The 4-H Motto

"Learn to Do by Doing."

The 4-H Pledge

I pledge

My **Head** to clearer thinking,

My **Heart** to greater loyalty,

My **Hands** to larger service,

My **Health** to better living,

For my club, my community and my country.

The 4-H Grace

(Tune of Auld Lang Syne)

We thank thee, Lord, for blessings great

on this, our own fair land.

Teach us to serve thee joyfully,

with head, heart, health and hand.

Published by

4-H Branch

Alberta Agriculture, Food and Rural Development

7000 - 113 Street NW Rm 200, Edmonton, Alberta, Canada T6H 5T6

Check out our web site at: **http://www.4h.ab.ca**

revised August 1997

revised July 2002/cas

revised September 2004/cs/cas

4-H Beef Project

Level One

Unit		Page
1	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	Judging Beef	21-1
22	Alberta 4-H LAW Level One	22-1
23	Evaluation	23-1

Unit One

Welcome to the 4-H Beef Project

Dear 4-H Beef Member:

Hi! We're excited that you chose to become a member of the 4-H Beef Project. We hope you have a great time this year making new friends, taking part in 4-H activities, working with your beef project, and learning more about beef production!

To complete your project year in the 4-H Beef Project, you must

- complete four to six units in level one
- take part in at least 70% of club activities
- take part in your Achievement Day
- complete a record book
- have FUN!

About the Beef Project Material

Take a 3-ring binder and put this material in it. Your leader will give you other information during the year. During the year, you will build your own book about beef production. This is also a good place to keep your 4-H diary. Make it **your** book by designing your own cover. Add any pictures or related information you find. After you have been in the project for several years, you will have a special book.

About Your Record Book

You will be using the Livestock Record Book. The project portion of the book that you complete depends on if you have a steer or a heifer. If you have both a steer and a heifer project you will need to fill out a Livestock Record Book for each project. Your leader will tell you which pages to fill out. Since you are a new member in the project, the amount of year-end calculation that you do is less. Spaces are there to add pictures, newspaper, or magazine clippings you have of yourself, your farm, or your beef project.

Achievement Day Requirements

For Achievement Day you should

- exhibit your beef project
- take part in the showmanship and judging classes
- display your record book that is completed to date.

Other Opportunities in 4-H

Your beef project is only a part of 4-H. Many activities are offered at club, district, regional, and provincial levels.

- ✔ Public Speaking
- ✔ Highway Clean-Up
- ✔ Regional Camps
- ✔ Summer Camps
- ✔ District Activities and Workshops
- ✔ Livestock Judging
- ✔ Provincial Beef Heifer Show

The provincial 4-H program booklets have application forms for all the provincial 4-H events. You can find the program booklets in the Cloverleaf Quarterly which is delivered to you four times a year or on the 4-H web site at www.4h.ab.ca.

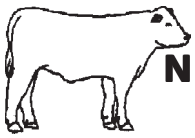
Available Beef Projects

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 **Current Year's Provincial 4-H Livestock Project Regulations** and must abide by any regulations put forth by the local beef committees.

The Fed Calf Unit

- This unit is intended for 4-H members with little or no beef experience.
- It provides an opportunity for members to learn about the responsibility involved in caring for a beef steer.
- Each member is to select and provide the majority of the feed, management and care of the beef steer.
- The steer is to be registered in some manner 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 project animals.

Achievement

- Exhibit steer.
- Take part in skill competitions as designated by club such as showmanship, judging, grooming, project knowledge events.
- Met 4-H basic member expectations so far.
- Record book up to date.

The Heifer Unit

- Members should wish to 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 fed calf and the heifer calf, detailed records are to be kept only on the fed calf, 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 Fed Calf 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.
- Supplemental 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 Fed Calf Unit.

The Pen Unit

- This unit is designed for beef members 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 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 Fed Calf Unit.

The Novice Beef Unit

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

Achievement

- Exhibit animal
- Other requirements as in Fed Calf Unit

The 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 Fed Calf Unit

The 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 Unit I through Unit III 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 demonstration/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 Technician members cover Training Objectives: Handling Cattle, Maintaining Cattle Health, Operating a Feeding Program, Operating General Farm Equipment, Operating Trucks and Tractors, Personal Working Skills.
- Under Feedlot Beef Technician members cover Training Objectives: Processing and Handling Cattle, Treating Cattle Chute Side, Pen Checking, Feeding Cattle, Operating and Servicing Equipment and Facilities, Personal Working Skills.

Achievement

- Members complete the requirements of the Green Certificate program.
- Deliver three talks/demonstration 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 Fed Calf.

The Creative Option 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 Opportunities Project Book or by contacting your regional 4-H specialist.

Achievement

- Conduct a tour or develop a display for club members highlighting management practices learned, cash flow and business plan.
- Other Requirements as in Fed Calf.

4-H Livestock Project Requirements

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.

Revised
September - 2002

- 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 tranquillizing products on 4-H animals, immediately proceeding or at any 4-H project event is prohibited. (Tranquillizing products give the handler an unfair advantage in displaying their livestock handling and control skills). Any animal that is tranquillized 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.

Weighing Your Animal

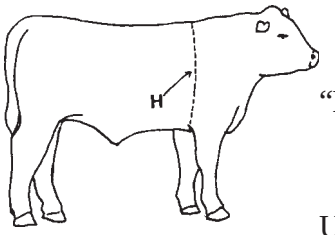
Using a scale is the best method to get an accurate weight of your animal. If you do not have scales on your farm, try to borrow one from a neighbour. Remember, trucking your animal over to another farm is good practice for you and your animal.

Tape Measuring

One method which you can use to estimate the weight of your animal is the tape measure. Any tape measure may be used, but there are specially marked tape measures which you can purchase at most livestock and farm supply outlets.

Remember that it only gives you an estimate of the animal's weight. Variations from the actual weight may be due to the length of the body and, or the legs.

Measure the circumference of the heart girth as indicated in the diagram below. Stand the animal with the head in the normal position and the four legs set squarely under the body. Pass the tape tightly around the body just back of the shoulders at the smallest circumference.



"H" is the heart girth.

Use one of the following charts to estimate the weight of your project. Record the weight on page seven of your Livestock Record Book. You should weigh your animal on about the same day each month.

Measuring

Values to Use When Estimating the Weight of Beef Animals By Heart Girth

Metric Measurements:

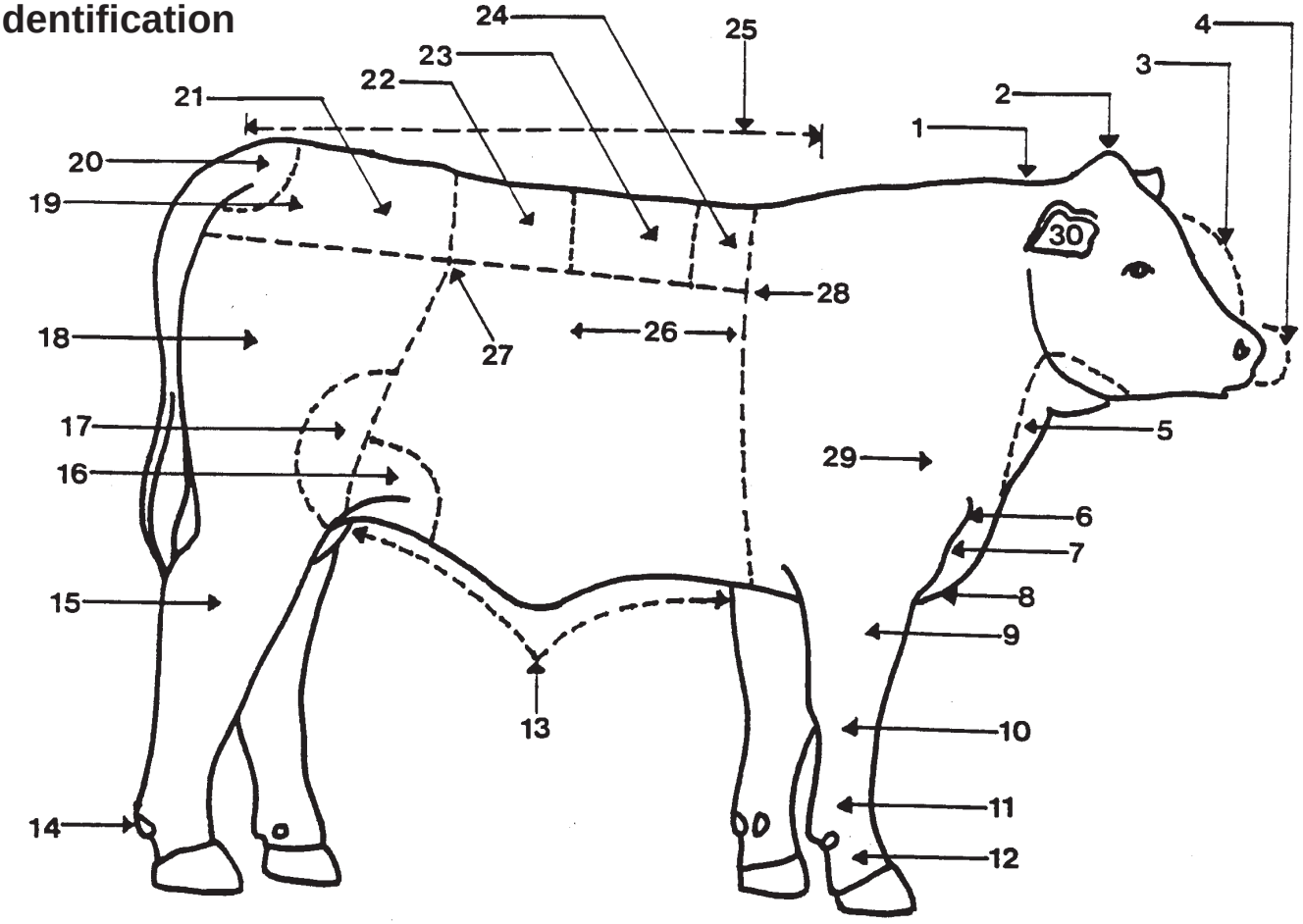
Heart Girth (cm)	Weight (kg)	Heart Girth (cm)	Weight (kg)	Heart Girth (cm)	Weight (kg)	Heart Girth (cm)	Weight (kg)	Heart Girth (cm)	Weight (kg)
76.2	41.3	106.7	107.0	137.2	219.5	167.6	378.3	198.1	584.2
77.5	43.1	108.0	110.7	138.4	225.0	168.9	385.6	199.4	594.2
78.7	44.9	109.2	114.8	139.7	230.9	170.2	394.2	200.7	604.2
80.0	46.7	110.5	118.8	141.0	236.8	171.5	401.9	201.9	613.7
81.3	49.0	111.8	122.9	142.2	242.7	172.7	409.6	203.2	623.2
82.6	51.3	113.0	126.6	143.5	248.6	174.0	417.8	204.5	633.2
83.8	53.5	114.3	130.6	144.8	254.9	175.3	425.9	205.7	643.2
85.1	55.8	115.6	134.7	146.1	260.8	176.5	434.1	207.0	653.2
86.4	58.1	116.8	138.2	147.4	266.6	177.8	447.2	208.3	663.6
87.6	60.3	118.1	143.8	148.6	272.5	179.1	450.4	209.6	673.6
88.9	63.0	119.4	148.3	149.9	280.3	180.3	458.6	210.8	684.0
90.2	65.8	120.7	152.9	151.1	286.7	181.6	467.2	212.1	694.4
91.4	68.5	121.9	157.4	152.4	293.5	182.9	475.8	213.4	705.3
92.7	71.2	123.2	162.4	153.7	299.8	184.2	484.4	214.6	715.8
94.0	73.9	124.5	168.4	154.9	306.6	185.4	493.1	215.9	726.2
95.3	76.7	125.7	171.9	156.2	313.4	186.7	502.1	217.2	736.6
96.5	79.8	127.0	176.9	157.5	320.7	188.0	511.2	218.4	747.5
97.8	83.0	128.3	181.9	158.8	327.5	189.2	520.3	219.7	758.4
99.1	86.2	129.5	186.9	160.0	334.3	190.5	529.3	221.0	769.7
100.3	89.4	130.8	192.3	161.3	341.6	191.8	539.0	222.3	780.6
101.6	93.0	132.1	197.8	162.6	349.3	193.0	546.6	223.5	791.5
102.9	96.2	133.4	203.2	163.8	356.5	194.3	556.1	224.8	802.9
104.1	99.8	134.6	208.7	165.1	363.8	195.6	565.6	226.1	814.7
105.4	103.4	135.9	214.1	166.4	371.0	196.9	574.7	227.3	826.0

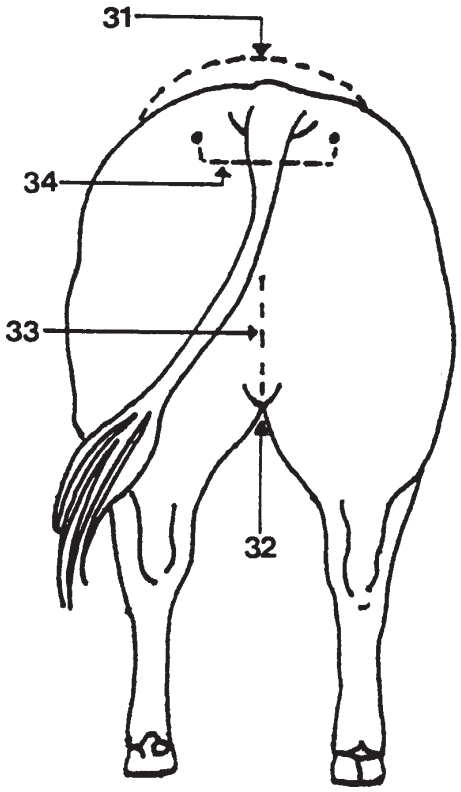
Measuring

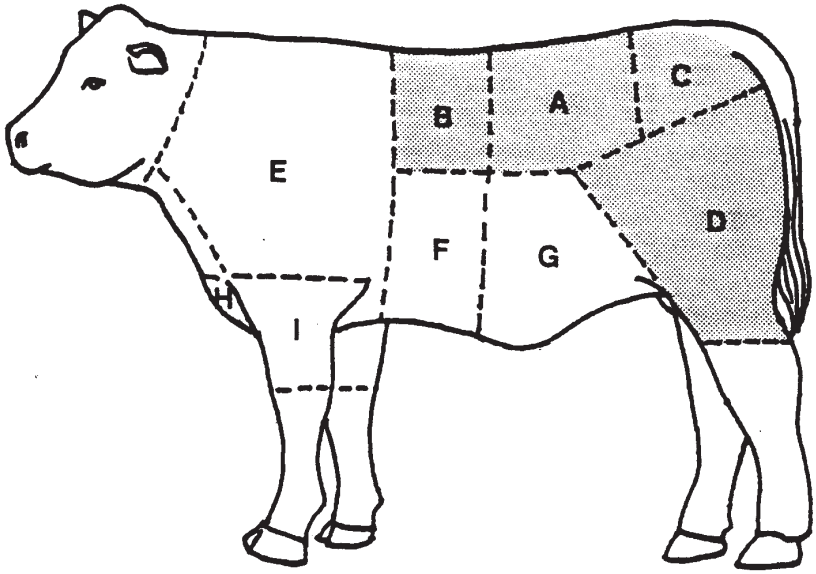
Imperial Measurements

Heart Girth (in)	Weight (lb)	Heart Girth (in)	Weight (lb)	Heart Girth (in)	Weight (lb)	Heart Girth (in)	Weight (lb)	Heart Girth (in)	Weight (lb)
30	91	42	236	54	484	66	834	78	1,288
30.5	95	42.5	244	54.5	496	66.5	850	78.5	1,310
31	99	43	253	55	509	67	869	79	1,332
31.5	103	43.5	262	55.5	522	67.5	886	79.5	1,353
32	108	44	271	56	535	68	903	80	1,374
32.5	113	44.5	279	56.5	548	68.5	921	80.5	1,396
33	118	45	288	57	562	69	939	81	1,418
33.5	123	45.5	297	57.5	575	69.5	957	81.5	1,440
34	128	46	307	58	589	70	975	82	1,463
34.5	133	46.5	317	58.5	603	70.5	993	82.5	1,485
35	139	47	327	59	618	71	1,011	83	1,508
35.5	145	47.5	337	59.5	632	71.5	1,030	83.5	1,531
36	151	48	347	60	647	72	1,049	84	1,555
36.5	157	48.5	358	60.5	661	72.5	1,068	84.5	1,578
37	163	49	369	61	676	73	1,087	85	1,601
37.5	169	49.5	379	61.5	691	73.5	1,107	85.5	1,624
38	176	50	390	62	707	74	1,127	86	1,648
38.5	183	50.5	401	62.5	722	74.5	1,147	86.5	1,672
39	190	51	412	63	737	75	1,167	87	1,697
39.5	197	51.5	424	63.5	753	75.5	1,186	87.5	1,721
40	205	52	436	64	770	76	1,205	88	1,745
40.5	212	52.5	448	64.5	786	76.5	1,226	88.5	1,770
41	220	53	460	65	802	77	1,247	89	1,796
41.5	228	53.5	472	65.5	818	77.5	1,267	89.5	1,821

Part Identification







Part Identification

Identify the following beef animal parts.

2 _____ 14 _____ 21 _____

4 _____ 16 _____ 26 _____

5 _____ 18 _____ 27 _____

8 _____ 19 _____ 29 _____

10_____ 20 _____ 32 _____

Identify the following meat cut areas.

A _____ E _____

C _____ F _____

Transportation Regulations

When you transport your livestock, you must carry a **Livestock Manifest** completed according to the regulations. Make sure that you complete this manifest before the vehicle leaves your property whenever you transport any livestock.

The owner of the livestock or his agent must complete the manifest with this information:

1. date the livestock is transported
2. name and address of the owner of the livestock
3. consignee's name and address
4. number of livestock
5. color of the livestock
6. kind of livestock
7. the proper description and location of the brand and other marks of ownership on each head of livestock
8. sign the manifest.

The operator of the vehicle transporting the livestock or the driver of the livestock must complete the manifest with this information:

1. name and address of the person who is operating the vehicle or driver of the livestock
2. licence number of the vehicle used to transport the livestock
3. transportation charges, if any
4. sign the manifest.

Livestock manifest books are available from your leader, local brand inspector or market.

The Use of Agricultural and Veterinary Chemicals

More and more farm chemicals are being labelled in metric units (mL, cc). The use of "cc" will be discontinued and cm^3 will replace it. Items such as vaccines and oral medications will be applied directly at rates given as

millilitres (mL), milligrams (mg), or

grams (g) per kilogram of bodyweight

Concentrated products such as horticultural, crop and pasture sprays will require dilution as

mL/L or mL/100 L or L/100 L

g/L or g/100 L or kg/100 L

Application will be as mL/ha, L/ha, mL/m^3 and so forth. Standard prepacked products (to avoid weighing from bulk supplies) will eventually be labelled as one pack for a certain number of litres (L) instead of one pack for 100 gallons. Animal remedies will rely on dosage rates based on live bodyweight in: millilitres per kilogram (mL/kg). Only experience will enable you to estimate live bodyweight in metric units. You will have to compare your estimates with actual measurements for example at stockyards. Some animal remedies will be on a per animal basis and will not require knowledge of live bodyweight.

Think metric and read all labels and instructions carefully. If you use tranquilizers read the **label** to find out what the withdrawal regulations are.

Unit Two

You and Your Beef Project

Roll Call

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

Selecting Your Project Animal

What must you consider when selecting an animal as your 4-H beef heifer or steer? What is most important? How do you decide? In this unit we will try to answer these and other questions you might have.

When to Select

Select your beef project animal as soon as possible, preferably before November. The sooner you select your animal, the sooner you can begin working with him.

If you take the steer project, select a steer which weighs less than 275 kg. The actual weight and age of your steer will depend on the type of animal. The exotic breeds will take longer to finish than the traditional breeds. Know the date when your steer must be finished. This is important as you will have to know how to feed your steer to have it properly finished for Achievement Day.

When did you select your 4-H project animal?

Use your knowledge about the breeds to fill in the blanks below with examples of the British and the exotic breeds.

The British Breeds	**The Exotic Breeds**

Heifer or Steer?

The first decision you have to make is whether to feed a steer or a heifer. If you have a steer, you will sell it at the end of your project year. If you have a heifer, you can keep her and use her as a yearling project next year and then as a cow-calf project or a beef herd project.

As a producer deciding between finishing a heifer or a steer for market, you need to keep these points in mind:

1. Heifers grow more slowly, but will fatten at a lighter weight than steers.
2. Heifers require more feed per unit of weight gain than steers. Heifers are often more active and require you to provide more energy per unit of gain than you would for a steer.
3. Heifers finish approximately 70 kg lighter than steers. This will vary among breeds. If you finish a heifer and a steer at the same weight, the heifer will be fatter.
4. Heifers sell for less at finish than steers. This is because heifers dress at a lower percentage than steers. There is always the possibility that the heifer may be in calf.
5. Heifer calves can often be purchased at a lower price than steers.
6. Heifer calves may be bought as breeding stock instead of being slaughtered at the end of the project year.

What did you select for your 4-H project this year? A heifer or a steer?

Why?

Crossbred or Purebred?

Another decision you must make is whether to buy a single breed or a mixture of breeds. That is, a purebred or a crossbred.

A purebred calf is one whose parents are of the same breed. No other breeds are present in their background. The animals may be registered with their breed organization. Although many people prefer a registered purebred, it is not always necessary and may cost you extra money.

A crossbred calf is one which has parents of different or mixed breeds. The calf will show characteristics of more than one breed, and hopefully, the most desirable characteristics of each of the breeds.

Commercial breeders often prefer crossbred animals for these reasons:

1. They may inherit the desirable characteristics of each breed.
2. Crossbred calves often have hybrid vigour. This means that their performance is superior to the performance of the average of their parents performance. You can see the improvements most often in fertility, growth rate and feed conversion.

3. Calves from some breeds of cows have higher pre-weaning gains because of the higher levels of milk production.

4. Crossbred calves will finish earlier than some of the larger framed purebred cattle.

Did you select a crossbred or a purebred?

Why?

The breed(s) is, are

In your own words ...

What advantages does a crossbred animal have over a purebred animal?

What advantages does a purebred animal have over a crossbred animal?

Selecting is Really Judging

Choosing your calf will be your first practice with judging. Judging is evaluating and comparing in order to select the most desirable in a group of similar objects. In your case, this will be your 4-H calf.

Follow these steps when you judge a class or when you are selecting your animal:

- Know the characteristics of the ideal or the perfect animal.
- Compare the animals which are available. Compare them to each other and to your perfect animal using those characteristics you identified above.
- View the animals from a distance.
- From a distance, view from the front and the rear.
- Move in for a close examination of each one.
- View once again from a distance.
- Make your decision.

List the steps you went through in selecting your project animal.

For more information on judging, have a look at these units:

"Let's Judge"
"Judging Beef"

Working With Your Project Animal

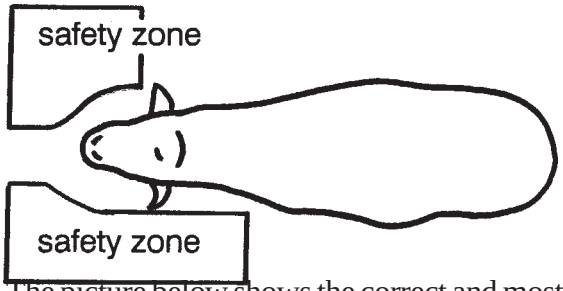
Safety First

Safety is important at all times when you work with your project animal. Even cattle which are calm in the pen may become frightened and unmanageable when you take them outside.

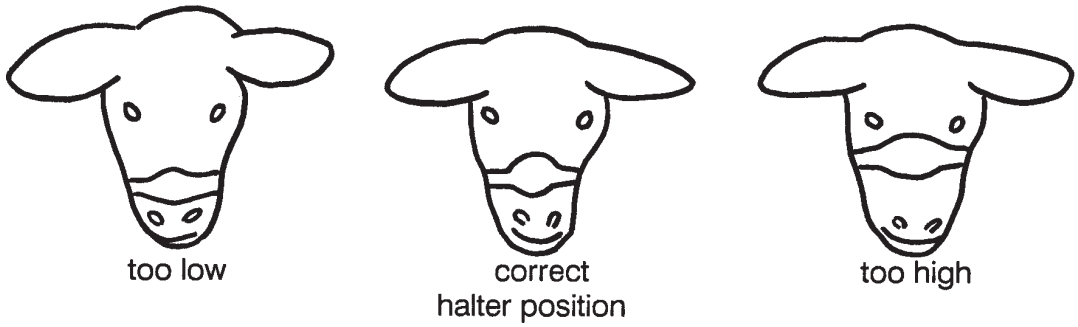
Until you and your calf are comfortable with each other, have someone help you as you work together.

Always wear safety footwear when working with your calf. Steel toed boots will protect your toes if your calf should accidentally step on you. It takes only an instant for you to become injured.

The best safety zone is on the front left side of your calf. Never stand directly in front of him as he has difficulty seeing you properly and will become frightened. If you move to the right side, hold the lead shank in your left hand and make sure that the shank is under the animal's jaw and not over it.



The picture below shows the correct and most secure placement of the halter on the head of the animal. If the halter is too low on the nose, it will slip off easily. If it is too high, you will not have enough control.



Most important to your safety is your attitude. You will spend many hours working with your animal over the next few months. Be patient but firm. Do not lose your temper. The animal can sense when you become angry or upset.

Learn To Do By Doing

The best part of the 4-H project is that you will "learn to do by doing". Whether you are working with your animal or with the other members in your club, you will be doing and learning.

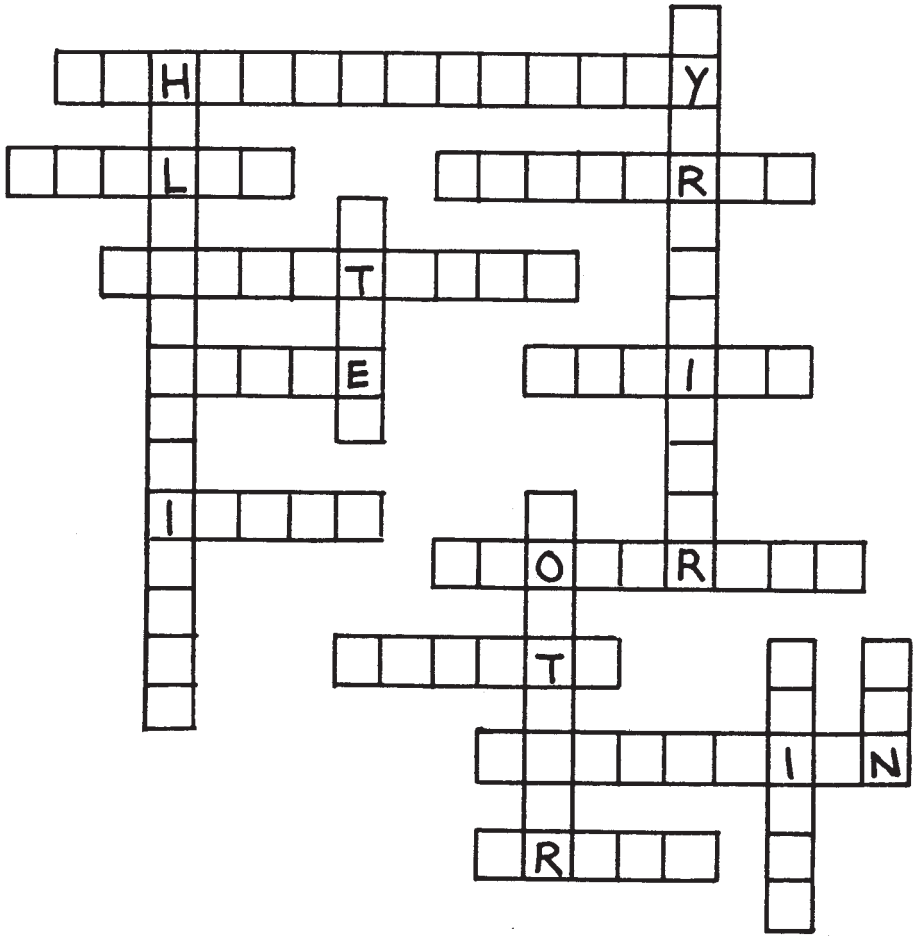
Remember - 4-H is fun!

Activity:

Selection Review

Fill in the crossword using these words related to selecting and working with your project animal:

achievement day
breed
crossbred
finish
footwear
fun
halter position
health
heifer
hybrid vigour
ideal
price
purebred
safety
selection
steer
weight gain



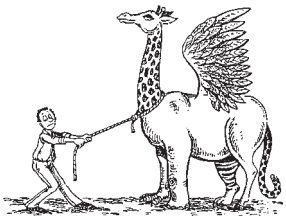
Unit Three

Digestion in the Beef Animal

Roll Call

Name an animal.

Is this animal ruminant or monogastric?



"I'm having trouble with this one - Can you help?"

As other members answer the roll call, record the animal they name. Put it in the correct column.

Ruminant	**Monogastric**

What is a ruminant?

A ruminant animal has a stomach with four distinct rooms or compartments. Each of these compartments has its own special job to do in digestion of the food.

A monogastric animal has a stomach with one big compartment. All the digestion work is done in this one big room. Here is an easy way to remember this

mono = one**gastric** = stomach

Because the stomachs of the ruminant and monogastric animals are different, their diets are very different. Compare your diet to your steer's diet.

A monogastric - You	**A ruminant - Your Steer**

What a difference in the foods you eat! Your diets are different because your stomachs have different abilities to digest food.

What is digestion?

Digestion is the preparation of food for absorption.

Before your body can use those things in the foods, your stomach must digest them so the body can absorb them. The digestive system does this by breaking the food down into tiny bits and then breaking them down even further so they can be absorbed into the body parts.

What is the digestive system?

The digestive system is made up of all the parts of the body which have a job to do in the process of digestion.

Let's look at each of the parts of the digestive system and the jobs they have to do.

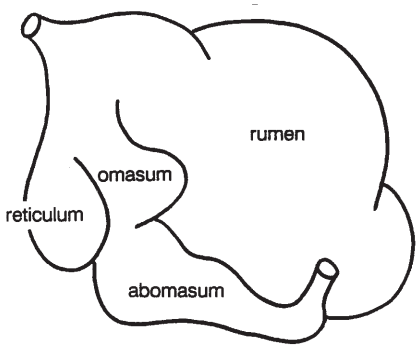
The parts of the digestive system in the beef animal are

- Mouth
- Esophagus
- Stomach
  - rumen or "paunch"
  - reticulum or "honeycomb"
  - omasum or "manyplies"
- Abomasum or "true stomach"
- Small Intestine
- Large Intestine
- Anus

The **mouth** takes the food into the body. The food is broken up into smaller bits by the chewing and grinding of the teeth. Saliva from the mouth helps to break the food down more. The saliva contains enzymes which attack the food.

The **esophagus** is the long tube or tunnel which runs from the mouth down to the stomach. When food is swallowed, it goes down the esophagus into the stomach.

The **stomach** of the beef animal has four distinct compartments. This is how we know that he or she is a ruminant animal. Each of these compartments has its own special job to do in digesting food.



◀ This is what the stomach looks like.

The first part of the stomach the food enters is the **rumen**. This is the largest compartment. In the adult beef animal, it takes up about 80% of the size of the entire stomach. The rumen mixes the food. Microbes or "bugs" attack the food and help break it down.

From the rumen, the food moves to the **reticulum**. The fine material is moved to the next compartment. The coarser food material is sent back up to the mouth for more chewing. This is called rumination or "chewing the cud".

Did you know?
The cow spends up to eight hours a day "chewing its cud". This is 1/3 of its life!

The third compartment of the stomach is the **omasum**. The omasum squeezes the fluids out of the food material.

The fourth and last compartment of the stomach is the **abomasum**. It is also called the true stomach since it is very similar to the stomach of the human and other monogastric animals. The abomasum contains digestive juices which help to break down the food even more. In the newborn calf, the milk bypasses the first three stomach compartments and goes directly down the esophagus into the abomasum.

When the food moves out of the stomach, it no longer looks like the food which your animal ate. This food material goes from the stomach into the **small intestine** which is like a very long, thin, coiled tube. Juices are found here. These juices help to change the food material to a form which the body can absorb.

Now, the material moves to the **large intestine**. The large intestine is a shorter, fatter tube. It absorbs what is left of the liquid in the material and adds mucus to help the material travel more easily.

The final part of the digestive system is the **anus**. This is the opening in the body through which the waste material passes. This waste material is the remains or undigested food, which we refer to as manure.

WOW! Digestion is really complicated, isn't it? If any one part of this system is not working properly, the rest of the system cannot function and that can lead to real problems.

It is important that you understand how the beef animal can digest such different foods than you or any other monogastric animal. The beef digestive system can turn some very poor quality hay and straw into valuable proteins and energy which the beef animal can use for growing and reproducing.

Activity:

The Digestive System - A Word Search

Find these digestion words in the puzzle on the right.

abomasum
action
bugs
compartment
digestion
folds
intestine
large
manyplies
microbes
omasum
reticulum
rumen
small
stomach
systems
true

All of these words are in a straight line!

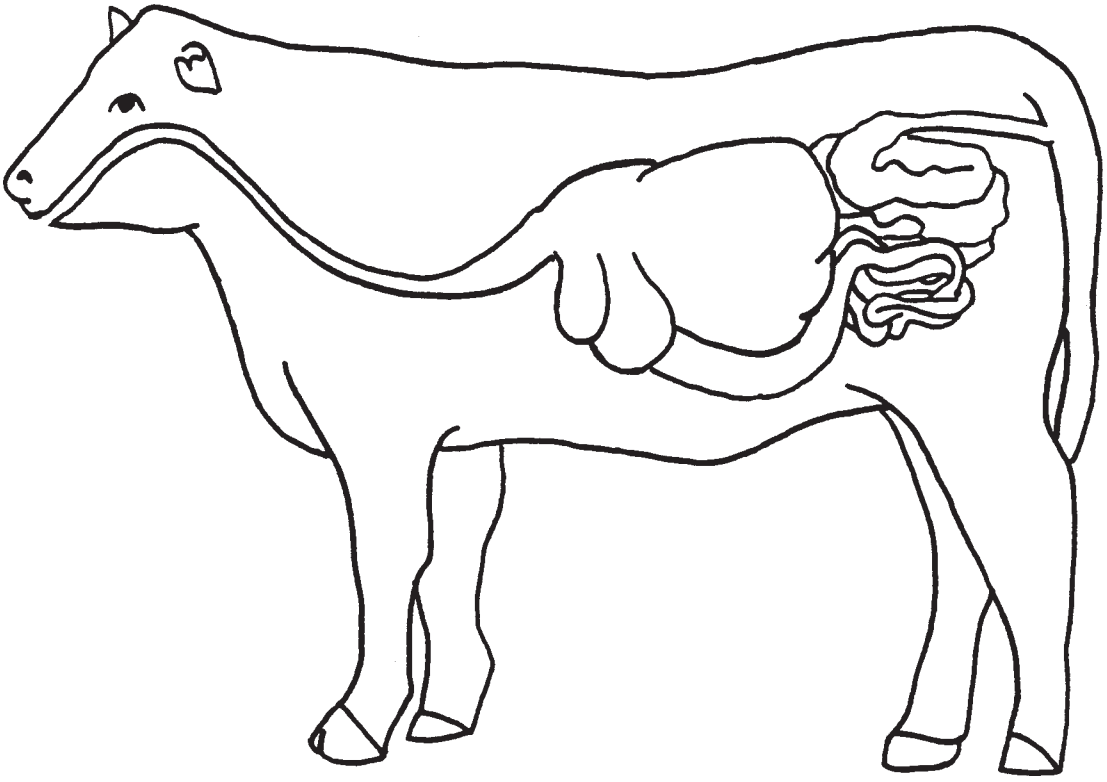
```
C O M P A R T M E N T
I M U S A M O U H B A
N I R S M A L L C U B
T C S Y A N A U A G O
E R D S C Y R C M S M
S O L T T P G I O R A
T B O E I L E T T U S
I E F M O I F E S M U
N S O S N E T R U E M
E D I G E S T I O N U
```

The remaining four letters spell the word which completes this statement:

"The stomach of the beef animal has ____ compartments."

Activity: Follow the Path

In the diagram below, follow the path the food takes through the digestive system of your steer. Draw arrows to show the direction the food material moves through the digestive system. Remember that once this food reaches the stomach, it begins to look very different. This is only one of the things which happens during digestion!



Unit Four

Nutrient Requirements of Beef

Roll Call

Name a nutrient.

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

What is a nutrient?

A nutrient is something needed for life.

What is a nutrient needed for?

maintenance, growth, production, reproduction

A nutrient is like an ingredient in a recipe. If we leave an ingredient out, the food we are preparing will not turn out properly. If we leave an ingredient out of our beef animal's diet, he or she will not grow up or produce as well as we expect.

If the animal does not receive enough of a nutrient, it is said to be deficient. There are five nutrients the beef animal needs in its diet. Can you name them?

Let's learn more about each of these.

Water

We don't often think of water as an important nutrient, but it is necessary for life.

How important is water?

When a calf is born, water makes up 75 to 80 percent of its bodyweight.

What does water do?

Water does many things: it helps the body get rid of waste, it helps things transport through the body, it lubricates the joints, it participates in body activities and it helps keep the body healthy.

How much water does an animal need?

The amount of water your animal needs depends on many things: body size, weight, feed consumed, the environment and the type of animal. Water should be available for your animal at all times.

How can you tell if your animal is getting enough water?

The first sign you will notice if your animal is not getting enough water is a decrease in feed intake.

Water quality is important for all livestock. An abundant supply of clean, fresh water should always be available for all your animals.

Energy

What is energy?

Energy is the power the animal needs for the body to function. It receives this power from the food it digests, or the "fuel" it "burns".

The beef animal needs energy for many reasons:

- to keep warm
- to grow
- to produce milk and calves
- to move around.

It receives energy from digesting carbohydrates and fats. Carbohydrates include the sugar, starch and cellulose found in plants. The oils of soybean and canola are good sources of fats.

Too Much Energy

How can you tell if your beef animal is getting enough energy?

- becomes too fat
- calving is difficult
- upset digestive system
- lower resistance to disease

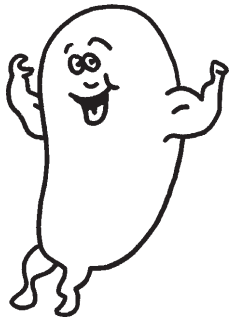
Too Little Energy

How can you tell if your beef animal is not getting enough energy?

- slow or stopped growth
- losing weight
- poor hair coat
- lower resistance to disease
- reproductive problems

From these problems, you can see how important it is to provide your beef animal with the right amount of energy.

Protein



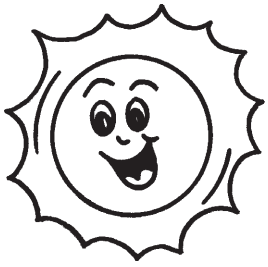
Protein is needed by the beef animal for

- growth
- reproduction
- muscle development and action
- hair growth
- milk production.

Most feeds contain some protein. However, it is often in only small amounts. The best sources of protein are

- soybean meal
- canola meal.

Vitamins



Vitamins are needed for these activities:

- growth
- reproduction
- movement
- staying healthy.

There are many vitamins. Each of them is important for specific reasons.

How much do you know about vitamins? Match up the vitamin on the left with its characteristic on the right.

Vitamin			Characteristic
A	*	*	ruminants manufacture this vitamin, but humans must receive it in their diet
B	*	*	needed along with the 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	*	*	a very important vitamin needed for vision, healthy skin, digestion and reproduction
K	*	*	needed along with the mineral selenium for muscle function

Minerals

Minerals are needed in the body to build healthy teeth and bones. They are also needed for other functions including the working of muscles and nerves. There are at least 19 minerals required by the beef animal.

Some of these are

Macrominerals

These minerals are required in fairly large amounts.

- Calcium
- Phosphorus
- Magnesium
- Sulphur
- Potassium
- Sodium
- Chlorine

Microminerals

These minerals are required in smaller amounts.

- Iodine
- Cobalt
- Selenium
- Iron
- Zinc
- Copper
- Molybdenum
- Manganese

Activity:

Find the minerals in the puzzle below. Each one is in a straight line - up, down, across or diagonally.

C	M	U	I	S	E	N	G	A	M
A	O	U	C	O	P	P	E	R	U
L	L	B	I	M	D	R	S	D	I
C	Y	I	A	S	U	I	U	C	N
I	B	R	L	L	S	I	N	Q	E
U	D	O	R	E	T	A	D	E	L
M	E	N	Z	I	N	C	T	O	E
E	N	I	R	O	L	H	C	O	S
S	U	R	O	H	P	S	O	H	P
D	M	A	N	G	A	N	E	S	E
O	L	Z	S	U	L	P	H	U	R

About Salt

Type of Salt	Minerals Contained
White	Sodium, chloride
Iodized (red)	Sodium, chloride, iodine
Cobalt iodized (blue)	Sodium, chloride, iodine, cobalt
Trace mineralized	Sodium, chloride, iodine, cobalt, zinc, iron, manganese, copper, selenium

Nutrient Summary

We have now learned a little about each of the nutrients which are required by the beef animal. Answer the following questions to give you a summary of the information provided in this unit.

1. The five nutrients required by the beef animal are

2. Why is water important for the beef animal?

3. Two good sources of protein are

4. The beef animal receives energy from digesting

5. Choose the correct answer. If your beef animal receives too much energy, it will
   a) become too fat or
   b) lose weight.

6. Why are vitamins needed by the beef animal?

7. There are two types of minerals. These are

_____

_____

An example of each of these types is

_____

_____

Did you know?

You need the same kinds of nutrients in your diet as the beef animal does in his or her diet.

Unit Five

Feeds for Beef

Roll Call

Name a feed ingredient which is used in a ration.

Rations and Diets

Diet is the mixture or combination of feeds which provide the nutrient requirements. The diet you feed your animal contains those nutrients which keep your animal healthy, growing, producing and reproducing.

Ration is the amount of feed required by the animal daily.

The diet must contain the correct proportion of the nutrients the animal needs. The correct amount of a properly balanced diet gives you a ration which meets the animal's dietary requirements.

Tell me about the diet you are feeding your animal.

More About Rations and Diets

Your animal's diet will be made up of concentrates, roughages and supplements. Each of these contains necessary nutrients.

Roughages are high fibre feeds. Roughages include hay, silage, and straw.

Concentrates are high energy feeds. This includes the grains.

Supplements are a good source of one or more nutrients. They are added to the ration to make a more nutritious feed. They may provide energy, proteins, vitamins or minerals.

Salt is a mineral supplement. Salt, or sodium chloride, is important for the animal because he loses sodium and chloride through sweat and body wastes. Your animal can receive salt by licking a block or eating loose salt mixed in with the feed.

Tell me about the concentrates, roughages and supplements you are feeding your animal.

Concentrates

Roughages

Supplements

Palatability

Palatability is ... how acceptable the feed is to the animal.

Palatability is affected by the flavour, smell, appearance, texture, temperature and dustiness of the feed. The way the feed is prepared will affect each of these.

Your animal must eat enough of its ration to get the daily gains you want. If it does not eat enough, it won't get those gains and the feed and the nutrients in the feed will be wasted.

What do you think your animal likes about the ration you are feeding?

What doesn't it like?

About Roughages

Hay is dried roughage which is harvested and stored with a low moisture content.

Two types of roughages are used for hay crops:

- grasses
- legumes - clover, alfalfa, trefoil.

What type(s) of hay are you feeding your animal?

The most common ways in which hay is packaged today are

- Small square bales weighing from 20 to 30 kg.
- Large round bales weighing from 300 to 600 kg.
- Loose hay stacks weighing from one to three tonnes.
- Large square bales weighing about 500 kg.

Haylage is also produced from grasses and legumes. Instead of being stored as long hay, it is chopped into shorter pieces by a forage harvester. The main difference between hay and haylage is that haylage has a higher moisture content - around 40%.

Silage is grasses, legumes or cereals stored with a higher moisture content, about 60% but harvested the same as haylage.

About the Grains

The grains are concentrates. As we know, these are the energy feeds.

Wheat is high in energy. It should be coarsely ground or cracked and fed in small amounts along with other grains. Fine particles of wheat appear when it is processed and may cause digestive upsets or bloat.

Barley is the energy source used most often in Alberta feedlots. It has less energy than wheat, but more than oats. Barley is a very dense feed. If you compare the weight of a pail of barley with the weight of a similar pail of oats, the barley pail will be much heavier. Therefore, it is important to measure your grains by weight, not by volume.

Oats are very palatable. They are good to use when starting your animal on grain. However, because oats have less energy than wheat or barley, oats are not a very good finishing feed.

Corn is the most commonly used energy feed in most parts of North America. In Alberta, very little corn is used because most Alberta climate conditions are not suited for growing corn. Corn is low in calcium, but has a good phosphorus content. In most cattle diets, corn is fed along with protein supplements.

Feed Intake

Beef cattle will eat from 1.4 to 2.7 percent of their bodyweight each day in feed. This amount is on a dry matter or moisture free basis. The amount consumed varies depending on the concentrate roughage ratio of the fed and the age and condition of the animal. Older and more fleshy cattle will consume less feed per unit of bodyweight than younger, leaner animals.

The table below lists the approximate amounts of different types of feed an animal will eat. These are based on a 90% dry matter basis.

Feedstuff	Daily Consumption as a Percentage of Bodyweight
Excellent quality hay	3
Very good hay	2.5
Medium hay	2
Poor hay, oat or barley straw	1.5
Wheat straw	1
Silage (air dry basis)	2-3
Oats	3
Barley	2.5
Wheat	1.5-2

What do we mean when we say "on a dry matter basis"?

If your haylage has 40% moisture, then it has 60% dry matter - because the dry matter plus the moisture makes up the haylage or 100%. If you feed 10 kg of haylage then you are only feeding 6 kg of dry matter.

Activity: "True or False"

For each of the statements below, put a "T" in the blank if the statement is true, or an "F" if the statement is false.

_____ Barley has more energy than wheat.

_____ Oats are more palatable than barley.

_____ A diet is the amount of feed required by the animal daily.

_____ Corn is often used in beef rations in Alberta.

_____ A pail of oats is lighter than a pail of barley.

_____ Silage contains more moisture than hay.

_____ Concentrates are high energy feeds, roughages are high fibre feeds.

_____ Alfalfa is a grass used to make hay.

_____ Beef cattle will consume up to 8% of their bodyweight per day.

_____ Oats have less energy than wheat or barley.

_____ If you feed 20 kg of hay with 90% dry matter, you are actually feeding 18 kg of dry matter.

_____ Dry matter plus moisture gives you the total amount of the actual feed.

Unit Six

Parasites of Beef Cattle

Roll Call

Name a parasite.

What are parasites?

A parasite is any living organism which survives on or in a host animal. This organism, or parasite, gets all of its support for life from the host animal. This include its food and shelter.

There are two types of parasites. These are the internal and the external parasites. What is the difference between these two types of parasites?

An internal parasite	**An external parasite**
_____	_____
_____	_____

Give some examples of each of these types of parasites.

Internal	**External**
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Activity: Find the Parasites

Find the names of many different parasites. The words are in a straight line - forwards, backwards, up, down or on a diagonal. Find as many parasites as you can and record the words below.

C

B O

M E C

R Q K C

O F L U I

W L I Z L D

D I C S R F I

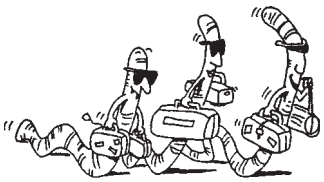
N E E L P K R O

U S W A R B L E S

O X E G N A M A V I

R T A P E W O R M I S

G M U M R O W G N U L Y



"Look out guys - Here we come!"

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

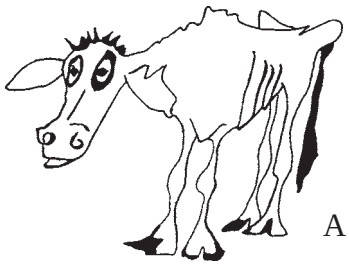
Parasites and Your Beef Animals

Why do we need to worry about parasites?

Parasites harm our animals. They cause our beef cattle to be stressed. When they are stressed, they don't perform well, and they are more susceptible to disease and infection.

The healthy beef animal

- has bright, clear eyes
- eats regularly
- drinks water provided
- is active
- has a shiny hair coat
- has pleasant breath.



A beef animal with internal parasites may

- stop drinking
- have poor feed efficiency
- be weak and losing weight
- have decreased milk production
- be generally unhealthy.

A beef animal with external parasites may

- be uncomfortable
- not eat or drink regularly
- lose weight
- have a rough and dull hair coat
- rub against fences, walls or trees.

The bottom line is that your beef animal will not be healthy. When he is not healthy, he will not grow or produce well. When he does not grow or produce well, this costs you money.

It is important to know that a beef animal with only a slight infection of parasites will look normal. Often, you cannot tell just by looking at the animal that there is a problem. A beef animal with a severe infection, or many parasites, will look sick.

With good management, you will be able to control parasites on your farm. This will keep your animals happy and healthy.

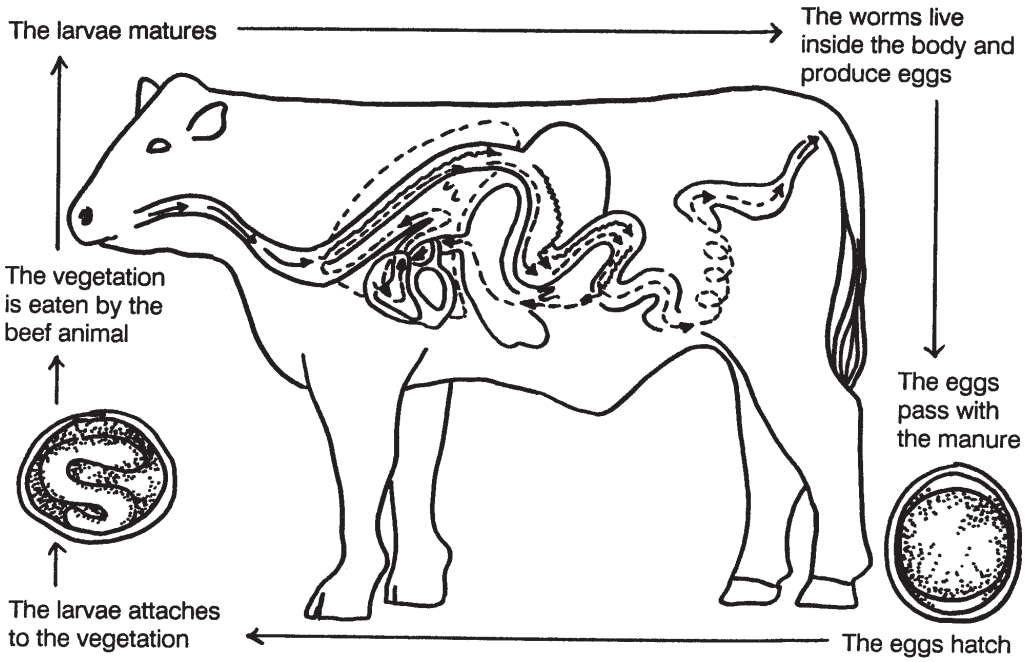
Controlling Parasite Infection

It is much easier and less expensive to control parasites by preventing them, rather than having to treat your animals once they have parasites. Because beef cattle spend so much time on pasture, they are very susceptible to parasites, especially worms.

To help you better understand how the beef animal can become infected, let's look at the life cycle of a common internal parasite, the roundworm.

Suppose your beef animal has roundworms. The worms lay eggs while living inside the body. These eggs pass out of the body in the manure. While on the ground in the manure, the eggs grow into larvae. These larvae move from the manure to the grass. The animals eat the grass, taking the larvae into their body. Once inside the body, the larvae grow into adult worms. The cycle continues.

In Western Canada, roundworms can be found in beef and dairy cattle year round, particularly in young animals. They are often found in only small numbers. Because of this, it is often difficult to detect them.



Life Cycle of the Roundworm

There are three different species of roundworms which can live in the abomasum or fourth stomach of cattle:

barberpole worm	35 mm
brown stomach worm	15 mm
threadworm	7 mm

They suck blood while attached to the stomach wall. One or all three of these species may be found. A serious infection would include several thousand of these worms in one animal.

The threadnecked worm is a common roundworm found in the small intestine. It causes harm only when found in large numbers.

How can your animal become infected with parasites?

_____

_____

The first step in preventing roundworm infection in your cattle is to know how to recognize infected cattle. Roundworm infection is usually a herd problem rather than an individual animal problem. If only a few worms are present, you likely won't notice any problems.

When many worms are present, your animals will begin to lose their appetites, not gain weight, appear thin and look poorly. Some may develop scours. To be positive that worms are the problem, manure samples can be analyzed for the identification and count of eggs. This will tell which type of worm and how severe the problem is.

There are several treatments on the market. Whether or not mass treatment is necessary is an individual farm decision. Consult your veterinarian for more information.

Unit Seven

Beef Herd Health

Roll Call

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

The Healthy Calf

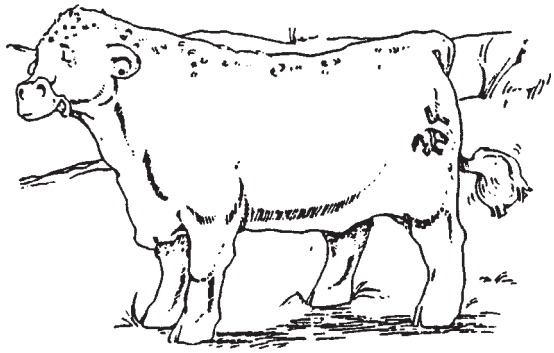
As you get to know your calf and the animals in your herd, you will know what kind of behaviour is normal. A normal, healthy calf has these characteristics

- bright, clear eyes
- eats regularly
- drinks water provided
- is active
- has a shiny hair coat
- has pleasant breath.

Keeping Your Animals Healthy

Help to keep your animals healthy by giving them

- a dry, clean home
- clean, fresh water
- well balanced diets containing the right amounts of all the nutrients.



The Unhealthy Calf

If an animal starts behaving differently, or you notice anything that is not normal, your calf might be ill. Look for some of these signs that something is wrong:

Appearance	• depressed • dull
Posture	• standing differently from normal • favoring some part of the body
Gait	• walks faster or slower than normal • walks around more or less than normal • stands in one spot • wanders aimlessly
Condition	• too fat or too thin
Appetite	• eating more or less than normal • growing too fast or too slow • refusing to eat certain foods • drinking more or less water than normal
Behaviour	• bawling • nervous
Breath	• smells sour
Urine	• not yellow and clear
Manure	• softer or harder than normal • colour different than normal

Working With Your Vet

Once you have discovered an unhealthy animal and you cannot solve the problem yourself, you will need to get help. Call your local veterinarian. To make it easier for the vet to find out what is wrong with your animal(s) do the following:

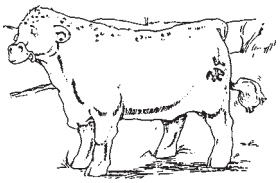
- put the sick animal(s) in a separate area
- make it comfortable
- have plenty of warm water available
- have a halter ready
- be ready to discuss the symptoms
    - how long has the animal been ill
    - what are the symptoms
    - any recent changes in management or feed
- be ready to help.

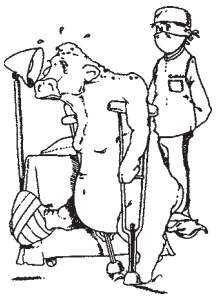
Activity:

How are Betsy and Boris?

Betsy and Boris are two of my favourite calves. Let's see how healthy they are.

Put an (H) if you think he or she is healthy. Put an (N) if you think he or she is not healthy. Go ahead - fill in the blanks!





_____ Boris has a soft, shiny hair coat.

_____ Betsy is breathing very heavily.

_____ Boris is watching me very closely, with his ears alert.

_____ Boris has bright, shiny eyes.

_____ Betsy has a runny nose.

_____ Betsy is just standing in the pasture hanging her head.

_____ Boris came running to me, just like he always does.

_____ Betsy's manure is very loose.

Which calf is the healthy one - Betsy or Boris? _____

Looking at Medicine

Drugs can be given through the mouth (orally) or with a needle (by injection). Whichever way you give the medicine, be sure to read the directions on the box or bottle. Follow instructions carefully for the amounts and ways to give it.

The amount of medicine you give an animal often depends on how big the animal is. It is important to give your calf the right amount. Giving it more will not make it get better faster. It may make it sicker.

Oral Medications

Medicines given through the mouth work more slowly than those which are injected. That's because the medicines must go through the digestive tract before they can be absorbed into the bloodstream, where they go to work.

In the Feed

Mix the powdered drug into the feed. These drugs must taste good or the animal won't eat. The animal won't get the medicine and may become sicker.

Balling Gun

Put the balling gun in the animal's mouth at the back near the throat. Press the plunger to force the capsule, tablet or bolus down the animal's throat.

Drenching Bottle

Put the bottle in the animal's mouth at the back near the throat. Give the liquid slowly to make sure the animal swallows and the liquid goes down the esophagus and not into the lungs.

Flexible Tube or Hose

Slide the tube or hose into the animal's mouth and down the throat to the stomach. This can be used to put liquid medicine directly into the rumen. It can also be used to relieve pressure in animals with bloat.

Injections

Drugs may also be injected or given with a needle.

Subcutaneous (injected beneath the skin)

The best place to inject is just in front of the shoulder where the skin is loose. If the dosage is large, split it in half and give it in two locations. Some drugs cannot be injected subcutaneously because they will bother the animal.

Intramuscular (injected directly into the muscle)

Inject directly into the muscle to get drugs into the animal quickly. The two most common sites are the hind leg and the hip just behind the hook bones. Do not inject into a large blood vessel. It could kill the animal. If the dosage is large, split it in half and give it in two locations.

Intravenous (injected into the vein)

An intravenous injection should be done by a veterinarian or someone with experience. Use it if

- the dosage is very large
- drug must get into the bloodstream immediately
- drug is too irritating to be given to the animal any other way

When giving injections, always

- use sterile equipment
- make sure the injection area is clean
- read the label and follow the directions
- restrain your animal in a squeeze chute with a head gate
- consult your veterinarian if you are not sure.

Activity: "P" or "N"

Below are some problems which can happen on the farm. Is the farmer trying to prevent diseases from happening or not?

Put a (P) if the farmer is trying to prevent diseases from happening on his farm. Put an (N) if the farmer is not preventing diseases from happening on his farm.

_____ A calf in the far pasture suddenly dies. He did not look sick yesterday. You decide to leave him there for the coyotes.

_____ You are almost out of your protein supplement and your cows are due to calve next month. You have no time to go to town and buy more. You decide to put less supplement in the ration so it will last longer.

_____ Each year when your calves are six months old, you vaccinate each of them for Bovine Virus Diarrhea (BVD).

_____ Yesterday you bought five new calves at the local auction mart. You brought them home and put them in the pasture with your other 30 calves.

_____ A calf in the south pasture died this morning. You had no idea what the problem might be so you took him to the vet for an autopsy.

_____ A two month old calf has runny eyes and nose. He also has the scours. You decide to leave him and see how he is tomorrow.

_____ You bought 10 calves from the neighbour. He was only feeding them some good quality alfalfa hay. You want to get the calves growing, so you offer them a small amount of barley each day. Four days later you begin to slowly increase the amount of grain.

_____ You have been feeding your calves hay and barley. Your neighbour has some extra silage he wants to give away so he can clean out the bunker silo. You take it and start feeding it instead of the hay and grain.

Unit Eight

Managing Your Market Steer

Roll Call

What is the most important part of managing your market steer?

Dehorning

Welcome to the level one unit of Managing Your Market Steer. As most members will have the steer for their project, you will find this unit to be interesting.

Removing horns from an animal is called dehorning. Beef producers dehorn their beef cattle because

- beef cattle with horns can be dangerous to people and to other animals
- beef cattle with horns can bruise carcasses
- aggressive animals use their horns to push others around
- beef cattle with horns need more space at the feedbunk and water trough
- horns damage fences and buildings.

It is easiest for both the animal and the beef producer if you dehorn before the calf reaches two months of age because

- the calf is easier to control
- it is less stressful for the calf
- the wound heals quicker
- there is only a small amount of blood flow to the horn area at this age.

Castration

What is castration?

When was your steer castrated?

How was this done?

Why was this a good method to use?

More About Castration

What?

Castration is the removal of the testicles in a male animal.

When?

It is best to castrate bull calves when they are between one and three months of age. A young calf recovers from the stress more quickly than an older calf.

It is more risky to castrate a calf over three months of age. As the calf gets older, more blood flows to the testicles. There will be a greater blood loss when castrating older calves. If castrated when too old, the steer will look "staggy". He will show some of the signs of a bull, including muscling through the neck and shoulder.

Why?

Steers are unable to reproduce. They don't show secondary sex characteristics such as masculinity about the head and shoulders. There is less struggle for position in a group of steers than with bulls. Steers produce a more desirable carcass.

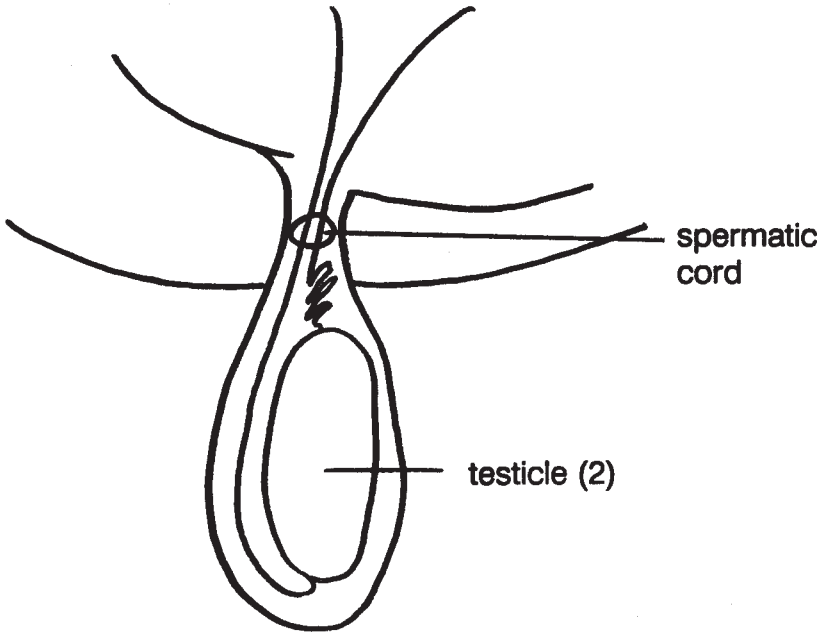
How?

Before you begin castrating, make sure all your equipment is clean. Boil it in water for 30 minutes. If you are castrating more than one animal, rinse the equipment with disinfectant between each animal. Use fresh disinfectant after every 15 animals. This will help to reduce the transfer of disease and infection.

A bull calf has two testicles. When castrating, you must remove both of the testicles. If not completely removed, the steer will have some of the characteristics of the bull. By feeling, or palpating the scrotum, you can tell if both testicles are down in the scrotum.

In a normal calf, castration is very simple. In some calves, one testicle stays inside the body cavity and does not move down into the scrotum. This animal is called a cryptorchid or ridgling. Special surgery is needed to castrate these animals.

It is important to properly control your calf during castration so you will not be injured. Small calves can be thrown or hobbled. A tilting calf table or chute works very well. For larger animals, you will have to use a squeeze chute or head gate.



The method you use will depend on the size of the animal and the number of animals you must castrate. Castration can be surgical or non-surgical.

Activity:

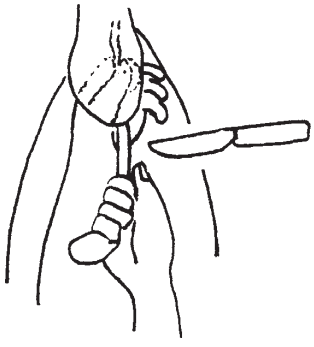
Farm Animal Review

Animal	Female	Male	Castrated Male
Sheep		Ram	
Cattle	Cow		
Horse		Stallion	
Chicken			Capon
Pig	Sow		

Surgical Castration

With these methods of castration the scrotum is opened and the testicles and cords are removed. Castrate when the weather is cool. Early spring or late fall are the best times.

The Knife Method

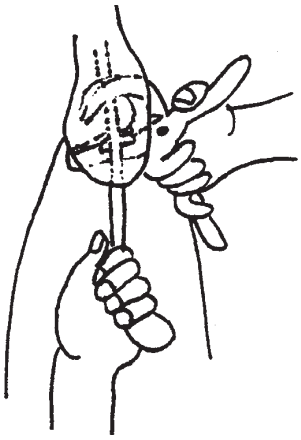


To remove the testicles, either split the side or remove the bottom third of the scrotum. There is less pain when the cut is made below the testicles.

Remove the testicle by pulling or squeezing it through the opening. Pull downward on it to show the spermatic cord. Slide your thumb up and down the cord to separate it from the connective tissue. A slow, steady pull will break the muscle that controls the position of the testicle.

Use a dull knife. If you cut yourself, you know that a scratch or scrape heals faster than a cut. The dull knife makes a rough wound which will heal faster than a clean cut. Remove the testicle by scraping the cord with a dull knife inside the scrotum until it is cut free. Repeat for the other testicle.

Make sure the calf has room to move around. The cut will drain as the calf moves. Keep the calves on clean bedding or pasture. Treat infections with antibiotics.



The Emasculator

The emasculator is both a clamp and a knife. Do not use the emasculator on calves over 220 kg or 500 lbs, because there is too much blood flowing to the testicles.

Place the emasculator over the cord with the crushing part toward the body.

Hold the emasculator as close to the body as possible. Squeeze the handle to crush the cord and cut off the testicle. Keep the pressure on the cord for at least 10 seconds after you cut so there will be less bleeding. Repeat for the other testicle.

Non-Surgical Castration

Non-surgical castration does not leave an open wound and can be done at any time of the year.

The Burdizzo

The burdizzo is a blunt jaw pincher used to crush the spermatic cord and blood vessels which lead to the testicles.

Find the testicle and the cord in the scrotum. Pull the cord to the side of the scrotum with your thumb and index finger. Clamp the cord with the burdizzo. Hold for five seconds. Repeat for the other cord and testicle.

Make sure you crush the cord. If not, the calf will still develop some of the characteristics of the bull. Be careful not to crush both cords at the same time.

The Elastrator

Use the elastrator only on calves one month of age or younger. Place the rubber band on the elastrator. Open wide and slide the band up over the testicles, near the body. Release the band. Palpate the scrotum to make sure that both of the testicles are below the band. Give your calf a tetanus shot.

Activity: Identify the Instrument

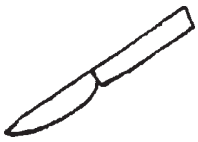
Match the instrument on the right with the method of castration on the left.

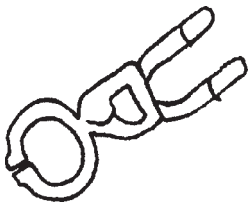
burdizzo * *

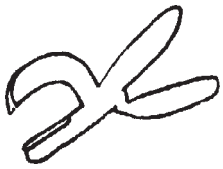
elastrator * *

knife * *

emasculator * *







Now, tell me more . . .

Circle the instrument(s) which you might use in a non-surgical method of castration.

burdizzo knife elastrator emasculator

Circle the instrument(s) which you should not use on your calf if he is over six months of age.

burdizzo knife elastrator emasculator

What is the most important thing you have learned about castration?

_____

_____

_____