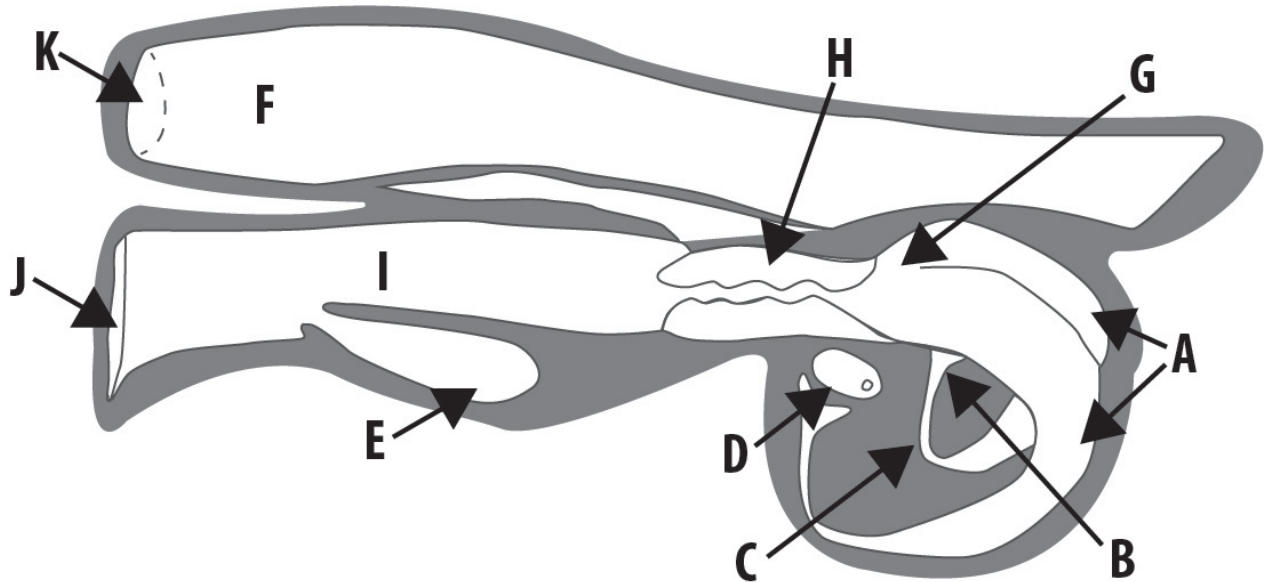
Name _____

Match each part with their correct function:

- | | |
|---------------------------|---|
| 1) _____ Vagina | A) Exterior opening to reproductive tract |
| 2) _____ Uterine Horn | B) Muscular opening between uterus and vagina |
| 3) _____ Vulva | C) Leads to bladder |
| 4) _____ Oviducts | D) Site for fertilization |
| 5) _____ Cervix | E) Implantation site for litter bearing |
| 6) _____ Body of Uterus | F) Houses penis during intercourse |
| 7) _____ Ovaries | G) Implantation site in non-litter bearing |
| 8) _____ Urethral Opening | H) Egg producing factory |

Cow Reproduction Quiz – Answer Key

Label and match the following reproductive parts:



- 1) I Vagina
- 2) A Uterine Horn
- 3) F Rectum
- 4) J Vulva
- 5) B Fallopian Tubes
- 6) H Cervix

- 7) E Bladder
- 8) G Body of Uterus
- 9) D Ovary
- 10) C Oviducts
- 11) K Anus

Beef Cattle Kit

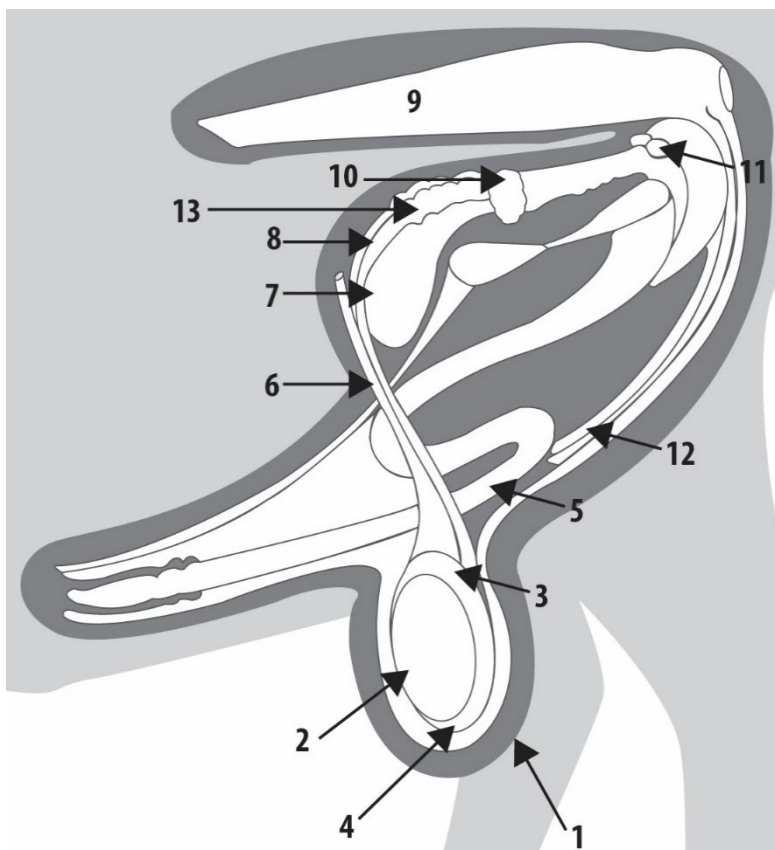
Match each part with their correct function:

- | | |
|---|---|
| 1) <u> G </u> Vagina | A) Catches ova after release from ovary |
| 2) <u> F </u> Uterine Horn | B) Muscular opening between uterus and vagina |
| 3) <u> A </u> Infundibulum | C) Egg producing factory |
| 4) <u> I </u> Vulva | D) Leads to bladder |
| 5) <u> E </u> Oviducts | E) Site for fertilization |
| 6) <u> B </u> Cervix | F) Implantation site for litter bearing |
| 7) <u> J </u> Vestibule | G) Houses penis during intercourse |
| 8) <u> H </u> Body of Uterus | H) Implantation site in non-litter bearing |
| 9) <u> C </u> Ovaries | I) Exterior opening to reproductive tract |
| 10) <u> D </u> Urethral Opening
urethra | J) General area of vaginal posterior to entrance of |

Bull Reproduction Quiz

Name _____

Identify and label the following parts:



- 1) _____
- 2) _____
- 3) _____
- 4) _____
- 5) _____
- 6) _____
- 7) _____
- 8) _____
- 9) _____
- 10) _____
- 11) _____
- 12) _____

Cowper's Glands
 Vas Deferens
 Head of Epididymis
 Testis
 Rectum
 Tail of Epididymis
 Prostate
 Bladder
 Ampulla
 Scrotum
 Retractor Muscle
 Sigmoid Flexure

Beef Cattle Kit

Match each part to their correct function:

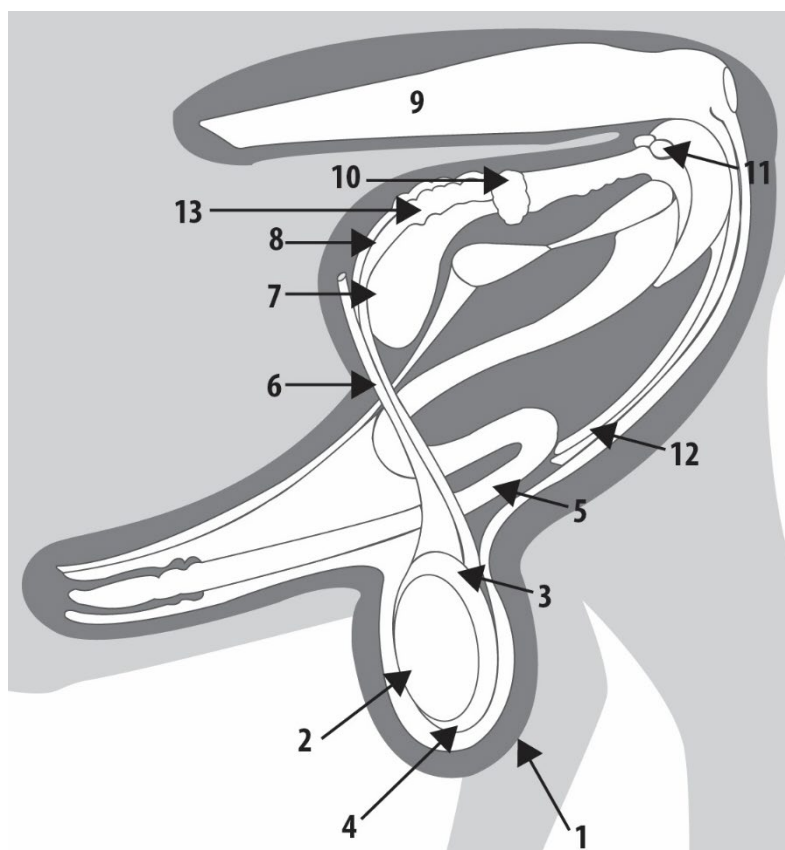
- | | |
|---------------------|---------------------|
| A) Cowper's Glands | G) Bladder |
| B) Vas Deferens | H) Ampulla |
| C) Seminal Vesicles | I) Scrotum |
| D) Penis | J) Retractor Muscle |
| E) Rectum | K) Testis |
| F) Epididymis | L) Prostate |

- 1) _____ Protects by regulating temperature.
- 2) _____ Tightly packs sperm and keeps them immobile.
- 3) _____ Pulls penis back into original position.
- 4) _____ Secretes some of the liquid volume in semen.
- 5) _____ Used as an exit for solid waste material.
- 6) _____ Storage for sperm before they enter the seminal vesicles.
- 7) _____ Provides a nutrient source for sperm.
- 8) _____ Transports sperm and semen from epididymis to ampulla.
- 9) _____ Male organ for copulation.
- 10) _____ Helps create semen.
- 11) _____ Serves as the sperm production "factory."
- 12) _____ Storage site for liquid waste material.

Bull Reproduction Quiz – Answer Key

Name _____

Identify and label the following parts:



- 1) Scrotum
- 2) Testis
- 3) Head of Epididymis
- 4) Tail of Epididymis
- 5) Sigmoid Flexure
- 6) Vas Deferens
- 7) Bladder
- 8) Ampulla
- 9) Rectum
- 10) Prostate
- 11) Cowper's Glands
- 12) Retractor Muscle
- 13) Seminal Vesicles

- Cowper's Glands
 Vas Deferens
 Head of Epididymis
 Testis
 Rectum
 Tail of Epididymis
 Prostate
 Bladder
 Ampulla
 Scrotum
 Retractor Muscle
 Seminal Vesicles
 Sigmoid Flexure

Match each part to their correct function:

- | | |
|---------------------|---------------------|
| A) Cowper's Glands | G) Bladder |
| B) Vas Deferens | H) Ampulla |
| C) Seminal Vesicles | I) Scrotum |
| D) Penis | J) Retractor Muscle |
| E) Rectum | K) Testis |
| F) Epididymis | L) Prostate |

- 1) I Protects by regulating temperature.
- 2) F Tightly packs sperm and keeps them immobile.
- 3) J Pulls penis back into original position.
- 4) L Secretes some of the liquid volume in semen.
- 5) E Used as an exit for solid waste material.
- 6) H Storage for sperm before they enter the seminal vesicles.
- 7) A Provides a nutrient source for sperm.
- 8) B Transports sperm and semen from epididymis to ampulla.
- 9) D Male organ for copulation.
- 10) C Helps create semen.
- 11) K Serves as the sperm production "factory."
- 12) G Storage site for liquid waste material.

Lesson Five – Body Systems

Lesson Overview

Participants will be given an overview of the bodily systems in beef cattle.

Lesson Objectives

After completing this lesson, participants will be able to:

- List four of the body systems
- Describe what each system does
- Explain in general terms what a ruminant animal is

Lesson at a Glance

Activity	Materials	Preparation	Approximate class time
FOCUS	• <i>Guess the Body System</i> worksheet • <i>Guess the Body System – Answer Key</i>	1. Print/photocopy <i>Guess the Body System</i> (one per participant)	10 minutes
LEARN	• <i>Beef Cattle Body Systems</i> slide presentation • <i>How Do These Systems Work?</i> • <i>How Do These Systems Work? – Answer Key</i>	1. Print/photocopy <i>How do these systems work?</i> (one per participant) 2. Prepare <i>Beef Cattle Body Systems</i> slide presentation for viewing	40 minutes
REVIEW	• 4D Vision Cow Models • <i>Body System Quiz</i> • <i>Body System Quiz – Answer Key</i>	1. Print/photocopy <i>Body System Quiz</i> (one per participant)	10 minutes

Lesson Five – Body Systems

FOCUS: Intro to Beef Cattle Body Systems

10 minutes

Purpose:

Participants will be introduced to the beef cattle body systems.

Materials:

- *Guess the Body System* worksheet
- *Guess the Body System* – Answer Key

Facilitation Steps:

1. Instruct participants to pair up.
2. Distribute the *Guess the Body System* worksheet and have participants complete them individually.
3. After five minutes, have participants trade papers and check the answers while you go over the answer key.

Name: _____ Class: _____

Guess the Body System

Directions: Unscramble the following words.

1. _____ Tivedegestid
2. _____ Crineendo
3. _____ Talskele
4. _____ Scularmu

Fill in the blanks with the unscrambled words:

1. _____ system consists of glands that produce hormones.
2. The frame for the body is made by the _____ system.
3. _____ system allows the body to move.
4. _____ system process food.

Guess the Body System – Answer Key

Directions: Unscramble the words and then use them to fill in the blanks.

Scrambled Words:

1. **Digestive** Tivedegestid
2. **Endocrine** Crineendo
3. **Skeletal** Talskele
4. **Muscular** Scularmu

Fill in the blank with the unscrambled words:

1. **Endocrine** system consists of glands that produce hormones.
2. The frame for the body is made by the **skeletal** system.
3. **Muscular** system allows the body to move.
4. **Digestive** system process food.

Lesson Five – Body Systems

LEARN: How do these systems work?

40 minutes

Purpose:

Participants will develop an understanding of the internal systems of beef cattle and what their important functions are to that animal

Materials:

- *Beef Cattle Body Systems* slide presentation
- *How Do These Systems Work?* worksheet
- *How Do These Systems Work?* – Answer Key

Facilitation Steps:

1. Distribute the *How Do These Systems Work?* worksheet and provide instruction on how to fill it out.
2. Present the *Beef Cattle Body Systems* slide presentation while the participants take notes.

Slide 3: Skeletal System

- Consists of bones, cartilages, and ligaments
- It is the frame by which the bovine body is built upon
- Beef cattle have 207 bones

Slide 4: Function of Different Shaped Bones

- The skeleton is made up of different shaped bones. Each shape has a purpose
- Long bones provide support and allow the animal to move
- Short bones are shaped like cubes and found in joints to protect the body from friction and impacts
- Flat bones protect the organs of the animal such as the heart, lungs, and brain.

Slide 5: How are bones held together?

- Skeletal system held together in three ways
- Joints – where two or more bones meet
- Ligaments – bands of connective tissue that keep bones together
- Tendons – thick bands that connect bone to muscle

Slide 6: The Skeletal System Also...

- Stores and releases minerals
- Stores and releases fat
- Produces blood cells through bone marrow

Slide 7: Muscular System

- Mention that the muscular system is muscle such as the steak in the picture.

Slide 8: Function of the Muscular System

- Allow the body to move
- Can be voluntary (ex. The muscles in your hand as you write) or involuntary (ex. Muscles not controlled by the animal, such as the heart)

Slide 9: 3 Types of Muscles

- Smooth muscles, found in the walls of internal organs, involuntary
- Cardiac muscles, make up the heart, involuntary
- Skeletal muscles, attached to bones, aid in movement

Slide 11: How does the digestive system work?

- Breaks down food into small molecules for the body to gain nutrition
- Consists of the mouth, tongue, pharynx, esophagus, stomach, small intestine, large intestine, and anus

Slide 12: Ruminant's Stomach

- Cattle are a ruminant animal
- Stomach is broken into four compartments: reticulum, rumen, omasum, and abomasum

Slide 13: Bovine Stomach Process

- Cattle eats and breaks down food with their teeth
- Food forms a bolus that goes down the esophagus and into the rumen
- Bolus goes back up esophagus into the mouth where it is broken down into smaller parts

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- Smaller pieces are swallowed again and enter the reticulum

Slide 14: Stomach Process Cont.

- Food goes from reticulum to omasum where small pieces are broken down into molecules
- Molecules enter abomasum and are absorbed by the body
- Molecules not absorbed go through small intestine and then large intestine, ending up as solid waste

Slide 16: What does the Endocrine system do?

- Made up of glands that produce hormones
- Hormones – chemicals that control different types of bodily functions

- There are four glands that create this system

Slide 17: The Glands

- Hypothalamus Gland – Controls pituitary gland and makes antidiuretic hormone
- Pituitary Gland – Makes amino acids, and releases growth hormone
- Thyroid Gland – creates amino acids and encourages growth and metabolism
- Adrenal Gland – Makes amino acids, and releases epinephrine and norepinephrine

Collect the worksheet once the slide presentation is complete.

Name: _____ Class: _____

How Do These Systems Work?

Directions: Fill in the blanks for each question or statement.

1. The skeletal system is made up of _____, _____, and _____.
2. It is the _____ by which the bovine body is built upon.
3. Beef cattle have _____ bones.
4. _____ provide support like columns. This allows the animal to _____.
5. _____ are shaped like cubes. These cubes are found in joints and protect the body from _____ and _____.
6. _____ protect _____ of the animal. This includes the heart, lungs, and brain.
7. _____ occur where two or more _____.
8. _____ are bands of connective tissue that _____.
9. _____ are thick bands that _____ and _____.
10. Stores and _____.
11. Stores and _____.
12. Produces _____ through bone marrow.
13. The muscular system consists of _____.
14. Muscles allow the body to _____.
15. Muscles can be either _____ or _____. Voluntary are muscles such as those in your hand that allow you to write. Involuntary muscles are those that are not controlled by the animal, such as the heart.

16. _____ muscles are those found in the walls of _____ and are _____.
17. _____ muscles are those that make up the _____. These muscles are involuntary.
18. _____ muscles are those attached to the bones and _____.
19. The _____ breaks food down into small molecules so that the body can nutrition from the food.
20. The digestive system consists of the _____, _____, _____, _____, _____, _____, and _____.
21. Cattle are what is called a _____. This means the stomach is broken into _____ compartments. This includes the _____, _____, _____, and _____.
22. The cow eats and breaks down the food with the _____. This food then forms a _____ that goes down the _____ and into the _____. The bolus then goes back up through the esophagus into the mouth where it is broken down into smaller parts. These smaller pieces are swallowed again but this time it enters the _____.
23. This goes from the reticulum to the _____ where these small pieces are broken down into molecules.
24. These molecules then enter the abomasum and are _____ by the body.
25. The molecules not absorbed go through the small intestine and then the large intestine and end up as _____.
26. The _____ system is made up of _____ that _____.
27. Hormones are _____ that control different types of _____.
28. There are _____ glands that create this system.

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29. _____ gland controls the _____ and makes an _____ hormone.
30. _____ gland makes _____, and _____.
31. _____ gland creates _____, and encourages _____ and _____.
32. _____ gland makes _____, and releases _____ and _____.

How Do These Systems Work? – Answer Key

Directions: Fill in the blanks for each question or statement.

1. The skeletal system is made up of **bones**, **cartilages**, and **ligaments**.
2. It is the **frame** by which the bovine body is built upon.
3. Beef cattle have **207** bones.
4. **Long bones** provide support like columns. This allows the animal to **move**.
5. **Short bones** are shaped like cubes. These cubes are found in joints and protect the body from **friction** and **impacts**.
6. **Flat bones** protect **organs** of the animal. This includes the heart, lungs, and brain.
7. **Joints** occur where two or more **bones meet**.
8. **Ligaments** are bands of connective tissue that **keep bones together**.
9. **Tendons** are thick bands that **connect bone** and **muscle**.
10. Stores and **releases minerals**.
11. Stores and **releases fat**.
12. Produces **blood cells** through bone marrow.
13. The muscular system consists of **muscles**.
14. Muscles allow the body to **move**.
15. Muscles can be either **voluntary** or **involuntary**. Voluntary are muscles such as those in your hand that allow you to write. Involuntary muscles are those that are not controlled by the animal, such as the heart.
16. **Smooth** muscles are those found in the walls of **internal organs** and are **involuntary**.
17. **Cardiac** muscles are those that makeup the **heart**. These muscles are involuntary.
18. **Skeletal** muscles are those attached to the bones and **aid in movement**.
19. The **digestive system** breaks food down into small molecules so that the body can nutrition from the food.
20. The digestive system consists of the **mouth, tongue, pharynx, esophagus, stomach, small intestine, large intestine**, and **anus**.
21. Cattle are what is called a **ruminant**. This means the stomach is broken into **four** compartments. This includes the **reticulum, rumen, omasum**, and **abomasum**.
22. The cow eats and breaks down the food with the **teeth**. This food then forms a **bolus** that goes down the **esophagus** and into the **rumen**. The bolus then goes back up through the esophagus into the mouth where it is broken down into smaller parts. These smaller pieces are swallowed again but this time it enters the **reticulum**.
23. This goes from the reticulum to the **omasum** where these small pieces are broken down into molecules.
24. These molecules then enter the abomasum and are **absorbed** by the body.

25. The molecules not absorbed go through the small intestine and then the large intestine and end up as **solid waste**.
26. The **endocrine** system is made up of **glands** that **produce hormones**.
27. Hormones are **chemicals** that control different types of **bodily functions**.
28. There are **four** glands that create this system.
29. **Hypothalamus** gland controls the **pituitary gland** and makes an **antidiuretic** hormone.
30. **Pituitary** gland makes **amino acids**, and **releases growth hormone**.
31. **Thyroid** gland creates **amino acids**, and encourages **growth** and **metabolism**.
32. **Adrenal** gland makes **amino acids**, and releases **epinephrine** and **norepinephrine**.

Lesson Five – Body Systems

REVIEW: Recap of Beef Body Systems

10 minutes

Purpose:

Participants will review the beef cattle body systems in groups using the 3D Vision Cow Model.

Materials:

- 3D Vision Cow Model
- *Body Systems Quiz*
- *Body Systems Quiz – Answer Key*

Facilitation Steps:

1. Break participants into small groups and pass out the 3D Cow Models to each group.
2. Provide instructions on how to use the model for review.
3. Participants will review for five minutes.
4. Collect 3D Cow Models and distribute the *Body Systems Quiz* and give participants 5 minutes to complete.
5. Have participants trade quizzes to grade while you read the answers from the answer key.
6. Collect the quizzes.

Name: _____ Class: _____

Body Systems Quiz

Directions: Circle the correct answer for each question.

1. True or False Beef cattle have 250 bones.
2. True or False The skeletal system provides support for all other body systems.
3. True or False The skeletal system is made up of five different types of bones.
4. True or False Tendons are thick bands that keep the bone and muscle together.
5. True or False The skeletal system releases minerals, fats, and produces blood cells.
6. True or False All muscles are voluntary.
7. True or False Smooth muscles are found in the walls of internal organs.
8. True or False Cardiac muscles make up the heart muscle.
9. True or False Skeletal muscles attach to bone.
10. True or False Cattle are ruminates.
11. True or False Cattle have a stomach that is broken down into two compartments.
12. True or False Cattle chew food with their teeth to form a bolus.
13. True or False Endocrine system consists of a glands that produce hormones.
14. True or False There are eight glands that make up the endocrine system.
15. True or False Pituitary gland makes amino acids, and releases growth hormone.

Body Systems Quiz – Answer Key

Directions: Circle the correct answer for each question.

1. True or **False** Beef cattle have 250 bones.
2. **True** or False The skeletal system provides support for all other body systems.
3. True or **False** The skeletal system is made up of five different types of bones.
4. **True** or False Tendons are thick bands that keep the bone and muscle together.
5. **True** or False The skeletal system releases minerals, fats, and produces blood cells.
6. True or **False** All muscles are voluntary.
7. **True** or False Smooth muscles are found in the walls of internal organs.
8. **True** or False Cardiac muscles make up the heart muscle.
9. **True** or False Skeletal muscles attach to bone.
10. **True** or False Cattle are ruminates.
11. True or **False** Cattle have a stomach that is broken down into two compartments.
12. **True** or False Cattle chew food with their teeth to form a bolus.
13. **True** or False Endocrine system consists of glands that produce hormones.
14. True or **False** There are eight glands that make up the endocrine system.
15. **True** or False Pituitary gland makes amino acids, and releases growth hormone.

Lesson Six – Selection and Judging

Lesson Overview

Participants will be introduced to the importance of proper selection along with a basic understanding of beef judging.

Lesson Objectives

After completing this lesson, participants will be able to:

- List the five criteria of beef selection.
- Describe the two types of judging
- List the parts of a judging card
- List four good traits and four bad traits using judging terminology

Lesson at a Glance

Activity	Materials	Preparation	Approximate class time
FOCUS	• <i>Intro to Selection and Judging of Beef</i> worksheet • <i>Intro Selection and Judging of Beef</i> – Answer Key	1. Print/photocopy <i>Intro to Selection and Judging of Beef</i> worksheet (one per participant)	10 minutes
LEARN	• <i>Selection and Judging</i> slide presentation • <i>Selection and Judging</i> worksheet • <i>Selection and Judging</i> – Answer Key	1. Print/photocopy <i>Selection and Judging</i> worksheet (one per participant) 2. Prepare <i>Selection and Judging</i> slide presentation for viewing	40 minutes
REVIEW	• Beef Judging Poster • <i>Selection and Judging Quiz</i> • <i>Selection and Judging Quiz</i> – Answer Key	1. Hang Beef Judging Poster 2. Print/photocopy <i>Selection and Judging Quiz</i> (one per participant)	10 minutes

Lesson Six – Selection and Judging of Beef

FOCUS: Intro to Selection and Judging of Beef

10 minutes

Purpose:

Participants will be introduced to terms that are used in the selection process.

Materials:

- *Intro to Selection and Judging of Beef* worksheet
- *Intro to Selection and Judging of Beef* – Answer Key

Facilitation Steps:

1. Distribute the *Intro to Selection and Judging of Beef* worksheet and have participants complete them individually.
2. After five minutes, have participants trade papers and check the answers while you go over the answer key.

Name: _____ Class: _____

Intro to Selection and Judging of Beef

Directions: Unscramble the following words.

- | | |
|----------|-----------------------------------|
| 1. _____ | throwg fo mearf |
| 2. _____ | leetrlsk ezis |
| 3. _____ | clingsum |
| 4. _____ | umevol nda manforrepce |
| 5. _____ | nociidton dna nesstrim |
| 6. _____ | ructtures, undsossen, dan clanbea |
| _____ | |

Intro to Selection and Judging of Beef – Answer Key

Directions: Unscramble the following words.

- | | |
|---|----------------------------------|
| 1. Growth of Frame | throwg fo mearf |
| 2. Skeletal size | leetrslk ezis |
| 3. Muscling | clingsum |
| 4. Volume and performance | umevol nda manforrepce |
| 5. Condition and trimness | nociidton dna nesstrim |
| 6. Structure, soundness, and balance | ructtures, undsossen, dan clanbe |

Lesson Six –Selection and Judging

LEARN: Selection and Judging of Beef

40 minutes

Purpose:

Participants learn the importance of selection and how to judge.

Materials:

- *Selection and Judging* slide presentation
- *Selection and Judging* worksheet
- *Selection and Judging* – Answer Key

Facilitation Steps:

1. Distribute the *Selection and Judging* worksheet and provide instruction on how to fill it out.
2. Present the *Selection and Judging* slide presentation while the participants take notes.

Slide 3: Why is Proper Selection Important?

- Ask participants for some ideas as to why this would be the case.
Example: cost of feed, veterinarian bills, etc.

Slide 4: Goals of the Beef Market

- Age at market: 14 – 18 months
- Live weight: 1250 to 1400 pounds
- Hot carcass weight: 700 to 900 pounds
- Kidney, pelvic, heart (KPH): 3.0 or less
- Fat thickness: 0.5 inches or less
- Ribeye thickness: 12.5 to 14.5 inches
- Quality grade: Choice or higher
- Yield grade: 3.0 or less

Slide 5: Criteria to Follow when Meeting these Goals

- Growth of frame or skeletal size
- Muscling

- Volume and performance
- Condition and trimness
- Structure, soundness, and balance

Slide 6: Growth of Frame or Skeletal Size

- Measured by considering the length of the body, height of hip, and the length and size of the cannon bone on the leg

Slide 7: Issues with Poor Selection

- If the cannon bone is not long enough or large enough then the animal is more likely to break a leg as it grows
- This means the animal will need to be slaughtered early
- If the animal is too small (100 pounds or less), it costs more to process the animal compared to the standard size of 1250 to 1400 pounds
- If the animal is 1500 pounds or more then the animal is too big for the processing plant the cuts are too big for the consumer
- Any of these problems will cost the farmer money Explain that slaughtering early means that the profits are less for that animal and more costly to the farmer.

Slide 8: Muscling

- Muscling is associated with more meat and less fat. The consumer is interested in meat that has less fat
- How can you tell if an animal is well muscled?
- Look at the round and over the back for muscle development
- How the animal is standing is another hint of the amount of muscling. A steer standing wide is a

good indication that there is a lot of muscling

- A bad selection here will produce a product that is too fatty, which means the loss of profits

Slide 9: Volume and Performance

- Volume of the animal can be explained as to how well the animal can fill out
- Things to look for include ribcage length, depth, and shape. You need to also look at the depth of flank and width of chest floor
- The cost of bad selection here comes from the fact that it will take the animal longer to fill out to market size (performance)
- This will add cost to the raising of the animal, which decreases profits

Slide 10: Condition and Trimness

- This relates to performance also due to the fact that what you are looking at is the amount of fat
- You do not want an animal that is too thin or too fat
- Where do you look on the animal? Look at the brisket, in the flank, over the ribs, on the pin bones and in the cod/utter area
- Bad selection here will cost the owner money due to the animal being too large or too small

Slide 11: Structure, Soundness, and Balance

- This has to do with the skeleton of animal.
- Structure and soundness is measured by looking at the angle of the shoulder, the evenness of the top line and hip, the angle of the pastern and how the animal moves.
- Any problem in the skeleton can cause the animal to be slaughtered early.
- A balanced animal is one that is attractive in the sense that all the body parts are balanced from front to back.

Slide 13: Two Types of Judging

- One type of judging occurs when an owner “shows” their animal
- It is done by an individual walking around and “grading” the animal’s characteristics
- This is like a dog show where the animal wins and is rewarded as “grand champion”

Slide 14: Grand Champion

- What does a Grand Champion mean?
 - Higher value of the animal at auction.
 - This includes value as a breeder, sperm, and meat

Slide 15: Types of Judging Continued

- The second type occurs when individuals judge animals and have to defend the reason why this animal is better compared to another
- This is the type of judging we will discuss
- The following slide is the judging card that is used

Slide 16: Judging Card

- Share with participants the example of a judging card

Slide 17: Parts of the Judging Card

- Introduction provides a space to label what you are judging. Example: Red Angus steers
- It also provides space for you to write down your ranking of the animals from 1st to 4th as an example
- This helps with the oral presentation

Slide 18: Chart Organization

- 1st column is for identification
- 2nd column is for positives of the animal
- 3rd column is for the negatives of the animal

- 4th column is for comparing animals and stating why one is better than the other

Slide 19: What are they looking for?

- What the judge is looking for are the same things that an individual looks for when selecting an animal

Slide 20 – 27: How to fill out a judging card

Show participants words to use to describe both the good and the bad on a judging card for the following topics.

- Growth and Frame
- Muscling for Heifers
- Muscling for Steers and Bulls
- Volume and Performance
- Trimness and Condition
- Structure, Soundness, and Balance
- Femininity
- Carcass

Slide 28: Judging

- Builds communication.
- Teaches you how to define your position
- Determines the winner not by whether you choose the right animal but how you defend your choice. This entails using the proper terminology to describe your reasoning during your oral presentation

Please note to participants that the cards are only used for note taking. During your

judging presentation, you must present your reasons without notes.

3. Collect the worksheet once the slide presentation is complete.

Name: _____ Class: _____

Selection and Judging

Directions: Fill in the blanks with information from the powerpoint.

1. Proper selection is important because it can _____ you money.
2. The five criteria that is used in selection is _____ or _____, _____, _____, _____ and _____.
3. Growth of frame or skeletal size is measured by length of _____, height of _____, length and size of _____>
4. Poor selection of proper frame can cause the animal to be _____ early.
5. An animal that is too _____ will cost more to process. An animal that is too _____ will produce meat _____ that are too large, which the consumer does not like.
6. _____ means more meat and less fat.
7. Look at the _____ and _____ back for muscling development.
8. A animal with good muscling will stand _____.
9. An animal that does not have good muscling will produce too much _____>
10. _____ is how well the animal can fill out.
11. When looking at volume, consider the length of the _____ along with the _____ and _____. Also look at the width of the _____ floor.
12. An animal that does not have a lot of volume will take more time to fill out, which means it will cost _____ to raise and _____ profits.
13. _____ and _____ deals with the amount of fat. You do not want an animal that is too _____ or too _____>
14. Look at the _____, in the _____, over the _____, on the _____ and in the _____ area.

Beef Cattle Kit

15. _____, _____, and balance deal with the skeleton.
16. _____ and _____ is measured by looking at the angle of the _____, the evenness of the _____, the angle of the _____ and how the animal _____.
17. Problems with the skeleton can cause the animal to be processed _____.
18. _____ is the appearance of the animal from front to back.
19. There are two types of judging. One is when the animal is shown by a person like in a _____ show. In this type of judging, the animal can earn the title _____. The second type of judging involves evaluating the _____ and how he or she presents their reason for placing one animal above another.
20. Using the chart below, fill out the columns with proper labels.

List two good traits and two bad traits for each category.

21. Growth and Frame.

Good Trait	Bad Trait

22. Muscling of Heifters

Good Trait	Bad Trait

23. Muscling of Steers and Bulls

Good Trait	Bad Trait

24. Volume and Performance

Good Trait	Bad Trait

25. Trimness and Condition

Good Trait	Bad Trait

26. Structure, Soundness and Balance

Good Trait	Bad Trait

27. Femininty

Good Trait	Bad Trait

28. Carcass

Good Trait	Bad Trait

Selection and Judging – Answer Key

Directions: Fill in the blanks with information from the powerpoint.

1. Proper selection is important because it can **cost** you money.
2. The five criteria that is used in selection is **growth of frame** or **skeletal size**, **muscling**, **volume and performance**, **condition and trimness**, **structure**, **soundness** and **balance**.
3. Growth of frame or skeletal size is measured by length of **body**, height of **hip**, length and size of **cannon bone**.
4. Poor selection of proper frame can cause the animal to be **slaughtered** early.
5. An animal that is too **small** will cost more to process. An animal that is too **large** will produce meat **cuts** that are too large, which the consumer does not like.
6. **Muscling** means more meat and less fat.
7. Look at the **round** and **over the** back for muscling development.
8. A animal with good muscling will stand **wide**.
9. An animal that does not have good muscling will produce too much **fat**.
10. **Volume** is how well the animal can fill out.
11. When looking at volume, consider the length of the **ribcage** along with the **depth** and **shape**. Also look at the width of the **chest** floor.
12. An animal that does not have a lot of volume will take more time to fill out, which means it will cost **more** to raise and **decrease** profits.
13. **Condition** and **trimness** deals with the amount of fat. You do not want an animal that is too **thin** or too **fat**.
14. Look at the **brisket**, in the **flank**, over the **ribs**, on the **pin bones** and in the **cod/utter** area.
15. **Structure**, **soundness**, and balance deal with the skeleton.
16. **Structure** and **soundness** is measured by looking at the angle of the **shoulder**, the evenness of the **top line and hip**, the angle of the **pastern** and how the animal **moves**.
17. Problems with the skeleton can cause the animal to be processed **early**.
18. **Balance** is the appearance of the animal from front to back.
19. There are two types of judging. One is when the animal is shown by a person like in a **dog** show. In this type of judging, the animal can earn the title **Grand Champion**. The second type of judging involves evaluating the **judge** and how he or she presents their reason for placing one animal above another.
20. Using the chart below, fill out the columns with proper labels.

# and ID	Good	Bad	Compare

List two good traits and two bad traits for each category.

21. Growth and Frame.

Good Trait	Bad Trait
More youthful appearing	Small framed
Larger framed	Earlier maturity, narrow and/or tall

22. Muscling of Heifters

Good Trait	Bad Trait
Bigger hipped	Narrow based
Wider base	Flat and narrowed body

23. Muscling of Steers and Bulls

Good Trait	Bad Trait
Bigger hipped	Narrow topped
More shape and dimension of muscle	Least shape of his top

24. Volume and Performance

Good Trait	Bad Trait
Wider chested	Flat ribbed
Deeper bodied	Narrow chested

25. Trimness and Condition

Good Trait	Bad Trait
Trimmer through the brisket and flank	Too fat
More desirable conditioning	Less desirable conditioning

26. Structure, Soundness and Balance

Good Trait	Bad Trait
Easy moving	Tight moving
Level hip	Tight hip

27. Femininty

Good Trait	Bad Trait
Thin neck	Plain made
Smooth shoulder	Bold and coarse shouldered

28. Carcass

Good Trait	Bad Trait
Most market ready	Least market ready
Highest cutability	Least cutability

Lesson Six – Selection and Judging

REVIEW: Recap of Selection and Judging of Beef Cattle

10 minutes

Purpose:

Participants will break into groups and discuss what judges look for in beef using the poster.

Materials:

- Beef Judging Poster
- *Selection and Judging Quiz*
- *Selection and Judging Quiz – Answer Key*

Facilitation Steps:

1. Break participants into groups of two and go over the information on the Beef Judging Poster.
2. Have participants discuss what judges look for in beef.
3. Once the discussion is over, have the participants go back to their seating arrangement.
4. Distribute the *Selection and Judging Quiz* and give participants 5 minutes to complete.
5. Have participants trade quizzes to grade while you read the answers from the answer key.
6. Collect the quizzes.

Name: _____ Class: _____

Selection and Judging Quiz

Directions: For each statement below, indicate whether it is true or false in the blank.

1. True or False When it comes to beef judging, there are three different types.
2. True or False Part of how the animal is judged is how well it does a trick.
3. True or False A Grand Champion win goes to the largest animal.
4. True or False The improper selection of an animal will not cost more to raise.
5. True or False It is better to have an animal that is too big compared to an animal that is too small.
6. True or False As a student judge, you do not have to explain why you say one animal is better than another.
7. True or False There is no difference in judging when it comes to heifers, steers, and bulls.
8. True or False An animal that is narrow in the chest is a good choice.
9. True or False Watching an animal move is one practice that can be used to determine if the animal has good balance.
10. True or False Having a thin neck is a desirable trait.

Selection and Judging Quiz – Answer Key

Directions: For each statement below, indicate whether it is true or false in the blank.

1. True or **False** When it comes to beef judging, there are three different types.
2. True or **False** Part of how the animal is judged is how well it does a trick.
3. True or **False** A Grand Champion win goes to the largest animal.
4. True or **False** The improper selection of an animal will not cost more to raise.
5. True or **False** It is better to have an animal that is too big compared to an animal that is too small.
6. True or **False** As a student judge, you do not have to explain why you say one animal is better than another.
7. True or **False** There is no difference in judging when it comes to heifers, steers, and bulls.
8. True or **False** An animal that is narrow in the chest is a good choice.
9. **True** or False Watching an animal move is one practice that can be used to determine if the animal has good balance.
10. **True** or False Having a thin neck is a desirable trait.

Lesson Seven – Intro to Careers in Beef

Lesson Overview

Participants will explore careers in the beef production industry.

Production

Lesson Objectives

After completing this lesson, participants will be able to:

- Discuss careers involved in beef production.
- List three or more careers that require a college degree.
- List one career that does not require a college degree.
- Discuss one unique aspect of a career they are interested in exploring

Lesson at a Glance

Activity	Materials	Preparation	Approximate class time
FOCUS	• <i>Intro to Careers</i> worksheet • <i>Intro to Careers</i> – Answer Key	1. Print/photocopy <i>Intro to Careers</i> (one per participant)	10 minutes
LEARN	• <i>Beef Marketing, Careers, and Training</i> slide presentation • <i>Beef Production Careers</i> worksheet • <i>Career Exploration</i> Graphic Organizer	1. Print/photocopy <i>Beef Production Careers</i> worksheet (one per participant) 2. Prepare <i>Beef Marketing, Careers, and Training</i> slide presentation for viewing 3. Print/photocopy <i>Career Exploration</i> Graphic Organizer (one per participant)	40 minutes
REVIEW	• Beef Careers Poster • <i>Careers Quiz</i>	1. Print/photocopy <i>Careers Quiz</i> (one per participant) 2. Display Beef Careers Poster	10 minutes

Lesson Seven – Intro to Careers in Beef Production

FOCUS: Intro to Careers in Beef Production

10 minutes

Purpose:

Participants will be introduced to careers in beef production by unscrambling the letters of the careers listed.

Materials:

- *Intro to Careers* worksheet
- *Intro to Careers* – Answer Key

Facilitation Steps:

1. Distribute the *Intro to Careers in Beef Selection* worksheet and have participants complete them individually.
2. After five minutes, have participants trade papers and check the answers while you go over the answer key.
3. Throughout the grading process, discuss whether the career required a college degree.
4. Once completed, collect the worksheets.

Name: _____ Class: _____

Intro to Careers

Directions: Unscramble the words and then use them to fill in the blank. Once completed, circle the careers that require a college degree.

1. _____

beewsit gneesrid

2. _____

nairaniretev

3. _____

dsremhan

4. _____

ctudrop gnteikarm

5. _____

gist loobiorcm

Intro to Careers – Answer Key

Directions: Unscramble the words and then use them to fill in the blank. Once completed, circle the careers that require a college degree.

- | | |
|-----------------------------|-------------------|
| 1. Website Designer | beewsit gneesrid |
| 2. Veterinarian | nairaniretev |
| 3. Herdsman | dsremhan |
| 4. Product Marketing | ctudrop gnteikarm |
| 5. Microbiologist | gist loobiorcni |

Lesson Seven – Intro to Careers in Beef Production

LEARN: Careers in Beef Production

40 minutes

Purpose:

Participants will be exposed to several different types of careers that are involved in beef production

Materials:

- *Beef Marketing, Careers, and Training* slide presentation
- *Beef Production Careers* worksheet
- *Career Exploration* Graphic Organizer

Facilitation Steps:

1. Distribute the *Beef Production Careers* worksheet and provide instruction on how to fill it out.
2. Present the *Beef Marketing, Careers, and Training* slide presentation while participants take notes.

Slide 3: Statistics for 2021

- 779,386 people work in the beef production industry in the U.S.
- Equals to 2.6 billion dollars in salary
- Multiple other jobs that this industry depends on
- Some jobs require college degrees

Slide 5: Beef Checkoff

- Several jobs rolled into one
- Brainstorming new ideas for beef products, advertising, public relations, marketing, education, and research
- Work with restaurants and grocery stores to help sell more beef products
- College degree not required but understanding business, marketing, and food service helps

Slide 6: Beef Extension

- Work with farmers who want to be involved in beef production

- Work for land grant college and at times teaches college classes
- May also help with 4-H and/or FFA
- College degree Required. A BS (Bachelor of Science) in Animal Science and and MS (Master of Science) in Extension Education
- Note that most counties have an extension agent.

Slide 8: Prodcut Marketing

- Work to market beef products both in person and online
- College degree not required but having business background and understanding marketing is helpful

Slide 9: Pharmaceutical Sales

- Work with businesses that need pharmaceuticals like veterinarians, zoos, and animal supply stores
- College degree required; four-year degree major not always considered, taking multiple science classes help

Slide 10: Feed Sales

- Work in feed sales to sell animal food
- College degree not required but helps; many businesses look for four-year degrees in marketing, business, animal science, agriculture, and communications

Slide 12: Herdsman

- Work to move cattle from one area to another when grazing
- College degree not required; can get on-the-job experience, helps to have been raised in the industry

Slide 13: Livestock Transportation Manager

- Work to arrange the movement of cattle from one area to the next and/or processing facility
- College degree not required; experience in animal transportation and/or perishable goods helps
- Valid driver's license and CDL may be required

Slide 14: Feedlot Manager

- Work to take care of beef cattle when they arrive at the feedlot
- College degree may be required; most businesses require a two-year degree; may want a four-year degree in animal science, agriculture marketing, and/or agribusiness, can help

Slide 16: Animal Health Technology Specialist

- Work to take care of animals but is not a vet tech
- College degree required; minimum of a two-year degree and must pass a state exam before becoming licensed

Slide 17: Veterinarian

- Work to examine and provide treatment for a wide variety of creatures
- College degree required, minimum of a four-year degree and a Doctor of Veterinary Medicine Degree, shortened to DVM or VMD

Slide 18: Hoof Trimmer

- Work to care and trim the hooves of animals
- College degree currently not required, encouraged to attend hoof trimming school or another hoof trimmer for apprenticeship

Slide 20: Beef Nutritionist

- Works to analyze beef cattle feed to ensure it meets dietary requirements for the animal
- College degree required; minimum of four-year degree in animal science, nutrition, and/or agricultural science; some businesses may require a masters; will need a PhD if wanting to teach

Slide 21: Dietitian

- Work with Beef Nutritionist and Beef Producer to produce products that are healthy
- College degree required, minimum of four-year degree in nutrition or closely related field

Slide 22: Cattle Feeder

- Works to feed cattle and observe the health of the herd and report any problems
- College degree required if not raised in beef production industry; minimum of two-year degree; classes included animal science, agribusiness, and/or agricultural marketing

Slide 24: Embryologist

- Work to analyze the health of the sexual components of the male and female, information used to combine egg and sperm to create embryos to be inserted into the female
- College degree required, minimum of a four-year degree in biomedicine or biomedical science. Advancement can only happen with Masters and PhD

Slide 25: Artificial Insemination Technician

- Works to artificially deposit sperm into the cow (beef), can also require the collection of sperm
- College degree not always required but highly recommended; minimum of four-year degree in animal, poultry, or equine science; or can take test for AI certification that is supported by the National Association of Animal Breeders

Slide 27: Food Safety Inspector

- Works to check on slaughterhouses to ensure that food safety rules and regulations are being followed
- College degree not required but recommended, minimum of four-year degree and passing a written test, can also obtain job if you have one year of food industry experience where you are

making sure that the business is in compliance

Slide 28: Microbiologist

- Work to look for viruses, bacteria, and parasites that may attack the animal; also may study how treatment prevents or kills microbe
- College degree required, minimum of four-year degree in microbiology to enter field, additional degrees required to move forward

Slide 29: Agribusiness Related to Beef Production

- There are many businesses that depend on beef as their product

Slide 30: Butcher Shop Owner

- Making a comeback
- Typically sell local products, process the sides of beef themselves
- College degree not required, experience in field is very helpful, must know how to properly cut beef and understand how to manage a business

Slide 31: Animal Training/Showing

- Works to teach someone what to look for in beef cattle and how to show them; the more an animal wins the higher the price; includes meat and sperm
- College degree not required, experience and track record of winning many beef showing competitions is the way into this field

Slide 32: Website Designer

- Works to develop and maintain websites for farmers and other agribusinesses
 - College degree not required, taking classes would benefit, experience in programming is another way into this field
3. Collect the worksheet once the slide presentation is complete.
 4. Hand out the *Career Exploration* Graphic Organizer and have participants pick one career that they would want to do more research on.
 5. Give participants a timeline of when the research and graphic organizer must be completed

Name: _____ Class: _____

Beef Production Careers

Directions: Fill in each blank with the answer from the Powerpoint

1. _____ is a job that includes many different types of jobs that are involved in creating new _____ products. A degree is not required but understanding _____, _____ and _____ concepts.
2. _____ works with _____. You need a degree in _____ and a masters in _____.
3. _____ involves marketing beef products both _____ and _____. This job does not require a college degree but a general understanding of _____ and _____ marketing is helpful.
4. _____ is involved in providing medications for animal businesses. It does require a _____ in any major. Taking several _____ classes will help with this occupation.
5. _____ people spend their days saling different types of animal feed. Getting a job in this occupation does not require a degree but many businesses look for individuals who have a _____ in marketing, _____, _____, agriculture, and _____.
6. A _____ moves cattle from one area to the next. It _____ require a college degree but it does help to have experience with _____.
7. _____ moves beef cattle from one location to another and/or to the _____. You do not need a college degree but _____ is a plus. You will need a _____ and possibly a _____.
8. _____ takes care of the cattle when they reach the _____. You will need at least a _____ but many feedlot businesses require a _____. Beneficial classes to take include animal science, _____ and/or agribusiness.

9. _____ is an individual that takes care of animals but this individual is not a veterinarian. You do need a _____ and must pass a _____.
10. _____ is a doctor for animals. It does require a _____ and a _____ degree.
11. _____ takes care of the hooves of beef cattle. This also includes trimming, filling, and maintaining hoof health. There is no certification but it will benefit you to go to a _____ or _____.
12. _____ is responsible for making sure the feed meets the nutritional needs of beef cattle. You will need a _____ in _____, _____ and/or _____. Some businesses will require a _____ degree.
13. _____ is one that works in human nutrition but in the case of beef production, this individual works with the beef industry to create healthy food for humans. It requires a _____ in nutrition or related field.
14. _____ is responsible for feeding the cattle. This individual is also responsible for monitoring the health of the _____ and reporting any problems. If you have no experience then you will need to earn a _____. Classes you may take include _____ and/or _____.
15. _____ is responsible for the sexual components of the male and female. This information is used to create the healthiest offspring. This career requires a _____ in _____, _____ or biomedical science. You can only advance with a advanced degree.
16. _____ is one that performs artificial insemination or the placing of sperm inside a cow. It can also be responsible for the collection of the _____. The best way to get into this field is through a _____ in _____, _____ or _____. You can also earn an AI certification by taking a test sponsored by the _____.
17. _____ check slaughterhouses to make sure that food safety rules are being followed. You can get this type of job by having at least a year experience in a business where you are responsible for making sure the food safety rules are followed or a _____.

_____. Regardless of which way you choose, you will need to take a test to get certified.

18. A _____ spends their time studying _____, _____, and _____. They also look at how treatments kill the _____. You will need at least a _____ in microbiology. If you want to advance you will need additional degrees.
19. _____ cuts and sells animal products. To get into this occupation, you will need to have experience as a meat cutter and will benefit from understanding _____ practices.
20. _____/_____ occupation entails an individual acting as a teacher or coach to teach individuals how to show their beef cattle. You do not need a college degree for this job but you do need to show a track record of winning _____.
21. _____ is an individual who designs websites for _____ and other _____. You do not need a college degree for this job but taking classes in _____ will help.

Beef Production Careers – Answer Key

Directions: Fill in each blank with the answer from the Powerpoint

1. **Beef checkoff** is a job that includes many different types of jobs that are involved in creating new **beef** products. A degree is not required but understanding **business**, **marketing**, and **food service** concept.
2. **Beef extension** works with **farmers**. You need a degree in **animal science** and a masters in **extension education**.
3. **Product marketing** involves marketing beef products both **in person** and **online**. This job does not require a college degree but a general understanding of **business** and **online** marketing is helpful.
4. **Pharmaceutical sales** is involved in providing medications for animal businesses. It does require a **4 year degree** in any major. Taking several **science** classes will help with this occupation.
5. **Feed sales** people spend their days selling different types of animal feed. Getting a job in this occupation does not require a degree but many businesses look for individuals who have a **4 year degree** in marketing, **business**, **animal science**, agriculture, and **communications**.
6. A **herdsman** moves cattle from one area to the next. It **does not** require a college degree but it does help to have experience with **cattle**.
7. **Livestock transportation manager** moves beef cattle from one location to another and/or to the **processing facility**. You do not need a college degree but **experience** is a plus. You will need a **driver's license** and possibly a **CDL**.
8. **Feedlot manager** takes care of the cattle when they reach the **feedlot**. You will need at least a **two year degree** but many feedlot businesses require a **4 year degree**. Beneficial classes to take include animal science, **agricultural marketing** and/or agribusiness.
9. **Animal health technology specialist** is an individual that takes care of animals but this individual is not a veterinarian. You do need a two year degree and must pass a **state examine**.
10. **Veterinarian** is a doctor for animals. It does require a **4 year degree** and a Doctor of **Veterinary Medicine** degree.
11. **Hoof trimmer** takes care of the hooves of beef cattle. This also includes trimming, filling, and maintaining hoof health. There is no certification but it will benefit you to go to a **hoof trimming school** or **apprenticeship**.
12. **Beef nutritionist** is responsible for making sure the feed meets the nutritional needs of beef cattle. You will need a **4 year degree** in **animal science**, **nutrition** and/or **agricultural science**.
Some businesses will require a **Masters** degree.
13. **Dietitian** is one that works in human nutrition but in the case of beef production, this individual works with the beef industry to create healthy food for humans. It requires a **4 year degree** in nutrition or related field.
14. **Cattle feeder** is responsible for feeding the cattle. This individual is also responsible for monitoring the health of the **herd** and reporting any problems. If you have no experience then you will need to earn a **2 year degree**. Classes you may take include **animal science**, **agribusiness** and/or **agricultural marketing**.

15. **Embryologist** is responsible for the sexual components of the male and female. This information is used to create the healthiest offspring. This career requires a **4 year degree** in **biomedicine**, **biology** or biomedical science. You can only advance with an advanced degree.
16. **Artificial insemination technician** is one that performs artificial insemination or the placing of sperm inside a cow. It can also be responsible for the collection of the **sperm**. The best way to get into this field is through a **4 year degree** in **animal**, **poultry** or **equine science**. You can also earn an AI certification by taking a test sponsored by the **National Association of Animal Breeders**.
17. **Food safety inspectors** check slaughterhouses to make sure that food safety rules are being followed. You can get this type of job by having at least a year experience in a business where you are responsible for making sure the food safety rules are followed or a 4 year degree. Regardless of which way you choose, you will need to take a test to get certified.
18. A **microbiologist** spends their time studying **viruses**, **bacteria**, and **parasites**. They also look at how treatments kill the **microbes**. You will need at least a **4 year degree** in microbiology. If you want to advance you will need additional degrees.
19. **Butcher shop owner** cuts and sells animal products. To get into this occupation, you will need to have experience as a meat cutter and will benefit from understanding **business** practices.
20. **Animal training/showing** occupation entails an individual acting as a teacher or coach to teach individuals how to show their beef cattle. You do not need a college degree for this job but you do need to show a track record of winning **beef cattle competitions**.
21. **Website designer** is an individual who designs websites for **farmers** and other **agribusinesses**. You do not need a college degree for this job but taking classes in **computer programming** will help.

Career Exploration Graphic Organizer

Pick a career that you have learned about and research some of the key components to follow that career path. Possible sources for information include your school library, public library, Bureau of Labor Statistics website, Occupational Outlook Handbook website, FFA or other career-related websites on the internet.

CAREER: _____

Degree or license required	
Length of time to complete training or earn degrees	
Average starting salary per year	
Average hourly wage	
Job outlook	
5 skills needed for this job	
Describe the job setting	
What are the primary job duties?	
Do you work alone or with people?	
What needs or wants does this occupation fill?	
What is one thing an employer would expect from someone in this position?	
What kinds of people will be successful in this career?	

Lesson Seven – Intro to Careers in Beef Production

REVIEW: Recap of Beef Production Careers

Length: 10 minutes

Purpose:

Participants will break into groups and review the careers presented on the poster.

Materials:

- Beef Career Poster
- *Careers Quiz*
- *Careers Quiz – Answer Key*

Facilitation Steps:

1. Break participants into groups of two and go over the information on the Beef Career Poster.
2. Have participants discuss the potential careers in the beef industry.
3. Once the discussion is over, have the participants go back to their seating arrangement.
4. Distribute the *Careers Quiz* and give participants 5 minutes to complete.
5. Have participants trade quizzes to grade while you read the answers from the answer key.
6. Collect the quizzes.

Name: _____ Class: _____

Careers Quiz

Directions: Using the careers listed below, fill in the blanks with the correct answer.

1. _____ studies viruses, bacteria, and parasites that may attack animals.
2. A person who sales medications to veterinarians is in _____.
3. A _____ is responsible for moving a herd of cattle from one location to the next.
4. The individual that takes care of the hooves of beef cattle is called a _____.
5. Inspecting slaughterhouses to make sure the meat is safe to eat is the resposibility of the _____.
6. A physician to animals is called a _____.
7. _____ entails marketing any proeduct made from beef.
8. If you manage a beef feedlot then you are considered a _____.
9. The _____ not only feeds the cattle but also monitors the herd for any health problems.
10. _____ performs Als and may also collect sperm.

Careers

Product marketing
Cattle feeder
Microbiologist
Herdsman
Artificial Insemination Technician
Food safety inspector
Hoof trimmer
Feedlot manager
Veterinarian
Pharmaceutical sales

Careers Quiz – Answer Key

Directions: Using the careers listed below, fill in the blanks with the correct answer.

1. **Microbiologist** studies viruses, bacteria, and parasites that may attack animals.
2. A person who sales medications to veterinarians is in **pharmaceutical sales**.
3. A **herdsman** is responsible for moving a herd of cattle from one location to the next.
4. The individual that takes care of the hooves of beef cattle is called a **hoof trimmer**.
5. Inspecting slaughterhouses to make sure the meat is safe to eat is the resposiblity of the **food safety inspector**.
6. A physician to animals is called a **veterinarian**.
7. **Product marketing** entails marketing any product made from beef.
8. If you manage a beef feedlot then you are considered a **feedlot manager**.
9. The **cattle feeder** not only feeds the cattle but also monitors the herd for any health problems.
10. **Artificial insemination technician** performs AIs and may also collect sperm.

Careers

Product marketing
Cattle feeder
Microbiologist
Herdsman
Artificial Insemination Technician
Food safety inspector
Hoof trimmer
Feedlot manager
Veterinarian
Pharmaceutical sales

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