

Unit A: Introduction to Cattle Management

Lesson 3: Anatomy of Cattle

Student Learning Objectives:

Instruction in this lesson should result in students achieving the following objectives:

1. Name the parts of a beef animal.
2. Identify major external parts of dairy cattle.
3. Describe major internal parts of dairy cattle.

Recommended Teaching Time: 1 hour

Recommended Resources: The following resources may be useful in teaching this lesson:

Ensminger, M.E., *The Stockman's Handbook*. Danville, Illinois: Interstate Publishers, Inc., 1992.

Lee, Jasper S., *Introduction to Livestock and Companion Animals 2nd Edition*. Danville, Illinois: Interstate Publishers, Inc., 2000.

List of Equipment, Tools, Supplies, and Facilities:

- Writing surface
- PowerPoint Projector
- PowerPoint Slides
- Transparency Masters
- Copies of student worksheets

Terms: The following terms are presented in this lesson (shown in bold italics and on PowerPoint Slide 2):

- Gestation
- Mammary system
- Parturition
- Reproductive system
- Testes

Interest Approach:

Have students name as many external parts of a beef animal as they can. Write a collection of all the answers on the chalk board. Try to get both technical and non-technical terminology. When the students can no longer come up with any external parts, transition into Objective 1.

SUMMARY OF CONTENT AND TEACHING STRATEGIES

Objective 1: Name the parts of a beef animal.

Anticipated Problem: What are all the parts of a beef animal?

(PowerPoint Slides 3, 4, 5, 6, and 7)

- I. Since the main purpose of beef cattle is for meat consumption, we look at them not only to identify their basic parts, but also to identify the beef cuts on an animal.
 - A. There are many external parts of beef cattle that you should know in order to speak the language when selecting one beef animal over another. They are more than just general parts like eyes, head, tail, belly, and back.
 - B. There are also many terms you should know in reference to beef cuts that are taken from an animal. These are meat terms like loin, sirloin, stew meat, and short ribs.

After students become familiar with the various external parts of beef cattle and the terms associated with beef cuts use PowerPoint Slides 4 and 6 for review. While the pictures are being shown have the students come forward and point to and name specific external parts of the beef animal and point to and name the specific cuts of meat. TM: 3-1 can also be used to confirm the parts students identify and locate on the external parts of the animal and the beef cuts.

Objective 2: Identify major external parts of dairy cattle.

Anticipated Problem: What are the major external parts of a dairy cow?

(PowerPoint Slide 8)

- II. Dairy cattle have many external parts that we need to be able to identify in order to select them and to describe any problems they may have. Since the main purpose of dairy cattle is to produce milk, their structure has been developed to do so more efficiently by intensive breeding programs. Some of the main external parts of a dairy cow include:
 - A. Head and neck
 - B. Legs and feet
 - C. Udder and mammary system
 - D. Rump and back
 - E. Tail

Use TM: 3-2 and WS: 3-1 to fill in all the parts of a dairy animal. You may also want to make extra copies of WS: 3-1 to use as a quiz or test.

Objective 3: Describe the major internal parts of dairy cattle.

Anticipated Problem: What are the major internal parts of dairy cattle?

(PowerPoint Slide 9)

III. Since dairy cattle are used mainly for milk production, their reproductive system and mammary system are the most important internal parts.

A. The **reproductive system** is the system used to reproduce cattle by natural, in vitro, and various artificial means of insemination. It is the most important factor in improvement of the dairy breeds.

(PowerPoint Slide 10)

B. The male reproductive system serves the purposes of producing sperm cells and male sex hormones. The **testes** are the organs that produce sperm cells and the male hormone testosterone.

(PowerPoint Slide 11)

C. The female reproductive system serves the purposes of producing eggs and the female sex hormones estrogen and progesterone. This system is also responsible for **gestation**, which is the time between when the egg is fertilized by the sperm and the birth of a calf. The technical term for the birth of a calf is called **parturition**.

(PowerPoint Slides 12 and 13)

D. The **mammary system** is the system responsible for producing milk after parturition. It includes teats, udder, fore and rear udder attachments, alveoli, suspensory ligaments, mammary veins, and milk wells. The production of milk is dependent on management techniques including proper feeding, watering, and breeding programs.

Use TM: 3-3 to discuss the parts of the mammary system. Specific details covering the male and female reproductive systems will be presented in a future lesson.

Review/Summary: Focus the review and summary of the lesson around the student learning objectives **(PowerPoint Slide 14)**. Call on students to explain the content associated with the objectives.

Application: Application can involve the following student lab sheet:

WS: 3-1 External Parts of a Dairy Cow

Evaluation: Evaluation should focus on student achievement of the objectives for the lesson. Various techniques can be used, such as student performance on the application activity. A sample written test is included.

Answers to Sample Test:

Matching

1. D
2. B
3. C
4. A

Fill-in-the-blank

1. Breeding programs
2. Sperm cells
3. Estrogen, progesterone
4. Management techniques

Short Answer

See TM: 3-1

Anatomy of Cattle

Name: _____

Matching: Match each word with the correct definition.

- | | |
|-------------------|----------------|
| a. Gestation | c. Parturition |
| b. Mammary system | d. Testes |

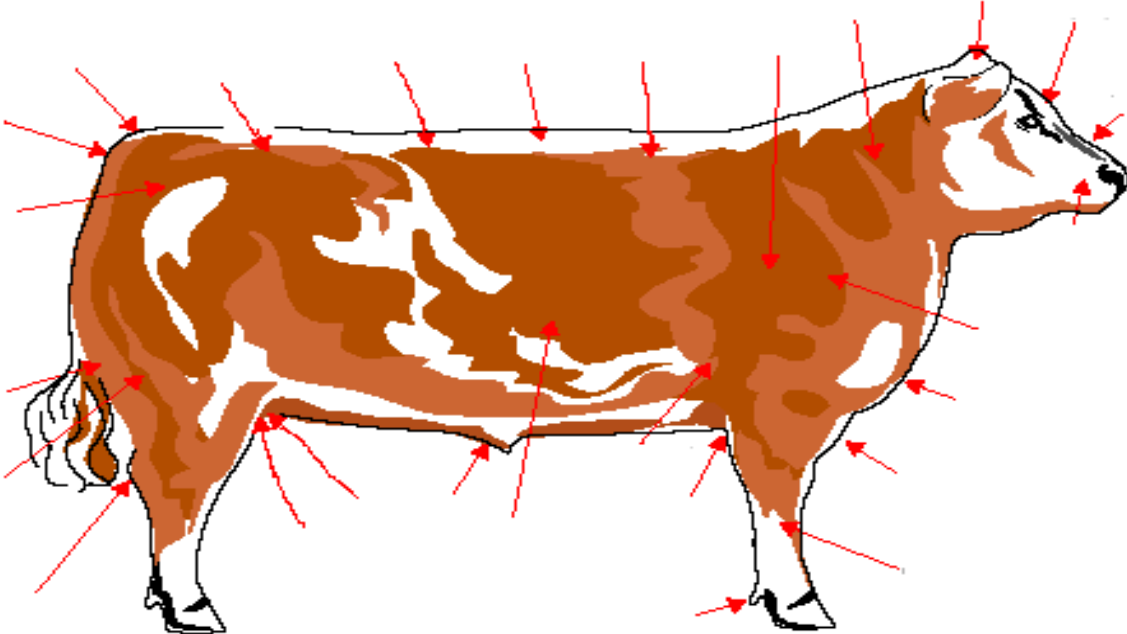
- _____ 1. The organs that produce sperm cells and the male hormone testosterone.
- _____ 2. The system responsible for producing milk after parturition.
- _____ 3. The technical term for the birth of a calf.
- _____ 4. The time between when the egg is fertilized by the sperm and the birth of a calf.

Fill-in-the-blank: Complete the following statements.

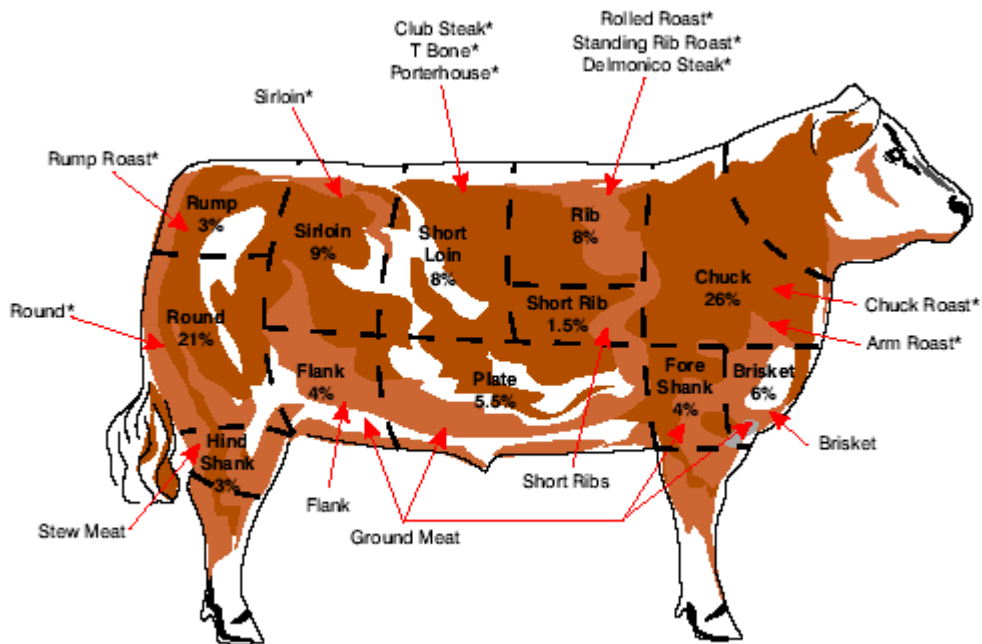
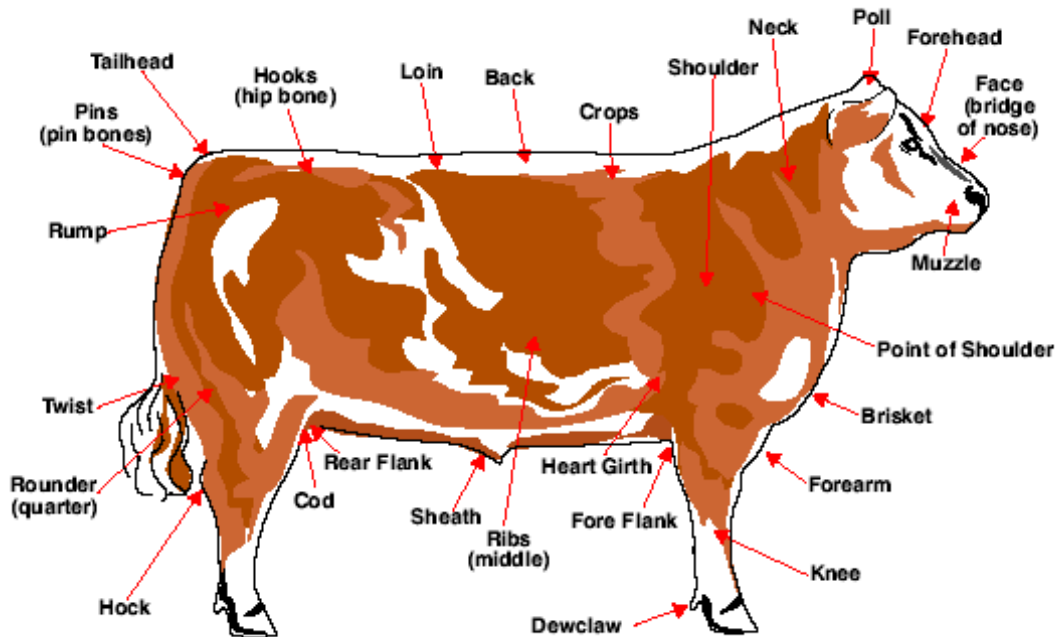
1. Since the main purpose of dairy cattle is to produce milk, their structure has been developed to do so more efficiently by intensive _____.
2. The male reproductive system serves the purposes of producing _____ and male sex hormones.
3. The female reproductive system serves the purposes of producing eggs and the female sex hormones _____ and _____.
4. The production of milk is dependent on _____ including proper feeding, watering, and breeding programs.

Short Answer: Answer the following question.

Label the parts of the beef animal.

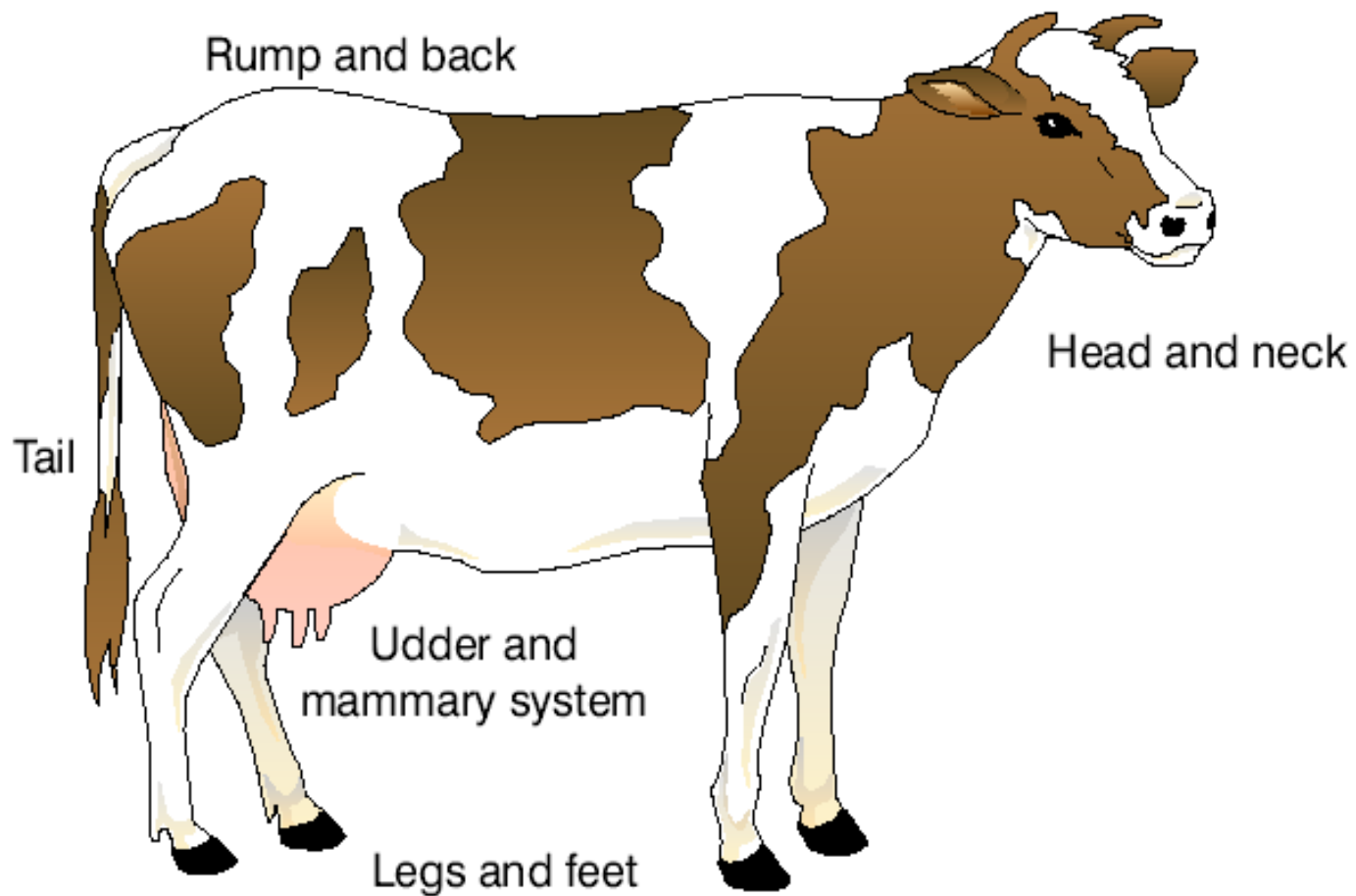


BEEF EXTERNAL PARTS AND MEAT CUTS



TM: 3-2

EXTERNAL PARTS OF A DAIRY COW



TM: 3-3

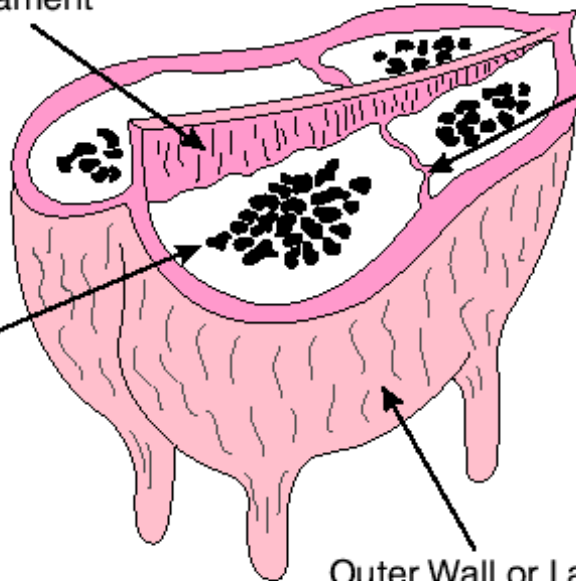
MAMMARY SYSTEM

Central Wall or Median
Suspensory Ligament

Fine Membrane
Between Quarters

Alveoli

Outer Wall or Lateral
Suspensory Ligaments

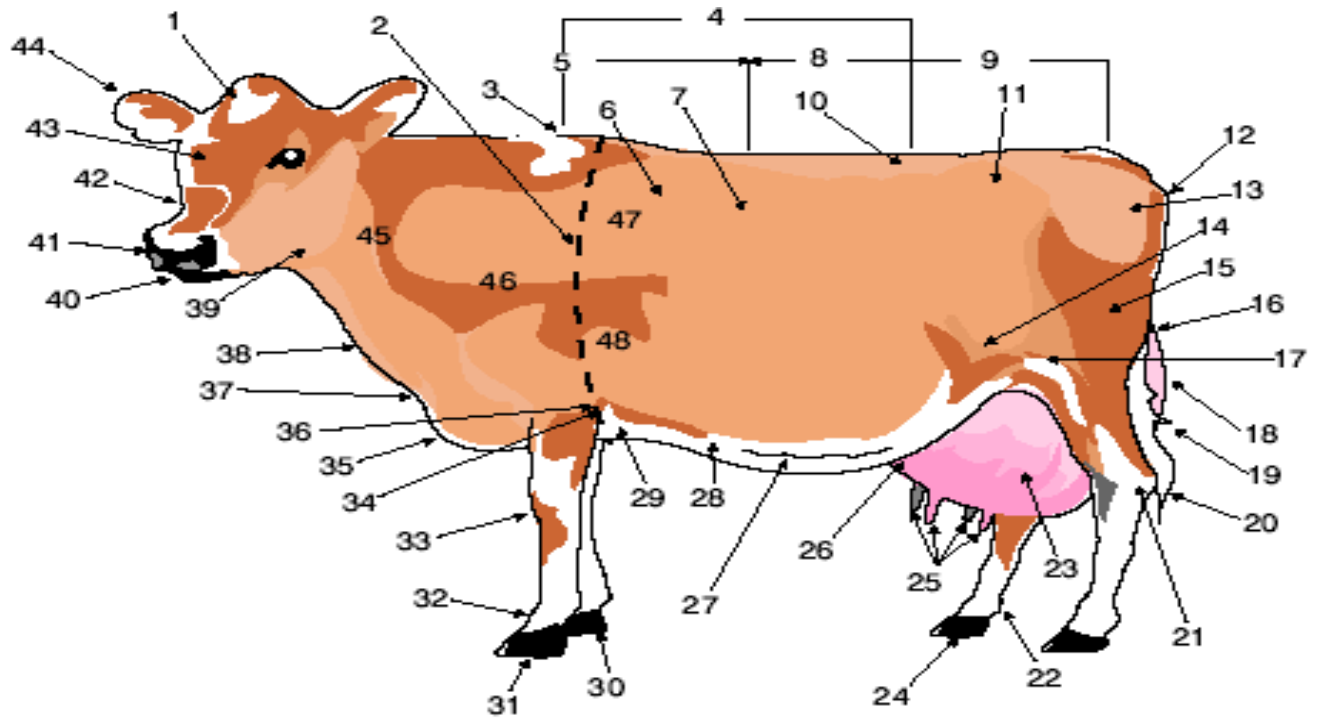


WS: 3-1

EXTERNAL PARTS OF A DAIRY COW

Instructions:

Label the parts of a dairy cow.



- | | | |
|-----------|-----------|-----------|
| 1. _____ | 17. _____ | 33. _____ |
| 2. _____ | 18. _____ | 34. _____ |
| 3. _____ | 19. _____ | 35. _____ |
| 4. _____ | 20. _____ | 36. _____ |
| 5. _____ | 21. _____ | 37. _____ |
| 6. _____ | 22. _____ | 38. _____ |
| 7. _____ | 23. _____ | 39. _____ |
| 8. _____ | 24. _____ | 40. _____ |
| 9. _____ | 25. _____ | 41. _____ |
| 10. _____ | 26. _____ | 42. _____ |
| 11. _____ | 27. _____ | 43. _____ |
| 12. _____ | 28. _____ | 44. _____ |
| 13. _____ | 29. _____ | 45. _____ |
| 14. _____ | 30. _____ | 46. _____ |

15. _____

31. _____

47. _____

16. _____

32. _____

48. _____

LS KEY: 3-1

EXTERNAL PARTS OF A DAIRY COW

- | | |
|---------------------------|---------------------------|
| 1. Poll | 25. Teats |
| 2. Heart girth | 26. Fore udder attachment |
| 3. Withers | 27. Mammary veins |
| 4. Back | 28. Milk wells |
| 5. Chine | 29. Chest floor |
| 6. Crops | 30. Heel |
| 7. Barrel | 31. Sole |
| 8. Loin | 32. Pastern |
| 9. Rump | 33. Knee |
| 10. Hip or hook | 34. Fore flank |
| 11. Thurl | 35. Brisket |
| 12. Tailhead | 36. Point of elbow |
| 13. Pinbone | 37. Dewlap |
| 14. Stifle | 38. Point of shoulder |
| 15. Thigh | 39. Jaw |
| 16. Rear udder attachment | 40. Muzzle |
| 17. Rear flank | 41. Nostril |
| 18. Rear udder | 42. Bridge of nose |
| 19. Tail | 43. Forehead |
| 20. Switch | 44. Ear |
| 21. Hock | 45. Neck |
| 22. Dewclaw | 46. Shoulder blade |
| 23. Fore udder | 47. Ribs |
| 24. Hoof | 48. Chest |