

## Health Activities

### Potential Guest Speakers

- Local veterinarian
- Nutritionist to discuss body condition scoring
- Farmer who does a good job at keeping cows or calves healthy

### Roll Calls

- Name one sign your calf is healthy
- Have you ever given medicine to a cow or calf? What was it for? Did it help?
- What is one way you can stay healthy or get better when you are sick? (Sample answers include: exercise, vitamins, proper diet, wash hands, stay away from sick friends, medicine, rest, chicken soup, etc.)
- What is one way your calf can stay healthy or get better when she is sick?
- What is one practice on the farm that will help keep cows healthy?
- What is one vaccination that you have given on your farm?
- Name one thing you can do to decrease the incidence of mastitis in your herd.
- Name one infectious or non-infectious disease.
- Name one thing that might be found in a farm's medicine cabinet.

### Projects and Take Home Activity Ideas

1. Put together a barn medicine chest OR make up a list of things you would include in such a chest and their prices OR look at an existing medicine chest and make a list of what the contents are, what you think should be added and the cost. Is everything properly stored? Are any of the medicines too old to be used?
2. Keep a medical record of a sick cow or calf in your own or someone else's herd. Record your observations, the vet's diagnosis (if one is called), the treatment and the stages of its recovery. How could this health problem have been avoided?
3. Develop a health log for a treated calf or one that has been ill. What caused the problem? Who identified it? Who treated it? For how long? What was the treatment? What was the result? What was the cost? Was the result worth the time and effort? What are similarities and differences in animal and human health treatments?
4. Keep a record of all the injections or medical treatments given to a cow in your herd or someone else's herd for one month. With each treatment, record the cost of the treatment, the value of the milk lost and the probable cause of the disease. How could this problem be avoided?
5. Travel with a vet for a day and report on the treatments he/she provides to dairy animals.
6. Visit a farm that usually raises well-grown and healthy calves. What practices does the farmer do to keep calves healthy?



7. Observe a group of calves around feeding time. How do the healthy calves act? Are there any sick calves? How do they act? Record your observations.
8. Select a disease and write a report or make a poster about it. Include causes, symptoms, prevention, treatment, cures, etc.
9. Find out what vaccinations the cows get on your farm, or your neighbour's farm and provide information on what the vaccinations are for, how frequently they must be given and how much they cost.
10. Coordinate an interview with a vet as a club or group project. Develop a list of questions in advance, such as:
  - a. How do you keep health records?
  - b. What animal health practices would you most like farmers to improve upon?
  - c. What do you keep in your vehicles?
  - d. How do you do your billing? Do you bill at an hourly rate, a set fee for a particular service, or a combination of both?
  - e. What career preparation does a veterinarian need?
  - f. Why did you choose this career?
11. Prepare a health resource book or notebook for future reference. Take photos or find pictures of animals with various health problems and mount them in the notebook with a list of symptoms and treatments under each photo.
12. Collect labels from empty chemical and drug containers in your house and on your dairy farm. Read the contents, directions for use and cautions. What might happen if the drug was used in a way not shown on the label?



**Activity: Symptom Game**

**Purpose:** To introduce and review common calf diseases. Part 1 introduces members to the diseases and their symptoms. Part 2 gets members thinking of ways to prevent these diseases.

**Age Group:** All members

**Time Allotted:** 15 minutes

**Preparation & Equipment:** Three sheets of chart paper, labeled “Scours”, “Pneumonia” and “Parasites”; one piece of chart paper listing symptoms of these diseases in no particular order; markers, copies of the ‘Common Calf Diseases’ Resource sheets.

**Instructions:****Part 1**

- Explain to the members that they have to look at the symptom list (found in the Health section of the Resource guide under ‘Common Calf Diseases’) and match the symptoms to the diseases on the sheets of chart paper. The list could include: watery manure, dehydration, lungs filled with fluid, temperature, loss of appetite, cough, manure-stained hindquarters, bloody manure, lack of growth
- Get a volunteer to write the symptoms under the proper disease. Note that some symptoms may fit under more than one disease.
- Once all the symptoms are placed in their proper sections, discuss treatments for each disease.

**Part 2**

- Divide the members into groups and ask each group to brainstorm about ways to prevent diseases. Point out that some of these are similar to the ways you keep people from getting sick. For example, you’re supposed to wash your hands between working with sick and healthy calves. People should also wash their hands frequently if they are sick or are taking care of someone who is. This prevents germs from passing to other people. (*Other prevention tips are included in the Health section of the 4-H Dairy Resource Guide.*)

**Debrief:** Knowing common calf diseases is important. Why? Why is preventing these diseases smart farming? Name other areas of your life where preventing something from happening in the first place is better than fixing it once it does happen (i.e. studying before a test instead of trying to make up for a bad grade later on).



**Activity: Taking a Calf's Vital Signs**

**Purpose:** To teach members how to take a calf's vital signs and to practice teamwork

**Age Group:** All members

**Time Allotted:** 30 minutes

**Preparation & Equipment:** copies of the vital signs worksheet on the following page, calves (or older animals), veterinary rectal thermometer, petroleum jelly, watch with a second hand, human thermometers, pens and pencils

**Instructions:**

- Break the members into small groups . Make sure the groups have both older and younger members. Then hand out the "Vital Signs" worksheet.
- Have the members take their own vital signs and record them on a piece of paper. Each member should know his or her: heart rate (pulse), respiration rate and temperature.
- To take a heart rate, place two fingers on your neck to the left or right of the middle of your throat until you feel a pulse. Count the number of beats you feel in 30 seconds and multiply that number by two. That's your heart rate. For your respiration rate, count the number of times you breathe in 30 seconds and multiply that by two.
- Assign each group to a calf. Get the group to take and record all of the calf's vital signs. This is an exercise in teamwork as well as calf health.
- Encourage the groups to work together to take these vital signs.
- Ask questions while the groups are working (address safety concerns before members get started - you may want to demonstrate the procedure first, then have members try it):

*How do you take a calf's temperature?*

1. Restrain the calf.
2. Make sure the thermometer is shaken down.
3. Put Vaseline on the end of the thermometer and insert it 3/4 of its length into the calf's rectum.
4. Hold the thermometer in the rectum and wait for 2 to 3 minutes.
5. Remove the thermometer. Wipe it clean and read it.
6. Wash the thermometer with soap and water.

*How do you measure the respiration rate?*

- o Count the number of breaths an animal takes in one minute by placing your hand on her ribs or flank.

*How do you measure the heart rate?*

- o Place your finger tips underneath of the calf's jaw or between her ribs to feel the heart beat for one minute. Count the beats.
- Once the groups are finished, get them to compare their own vital signs to the calves' vital signs. What kind of differences do they notice? Why is it important to know a calf's healthy vital signs?
- Have the groups share the results of their calves' vital signs with the rest of the club. Ask why there are differences in the numbers and what may cause these differences (e.g. weather, health, time of day, exercise, excitement).

**Debrief:** Why is it important to know a calf's vital signs? Answer: to distinguish healthy calves from sick ones. Was this activity easier or harder because you had to work as a team?



Vital Signs Worksheet

	Mine	The Calf's
Heart Rate		
Respiration Rate		
Temperature		

	Mine	The Calf's
Heart Rate		
Respiration Rate		
Temperature		



**Activity: Complete Calf Health Examination**

**Purpose:** For members to find out what a healthy calf looks like

**Age Group:** All members

**Time Allotted:** 30 minutes

**Preparation & Equipment:** A healthy calf and copies of the Calf Examination Chart found on the following page.

**Instructions:**

- In groups, members should look at a healthy calf (ideally one calf for each group) and complete the Calf Examination Chart. Then the groups can compare their answers.

**Debrief:** What are some of the common characteristics of a healthy calf? What would be different if the calf was unhealthy? How can you make sure that you are raising calves in a healthy environment? Answers: proper nutrition, clean and dry bedding, draft-free environment, exercise, and individualized, personal care.



### Calf Examination Chart

Calf Identification:		Breed:	Age:	Weight:	Height:
Weather Temperature:					
General state of health: (circle one)                      EXCELLENT                      GOOD                      POOR					
Describe how the calf looks and acts:					
Have these management practices been done?		Yes	No	Comments (i.e. method, date, etc.)	
Horns removed					
Extra teats removed					
Dewormed recently					
Free from flies and lice					
Vaccinated (indicate for which diseases in comments section)					
Tagged					
Ear tattooed					
	Observations of a Healthy Calf			Symptoms of a Sick Calf	
Udder and teats					
Ears and eyes					
Respiration rate					
Heart rate (pulse rate)					
Temperature					
Fecal material					
Eating habits					
Drinking habits					

Source: Chart adapted from Manitoba 4-H Intermediate Dairy Manual



**Activity: Designing a Calf Health Program**

**Purpose:** For members to apply their knowledge of calf health and practice teamwork

**Age Group:** Senior members (or could pair younger members with older members)

**Time Allotted:** 45 minutes

**Preparation & Equipment:** Chart paper, markers, scrap paper and pencils

**Instructions:**

- Divide the members into groups. Ask each group to appoint a "recorder" to write down its health program plan.
- Each group must consider all of the steps a dairy farm must take to ensure the health of its calves from birth to four months. Encourage the groups to brainstorm first, calling out any idea, no matter how wacky or wild.
- After getting a number of ideas from brainstorming, the groups should organize these ideas into a plan for a fictional dairy farm. Ask them to be creative. Make up farm names, cattle names - anything they want!
- Once the groups have finished their plans, get each group to present its ideas to the others. Encourage them to pool their ideas and come up with a "super" plan - a combination of the best ideas from each small group.
- If this activity was done as a senior member activity, the senior members could present their "super plan" to the rest of the club. This could be done as one presentation to all of the younger members, in smaller groups or one on one.

**Debrief:** Why is having a health plan important? Did the team effort make it easier or harder to create the plan?





**Activity: Mastitis Demonstration**

**Purpose:** To show all members what a case of clinical mastitis looks like and how to detect it. It also gives them some experience in how to treat an infection. Make sure they know that mastitis can also be subclinical, with no visible signs that the cow has mastitis.

**Caution:** **Make sure that the host farmer does not mind his cows being stripped out for the demonstration. This should be something that is discussed prior to the meeting.**

**Age Group:** All members

**Time Allotted:** 20 minutes

**Preparation & Equipment:** strip cup, a California Mastitis Test (CMT), a healthy milk cow and a cow with mastitis (if available), copies of the "How to do the California Mastitis Test" and the "CMT Analysis Chart" on the following pages.

**Instructions:**

- Introduce the activity by asking the members if they know what mastitis is. Go on to ask them other questions about the disease so that they come to the answers themselves. (i.e. What's the difference between clinical and subclinical mastitis? What are common signs of mastitis? Why is mastitis an important disease to learn about? Is mastitis common? How does mastitis affect a cow's udder and her ability to milk? How can you prevent mastitis?)
- Next, show the group the cow with the healthy udder and the cow with clinical mastitis. (If you only have a healthy cow, then describe what the udder of a cow with clinical mastitis would feel like.) Have the members feel the udders so that they can tell the difference.
- Squirt a small amount of milk into a strip cup if the cow has clinical mastitis and let members see the lumps or flakes in the milk. Then ask a volunteer to perform a CMT on both cows. (Refer to the "How To Do the California Mastitis Test" factsheet on the following page for guidance.) Pass around the results so that members can see what a positive (or negative) result looks like. Note that a "healthy" cow could test positive because she has subclinical mastitis.
- Finally, treat the cow based on the CMT or on the clinical signs. Refer to the "CMT Analysis Chart," for help in diagnosing the cow.

Note: if you have a large group, you may want to consider splitting them into two and have one group work on another activity, then switch, to make sure everyone can see the demonstration clearly.

**Debrief:** Emphasize that this is just one way to treat an infection. For example, frequent stripping of the infected quarter, as well as providing the cow with a comfortable environment and supportive therapy may be all a cow needs to get rid of a mastitis infection. On the other hand, some cows also need antibiotic treatment.

Ask members why it is important to know the signs of a disease. What's better – preventing a disease or treating it after it's arrived? Why?



## How to perform the California Mastitis Test

Discard the first few streams of milk.  
Do not use colostrum milk or strippings.



Draw the next milk from each quarter into the respective cup  
of the testing paddle.



Tilt the testing paddle to an almost verticle position  
to let excess milk run off.



Tilt the paddle back until the milk is halfway between the circles.



Slowly squirt an equal volume of reagent over the milk in each cup.



Proportions of milk and reagent must be equal for accurate results.



Gently rotate the paddle.



Grade results according to the CMT Analysis Chart.



## C.M.T. Analysis Chart\*

	<b>NEGATIVE</b>	<b>TRACE</b>	<b>½ POSITIVE</b>	<b>2/3 POSITIVE</b>
	Mixture remains liquid. No flakes or gel forms.	Mixture begins to gel. Seen best by tipping the paddle back and forth while observing the mixture as it flows over the bottom of the cup.	Mixture distinctly forms a gel	Mixture thickens immediately. Tends to form jelly. Swirling the cup moves mixture in towards the centre, exposing the outer edges of the cup.
<b>Individual Quarter Sample</b>	No Mastitis	Trace of Mastitis	Mastitis	Mastitis
* For Individual Cow Use.				

## C.M.T. Analysis Chart\*

<b>Mastitis Status</b>	<b>Somatic Cell Count by 1,000s</b>	<b>% Milk LOSS per quarter</b>
<b>Negative</b>	<b>0-200</b>	<b>0%</b>
<b>Trace</b>	<b>200-500</b>	<b>6%</b>
<b>Positive 1</b>	<b>500-1500</b>	<b>15%</b>
<b>Positive 2</b>	<b>1.5M-5M</b>	<b>25%</b>
<b>Positive 3</b>	<b>5M+</b>	<b>25%</b>

\* For Individual Cow Use.



**Activity: Culture Sample Demonstration**

**Purpose:** To discuss with members why culture samples are a valuable tool in combating mastitis infections. A culture sample tells you exactly what organism is causing infections so that you can treat the infection more effectively.

**Caution:** **Make sure that the host farmer does not mind his cows being stripped out for the demonstration. This should be something that is discussed prior to the meeting.**

**Age Group:** All members

**Time Allotted:** 15 minutes

**Preparation & Equipment:** copies of the “How to Take a Culture Sample” factsheet on the following page, sterile tubes, teat dip or sanitizer solution, individual towels, alcohol swab, milking cow

**Instructions:**

- See the “How to Take a Culture Sample” factsheet on the following page. Follow the steps to give the members a demonstration.

**Debrief:** Why is it important to take a culture sample properly? Answer: You don't want to contaminate the sample, it's important for diagnosing mastitis infections, etc. Review the types of mastitis that can be diagnosed and the signs, prevention and treatment for each mastitis causing organism following the “How to Take a Culture Sample” factsheet. *(Refer to the Health Section of the 4-H Dairy Resource Guide)*



## How to Take a Culture Sample

Label Sterile Tubes



Wash hands



Wash teats in sanitising solution



Dry teats with individual towels (or predip, leave for 30 - 45 seconds, then dry with individual towels).



Gently scrub each teat end with an individual alcohol swab (start with the furthest teats first).



Open the sterile tube (handle it only by the rim).



Remove a stream of milk from each quarter prior to collection.



Collect 1-2 squirts from each quarter... start with the closest teats first.



Close the container while still under the cow.



Immediately refrigerate the samples or freeze them if not processed within 24 hours.



**Activity: Herd Health Awareness**

**Purpose:** This activity teaches members how diseases can be brought into and spread through a herd of cows. They can then discuss how to stop them.

**Age Group:** All members

**Time Allotted:** 30 minutes

**Preparation & Equipment:** poster papers, markers, breed magazines, scissors and glue

**Instructions:**

- Start the activity with a discussion: brainstorm with the members ways that diseases can be brought onto a farm. Use parallels to people; for example, a classmate comes to school sick compared to a cow that comes to the farm sick. Both of them can spread illnesses. Then, discuss ways to stop diseases from getting onto the farm and spreading around based on the ideas the group generates.
- Hand out poster paper and markers. Tell the members to pretend they are making farm health awareness posters for a local fair. Each poster should illustrate some point about preventing diseases from getting onto, or spreading on, a farm. They can use pictures from the breed magazines to add to the posters.
- Hint: these posters could be used as part of a display for your Achievement Program.

**Debrief:** Why is it important to know how diseases can be brought to a farm? Why is it important to know how diseases are spread and prevented?



**Activity: Using Medicine Safely – Labels and More!**

**Purpose:** Members learn how to use medicines properly

**Age Group:** All members, good activity for pairing younger and older members

**Time Allotted:** 30 minutes

**Preparation & Equipment:** three different types of medicine (including labels and instructions) and the equipment required to administer them - or copies of 3 medicine labels scanned and blown up on a piece of paper; copies of the "Using Medicine Safely" worksheet on the following page; paper and pens

**Instructions:**

- Divide the members into groups of two or three. Give each group paper, pens and the "Using Medicine Safely" worksheets. (Note: the point of this activity is not to identify the right cow for the right medicine, but rather to learn the safe and effective use of the medicines themselves. Therefore, you do not have to make up symptoms for each cow to match the medicines you give out. But for a more advanced group, this would be a good way to challenge the members.)
- Explain the activity. Hypothetically, the three medicines were in the medicine cabinet on the farm. The members need to use the information provided with the medication to complete the "Using Medicine Safely" worksheet on the following page to determine how each medication should be used on the farm.
- After the groups are done, they can share their results with each other.
- Discuss differences of opinion.

**Debrief:** What's the most important step in giving medication safely? Name one way you can use the information you learned about animal medication in your own life.



## Using Medicine Safely Worksheet

	Medicine 1	Medicine 2	Medicine 3
Who is the medicine for?			
What is the medicine for?			
Where should the medicine be stored?			
When should the medicine be used and when does it expire?			
Why does the medicine work (i.e. What are its active ingredients)?			
How much should be given (i.e. dosage)?			
How should it be given?			
How often (i.e. frequency)?			
For how long (i.e. duration)?			





**Activity: Administering Needles Safely**

**Purpose:** To give members hands on practice at administering subcutaneous and intramuscular injections. It is unreasonable to expect an animal will be available for demonstrating injection procedures at a 4-H meeting, so this is a good simulation.

**Age Group:** This activity involves handling sharp objects, so it should be reserved for senior members or it could be done by pairing older and younger members together

**Time Allotted:** 15 minutes

**Preparation & Equipment:** each group of two or three members will require an orange (or grapefruit, etc.), a needle, syringe, knife, cutting board, paper towels or newspapers and a mixture of food colouring and water. It is best to have the water and food colouring mixed (strong, dark coloured mixture) prior to the meeting.

**Instructions:**

- Give each group an orange, needle, syringe, knife and cutting board, and paper towels
- Have someone from each group come to a central location to draw their syringe, filling it with the food colouring and water mixture. Discuss how a syringe of fluid should be drawn from a real medicine bottle, by injecting air into the bottle and then drawing fluid into the syringe by pulling out the plunger of the syringe. Discuss the removal of air from a syringe once it has been loaded.
- Members should tap the syringe, holding the needle part (with cap covering needle) upwards, to move any air bubbles to the top. With the cap removed, the plunger should be pushed in a little bit so some liquid and air comes out the opening of the needle. When the air is gone and there is only liquid left, the needle is ready to be given to the animal.
- To simulate giving a subcutaneous injection, members should insert their needle just under the skin of the orange and push the plunger in to insert some fluid.
- To simulate giving an intramuscular injection, the needle should be pushed all the way into the middle of the orange, and the plunger pushed in to release fluid.
- The injections can be repeated by the other member(s) of the group.
- The orange can then be cut open on top of the cutting board, revealing the spreading of the 'subcutaneous' injection just under the skin of the orange, and the 'intramuscular' injection through the middle of the orange.

Hint: if no spreading of the 'medicine' can be seen, try cutting the orange in the opposite direction.

Tip: Be careful, as sometimes the juice squirts back out! Be sure to have paper towels or rags on hand.

**Debrief:** What types of medicines would be given by subcutaneous or intramuscular means? In this activity, we did not give intravenous injections. How do you give those injections?

There are several more aspects of administering needles that can be emphasized while doing this activity:

- Alcohol swabs should be used to disinfect the area of the animal's body to be injected.
- Review proper injection sites, pointing out proper sites on a live animal, stuffed animal or diagram (i.e. intramuscular needles should not be given in the hip but in the neck instead).
- Review the importance of using the correct dosage.
- It is important to be quick and confident when giving needles.
- If a large volume of medication is being used, the medication should be divided, with smaller amounts being administered in different injection sites.
- What other things are there to watch out for with a live animal? Answers: kicking, moving around, dirty spots, etc.



**Activity: Evaluating Health Problems**

**Purpose:** Members learn to evaluate and solve herd health problems.

**Age Group:** Senior members (they could present their findings to junior members after completing the activity)

**Time Allotted:** 30 minutes

**Preparation & Equipment:** copies of the "Health Situations" worksheet; the Mastitis information contained in the *Health Section of the Resource Manual*; pens

**Instructions:**

- Divide the members into groups and give each group a handout
- Explain the activity. They get to play "Ace 4-Her: Vet Detective!". Each group has been given four situations about herd health problems. They need to diagnose each problem and then figure out a way to fix it and prevent it from happening in the future.

Hint: To save time, each group can solve just one or two problems

- Once each group is finished, have them share their findings. Discuss any disagreements

**Debrief:**

How did you use the resources and the people in your group to solve these problems?  
What kinds of resources are available for farmers who need to solve health problems?

**Answers to Health Situations** (situation worksheet for members is on the following page):

**Situation 1:** Somatic cell increases one month

Cause	Treatment	Prevention
Environmental mastitis infection	<ul style="list-style-type: none"> <li>• Locate infected cows</li> <li>• Frequently strip infected quarters</li> <li>• Possibly use antibiotic treatment</li> </ul>	<ul style="list-style-type: none"> <li>• Use clean, dry bedding</li> <li>• Disinfect stalls</li> <li>• Use good milking techniques</li> </ul>

**Situation 2:** Consistently high SCC and you've had a hard time getting rid of mastitis infection in a few cows.

Cause	Treatment	Prevention
Contagious mastitis infection	<ul style="list-style-type: none"> <li>• Cull difficult to cure cows</li> <li>• Treat other infected cows with antibiotics</li> <li>• Use dry cow mastitis treatments</li> </ul>	<ul style="list-style-type: none"> <li>• Use good milking techniques</li> <li>• Follow proper hygiene (teat dipping, washing hands after touching infected cows, etc.)</li> </ul>

**Situation 3:** Feet abscesses developing after switching to a higher grain ration

Cause	Treatment	Prevention
Acidosis causing laminitis	<ul style="list-style-type: none"> <li>• Switch ration to include more fibre</li> </ul>	<ul style="list-style-type: none"> <li>• Feed a properly balanced ration, not too high in energy or too low in fibre</li> </ul>

**Situation 4:** A number of cattle show signs of lameness with their feet giving off a strong odour

Cause	Treatment	Prevention
Possibly foot rot	<ul style="list-style-type: none"> <li>• Rub with antibiotic ointments</li> <li>• Remove dead tissue</li> <li>• Keep feet clean and dry</li> <li>• Soaking foot in a copper sulphate solution on a regular basis</li> </ul>	<ul style="list-style-type: none"> <li>• Proper nutrition</li> <li>• Stand on well-drained dirt and grass</li> <li>• Groove slippery concrete and smooth rough concrete</li> <li>• Install a foot bath</li> <li>• Keep free stalls, dry and comfortable</li> <li>• Trim feet regularly</li> </ul>



### Health Situations Worksheet

**Situation 1:** After studying your herd’s somatic cell count for six months, you find that it is usually normal, then suddenly goes up for a month. What’s going on?

Cause	Treatment	Prevention

**Situation 2:** Your herd has a consistently high somatic cell count. You’ve also had a hard time getting rid of mastitis infections in a few cows. What’s going on?

Cause	Treatment	Prevention

**Situation 3:** After moving to a higher energy ration, cattle in your herd start to develop abscesses on their feet. What’s going on?

Cause	Treatment	Prevention

**Situation 4:** A number of cattle begin to show signs of lameness. Their feet give off a strong odour. What’s going on?

Cause	Treatment	Prevention



**Activity: Body Condition Scoring**

**Purpose:** To give members practice body condition scoring

**Age Group:** All members (it may be helpful to split members into groups of older and younger members)

**Time Allotted:** 30 minutes

**Preparation & Equipment:** copies of the “Body Condition Scoring Guide” found on the following pages  
cows at various stages of lactation

**Instructions:**

- Discuss body condition scoring with members. What can body condition scoring tell you? Why is it important?
- This may be a good topic to have a dairy nutritionist or someone experienced in body condition scoring to come and review the information with members
- Look as a large group at a few cows in the barn and determine what their body condition scores would be.
- Split up the members into groups of two or three and ask each group to body condition score some selected cows.
- Discuss results with members and help them adjust their scores as needed.

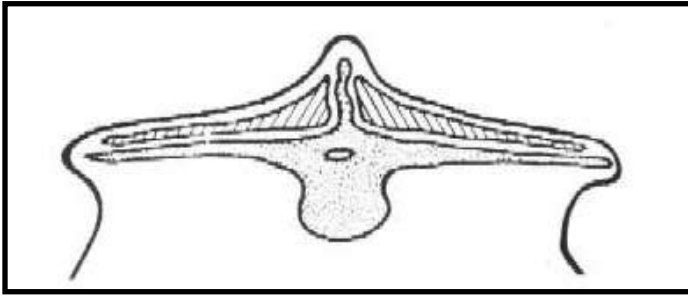
**Debrief:** Is it easy or hard to body condition score cows? Remind members that this is a process that gets faster and easier with practice.

What are some reasons for their being fatter or thinner cows? (Answers: nutrition, stage of lactation, pregnancy, exercise, etc.)

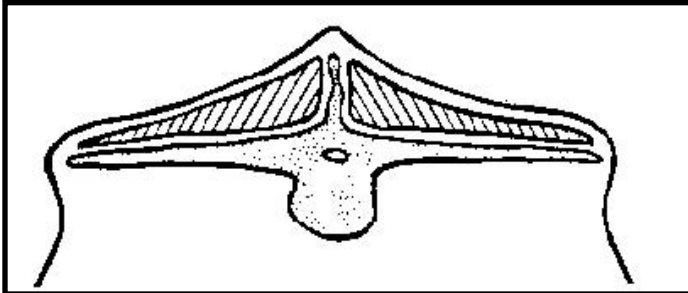
How does stage of lactation affect body condition? (Answers: heavier in very early stages of lactation, losing body fat as they reach peak milk production; gaining more weight during later stages of lactation and during the dry period when they are preparing to give birth and produce milk during their subsequent lactation.)



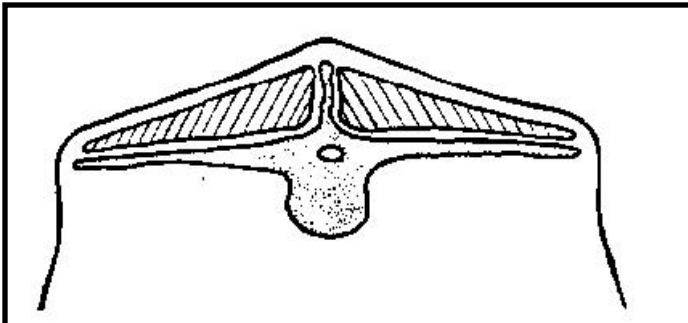
## Body Condition Scoring Guide

Condition Score 1

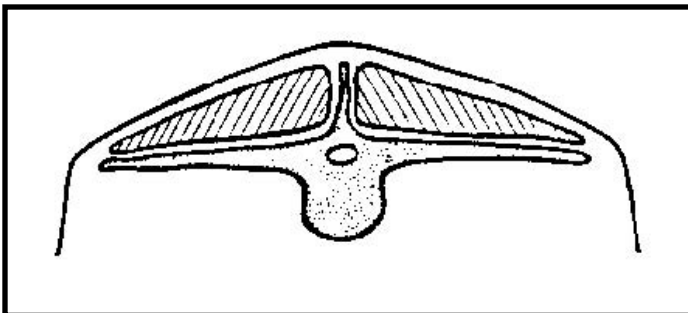
This cow is emaciated. The ends of her short ribs are sharp to the touch and together give a prominent, shelf-like appearance to the loin. The individual vertebrae of the backbone are prominent. The hip and pin bones are sharply defined. The thurl region and thighs are sunken and in-curving. The anal area has receded and the vulva appears prominent.

Condition Score 2

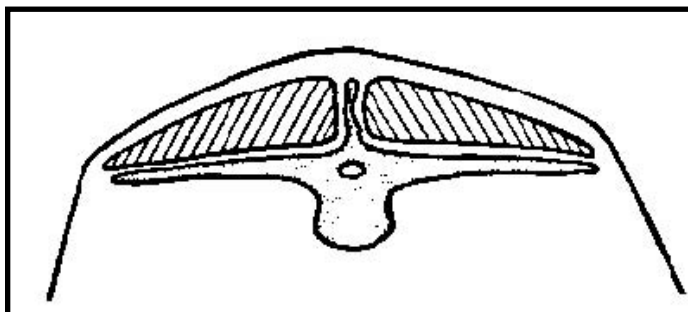
This cow is thin. The ends of the short ribs can be felt but they and the individual vertebrae are less visibly prominent. The short ribs do not form as obvious of an overhang or shelf effect. The hip and pin bones are prominent and the depression of the thurl region between them is less severe than in Score 1. The area around the anus is less sunken and the vulva less prominent than in Score 1.

Condition Score 3

A cow in average body condition. The short ribs can be felt by applying slight pressure. The overhanging shelf-like appearance of these bones is gone. The backbone is a rounded ridge and the hip and pin bones are round and smoothed over. The anal area is filled out but there is no evidence of fat deposit.

Condition Score 4

A cow in heavy condition. The individual short ribs can be felt only when firm pressure is applied. Together they are rounded over with no shelf effect. The ridge of the backbone is flattening over the loin and rump areas and rounded over the chine. The hip bones are smoothed over and the span between the hip bones over the backbone is flat. The area around the pin bones is beginning to show patches of fat deposit.

Condition Score 5

A fat cow. The bone structure of the topline, hip and pin bones and the short ribs is not visible. Fat deposits around the tailbone and over the ribs are obvious. The thighs curve out, the brisket and flanks are heavy and the chine very round.

Source: Diagrams taken from OMAFRA Factsheet "Body Condition Scoring For Dairy Cattle" by Jack Rodenburg, 1996.

**Activity: Body Condition Scoring at Different Stages of Lactation**

**Purpose:** For members to learn about the changes in body condition throughout the lactation cycle

**Age Group:** All members

**Time Allotted:** 30 minutes

**Preparation & Equipment:** copies of “Body Condition Scoring Guide” (found on previous page); copies of “Dairy Herd Body Condition Scoring Chart” on the following page.

**Instructions:**

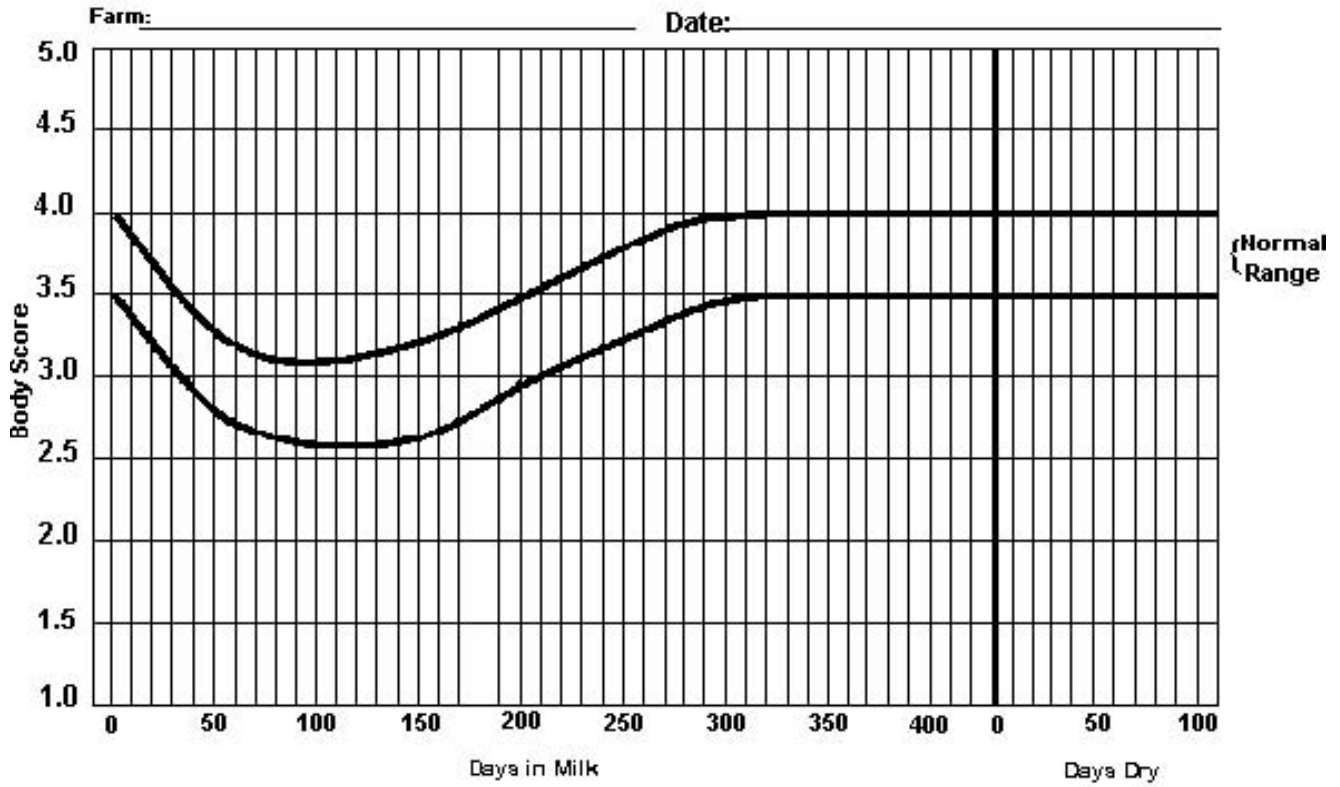
- Discuss body condition scoring with members. Will all cows within the same herd have the same body condition score? Why or why not?
- This may be a good topic to have a dairy nutritionist or someone experienced in body condition scoring to come and review the information with members
- Ask the members to score a few cows within their small groups and plot the scores on the Dairy Herd Body Condition Scoring Chart
- A chart could be made by combining the plots of different cows scored by different groups
- Discuss results with members and help them adjust their scores as needed

**Debrief:** How does stage of lactation affect body condition? (Answers: heavier in early stages of lactation, losing body fat as they reach peak milk production; gaining more weight during later stages of lactation and during the dry period when they are preparing to give birth and produce milk during their subsequent lactation).

Do most of the cows in the herd fit into the normal body condition range? If not, what do you think the reason(s) might be? How can body condition scoring be managed? (Answers: increasing or decreasing the amount of energy in the diet, exercise, altering the number of days open or the number of days dry, etc.)



Dairy Herd Body Condition Score Chart



Plot individual cows on this chart according to stage of lactation. The chart can be used to profile a herd at one point in time or to monitor changes over a lactation for an individual cow.

Source: Chart taken from OMAFRA Factsheet "Body Condition Scoring For Dairy Cattle" by Jack Rodenburg, 1996.



**Activity: Belching Demonstration**

**Purpose:** To demonstrate that proper belching is a matter of life or death for ruminants.

**Age Group:** All members

**Time Allotted:** 5 minutes

**Preparation & Equipment:** balloon; funnel; can of carbonated soda.

**Instructions:**

- Pour the pop into the balloon.
- Close the balloon carefully and shake it up.
- Ask the members to explain what happened.

**Debrief:** Emphasize that this is what would happen to the animal's rumen if the gas was not released. How do you treat bloat?





## Nutrition Activities

### Potential Speakers

- Veterinarians
- Representative from local feed supplier
- Dairy nutritionists
- Farmers who feed different types of rations/ high quality forages, etc.
- Farm safety representative (if discussing safety and feed storage)

### Roll Calls

- Name one food that a ruminant eats and a food that a monogastric animal eats
- Name one food that you eat to keep you healthy and help you grow
- Why (one reason) do cows need a good feeding program? (i.e. feed affects milk, butterfat and protein production, can make them sick or keep them healthy, helps reproduction, etc.)
- Name one of the feeds that you (or your neighbour) feeds on your farm
- Name one type of food that you used to eat which you don't eat any longer or that you eat now which you never used to eat (i.e. baby foods, formulas, health drinks, skim milk, broccoli). The point is that tastes and dietary needs change as you pass through different phases of your life.
- What type of feeding system (i.e. conventional or TMR) do you have on your farm or on your neighbour's farm?

### Project or Take Home Activity Ideas

1. Compare the cost to raise a calf on whole milk versus milk replacer at current prices. Prepare a written report and present the results at one of your club meetings.
2. Prepare an exhibit to display at your Achievement Program on one of the following topics:
  - a. A health disorder that relates to feeding management
  - b. Following a feed through a ruminant animal
3. Complete a balanced ration check on your ration at home. If your ration requires improvement, suggest how this can be done. Give a brief report to your club.
4. Visit two farms with different feeding systems (tie stall and free stall). Compare the two systems.
5. Find feed tags from two different commercial feeds. What are these two feeds used for?
6. Find and read a formulation sheet for the ration on your farm or a neighbour's farm.
7. Explore the calf feeding program on a farm. What liquid feed is used and why?
8. Evaluate the safety procedures around silos and grain bins on your farm or a neighbour's farm. What can you do to make these areas safer?
9. Get a sample of a heifer or dry cow ration fed on a farm. Find out what's in the ration.
10. Observe a group of calves around feeding time. How do the healthy calves act? Are there any sick calves? How do they act? Record your observations.
11. Visit a farm that feeds acidified calf milk. Interview the farmer about costs, labour, calf growth and health, etc.



**Activity: Ruminant Versus Monogastric Animals**

**Purpose:** To familiarize members with ruminant animals by comparing them to monogastrics.

**Age Group:** All members

**Time Allotted:** 15 minutes

**Preparation & Equipment:** chart paper and markers; diagrams of a ruminant stomach from the Nutrition section of the Resource Manual

**Instructions:**

- Divide the club into groups, with one or two senior members leading each group.
- Senior members can ask the following questions, writing the answers on the chart paper as the group comes up with them.
  - o Define ruminant and monogastric. For example, how does the stomach of a ruminant animal differ from a monogastric animal? (At this point, you can show the group the picture of the stomach if required.)
  - o Name some ruminant and monogastric animals.
  - o What types of food does a ruminant eat?
  - o What types of food does a monogastric eat?

**Debrief:** Why is it important to know how an animal's body works, for example, how its digestive system works? (e.g. so you can feed it the proper diet, give it the right care, and so on)

Do you think you should know how your own body works? Why or why not?



**Activity: Digestion Game**

**Purpose:** This game, modeled after “Twister”, will be a fun way to learn all the parts of a cow. You can have more than one game going on at once.

**Age Group:** All members

**Time Allotted:** 15 minutes

**Preparation & Equipment:** a large drawing of a digestive system, slips of paper with actions and parts of the digestive system and a basket or hat from which to pull the slips of paper (parts and actions are on following page)

**Instructions:**

- Explain to members that this will be a “Ruminant” game of “Twister”. Then, each member will take turns drawing digestive system parts from the hat and completing the action on the slip of paper.
- As more members get on the drawing, they become more and more tangled until they eventually collapse in a pile of laughter.

**Debrief:** What are the major parts of a cow’s digestive system?



## Digestion Game

Make enough copies of this sheet to split the members into an appropriate number of groups. Then cut out these slips of paper for the "Ruminant" Twister game.

<b>Right hand on the mouth</b>	<b>left hand on the mouth</b>
<b>Right foot on the mouth</b>	<b>left foot on the mouth</b>
<b>Right hand on the esophagus</b>	<b>left hand on the esophagus</b>
<b>Right foot on the esophagus</b>	<b>left foot on the esophagus</b>
<b>Right hand on the rumen</b>	<b>left hand on the rumen</b>
<b>Right foot on the rumen</b>	<b>left foot on the rumen</b>
<b>Right hand on the reticulum</b>	<b>left hand on the reticulum</b>
<b>Right foot on the reticulum</b>	<b>left foot on the reticulum</b>
<b>Right hand on the omasum</b>	<b>left hand on the omasum</b>
<b>Right foot on the omasum</b>	<b>left foot on the omasum</b>
<b>Right hand on the abomasum</b>	<b>left hand on the abomasum</b>
<b>Right foot on the abomasum</b>	<b>left foot on the abomasum</b>
<b>Right hand on the small intestine</b>	<b>left hand on the small intestine</b>
<b>Right foot on the small intestine</b>	<b>left foot on the small intestine</b>
<b>Right hand on the large intestine</b>	<b>left hand on the large intestine</b>
<b>Right foot on the large intestine</b>	<b>left foot on the large intestine</b>
<b>Right hand on the anus</b>	<b>left hand on the anus</b>
<b>Right foot on the anus</b>	<b>left foot on the anus</b>



**Activity: Showcase on Stomachs**

**Purpose:** This activity gives members an opportunity to see a cow's stomach up close and to discuss how the stomach changes from the time a calf is born until she becomes an adult cow.

**Age Group:** All members

**Time Allotted:** 30 minutes

**Preparation & Equipment:** a dissected stomach from a butcher shop or vet, or a cow's stomach that members can dissect themselves

**Instructions:**

- Let members look at and touch the different sections of the cow's stomach. Discuss what each section does to a cow's feed and how it works.  
or
- Let members dissect the cow's stomach. (Hint: A vet or science teacher would be helpful for this activity.)
- Move on to discuss how a cow's stomach is different from a calf's.
- Introduce the topic by discussing the main thing a calf eats that a cow doesn't-milk!

**Debrief:** How do the compartments of a cow's stomach work together to digest feed? What's it like to actually feel a cow's stomach? Did this make it easier to understand how the stomach works? Why or why not? What other ways do you use your senses to discover new information?



**Activity: Build a Ruminant Digestive System**

**Purpose:** For members to familiarize themselves with the structure and components of the different parts of the alimentary tract.

**Age Group:** All members

**Time Allotted:** 30 minutes

**Preparation & Equipment:** collect household items that members could use to construct a mock digestive system, such as tape, balloons, paper towel or toilet paper rolls, plastic bags, paper clips, fasteners, elastics, money rollers, straws, popsicle sticks, etc.

**Instructions:**

- Split members into groups of four or five. Give each group a number of items to build their digestive system with
- Give members 20 minutes to build a digestive system with identifiable components
- Have a contest at the end to see which group could build some of the following:
  - o Most lifelike looking system
  - o Include all parts of the digestive system
  - o Most closely resembles a real digestive system
  - o Flow through design to show the passage of food

**Debrief:** What are the parts of the digestive system? How does food flow through the digestive system? Did everyone in your group participate in building the digestive system?



**Activity: Digestion – A Chemical Reaction**

**Purpose:** To illustrate a chemical reaction in water

**Age Group:** All members; especially beneficial for junior members with little experience in chemistry

**Time Allotted:** 5 minutes

**Preparation & Equipment:** 15mL of baking powder, 75mL of hot water, large glass, 1 litre container

**Instructions:**

- Place hot water in a large glass and add baking powder, stirring the mixture. Observe. You should see many bubbles form and hear a fizzing noise. When the fizzing is over, most, if not all the powder should be gone. This is a chemical reaction because a new substance is formed. The new substance is the gas given off (bubbles of carbon dioxide).
- Explain that similar, although not the same reactions occur in the body. Different foods change into different substances in water.
- Show members a 1 litre container. That is how much water the average human consumes in a day. Ask members to picture 70 or 100 of these containers. That's how much a cow might drink in a day!

**Debrief:** How is this demonstration similar to what happens inside a cow's body? What helps to make the chemical reactions occur (i.e. acidic juices, etc.)? Remind members that much of the breakdown of foods actually is the digestion by the rumen bugs that are inside the cow.



**Activity: Ruminant Diseases**

**Purpose:** To learn more about different ruminant-specific diseases

**Age Group:** All members, may want to pair older and younger members

**Time Allotted:** 20 minutes

**Preparation & Equipment:** resource Manual materials pertaining to digestive diseases, paper and pens, chart paper and markers

**Instructions:**

- Divide the members into three groups. Each group is responsible for researching one ruminant disease: displaced abomasum, acidosis or hardware. They should find out symptoms, treatments, causes and prevention. The point is not to have in-depth research, but to be able to discuss the diseases with the rest of the club.
- After they have finished a bit of research, have them prepare a "lesson" to "teach" the rest of the club about the ruminant diseases. They can use pictures, chart paper, skits, and so on, to liven up their presentation.

**Debrief:** Why is research an important part of dairy farming? What are some ways to teach others what you know about farming? What are some other diseases that may be linked to nutrition?





**Activity: Feeding the Calves**

**Purpose:** Members will learn more about the different types of foods calves eat, with the opportunity to see and touch (and taste) them

**Age Group:** All members; see advanced section below for senior members

**Time Allotted:** 20 minutes

**Preparation & Equipment:**

Set up a station with:

- Feeds in different containers (i.e. colostrum, sour colostrum, acidified milk, mixed or unmixed milk replacer, calf starter, hay, etc.)
- Feeding equipment (i.e. nipple bottle, pail)
- Copies of the "Feeding the Calves" worksheet found on the following page
- Pens and pencils

**Instructions:**

- Hand out the "Feeding the Calves" worksheet for members to fill out as they work through the activity.
- Have members study each of the calf feeds so they can fill out their charts.
- Ask the members to pick up and look at the different feed equipment on the table. Which equipment is best suited to which feed?

**Advanced Modification for Senior Members:**

- Hand out the "Feeding the Calves" worksheet.
- To make this a hands on, interactive activity, split members into small groups and give them each a feed to explore. From the feed label, and container, and from asking a leader questions, they can fill in each section of the chart. Once the groups are finished, they can share information with each other to make sure everyone can fill in the rest of the chart.

**Debrief:** Do calves have a lot of variety in their diets? Why or why not? Why is it important to know exactly what a calf eats?

Do you think feeding calves is an 'easy" or a "hard" job on the farm? Why or why not?

What does feeding calves teach you about caring for animals? How can you apply these lessons to other areas of your life?



### Feeding the Calves Worksheet

#### General Observations

	Name	Feels Like	Smells Like	For Calf's Age...
Feed 1				
Feed 2				
Feed 3				
Feed 4				
Feed 5				

#### Senior Member Advanced Worksheet:

	Name	Where it's from	When it's fed to calves	How it's fed	Why it's fed
Feed 1					
Feed 2					
Feed 3					
Feed 4					
Feed 5					



**Activity: Reading the Label**

**Purpose:** To learn how to judge good calf feeds from poor quality calf feeds using the labels

**Age Group:** All members

**Time Allotted:** 15 minutes

**Preparation & Equipment:** labels and prices from good, medium and poor quality milk replacers and/or labels from different quality calf starters OR compare the sample milk replacer tags from the following page.

**Instructions:**

- Discuss what the ideal milk replacer/calf starter must contain and why (refer to Resource Manual)
- Look at the labels from these products. What do they tell members about the feed's quality? (Members could be analyzing the two tags found on the following page if no real tags are available)
- Have members rank the calf feeds according to their costs and quality.
- Practice giving reasons on their assessments of the calf feeds.

**Debrief:** Why is it important to get all the information possible before making a judgement to other areas of your life?

**ANSWERS (if using sample tags from following page)**

Milk Replacer – Tag A is good quality and Tag B is poor quality. Tag B is a milk replacer with fewer milk ingredients and more vegetable based products that are harder to digest and do not provide the same nutritional value to the calf.



## Reading the Label

Sample Milk Replacer tags for members to compare:

**FEED TAG A**

Guaranteed Analysis

Crude protein, min. 25%

Crude fat, min. 20%

Crude fibre, max .25%

Ingredients: skim milk powder,  
dried whey casein, animal fat, soy  
lecithin

**FEED TAG B**

Guaranteed Analysis

Crude protein, min. 21%

Crude fat, min.  
10%

Crude fibre, max 1%

Ingredients: skim milk powder,  
dried whey, animal fat, vegetable  
fat, soy flour, dried meat soluble,  
brewers' dried yeast



**Activity: Decisions, Decisions**

**Purpose:** The “Pieces of the Feeding Puzzle” and the “Priorities and Goals” handout can be used to put together a calf feeding program based on predefined goals. The purpose of this activity is to synthesize all parts of a calf feeding program into a whole, and to be able to analyze and prioritize the information

**Age Group:** Senior member activity

**Time Allotted:** 35 minutes

**Preparation & Equipment:** copies of the “Pieces of the Feeding Puzzle” and “Priorities and Goals” found on the following page, chart paper and markers

**Instructions:**

- Divide the members into small groups. Hand out the worksheet on the following page of this Guide. Then, assign each group (or each person if there are not many senior members) a different set of "Priorities and Goals" from the worksheet. If there are more groups than sets of "Priorities and Goals," give two groups the same set.  
or
- Give each group two sets of "Priorities and Goals" so they can see how their thinking has to change with different goals.
- Explain that each group must come up with a feeding program based on the options in the "Pieces of the Feeding Puzzle" and the goals they were given. Higher priority goals will have more impact on feeding plans than lower priority ones.
- Once the groups have feeding programs developed, have them write them on chart paper, along with their priorities.
- Have each group share their program with the other groups

**Debrief:** How did priorities and goals affect the feeding programs? Why are priorities and goals important? How can they help you make decisions and accomplish what you want to do?



## Priorities and Goals Worksheet

The goals are listed from highest priority to lowest priority for each group.

Group 1	<ol style="list-style-type: none"><li>1. Calf health and growth</li><li>2. Low costs</li><li>3. Less labour</li></ol>
Group 2	<ol style="list-style-type: none"><li>1. Less labour</li><li>2. Calf health and growth</li><li>3. Low costs</li></ol>
Group 3	<ol style="list-style-type: none"><li>1. Low costs</li><li>2. Calf health and growth</li><li>3. Less labour</li></ol>
Group 4	<ol style="list-style-type: none"><li>1. Low costs</li><li>2. Less labour</li><li>3. Calf health and growth</li></ol>

### Pieces of the Feeding Puzzle

- Whole milk
- Milk replacer (with mostly plant proteins)
- Milk replacer (with mostly animal proteins)
- Sour colostrum
- Acidified milk
- Calf Starter
- Hay
- Warm environment calf barn
- Cold environment calf barn



**Activity: Ingredient Classification Game**

**Purpose:** For members to learn what type of nutrient is in different feed ingredients

**Age Group:** All members

**Time Allotted:** 10 minutes

**Preparation & Equipment:** 5 paper plates with the following titles written on them: protein, energy, vitamin, mineral, water; many slips of paper with an individual feed ingredient written on them.

*Ingredient Suggestions:*

- Primary energy source – barley, oats, corn, beet pulp, wheat germ, hay, molasses
- Primary protein source – cottonseed meal, soybean meal, linseed meal, corn gluten meal, corn distillers, brewers grain, canola meal, fish meal, urea
- Primary mineral source – salt, trace mineralized salt, limestone, oyster shells, commercial mineral mixes
- Primary vitamin source – green pasture, vitamin supplements, stored feeds less than 8 months old
- Primary water source - water

**Instructions:**

- Split the members into pairs or small groups
- Have one pair or one team member draw an ingredient from a hat and place it on the plate with the name of its primary use (i.e. barley on the energy plate, oyster shells on the mineral plate)
- Continue until all slips are gone and discuss

**Debrief:** Are some feeds sources of more than one type of nutrient? Is it hard to guess which category the feeds belong in?



**Activity: Snatch the Feed**

**Purpose:** To identify feedstuffs by appearance

**Age Group:** All members

**Time Allotted:** 10 minutes

**Preparation & Equipment:** different types of feed samples should be collected and placed in see through containers

**Instructions:**

- Divide the members into two equal teams and number off the members
- Line up the feed samples in between the two teams (equal distance from each team)
- Read off the name of a feed ingredient and the member number
- The members with that number race to the ingredients and the first one to pick up the correct ingredient and race back wins a point
- Continue playing until all the ingredients are gone. A wrong selection will result in the opposite team receiving a point

**Debrief:** Discuss the appearance of the different feeds, for future ID.





**Activity: Name the Feed Relay**

**Purpose:** To teach members to identify different types of feeds

**Age Group:** All members

**Time Allotted:** 10 minutes

**Preparation & Equipment:** feedstuff samples and a set of feed name cards for each team (different coloured name cards for each team)

**Instructions:**

- Display feed ingredients in a line or circular fashion
- Divide the club into teams
- Shuffle feed names and pass out to team members. Some may end up with more than one name depending on the number of feed samples available.
- When you say "GO" a member from each team races up, locates the sample that matches their card, places the card facedown by the plate races back and touches the next person to go. Since the cards are shuffled the different teams will not be looking for feeds in the same order.
- Continue until all the teams are finished.
- Turn over the cards to see if they were matched correctly. The team who matched the most the fastest wins.

**Debrief:** Discuss the correct matchings.



**Activity: Matching Feeds Game**

**Purpose:** To teach members to identify different types of feeds

**Age Group:** All members

**Time Allotted:** 10 minutes

**Preparation & Equipment:** feedstuff samples and a set of feed name cards for each team (different coloured name cards for each team)

**Instructions:**

- Display feed ingredients in a line or circular fashion
- Divide the club into teams
- Shuffle feed names and pass out to team members. Some may end up with more than one name depending on the number of feed samples available.
- When you say "GO" a member from each team races up, locates the sample that matches their card, places the card facedown by the plate, races back and touches the next person to go. Since the cards are shuffled the different teams will not be looking for feeds in the same order.
- Continue until all the teams are finished.
- Turn over the cards to see if they were matched correctly. The team who matched the most the fastest wins.

**Debrief:** Discuss the correct matchings.



**Activity: Bringing Home Dinner**

**Purpose:** Introduce members to the different feeds for heifers and dry cows

**Age Group:** All members could participate, but it would be advisable to group the club so that members must 'compete' against other members their own age

**Time Allotted:** 30 minutes

**Preparation & Equipment:** samples of different types of feeds, both roughages and concentrates, placed in clear plastic bags ; copies of the "Looking at Feeds" worksheet on the following page; pencils

**Instructions:**

- Review what roughages and concentrates are
- Divide the members into two teams. Place the plastic bags of feed between the two teams
- Explain that you are going to call out the name of a feed. Each team then sends one member to pick up the bag containing that feed and identifies it as a roughage or a concentrate. The first team to pick up the right feed and identify it as a roughage or concentrate gets two points. If the team picks up the right feed, but doesn't identify it correctly, it gets one point.
- After all the feeds have been identified, hand out the "Looking at Feeds" worksheet to each member. Then, pass the bags of feed around so members can touch and smell the different types of feed - - and write down their characteristics on the worksheet.
- Ask the members the following questions: What do heifers and dry cows need these different types of feed for? Why is the right diet so important for heifers and dry cows?

**Debrief:** How were you able to tell what each feed was? Which of your senses did you use and why? How do you use your senses to find things out in other areas of your life? What senses does a cow use to decide what she will eat?





**Activity: Match the Nutrients Game**

**Purpose:** To introduce members to the different nutrients cows need in their feed. By comparing the nutrients in cow feed to the nutrients in “people feed” members can see how these nutrients are important to them also.

**Age Group:** All members, teams should have a mixture of older and younger members

**Time Allotted:** 30 minutes

**Preparation & Equipment:** containers with their nutrition labels of different types of “people” food, including salt and vitamins; bags, labelled and filled with grains and forages (e.g. corn, hay, haylage, and so on); nutrient signs labelled: Protein, Energy, Water, Minerals, Vitamins

**Instructions:**

- Place all of the food and the bags labelled "corn," "hay," "haylage," and so on, on a table. Place the nutrient signs for Protein, Energy, Water, Minerals and Vitamins around the room.
- Divide the members into two teams. Each team sends one person to the table who picks up a container or bag of food. That person has to place the container by one of the nutrient signs and say how that food helps either his or her body, or a cow's body. The points for this game are:
  - 3-placing the food under the nutrient sign that it has the most of
  - 2-placing the food under a sign that's close
  - 1-naming how the food helps the body(Note: For details on the correct categories to place feeds in, and how they help the body, see the *Nutrition section of the Resource Manual*)
- The team with the most points after you've gone through all the food on the table wins.

**Debrief:** Why are nutrients important for our health and a cow’s health? How does knowing what nutrients are in food help you create a good diet for your calf? . . .for yourself?



**Activity: Different Rations**

**Purpose:** Once members know what the feedstuffs are with various nutrients in them, you can let them actually see different types of rations.

**Age Group:** All members; this is an activity that would be good for senior members / youth leaders to lead for younger members

**Time Allotted:** 10 minutes

**Preparation & Equipment:** examples of ration analyses and feeds for milking cows

**Instructions:**

- Discuss what's in each ration and why the cow needs these ingredients as the members pass them around and touch and smell them. Let the members do most of the talking. You ask the questions.

**Debrief:** What is a balanced ration? Why is a balanced ration important?



**Activity: Feed Program Pros and Cons**

**Purpose:** This activity introduces members to conventional and TMR feeding programs

**Age Group:** All members

**Time Allotted:** 10 minutes

**Preparation & Equipment:** chart paper and markers (or no equipment if you are just having a discussion)

**Instructions:**

- Let members brainstorm and discuss the pros and cons of each system for feeding cows

**Debrief:** If you had to choose one feeding system over the other, what would you choose and why? What factors would affect your decision? What systems do the members have at home?



**Activity: Designing a Feeding Program**

**Purpose:** This activity allows members to apply their knowledge of ruminant digestion and the feedstuffs that are available

**Age Group:** All members could participate; for more elaborate plans this could be done as a senior member project or activity

**Time Allotted:** 30 minutes

**Preparation & Equipment:** pens and paper; related pages on feedstuffs from the resource manual

*TIP: This would be an excellent topic to have a representative from a feed supplier or nutritionist available to help with*

**Instructions:**

- Split members into groups of two or three. Ask them to design a feeding program for their fictional herd of 50 cows (or 100 cows). They can include production objectives, health objectives, feeding method and feed bunk design.
- If more time is allowed, members could be asked to design complete feeding programs for their herds (i.e. calves, heifers, dry cows, milking cows)
- Groups can share their plans with each other.

**Debrief:** What were the most important goals in designing your feeding program? Did any of these goals compete with each other (i.e. feeding for high protein production can compromise herd health)? How did you come to a final decision about which goals were more important for your herd?





**Activity: Feeding a TMR**

**Purpose:** An on-site tour to familiarize members with this type of feeding program.

**Age Group:** All members

**Time Allotted:** 30 minutes

**Preparation & Equipment:** arrange to hold a meeting at a farm that feeds a TMR

**Instructions:**

- Ask the host farmer to give a guided tour of the feed room.
- Describe how feed is mixed and what the farmer has to do to put all of the ingredients together. Also tour the milking barn to see how the feed is distributed to the animals.
- Ask members to consider labour, costs, effects on the animals and TMR ingredients.

**Debrief:** How does a farm's set up and size affect feeding programs, such as feeding a TMR? How does the farmer ensure that each cow consumes the nutrients she needs?



**Activity: Judging a Balanced Ration**

**Purpose:** Introduces members to a cow's ration and what should be in that ration

**Age Group:** All members

**Time Allotted:** 40 minutes

**Preparation & Equipment:** copy of the flash cards of different feed terms found in the nutrition glossary in the resource guide; feed tags from feed mixed for different cattle (e.g. dry cow mineral pre-mix, milk cow mix); copy of the series of four feed rations; chart paper and markers; paper and pens

**Instructions:**

- To begin the activity, use the flash cards to introduce the different feeding terms that members may see on the feed rations. As each term is identified, have the member who did so write it on the chart paper.
- Include how much should be in a balanced ration.
- Discuss how farmers develop balanced rations: feed testing of the forages and grains they grow on their farms; using commercial mixes to add nutrients that are missing from the home-grown feed; doing a little math to balance the ration. Pass around the feed tags so that members can see that a feed pre-mix is not a complete ration, but rather something that helps you balance a ration.
- Next, members are to judge the four rations on the basis of the needs for a balanced ration. After they're finished, they can discuss their placements. The proper order is:  
1st- Ration #1                      3rd - Ration #4  
2nd- Ration #2                     4th - Ration #3

**Debrief:** Why is knowing the nutrients in any feed important? Is there comparable information for "people food"? (i.e. Canada's Food Guide to Healthy Eating, labels on food containers) How can you use these things to make your own 'balanced ration'?



**Activity: The Judge's Seat – Feedstuffs**

**Purpose:** Members will practice their judging skills and learn the characteristics of good and bad feeds

**Age Group:** All members

**Time Allotted:** 15 minutes

**Preparation & Equipment:** Copies of the hay and haylage scorecards; samples of hay and haylage.

**Instructions:**

- Discuss the features of good types of feed and review the applicable scorecard with the members. If members need help judging, answer their questions with questions. Then, they can come to conclusions on their own. Once everyone is done, members could pair up and practice giving reasons to each other. Then some volunteers could give reasons to the whole group. The leader or host farmer or nutritionist could provide official reasons for the class.
- The scorecard for hay and haylage is on the following page for your reference, but there are also more scorecards for other types of feedstuffs available in the 4-H Ontario Judging Toolkit.

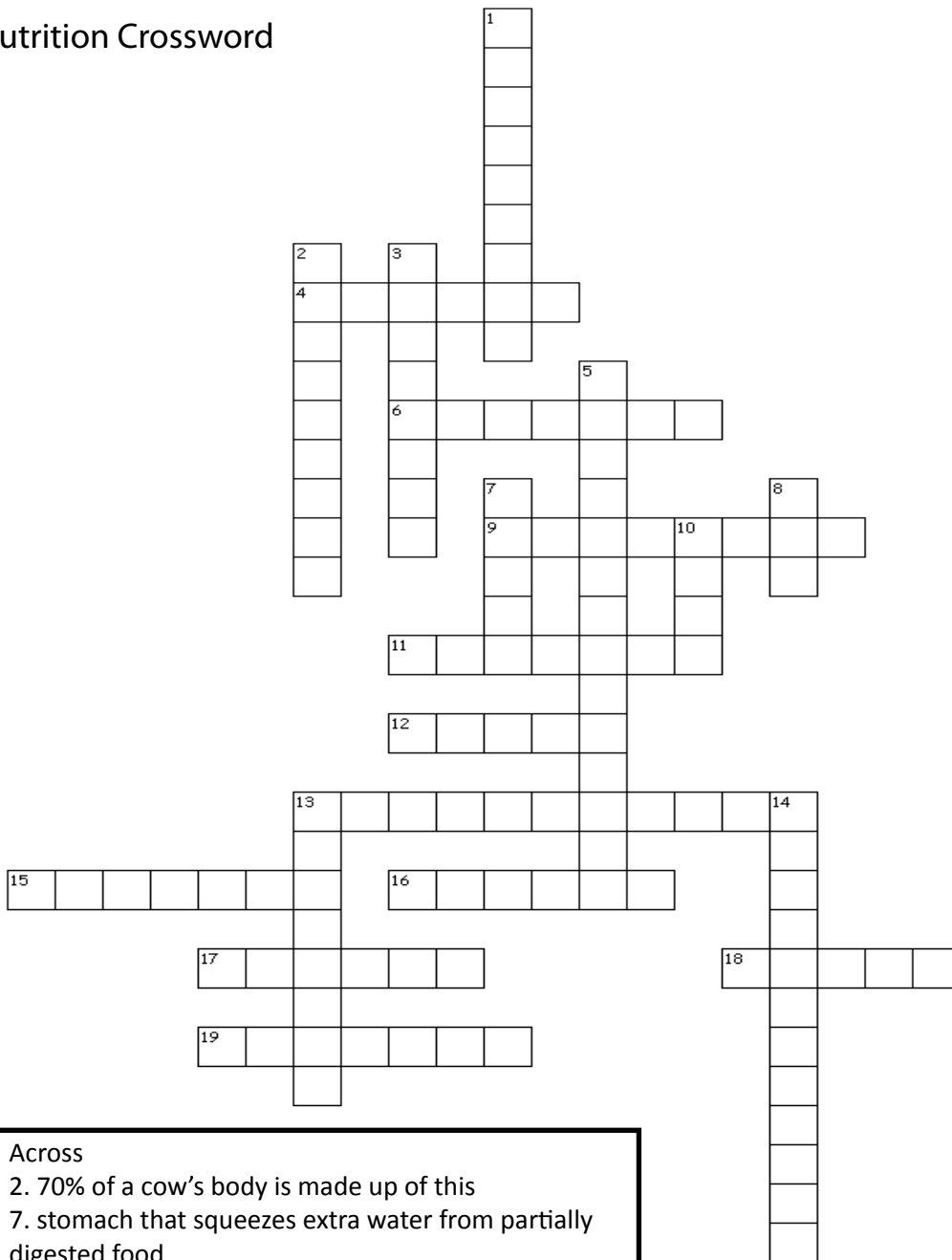
**Debrief:** Why is it important to judge a group of things, such as hay? How can this help you with dairy farming or other aspects of your life?



## HAY AND HAYLAGE

	<b>PERFECT SCORE</b>	
	<b>HAY</b>	<b>HAYLAGE</b>
<p><b>MATURITY</b></p> <ul style="list-style-type: none"> <li>- hay should be cut when legumes are in first flower and grasses are in boot stage (heads just emerging)</li> <li>- late cut hay is low in field value</li> <li>- early cut hay will produce low yields but be tasty</li> </ul>	<b>40</b>	<b>30</b>
<p><b>COLOUR, ODOUR AND DISEASE</b></p> <ul style="list-style-type: none"> <li>- should retain a green colour</li> <li>- hay should have a fresh smell</li> <li>- haylage should have a sharp, sweet smell</li> <li>- musty, burnt or rotten smells indicate poor quality hay or haylage</li> <li>- discolouration is undesirable</li> </ul>	<b>20</b>	<b>35</b>
<p><b>LEAF TO STEM RATIO</b></p> <ul style="list-style-type: none"> <li>- much of the feed value is in the leaves</li> <li>- good quality hay will retain most of its leaves</li> </ul>	<b>20</b>	<b>0</b>
<p><b>MOISTURE AND CONDITION</b></p> <ul style="list-style-type: none"> <li>- moisture content should be 55-65%</li> <li>- you should not be able to squeeze out water</li> <li>- very wet samples may rot in silo</li> <li>- should be free from mold or slime</li> <li>- if too dry, haylage will lose nutrients and taste</li> </ul>	<b>0</b>	<b>15</b>
<p><b>LEGUME-GRASS BALANCE</b></p> <ul style="list-style-type: none"> <li>- legumes are higher in protein than grasses of similar maturity</li> <li>- for hay: over 75% legumes is excellent</li> <li>- for haylage: over 50% legumes is best</li> </ul>	<b>15</b>	<b>10</b>
<p><b>PURITY</b></p> <ul style="list-style-type: none"> <li>- foreign materials such as weeds or straw indicate a low feed value</li> </ul>	<b>5</b>	<b>10</b>

## Nutrition Crossword



## Across

2. 70% of a cow's body is made up of this  
 7. stomach that squeezes extra water from partially digested food  
 10. along with minerals, these are needed in small amounts  
 12. these nutrients are classified into two categories: major and trace  
 14. newborn calves drink this because it is high in antibodies to fight disease

## Down

1. this type of feed is important for rumen function  
 3. true stomach  
 4. the largest stomach  
 5. type of protein that "skips" the rumen and is digested in the intestines  
 6. the stomach that catches wire, nails and other foreign particles  
 8. every bite tastes the same in this type of ration  
 9. a calf consumes this but a cow makes it instead  
 11. grains and other feeds that are jam-packed with energy  
 13. this needs to be balanced so that a cow eats all of the nutrients her body needs



**Answers for Nutrition Crossword:**

## Across:

2. water
7. omasum
10. vitamins
12. minerals
14. colostrum

## Down:

1. roughage
3. abomasum
4. rumen
5. bypass
6. reticulum
8. total mixed ration
9. milk
11. concentrates
13. ration

