

Unit Nine

Beef Cow and Heifer Management

Roll Call

What is one thing you must remember when looking after your beef cows and heifers?

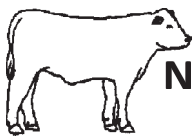
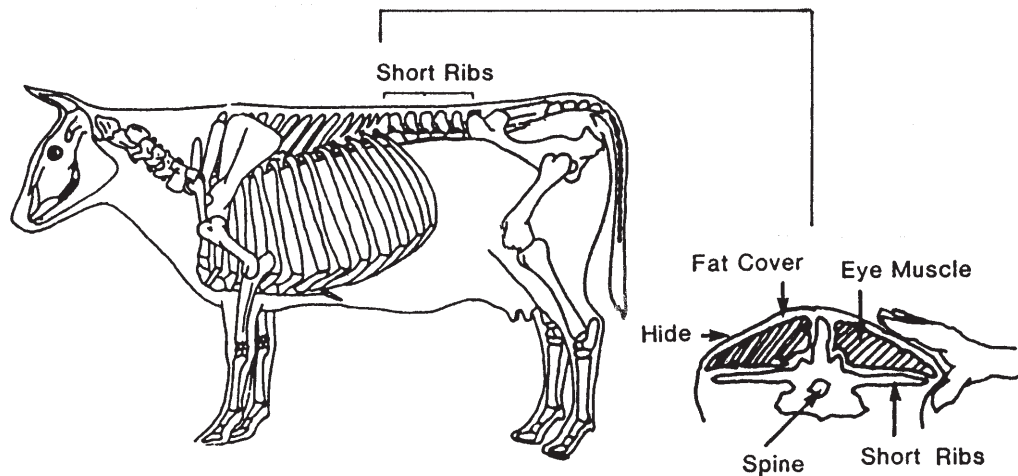
Condition Scoring Beef Cows

Condition scoring is a “hands-on” method of determining the amount of fat covering on an animal. Numbers are assigned based upon the feel of the cow or heifer. The numbers range from 1 (very thin) to 5 (very fat).

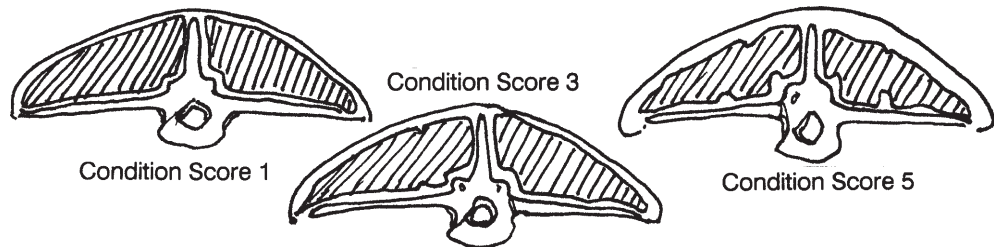
The fat cover over the loin area, between the hip bone and the last rib, is the major location used for condition scoring. Vertebrae in the loin area have two projections you can feel:

- spinous processes or short ribs
- transverse processes which extend from either side of the spine.

Condition Score	Characteristics	
1	<ul style="list-style-type: none"> • short ribs sharp to touch • hip bones and ribs prominent • no fat around tail bone 	skinny
2	<ul style="list-style-type: none"> • can feel short ribs individually but they feel rounded • some fat over tail head, hip bones and flank • individual ribs not obvious 	lean
3	<ul style="list-style-type: none"> • can feel short ribs only with firm pressure • can feel fat on either side of the tail head 	good condition
4	<ul style="list-style-type: none"> • can't feel short ribs • folds of fat are beginning to develop over ribs and thighs • can feel “rounds” of fat around the tail head 	over-conditioned
5	<ul style="list-style-type: none"> • cow has blocky appearance • tail head and hip bones are buried in fat • can feel folds of fat over thighs and ribs • mobility is impaired by fat 	fat

**NOTE:**

- Condition scores cannot be determined visually because the hair coat can hide the actual condition of the animal. A condition score must be determined by feeling for the amount of fat cover.
- An animal's score may fall between the values in the chart. If this happens, half numbers (2.5 or 3.5 etc.) may be used.



Because there is no muscle between the end of the short ribs and the skin, any padding felt by the thumb will be fat. In cows with a score above 3, the short ribs can no longer be felt, even with firm pressure. In fatter cattle, the fat cover around the tail head and over the ribs are also used in determining the score.

Follow these steps when condition scoring your cows and heifers:

1. Run your fingers down the backbone to determine the prominence of the spinous processes or short ribs.
2. Push your fingers along the backbone to determine the prominence of the transverse processes.
3. Place your hand on the loin area with your fingers pointing toward the opposite hip bone. With your thumb, feel the fat cover over the ends of the spinous processes or short ribs. Any pad you can feel with your thumb will be fat.
4. Refer to the chart to help you determine the number to assign for the condition score of the cow or heifer.
5. Record your scores. Now you can begin to make comparisons between animals and scores.

When to Condition Score

Cows should be condition scored three times in each production year:

Time	Optimum Score
<ul style="list-style-type: none"> • Fall pregnancy check at start of winter feeding program 	<ul style="list-style-type: none"> • 3.0 for all females
<ul style="list-style-type: none"> • At calving 	<ul style="list-style-type: none"> • 2.5 for mature females • 3.0 for first calf heifers
<ul style="list-style-type: none"> • Thirty days before the start of the breeding season 	<ul style="list-style-type: none"> • 2.5 for all females

Using Condition Scoring as a Management Tool

Cows Too Thin (2.0 or less)

Cause

- lack of sufficient feed
- competition or too little room at the feed bunk
- internal/external parasites

Potential Problems

- increased calving difficulty
- increased calf loss
- decreased calf health
- delayed breeding
- more open cows
- fewer weaned calf pounds

Prevent Problems

- feed thin cows separately
- improve thin cow winter diet
- control and prevent parasites
- vaccinate
- wean calves 1 month earlier

Cows Too Fat (3.5 or more)

Cause	<ul style="list-style-type: none"> • disease or injury • did not wean a calf • produced very little milk • overfeeding
Potential Problems	<ul style="list-style-type: none"> • decreased calf health • lower fertility • low weaning weights • feed costs too high
Prevent Problems	<ul style="list-style-type: none"> • cull less productive cows • do not overfeed cows • let fat cows lose condition

**Activity:**

Practice condition scoring cows and heifers with someone who has experience. Accuracy comes only with practice.

Diseases of the Cow and Heifer**Brucellosis**

(Bang's Disease or Contagious Abortion)

The presence of this highly contagious disease in your herd must be reported to a veterinarian. Upon confirmation, infected animals must be slaughtered and the rest of the herd quarantined. Disinfect your facilities to avoid spread of the bacteria.

Cattle become infected with the Brucellosis bacteria when they come into contact with contaminated aborted fetuses, placentas, uterine discharge, semen, urine, manure and milk often via feed or water.

Symptoms

- abortion in 5th to 8th month of pregnancy
- infertility
- retained placentas
- uterine infections
- poor milk production
- bulls may become infertile
- bulls may develop swollen testicles
- young animals will show no symptoms

There is no treatment, only prevention. Ensure that all new additions to your herd are confirmed to be Brucellosis-free before they arrive on your farm. The Brucellosis bacteria is contagious to humans, causing the disease called undulant fever.

Vibriosis

Vibriosis diagnosis is difficult to make. The organism is transmitted on the reproductive organs of cattle during breeding. Bulls can spread the disease without becoming infected. An infection in a bull may clear up on its own.

Symptoms

- infertility
- prolonged and irregular heat cycles
- retained placentas
- abortion in 5th to 7th month of pregnancy
- long breeding and calving seasons in your herd

Vibriosis can be prevented by vaccinating your cows 30 to 120 days before the start of the breeding season. Using artificial insemination can also prevent vibriosis because semen is only drawn from bulls known to be negative.

Leptospirosis

The Leptospirosis causing bacteria, which can affect animals and humans, enters the body through contact with contaminated feed, water, bedding, pastures and pens.

Symptoms

- abortions in last third of pregnancy
- failure to conceive
- swollen joints
- poor kidney function as indicated by bloody urine

This disease is often short lived, with most animals recovering within three months. If Leptospirosis infection is suspected, cultures can be made from blood, milk or urine and tested.

Antibiotics are often successful treatments in the early stages. Prevention should be done by vaccination.

Prolapses

When the cow is under stress, most often during pregnancy or calving, the vagina or uterus may prolapse or exit the body.

A vaginal prolapse occurs when the vagina, the hind part of the cow's genital system, is pushed from the body. This occurs most often about two weeks before calving.

Outside the body, the vagina becomes sore and can get very dirty. Your veterinarian can push the vagina back into the body and sew it into place. You will need to watch this cow very closely before and during calving to make sure she does not develop an infection or prolapse again. Since this is likely to happen again in her future, you should cull this cow after weaning.

Uterine prolapse occurs when a cow continues to push after her calf is born, pushing the uterus out of her body. Keep your cow quiet and the uterus clean by wrapping in clean sheets moistened with warm disinfecting solution. Contact your veterinarian.

Obturator Paralysis

Occasionally, when a young cow or heifer has a very difficult calving, produces a very large calf or traction is used during the delivery, the nerves of the hind legs may be temporarily damaged. She may be unable to get up and stand. Keep her quiet and rested in a well bedded stall, periodically rolling her to prevent sores from developing.

Milk Fever

The cow uses the calcium in its blood when making milk, lowering the blood calcium level. Shortly before or immediately following calving, the blood calcium level may become too low and the cow may develop milk fever and become unable to function normally.

Symptoms

- stiffness, staggering
- no fever
- temperature may drop below normal
- unable to get up
- stomach stops working and gases accumulate
- if serious, death

The cow must be treated immediately. Calcium borogluconate injections will raise the blood calcium level so the cow will be able to function normally. Milk fever can be prevented by providing adequate nutrition, controlling stress and avoiding sudden changes in feed.

Mastitis

The mastitis causing bacteria enters the udder through cuts or udder injuries. Infection develops rapidly. The udder becomes hard and painful and milk production decreases.

Mastitis should be treated immediately. Strip the udder frequently. Apply hot packs or liniment and inject the udder with antibiotic. It is a good practice to cull cows with history of mastitis because they will likely develop mastitis again.

Agalactia or Lack of Milk

The cause of Agalactia is uncertain but it is suspected to be hereditary. It may be influenced by chronic mastitis, early calving, poor nutrition or an undetected infection. The only symptom is lack of milk. Treatment or prevention is unknown and culling of cows or heifers experiencing Agalactia is recommended.

Dystocia

Dystocia is difficulty in calving. It may be caused by small mothers or large calves. It is possible to prevent the incidence of Dystocia in your herd. Since calf birth weights are genetically determined, select the appropriate bull to breed to each individual cow to ensure easier calving. Good management, leading to strong, healthy, well grown heifers will also help to ensure easier calving.



Activity:

Dig deeper into one of the diseases which affect cows and heifers. Share your findings with other members of your club.

Unit Ten**Managing The Beef Herd Sire****Roll Call**

What is one thing you must remember when looking after your beef bull(s)?

Using the Young Bull

Properly managed, young bulls can be successfully used for breeding purposes. A young bull raised in your herd has the advantage of already adapting to the environment and your management practices.

Puberty occurs when the bull begins to develop his masculine characteristics. He develops the desire and ability to mate, and is able to fertilize. Young bulls can often be seen to mount and apparently show the desire to mate at several months of age. However, at this age, they are incapable of producing sperm.

Puberty develops gradually, usually occurring at about 9 or 10 months of age. Sexual maturity depends on bodyweight. The timing of the puberty is also affected by:

- breed
- bodyweight and growth rate
- nutrition
- management

Most young bulls can be successfully used for breeding as early as 14 to 18 months of age. Follow the guidelines below to ensure that your young bull is ready and able to reproduce successfully.

Guidelines for Using Young Bulls

1. Begin to use at 14 months of age, or preferably older.
2. Semen test him. Semen quality improves following puberty.
3. Palpate the testicles to determine the presence of abnormalities.
4. Group bulls of similar size and age in breeding pastures. Older bulls may be more dominant and aggressive, intimidating the younger bulls.
5. Rotate yearling bulls at one or two week intervals during the breeding season. Rest periods increase your breeding efficiency.
6. Provide lots of opportunity for exercise to keep bulls in good condition.
7. You may need to provide supplemental grain to the young bulls during the breeding season.
8. Limit a small yearling bull to 10 cows. A larger, older bull may be able to service up to 20 cows.
9. Check your bulls regularly to see if they are having breeding fertility problems. Bulls passing a breeding soundness examination may develop problems later. Changes in scrotal temperature caused by disease may reduce fertility.

**Activity:**

Will you use young bulls on your (or a neighbour's) farm? Why or why not? Discuss this with your farm owner.

**Semen
Collection
and
Evaluation**
Semen Collection

The **artificial vagina** is most commonly used to collect semen. The artificial vagina simulates the pressure and temperature of the vagina of the cow or heifer. The bull mounts a female in oestrous or a teaser animal. When the bull mounts, his penis is directed into the artificial vagina and his semen accumulates in the collection tube.

Advantages

- the libido of the bull can be evaluated while the semen is being collected

Disadvantages

- bull must be trained to use the artificial vagina

An **electro-ejaculator** can also be used in semen collection. A probe is inserted into the rectum of the bull. The bull is stimulated with electrical current and he ejaculates.

Advantages

- this method is not dependent upon the libido of the bull
- some bulls won't respond to the artificial vagina, but will respond to this method
- you can collect from many bulls in a short period of time
- this method works well for older or incapacitated bulls

Disadvantages

- if the bull is not properly and securely restrained, it can become dangerous for the bull and the handler
- the semen can easily become contaminated with urine
- it does cause some discomfort to the bull
- if this method is frequently used on a bull, the concentration of sperm in his ejaculate will decrease

**Semen
Evaluation**

Following collection, each semen sample undergoes a gross examination and a microscopic examination. You must take care to avoid destruction of the quality of the semen. Keep it at a constant temperature between 37 and 40 degrees Celcius. Avoid contamination with urine, water or chemical disinfectants as they will decrease both the quality and the fertility level.

Gross Examination: Examine the semen with the naked eye for	
Colour	<ul style="list-style-type: none"> • should be milky white or pale cream • if the semen has a pinkish or greenish colour, there is blood or pus in the semen and a reproductive tract infection is likely
Volume	<ul style="list-style-type: none"> • a normal ejaculation will provide from 4 to 7 ml of semen

Microscopic Examination: Qualified veterinarians and technicians examine the semen with a microscope for:	
Motility (motion of sperm)	<ul style="list-style-type: none"> • sperm move forward similar to a torpedo in water • the higher the motility, the better the quality of the semen
Morphology (structure of sperm)	<ul style="list-style-type: none"> • if more than 25% of the sperm in a sample are abnormal, fertility will be affected • deformed or abnormal sperm may have no head, two heads, no tails or be unusually shaped
Concentration (sperm cells per volume of semen)	<ul style="list-style-type: none"> • from 5 to 25 billion sperm may be present in the ejaculate from one bull

Normal semen has these characteristics:

- milky white or pale cream in colour
- volume of 6 ml per ejaculate (range from 2-12 ml)
- 0.5 to 2.5 billion sperm cells per ml of semen.



Activity:

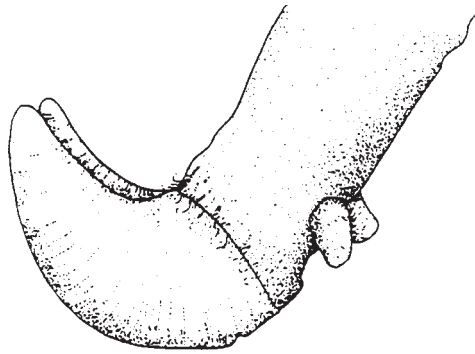
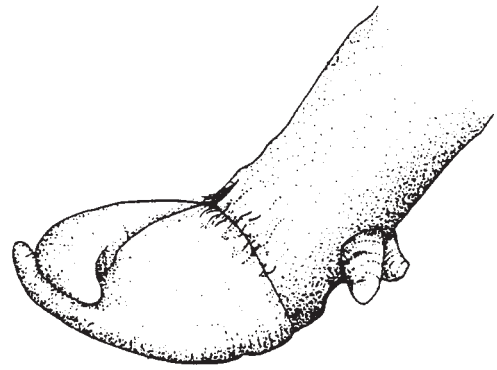
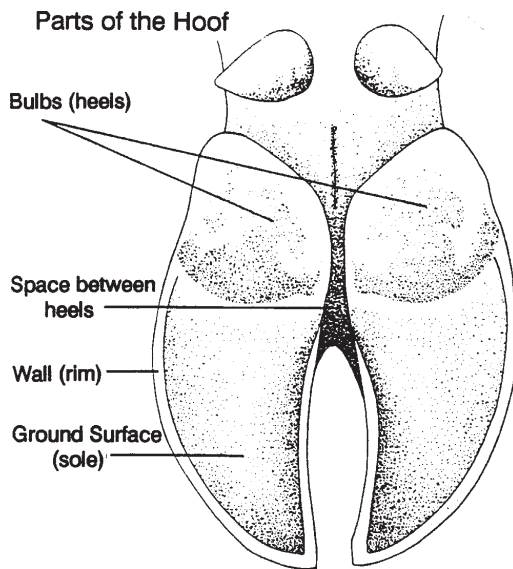
To other members in your club, explain why and how semen is collected and evaluated. Describe the characteristics of normal semen.

Hoof Trimming

Foot problems created by overgrown feet are often the cause for a poor breeding bull.

Breeding stock, particularly bulls, suffer from overgrowth of the horny hoof. This extra growth around the hoof makes it difficult for the bull to move around to pasture and find females in heat.

It is most profitable to do your hoof trimming in the spring. The cattle will then be ready for breeding season and pasturing.

**Overgrown Hoof****Scissor Hoof**

If you have the right facilities and equipment, you can trim the feet yourself. Most farmers hire custom hoof trimmers to do the job.

The sole of the hoof is normally concave. The outside rim of the hoof bears the weight of the animal. After hoof trimming, the outer rim of the hoof should be slightly longer than the edges next to the cleft between the toes. The trimmer should be careful not to cut the toes off.

The horn from under the toes should be trimmed. The horn under the heels is normally thicker than that under the toe. Be careful not to pare too much horn from the heel to avoid damaging the sensitive foot under the sole.

**Activity:**

Examine the condition of the feet of the cattle, male and female, in your herd (or a neighbour's). Do they need trimming? Discuss the importance of good foot care with the herd owner. If possible, view or assist with the foot trimming.

Unit Eleven

Beef Breeding

Roll Call

What is one thing you know about breeding beef cattle?

Artificial Insemination

Insemination is a skill that can be learned with training and practice. Experience and knowledge of the reproductive system and inseminating equipment will help you avoid accidental injury or infection of the reproductive tract. Semen must be handled properly to ensure pregnancy.

The artificial insemination technician uses an instrument called a French Straw gun. It is a stainless steel syringe and piston with a disposable sheath.

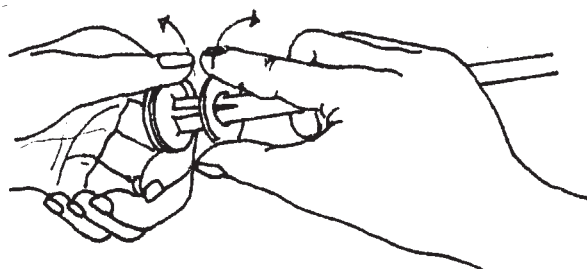


The loaded “French Straw Gun”: split sheath with o-ring seal



The loaded “French Straw Gun”: self-locking sheath with threaded seal

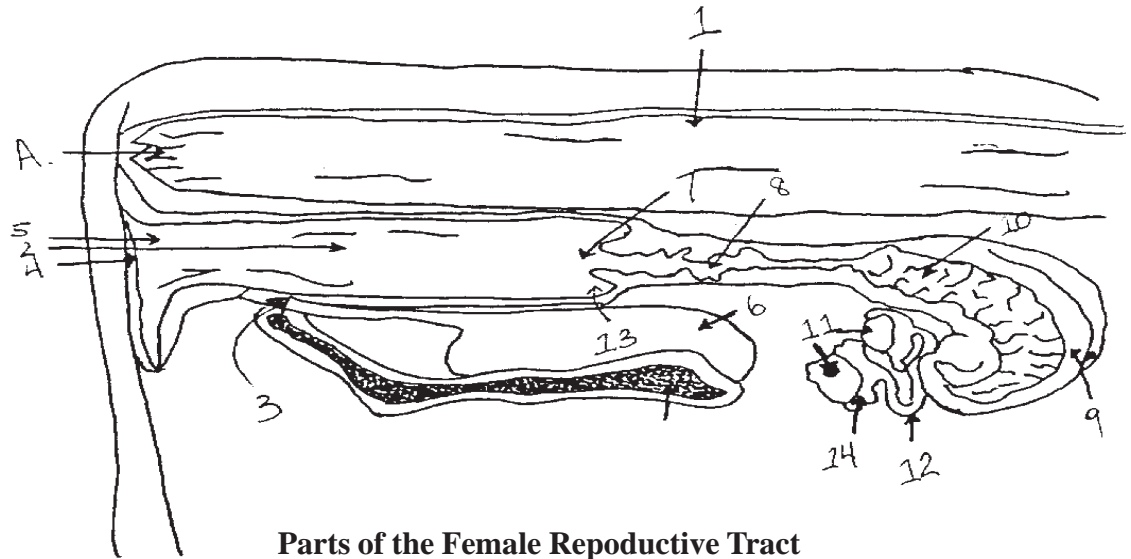
The thawed and unsealed straw is placed in the chamber of the gun, with the piston of the plunger pulled out. A disposable sheath is slipped over the entire gun. When the solid sheath reaches the threaded base of the French Gun, simply screw the sheath into the threads until it stops. If your gun does not have this threaded seal, then you must use a split sheath with an O-ring. The plunger is moved forward until the semen is almost emerging from the tip. The straw gun is then ready for insemination.



Locking the loaded gun with the O ring

The insemination tube is placed into the vagina at a 45 degree angle, straightened out and passed through the cervix. The semen is deposited 1 inch inside the uterus. To increase the possibility of pregnancy, it is very important to place the semen in this target area.

Artificial Insemination (continued)

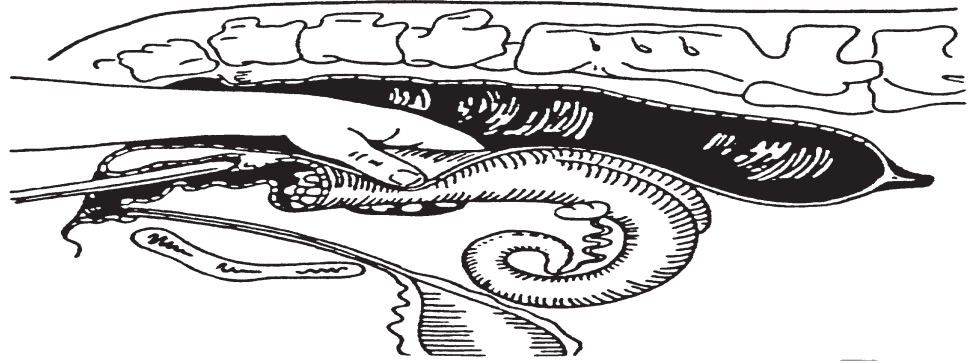


Parts of the Female Reproductive Tract

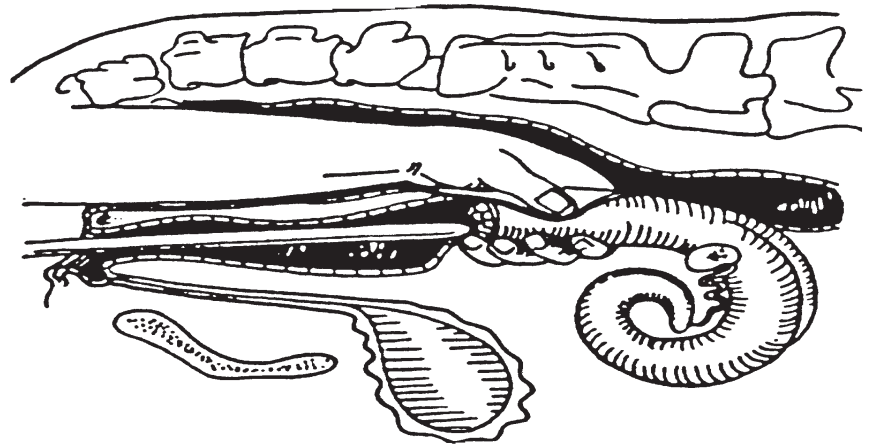
- | | | |
|------------|-----------------------|---|
| A. | Anus | |
| 1. | Rectum | - this is the long area for manipulation or palpation of the reproductive tract during artificial insemination or pregnancy detection |
| 2. | Vagina | - tube-like passageway to the cervix
- made up of lengthwise muscle striations
- very tough and rigid
- very moist and lubricated during heat
- when not in heat, then the texture is gummy and viscous
- bull deposits semen at the rear of the vagina |
| 3. | Urethra | - acts as a sink drain opening |
| 4. | Vulva | - the only external part of the reproductive system
- barrier to manure and bacteria |
| 5. | Vestibule | - first section of the vagina, just inside the vulva |
| 6. | Bladder | |
| 7. | Os of Cervix | - doughnut hole-like opening around the cervix |
| 8. | Cervix | - most important organ in artificial insemination
- generally 3 separated rings in an extremely tough turkey neck-like tissue
- very thick and cartilagenous
- smaller in heifers than in cows
- greatest barrier for semen since it protects the uterus from foreign infection |
| 9. | Uterine Horns- | curl around and are hard during heat as opposed to soft and flexible when not in heat |
| 10. | Uterine Body | - the womb
- supports and protects the fetus during development
- very strong muscle dispels the calf at birth
- semen is deposited here in the target area, or between 1/2 - 1" inside the uterus |
| 11. | Ovaries | - produce reproductive hormones
- generates the follicle and the corpus luteum |
| 12. | Oviduct | - also called fallopian tubes
- this where the sperm meets the egg |
| 13. | Fornix | - blind pouch all around the cervix |
| 14. | Infundibulum | - acts as a "catcher's mitt" surrounding 3/4 of each ovary |

**Artificial
Insemination
(continued)**

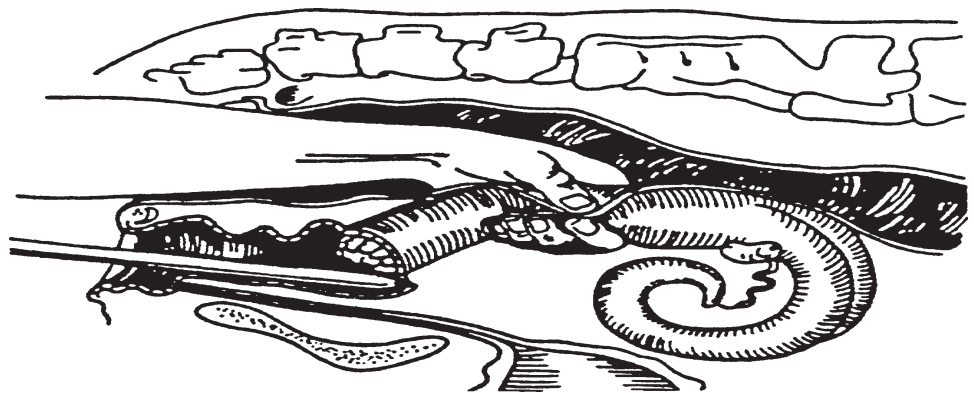
Cervix Manipulation



Wrong Cervix Fixation



Properly Holding the Cervix



Wrong Cervix Fixation

Artificial Insemination (continued)

Semen Packaging

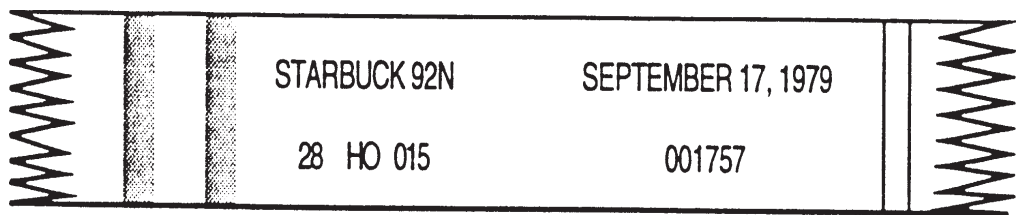
Semen is packaged for easy identification and selection. Most semen in North America is now stored in french straws. The French straw is a long, thin tube, 13.5 cm long and 2 to 3 cm in diameter.

Straw Information

1 cc	ampule	12,000,000 live cells
1/2 cc	straw	12,000,000 live cells
1/4 cc	straw	10,000,000 live cells

1/4 cc straws began to be used 7 years ago. The dairy industry uses this straw.

1/2 cc straw used by the beef industry. Ampules are older, sometimes containing valuable semen.



28	HO	015
stud collection	breed	registration number at the stud farm

001757 7 digit registration number

September 17, 1979 Freeze date

92N Tattoo

Beef Bull 350 straw per collection

Dairy Bull 600 - 1,000 per collection



Activity:

Find out where you can obtain semen locally and access a semen catalogue to determine which bull is most beneficial for your heifer. Discuss your research with your 4-H club leader.

Synchronized Breeding Programs

Synchronized breeding programs mean controlling the estrus cycles of your cows so that groups of females in a herd come into heat or estrus at the same time.

Prostaglandins are naturally occurring substances in the body of the beef female. These prostaglandins bring about the production of the hormone, progesterone, which stops the uterus from preparing for pregnancy. The cow will then return to her estrus cycle.

Prostaglandins or synthetic products, such as estrumate, lulatoryse and synchrocept, can be injected into the female to regulate her estrus cycle. Take caution not to inject pregnant cows because prostaglandins may cause an abortion.

In a normal herd, 60 to 70% of females will show standing heat between day 2 and 5 following injection. The actual time will vary depending on whether they are heifers or cows and the stage of the estrus cycle they were at when injected.

Controlling the estrus cycle has these advantages:

- you will be able to artificially inseminate all of your cows in a very short period of time
- your breeding period and calving season will be shorter
- calf crops will be more uniform
- problem breeders will be more easily detected
- you will spend less time on heat detection.

For your synchronization program to be successful, you must:

- have a well planned breeding program
- keep records current and accurate
- have normally cycling cattle
- have healthy animals, free from disease
- provide adequate nutrition to keep animals in desired condition all year round
- have competent artificial insemination technicians
- have adequate facilities for AI work including a crowding pen, holding area and restraining chutes.

Synchronizing Successfully - Tips for success:

- Make sure females are in moderate to good condition, with a body score of five or six.
- Cows should be calved out at least 50-60 days to ensure high probability of cycling.
- First calve heifers take longer to begin cycling after calving than mature cows.
- For virgin or replacement heifers, select the oldest heifers at about 65% of their mature weight.

- Make sure cattle are cycling before you begin a synchronizing program.
- All females should be gaining weight, going into breeding season.
- When using MGA make sure there is enough bunk space available for all cattle to eat the required amounts.
- Handle cattle calmly at all times.
- If breeding a large group of cattle, have a back up inseminator available to avoid inseminator fatigue.
- Separate those individuals in standing heat from the rest of the group so it is easier to detect the less active females. However, if activity is slow leave a “hot cow” with the group.
- If synchronizing cows and fixed time breeding after removing the implants, separate the calves from the cows for at least 48 hours or until cows have been bred.
- Cows synchronized on the same day, there will be a window of as much as 10 days before or after due dates.
- Don’t be afraid to ask questions of cattlemen using synchronization. There’s no such thing as a dumb question.
- Don’t trust Mother Nature, plan for unexpected weather.



Activity:

Look at your own beef herd (or a neighbour’s). Using a sheet of paper, on one side list the reasons why you would want to implement a synchronized breeding program. On the other side, list the reasons why you would not want to implement a synchronized breeding program. Discuss these with the beef producer.

Heat Detection Aids

Knowing when your animal is in heat is the key to successful breeding. Since about 70% of mounting activity occurs between the hours of 12 a.m. and 6 a.m., the beef producer cannot always see all of the females in heat. Fortunately, there are heat detection aids available to assist the producer.

1. Chin-Ball Marker

A chin-ball marker has a paint reservoir attached to a leather harness. The paint reservoir has a ball bearing in it that makes it work similar to a ball point pen. This unit is strapped around the head of a detector animal. When the animal mounts a female in heat, the chin-ball marker rubs on the female’s back or rump, releasing paint on the female. You can then identify the females which have been mounted by the paint marks on them.

2. Gomer or Teaser Bulls

Gomer or teaser bulls are surgically altered so they are not physically capable of breeding, but still have the desire to mate. By putting chin-ball markers on these bulls and then pasturing them with your females, you will be able to identify females in heat.

3. Hormonally Treated Cows or Steers

A cull cow or steer injected with male hormones can also be used to identify females in heat. Inject these animals before the breeding season and again during the breeding season so they maintain their sexual activity. Using these animals is less expensive than preparing a gomer bull. The cow or steer can be sold for slaughter after the breeding season is over. Make sure that you follow the requirements for the withdrawal period.

4. Heat Detector Patches

The heat detector patch is a patch of plastic filled with fluid. It is glued to the top of the female's back between the tailhead the hook bones. This patch contains white fluid with an inner vial of coloured fluid. When the female is mounted, the pressure breaks the inner vial of fluid, colouring all of lthe fluid in the patch. The disadvantage of relying on these patches for heat detection is that they may be activated by cows in heat mounting those which are not. They may also be lost when cows rub on fences, trees or buildings



Activity:

Find out more about these and other heat detection aids which are available in your area. What is your preference and why?

Unit Twelve

Calving

Roll Call

How can you tell your cow will soon calve?

After - Calving Problems in the Cow

Infection and Tears

Tears or lacerations in the vagina are common after calving, especially in heifers. Unless the tears become infected, no special treatment is required. If the wall of the uterus has been torn, call your veterinarian immediately.

Prolapsed Uterus

A prolapsed uterus is one which turns itself inside out during the second stage of delivery and comes out of the cow through the vulva. This happens if the pelvic muscles relax too much. This occurs more often with multiple births, poor physical condition of the cow and reproductive diseases.

If this happens, call your veterinarian immediately. If possible, wrap the uterus in sheets moistened with water and disinfectant. Keep the cow quiet to prevent further damage to the uterus.

If your cow continues to strain and force after the calf has been delivered, make her stand and move around. This will help to prevent the uterus from prolapsing.

Retained Placenta

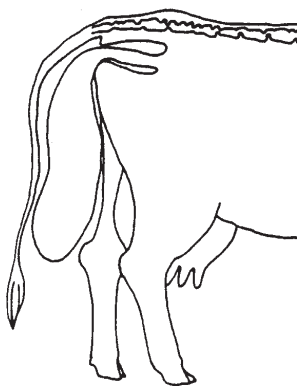
Normally, the uterus contracts and the fetal membranes, or placenta, are pushed out of the body within 12 hours after birth. Retained placenta occurs when the cow does not expel the placenta.

There are many cause of retained placenta including dystocia, multiple births, abortion or premature birth and nutritional deficiencies. If the incidence of retained placenta in your herd is above 10%, consult your veterinarian and try to find the cause.

If an animal with a retained placenta loses her appetite or becomes dull and lethargic, take her temperature. She may be developing an infection. Consult your veterinarian. Have your veterinarian do a postpartum examination a month later to make sure the cow's uterus has returned to normal.

Obturator Paralysis

A cow, or more often a heifer, may be unable to get up on her hind legs after calving. A very large calf or difficult delivery may damage the nerves to the hind legs where they pass through the bones of the pelvis.



There is no specific treatment for obturator paralysis. Allow the cow to rest in a well bedded stall and roll her periodically to prevent bed sores and further damage to the hind legs. The paralysis is temporary and your cow should get up within the next few hours. If she doesn't, contact your veterinarian.

Be careful not to confuse obturator paralysis with milk fever which is caused by low blood calcium levels.



Activity:

Find out more about one or more of these problems. Your veterinarian, local beef producer or beef specialist will be able to provide you with information. You may want to share your information with club members in a short presentation.

More Calving Problems

Uterine Inertia

Uterine inertia, or lack of activity of the uterus, will cause the cow to show some of the early signs of labour without attempting to deliver the calf. This can be caused by poor nutrition, overcondition or diseases such as mastitis. Contact your veterinarian if you suspect uterine inertia.

Prolonged efforts at calving can also lead to uterine inertia. If this happens, there is danger that the uterus will rupture. Contact your veterinarian immediately.

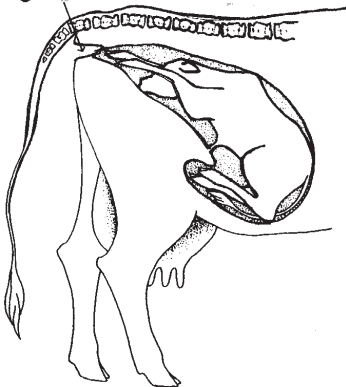
Nondilation of the Cervix

If the cervix is not dilating (relaxing to allow the calf to pass through), signs will be similar to uterine inertia. The cow will show some of the early signs of labour but will not attempt to deliver the calf.

During pregnancy, the cervix is about the size of an orange and has a very narrow undulating passage through the centre. At birthing time, the actions of hormones cause this passage to become larger to allow the calf to pass through.

If you insert your hand into the vagina and find that you can put only two or three fingers in the cervix, there is likely nondilation. Do not attempt to force the calf out of the cow when the cervix is not ready. Contact your veterinarian. He/she may need to perform a caesarean operation.

Twist causing obstruction



Uterine Torsion

Occasionally, the uterus will rotate, causing a twist or torsion near the vagina. Symptoms are similar to nondilation of the cervix. The cow will not be able to deliver the calf. Contact your veterinarian.

**Activity:**

Find out more about one or more of these problems. Your veterinarian, local beef producer or beef specialist will be able to provide you with information. You may want to share your information with club members in a short presentation.

Coping With Calving Problems

Some beef producers cope with calving problems better than others. Some have more time, desire, energy and/or expertise to use to ensure a high rate of calf survival in their herd. However, calving time can be stressful. Producers with large herds do not have the time to spend with individual cows and cannot tolerate calving problems.

Management

Understanding the process of giving birth and the problems which may be encountered will help you become a better manager of calving. Follow these suggestions:

- Know the cow's nutrient requirements. Do not overfeed or underfeed the cow, as this will lead to calving problems.
- First calf, two year old heifers have a significantly higher incidence of calving problems than older cows. Give these heifers extra attention during calving season.
- Know how and when to give assistance to your cows during calving. Know when to call the veterinarian.

Genetics

Research shows that the birth weight of the calf is one of the most important factors associated with calving difficulties. Genetically, you can control the birth weight of your calves by selecting bulls which sire calves with your desired birth weight. Keep in mind that the birth weight of the calf is genetically correlated with weaning weight, yearling weight, weight gain and mature weight. Generally, as birth weight is reduced, so are these other characteristics.

Birth weights can vary significantly between sires and breeds. When selecting a bull to use for artificially inseminating your females, look at the information on his sire summary. When selecting a bull for natural service, look at his birth weight. If it is breed average or lower, he is likely to sire calves which deliver easily. Breed of sire and dam also affect the ease of calving.

**Activity:**

Using your own herd (or a neighbour's) do a survey of one of the following and share your findings with your club:

- breed vs. ease of calving
- age of dam vs. ease of calving
- birth weight vs. ease of calving
- size of dam vs. ease of calving

Unit Thirteen

The Newborn Calf

Roll Call

When was your project calf born?

Creep Feeding Calves

Creep feeding is providing supplemental feed to calves before weaning. The feed is provided in a facility designed so that the adult animals cannot have access to the feed.

The creep ration should contain 2.9 to 3.1 Mcal/kg digestible energy, 13 to 16% crude protein, 0.7% calcium, 0.5% phosphorus, trace mineral salt and vitamin A, D and E. Where selenium content of feed is low, selenium should be added. When forages contain 10% or more protein, a creep feed with 13% protein should be used. Where pasture quality is very poor, use a creep feed with 16% protein.

Examples of Creep Feeds Using Either a 32% Commercial Protein Supplement or Canola Meal

Examples of Creep Feeds Using Either a 32% Commercial Protein Supplement or Canola Meal				
	Crude Protein Content			
	13%		16%	
oats	27.0	27.0	23.0	23.0
barley	63.0	61.6	53.0	53.2
32% supplement	10.0	-	24.0	-
canola meal	-	9.1	-	22.0
2:1 mineral	-	0.6	-	-
limestone	-	1.2	-	1.3
trace mineral salt	-	0.4	-	0.4
vitamin ADE premix	-	0.1	-	0.1

Oats is the preferred grain for creep rations because of its bulk and high level of energy. By using combinations of two or more grains, you can increase the palatability of the ration. Palatability can also be improved by protecting the ration from the weather and keeping the supply fresh.

Creep feeders can be very simple structures or more complicated ones. Plans are available from your district agriculture office. Make sure your creep feeder keeps the feed dry, holds at least a one week supply of feed, is portable and allows the calves in while keeping the adult animals out. The feeders should be located near a water supply, in or near a shaded area in the summer and near mineral and salt feeders and back rubbers.

Advantages of Creep Feeding

- calf weaning weights can be increased an average of 18 kg (40 lb); varies according to pasture quality and quantity, milk production of dams, length of creep feeding period, and time of birth, weight and sex of calf
- can increase your pasture stocking rate
- will conserve pasture
- will accustom calves to grain feeding so they will wean easier
- calves will grow to a more uniform size
- there will be less shrinkage at weaning time
- most successful for fall-born calves because pasture is not available and weather is more severe

Disadvantages of Creep Feeding

- creep fed calves may utilize less pasture
- the intake of creep feed may vary among calves
- extra gain usually lost in feedlot; the non-creep fed calves show compensatory gain
- may put extra unwanted finish on the calves; cattle buyers discriminate against extra fleshing
- pasture close to creep feeder is overgrazed if feeder not frequently moved
- distorts production records
- may lower finished cattle prices if calves finish at smaller weights
- extra costs of feed, labour and facilities

Creep feed in these situations:

- during drought, or when pastures are poor
- two year old heifers and low producing cows can be separated from the rest of the herd
- when you need to conserve pasture
- when calves are born in the fall
- as part of your preconditioning program

There is no need to creep feed if your cows are milking well, there is lots of good quality pasture and grain prices are high relative to calf prices.

**Activities:**

1. Design or find a design for a creep feeder to suit your (or a neighbour's) operation.
2. Compare three different creep feeds.
3. Prepare a short presentation (for your club) on creep feeding.

Freezing Colostrum

It is very important that all beef cow-calf producers have a supply of colostrum available for those times when the calf is unable to nurse its mother. One way you can do this is by freezing colostrum and keeping it in your freezer for future use.

Collect colostrum milk from dams having extra milk or from a dairy cow. Colostrum milk must be heat treated before freezing. It is difficult to heat treat. If it is heated too much, it will turn out looking just like an omelette! This is because of the extra fat and other ingredients in the colostrum. You must take care to heat treat the colostrum properly.

Put the colostrum in a heat proof container and place it in water in the top of a double boiler. Heat this gradually until the temperature of the milk is raised to 58 degrees Celsius.

Have a thermos ready. Just before the colostrum is warm enough, rinse out the thermos with very hot tap water. When the colostrum is up to the right temperature, pour it into the thermos and immediately put the cap on tightly. Wrap the thermos in a towel or in a heating pad and keep it in a warm place for one hour. Open the thermos and check the temperature of the milk. If you have heat treated successfully, the temperature of the milk will still be 58 degrees Celsius.

Pour the colostrum into ice cube trays and freeze. Pop the frozen cubes into a plastic bag and store them in the freezer until you need them. When needed, put the cubes in a heat proof container sitting in hot tap water. Let them warm until the temperature reaches 38 degrees Celsius.

Remember that the calf should receive colostrum as soon as possible after birth. It should receive 10-12% of its bodyweight in milk per day, or 5-6% per feeding (if feeding twice daily).

**Activity:**

Practice heat treating and freezing colostrum. Demonstrate this to other members in your club.

Study The Newborn Calf

The best way to learn about the postpartum (after birth) behaviour of the newborn calf and its mother is to observe. If you have the opportunity to view a calving, take the time to observe a newborn calf and its mother. If it is not calving time on your farm, talk to a neighbouring dairy farmer about watching a calving and/or postpartum behaviour on the dairy farm.

Keep a detailed record of the actions of both the mother and the newborn calf during the first 30 minutes after birth. How can you explain the actions of each? How soon did the calf nurse? Did the mother nudge the calf towards her udder? For how long did the mother continue to lick her calf?

You may want to work in pairs, with one of you studying the mother and the other the calf.



Activity:

Share your findings with the other members of your club in a short presentation.

Unit Fourteen

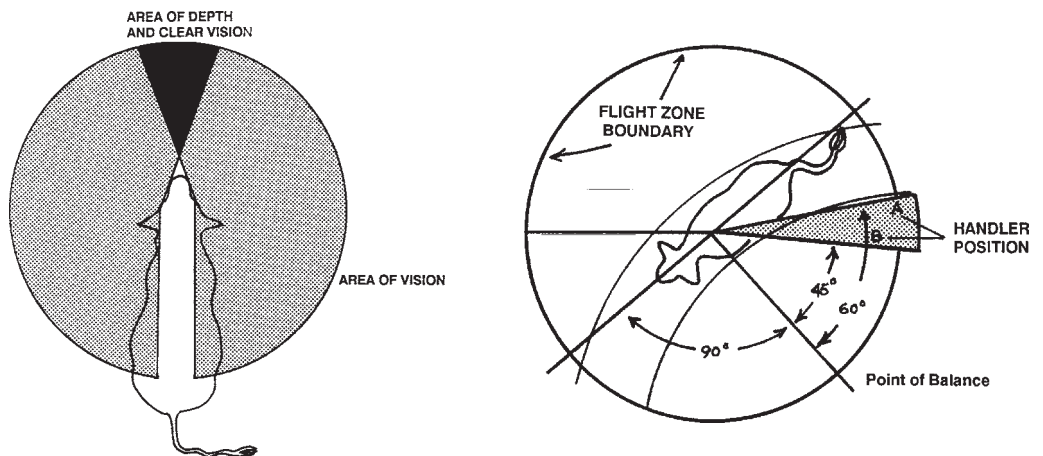
Beef Cattle Handling and Facilities

Roll Call

What is one thing to remember when you are working with beef cattle?

Understanding Cattle Behaviour

Cattle see very differently than humans. Because their eyes are on the sides of their head, they have a greater area of vision than us. However, they can see clearly and with good depth perception in only a small area directly in front of them. The only area where they cannot see is directly behind them. Don't try to handle cattle from directly behind. Because they cannot see you, they will be easily frightened by a noise or touch from behind.



Cattle move forward or back depending on the position of the handler. If you are in front of the point of balance (around the animal's shoulder) the animal will back away. If you are behind this point, the animal will move forward. The flight zone boundary is the point where the animal will move away from you as you advance.

Cattle move naturally in a circular manner. This way, they can keep an eye on whatever they are moving away from.

Understanding how and why cattle behave the way they do will help you to better work with them. Some cattle are very difficult to work with. The flight zone is different for all animals, but is always present. If you want the animal to move, enter its flight zone where it can see you. It will move away from you in a circular manner.



Activity:

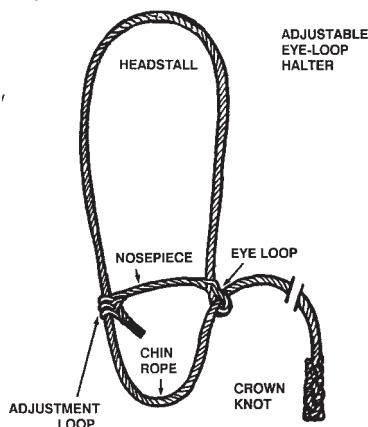
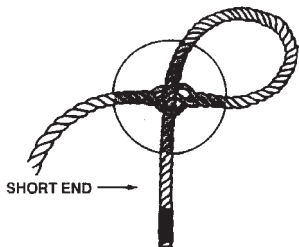
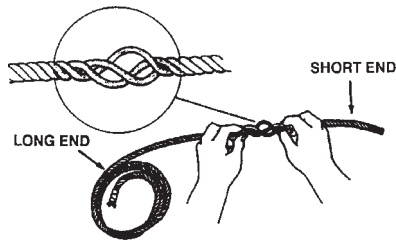
Working in pairs, develop a short skit or presentation to demonstrate what you know about cattle behaviour. Have fun with your act!

Rope Halters

Halters are the most commonly used method of controlling cattle. They are also one of the most humane and easiest to use methods. An adjustable rope halter is easy and inexpensive to make.

Rope is made by twisting three strands of material (nylon, manila or cotton) together. To prevent a rope from fraying, finish one end: burn or melt it, or dip it in enamel or varnish. Temporarily finish the other end with tape.

Making An Adjustable Rope Halter



1. Using a 4.5 m length of 1.3 cm three-strand rope, mark a point about 30 cm from the finished end of the rope. This end of the rope is the **SHORT** end. The other end of the rope is the **LONG** end.
 2. Separating your hands by about 5 cm, grasp the rope with both hands at the 30 cm point. Turn the rope clockwise with one hand and counter-clockwise with the other hand. This will separate the strands of rope.
 3. Take the finished end of the rope (short end) and insert it between the strands. This forms a loop called the **EYE LOOP**.
 4. Hold the rope with the eye loop and the single strand of rope in your left hand. Hold with the short end of the rope pointing towards three o'clock and the long end towards six o'clock. With your right hand, grasp the short end of the rope near the eye loop.
 5. Pull the long end of the rope under and completely through the two strands. You will be able to see the three strands of the rope lying smoothly against one side of the loop. This is the part of the rope which will lie against the animal's face.
 6. About 10 cm from the finished end, grasp the rope with both hands, separating your hands about 3 cm. Turn one hand clockwise and the other counterclockwise to separate the three strands. When the strands are open, push your hands together, making the strands buckle over and form three loops.
- Insert a sharp stick or pencil through these three loops. Insert the long end of the rope through the strands, pushing out the stick or pencil as you go.
7. Insert the long end of the rope through the eye loop to complete your halter. Permanently finish the long end to your desired length.



Activity:

Practice making and demonstrate to members of your club how to make an adjustable rope halter.

Size of Facilities

The chart below gives you some guidelines to use when designing your own cattle handling facilities.

Animal Weight	Under 270 kg	270-540 kg	Over 540 kg
Holding area (sq m/head) <ul style="list-style-type: none"> • worked immediately • held overnight 	1.3 4.2	1.6 4.6	1.9 5.6
Working Chute - Vertical Sides (m) <ul style="list-style-type: none"> • width • length 	0.45 7.2	0.55 7.2	0.70 7.2
Working Chute - Sloping Sides (m) <ul style="list-style-type: none"> • width at bottom • width at 1.5 m height • length 			0.55 0.80 7.2
Loading Chute (m) <ul style="list-style-type: none"> • width • length 	0.65	0.80	0.80 3.6
Ramp Height (m) <ul style="list-style-type: none"> • Gooseneck trailer • Pickup truck • Van type truck • Tractor trailer • Double deck 	0.38 0.70 1.00 1.20 2.50		



Activity:

Have a close look at your (or a neighbour's) facilities. Using a tape measure, determine the height and width of the facilities mentioned above. How do they measure up? Are there any changes which could be easily made to improve the facilities?

Unit Fifteen**Range and Pasture Management**

Roll Call

What is one thing you might find on the land where you graze your cattle?

Grazing Systems

Grazing management involves creating a balance between the number of animals, their distribution over the range or pasture and the availability of forage.

The amount of forage produced and available to the livestock varies from year to year and among different land areas. Therefore, the timing, location and duration of grazing is an important part of your management program.

Livestock producers use a plan or schedule to determine where and when livestock graze. This plan is called a **GRAZING SYSTEM**. The purpose of a grazing system is to maintain or improve the condition of the range or pasture while at the same time, achieving a high level of livestock production.

There are many advantages for planning a grazing system:

1. Each pasture has an opportunity to set seed, replenish its food reserves and improve its condition.
2. Grazing is more uniform because the cattle are better distributed when on concentrated pastures.
3. Reserve grass is always available in case of drought.
4. Breeding efficiency and calving percentage usually improve when cattle are closely confined.
5. Improved range condition and more grass lead to increased weaning weights.
6. Cattle are easier to manage.

There are many different grazing systems which can be used. The two most popular are the continuous and the rotational grazing systems.

Continuous Grazing System

In the continuous grazing system, livestock are allowed to graze the land throughout the growing season. They are turned out in early May and removed in late October. The cattle graze and regraze favourite plants and areas of the range or pasture. This causes the best plants to be killed and an overall lower forage yield on the land. The area of pasture deterioration increases each year.

The continuous grazing system is designed for the livestock producer's convenience. It has these advantages:

- minimum handling and moving of cattle required
- cattle are allowed to select their forage early in the season when plants are most nutritious.

The continuous grazing system is not designed to meet the needs of the plants or the animals.

Rotational Grazing System

In the rotational grazing system, the range is separated into fields and the animals are moved or rotated among the fields.

Cattle are rotated so that all areas of the range receive at least one rest period during the year. Rotational grazing systems allow the increased production of forages. The land is rested to allow forages to store food in their roots and/or make their seeds. Better forage utilization is achieved and the pasture supports more animals during a shorter grazing season.

Many livestock producers hesitate to use the rotational grazing system because:

- more labour is required to move cattle
- there may be no water supply in some areas
- it can be costly to fence.

Deferred Grazing System

Deferred grazing is delayed grazing. The cattle are not allowed to graze until after the seeds have matured. The longer the beginning of grazing on a pasture can be delayed, the better the opportunity for new plants to become established. Producers often use a deferred system in combination with a rotational grazing system.

There is no formula to tell you which grazing system will work best for you, your cattle and your land. Each area must be looked at individually. Consider all of these:

- soil type
- vegetation types
- types and numbers of livestock
- needs and capabilities of the land.



Activity:

Develop a grazing system for your (or a neighbour's) operation.

Step 1 Take inventory and make a map of the operation. Include fences, water, topography, and land conditions. The map should indicate where the strong and weak areas of land are.

Step 2 Develop your plan. Include grazing dates, number and type of livestock to be grazed, and fencing plans.

Some things to consider:

Can you improve the distribution of cattle by developing water and salt locations, fences, etc.?

Will your plan improve the condition of areas which are currently poor?

Would the land base be better utilized if you introduced or seeded some new grasses in some areas?

Remember that extreme weather conditions and unexpected circumstances can force you to change even the best of plans.

Range Condition

RANGE CONDITION is the present state of a range or pasture. It is determined by the:

- type of plants which grow there
- numbers of plants
- strength and health of plants (size, stems, flowers, amounts of seeds produced).

Plants growing on grazing land can be grouped according to their response to grazing. The plant groups are:

Decreasers

- plants which decrease in number if the land is overgrazed
- most desirable plants
- usually the high quality plants.

Increasers

- plants which increase in number when the land is overgrazed
- usually the shorter, less productive plants.

Invaders

- weeds which invade the land as it deteriorates or as the decreaseers are destroyed by overgrazing.

By practising good grazing management, you will be able to:

- increase or maintain the number of decreaseers
- decrease or keep the number of increasers from going up
- as much as possible, eliminate the invaders.

Range condition may also be referred to as range health. It can be measured by how much the vegetation has changed from the original land cover (climax vegetation). The greater the proportion of forage provided by the original or climax vegetation, the better the range condition.

Range condition can be determined by the percentage of forage yield coming from the climax vegetation and is classified as follows:

Excellent	75 - 100%	Good	50 - 75%
Fair	25 - 50%	Poor	0 - 25%



Activity:

Practice determining the range condition of a variety of land areas.

Poisonous Plants

Many different plants can be poisonous to your cattle. They can be found in most grazing areas.

Poisonous plants contain toxic or harmful substances that can cause abortion, birth defects, illness, sensitivity to light and/or death. Because each poisonous plant contains a different and specific poison, animals can be affected differently and symptoms of poisoning will vary. The symptoms vary depending on the poison and the amount eaten.

When poisoning by plants is suspected, you should have the animal(s) examined for confirmation by a veterinarian.

You can avoid losses caused by poisonous plants by:

- being able to recognize these plants
- knowing the conditions or circumstances under which the plants can be most dangerous
- not turning your cattle out too early on inadequate forage where poisonous plants are the only green feed
- keeping your land in good condition
- not allowing your cattle to become too hungry
- providing adequate mineral and salt (cattle lacking salt may be attracted to the poisonous plant arrowgrass)
- eliminating the poisonous plants
- fencing out the poisonous plants
- not moving cattle over land which contains poisonous plants.



Activity:

There are many plants poisonous to cattle. Some of these are larkspur, water hemlock and arrowgrass. Select one of these plants or another poisonous plant and find out the following:

- WHAT it looks like
- WHERE it grows
- WHEN it causes the most harm
- HOW it can harm cattle.

Share your findings with other members in your club.

Unit Sixteen**Record Keeping**

Roll Call

What is one record you keep on your (or a neighbour's) farm?

**Choosing
Your Farm
Business
Record System**

Your farm business records have many potential uses:

- filing income tax returns
- managing your tax position
- information for negotiating loans
- making farm arrangements
- improving family communications

There are many different types of record keeping systems used today. Let's look at some of them.

Shoe Box

This commonly used method of storing invoices and receipts is difficult to organize and audit.

Scribbler

Many people use a simple three ring book for recording their information.

Record Books

Record books are available at farm supply shops or any stationery store. Simple ones can be adjusted to suit the way you want to keep your records. Complex record books allow you to include more management information.

Computerized

Today, many farms are changing to computerized record keeping systems. A computer can easily accommodate and generate more information than a manual bookkeeping system. However, a computer can be a costly system. You will also need someone familiar and comfortable with the computer to handle the records.

**Activity:**

Which method of farm business record keeping do you think is best for your (or a neighbour's) farm? Why? Find out more about the system. How could it be improved and/or made more efficient?

Computer Record Keeping Programs

There are many different computer programs available today for keeping farm records. Some programs are designed specifically for beef farms. Others are general financial accounting packages or general farm record keeping systems which can be customized for your operation.

Sources of information on computer programs available are:

- your district agriculture office
- your breed association
- local producers
- local farm and agriculture associations
- your bank.



Activity:

Find out more about the programs available for computerized record keeping on the farm. Select one which you feel would be suitable for your needs. Make a list of all of its capabilities. Share this information with other members of your club.

Using Records to Determine Breeding Goals

Many traits have the potential to determine the profitability of a beef operation. Each producer must identify their own breeding goals. The producer does this by identifying traits with economic importance to the operation. Using profit equations can help you determine your breeding goals.

Eg 1: Michael's herd is made up of 40 crossbred cows and a purebred bull. Michael also operates a home-based business, so he is available to assist the cattle during calving season. He raises the calves to weaning and then sells them at the local auction mart. He purchases replacement heifers.

$$\text{Profit} = \left[\begin{array}{ccc} \# \text{ of calves} & & \text{price} \\ \text{sold} & \times & \text{received} \\ & & \text{per kg} \end{array} \right] - \left[\begin{array}{c} \text{cost of} \\ \text{maintaining} \\ \text{cow herd} \end{array} \right]$$

By looking at the components of his profit equation, Michael can identify the traits which will affect each of the components.

Factors Affecting Profitability of Michael’s Farm

Component	Influential Traits	Importance to Michael
# of calves sold	<ul style="list-style-type: none"> • conception rate • calving ease 	<ul style="list-style-type: none"> • high • low; Michael is available to assist with calving
Weaning weight	<ul style="list-style-type: none"> • milk yield • pre-weaning growth rate 	<ul style="list-style-type: none"> • high when selecting replacement heifers; not important when selecting a bull because he keeps no daughters for replacements • high
Price received per kg	<ul style="list-style-type: none"> • muscling, weight • finishing ability 	<ul style="list-style-type: none"> • high only if there are premiums or discounts • high if buyer can identify this on Michael’s cattle
Cost of Maintaining Cow Herd	<ul style="list-style-type: none"> • mature weight, milk yield 	<ul style="list-style-type: none"> • high

After looking at this table, we can see that Michael’s breeding goals should include achieving a high conception rate, selecting replacement heifers with moderate size and high milk yield and selecting well muscled sires with high rates of gain.

Eg 2: Eric’s farm comprises 1000 acres of cash crop and 35 beef cows. He feeds all calves to finish and raises all his own replacement heifers. Because he is so busy in the fields during calving season, he has little or no time to spend with the cattle. Eric sells all his market animals to a local butcher who prefers B1 carcasses at any weight.

$$\text{Profit} = \left(\begin{array}{ccc} \# \text{ of calves} & \times & \text{market} \\ \text{sold} & & \text{weight} \end{array} \right) \times \left(\begin{array}{c} \text{price} \\ \text{received} \\ \text{per kg} \end{array} \right) - \left(\begin{array}{ccc} \text{cost of} & + & \text{calves feed} \\ \text{maintaining} & & \text{cost} \\ \text{herd} & & \end{array} \right) + \left(\begin{array}{c} \text{calves} \\ \text{overhead} \\ \text{cost} \end{array} \right)$$

By looking at the components of his profit equation, Eric can identify the traits which will affect each of the components.

Factors Affecting Profitability of Eric's Farm

Component	Influential Traits	Importance to Eric
# of calves sold	<ul style="list-style-type: none"> • conception rate • calving ease 	<ul style="list-style-type: none"> • high • high
Market weight	<ul style="list-style-type: none"> • milk yield, weaning weight • post-weaning rate of growth • finishing ability 	<ul style="list-style-type: none"> • high since he raises replacement heifers • moderate • high
Price Received per kg	<ul style="list-style-type: none"> • market weight • finishing ability • muscling 	<ul style="list-style-type: none"> • low • low • low
Cow Costs	<ul style="list-style-type: none"> • mature weight, milk yield 	<ul style="list-style-type: none"> • high if there are premiums or discounts
Feed Costs	<ul style="list-style-type: none"> • feed efficiency 	<ul style="list-style-type: none"> • high
Overhead	<ul style="list-style-type: none"> • rate of gain • finishing ability 	<ul style="list-style-type: none"> • high • high

After looking at this table, we can see that Eric's breeding goals should include raising cows with moderate size, achieving a high conception rate and selecting sires with high rates of gain, good muscling and ease of calving.

**Activity:**

Use this method to determine the breeding goals for your (or a neighbour's) beef operation.