National 4-H Curriculum
BU-08145

4-H SKILLS FOR LIFE ANIMAL SERIES

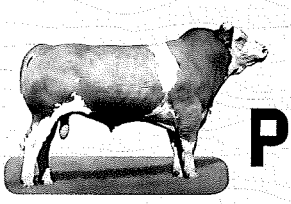
LEADING THE CHARGE

Beef 3

Beef Youth Activity Guide

REVIEWED & RECOMMENDED
National 4-H Curriculum

Name _____ County _____



Note to the Project Helper

If you were a project helper for one or more youth involved in completing Beef 1 or Beef 2 you know what a great experience this important role is. If not, expect a memorable time. As a helper you are in the perfect position to help youth grow and develop in positive ways as they learn about beef and about themselves. You nurture and cultivate their interest in this project by guiding their planning, helping them carry out their activities and recognizing them for a job well done.

Your Role

- Become familiar with the material in this activity guide and the *Helper's Guide*
- Support youth in their efforts to set goals and complete each achievement program
- Date and initial the activities on the Beef Achievement Program as the youth completes them
- Help them to get to know themselves, including their strengths and weaknesses
- Encourage the use of the experiential learning cycle described on this page

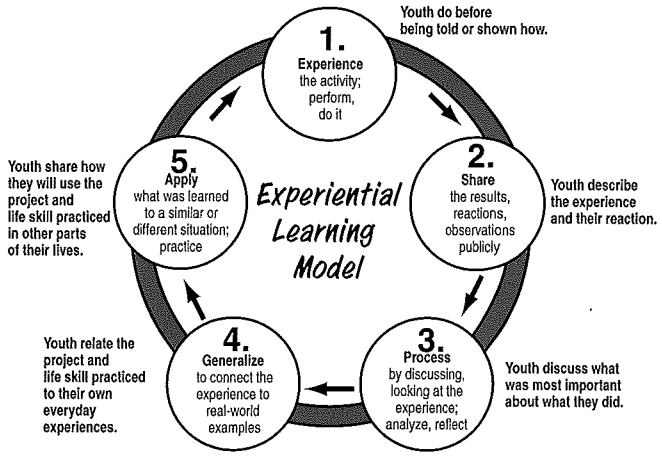
The Beef "Skills for Life" Series

This guide, *Leading the Charge* is the third in the series of three for youth, which also includes Beef 1 *Bite into Beef*, Beef 2 *Here's the Beef* and the *Beef Helper's Guide*. The three youth guides have been designed to be developmentally appropriate for grades 3–4, 5–7 and 6–9 respectively, but may be used by youth in any grade based on their project skills and expertise.

All activities in the guides have several parts: A description of the skills to be practiced, discussion questions, suggestions for additional activities and additional helpful information. The "Success Indicator" listed for each activity is an excellent way to evaluate the youth's success. Each of the guides also includes an achievement program to encourage youth to learn more about beef while developing important life skills.

The fourth publication in this series, *Beef Helper's Guide*, provides additional learn-by-doing activities that can be adapted to the family, the classroom, after school child care, 4-H project groups, clubs or other groups. You'll also find helpful hints about characteristics of youth, life skill development, teaching experientially, meeting ideas, answers to many of the activities in the youth guides and another evaluation piece titled "Evaluating the Impact." Complete this before the youth begins each level and after completing each level.

Experiential Learning Model



Pfeiffer, J.W., & Jones, J.E., "Reference Guide to Handbooks and Annuals" © 1983 John Wiley & Sons, Inc. Reprinted with permission of John Wiley & Sons, Inc.

This five-step model is included in each activity in this series. As you can see, the youth first attempt the activity on their own. After the youth do as much as they can and answer the questions with the asterisks, you then meet together and discuss: What they did? What was important about what they did? How does what they did relate to their lives? And finally, how might they use the life and project skills practiced in the future? Sample questions are included following each experience. Your ability to ask additional thought-provoking questions and to clarify and expand the youth's ideas will add to the educational experience.

Good luck in your role as Project Helper!

Acknowledgments

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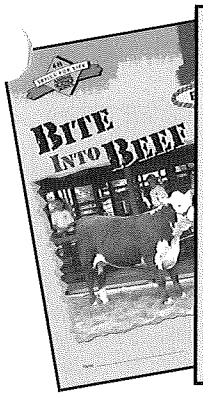
For more on beef... look for these other guides in this set.

Bite Into Beef - Level 1 BU-08143



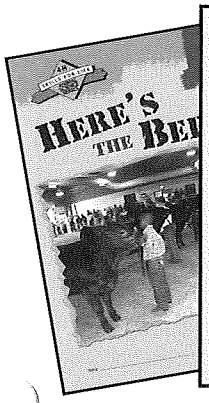
Chapter 1 - Know Your Beef
- Identifying Beef Brands
- Locating Beef Parts
- Doing the Right Thing IS the Right Thing
- Planning Your Work, Working Your Plan

Chapter 2 - Animal Health
- Recognizing a Healthy Animal
- Picking Feed Ingredients
- Where, Oh Where Is My Calf?

Chapter 3 - Beef and Beef Products
- Judging Beef
- Shopping for Beef
- Recognizing Beef By-products

Chapter 4 - It's Showtime!
- Halter Breaking Your Calf
- Fitting a Steer
- Showing Beef Cattle

Here's the Beef - Level 2 BU-08144



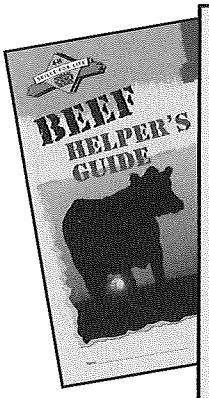
Chapter 1 Animal Health
- Beef Quality Assurance
- Nutritional Needs
- Following Feed through the Digestive System
- Mange on the Range

Chapter 2 Safety and Ethics
- Live Long and Prosper
- Becoming Ethically Enlightened Forever
- Beef Communication

Chapter 3 Judging Beef
- Evaluating Leg Structure
- Judging Breeding Heifers
- Presenting Oral Reasons
- Determining Frame Scores

Chapter 4 Grading Beef
- Locating and Identifying Beef Cuts
- Making the Cut

Beef Helper's Guide - BU-08146



- Youth Learning Characteristics
- Developing Life Skills
- Teaching and Learning Experientially

Chapter 1 Front and Center
- Producing a Beef Commercial
- Planning the Beef Project Year
- Show What You Know
- Demonstrating Fitting Equipment

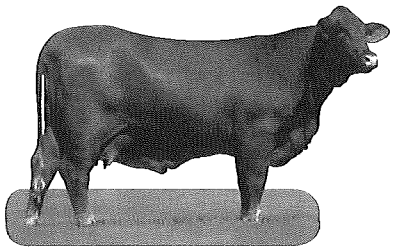
Chapter 2 Word Games
- Playing BEEFagories
- Beef Talk Games
- Fun with Beef Pyramid
- Playing STEAK Bingo

Chapter 3 Beef Management Practices
- Keep it Clean
- Moo-rades
- Investigating Medications
- Tying the Knot
- Accepting the End

Chapter 4 Skill Building
- Conducting a Beef Quiz Bowl
- Identifying Beef Parts
- Practicing Sportsmanship

- The 4-H Recognition Model
- Answer Key
- Beef Project Meeting Ideas

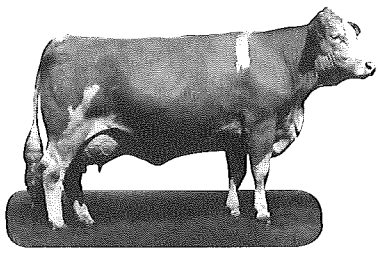
Leading the Charge
Contents



Having Fun with the Beef Project

By now you are probably an expert on beef, or certainly know more than you did when you started this project. Whether you raise one or several project animals, you are in an excellent position to share your experiences with others. *Leading the Charge* provides several opportunities for you to develop your leadership skills as you strive to complete Level 3 of the Beef Achievement Program. You'll also find activities to help you develop a business, explore careers and teach others. Here are some of things you'll do:

- Determine the frame score of a calf
- Decide what bull to recommend
- Present a set of oral reasons on a heifer class
- Judge hay and present reasons
- Calculate a ration for a beef animal
- Develop a feed tag
- Interview people in five agricultural careers
- Identify common beef diseases
- Label the parts of the male and female beef reproductive systems
- Detect heat in beef cattle
- Demonstrate how to detect pregnancy in cattle
- Demonstrate how to deliver a calf
- Decide which carcasses are most desirable
- Conduct a beef promotional event



Beef 3 Project Guidelines

- Do a minimum of seven activities of the *Leading the Charge* Beef Achievement Program each year and complete Level 3 within three years
- Practice and develop the life skills of leading others, making decisions, planning and communicating, while you learn to take risks, think creatively, use community resources, explore careers and take responsibility
- Complete the Before and After—What Do You Know? Evaluation
- Keep the Goals and Highlights page current
- Share your beef knowledge and skills with others
- Have fun!

Leading the Charge Achievement Program

If you have completed levels 1 and 2, you know each chapter contains beef-related activities that encourage you to practice a certain life skill while doing the activity. In many cases, because this is an activity guide and not a resource manual, you will need to research other sources of information to complete a particular activity. The page of beef resources in the back of this guide is a good place to start, but you'll also want to work closely with your project helper. You'll find an abundance of information on the Internet with literally thousands of sites containing information on beef cattle and beef products.

Remember this is your own personal guide. Feel free to use it to record your thoughts and ideas. Most questions will not have a "right" answer. The questions will help you explore the subject and your own ideas in more depth. Additional activities are included in *Beef Helper's Guide*. Many of these are fun experiences for you to use with other youth as you develop your leadership skills. The person you choose to be your project helper needs to be willing to support your efforts to complete Level 3 of the Beef Achievement Program.

Your Project Helper

Choose your own helper. This person might be a project leader or advisor, teacher, family member, neighbor, friend, or anyone who has the interest to work with you to complete Level 3. Meet with your helper to set goals, plan and complete activities in this guide. Discussing each activity with your helper and having this special person date and initial your achievement program will make this project more interesting and fun. Write the name, phone number and e-mail address of your project helper here:

My project helper: _____

Phone number: _____

E-mail address: _____

Goals and Highlights

My Beef Project Goals

Name_____

What I want to do and learn in Beef 3.

1. _____

2. _____

3. _____

4. _____

Before and After – What do you know?

Here is a great way to see if you learn something new and develop important skills in this project. Before you start doing the activities in this guide indicate what you know **NOW**. Then when you complete the *Leading the Charge* Achievement Program write down here what you know **AFTER**. You may be surprised to see what you learn! Share the results with your helper.

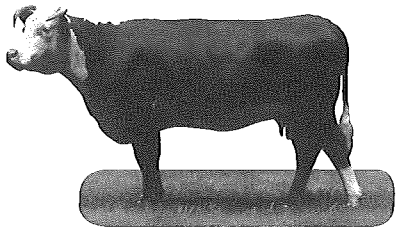
Begin each skill with the words ***"I know how to..."***
Then circle **1** (not at all), **2** (somewhat) or **3** (to a great extent).

I know how to:	**Before**	**After**
Locate beef information on the Internet	1 2 3	1 2 3
Calculate a ration for a beef animal	1 2 3	1 2 3
Judge hay and present reasons	1 2 3	1 2 3
Develop a feed tag	1 2 3	1 2 3
Identify common beef diseases	1 2 3	1 2 3
Determine the amount of red meat in a carcass of a beef animal	1 2 3	1 2 3
Calculate the yield grade for each animal	1 2 3	1 2 3
Figure the correct live animal price and carcass value	1 2 3	1 2 3
Decide which carcasses are most desirable	1 2 3	1 2 3
Give a beef fitting demonstration	1 2 3	1 2 3
Decide what bull to recommend	1 2 3	1 2 3
Identify beef reproductive system parts	1 2 3	1 2 3
Detect heat in beef cattle	1 2 3	1 2 3

Beef Project Highlights

Date and list the exciting things you do and learn.

A picture of my project animal and me.



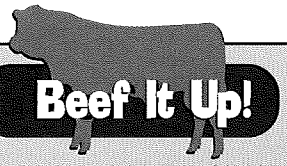
Leading the Charge
Achievement Program

Guidelines

- Do at least seven of the *Leading the Charge* and Beef's Future Achievement Program activities each year.
- Complete at least 21 of the *Leading the Charge* and Beef's Future activities within three years to complete this achievement program.
- Have your project helper date and initial the activities as you complete them.

Leading the Charge Activities

Activities	Date Completed	Helper's Initials
Chapter 1 Animal Nutrition and Health		
Surf n' Turf		
Balancing a Beef Ration		
Let's Talk Hay		
Read It on the Label		
Blocking Bovine Bugs		
Chapter 2 Showing Beef		
Fitting for Show		
Chapter 3 Meat Evaluation		
Evaluating a Beef Carcass		
Yielding the Grade		
Chapter 4 EPDs		
Selecting a Sire		
Chapter 5 Reproduction		
Exploring Beef Reproductive Systems		
The Heat Is On		
A Womb with a View		
The LaMOOze Method		
Chapter 6 Exploring Careers		
Looking Ahead		



Beef It Up!

Select and do any of the Beef It Up activities in *Leading the Charge* or make up your own. Record the page and number of each one you complete.

Page	#	Date Completed	Helper's Initials

Write your own activity here.

Date_____ Helper's Initials_____

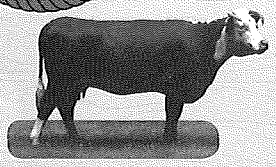
Write your own activity here.

Date_____ Helper's Initials_____

Write your own activity here.

Date_____ Helper's Initials_____

Explore more at
www.4-hcurriculum.org
National 4-H Curriculum



Surf 'n Turf

Beef Project Skill:	Expanding beef knowledge
Life Skill:	Acquiring and evaluating information: researches information sources
Education Standard:	NT.K-12.5 Technology research tools
Success Indicator:	Locate beef information on the Internet.

Sure, you know how to chat and play games using the Internet, but do you know how to find answers to specific cattle-related questions? This activity will help you sharpen your web searching skills while you look for answers to unusual questions about beef cattle. And who knows? You just might learn a fun fact or two along the way!

Taking on the Challenge

By yourself or as a team member, look for answers to the questions below. If you choose to, you can make it a fun competitive activity by racing against another team to see who finds all the answers first. Write the answer in the space provided.

- At what age does a beef animal's permanent molars come in? _____
- How many chromosomes does *Bos taurus* have? _____
- How many sesamoid bones are in the bovine skeleton? _____
- How many vertebrae are in the tail? _____
- What is freemartinism and how is it caused?

  _____

  _____
- What can you observe through a rumen fistula?

  _____
- What is a fish teat? _____
- What is the annual cost of wildlife damage done to livestock each year in the U.S.? _____
- What is the correct medical terminology for hardware disease? _____

  _____
- What is the TDN of bakery waste? _____

  _____

For safety's sake, NEVER give out personal information to someone you don't know, especially over the Internet!

BarnTalk

Shooting the Breeze

- What was the oddest new thing you learned about cattle?

Show Me the Beef

- Why is it important to develop good researching skills?

_____

_____

Where's the Beef?

- What problems have you encountered while using the Internet?

_____

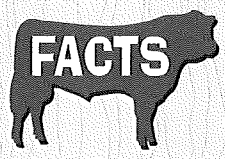
_____

Beef's Future

- How can you improve your ability to find the information you need?

_____

_____

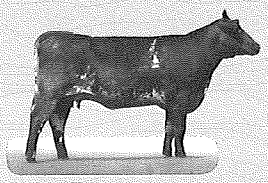


Surf the Web

Internet search engines help you find the information you need. Be as specific as you can to help narrow down the number of search results you will receive. When you find helpful web sites, be sure to bookmark them so you can find them again. Save your bookmarks in files with names that will help you find them. Internet software filters will help prevent youth from viewing web sites that are inappropriate for minors.

Remember that just because something is on the Internet doesn't make it true! Before you trust what you find, try to find the same information in multiple places, look up references, compare new information to what you already know to be true and ask a trusted adult whenever you find new information that confuses you. Consider the source of the information, too—does it come from a trustworthy source, such as a research university?

1. Create a resource notebook of beef-related information from web sites for your group's resource library.
2. Develop a web site for your beef group.



Balancing a Beef Ration

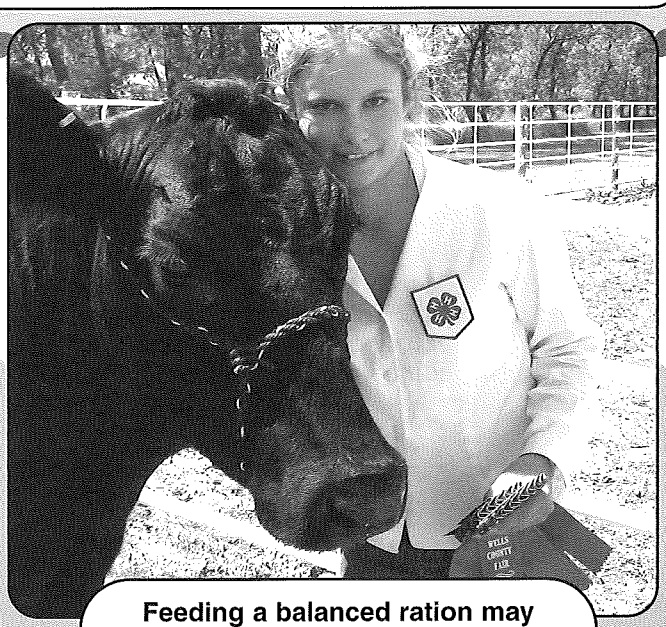
Beef Project Skill:	Selecting feed ingredients
Life Skill:	Decision making
Education Standard:	NS.9-12.1 Science as Inquiry
Success Indicator:	Calculate a ration for a beef animal.

Feed costs are the major expense when raising beef cattle. In order to produce the most desirable product in the shortest time at the lowest possible cost, you'll want to know what is included in a beef ration. This activity will help you decide which feeds may be a good choice for your animal's ration.

Taking on the Challenge

Pretend you purchased a medium frame 600 lb. steer calf on November 1. You want to place him on a grower ration to gain 2.0 pounds per day until January 1. After that time, you plan to feed him a finishing ration to gain 2.5 lbs./day. Your target weight is 1225–1250 lbs. Will the feeds shown make a complete, balanced ration for your calf from November 1 until January 1? Remember that a calf will eat approximately 2–2.5% of its body weight per day.

Select one or more of the concentrates and roughages listed in the tables. Use the information provided to complete the four worksheets.



Feeding a balanced ration may result in a winning beef project.

Concentrates

	CP% DM	T.D.N. %	Calcium %	Phosphorus %
Corn Grain	9.8	93	.13	.35
Barley	13.2	84	.05	.38
Oats	12.6	77	.07	.38
Soybean Oil Meal	52.9	84	.33	.71
Cottonseed Whole	23.0	95	.16	.75
Beet Pulp	10.0	74	.69	.10

Roughages

Brome Grass Hay	10.0	56	.4	.10
Alfalfa Mid Bloom	22.0	58	1.4	.24
Timothy Hay Mid-bloom	9.7	57	.48	.14
Crested Wheat Grass hay	9.0	53	.33	.21
Prairie Hay	5.3	48	.43	.15

1.

Beef Ration Worksheet

Animal: **Weight:** **Age:**

Worksheet 1 – **Composition of Feed**

Feed	Crude Protein %	T.D.N.%

2.

Worksheet 2 – **Quality of Nutrients in Feeds Being Used**

Feed	Lbs. Fed	Crude Protein (Lbs.)	T.D.N. (lbs.)
Total			

lbs. fed X % C.P. = C.P. lbs.
lbs. fed X % T.D.N. = T.D.M. lbs.

3.

Worksheet 3 – **Daily Nutrient Requirements**

Size of Beef Animal	Lbs. Fed	Crude Protein (Lbs.)	T.D.N. (lbs.)
Total			

4.

Worksheet 4 – **Balancing Ration & Meeting Requirements**

Total From Section 2	Lbs. Fed	Crude Protein (Lbs.)	T.D.N. (lbs
Ration Deficiency or Surplus			
Supplement			
Balanced Ration			

BarnTalk

Shooting the Breeze

- What feed ingredients did you use in your ration?
- How did you find the answers to complete the chart?

Show Me the Beef

- What kinds of problems would keep you from using some of the feeds in a calf's ration?
- What are some by-product bargains that your family could buy to save money?

Where's the Beef?

- Why is getting several opinions important in forming your own ideas?

Beef's Future

- What are some times when asking others questions will help you learn about an issue?

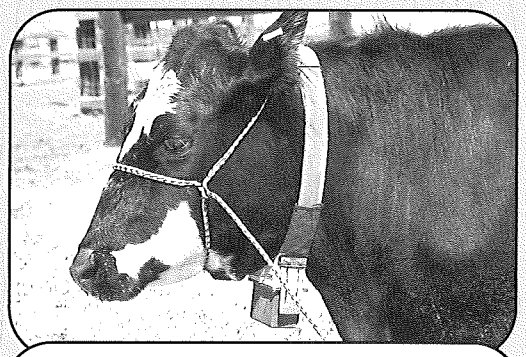
Beef Talk Words

T.D.N.

FACTS Nutrient Requirements for Growing and Finishing Cattle

Nutrient Requirements for Growing and Finishing Cattle (Nutrient Concentration in Diet Dry Matter)

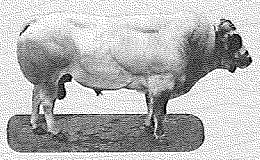
Weight (b)	Daily Gain (lb)	Dry Matter Intake (lb)	Protein (%)	TDN (%)	Ca (%)	P (%)
Medium-frame steers						
600	0.5	13.2	8.2	54.0	0.23	0.18
	1.0	14.1	9.0	58.5	0.28	0.19
	1.5	14.7	9.8	63.0	0.35	0.21
	2.0	15.0	10.5	67.5	0.40	0.22
	2.5	14.9	11.4	73.5	0.46	0.24
	3.0	13.5	12.9	85.0	0.57	0.29
700	0.5	14.8	7.9	54.0	0.22	0.18
	1.0	15.8	8.6	58.5	0.27	0.18
	1.5	16.5	9.2	63.0	0.31	0.20
	2.0	16.8	9.8	67.5	0.34	0.21
	2.5	16.7	10.5	73.5	0.40	0.22
	3.0	15.2	11.7	85.0	0.49	0.26
800	0.5	16.4	7.7	54.0	0.22	0.17
	1.0	17.5	8.3	58.5	0.24	0.19
	1.5	18.2	8.8	63.0	0.28	0.19
	2.0	18.6	9.2	67.5	0.31	0.20
	2.5	18.5	9.8	73.5	0.35	0.21
	3.0	16.8	10.8	85.0	0.42	0.25
900	0.5	17.9	7.6	54.0	0.21	0.18
	1.0	19.1	8.0	58.5	0.23	0.18
	1.5	19.9	8.4	63.0	0.25	0.19
	2.0	20.3	8.8	67.5	0.28	0.20
	2.5	20.2	9.3	73.5	0.31	0.20
	3.0	18.3	10.1	85.0	0.37	0.23
1000	0.5	19.3	7.5	54.0	0.21	0.18
	1.0	20.7	7.8	58.5	0.21	0.18
	1.5	21.5	8.1	63.0	0.24	0.18
	2.0	22.0	8.4	67.5	0.25	0.19
	2.5	21.9	8.8	73.5	0.27	0.19
	3.0	19.8	9.5	85.0	0.32	0.22



This beef animal is equipped with a Global Information System. (GPS) to monitor feed intake

Beef It Up!

1. Look up more feeds in the Nutrient Requirements of Beef Cattle table and develop a ration that would meet the requirements for finishing a steer.



Let's Talk Hay

Beef Project Skill:	Selecting quality forage
Life Skill:	Relating through communicating
Education Standard:	NS.5-8.3 Life Science
Success Indicator:	Judge hay and present reasons.

Did you know that cattle are a kind of "food machine"? They change things people can't eat—like grass and hay—into foods we can use like milk and meat. How well they do this depends on the quality of forage (pasture, hay, silage) they eat. Learning how to tell forage quality is an important skill for a beef producer. Sometime you may be asked to help someone select a load of hay. This activity will help prepare you.

Taking on the Challenge

You'll need three or four samples of hay. The hay can be one of the legumes such as alfalfa, clover, peas and vetch or a grass hay such as oats, wheat, ryegrass, sudan, brome or prairie grass. If you can't find samples of one kind that are very different in quality, use different kinds of hay. Play the role of official hay buyer. Judge the samples and present your reasons to your helper. Complete the Hay Judging Notes form and the Oral Reasons Note Card to help you give your reasons. Give four points for best in each category and one for the worst sample.

Cutting alfalfa hay at the correct maturity gives the best quality forage.

Hay Judging Notes

	Sample 1	Sample 2	Sample 3	Sample 4
Color				
Leafiness				
Odor				
Maturity (how old)				
Foreign Material				
Texture				
Total Points				
My Placing				

BarnTalk

Shooting the Breeze

- Where did you find the hay samples?
- What kind of hay did you judge?

Show Me the Beef

- Why is selecting good hay for beef cattle important?
- What can a person do to grow quality hay?

Where's the Beef?

- Why is being able to clearly tell others what you believe important?
- How could you provide the best quality hay to your cattle?

Beef's Future

- What can you do to improve your speaking skills?
- How can you apply what you learned about selecting hay to your beef project?
- What quality of hay will you purchase in the future?

Reasons Note Card

Class _____

I placed this class of _____

_____-_____-_____-_____

I placed _____ over _____ in the top pair because _____

I grant _____ was _____ than _____

Going to the middle pair, I placed ____ over ____ because

I admit _____ was _____ than _____

I placed _____ over _____ in the bottom pair because

I realize _____ was _____ than _____

However, I faulted _____ and placed it last because

FACTS Hay Quality

Affects the Quality

- kind of hay (alfalfa vs. prairie hay)
- fertilizers
- age or stage of maturity
- how well it dried after being cut
- storage and handling

Storing Hay

Store baled hay inside a shed, or on dry, level, well-drained sites. Stack the bales to avoid wasted space and permit easy handling. Even large round bales must be set on a well-drained site. Crushed rock makes a good base for those bales. The bales will act like a sponge and soak up moisture from wet soil. More spoilage can occur on the bottom side of the bale than the top.

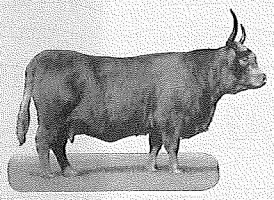
Crude Protein and Stage of Growth

Crop	Stage of Growth	Percent Crude Protein
Alfalfa	Early Bloom	18
	Full Bloom	14
Wheat	Boot	18
	Full Bloom	8.5
Sudan	Early Boot	17
	Full Bloom	8
Brome	Late Boot	17
	Full Bloom	12.5
Prairie Grass	Early Boot	13
	Mature	6

Beef It Up!

1. Participate in a hay-judging contest.
2. Give an illustrated talk on selecting high quality hay.
3. Attend a hay show and observe the different qualities of hay.
4. Give an illustrated talk on producing quality hay.

Adapted with permission from
Kansas 4-H Beef Curriculum Notebook.



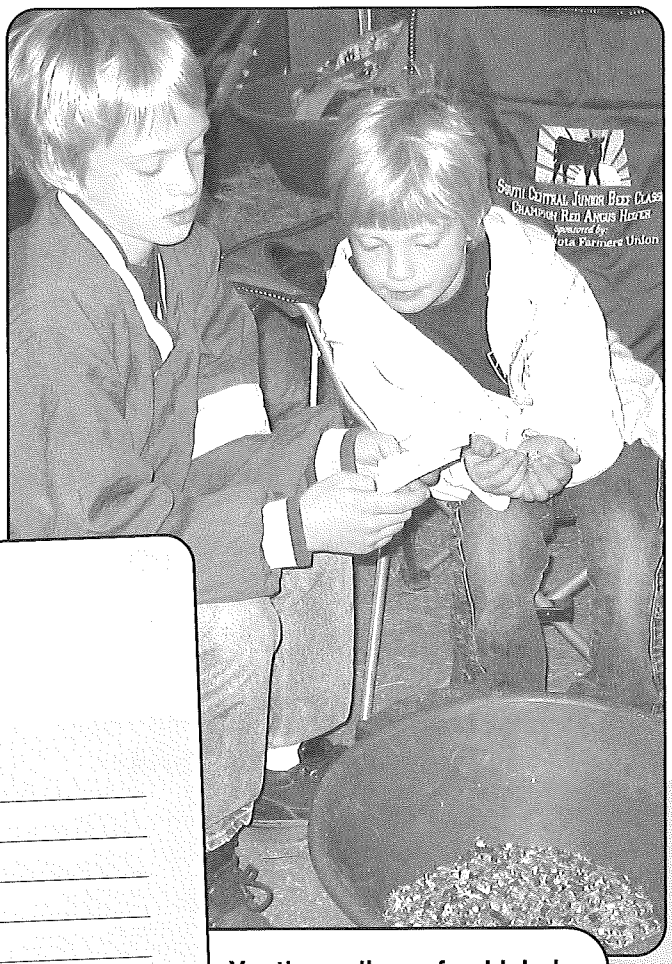
Read It on the Label

Beef Project Skill:	Reading a feed tag/label
Life Skill:	Making decisions
Education Standard:	NS.9-12.1 Science as inquiry
Success Indicator:	Develop a feed tag.

How do you know what ingredients are in the feed you give your calves? Does the feed meet your animal's needs? The feed tag or label will help you answer these questions. Labels tell you what is in a feed and help you decide which feeds provide the amounts of protein, energy, minerals, vitamins and water your project animal needs.

Taking on the Challenge

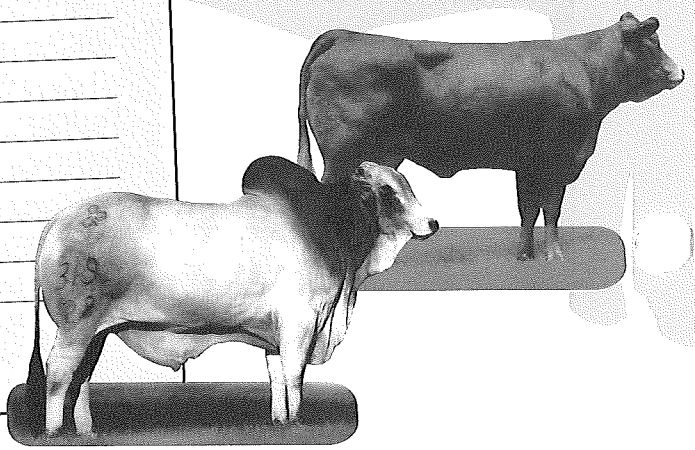
Put yourself in business as the owner of a feed mill. Your challenge is to develop a feed tag for a ration you would feed a 1000 pound steer. See if you have put all of the required items on your feed tag by comparing it to what is listed in Beef Facts.



Youth reading a feed label.

Feed Tag

for a 1000 Pound Steer



BarnTalk

Shooting the Breeze

- What did you include on your label?

Show Me the Beef

- How does your label compare to what must be included according to law?

Where's the Beef?

- How do you use label information to select or mix feed?

Beef's Future

- How will this activity change the way you feed your cattle?

50 lbs Net Weight

Chewy Beef Receiving Ration

(for ruminants only)

Medicated
Feed for 28 days as an aid in the maintenance of weight gains in the presence of respiratory diseases such as shipping fever.

Warning: Feed only as directed on this label. Discontinue use 7 days prior to slaughter.

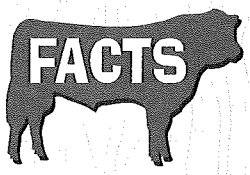
Active Drug Ingredient
Chlortetracycline - 70 grams/ton

Guaranteed Analysis
Crude protein, not less than 12% (this includes not more than 1% equivalent crude protein from non-protein nitrogen.
Crude fat, not less than 1.0%
Crude fiber, not more than 22%

Ingredients*
Ground corn, ground grain sorghum, dehydrated alfalfa meal, cottonseed hulls (37%), cottonseed meal, salt and limestone.

Feeding Directions
Feed at the rate of 10 pounds per head per day.

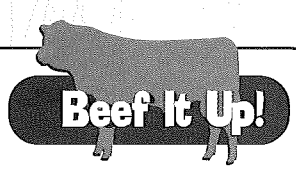
Manufactured By
The Cow Feed Company
White City, Kansas



Feed Label Information

A commercial law requires each bag or bulk load to be accompanied by a label showing several key items:

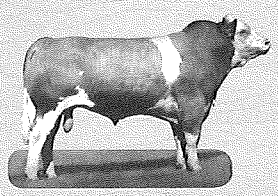
- Net weight
- Product name and brand name
- Drug additives
- Guaranteed analysis of the feed - Crude protein, crude fat and crude fiber must be guaranteed on all feeds except straight mineral or vitamin supplements, molasses or drug compounds.
- Minimum percentage of crude protein, percentage of equivalent protein from non-protein nitrogen, if any. The amount of crude or total protein in a feed is guaranteed. Crude protein is determined by multiplying the nitrogen content of a feed by the factor 6.25.
- When non-protein nitrogen (NPN) is added to feedstuffs, a statement "for ruminants only" must appear underneath the name of the feed. Additionally, it must also have a guarantee for crude protein which has been supplied from non-protein nitrogen.
- Minimum crude fat content - Fat has an energy value approximately 2.25 times the value of carbohydrate feedstuffs.
- Maximum crude fiber content - Crude fiber is a measure of the indigestible, or non-useful portion of a feed. Feeds having low fiber values tend to be higher in digestible energy or total digestible nutrients than those feeds having high fiber values.
- Minerals - feeds containing 6.5 percent or more minerals must show a guarantee of:
  - Calcium - minimum and maximum
  - Phosphorus - minimum
  - Salt - minimum and maximum
- Vitamins, only if guaranteed
- Common and usual name of each ingredient or the collective term for each grouping of feed ingredients
- Directions for use and cautionary statements
- Name and principal mailing address of the manufacturer



1. Visit feed stores and read feed tags. Compare labels.
2. Visit feed mills and see how they provide information to customers.
3. Give an illustrated talk on how to read a feed tag.

Original material from John Kuykendall with adaptation by Gerry L. Kuhl, and James P. Adams, Kansas State University.

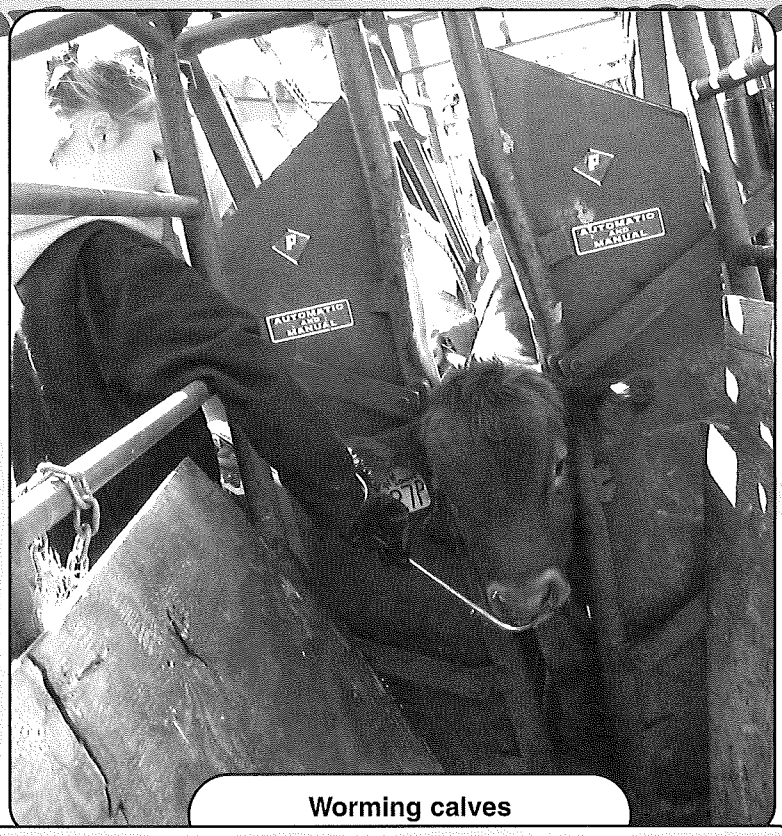
Adapted with permission from Kansas 4-H Beef Curriculum Notebook.



Blocking Bovine Bugs

Beef Project Skill:	Identify common cattle diseases
Life Skill:	Making decisions
Education Standard:	NS.9-12.1 Science as Inquiry
Success Indicator:	Identify common beef diseases.

Your animal's health is important and it is up to you to keep your cattle healthy. Management of your calf includes a health care program that will prevent diseases or parasitism that are common in your area. Learning about each disease will help you identify problems that may occur and be able to prevent diseases in the future.



Worming calves

Taking on the Challenge

Match the descriptions of each disease listed with its name and describe at least one symptom of each disease. Indicate if you have ever personally seen the disease.

Beef Cattle Diseases

Disease	Description (A-F)	Symptoms	Seen this Disease?
1. Acidosis			
2. Bloat			
3. Foot rot			
4. Laminitis			
5. Ringworm			
6. Warts			

Descriptions

A. A swelling on the left side of the animal will occur. The excess gas is built up in the rumen. The gas bubbles that form expand the rumen contents and interfere with nerves that control the opening into the esophagus.

B. A contagious skin disease of cattle, where hair is lost and a slightly raised crustiness appears.

C. Caused by a bacteria. This disease normally occurs when cattle have access to stagnant water holes. There is a break in the skin and the organism infects the wound.

D. This is a diet-related disease caused by a sudden increase in consumption of concentrated feeds. The feed contains a large amount of fermentable carbohydrates.

E. An infectious viral disease sometimes seen in young cattle.

F. This is a lameness in cattle where the lamina hoof wall and sole become very sore. Overgrown and malformed hooves often result.

Barn Talk

Shooting the Breeze

- What are the symptoms of each of the six diseases?
- Which diseases have you personally seen?

Show Me the Beef

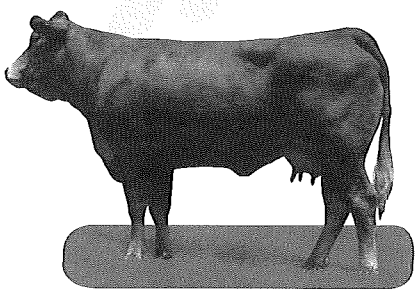
- What is the main treatment for foot rot?
- Why is it necessary to treat acidosis quickly to prevent founder?
- How can all of these diseases sometimes be related?

Where's the Beef?

- Foot rot in cattle is caused by bacteria entering an abrasion or puncture. What antibiotics are available on your farm or in your home to kill bacteria?

Beef's Future

- How can you prevent one these diseases?

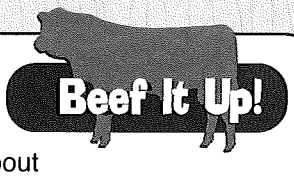


Adapted by Jackie Buckley from Blocking Bovine Bugs.

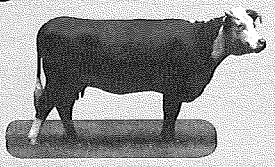
FACTS

Common Diseases of Beef Animals

- **Bloat** - A swelling on the left side of the animal will occur. The excess gas is built up in the rumen. The gas bubbles that form expand the rumen contents and interfere with nerves that control the opening into the esophagus.
- **Ringworm** - A contagious skin disease of cattle, that are 1 to 2 inches in diameter where hair is lost and a slightly raised crustiness appears.
- **Foot Rot** - Caused by a bacteria. This disease normally occurs when cattle have access to stagnant water holes. There is a break in the skin and the organism infects the wound.
- **Acidosis** - This is a diet-related disease caused by a sudden increase in consumption of concentrated feeds. The feed contains a large amount of fermentable carbohydrates.
- **Warts** - An infectious viral disease sometimes seen in young cattle.
- **Laminitis** (founder) - This is a lameness in cattle where the lamina hoof wall and sole become very sore. Overgrown and malformed hooves often result.



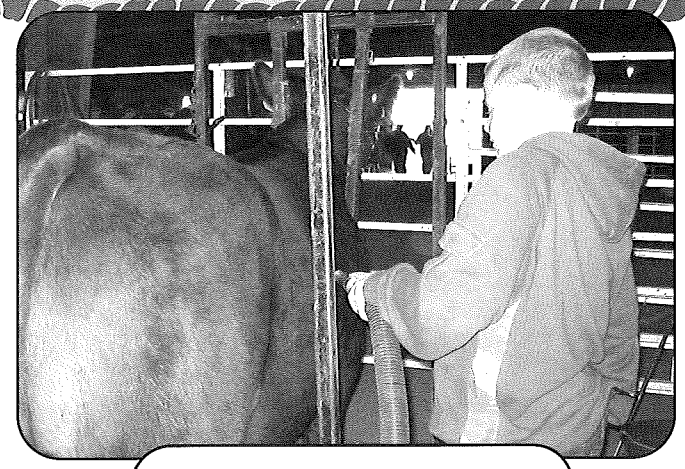
1. Interview a beef producer about how the six diseases listed are prevented on his/her farm or ranch.



Fitting for Show

Beef Project Skill:	Fitting a beef animal for show
Life Skill:	Relating to others
Education Standard:	NS.5-8.3 Life Science
Success Indicator:	Give a beef fitting demonstration.

Now you are experienced enough to groom your own animals for show. Fitting a calf for a show is an art that takes time and practice to master.



Almost ready for show.

Taking on the Challenge

This is your opportunity to show others how to fit a beef animal. Team up with a friend to give a demonstration on fitting to your beef project group, your family or your helper.

Outline the key points of your demonstration in the space provided. As you are preparing your demonstration discuss each of the questions in Barn Talk with your helper. You'll also find great tips to use in your demonstration in Beef Facts.

Demonstration Outline

Demonstration Topic: *Clipping a Beef Animal*

Title _____

Introduction _____

_____

_____

_____

_____

_____

Body _____

_____

_____

_____

_____

_____

Conclusion _____

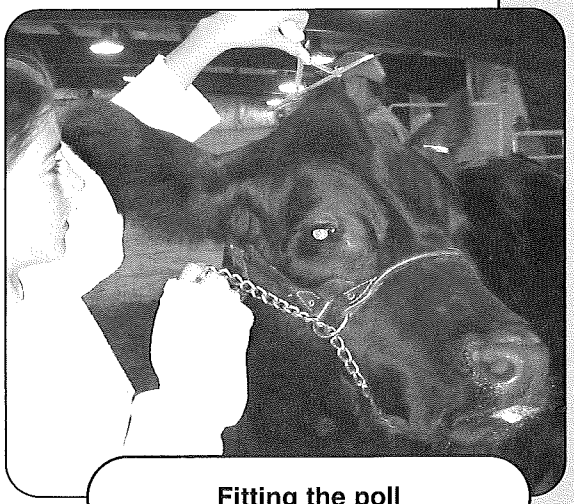
_____

_____

_____

_____

_____



Fitting the poll

BarnTalk

Shooting the Breeze

- What did you enjoy most about clipping your calf? Why?
- What was the most difficult aspect of clipping your calf? Why?
- What did you include in your demonstration?

Show Me the Beef

- What are the two main reasons for pulling up the leg hair?
- In what direction is the hair brushed on the back legs? front legs?
- Why do you brush the legs at home?
- Why does it matter how much adhesive you use?
- What options are there for fitting the tail?
- What options are there for grooming the body hair?
- Why are the legs clipped?
- Why is it important how the calf is standing when you are clipping?
- Why is the tail head clipped?

Where's the Beef?

- How can you be creative when clipping your beef animal?

Beef's Future

- What did you learn in this activity that will help you when you are fitting your animal?

Adapted with permission from the *Kansas 4-H Beef Curriculum Notebook* and the Angus Journal by Josh Merrill, Larry Tibbs and Jackie Buckley.

FACTS

Fitting Tips

Pre-show Preparation

Body Hair

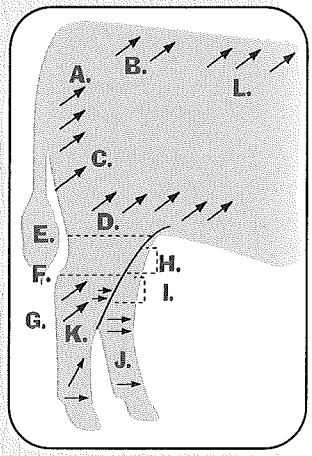
- Apply show foam over the entire body (except the legs). Brush it in and blow it dry. The foam holds the hair and brings up the under coat.
- Another option is to mist the calf with a show product such as Base Coat, Zoom Bloom, Show Sheen or rag oil to set the hair. When using these products you need time to blow it in using an electric blower for the hair to really pop out. The more you blow the hair, the more volume it gets.
- Use light adhesive all over short-haired calves if you remember to wash it out. Longer, better trained hair doesn't need much more than a light oil. The foam and some mists will weigh down the hair.

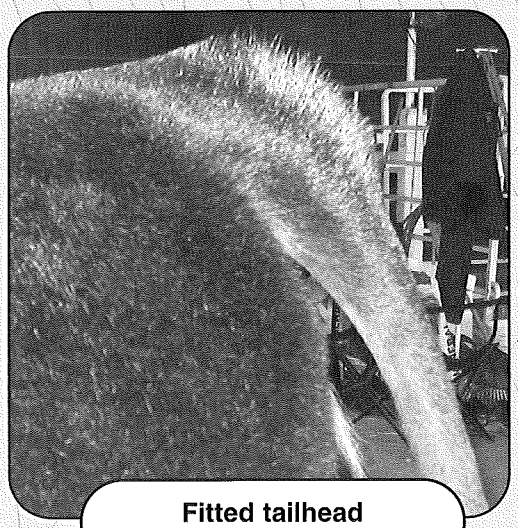
Fitting the Legs

Pull the hair up to give the calf an appearance of straighter legs with more bone but making it look natural. The key to a natural appearing fit job is to use as little adhesive as possible while combing frequently to avoid a "gummy" look. The areas at the calf's stifle, forearm and around the tail head need to show a smooth transition from glued to non-glued areas.

The hair below the hocks and knees needs to be pulled up at a 45 degree angle and feathered to the front and back of the leg. When done correctly on the inside and outside there will be a point on the front and back of the legs. This point of hair is what you clip in order to make the calf's legs look straighter. If there is a part in the center of the leg, gently pull the hair at the part straight up with the tip of the comb just enough to cover the line.

- Start at the base of the hoof when pulling up leg hair.
- Brush the legs everyday at a 45 degree angle to help "loosen" the hair for ease of fitting.
- Fit the inside of the legs but only up to the hock or knee.
- A good rule of thumb is two quick bursts of leg adhesive and then several strokes with the comb. Keep your comb clean.
- Keep the areas to be glued as clean as possible. Many showday oils break down adhesive.
- Keep the spray cans in a cooler. Do not get them too hot or they will explode!! Keep your aerosol cans warm on extremely cold days so that they will spray better.
- Center the points on the front and back of the legs or the leg will appear crooked.
- The shorter the hair on the legs, the less natural it is going to look pulled up.
- Everyone has different styles of fitting, watch a pro.



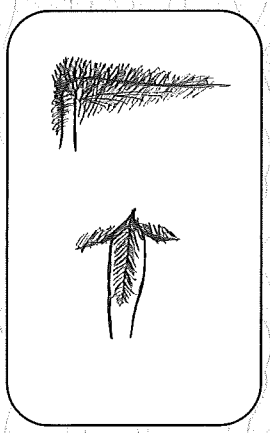


Fitted tailhead

Fitting the Tailhead and Tail

Most fitters leave an animal's tail natural—just trimming it. The hair needs to extend approximately one inch below the last bone in the tail and then be bobbed off. You can put the tail up using a ratting comb, glue and a tail tie if needed. The completed symmetrical ball needs to be in a position to add balance to the animal. A tail that is too high will make the animal look heavy fronted.

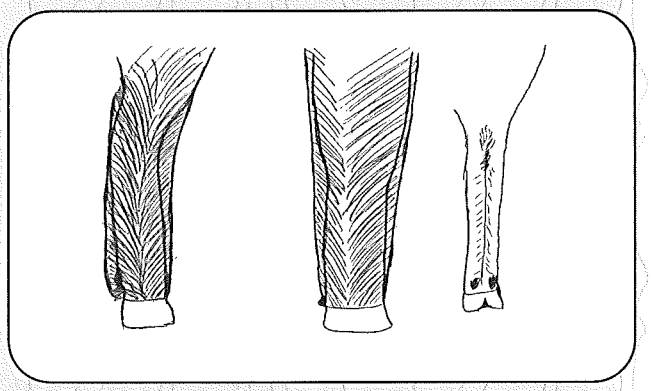
The tailhead needs to be pulled up to a point from both sides. Keep it straight in line with the calf's head and spine. Keep the part level.



Clipping Tips

Clipping the Legs

The legs need to be clipped to make them appear as straight as possible. Most legs have a natural curve. Clip that curve out. Only if your calf is post-legged (too straight) you need to clip a slight curve into the leg. It is important to remember that the more hair you can leave on the leg the bigger boned the calf will look. Don't clip off all the hair you worked so hard to grow. In general, try and make a straight line from the top of the hoof, up the front of the leg, to the rear flank area.



Clipping the Tailhead, Rear Quarter and Rear Legs

Clip the tailhead to give the calf the appearance of a longer square rump. The tailhead hair needs to be a natural extension of the calf's top line.

A. Brush the hair out and around the hindquarter to add dimension when viewing the animal from the rear.

B. Brush hair in this area to fill in the hip to make it appear to be more level from the hooks to pins.

C. Pull hair up and out and hold in place to add muscularity.

D. Leave hair longer to add width to the lower quarter.

E. Leave hair above the hock to reduce hock prominence.

F. Shave the ball of the hock to the skin in about a three inch long area to reduce hock prominence.

G. Trim long hairs after boning the leg (pulling the hair up and out) to give the appearance of a straighter leg.

H. Trim this area beginning right above the hock area to straighten the appearance of the leg.

I. Trim this area and around the entire leg to give a straight, symmetrical appearance.

J. Pull the hair on the inside and the outside of the cannon bone slightly forward to help add hair length to the front of the leg.

K. Clip the loin area on steers and heifers flat on top and all of the hair left on the loin edge.

1. View a video on clipping show animals.
2. Attend a show and observe the clipping techniques used by others. Share what you learned with your beef group.

Chapter 3

Meat Evaluation

Evaluating a Beef Carcass

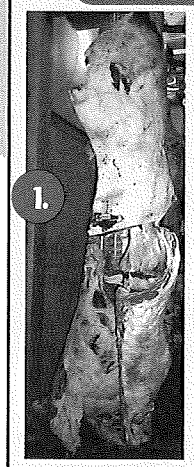
Beef Project Skill:	Evaluating beef carcasses
Life Skill:	Making decisions - selecting among choices.
Education Standard:	NS.9-12.2 Physical Science
Success Indicator:	Decide which carcasses are most desirable.

You have raised your calf to the best of your abilities. Now is the time to see just how well you did. No matter how good the animal looks, a quality carcass is critical. In this activity you will sharpen your carcass judging skills.

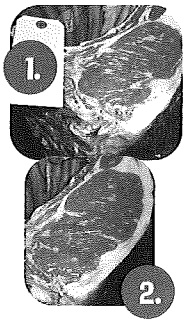
Taking on the Challenge

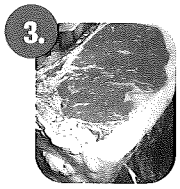
After reading the information given, look at the four carcasses shown and place them in the order of quality. Then prepare a set of reasons as to why you placed them the way you did. Use the Reasons Note Card on page 37.

Beef Carcass



Ribeye





Beef Talk Words Dark Cutter

BarnTalk

Shooting the Breeze

- How did you place the carcasses?
- Why did you place one over the other?
- Which steer had the heaviest carcass?
- Which one looks like it will yield the largest amount of lean red meat?

Show Me the Beef

- How could you alter your feeding program to change the appearance of a carcass?

Where's the Beef?

- What carcass will be the least acceptable to the consumer? Why?
- What are some consumer concerns with the beef industry?

Beef's Future

- How will the beef packing industry react to these carcasses?

FACTS

Cutability

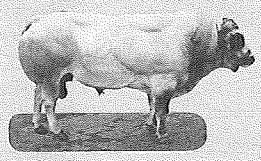
Cutability is a term used quite often when evaluating carcasses, whether it is beef, lamb or pork. Cutability refers to the proportion of the carcass that is saleable as trimmed (boned or partially boned) retail cuts.

The cutability of beef carcasses is predicted by the USDA Yield Grades as described in "Yielding the Grade" on page 18.

Beef It Up!

1. Visit a local meat cooler to look at other carcasses and determine their grades.
2. Conduct a meat judging class for a beef project group.

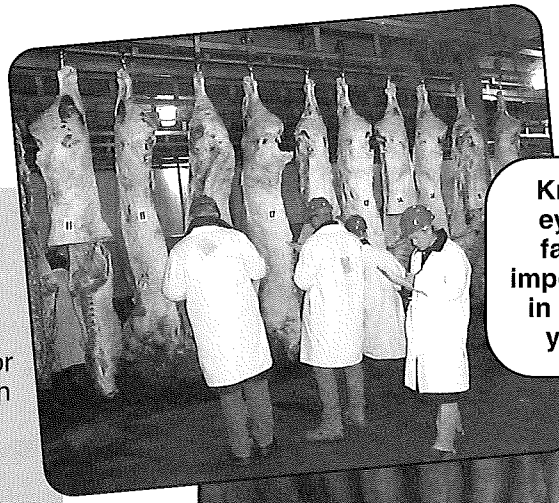
Adapted by Larry Tibbs with permission from the National Livestock and Meat Board.



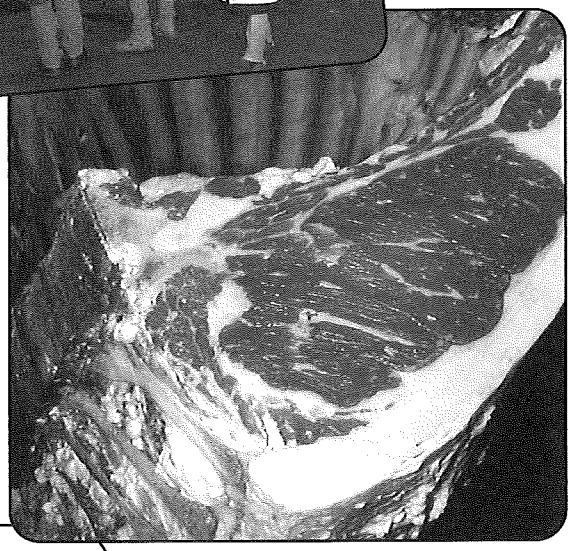
Yielding the Grade

Beef Project Skill:	Determining yield grade
Life Skill:	Making decisions, selecting among alternatives
Education Standard:	NS.9-12.2 Physical Science
Success Indicator:	Calculate the yield grade for each animal.

You hear the judge in the ring predict the yield grade of your animal. In this activity you will understand what is meant by yield grade and how it is calculated.



Knowing loin eye area and fat cover are important factors in determining yield grade.



Taking on the Challenge

From the information given in Beef Facts, calculate the yield grade of steers A and B. Show your calculations for each steer. The yield grades for each steer are shown in this activity so you will know when you have the correct answers. If you can't arrive at these answers ask your helper to check the Answer Key in the *Beef Helper's Guide.*

	Steer A	Steer B
Live weight in pounds	1270	1050
Dressing percentage	62.5	64.5
Fat thickness in inches at 12th rib	.3	.7
Ribeye area square inches	14.3	10.5

Calculations

	Steer A	Steer B
1. Fat – thickness at 12th rib	_____	_____
2. Ribeye area	_____	_____
3. Hot carcass weight	_____	_____
4. % KPH	_____	_____

	Steer A	Steer B
	3.5 Base	3.5 Base
1. Fat thickness adjustment	_____	_____
2. Ribeye adjustment	_____	_____
3. Hot carcass adjustment	_____	_____
4. KPH adjustment	_____	_____
Yield Grade (do not round up)	_____	_____

Estimated 12th Rib Fat Thickness, Inches	Estimated % Kidney, Pelvic and Heart Fat
.1	1.0 - 2.0%
.2	1.0 - 2.0%
.3	2.0 - 3.5%
.4	2.0 - 3.5%
.5	2.0 - 3.5%
.6	3.5 - 4.5%
.7	3.5 - 4.5%
.8	3.5 - 4.5%
.9	equal or greater than 4.5%
1.0	
1.1	equal or greater than 4.5%
1.2	equal or greater than 4.5%

Table 1: Estimated Percentage of Kidney, Pelvic and Heart Fat from Estimated 12th Rib Fat Thickness

BarnTalk

Shooting the Breeze

- What differences did you notice in the two carcasses?
- What terms would you use to describe these differences?

Show Me the Beef

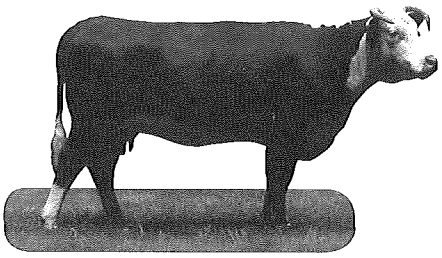
- Which steer is the fattest?
- Which steer has the largest loin eye?

Where's the Beef?

- How do you select your own beef project animals?

Beef's Future

- How would you use this information to select your project in the future?



Adapted by Larry Tibbs from the National Livestock and Meat Board's *An Integrated Approach to Evaluation, Grading, and Selection.*

FACTS

Yield Grade

Yield grade identifies cattle for differences in yields of boneless, closely trimmed retail cuts from the round, loin, rib and chuck. Yield grade is often used synonymously with cutability. Cutability is usually expressed as a percentage of carcass weight (i.e., 51.0%, etc.). However, the percentage figure is converted to a yield grade designation between 1.0 and 5.9. A yield grade of 1.0 is equivalent to 54.6%, whereas a 5.9 yield grade is equivalent to 43.3.% boneless, closely trimmed, retail cuts from the round, loin, rib and chuck. A yield grade of 1 means the highest cutability (yield of boneless, closely trimmed retail cuts from the round, loin, rib and chuck), and a yield grade of 5.9 means the lowest cutability. Thus, a carcass with a yield grade of 5.9 has considerable fat and a relatively small ribeye area.

Factors Used To Determine Yield Grade

- Fat thickness at the 12th rib which is adjusted up or down depending upon the estimated distribution of fat over the external surface of the animal
- Ribeye area
- Hot carcass weight
- Percentage kidney, pelvic, and heart fat (KPH)

Figuring Yield Grade

A yield grade of 3.5 is used as the base yield grade. The 3.5 yield grade is equivalent to a 600 lb. carcass with .6 in. of fat (12th rib), an 11.0 inch ribeye area and 3.5% KPH. Since most cattle differ from these base values, the yield grade of each animal is determined by adjusting the base yield grade (See 1–4).

1. Fat thickness at the 12th rib - For each .1 inch of fat thickness over .6 inch, add .25 of a yield grade; and for each .1 inch under .6 inch, subtract .25 of a yield grade from the base of 3.5. This adjustment determines the preliminary yield grade (PYG). PYG is then adjusted for ribeye area, hot carcass weight and percentage kidney, pelvic and heart fat as described below in 2, 3 and 4.

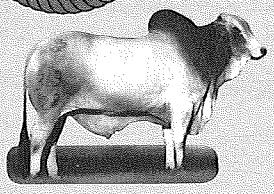
2. Ribeye Area - For each square inch of ribeye area in excess of 11.0 inches, subtract .3 of a yield grade; and for each square inch less than 11.0 inch, add .3 of a yield grade.

3. Hot carcass weight - For each 25 lb. of hot carcass weight in excess of 600 lb., add .1 of a yield grade and for each 25 lb. of hot carcass weight less than 600 lb., subtract .1 of a yield grade. Hot carcass weight is estimated by multiplying live weight by the estimated dressing % = chilled carcass weight x 1.015 (101.5%) = hot carcass weight.

4. % KPH - Is estimated from the estimate of the 12th rib fat thickness. Obtain the estimated % kidney, pelvic and heart fat for rib thickness in Table 1. Compare this figure to 3.5% base figure. For each .5% KPH in excess of 3.5%, add 0.1 of a yield grade; and for each 0.5% KPH less than 3.5%, subtract 0.1 of a yield grade.

Beef It Up!

1. Visit a feed lot or ranch and estimate the yield grade of five different animals.
2. Visit a local slaughter house and look at three beef animals about to be slaughtered. Determine their yield grade and then look at them again when they are hanging on the rail.



Selecting a Sire

Beef Project Skill:	Making bull-buying decisions with performance data
Life Skill:	Making decisions
Education Standard:	NS.5-8.3 Life Science
Success Indicator:	Decide what bull to recommend.

Deciding which bull to buy or what semen to use is one of the most critical choices a cow/calf producer faces. Bulls account for over 90% of the genetic improvement seen in most commercial cow herds over several generations.

Performance figures like birth, weaning, yearling and milk Expected Progeny Differences (E.P.D.'s), scrotal circumference and frame score help producers make informed and profitable decisions. These numbers don't tell the whole story, because they don't tell about disposition, structural soundness, carcass traits, eye appeal and many other traits.

Taking on the Challenge

Imagine that you and a friend are partners in a consulting firm that producers hire to help them select the best bulls to use on their herds. Using the information given about these eight Red Angus bulls, select the four bulls you would keep. Give your reasons for your top choice.

Producer #1: Owns ten 1,100 pound, Hereford cows. He will keep replacement heifers and sell all other calves as yearlings. He has good quality pasture for the cows, but the heifers have not been cycling until 16 or 17 months.

My recommendation _____-_____-_____-_____

I selected bull_____first because _____

_____

Producer #2: Owns 500 15-month-old crossbred heifers raised on a 5,000 acre range and will sell all resulting calves at weaning. He retains ownership in his steer calves until slaughter.

My recommendation _____-_____-_____-_____

I selected bull_____first because _____

_____

Producer #3: Owns Hereford Angus cows and will retain heifers while selling others as yearlings. He wants to add growth and some frame size, while retaining the cow herd.

My recommendation _____-_____-_____-_____

I selected bull_____first because _____

_____

Producer #4: Owns mature, large Holstein cows in a milking herd. Her calf buyer pays more for calves that will remain very lean at very heavy market weights and no heifers are kept for breeding.

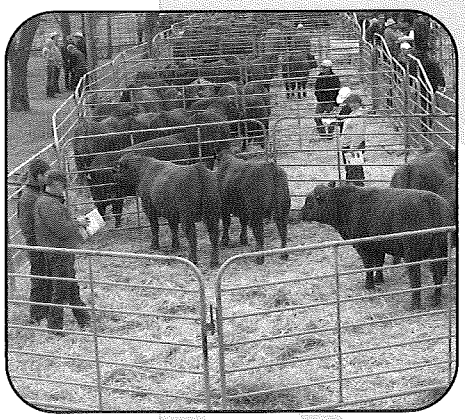
My recommendation _____-_____-_____-_____

I selected bull_____first because _____

_____

Red Angus Bull Calves

Bull No.	Birth WT. EPD	Wean WT. EPD	Yrl WT. EPD	Milk EPD	Total Maternal	Stayability	Marbling	Loin Eye Area
1	-2.8	28	57	20	34	10	0.02	0.01
2	0.3	34	62	18	35	13	0.01	0.08
3	0.8	21	45	22	33	11	-0.02	0.02
4	1.2	36	68	19	37	12	0.02	0.01
5	1.0	51	82	14	40	8	0.03	0.01
6	1.8	42	84	15	36	10	0.05	0.02
7	1.0	57	96	23	52	10	0.04	0.05
8	3.0	36	78	16	34	14	-0.01	0.04
Breed Ave.	**0.5**	**28**	**48**	**15**	**29**	**9**	**0.04**	**-0.03**



BarnTalk

Shooting the Breeze

- Why did you make the selections you did for each scenario?
- Why were some choices easier to make or clearer to see than others?
- What are EPD's?
- Why do you use EPD's?
- Where do you find EPD's?

Show Me the Beef

- Why should some bulls never be chosen for breeding?

Where's the Beef?

- Why are some of the choices you face in real life so much more difficult to make than others?

Beef's Future

- How might making a chart or matrix, or writing down information to compare help you make better decisions about other things in the future?

Beef Talk Words

Birth weight EPD
Expected Progeny Differences
Marbling EPD
Maternal milk EPD
Weaning weight EPD
Yearling weight EPD

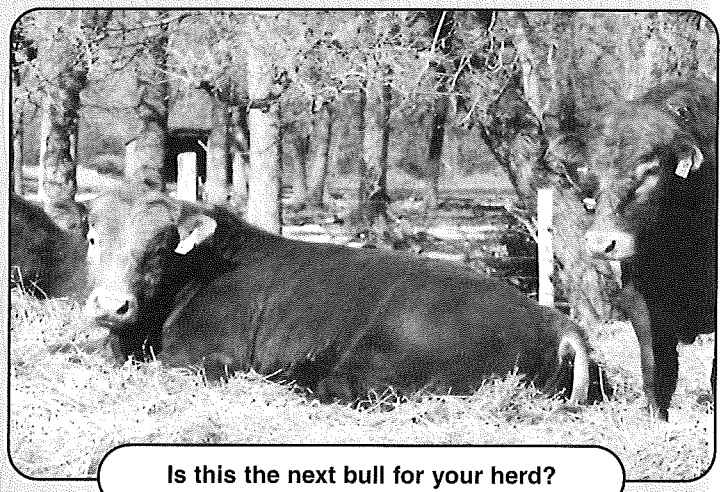
Written by Josh Merrill from Bulls that Work activity in original printing.

Resources:
Sire associations that provide semen to the beef and dairy industry are excellent sources for judging classes and further study.

FACTS

Expected Progeny Differences (EPD's)

- Every year (or more often) bulls' EPD's are posted in a Sire Summary or Sire Evaluation Report.
- EPDs are a tool you have available to make the correct selection. Other tools include visual appraisal, in-herd ratios, and actual performance with in the herd.
- EPD's provide a with-in herd comparison between animals.



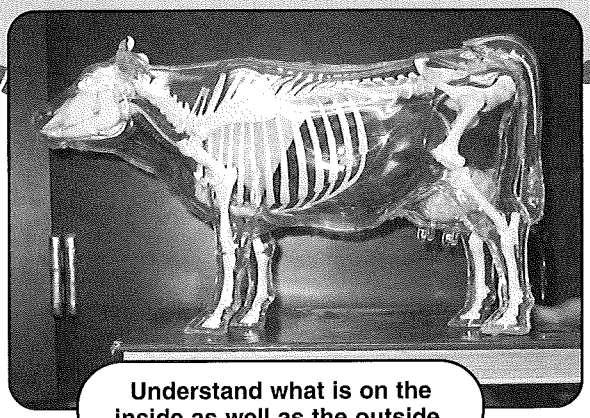
Is this the next bull for your herd?

Beef It Up!

1. Attend a bull sale that includes a catalog with performance data. Make up at least four judging classes of bulls from the sale bulls. Plan and conduct a judging contest for your family or beef group.
2. Obtain a sire summary or AI book and select a sire that you would mate your three heifers to.
3. Attend a production sale and identify a replacement heifer for your herd based on what you think is important.

Exploring Beef Reproductive Systems

Beef Project Skill:	Identifying parts of the beef reproductive systems
Life Skill:	Practicing science and processing skills
Education Standard:	NS.9-12.3 Life Science
Success Indicator:	Identify beef reproductive system parts.

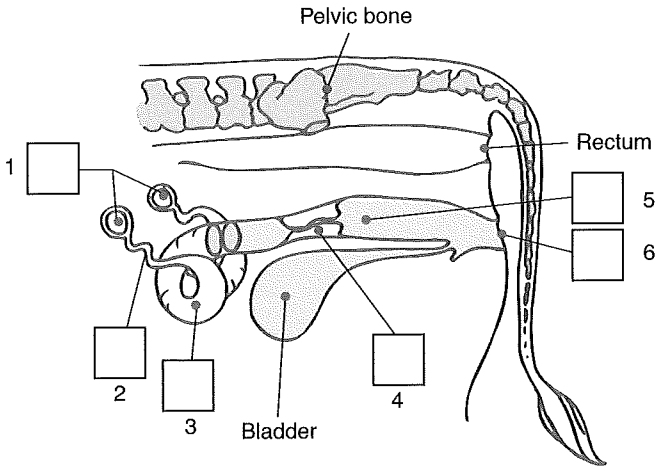


Understand what is on the inside as well as the outside.

What is the purpose of the bull? Basically, it is to breed cows to have calves. Each organ is designed to perform a specific reproductive function. What is the cow's purpose? It is to have a calf. The cow's body is designed to breed, carry and give birth to a calf. In this activity, you will learn the basic parts of the male and female beef reproductive systems.

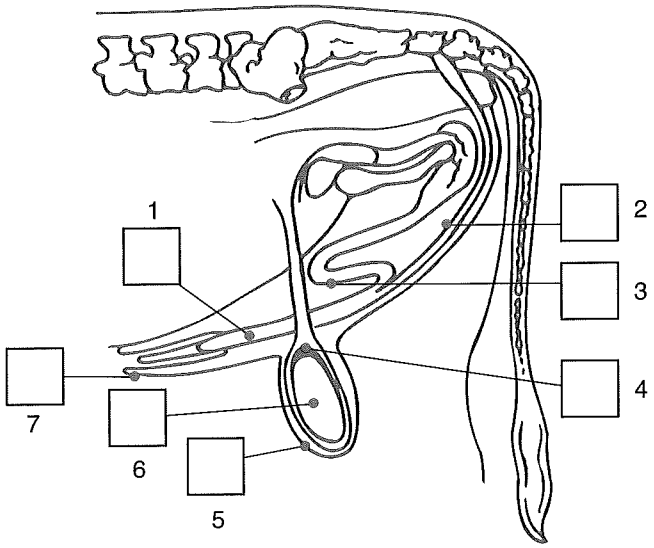
Taking on the Challenge

Identify parts of the cow and bull reproductive tracts by labeling each part on the diagram with the correct letter. Explain to your helper the purpose of each part.



Cow Reproductive Tract

v = vulva
va = vagina
c = cervix
u = uterus
o = ovary
f = oviduct



Bull Reproductive Tract

a = testicle
b = epididymis
c = sheath
d = scrotum
p = penis
q = sigmoid flexure
s = retractor penis muscle

BarnTalk

Shooting the Breeze

- What are the parts of the beef reproductive systems?

Show Me the Beef

- At what age are heifers normally bred? Why?
- Why is it important to know how the beef reproductive systems function?

Where's the Beef?

- What economic factors do you need to consider if you have cows or heifers that do not get bred?
- What are some factors that may prevent a cow from producing healthy eggs for fertilization?

Beef's Future

- How can information in this lesson be useful in preventing future breeding problems?

Beef Talk Words

Broad ligament
Cervix
Epididymis
Ovary
Oviduct
Penis
Retractor penis muscle
Scrotum
Sheath
Sigmoid flexure
Testicles
Uterus
Vagina
Vulva

Written by Jackie Buckley.

FACTS

Beef Reproductive Systems

Female Reproductive Parts

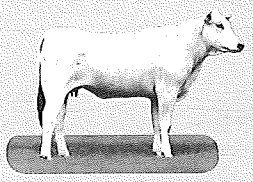
- **Broad ligament** - A rough band of fibrous tissue that holds the uterus in place.
- **Cervix** - Barrier that protects the uterus from infection and foreign debris.
- **Ovary** - The eggs develop here.
- **Oviduct** - Fertilization takes place here. Fertilized egg travels down the oviduct to the uterus to develop.
- **Uterus** - Where the fetus-the baby calf- develops during pregnancy.
- **Vagina** - Tube that connects the vulva with the uterus, where the bull deposits the semen, serves as the birth canal.
- **Vulva** - External opening to the reproductive tract.

Male Reproductive Parts

- **Epididymis** - Tube that stores sperm, transports it from the testicles to the penis.
- **Penis** - Part of the tract that the bull uses to breed the cow.
- **Retractor penis muscle** - Pulls the penis back into the bull's body after mating.
- **Scrotum** - Covers and protects the testicles.
- **Sheath** - Provides protection for the penis.
- **Sigmoid flexure** - Muscle that keeps the penis inside the bull's body and allows it to be extended during mating.
- **Testicles** - Produce the male hormone testosterone. Where the sperm are made.

Beef It Up!

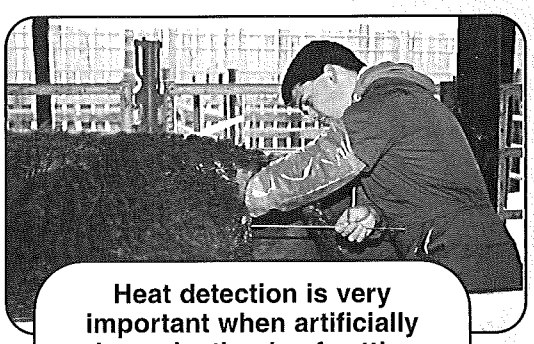
1. Demonstrate to your family or helper how to artificially inseminate a cow to become more familiar with the reproductive tract.
2. Locate and examine a beef female reproductive tract from a local slaughter plant or veterinarian. Describe the different parts to your helper or friend.



The Heat Is On

Beef Project Skill:	Understanding the estrous cycle of the beef cow
Life Skill:	Communicating with others
Education Standard:	NS.9-12.3 Life Science
Success Indicator:	Detect heat in beef cattle.

Unlike some other animals, cows are not seasonal in their sexual nature. Cows will mate at any time of the year, except immediately after calving. Science and technology have provided several different means to enable cows to reproduce. In this activity you will learn about some of these techniques.



Heat detection is very important when artificially inseminating beef cattle.

Taking on the Challenge

Understanding the reproductive cycle of a cow is an important part of good reproduction management. Observe at least three cows' estrous cycles and record the dates of each in the space provided. List the signs of heat you observed. Then fill in the answers to each of the seven questions and explain them to your helper.

Heat Detection Record

Cow	Date Heat Began	Date Heat Ended	Signs of Heat Observed

1. The cow's estrous cycle lasts for _____ days.

2. The 6 to 14 hour period that a cow will accept the bull for mating is called _____.

3. The egg is released from a structure called the _____.

4. A cow must recover from calving before she can rebreed.
This recovery period may be lengthened by stresses such as _____.

5. The process of breeding cows without a bull is called _____.

6. The length of time from breeding to calving is called _____

and takes approximately _____ months.

7. The naturally occurring compounds that cause the breakdown of the corpus luteum

are called _____.

BarnTalk

Shooting the Breeze

- What information about a cow's estrous cycle and/or the fertilization process was new to you?
- Why is it important for you to understand the cow's estrous cycle in your planning?

Show Me the Beef

- When is estrous synchronization used in the beef industry?
- What problems may upset the estrous cycle and prevent a cow from breeding?

Where's the Beef?

- What is the significance of each cycle that affect you as a beef cattle owner?

Beef's Future

- How will this discussion of cycles help you in the future?

Beef Talk Words

Estrous cycle
Estrous synchronization
Melengestrol Acetate (MGA)
Prostaglandin
Synchro-Mate B (SMB)

Written by Jackie Buckley.

FACTS

The Cow's Estrous Cycle and Fertilization

Estrous Cycle

A cow's normal estrous cycle is 21 days. The estrous cycle is characterized by heat periods (that time when the cow accepts the bull) at regular 21-day intervals. The heat period itself lasts for about 14 hours (range six to fourteen hours). This is the only time within the 21-day cycle that the cow allows the bull to mate. This 21-day cycle's activity continues until she finally conceives. She will not mate again until 40 to 60 days after the calf is born.

Fertilization

Fertilization involves the union of sperm from the male with an ovum (egg) from the female. At mating the male deposits semen (sperm-rich fluid) into the vagina of the female. The sperm cells migrate up the female reproductive organ to the site of fertilization which occurs in the oviduct. At this point the sperm waits for the egg to arrive. The egg has been sitting in a follicle on the ovary, waiting to be released. Release (ovulation) occurs about 24 hours after the cow initially exhibits heat.

Once ovulation occurs the egg is quickly swept into the infundibulum, into the oviduct and in a matter of minutes reaches the site of fertilization. Only one of millions of sperm actually penetrates the egg and fertilizes it. The result of fertilization is a new embryo, which after about six days, reaches the uterus and develops into a new calf. This development period is called gestation and lasts about 285 days.

Heat Detection Signs

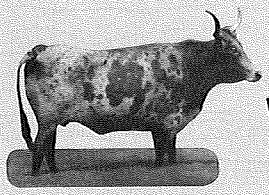
- Cows/ heifers tend to group together
- Cows/heifers ride each other
- Cows/heifers exhibit standing heat to indicate that they are ready to mate with the bull
- Cows/heifers heat cycle will usually last 6 to 14 hours
- Clear mucous will be discharged from the vagina

Estrous Synchronization and Artificial Insemination (A.I.)

Estrous synchronization manipulates reproductive processes so that a group of heifers and/or cows come into heat and ovulate in a predicted time range. Herds can be bred during a short, predefined interval with a high number of pregnancies resulting. Estrous synchronization has the greatest benefit when used with artificial insemination (A.I.). However, it may be used with natural service (when cows are bred by bulls) with the advantage of getting more cows bred early in the breeding season and having older (and therefore heavier) calves at weaning time.

Beef It Up!

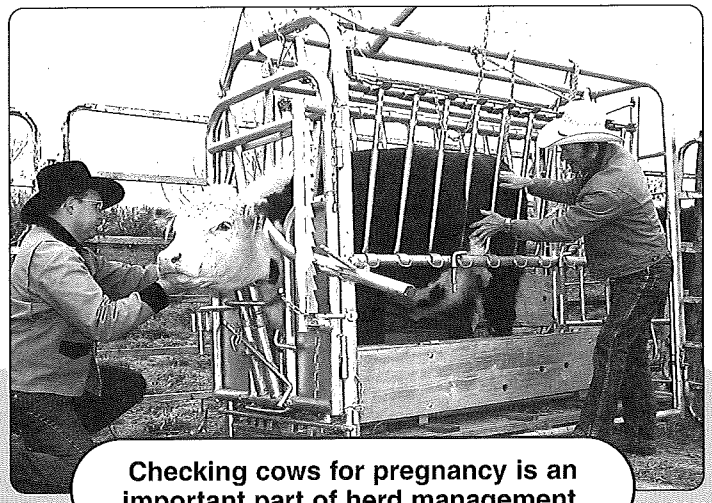
1. Demonstrate how to artificially inseminate a cow.
2. Discuss and record different heat detection methods. Interview producers, veterinarians, A.I. technicians. Search the Internet.



A Womb With a View

Beef Project Skill:	Checking for pregnancy
Life Skill:	Thinking creatively—organizes new processes/procedures
Education Standard:	NS.9-12.1 Life Science
Success Indicator:	Describe how to detect pregnancy in cattle.

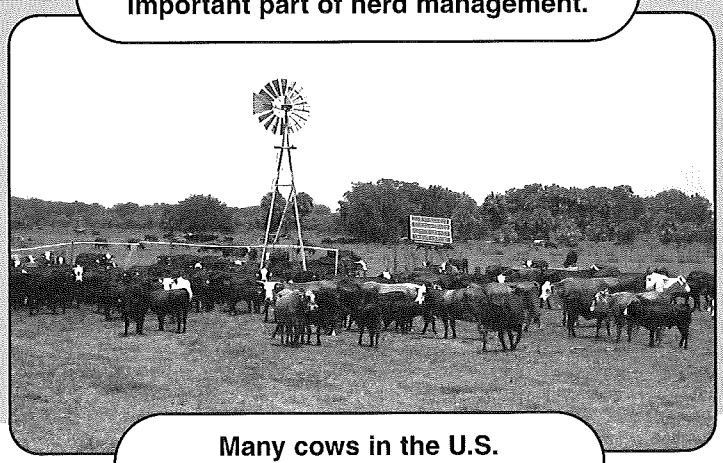
Practical jokes—you either love 'em or hate 'em! This activity will be sort of like being on the right side of a practical joke. Using your imagination and a little ingenuity, you'll create stations that resemble a cow's uterus at different stages of pregnancy. As you discover the importance of checking for pregnancy, you'll also practice being creative. Get ready to think outside the box!



Checking cows for pregnancy is an important part of herd management.

Taking on the Challenge

Your task is to develop stations for a skillathon, learning fair, group meeting or other event where people can experience what it's like to check a cow for pregnancy. Start by doing a little background research. What does a pregnant cow uterus feel like at 45, 90, 150 and 200 days of *gestation*? Think about the components of a pregnant uterus—what props could you use to create a model uterus at each stage? Make sure the stations are **not** in correct *chronological* order and include at least one *open* uterus; add more stages and abnormal conditions if you want. Make sure the situation is realistic: people shouldn't be able to see what they are feeling. In the box below, note what props you used for each station.



Many cows in the U.S. are bred in a pasture.

Station Information

Station Number	Number of Days Pregnant	Props Used
	45	
	90	
	150	
	200	
	0	
	other	
	other	

Beef Talk Words Gestation, Open, Settle, Ballottement, Placentomes, Buttons, Palpation

BarnTalk

Shooting the Breeze

- What was most fun about this activity?
- What was your biggest challenge and how did you approach it?

Show Me the Beef

- Why should beef cows be checked for pregnancy?
- How did this activity help you practice your ability to think creatively?

Where's the Beef?

- What are some other examples of creative thinking you have done?
- What is your prior experience with having cows checked for pregnancy?

Beef's Future

- How could you learn the skill of pregnancy testing real cows?
- What careers involve creative thinking?

FACTS

Testing, Testing

Whether you use natural mating or artificial insemination with your cows, pregnancy testing is an essential part of every herd management program. To be profitable, commercial beef producers must attain one calf per cow every 12 months, so cows that don't *settle* are less profitable.

Pregnancy testing can be done by manual *palpation*, testing hormones in milk or blood and by ultrasound. If a cow is at least 6 months pregnant, she can also be checked by ballottement (bah-LOT-ment). Manual palpation is the most common method. A sleeved arm is placed in the rectum and the palpater gently and carefully sweeps a hand around to feel the structures located below the rectum. Depending on the stage of pregnancy, the cervix, ovaries, uterine horns, uterine arteries, fetus and *placentomes* can be felt.

Beef It Up!

1. Watch a necropsy on a ruminant and pay careful attention to reproductive tract anatomy.
2. Accompany and work with someone who is pregnancy testing cattle. Perform a rectal examination yourself. Keep safety in mind! Watch a pregnancy ultrasound test performed on a cow or horse. Share what you observed with your group.

Determining Stages of Pregnancy

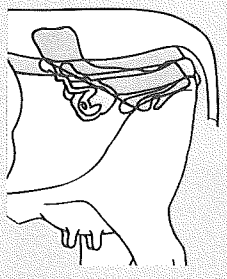
Non-pregnant
A non-pregnant tract will usually be small and located within the pelvis. There will be no embryonic tissue or fluid present.

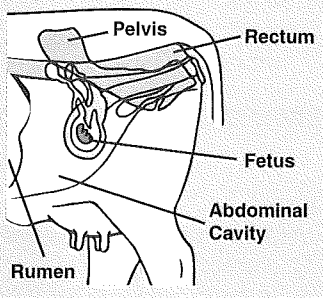
45 Days Pregnant
The uterus will be in about the same location as a non-pregnant uterus. One uterine horn will be slightly enlarged and the fluid surrounding the fetus in the uterine horn will be noticeable. The fetus is only 1" long.

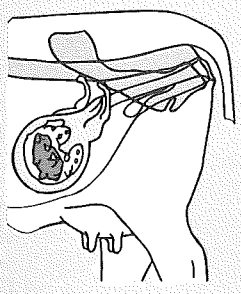
90 Days Pregnant
The fetus is now about 6" long (the size of a rat). The uterus is located over the pelvic rim due to the increase in weight. One horn is much larger than the other, with a prominent bulge where the fetus is.

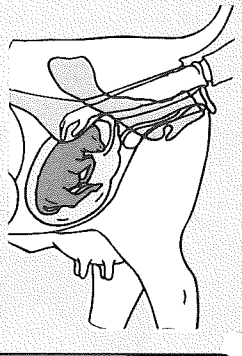
150 Days Pregnant
The fetus will be 12" to 17" inches long (the size of a large cat) and can be difficult to reach. The cervix will be at the rim of the pelvis and the uterus will be pulled deep into the abdomen. The *buttons* will be palpable. The uterine artery of the pregnant horn will have "whirring" instead of a distinct pulse.

200 Days Pregnant
The fetus will be large enough that individual structures (head, legs) are easily identifiable, but at times will be deep in the abdomen and out of reach. The fetus will be 22-30" inches long, about the size of a medium dog. The cervix will be pulled over the pelvic rim.

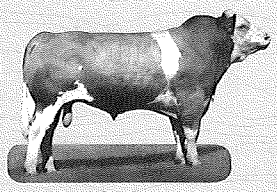








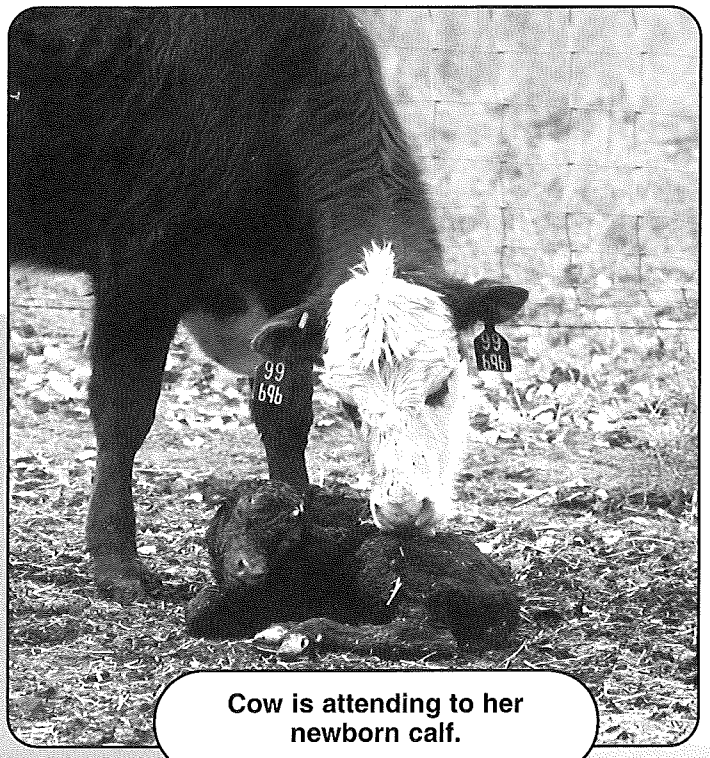
Adapted by Susan Kerr from the Kansas 4-H Beef Curriculum Notebook.



The LaMOOze Method

Beef Project Skill:	Delivering a calf
Life Skill:	Problem solving
Education Standard:	NL-ENG.K-12.4 Language Arts: Communication Skills
Success Indicator:	Demonstrate how to assist a cow giving birth.

Is that a foot? A nose? A tail? What is supposed to happen when a cow gives birth? How can you tell when something is going wrong? More importantly, how can you help? This activity will help you learn how to recognize calving problems by helping you become familiar with normal delivery. You'll practice your ability to solve problems, too. Time to scrub up!



Cow is attending to her newborn calf.

Taking on the Challenge

Stage 1: First you'll need to become familiar with the normal calving process so you can tell when something is wrong. To help you consider the calving process, you'll explain to a friend or helper what happens during calving. You'll need to collect lots of props to help you. Be creative! Find or make something to represent the calf and something to represent the cow's birth canal. The model calf made from the 4-HCCS calf pattern would be very helpful. Using your props, demonstrate what happens during a normal birth process.

Stage 2: Using your props, create a *dystocia*. Show how you would correct this problem and help the cow deliver a healthy calf.

Stage 3: Record what you did by supplying the information requested in the box below.

Props I used: _____

Who was in my audience: _____

Type of dystocia I created: _____

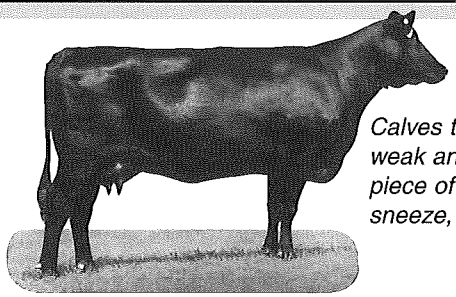
How I solved the problem and delivered the calf: _____

_____

_____

_____

_____



Did You Know?

Calves that have had a difficult birth are sometimes weak and slow to start breathing. Gently sticking a piece of straw up the calf's nostril will stimulate it to sneeze, cough and breathe.

Always call your veterinarian when you have a concern or question about your animal's health.

BarnTalk

Shooting the Breeze

- What materials and props did you use in your demonstration?
- Why types of problems did you encounter doing the activity?

Show Me the Beef

- What are some reasons for dystocia?
- What do you need to know in order to correct a dystocia?

Where's the Beef?

- What example of problem solving in your life are you most proud of? Why?
- How did this activity help prepare you to assist an animal giving birth?

Beef's Future

- What steps will you take in the future if you see a cow having difficulty calving?
- How can this logical approach to solving the problem of dystocia help you approach other problems you may encounter?

Revised by Susan Kerr from original activity from the Kansas 4-H Beef Curriculum Notebook.

FACTS

Labor Day

Stage 1
Uterus muscles contract, cervix dilates and calf readies to enter birth canal. Calf's back should be on top with both front legs in birth canal and head between them.

Stage 2
Calf moves into birth canal. Water bag then calf's front feet and nose can be seen. After head appears, calf is usually delivered within 30 minutes.

Stage 3
Fetal membranes are usually passed within 12 hours of birth. Membranes held longer than 12 hours are considered a *retained placenta.*

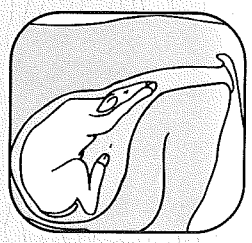
Difficult Births

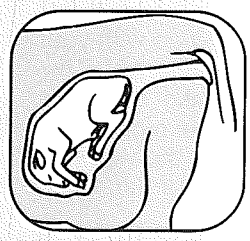
You must be able to decide when and how assistance should be given and when a veterinarian is needed. In heifers, if no progress is made after one hour of active labor (30 minutes for a cow), it's time to investigate the problem.

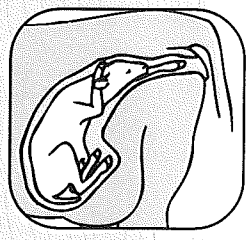
Keys to Helping. BE SAFE, BE CLEAN, BE GENTLE AND USE PLENTY OF LUBRICANT. Have an experienced adult help you restrain the animal in a clean area. Clean animal's vulva and anus area with warm water and disinfectant soap. Rinse well. Wash your hands and arms, then put on a clean plastic sleeve. Put lubricating jelly on your covered hand and gently insert it into the vulva and vagina.

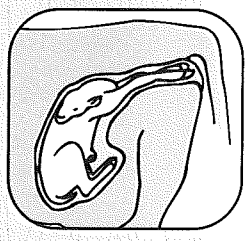
Identifying the Problem. Figure out what part of the calf you are feeling. If you don't feel anything in the empty cave of the birth canal, gently move your arm forward until you feel the calf or can't go any farther. If you reach a "dead end," the cervix is probably not dilated and the cow may need more time to dilate or could require veterinary assistance.

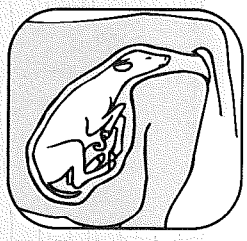
Assistance. To help a calf be delivered, pull calf's front legs with your hands while another person gently stretches both sides of the dam's vulva. If this isn't successful, attach clean obstetrical chains to the calf's front legs. Use a half hitch above and below the fetlock on each leg so that the chains pull from the back of the legs, not the front. Do NOT use fence stretchers, tractors or other extreme force. Pull level and straight backwards on the calf's legs. As the calf's body is delivered, pull outward and downward to follow the natural bend in the calf's spine.


Normal Birthing Position

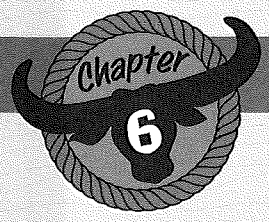

True Breech Birth

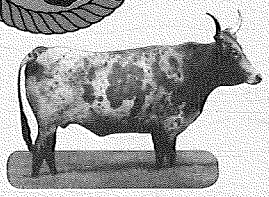

One Leg Back


Head Back


Front Legs Back

1. Talk with a veterinarian about how he or she handles difficult births. Travel with a veterinarian and observe how to assist a cow giving birth.
2. Visit with a rancher or dairy farmer to see how heifers and dry cows are managed before calving. Share what you discovered with your beef group.





Mapping My Future

Beef Project Skill:	Making career choices
Life Skill:	Planning your life
Education Standard:	NS.9-12.6 Personal & Social Perspectives
Success Indicator:	Interview people in five agricultural careers.

The 21st Century has arrived. Are you preparing yourself to live in a high tech world? No matter what you decide to do with your future, the decisions you make now are important. The activities you participate in, the classes you take, the groups you join, the friends you associate with, the high tech equipment you use every day are just some of the ways you are consciously or unconsciously planning your future.

Discuss with your helper what you believe your life will be like 10 or 20 years from now. Dream big. Then write down how you see yourself and keep it with your important papers. Who knows? Your vision just might come true!

Being a food scientist is just one career youth may pursue as a result of being involved in the beef project.

Taking on the Challenge

Many 4-H alumni say their career choices were based in part on their 4-H experiences. Their involvement with certain projects helped them to find areas of interest on which to focus their educational training and eventually identify a career path.

As a person interested in beef, you will want to investigate various career opportunities available related to beef cattle. Careers in the beef industry are not limited to production. They range from agribusiness, to finance, to communications, to marketing, to embryo transfer and much more.

Choose five careers you would like to explore. Think of people you know or who someone else might know that do what you might someday enjoy. Interview at least five of these people. Question them on the general nature and desirability of their chosen careers. Ask what training each career requires and where each person was educated. Search the Internet for different beef careers.

Career Interviews

Who Interviewed	Career	Training or Experience Required	Where Trained or Educated	Level of Satisfaction	Advice

BarnTalk

Shooting the Breeze

- What did you learn from each person you interviewed?
- With what parts of their careers were people most happy?
- In what careers are you most interested?
- Did you find any career(s) that you now know you do not want to pursue? Why?

Show Me the Beef

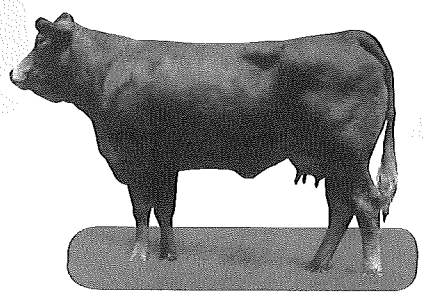
- What resources can you use to help choose a career and develop the skills you need to achieve your career goals?

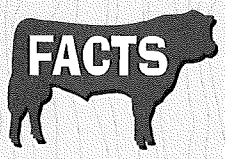
Where's the Beef?

- What personal skills or traits do you have that will help you pursue the careers that appeal to you?

Beef's Future

- What do you need to do right now to improve your chances of achieving a successful career?





Beef Industry Careers

- Cow/calf rancher
- Radio/TV communicator
- College researcher/teacher
- Sales and marketing representative
- Feeder cattle buyer
- Market cattle buyer
- Research technician
- Extension/consultant
- Technical service representative
- Food inspector
- Market reporter
- Breed representative
- Hay producer
- Feed yard manager
- Purebred producer
- Photographer
- Veterinarian

1. Visit various educational institutions and discover what they can offer you. Ask about entrance requirements, cost, job placement, extracurricular activities, etc. When you start high school it will help you know which classes to take and which activities will help you the most.
2. Arrange for an internship experience in a career that you have identified: a summer of full-time employment, or a few days of volunteer-donated service to a local business or organization. Include your helper in discussing your specific likes, dislikes, special skills, shortcomings, job availability, training required, etc.

Beef Talk 3

This is the third of three Beef Talk glossaries for you to use to increase your beef vocabulary. See how many of these words your family knows. See if you can find all the words hidden in the Beef Talk 3 Glossary Word Find.

A

Artificial Insemination – Manually placing semen into the reproductive tract of the female with the purpose of producing pregnancy.

Autopsy – An after-death examination that involves dissecting a body to learn the cause of death.

B

Backgrounding – Growing program for feeder cattle from the time calves are weaned until they are on a finishing ration in the feedlot.

Balanced ration – A ration that provides an animal with the proper amounts of all the required nutrients.

Ballottement – A type of pregnancy testing; using a fist against the flank on a cow's right side to set up a fluid wave and feel the fetus bump back against the fist; also called bumping a calf.

Birth Date – Birth Date is not an EPD. It is commonly used as part of the data.

Birth weight EPD – Predicts the difference in average birth weight of a bull's calves in comparison to the calves of all other bulls evaluated in the summary.

Branded beef product – A specifically labeled product that is differentiated from commodity items by its brand name. Certified Angus Beef is an example.

Broad ligament – A rough band of fibrous tissue that holds the uterus in place.

Buttons – See placentome.

C

Calving ease EPD – Probability or percentage of a sire's daughters that calve unassisted.

Carcass Weight EPD – Measured in pounds of hot carcass weight.

Case ready – Beef cuts received by the retailer that do not require further processing before they are put in the retail case for selling.

Cervix – Portion of the female reproductive tract that connects the uterus to the vagina. It also secretes a heavy mucus which plugs the reproductive tract during pregnancy to protect the embryo.

Clean – Negative in test for brucellosis; free of disease; describing animal believed to be free of congenital abnormalities.

Close breeding – Linebreeding or inbreeding, mating of related animals.

Conceive – Term to indicate that fertilization has occurred.

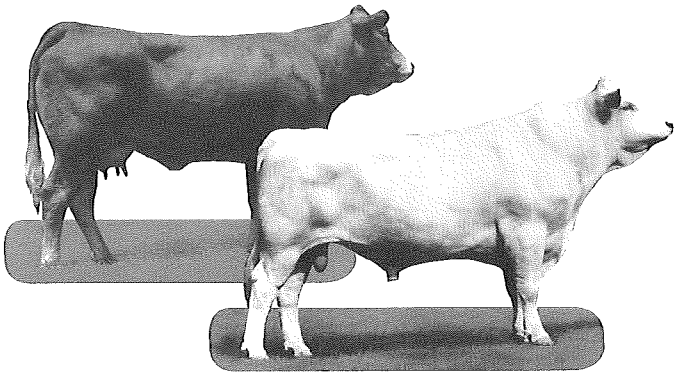
Conception – Union of ovum and sperm to begin life of new individual.

Conditioning – Treatment of cattle by vaccination and other means prior to putting them in the feedlot.

Contagious – Referring to diseases that can be readily transmitted from one animal to another.

Custom feeding – Cattle feeders who provide facilities, labor, feed and care as a service but they do not own the cattle.

Cwt – Abbreviation for hundredweight (100 lb.).



D

Dark cutter – Special quality classification for beef from young animals that has a dark red color. The condition can be caused by stress prior to slaughter.

Dystocia (dis-TOE-sha) – Difficulty giving birth.

E

Ejaculation – The discharge of semen from the reproductive tract of the male.

Embryo transplant – Removing a developing embryo from one female and transferring it to the uterus of another, usually in an attempt to increase the number of offspring.

Embryo transfer – Transfer of fertilized egg(s) from a donor female to one or more recipient females.

Epididymis – Tube that stores sperm, transports it from the testicles to the penis.

Expected progeny difference (EPD) – One-half of the breeding value of a sire or dam; the difference in expected performance of future progeny of a sire, when compared with that expected from future progeny of bulls in the same sire summary.

Estrous cycle – The reproductive cycle in nonprimates; it is measured from the beginning of one estrus or heat period to the beginning of the next. The average estrous cycle for cattle is 21 days.

Estrous synchronization – Manipulate the reproductive process so that a group of animals come into heat and ovulate in a predicted time range.

Estrus – Adjective meaning "heat"; the estrous cycle (or heat cycle) is the time from one heat cycle to the next.

F

Fat thickness EPD – Estimated differences in the amount of fat over the 12th rib. Expressed in inches of backfat.

F1 – First cross of two unrelated pure breeds.

F2 – Crossbred resulting from the mating of two F1's of the same type.

Feed efficiency – The amount of feed it takes to gain one pound of weight. In beef it is about six to seven pounds of feed to achieve one pound of gain.

Fertility – Ability of an animal to reproduce.

Fertilization – The union of one sperm cell with an ovum (egg).

G

Gene – One of the biologic units of heredity contained in the chromosome, each of which controls the inheritance of one or more characteristics.

Genetics – The science that deals with heredity and variation in organisms, and with the function and transmission of genes.

Genotype – Listing of genes that an animal has.

Gestation – Total length of a normal pregnancy.

H

Heat – The six to fourteen hours every 21 to 28 days when a cow will accept service of a bull.

Hedge – Risk management strategy that allows a producer to lock in a price for a given commodity at a specified time.

Herd bull battery – The number of bulls in service in particular herds.

Herd sire – Principle breeding bull in a herd.

Heterosis – The amount of superiority observed or measured in crossbred animals compared to the average of their purebred parents.

Hindquarter – The rear half of a carcass, divided from the front quarter between the 12th and 13th rib, contains the loin and round wholesale cuts.

Hip height - Measurement taken at a point level with the center of the back opposite the hook (or hipbone) to the ground.

Hybrid vigor - The degree to which the offspring out performs its parents.

I

Inbreeding - Mating of related animals; close breeding or line breeding.

Infundibulum - Cup-like structure that captures the egg after it is released from the follicle.

L

Linebreeding – Selective breeding; sire and dam related; mild form of inbreeding.

Ribeye Area EPD – Probability of a larger Loin Eye area. Expressed in units of square inches.

M

Malpresentation – Abnormal birth position that causes problems with calving.

Marbling EPD – Predicts which sire will produce progeny with more marbling at a specific fat level and age. A bull with a high EPD for marbling will sire calves with a larger amount of marbling in the lean.

Market price – Price paid for cattle.

Maternal milk EPD – Estimates the milking ability of a bull's daughters and is measured by the difference in weights due to milk production of the bull's daughter's calves at 205 days.

Marbling Score EPD – Expressed in units of a marbling score. This assumes that the cattle from both sires are fed and marketed the same, and it is an important consideration for quality grading.

Maternal weaning weight EPD – An EPD which accounts for an individual's genetic value for milk production and growth.

Melengestrol Acetate (MGA) – Synthetic progesterone that has been traditionally fed to feedlot heifers to keep them from coming into estrus.

Motility – Activeness of bull's semen as seen through a microscope.

N

Nutrient density – Amount of essential nutrients relative to the number of calories in a given amount of food.

O

Open – Not pregnant.

Ovary – Female reproductive organ which produces eggs and hormones for reproduction. A comparable structure in the male is the testicle.

Oviduct – Long, slender tube on the female reproductive tract where fertilization occurs. Acts as a transport for the embryo from the site of fertilization to the uterus.

Ovulation – The process of releasing eggs or ova from the ovarian follicles.

Ovum – The female gamete or reproductive cell. Usually referred to as the egg.

P

Palpation – Examine by touching.

Parturition – Birth.

Pasture bred – Referring to cows serviced by bull in pasture.

Pedigree – An ancestral record, a genealogical tree.

Penis – Part of the reproductive tract that the bull uses to breed the cow.

Percent Retail Product or Percent Retail Cuts EPD – Combines carcass traits (hot carcass weight, fat thickness, ribeye area, and %kidney, pelvic and heart fat) into a composite EPD.

Phenotype – An animal's appearance or one of its traits; the way it looks or behaves as determined by its genotype and environment.

Placentomes – Temporary structures made up of tissues from the dam and fetus; also known as the buttons on the placenta.

Planned mating – A mating when the bull and cow are specifically selected to mate.

Preconditioning – Preparing young cattle at or shortly after weaning prior to shipment to a feedlot.

Prepotency – Ability to transmit individual's traits to its offspring.

Progeny test – Evaluation of the offspring of sires to determine a sire's ability to transmit heritable traits such as gainability, meatiness, conformation and congenital abnormalities.

Prostaglandin – Naturally occurring compounds (they also can be produced artificially) that cause the breakdown of the corpus luteum.

R

Reproductive tract – The part of the beef animal where the reproductive organs are located.

Retained placenta – Fetal membranes not passed from the cow within 12 hours of giving birth.

Retractor penis muscle – Pulls the penis back into the bull's body after mating.

Rotational crossing – The systematic rotation of heifer replacements from one breeding unit to a succeeding unit for two or more rotations and utilization of purebred bulls of a different breed in each unit.

Rumen – The fermentation vat. The largest of the four stomachs.

S

Scrotum – Covers and protects the testicles.

Scrotal circumference EPD - Predicts the difference in scrotal circumference of male progeny; expressed in cm.

Seedstock – Registered animals for establishing a breeding herd.

Service – The mating of a female by a male.

Settle – Conceive.

Settled – Indicating that an animal has become pregnant.

Sex chromosomes – A pair of chromosomes in animals that determines gender; one sex usually has two of the same kind of sex chromosome in its cells while the other has two kinds. In mammals, the female is XX and the male is XY.

Sheath – Provides protection for the penis.

Sigmoid flexure – Muscle that keeps the penis inside the bull's body and allows it to be extended during mating.

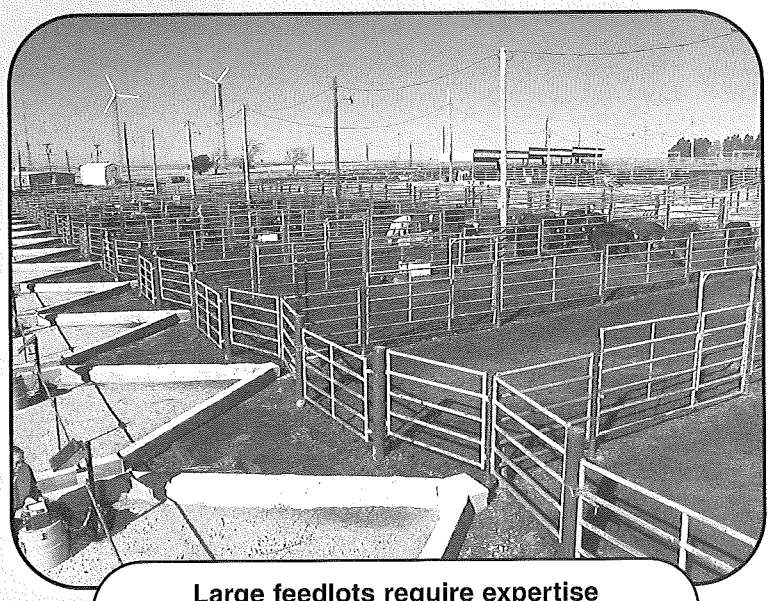
Sire evaluation – Publication by a breed association that contains genetic trait information.

Sire summary – An estimate of the genetic transmitting ability of a bull.

Sperm – The male sex cell. Combines with the egg from the female to form a new individual.

Stayability EPD – Probability that a sire's daughters will remain in the herd for a least 6 years.

Synchro-Mate B (SMB) – Artificially produced prostaglandin that consists of an implant placed subcutaneously in the ear and intramuscular injection that is designed to prevent the female from exhibiting estrus.



Large feedlots require expertise in nutrition and animal health

T

T.D.N. – Total digestible nutrients. What is easily digestible by the beef cow.

Testicles – Produce the male hormone testosterone. Where the sperm is made.

Testis – The primary sex organ of the male; the source of the male gametes and the male sex hormone.

Testosterone – A hormone produced by the cells of the testis that stimulates male sex drive, masculine characteristics, development of the male reproductive tract and spermatogenesis.

Three-breed cross – Crossbred resulting from the crossing of three breeds, such as an F1, or first cross mated to a third breed. Also called a three-way cross.

Trait – Distinguishing quality or feature.

Two-breed rotation – Systematic crossing of heifers produced in a two-breed cross to a bull of one of the parent breeds.

U

Ultrasound – Using high-frequency sound waves to show visual outlines of internal body structures (e.g., fat thickness, rib-eye area and pregnancy can be predicted). The machine sends sound waves into the animal and records these waves as they bounce off the tissues. Different wavelengths are recorded for fat and lean.

Uterus – Where the fetus, the baby calf, develops during pregnancy.

V

Vagina – Tube that connects the vulva with the uterus. Where the bull deposits the semen. Serves as the birth canal.

Value-based marketing – Marketing system based on paying for individual animal differences rather than using average prices.

Vulva – External opening to the reproductive tract in the female.

W

Wean – When the rancher removes the calf from the care of its mother, usually about 205 days after the calf was born.

Weaning weight EPD – Predicts the difference in average 205-day weight of a bull's calves in comparison to the calves of all other bulls evaluated in the summary.

Y

Yearling weight EPD – Predicts the difference in average 365-day weight of a bull's calves.

Beef 3
Glossary Word Find

S A F G S U N I C K E G S D I
P J S E C M U V O V N U T N C
X A U N R U Z V N I Y R F U O
Q S R E O T I W D T A U Y O N
N S T T T D I E I I N O S S C
O I S I U N E L T D S V P A E
I S E C M R I X I D H U O R P
T O T S B T I B O Z E L T T T
A R M N R V U T N R A A U L I
L E I E R L A M I G T T A U O
U T F E U E C E N O H I I G N
C E C M H H E D G E N O S O V
A H G N I D E E R B E N I L N
J R D H I N D Q U A R T E R T
E T S I M Y D I D I P E N E G

Word Bank

Autopsy
Cervix
Conception
Conditioning
Ejaculation
Epididymis
Estrus
Fertility
Fertilization
Gene
Genetics
Heat
Hedge
Heterosis
Hindquarter
Inbreeding
Infundibulum
Linebreeding
Nick
Oviduct
Ovulation
Ovum
Parturition
Scrotum
Sheath
TDN
Trait
Ultrasound

Beef Project Resources

The following are examples of resources to help you complete the activities and learn more about this exciting project. The Extension Service does not endorse any non-extension resources.

4-H National Juried Beef Publications

National 4-H Curriculum Beef Publications

- Beef 1 *Bite Into Beef* BU-08143
- Beef 2 *Here's the Beef* BU-08144
- Beef 3 *Leading the Charge* BU-08145
- *Beef Helper's Guide* BU-08146

Kansas 4-H Beef Curriculum Notebook Kansas Cooperative Extension Service – 4-H
201 Umberger Hall
Manhattan, KS 66506-3404

Beef Magazines

Beef

Beef Today
Farm Journal, Inc.
230 W. Washington Square
Philadelphia, PA 19160

Drovers Journal
Circulation Dept.
P.O. Box 1417
Linconshire, IL 60069

Farming Magazine
43 S. Water St. E.
Fort Atkinson, WI 53538-0809

Breed Associations

American Angus Association
3201 Frederick Blvd.
St. Joseph, MO 64506

Beefmaster Breeders United
6800 Park Ten Blvd., Ste. 290W
San Antonio, TX 78213-4204

American Brahman Breeders Association
1313 La Concha Lane
Houston, TX 77054

International Brangus Breeders Association
P.O. Box 696020
San Antonio, TX 78269-6020

Braunvieh Association of America
P.O. Box 6396
Lincoln, NE 68506-0396

American-International Charolais Association
P.O. Box 20247
Kansas City, MO 64195

American Chianina Association
P.O. Box 890
Platte City, MO 64079

American Gelbvieh Association
10900 Dover St.
Broomfield, CO 80021

The American Hereford Association
1501 Wyandotte Street
P.O. Box 014059
Kansas City, MO 64101

American Highland Cattle Association
200 Livestock Exchange Building
4701 Marion
Denver, CO 80216

North American Limousin Association
7383 South Alton Way
P.O. Box 4467
Englewood, CO 80155

Texas Longhorn Breeders Association of America
Box 4430
Fort Worth, TX 76164

American Maine-Anjou Association
528 Livestock Exchange Building
Kansas City, MO 64102

American Polled Hereford Association
11020 NW Ambassador Drive
Kansas City, MO 64153

Red Angus Association of America
4201 N. Interstate 35
Denton, TX 76207-3415

American Salers Association
19590 E. Main Street #202
Parker, CO 80138

American Shorthorn Association
8288 Hascall Street
Omaha, NE 68124

American Simmental Association
One Simmental Way
Bozeman, MT 59718

North American South Devon Association
19590 E. Mainstreet #202
Parker, CO 80138

American Tarentaise Association
P.O. Box 34705
Kansas City, MO 64116

Handbooks

National Beef Cattle Handbook

Organizations

National Cattlemen's Beef Association
9110 E. Nichols Avenue Ste. 300
Centennial, CO 80112

R-CALF United Stockgrowers of America
P.O. Box 30715
Billings, MT 59107

State Cattlemen's Associations

County Cattlemen's Associations

State Beef Councils & Commissions

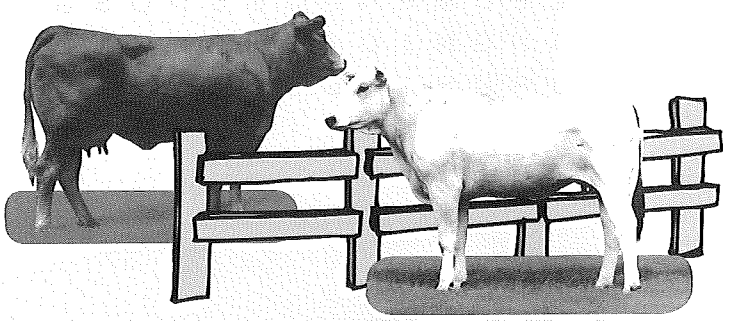
Web Sites

Beef Magazine web sites

Beef Breed Association web sites

National Cattlemen's Beef Association web site

General Beef Management



REVIEWED & RECOMMENDED
National 4-H Curriculum

Discover over 180 National 4-H Curriculum titles in mission areas of Science, Engineering and Technology; Healthy Living; and Citizenship. Youth activity guides are filled with fun, engaging experiences that cultivate abilities youth need for everyday living as they progressively gain knowledge about subjects that interest them.

All titles have been reviewed and recommended by the National 4-H Curriculum Jury Review process, signifying their excellence in providing hands-on learning experiences for youth.

Science, Engineering and Technology

Agricultural Science
- Afterschool Agriculture

Animal Science
- Beef
- Cat
- Dairy Cattle
- Dairy Goat
- Dog
- Embryology
- Entomology
- Exploring Farm Animals
- Meat Goat
- Pets
- Poultry
- Rabbit
- Sheep
- Swine
- Veterinary Science
- Horse

Engineering and Technology
- Aerospace Adventures
- Electric Excitement
- Computer
- Exploring 4-H Robotics
- Geospatial
- Sewing Expressions
- Small Engines
- Woodworking Wonders

Environmental Science
- Exploring Your Environment
- Forestry—Forests of Fun
- Fishing for Adventure
- Outdoor Adventures

Plant Science
- Down-to-Earth—Gardening in the Classroom
- Gardening

Science Discovery
- Science Discovery Series

Healthy Living

Health and Fitness
- Bicycle Adventures
- Child Development—Kids on the Grow
- Keeping Fit and Healthy

Nutrition
- Foods
- Microwave Magic

Citizenship

Communication and Expressive Arts
- A Palette of Fun
- Communications—Express Yourself!
- Photography
- Qué Rico! Latino Cultural Arts
- Theatre Arts
- Visual Arts

Community Action
- Citizenship—Public Adventures
- Service Learning

Leadership
- Exploring 4-H
- Step Up To Leadership

Personal Development
- Consumer Savvy
- Financial Champions

Workforce Preparation
- Be the E—Entrepreneurship
- Get in the Act!

Resources

- Experiential Learning Video

Find more about **Beef**
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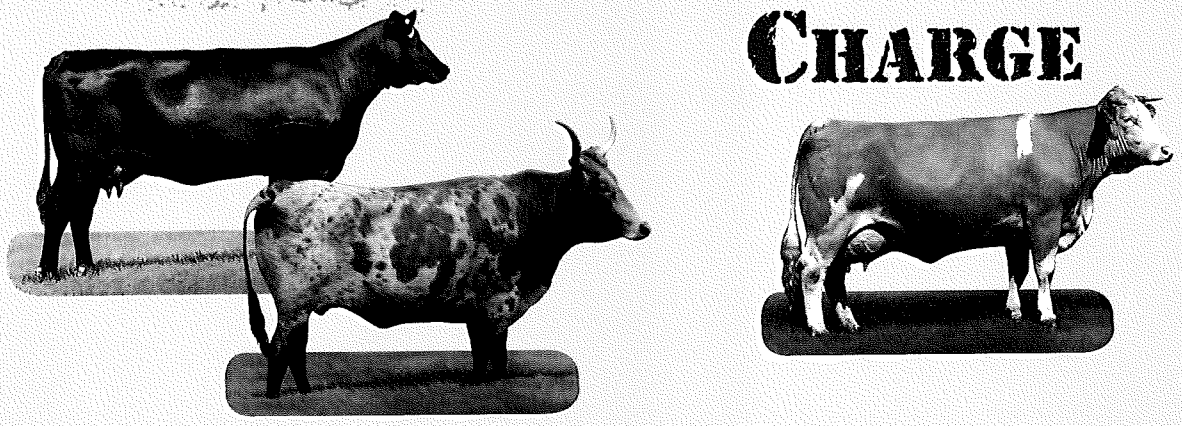
Beef 3

Leading the Charge



The 4-H Pledge

I pledge
my Head to clearer thinking,
my Heart to greater loyalty,
my Hands to larger service, and
my Health to better living,
for my club, my community,
my country, and my world.

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