
4-H Beef Project

Leader

Unit	Page
1 Welcome to the 4-H Beef Project - Introduction	1-1
2 You and Your Beef Project	2-1
3 Digestion in the Beef Animal	3-1
4 Nutrient Requirements of Beef	4-1
5 Feeds for Beef	5-1
6 Parasites of Beef Cattle	6-1
7 Beef Herd Health	7-1
8 Managing Your Market Steer	8-1
9 Beef Cow and Heifer Management	9-1
10 Managing the Beef Herd Sire	10-1
11 Beef Breeding	11-1
12 Calving	12-1
13 The Newborn Calf	13-1
14 Beef Cattle Handling and Facilities	14-1
15 Range and Pasture Management	15-1
16 Record Keeping	16-1
17 The Beef Carcass	17-1
18 Beef Marketing	18-1
19 The Beef Industry Today	19-1
20 Beef Grooming and Showing	20-1
21 Evaluation	21-1
22 Leaders' Activity Guide	22-1

Unit One

Welcome to the 4-H Beef Project

**Dear
4-H Beef
Leader:**

Welcome!

This challenging and exciting format allows you and the 4-H members to have fun while learning about the various aspects of beef production.

**How does
this material
work?**

1. There are three levels in this beef material. In each level there are 20 units. Each unit covers a specific topic or group of topics about one aspect of beef production.
2. The material varies in style and content from one level to the next.

The recommended age groupings are

Level One	9-11 years of age
Level Two	12-14 years of age
Level Three	15-21 years of age

Note that these age groupings are NOT carved in stone! Members may fit into a higher or lower level according to their experience. Please adjust these groupings as required in your club.

3. Each member must complete the specific units, in their level, that your club selects for that year. Encourage your members to begin a binder. Each member can then build on this binder over the project year and future years to create a valuable beef production manual.
4. You are NOT expected to complete all of the units in one year! This will take several years. Plan your project year at your first meeting. Choose the units you wish to cover at your meetings. The number of units and the topics you choose will vary depending upon the number of meetings you hold and the interests of your members. Your club should complete four to six units in each project year.
5. Depending on the interests of your members, you may wish to combine or extend units. Work at your own pace. The material is designed to be flexible.
6. Please note that you are NOT expected to complete all of the activities within each unit. These are provided as suggestions only. You may need to use them to get rolling, or you may not use them at all.

Review:

**Using This
Material**

Step 1

Order a leaders' guide for yourself.

Step 2

Decide on which units you and your members will cover this project year.

Step 3

At the end of your project year, complete the Beef Project Evaluation Form and send it to the provincial 4-H office.

Did you know ... that the following items are available to all 4-H beef clubs?

- *Loans through Alberta Treasury Branches*
- *Livestock Insurance*
- *Implants*

Talk to your regional 4-H specialist, or consult the Beef Fall Leaders'

4-H Livestock Project Regulations

Information package for more information.

These requirements apply to all 4-H livestock projects.

A. 4-H Member Requirements

In order for a 4-H member to receive credit for a club year, the member must

- ❖ Complete project records and have them signed by the club or project leader.
- ❖ Attend a minimum of 70% of club activities.
- ❖ Complete a communication activity.
- ❖ Participate in their 4-H Club Achievement Event.

B. 4-H Livestock Project Minimum Requirements

- ❖ Animals must be registered with the club.
- ❖ Animals must be identified as the 4-H member's project either by a 4-H tag, CCIA tag, breed registration tattoo, or brand, and a bill of sale to or a lease agreement in the name of the member.
- ❖ Replacement of animals can only be done with permission of the achievement sale committee.
- ❖ 4-H members must personally provide the major part of the feeding, care, and management for their animals. (Check with you sale committee for any further definition)
- ❖ The use of tranquilizing products on 4-H animals, immediately proceeding or at any 4-H project event is prohibited. (Tranquilizing products give the handler an unfair advantage in displaying their livestock handling and control skills). Any animal that is tranquilized cannot be shown or sold at a 4-H event.
- ❖ Drugs and some feed additives have withdrawal periods listed on their labels according to the dosage given. It is the legal responsibility of the owner of the animal, to be sold for slaughter, to insure that the withdrawal period has passed. If withdrawal period(s) have not passed at the time of sale, it is the responsibility of the member to tell the 4-H sale committee and the responsibility of the sale committee to communicate this to the potential buyers. Animals that show drug residues at time of slaughter are condemned.

C. Local or Interclub Project Regulations

- ❖ In addition to these basic provincial minimum requirements there may be additional regulations from the local or interclub project committees. It is your responsibility to know these rules and regulations.

Any one violating any of the above requirements will not be able to advance with that project to any 4-H project event, during the remainder of the project year.

Revised
September - 2002

Beef Project Outline

Alberta 4-H offers an opportunity for young people to develop mentally, emotionally and socially through association with others.

Objectives

The 4-H Beef Project gives members an opportunity to:

- Acquire an understanding of beef cattle production and management through the experience of owning, caring for, and maintaining records on beef cattle.
- Develop the skills, patience and understanding of the handling practices essential in working with beef cattle.
- Develop an appreciation of the cattle industry and its importance in the local community, the province and the country.



NOTE:

All 4-H members must meet the **Alberta 4-H Beef Project Policy** requirements (Policy #6.05 is available on the 4-H web site at www.4h.ab.ca under Resources/Policy) and must abide by any regulations put forth by the local beef committees.

Market Beef - Live Unit

- This unit is intended for 4-H members with little or no beef experience.
- A steer or a beef heifer can be fed as a market beef project.
- It provides an opportunity for members to learn about the responsibility involved in caring for a market beef project.
- Each member is to select and provide the majority of the feed, management and care of the market beef project.
- The market beef project must be registered to the 4-H member. Feeding records must be maintained for a minimum of 160 days prior to Achievement Day.
- The club must approve any replacements of the market beef project.

Achievement

- Exhibit project animal.
- Take part in skill competitions as designated by club: showmanship, judging, grooming, project knowledge events.
- Meet 4-H basic member expectations.
- Record book up to date.

The Heifer Unit

- Members will gain more experience in the practical aspects of purebred or commercial beef production.
- With successful development of the heifer, the heifer may be retained for subsequent years in the cow/calf unit.
- Each member is to select and provide care for a beef heifer calf. Records are to be maintained on the heifer from weaning through to Achievement Day and, or breeding time of the following year.
- If the member is carrying both the market beef project and the heifer calf, detailed records are to be kept only on the market beef project, and partial records on the heifer calf. If the member is carrying only the heifer calf, the whole record book must be kept on the heifer calf. Partial records are the animal sections of the record book.

Achievement

- Exhibit heifer.
- Other requirements as in Market Beef - Live Unit.

The Cow/Calf Unit

Two Year Old with Calf and/or Three Year Old with Calf

- The cow must be a previous heifer project carried through to this unit.
- Records must be kept on this unit.

Achievement

- Exhibit cow and calendar year calf (natural pair). (If a member shows an embryo or orphaned calf as part of the pair, show officials must be notified.)
 - Other requirements as in Market Beef - Live Unit.
-

Pen Unit

- This unit is designed for a beef member with at least three years of 4-H beef project experience, who is interested in advanced beef production.
- Each member selects, feeds, manages and markets at least **five** beef animals. (District or Regional guidelines may state at least **three beef animals**.)
- Members must develop a cash flow and business plan for their project.
- Members market their project on their own.
- Members can begin this project any time of the year. Members must arrange to have club leader(s) tour and observe their operation.

Achievement

- Conduct a tour or develop a display for club members highlighting management practices learned, cash flow and business plan.
 - Other requirements as in Market Beef - Live Unit.
-

Novice Beef Unit

- This unit is designed for 4-H beef members with no 4-H beef project experience.
- A member 9 to 11 years of age (Juniors) as of January 1 of the current 4-H year may enroll in this project for one (1) year.
- Each member selects, feeds, manages and exhibits a calendar year calf (January 1 to March 1) of that 4-H year.
- Member must keep records on the animal for at least 90 days prior to the Achievement Day event.
- Members have the option of continuing to exhibit this project as a Market Beef - Live or a Heifer Unit.

Achievement

- Exhibit project animal.
 - Other requirements as in the Market Beef - Live Unit.
-

Market Beef - Carcass Unit

- This unit is intended for 4-H members with at least two years beef experience.
- It provides an opportunity to learn more about the beef industry by following the project from weaning through to the cooler.
- Members can market their project on their own.
- Feeding records must be maintained for the period determined by the club.

Achievement

- Exhibit project.
- Attend Carcass Display.
- Other requirements as in Market Beef - Live Unit.

Green Certificate Unit

- This unit is designed for members at least 15 years of age at the beginning of the club year, who have completed their project studies outlined in Levels 1 to 3 of the beef project.
- Members must arrange with their club leadership to take this as a 4-H project. Members who are taking Green Certificate program through school may also carry this as a 4-H project. Members must have the approval and support of club leadership.
- Requirements of completing a **Green Certificate 4- H Project** are:
- Members must do **three** (3) demonstrations/talks on the training objectives that they are striving for through the Green Certificate program, during the club year that tie in with the club's program plan. Units that are offered by Green Certificate are: **Cow-Calf Beef Production Technician** or **Feedlot Technician**.
- Under **Cow-Calf Beef Production Technician** members cover Training Objectives: Handling Cattle, Maintaining Cattle Health, Operating a Feeding Program, Operating General Farm Equipment, Operating Trucks and Tractors, and Personal Working Skills.
- Under **Feedlot Technician** members cover Training Objectives: Processing and Handling Cattle, Treating Cattle Chute Side, Pen Checking, Feeding Cattle, Operating and Servicing Equipment and Facilities, and Personal Working Skills.

Achievement

- Members complete the requirements of the Green Certificate program.
- Deliver three (3) demonstrations/talks or workshops during the year.
- Develop and present a display or oral presentation on their Green Certificate Unit to their local 4-H club or district council on their project.
- Other requirements as in Market Beef - Live Unit.

Creative Options Project (COP)

- This unit is designed for intermediate (12 to 14 years old) and senior (15 to 20 years old) members as of January 1st of the current club year.
- The members must have completed at least three years of 4-H project work and wish to design their own area of study. In this unit, members select, plan, share and evaluate their own projects.
- Further information on this project is available by ordering the Creative Options Project Member Guide or by contacting the 4-H specialist in your region.

Achievement

- Conduct a tour or develop a display for club members highlighting management practices learned, cash flow and business plan.
- Other requirements as in Market Beef - Live Unit.

Beef Animal Part Identification Key

1. Crest	9. Forearm	17. Stifle Region	26. Ribs
2. Poll	10. Knee	18. Quarter	27. Hooks
3. Face	11. Shank	19. Pin Bone	28. Heart Girth
4. Muzzle	12. Pastern	20. Tail Head	29. Shoulder
5. Dewlap	13. Underline	21. Rump	30. Ear
6. Shoulder Point	14. Dew Claw	22. Loin	31. Rump
7. Brisket	15. Hock	23. Back	32. Cod
8. Chest Floor	16. Flank	24. Crop	33. Twist
		25. Topline	34. Pin Bones

Cuts of Beef Area Identification Key

A. Loin	C. Rump	E. Chuck	G. Flank
B. Rib	D. Round	F. Plate	H. Brisket
			I. Shank

Working With Your Members

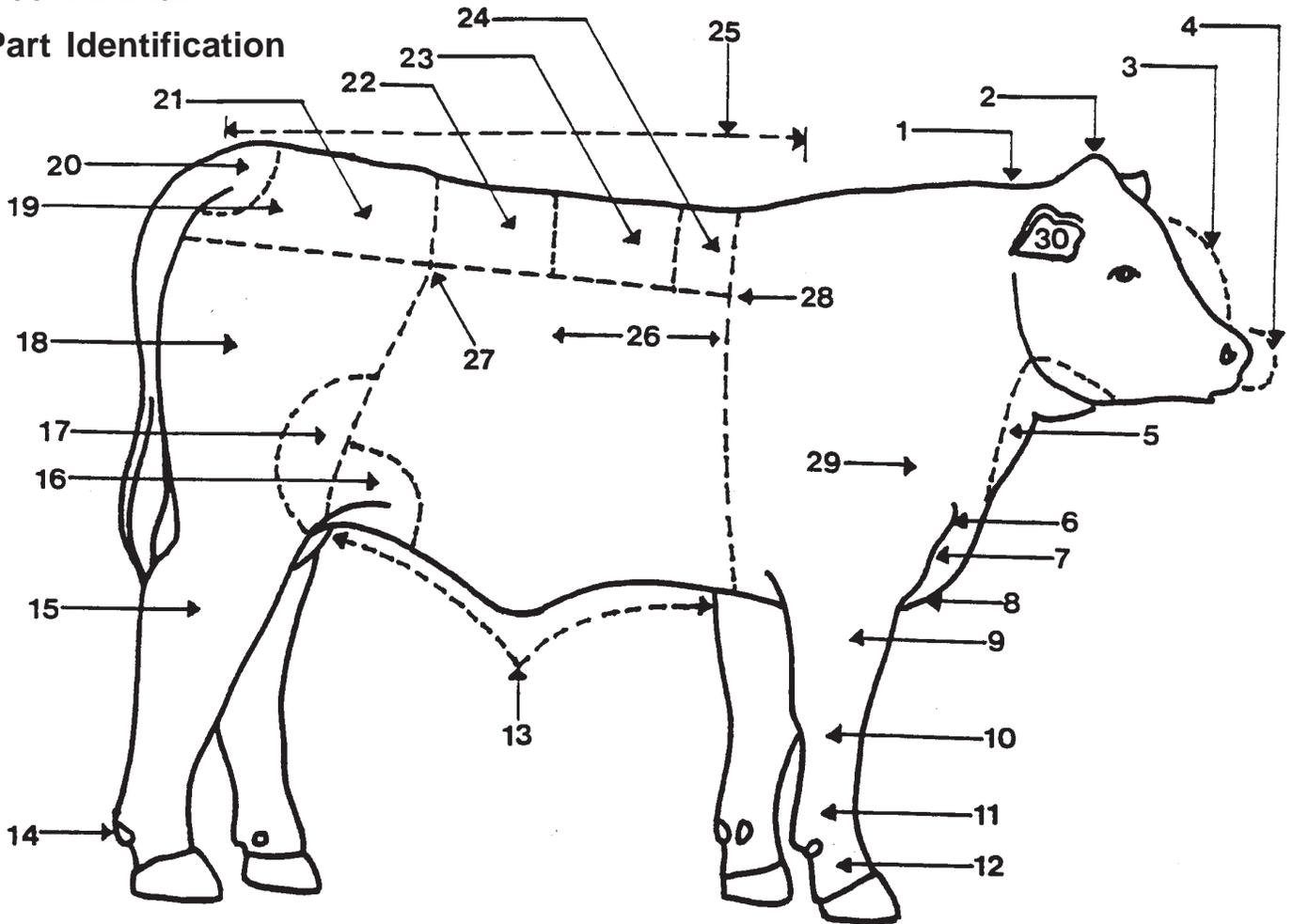
One of the biggest challenges facing 4-H leaders is keeping the interest of the members. By keeping your members interested you will be giving them information they will learn and retain. Keep the following chart in mind when you select activities for your members to do.

Method	Retention	Examples
Reading	members will retain 10% of what they read	Information in member units
Hearing	members will retain 20% of what they hear	Lectures, speakers
Seeing	members will retain 30% of what they see	Pictures, posters, drawing
Hearing and Seeing	members will retain 50% of what they see and hear	Demonstrations, tours, videos
Saying	members will retain 70% of what they personally explain	Discussion groups, expressing ideas
Saying and Doing	members will retain 90% of what they are saying and doing	Giving demonstrations, practising

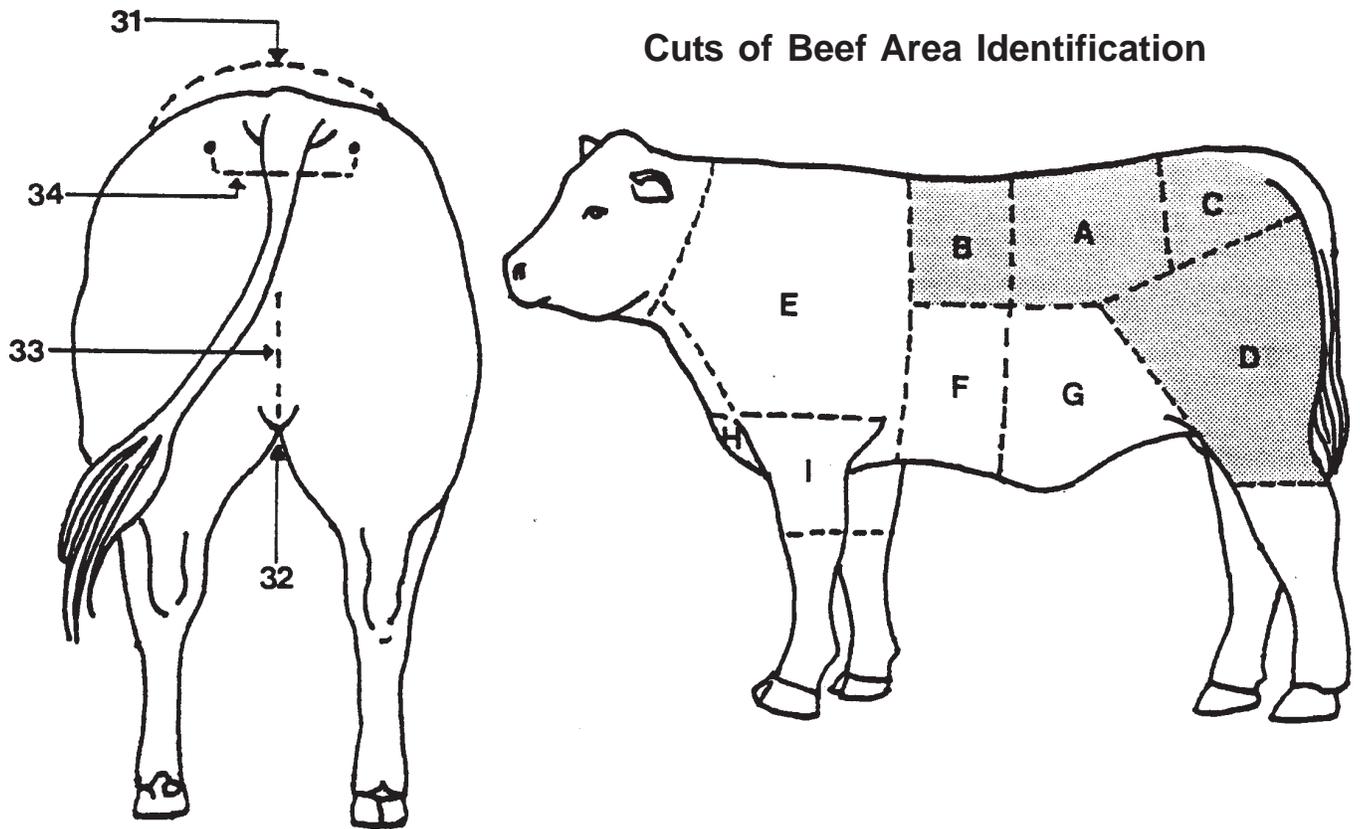
Needless to say, the most effective way of working with your members is for them to “LEARN TO DO BY DOING”.

Beef Animal

Part Identification



Cuts of Beef Area Identification



**Activities:**

1. Spend time getting acquainted with your members in the club. Consult your 4-H Recreation Activities Book or your regional 4-H specialist for activity ideas.
2. Determine your executive for the club.
3. Plan your 4-H project year. The easiest way to learn about the beef breeds is to use an activity and have fun! Following are several ideas of activities you can use in your club to help members learn the beef breeds.
4. “Who Am I?” This activity can be done by members of all ages. Answer “Who am I?” to each of the descriptions on the following page.

“Who Am I?”

Answer the question “Who am I?”. Fill in the breed which corresponds to the description.

1. I often have horns. I am red and white, and am one of the oldest and most numerous breeds in Canada.
Who am I? _____
2. I have one of the largest gene pools in the world. I range in colour from tan to dark red and have white markings. I come from five different European strains.
Who am I? _____
3. I originated in Scotland some 250 years ago. I came to Canada in 1825. I can be red, white or roan.
Who am I? _____
4. I was imported from France in the 1960’s. I am used primarily as a terminal breed in crossbreeding programs. I have dark red and white markings.
Who am I? _____
5. I am noted for my heavy muscling and lean, high yielding carcass. I came to Canada in 1969.
Who am I? _____
6. I was introduced to Canada in 1860. I can be black or red. My polled gene is dominant when crossed with other breeds.
Who am I? _____
7. I am noted for my maternal traits. I came from France to this country in 1973. I have a thick curly red coat.
Who am I? _____

8. I am one of the oldest French breeds. I have developed a polled gene which now represents 30% of all animals registered. My association has been operating the Conception to Consumer program since 1968. I can be white to straw coloured.

Who am I? _____

9. I was the first breed to be developed in Canada by private interests. The foundation stock was selected under Alberta range conditions.

Who am I? _____

10. I was brought to Alberta from the Southern United States. My horns can grow up to seven feet, that's 210 cm, across. I am often bred to first calf heifers because of my ease of calving.

Who am I? _____

In case you, the leaders, did not find all of the answers to this exercise, here they are.

“Who Am I?”

- | | |
|----------------|-------------------|
| 1. Hereford | 6. Angus |
| 2. Simmental | 7. Salers |
| 3. Shorthorn | 8. Charolais |
| 4. Maine-Anjou | 9. Hays Converter |
| 5. Limousin | 10. Longhorn |

“Match My Origin”

Match the breed on the left with the country or region of origin on the right.

Breed	Origin
Angus, Shorthorn, Luining, Galloway and Highland	Southern United States
Charolais, Limousin, Salers and Maine Anjou	Wales
Hereford, South Devon	Germany
Simmental	France
Gelbvieh	Australia
Hays Converter	Switzerland, France and Germany
Murray Grey	Scotland
Pinzgauer	Canada
Longhorn	Austria
Welsh Black	England

Here are the solutions to “Match My Origin”:

Breed	Origin
Angus, Shorthorn, Luing, Galloway and Highland	Scotland
Charolais, Limousin, Salers and Maine Anjou	France
Hereford, South Devon	England
Simmental	Switzerland, France and Germany
Gelbvieh	Germany
Hays Converter	Canada
Murray Grey	Australia
Pinzgauer	Austria
Longhorn	Southern United States
Welsh Black	Wales

“How many breeds can you name?”

In Alberta, there are at least 25 breeds of beef cattle. Work with your 4-H members to see how many you can name. You may wish to put together a game to see who can name the most breeds.

For example, pair up the members, or put them in groups of three, mixing the ages and experiences in each group. Give the groups a time limit of two minutes and see which group came up with the most breeds.

Here are the beef breeds we found in Alberta.

Angus	Highland	Romark
Blonde d’ Aquitane	Limousin	Salers
Braunvieh	Longhorn	Shorthorn
Charolais	Luing	Simmental
Chianina	Maine-Anjou	South Devon
Galloway	Murray Grey	Tarentaise
Gelbvieh	Piedmontese	Welsh Black
Hays Converter	Pinzgauer	any others?
Hereford	Red Poll	

Use some teaching resources.

The Beef Information Centre has some interesting teaching resources which you may be able to use in your clubs. There is a charge for their resources, but they are excellent. Contact the center at

Beef Information Center
215, 6715-8th Street NE
Calgary, Alberta T2E 7H7
(403) 275-5890

<http://www.beefinfo.org>

Suggestions for Planning, Preparing, and Presenting Beef Demonstrations

1. Decide on the subject for your demonstration. Example: showmanship, training, grooming, facilities, feeding, health, breeding, genetics, record keeping, and so on.
2. Gather your materials. Some sources of beef information you might use are Alberta Agriculture, breed publications, library books and magazines, seminars, resource people, veterinarians, feed salesmen, breeders, university and college professors, and so on.
3. Decide on a specific topic in your subject area. A demonstration is most successful if you discuss one specific topic, rather than trying to cover an entire subject area. Example: how to clip a steer, how to implant your growth hormones, and so on.
4. Decide on a title for your demonstration. Make it catchy!
5. Begin by writing your outline. Sort your information. Decide which sources you will use for your demonstration. Your outline should follow this format:
 - Introduction: Say what you are going to do.
 - Body: Show and tell what you said you were going to do. Use illustrations to help teach, enhance and present your information. Live animals will help to illustrate your points.
 - Conclusion: Say what you did. A poster summarizing the main points you discussed is helpful.
6. Prepare your visuals. Remember that people remember more of what they see and hear than what they only hear. Anytime you can use a visual presentation such as a live animal or a picture of some sort, do so.
7. Write down your presentation in the words you want to use for presenting it.
8. Practice, practice, practice!
9. Have fun - if you have fun, your members will enjoy your presentation.

**Ideas For
Beef
Demonstration
Topics**

Selection:

- Parts of the beef animal
- Selecting your 4-H steer
- Selecting a 4-H heifer
- Selecting your herd sire
- Using ROP records for selection
- How to read a pedigree
- Breeds of cattle
- How to read the information on an AI straw

Equipment:

- How to adjust the halter on a calf
- Types of shelters for cattle
- How to build a cattle loading chute
- How to use a weigh scale
- How to build a grooming chute
- How to build a hoof trimming chute
- How to build a round bale feeder
- How to build a tack box

Health:

- How to vaccinate an animal
- How to implant growth hormones
- How to use a balling gun
- Dehorning
- Castrating
- How to trim hooves
- How to restrain an animal
- Keeping breeding records
- Treating an animal for warbles
- Treating an animal for lice
- Drenching an animal

Meats:

- Cuts of meat from a beef carcass
- How a carcass is graded
- Canada's grading system
- Measuring the rib eye
- Uses for beef by-products

Unit Two

You and Your Beef Project

Roll Call

How did you choose your 4-H beef project animal this year?

This roll call will initiate discussion about the criteria the members used when selecting their project animals. You should hear a wide variety of answers. It will start members thinking about the different things which they should consider.

Objectives**Level One**

1. To introduce members to the different choices available to beef producers.
2. To make members aware of the similarities between selecting their project animal and judging livestock.
3. To understand the importance of safety when working with their project animal.

Level Two

4. To become familiar with the characteristics to look for when selecting beef animals.
5. To learn more about buying from auction marts and private sales.
6. To develop a selection plan.

Level Three

7. To share their 4-H experiences as hints for 4-H club members.
 8. To develop an understanding of animal behaviour.
 9. To be aware of and share the benefits of belonging to a 4-H beef club.
-

**Activities:****Level One**

1. British Breeds and Exotic Breeds. Beef Level One - Unit 2, page 2-1.

If you wish to spend more time on this subject with your members, contact your breed associations or your nearest Alberta Agriculture district office for more information.

Some of the answers you will hear are:

The British Breeds - Angus, Shorthorn, Hereford

The Exotic Breeds - Charolais, Simmental, Chianina, Salers, Limousin, Gelbvieh, Maine-Anjou, and so on.

2. Selecting is Really Judging.

Beef Level One - Unit 2, page 2-3.

In this section members should learn that selecting an animal is a form of judging. You may wish to obtain copies of the following units to use as resources:

AG-M22 "Let's Judge"

BF-M21 "Judging Beef"

3. Selection Review. Beef Level One - Unit 2, page 2-5.

Here is the solution to the crossword.



Level Two

4. A Selection Plan. Beef Level Two - Unit 2, page 2-5.

Members are encouraged to develop a plan that they could follow when selecting their next project animal. They should consider these points, and the advantages and disadvantages of each:

where to buy	age
crossbred or purebred	weight
heifer or steer	health
frame size	temperament and disposition
muscling	price

Level Three

5. Use the level three members to share their experiences in working with beef project animals and members.

All Members

6. Videos

Consult your 4-H Video Catalogue for the latest videos available on working with the beef animal.

Unit Three**Digestion in the Beef Animal**

Roll Call

Name an animal.

Is this animal ruminant or monogastric?

Some of the possible answers are

Ruminant	Monogastric
cow	horse
sheep	pig
moose	rabbit
antelope	human
buffalo	bird
deer	ostrich
goat	
giraffe	
llama	
elk	

Objectives**Level One**

1. To learn the difference between a ruminant and a monogastric animal.
2. To find out about digestion.
3. To understand that each component of the digestive system has a specific function.
4. To learn where to find each component of the digestive system in the beef animal.

Level Two

5. To compare the digestive systems of the ruminant and the monogastric animals.
6. To learn more about digestion in the ruminant animal.

Level Two

3. Let's Compare. Beef Level Two - Unit 3, page 3-2.

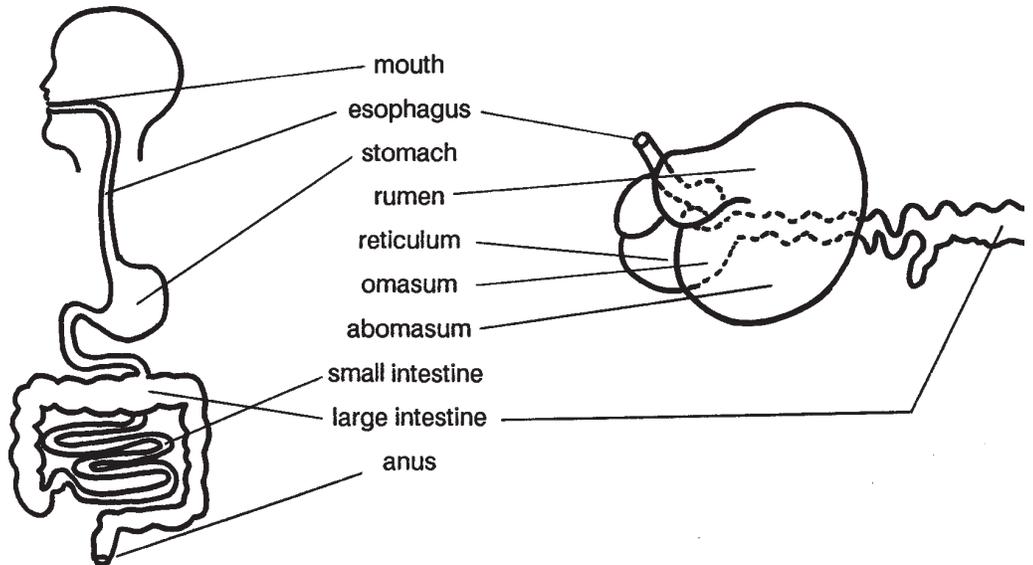
Following are the solutions to this activity.

The Human

You have a monogastric (single stomach) digestive system

The Beef Animal

The beef animal has a ruminant (four compartment) stomach digestive system.



4. Let's Review. Beef Level Two - Unit 3, page 3-5.

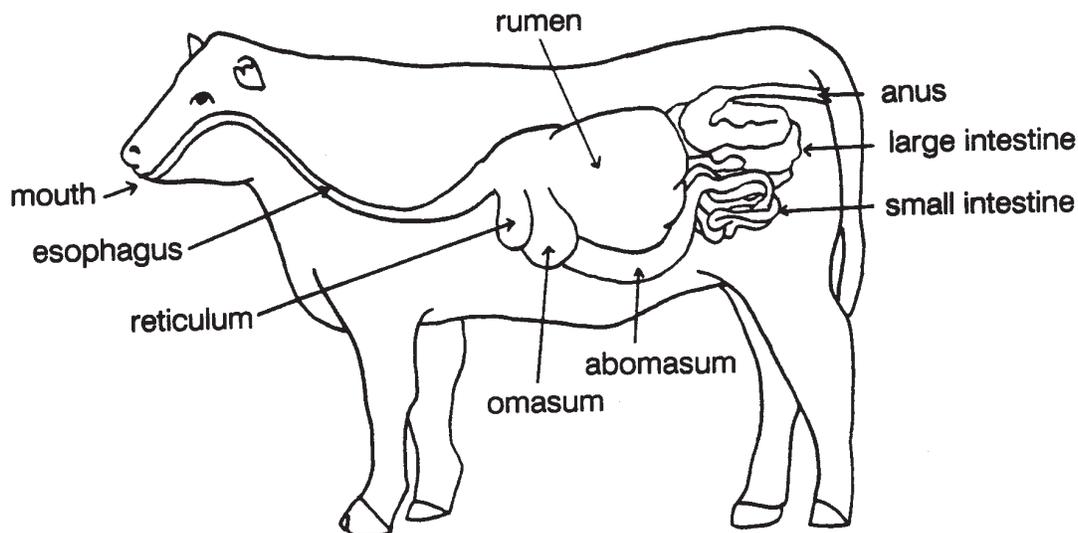
In this activity, members should match up the description and the function with each of the digestive system parts. To do this, they will need to think and to use the information found earlier in the unit and in the junior unit.

Here are the solutions.

Parts of the Digestive System	Description	Function
Mouth	1	B
Esophagus	9	C
Rumen	6	E
Reticulum	7	G
Omasum	4	I
Abomasum	3	A
Small Intestine	5	H
Large Intestine	2	F
Anus	8	D

5. "Label It". Beef Level Two - Unit 3, page 3-4.

Following are the solutions for this exercise.



All Members

6. The level three members can help out in this unit. The information in the level three unit builds from the information in the level one and level two units. Level three members have several interesting topics in their unit.

Have one of the level three members spend a few minutes sharing his or her information with the rest of the club.

7. Identification Activity

Take an outline of the beef digestive system and blow it up to poster size. Make up labels for each part and have your members place these labels on the correct part. This could be an activity for one of your level three members to facilitate.

8. Trivial Pursuit

Digestion would be an excellent topic to use for a game of trivial pursuit. You, or one of your level three members could design a series of questions and a game for all the members of the club to play.

9. Video - 1051 VT Introduction to Livestock Nutrition

This five minute VHS video provides a general overview of digestion and nutrition. The ruminant and monogastric species are compared and contrasted according to the feeds they utilize and the sites of digestion.

For more information on how to obtain this and other videos, consult your 4-H Club Supplies Catalogue.

10. Film - 400-09-1 F The Remarkable Ruminants

The basic structures and functions of a ruminant and digestive system are outlined in simple understandable terms. General interest. Film (23 minutes).

11. Talk to your veterinarian. One of the best ways to demonstrate digestion in the ruminant animal is to use a life size ruminant stomach. Your veterinarian may be able to help you locate one of these for use at your meeting.

Unit Four**Nutrient Requirements of Beef****Roll Call**

Name a nutrient. Name a feed ingredient which is a good source of this nutrient.

This roll call will provide a good introduction to this topic. Some of the answers you should hear are

Nutrient	Good Source of This Nutrient
Water	<ul style="list-style-type: none"> • clean, fresh drinking water which is available to the animals at all times
Protein	<ul style="list-style-type: none"> • soybean meal, canola meal, corn gluten meal, fish meal, meat and bone meal
Energy	<ul style="list-style-type: none"> • grains, forages
Vitamins	<ul style="list-style-type: none"> • forages, grains, sunshine, manufactured in the rumen, vitamin supplements
Minerals	<ul style="list-style-type: none"> • forages, grains, mineral supplements

Objectives**Level One**

1. To introduce the members to the concept of essential nutrients.
2. To create an appreciation of the importance of these nutrients.

Level Two

3. To understand that different animals require different amounts of nutrients.
4. To learn more about the different vitamins and minerals and their importance.

Level Three

5. To learn some of the effects of deficiencies of vitamins and minerals.
6. To understand about energy and how the body uses it.

**Activities:****Level One**

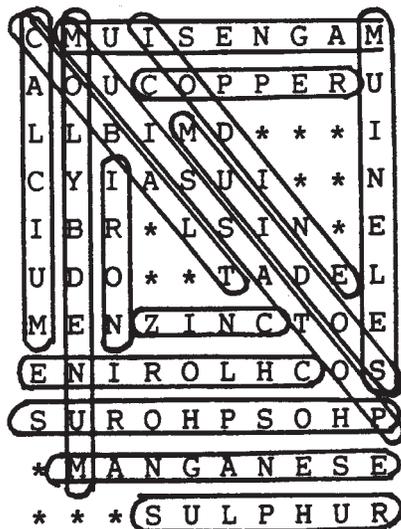
1. Beef Level One - Unit 4, page 4-1. There are five nutrients the beef animal needs in its diet. The answers we are looking for here are

Water, Protein, Energy, Vitamins, Minerals

- 2. Beef Level One - Unit 4, page 4-3. Match up the vitamins on the left with a characteristic on the right.

Vitamin	Characteristic
A *	* ruminants manufacture this vitamin, but humans must receive it in their diet
B *	* needed along with minerals calcium and phosphorus for healthy bones; known as the "sunshine vitamin"
C *	* vitamins in this category include niacin, riboflavin, thiamine and others
D *	* needed for proper blood clotting
E *	* needed for vision, healthy skin, digestion and reproduction
K *	* needed along with the mineral selenium for muscle function

- 3. Beef Level One- Unit 4, page 4-4. Find each of the minerals in the puzzle.



Level Two

- 4. Beef Level Two- Unit 4, page 4-2. Animals have different requirements for nutrients depending upon their body activities. We can divide the animals into the following groups:
 - Maintenance - the bull after breeding season is complete
 - Maintenance plus reproduction - the pregnant cow
 - Maintenance plus growth - the growing calf
 - Maintenance plus production - the lactating cow and the fattening steer

5. Beef Level Two - Unit 4, page 4-4. “Which Vitamin(s)...?”
 1. C is made by the beef animal but not by the human.
 2. D is the “sunshine vitamin”.
 3. A is most often deficient.
 4. A, D, E and K would be supplied if you fed leafy, green forages.
 5. E works together with selenium to cause muscle action.
 6. B and C are made in the rumen.
 7. A is needed for good vision.
 8. D is needed for strong bones.
 9. K is deficient if your animal bleeds heavily from a minor wound.
 10. B and C are not stored in the body.
6. Beef Level Two - Unit 4, page 4-4. Minerals For Beef. Here are the unscrambled minerals.

Macrominerals	Microminerals
1 Sodium	1 Iodine
2 Chlorine	2 Cobalt
3 Calcium	3 Iron
4 Phosphorus	4 Manganese
5 Magnesium	5 Zinc
6 Potassium	6 Selenium
7 Sulfur	7 Copper
	8 Molybdenum

Level Three

7. We have provided the level three members with some interesting information about vitamin and mineral deficiencies and energy. For activities to accompany these topics, we ask that they share the concepts with the club members. Use these level three members!

All Members

“I’ve Made a Feed”

Object of the Game

To be the first player to score a total of 50 points by making complete feeds using the nutrient cards and accumulating points.

Equipment

- One deck of “I’ve Made a Feed” cards for every six people - each deck contains:
 - 12 cards of: energy
 - 6 cards each of: protein
 - macrominerals
 - microminerals
 - vitamins (stored)
 - vitamins (not stored)
 - water
 - 1 card each of: “Super Beef”
 - “Dead Beef”

Instructions

In each hand, try to make a complete feed by getting two energy cards and **one** of each of the following: protein, macrominerals, microminerals, vitamins (stored), vitamins (not stored) and water. You may wish to write this on a large sheet of paper and put it up where the members can refer to it as they play.

1. Use one “complete feed” set of cards for each member playing. Example: if there are four players, make sure that you have eight energy, four protein, and so on in the deck. If there are more than six players, use two complete sets. They can be combined for one large game or members can split into two groups.
2. Prepare a score sheet to record the score of each round.
3. Select a dealer.
4. The dealer shuffles the cards and deals the whole deck out. Some people will have an extra card.
5. Pick up your cards and start sorting them, look for cards that will give you a complete feed. You will want to trade away any cards that you hold duplicates of (except energy - remember that you need two of those).
6. After everyone has had a chance to sort their cards, the dealer says “The pasture gate is open!”.

7. Players start trading with each other by holding out the number of cards they wish to trade and calling “two-two-two” or “three-three-three”, and so on. Cards should be held face down. You must accept back the same number of cards you have traded away. If you wish to trade away two cards, you must accept two cards back.
8. The trading continues until someone in the group has all eight cards required to make a complete feed - or seven cards and the “Super Beef” wild card. When this happens, the person calls “I’ve Made a Feed!”.
9. At this point, the trading stops.

Scoring

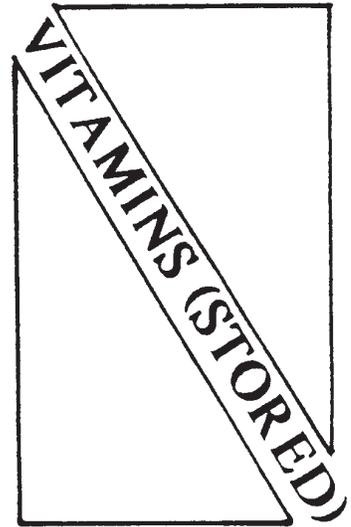
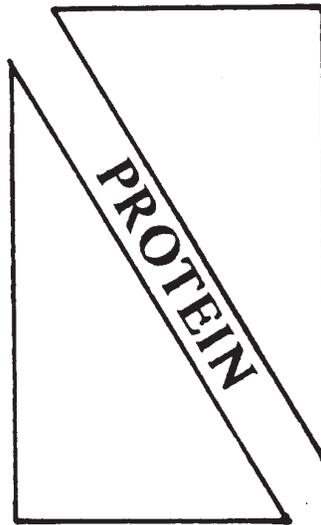
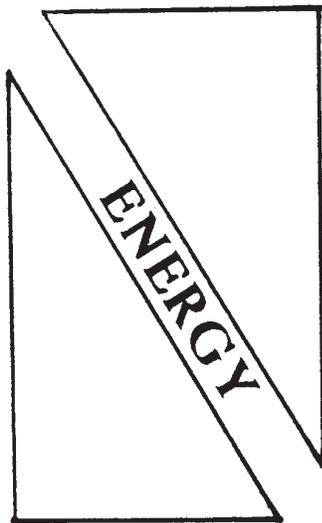
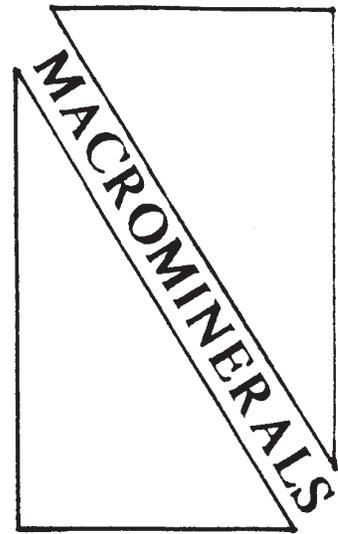
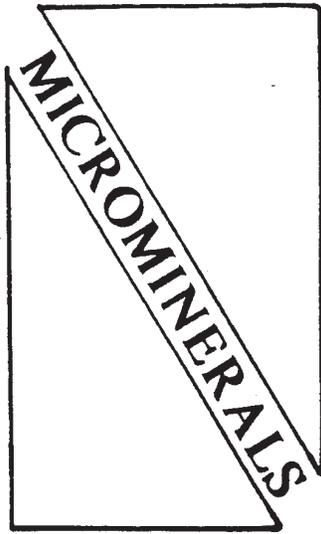
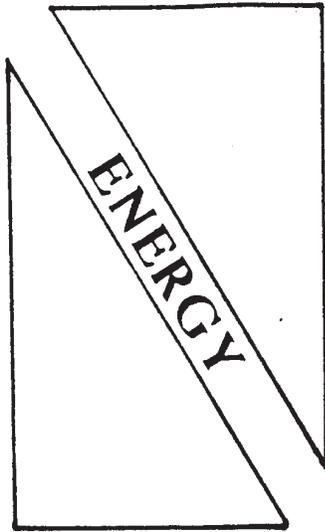
The maker of the feed gets 10 points

If he uses the “Super Beef” he gets 10 extra points

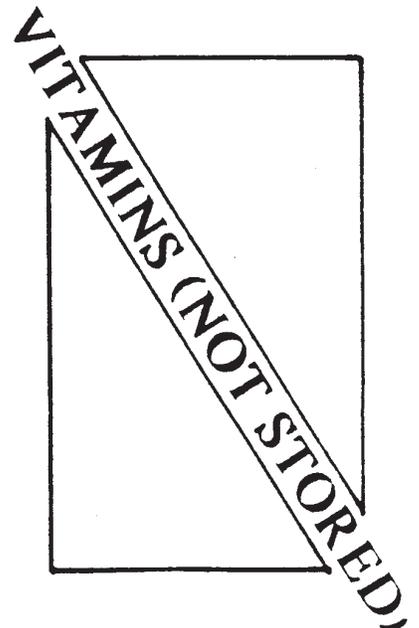
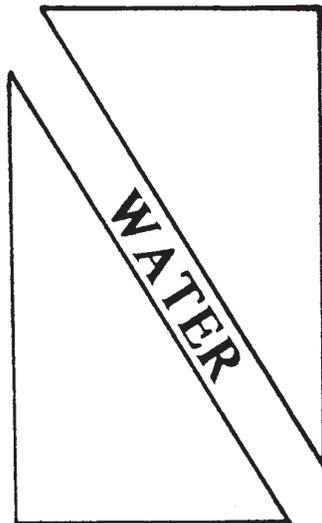
The holder of the “Dead Beef” loses 10 points

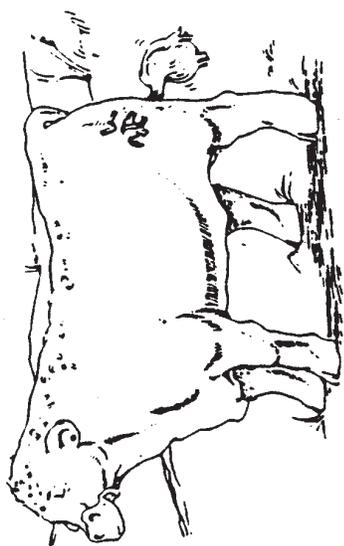
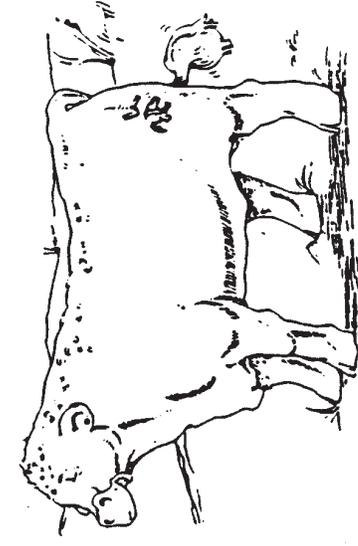
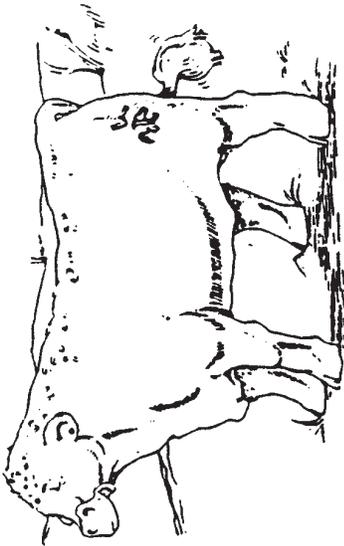
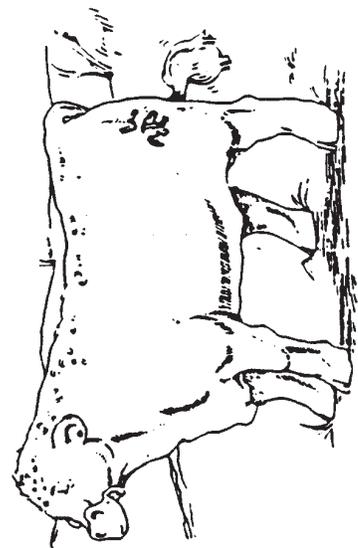
If someone holds the “Super Beef” but is not the first person to make a complete feed, he loses 10 points.

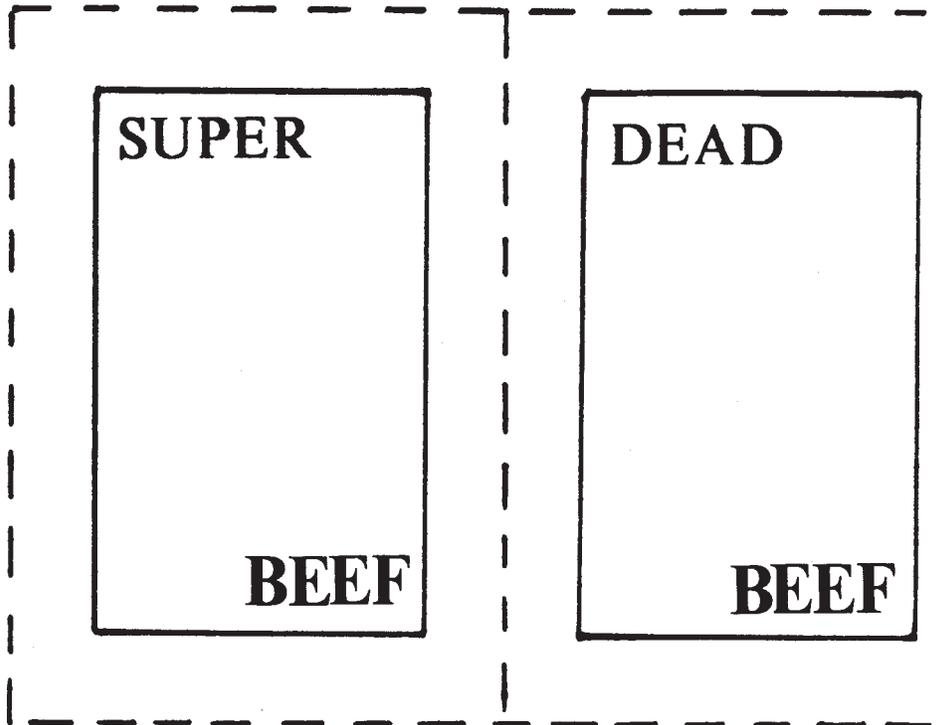
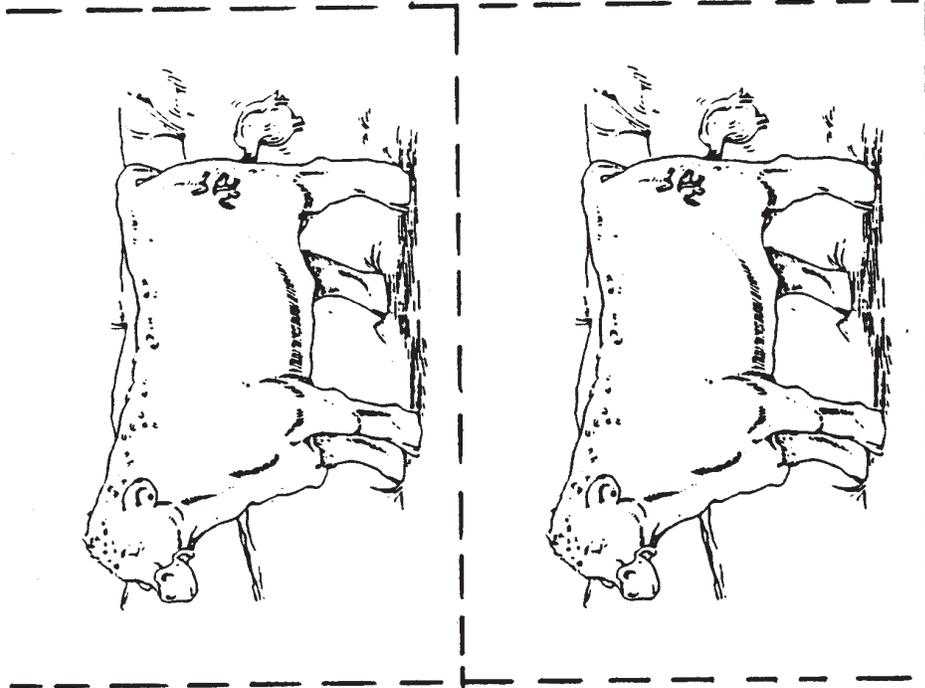
Play continues with more rounds until someone reaches 50 points or you are out of time.



"I've Made a Feed" cards







Thanks to the Ontario Ministry of Agriculture and Food for this activity.

Unit Five

Feeds for Beef

Roll Call

Name a feed ingredient which is used in a ration.

Encourage the members to name any ingredient which comes to mind. Rather than looking for good ingredients, you should be interested in having the members realize what a wide variety of feedstuffs are used for feeding beef. You can get into the least and most desirable later.

You may wish to have a member record all of the different answers on a flip chart or blackboard.

Objectives

In this unit, we have not attempted to cover everything about feeds for beef as this subject is endless. We have selected a limited number of topic areas and concentrated on them. For more information on feeds for beef, consult one of the many specialists in the field.

Level One

1. To understand the difference and similarity between rations and diets.
2. To understand what palatability is.
3. To become aware of the different roughages and grains.
4. To become aware of the factors which affect feed intake.

Level Two

5. To learn more about feed intake.
6. To begin to understand how to formulate rations for beef cattle.

Level Three

7. To gather resources available on feeding beef cattle and to build your club reference library.
8. To research computer programs available for formulating beef rations.
9. To become aware of the practice of feed sampling - why it is done, when it should be done, how to do it, where to send samples and what information can be provided.
10. To put all of the knowledge gained about beef nutrition together.

**Activities:****Level One**

1. The questions asked in this unit are an excellent way to stimulate discussion. Have the members share what they are feeding their animals. It is important for the members to realize that there are other things which they could be using.
2. “True or False”. Beef Level One - Unit 5, page 5-4.

This exercise is another way to stimulate discussion. It also provides a good review of the information in this unit.

1. False. Barley has less energy than wheat but more than corn.
2. True.
3. False. A ration is the amount of feed required by the animal daily. A diet is the mixture or combination of feeds which provide the nutrient requirements.
4. False. Because most Alberta climate conditions are not suited to growing corn, very little corn is used in beef rations. However, in other parts of North America, corn is the most commonly used energy feed.
5. True. Barley is more dense than oats.
6. True. Silage contains approximately 60% moisture. Hay has a low moisture content.
7. True.
8. False. Alfalfa is a legume.
9. False. Beef cattle will consume from 1.4 to 2.7 percent of their bodyweight in dry matter per day.
10. True.
11. True.
12. True.

Level Two

3. Beef Ration Formulation. Beef Level Two - Unit 5, pages 5-3 to 5-8.

Where possible, encourage the members to work through this section, filling in the blanks as they go. Obtain a copy of the National Research Council's Nutrient Requirements for Cattle to help your members understand the amounts of nutrients required.

4. Increase or Decrease. Beef Level Two - Unit 5, page 5-9.

These events cause the animal to increase feed intake: 1, 2, 3, 6 and 7.

These events cause the animal to decrease feed intake: 4, 5 and 8.

Level Three

5. More About Feeds for Beef.

As many resources are available on the subject of feeding beef cattle, we encourage you to gather some of these for your members. A good way of storing and utilizing these is as a resource library for your club. Gathering resources is mentioned as one activity for level three members.

6. Feed Sampling.

In the level three unit, we provided information about feed sampling. You may wish to use this information and, or one of your level three members to explain or demonstrate the importance of feed sampling to the members in your club.

All Members

In Unit 4, Nutrient Requirements of Beef, we provided a card game, "I've Made a Feed". This would be another appropriate time to use this game.

Video - 400-69 VT Forage and Grain Feed Testing. VHS - 15 minutes. The hows and whys of forage and grain testing.

Unit Six**Parasites of Beef Cattle****Roll Call**

Name a parasite.

You will hear some of these answers

roundworms	lice
stomach worms	ticks
tapeworms	lungworms
mange	mites
flies	flukes

Objectives**Level One**

1. To learn what a parasite is.
2. To learn the difference between an internal and an external parasite.
3. To understand how cattle might become infected with parasites, using the roundworm as an example.

Level Two

4. To introduce members to more internal and external parasites, looking at their life cycles and symptoms of infection.
5. To have members understand how parasites affect beef cattle.

Level Three

6. To understand the development and control of warble flies.
7. To learn more about the horn fly and its effect on cattle.
8. To summarize the methods of parasite control.

**Activities:****For the Entire Club . . .**

1. Invite a guest speaker. There are many knowledgeable people out there who may be interested in coming to speak to your club about parasites. Some examples are district Alberta Agriculture specialists, animal health company representatives, entomologists, veterinarians, local producers.
2. See samples of parasites. Your local veterinarian may have bottled samples of worms and other parasites. Keep in mind the saying - "A picture is worth a thousand words." If the members can actually see the parasites, they will get a better feel for the damage they can do.
3. Visit a local producer. Use this meeting to find out how a local producer controls, prevents and treats parasites on his farm.

4. Who Am I? Have members identify each of the following parasites or pests. Remind members that the parasite goes through several stages in its life cycle. There are three clues for each parasite or pest.
- Q1. I am a very tiny mite which burrows into the skin of your cattle. I cause barn itch. If you find me in your herd, you must report me to Agriculture Canada.
- A. Sarcoptic mite.
- Q2. My adults lay eggs or nits on the hair of your cattle. My life cycle is very short - no more than 34 days. There are two types of me - biting and sucking.
- A. Lice.
- Q3. I bother calves aged six to 12 months most often. I cause diarrhea. I am a protozoa.
- A. Coccidiosis.
- Q4. I can live in your cattle for 50 to 70 days. Suspect me if your cattle cough after light exercise. I block the air passages and your cattle will have trouble breathing.
- A. Lungworm.
- Q5. I can live for up to 11 years. I spend part of my life cycle in a snail. I am very hard to find until the animal is slaughtered and I am discovered in the liver.
- A. Liver fluke.
- Q6. Two hosts are needed to complete my life cycle. My larvae are very tiny and can only be seen under the microscope. Look for me when your animal "cries".
- A. Eyeworm.
- Q7. I am the most common internal parasite. I cause harm only when there are many of me. Depending on my species, I can be found in either the abomasum or the small intestine.
- A. Roundworm.
- Q8. I can live in the esophagus or near the spinal cord. My adult looks like a bumblebee. I cut holes in the hide to breathe.
- A. Warble fly.
- Q9. I don't bother calves under four or five months of age. I am an irritating blood sucking pest. I rest on the withers, back or underline of cattle - those places where the tail cannot reach me.
- A. Horn fly.
- Q10. I am very tiny - as small as 250 micrometres in length. I live on the surface of the skin. I cause the most common type of mange.
- A. Chorioptic mite.

Level One

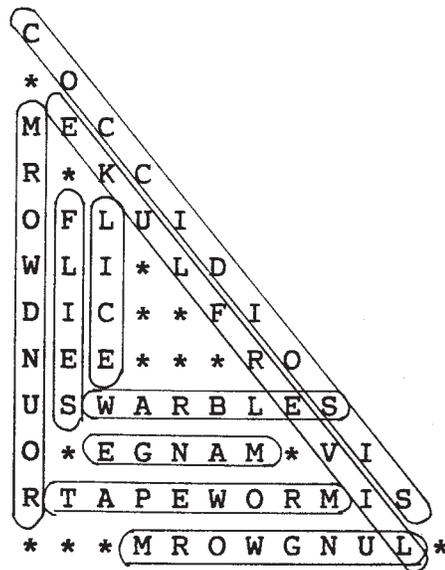
5. Beef Level One - Unit 6, page 6-1. An internal parasite - is an organism which lives inside the body of your animal, getting its life support (food and shelter) from the animal.

Examples: roundworms, tapeworms, coccidiosis, liver flukes, eyeworms and lungworms.

An external parasite - is an organism which lives outside the body of your animal, getting all its life support from your animal.

Examples: mange, warbles, nose bot flies, ticks, and lice.

6. Find the Parasites Beef Level One - Unit 6, page 6-2. These words are in the puzzle - lungworm, tapeworm, mange, warbles, roundworm, flies, lice, liver fluke and coccidiosis.



7. Beef Level One - Unit 6, page 6-4. The way your animal becomes infected will depend on the type of parasite. It may be through sharing corrals, eating grass, or drinking water with infected animals or under infected conditions.

You can prevent your animals from becoming infected by

- following good management practices
- keeping your facilities clean and dry
- following a routine prevention schedule
- recognizing the symptoms of infections.

Level Two

8. Parasite Match 'em Up Beef Level Two - Unit 6, page 6-6.

roundworm *	* caused by a protozoa
coccidiosis *	* difficult to diagnose before slaughter
eyeworms *	* most common internal parasite
lungworms *	* biting or sucking
liver flukes *	* caused by tiny mites
lice *	* bovine parasitic bronchitis
mange *	* two hosts - cattle and flies

Level Three

9. Invite your level three members to share the information they learned about their chosen topic with your club.

Unit Seven**Beef Herd Health****Roll Call**

Name one sign a beef animal shows when it is not healthy.

You may hear some of these answers

fever	dehydrated
depressed	no appetite
weak	rapid breathing
grunting	cough
uncomfortable	restless
droopy ears	runny nose
diarrhea	runny eyes
urinating more	

Objectives**Level One**

1. To learn how to identify healthy and unhealthy animals.
2. To look at how to give medications.
3. To think about preventing disease on the farm.

Level Two

4. To learn how to take the beef animal's temperature.
5. To be able to identify, treat and prevent some diseases found in beef calves.

Level Three

6. To learn more about some of the diseases which can affect feedlot animals.
7. To learn more about vaccinations.
8. To look at herd health management year-round.

**Activities:****For the Entire Club . . .**

1. Invite a guest speaker. A local veterinarian could discuss some of the common diseases he has encountered in beef cattle in your area. The veterinarian may also be able to provide advice on administering drugs or demonstrate some of the equipment he uses.

An animal health sales representative could be invited to discuss certain diseases and how the drugs work to combat these diseases. The representative may also wish to discuss safe handling of drugs, withdrawal periods, labelling and storage.

2. Video - 1002 VT Beef Management Practices-I and 1002-1 VT Beef

Management Practices-II. Consult your 4-H Video Catalogue to find out more about this video.

3. Develop a Jeopardy type game to help all members learn about a variety of different diseases and prevention or treatment techniques. Invite a junior leader, senior member or 4-H volunteer to design this activity.

Level One

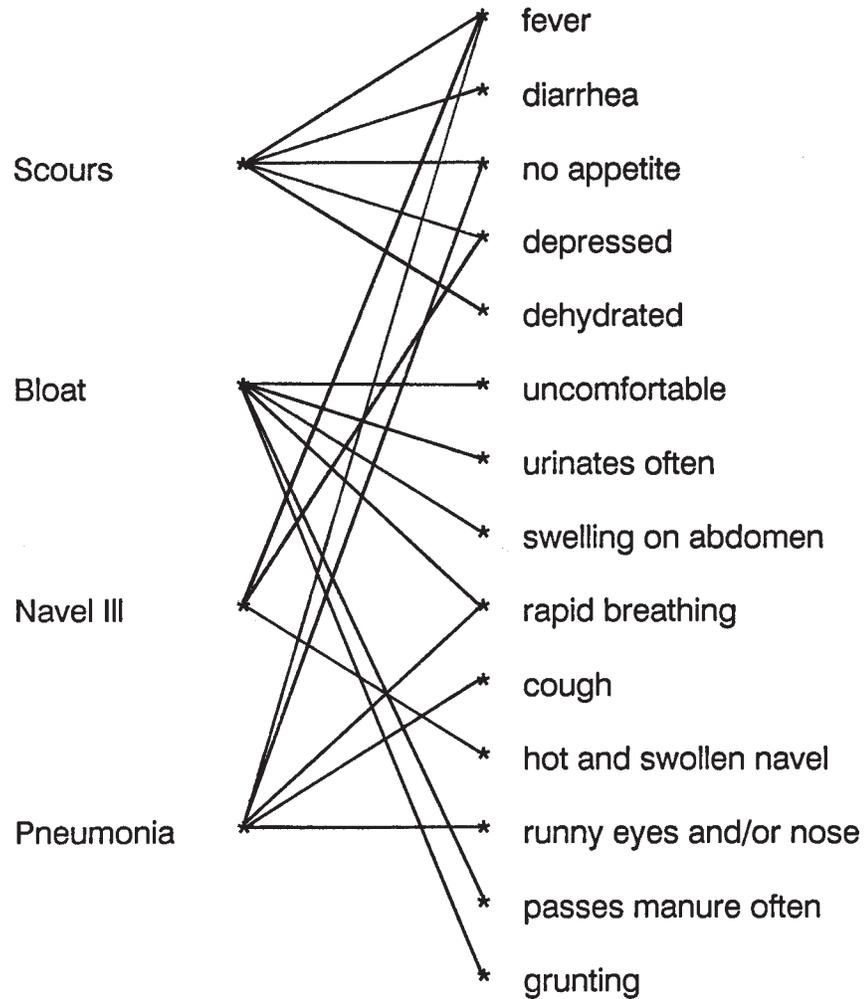
4. The Healthy Calf. Beef Level One - Unit 7, page 7-1. Look at a healthy calf and have your members show you all of the characteristics they can find that indicate the calf is healthy.
5. How are Betsy and Boris? Beef Level One - Unit 7, page 7-3. Boris is healthy and Betsy is unhealthy.
6. Looking at Medicine. Beef Level One - Unit 7, pages 7-3 to 7-4. There are several things which could be demonstrated here: using a balling gun, drenching gun or flexible tube, or injections. Emphasize the importance of following the directions on the bottle.
7. “P” or “N”. Beef Level One - Unit 7, page 7-5.

- | | |
|------|------|
| 1. N | 5. P |
| 2. N | 6. N |
| 3. P | 7. P |
| 4. N | 8. N |

Level Two

8. Taking Your Animal’s Temperature. Beef Level Two - Unit 7, page 7-1. Use the information in this section to demonstrate how to properly take a beef animal’s temperature.
9. “Doctor - I’m Sick”. Beef Level Two - Unit 7, pages 7-4 to 7-5.
 1. Pneumonia might be Buster’s problem.
 2. Flora might have bloat.
 3. James must have navel ill.
 4. Lester is likely suffering from bloat.
 5. Binky’s problem is scours.

10. Know the Symptoms Beef Level Two - Unit 7, page 7-5.



Level Three

11. Invite a level three member(s) to share his or her knowledge of vaccinations or a specific disease with the rest of the club.
12. Discuss herd health preventative measures with your level three members.

Unit Eight**Managing Your Market Steer****Roll Call**

What is the most important part of managing your market steer? Record the answers on a large sheet of paper and put it where all members can see. This will provide a good introduction to some of the topics to be discussed in this unit.

Objectives**Level One**

1. To learn what, when, why, and how, about castration.
2. To learn more about each of the different methods of castration.

Level Two

3. To become aware of the methods and importance of dehorning.
4. To learn about growth stimulants, how they work and the types available.

Level Three

5. To understand the value of preconditioning.

**Activities:****For the entire club . . .**

1. Do a demonstration.

In this unit, demonstrations would be an effective way of helping 4-H members learn the techniques. Have someone give a demonstration of how to:

implant dehorn castrate

2. “This Steer’s On Board”.

This game can be a fun activity for all members in your club. It is designed to get the members thinking about all of the things they need to do to profitably raise a market steer. You will find the games on the last page of this unit. Use these rules

1. You will need
 - one board for every four members
 - one die for each board.
2. Each member should use a coin, button or some other small object as their “man”.
3. Roll the die to determine who goes first.
4. Each member moves spaces according to the number rolled, then follows the direction on the space on which he lands.

5. The first person to land on “On Board” is the winner.
6. Have fun!

Level One

3. Castration. Beef Level One - Unit 8, pages 8-1 to 8-2.

This first page gives members the opportunity to think about castration and their own steer. If the calf has not yet been castrated, they can decide how it should be done and why. You may want to use this as a discussion to introduce the information in the unit.

4. Farm Animal Review. Beef Level One - Unit 8, page 8-3.

Animal	Female	Male	Castrated Male
Sheep	Ewe	Ram	Wether
Cattle	Cow	Bull	Steer
Horse	Mare	Stallion	Gelding
Chicken	Hen	Rooster	Capon
Pig	Sow	Boar	Barrow

5. Now, tell me more . . . Beef Level One - Unit 8, page 8-5.

The instruments which you might use in a non surgical method of castration are the elastrator and burdizzo.

The instruments which you should not use on your calf if he is over six months of age are the knife and elastrator.

Level Two

6. Choose Your Method. Beef Level Two - Unit 8, page 8-3.

This activity provides an opportunity for discussion. Members will choose different methods of dehorning. There is no right or wrong answer, but some answers are better than others.

7. More About Growth Stimulants. Beef Level Two - Unit 8, pages 8-4 to 8-5.

Ralgro

- Ralgro can be used on finishing steers and heifers.
- Implant into the lower portion of the ear about 2.5 cm from the base of the head.
- True - Ralgro should not be used in breeding cattle.

Synovex

- Synovex H is for heifers only. Synovex S is for steers only.
- Implant with Synovex when the animal is 150 kg or more.
- The withdrawal period for Synovex is 0(zero) days.
- Synovex is effective for up to 120 days.

Compudose

- Use Compudose on steers only.
- Compudose is effective up to 200 days.

Rumensin, MGA or both?

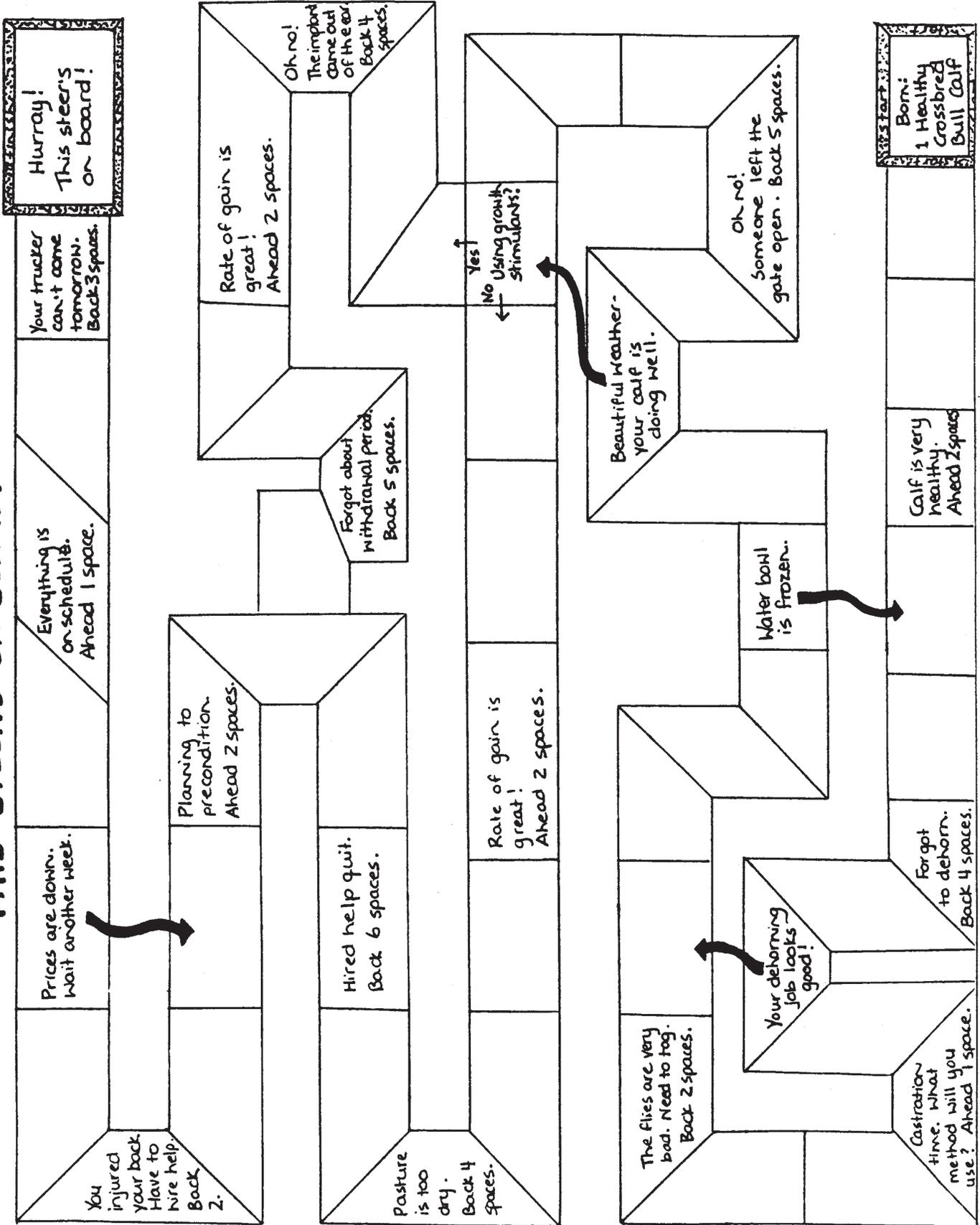
- MGA - Use in feedlot heifers only.
- Rumensin - Use in steers or heifers.
- Rumensin - No withdrawal period.
- MGA - Withdraw at least 24 hours before slaughter.
- both - Increases feed efficiency by approximately 11%.

Level Three

8. Preconditioning

After working through this unit, level three members will have a good understanding of the value of preconditioning. Have the level three members share some information about preconditioning with the rest of the club.

" THIS STEER'S ON BOARD! "



Unit Nine**Beef Cow and Heifer Management**

Roll Call

Tell me one thing you must remember when looking after your beef cows and heifers.

Objectives**Level One**

1. To learn how to manage for healthy cows.
2. To review the nutrients required by cattle.

Level Two

3. To learn about the priority of nutrient usage in beef cattle.
4. To learn about selecting and managing replacement heifers for the herd.
5. To become aware of the importance of culling.

Level Three

6. To learn how, when, and why to condition score beef heifers and cows.
 7. To learn about some of the diseases which can affect beef heifers and cows.
-

**Activities:****For the Entire Club . . .**

1. Invite a guest speaker. Possible topics are
 - cow and heifer diseases
 - condition scoring
 - feeding the heifer

Level One

2. Beef Level One - Unit 9, page 9-1.

The five main nutrients are water, vitamins, minerals, protein and energy.

3. Cow Management - A Word Scramble. Beef Level One - Unit 9, page 9-3.

LYTHEHA		HEALTHY
CTTALIANO		LACTATION
EIADSSE		DISEASE
EGNYER		ENERGY
GNNATEEMMA		MANAGEMENT
TGINOTEAS		GESTATION
EFHIRE		HEIFER

4. Cow Management Review. Beef Level One - Unit 9, page 9-3.

To have healthy calves, you must first have healthy cows. Heifers have greater nutrient requirements than mature cows. Grazing cattle use energy as they move about to find food. Climate affects the cow's nutrient requirements. Cold temperatures, high humidity and strong winds cause the cow's requirements to increase. In early gestation, nutrient requirements do not change very much. However, during the last six to eight weeks before calving, nutrient requirements increase. The cow's nutrient requirements are greatest when she is producing milk.

What three things must you do to keep your cows healthy and productive?

1. Feed them properly.
2. Keep your animals free from disease and injury.
3. Practice good breeding management.

What can you do to practice good management?

- Know the signs a cow shows when in heat.
- Check your cows for signs of heat in the morning and the evening.
- Make sure you have enough healthy fertile bulls.
- Pregnancy check at the end of breeding season.
- Keep accurate records.
- Feed to meet cattle nutrient requirements.
- Adjust feeding programs for individual cows.
- Cull poor performers.

Level Two

5. Minimum Daily Requirements of the Beef Cow.
Beef Level Two - Unit 9, page 9-2.

From the information on the chart, members should note

- Protein, energy and calcium requirements continue to increase as the cow progresses in her pregnancy.
 - Protein, energy and calcium requirements are even greater during lactation than they are during pregnancy.
 - Calcium and protein requirements during lactation are more than double the requirements of early pregnancy.
6. Developing a Successful Culling Program. Beef Level Two - Unit 9, page 9-3.

Why might you cull a cow or heifer from your herd?

- disease (mastitis, prolapse, and so on)
 - injury
 - poor conformation
 - poor growth
 - death
 - reproductive difficulties
7. Would You Cull This Cow or Heifer? Beef Level Two - Unit 9, page 9-4.
1. Yes Mastitis is often a recurring problem in cattle.
 2. No Calves are healthy and no problems are mentioned with the mother.
 3. Yes She is getting older, and will not be able to calve in the next calving season.
 4. Yes Good conformation should be one of your criteria for selecting replacement heifers.
 5. No She is a good performer.

Level Three

8. Invite a level three member(s) to demonstrate condition scoring and explain why, how and when it should be done.
9. Invite a level three member(s) to talk about a disease(s) which affects cows and, or heifers. Have him or her (them) describe how to identify it, and how to prevent it.

