

Course	Agricultural Science I
Unit	Introduction to Dairy Production
Lesson	Principles of Dairy Cattle Selection
Estimated Time	50 minutes

Student Outcome

Use available information to select dairy cattle.

Learning Objectives

1. Identify the parts of a dairy cow.
2. Describe how the Dairy Cow Unified Score Card is used in the classification of dairy cattle.
3. Explain how linear evaluation is used in dairy herd improvement.

Grade Level Expectations

SC/LO/3/E/09-11/a

Resources, Supplies & Equipment, and Supplemental Information

Resources

1. PowerPoint Slides
 - ☐ PPt 1 - Parts of a Dairy Cow
 - ☐ PPt 2 - Dairy Cow Unified Score Card
2. Activity Sheets
 - ☐ AS 1 - Parts of a Dairy Cow
 - ☐ AS 2 - Linear Evaluation
3. *Introduction to Dairy Production (Student Reference)*. University of Missouri-Columbia: Instructional Materials Laboratory, 1997.
4. *Introduction to Dairy Production Curriculum Enhancement*. University of Missouri-Columbia: Instructional Materials Laboratory, 2003.

Supplies & Equipment

- ☐ Four to six pictures of dairy cows

Supplemental Information



1. Internet Sites
 - ☐ *Linear Descriptive Traits*. Holstein Association. Accessed August 30, 2007, from <http://www.holsteinusa.com/pdf/f2224.pdf>.
 - ☐ Parts of the True Type Cow. Holstein Canada. Accessed August 30, 2007, from <http://www.holstein.ca/english/Breed/parts.asp>.
2. Print
 - ☐ Tyler, H., and M.E. Ensminger. *Dairy Cattle Science*. 4th Ed. Upper Saddle River, NJ: Prentice Hall, 2005.


Interest Approach


Show the students pictures of several dairy cows. Have them try to classify the cows by their visible traits.


Communicate the Learning Objectives

1. Identify the parts of a dairy cow.
2. Describe how the Dairy Cow Unified Score Card is used in the classification of dairy cattle.
3. Explain how linear evaluation is used in dairy herd improvement.

Instructor Directions	Content Outline
Objective 1 <i>Explain to students the importance of using proper terminology when describing dairy cattle. Use PPT 1 to illustrate the parts of the dairy cow. Have students complete AS 1.</i>  PPT 1 - Parts of a Dairy Cow  AS 1 - Parts of a Dairy Cow	Identify the parts of a dairy cow. <ol style="list-style-type: none">1. Face2. Muzzle3. Jaw4. Neck5. Throat6. Dewlap7. Brisket8. Floor of the chest9. Barrel10. Milk wells11. Mammary veins12. Fore udder attachment13. Ribs14. Teat15. Pastern16. Hoof17. Dewclaw18. Switch19. Hock20. Rear flank21. Thigh22. Pin Bones23. Tail head24. Thurl25. Hooks26. Withers27. Heart girth28. Poll29. Rump30. Loin31. Chine

Instructor Directions	Content Outline
	32. Back
<p>Objective 2</p> <p><i>Begin a discussion by passing out a copy of the current Dairy Cow Unified Score Card as found in the contest bulletin. Using PPt 2, ask for input on the various parts of the card.</i></p> <p> PPt 2 - Dairy Cow Unified Score Card</p>	<p>Describe how the Dairy Cow Unified Score Card is used in the classification of dairy cattle.</p> <p>Cows are compared to an ideal cow (which is assigned a score of 100 points) and classified according to their scores.</p> <ol style="list-style-type: none"> 1. Excellent – 90-100 points 2. Very good – 85-89 points 3. Good Plus – 80-84 points 4. Good – 75-79 points 5. Fair – 70-74 points 6. Poor – less than 70 points <p>The score card looks at five major traits.</p> <ol style="list-style-type: none"> 1. Frame – evaluation of the skeletal parts of the cow except feet and legs 2. Dairy character – evaluation of milking ability 3. Body capacity – evaluation of the volume of the cow 4. Feet and legs – evaluation of the cow’s skeletal soundness, or ability to move easily 5. Udder <ol style="list-style-type: none"> a. Most important part of the dairy cow b. Evaluation for milk production and productivity over time
<p>Objective 3</p> <p><i>Ask the class what linear evaluation is. List the seventeen functional traits on the board or overhead. Discuss how producers can select to improve specific traits using linear evaluation.</i></p>	<p>Explain how linear evaluation is used in dairy herd improvement.</p> <p>In linear evaluation, a computer program is used to score cattle for individual traits; producers use this information to improve the functional type of dairy herd by selecting animals for breeding.</p> <p>Seventeen linear traits are used in evaluating cows, with traits assigned a numerical score between one and fifty.</p> <ol style="list-style-type: none"> 1. Stature 2. Strength 3. Body depth 4. Dairy form 5. Rump angle 6. Rump width 7. Rear legs (side view) 8. Foot angle

Instructor Directions	Content Outline
	<ol style="list-style-type: none"> 9. Fore udder attachment 10. Rear udder height 11. Rear udder width 12. Udder cleft 13. Udder depth 14. Front teat placement 15. Teat length 16. Rear legs (rear view) 17. Udder tilt <p>Producers can pinpoint specific traits in cows that should be improved and then select bulls for breeding.</p> <p>They can also evaluate and select bulls for breeding by using their daughters' scores.</p>
<p>Application:</p> <p> AS 1 - Parts of a Dairy Cow</p>	<p>Answers to AS 1</p> <ol style="list-style-type: none"> 1. Face 2. Muzzle 3. Jaw 4. Neck 5. Throat 6. Dewlap 7. Brisket 8. Floor of the chest 9. Barrel 10. Milk wells 11. Mammary veins 12. Fore udder attachment 13. Ribs 14. Teat 15. Pastern 16. Hoof 17. Dewclaw 18. Switch 19. Hock 20. Rear flank 21. Thigh 22. Rear udder attachment 23. Tail 24. Pin bones 25. Tail head 26. Thurl

Instructor Directions	Content Outline
 AS 2 - Linear Evaluation	<p>27. Hooks 28. Withers 29. Heart girth 30. Poll 31. Rump 32. Loin 33. Chine 34. Back</p> <p>Answers to AS 2</p> <ol style="list-style-type: none"> 1. The cow is fine for fifteen of the seventeen traits. However, udder depth (UD) is too low and teat placement (TP) is too wide. When the cow is mated, the producer should pay particular attention to udder depth and teat placement. 2. Cow 2 has problems with stature (ST), rump angle (RA), and udder cleft (UC). The cow is small, and its rump has a severe slope from hooks to pins. The cow also has little, if any, cleft in her udder. The producer should select for these traits when mating the cow.
Closure/Summary	<p>Dairy producers need to be aware of the parts of a dairy cow and how to evaluate and select dairy animals. The Dairy Cow Unified Score Card provides a basis for evaluation. Linear evaluation is often used when selecting animals for breeding.</p>
Evaluation: Quiz	<p>Answers:</p> <ol style="list-style-type: none"> 1. b 2. g 3. d 4. c 5. i 6. e 7. f 8. j 9. h 10. a 11. c 12. d 13. b 14. Answers may include any three of the following: stature, strength, body depth, dairy form, rump angle, rump width, rear legs (side view), foot angle, fore

Instructor Directions	Content Outline
	<p>udder attachment, rear udder height, rear udder width, udder cleft, udder depth, front teat placement, teat length, rear legs (rear view), or udder tilt.</p> <p>15. Producers use the information from linear evaluation to improve the functional type of the dairy herd by selecting animals for breeding.</p>