

Housing & Equipment Activities

Guest Speakers

- Local farmers with different types of calf housing, milking systems, etc.
- This topic lends itself well to a tour of different facilities
- DHI milk tester to demonstrate how he/she checks and calibrates equipment
- Milk truck driver to discuss his/her equipment and responsibilities
- Milking equipment dealer to discuss new technology in milking equipment
- Representatives from farm chemical supply company to display and discuss cleaners and sanitizers for the dairy farm
- If wanting to demonstrate feed storage facilities, meeting could be held in conjunction with workers at a:
 - o Feed dealership
 - o Grain elevator
 - o Feed processing plant
 - o Dairy farm with some different feed storage systems
 - o Farm safety representative
- Farmer with a new or efficient manure management system

Roll Calls

- Name one feature of your perfect house
- Name one feature of a healthy or an unhealthy house (i.e. fire alarms, carbon monoxide detectors, warm or cool, well insulated, solid structure, well ventilated)
- What type of physical environment makes you feel comfortable or uncomfortable? Why? (i.e. rain, cold/warm house, lumpy mattress, flannel sheets, wool blankets, comfortable couch)
- What type of calf housing do you have at home? (If not from a farm members could describe a type of calf housing they have seen on someone else's farm)
- Name one piece of equipment located in a milk house
- Name one piece of equipment located in a stable where cows live
- Why is water so important on a farm? What is one way that it is used?
- If you wanted to build a new barn, what is one thing you would have to find out first?
- What type of milking system do you have at home? If you do not live on a farm, what type of system have you seen?
- Name one place where feed could be stored for a calf
- What is one way that feed is stored on your farm or your neighbour's farm?



- Name one important thing about managing manure on the farm
- What type of manure handling system do you have on your farm?

What does a “healthy environment” mean to you?

Projects or Take Home Activity Ideas:

1. Draw a diagram of calf housing on your own or your neighbour’s farm. Share it at the next meeting.
2. Find and read an article about calf housing and equipment in a dairy magazine. Share it at the next meeting.
3. Find an article about heifer or dry cow housing in a dairy magazine. Report on your findings at the next meeting.
4. Follow the milking procedure on your farm or a neighbour’s farm. Write down each step. Does the farm have Standard Operating Procedures posted? Share your findings at the next meeting.
5. Find out the cost of the stall base and bedding on your farm or a neighbour’s farm and share what you discovered at the next meeting. Compare with other members.
6. Sketch your farmstead. Draw in the public, private and service zones of your farmstead.
7. Examine ventilation in an existing dairy barn. Consider air flow patterns, capacity and safety. Analyze and make recommendations for improvement, if needed.
8. Prepare a display comparing different types of calf housing. Include costs, labour requirements, health and any other points you consider to be important.
9. Design a calf nursery for a particular farm operation. Using visual aids explain how you chose this design, its features and why it is suitable for this farm.
10. Compare two dairy farms with different systems: milking, feeding or manure handling. Interview each farmer on the advantages and disadvantages of his/her system.
11. Select a new development in farm housing or equipment technology. Review farm magazines and interview farmers, equipment dealers and other resource people to gather information on purpose, advantages, disadvantages and cost.
12. Look at all the different types of feed storage used on your (or a neighbour’s farm). Which ones are used most often?
13. Have members analyze a current situation and make plans for development of a manure system. Encourage them to create a worksheet with space to analyze economics, operating costs, capital costs, existing structures, milk house or parlour waste water, size of the operation, topography, type of soil, climate, location, convenience and pollution.
14. Find out the cost of a stall base and bedding on your farm
15. Find and cut out at least five pictures of different kinds of housing for dairy cattle. A dairy magazine or on the internet are good places to look. Label each picture, stating what kind of housing it is, what age animal it is made for and what needs it meets.
16. Watch cow behaviour in a barn for 10 minutes, 2 times a day. What behaviours are exhibited? Do you think the cows are comfortable or uncomfortable?
17. Create an environmental awareness poster (ie. dairy animals as natural recyclers).
18. Using cardboard, paper, wood, etc, construct a model housing arrangement for calves, heifers or milking cows.



Activity: The Ideal Calf House

Purpose: This activity is meant to get members thinking about the factors that make a calf house ideal.

Age Group: All members

Time Allotted: 10 minutes

Preparation & Equipment: Paper and pencils

Instructions:

- Divide the members into groups. Mix all of them together, making sure that there is an older member to act as a leader in each group.
- Tell the groups they have five minutes to brainstorm the characteristics of the ideal calf house. Someone in the group can scribble down these ideas as they are being shouted out.
- Once the groups are finished brainstorming, they must figure out the reasons why the features they named have to be in the ideal calf house.

Debrief: Was brainstorming features easier than coming up with reasons? Why? Were there any disagreements about these reasons? How did you solve them?



Activity: Building a Calf House (Option 1)

Purpose: To practice teamwork and get members thinking about the aspects of an ideal calf house

Age Group: All members

Time Allotted: 20 minutes

Preparation & Equipment: Collect household and craft items such as cardboard, construction paper, popsicle sticks, noodles, pipe cleaners, buttons, markers, glue and scissors

Instructions:

- Divide the members into small groups
- Based on lessons about calf housing, members should try to construct the ideal calf house. They can base it on their own farms, pictures they've seen in books or their imaginations!
- Encourage unusual ideas, such as the calf house of the future
- Once the groups have finished their calf houses, have them present their ideas to the rest of the club members, and explain the features they have put into their models.

Debrief: Did you and your group members have any disagreements when you were trying to create the ideal calf house? Why or why not? How did you solve these disagreements, or avoid them in the first place? What elements of ideal calf housing were they able to incorporate? What may have been missing?

Activity: Building a Calf House (Option 2)

Purpose: To practice teamwork and get members thinking about the aspects of an ideal calf house

Age Group: All members

Time Allotted: 20 minutes

Preparation & Equipment: stuffed animals, newspapers and masking tape

Instructions:

- Divide the members into small groups and give each group some newspaper and a roll of tape
- Give each group a stuffed animal, telling them that it represents a calf that they are supposed to build a shelter for out of the newspapers and tape
- Encourage members to incorporate important features of calf housing
- Once the groups have finished their calf houses, have them present their houses to the rest of the club and see which group built the strongest house

Debrief: Debrief as with Option 1 above.



Activity: Calf House Inspection

Purpose: This activity involves exploring an existing calf facility and determining how it meets the criteria for an ideal calf house.

Age Group: All members

Time Allotted: 45 minutes

Preparation & Equipment: Copies of the "Calf House Inspection Report" worksheet on the following page, paper and pencils, discuss the meeting with the host farmer to make sure it is okay for the members to look at the calf housing and rate it on an 'inspection report'

Instructions:

- Divide the members into small groups. Tell the groups that they are calf housing inspectors.
- Then, tell them to look at the list of factors on the "Calf House Inspection Report." They should make a few comments underneath each characteristic noting what factors would give a calf house a high rating in that category.
- Next, their assignment for the day is to inspect the facility on the farm the meeting is taking place at. They should test for drafts and dampness, cleanliness, labour requirements, proper bedding and so on.
- For example, members can sit on the bedding and rate how comfortable it is.
- From the inspections the groups perform, they can prepare a calf house inspection report, rating each characteristic for the facility and giving reasons for the ratings. Then, they can share these reports with the other members of the groups.

Processing: Did any group rate one aspect higher or lower and why? Within the groups, were there any disagreements about ratings? How did the group come to a consensus for their report?



Calf House Inspection Report

Farm: _____ Inspectors: _____

Type of Housing: _____ Date: _____

Inspect the calf housing and rate it according to each of the characteristics. Include reasons for your ratings in the Comments column. First, write a few points under each characteristic that would give the housing a high rating.

| Characteristic | Rating 1=lowest 5=highest | Comments |
|-----------------------|------------------------------|----------|
| Easy to clean | 1 2 3 4 5 | |
| Low cost | 1 2 3 4 5 | |
| Flexible | 1 2 3 4 5 | |
| Well ventilated | 1 2 3 4 5 | |
| Individual | 1 2 3 4 5 | |
| Dry | 1 2 3 4 5 | |
| Comfortable | 1 2 3 4 5 | |
| Convenient to work in | 1 2 3 4 5 | |
| Easy to observe | 1 2 3 4 5 | |



Activity: Farmstead Planning – Constructing a Calf House

Purpose: During this activity, the members learn about farmstead planning, and put their analytical skills to use by coming up with a new calf housing facility for the farm at which the meeting is being held.

Age Group: Senior members

Time Allotted: 55 minutes

Preparation and Equipment: paper and pencils, measuring tapes and binder twine

Instructions:

- Divide the members into small groups. Each group should pick the type of housing facility they are going to plan for this farm:
 - hutches
 - cold environment barn
 - warm environment barn or
 - mob feeding
- To plan the facility, the group needs to brainstorm everything they should consider before starting to build. They can also "interview" the owner of the farm to find out his or her requirements for a calving facility, such as the number of calves housed at one time.
- Let the planning begin! Groups can walk the farm property looking for a good site. They can also lay out the building using the binder twine and the measuring tape to see how big it will actually be. Then, they can draw their plans on paper, including all the details they feel are necessary to implement the plan.
- Present the plans to each other. Different housing systems will be in different locations, so they may want to walk to each of these locations and explain the plan from there. This may help the others visualize the facility.

Debrief: What were obstacles that you needed to overcome to complete your calf housing plan. both logistical and group-related? Were there any disagreements about the building plan? How did you handle or avoid these disagreements?



Activity: Keeping them Separate – Heifer Housing

Purpose: This activity reviews reasons why heifers and dry cows need to be grouped separately

Age Group: All members

Time Allotted: 10 minutes

Preparation & Equipment: could be done with no equipment or with chart paper and markers

Instructions:

- Ask the group to brainstorm answers as to why heifers and dry cows have different needs, and what these needs are when it comes to housing. Write the answers down on chart paper.

Debrief: Grouping heifers and dry cows separately is a good idea. Can you think of other areas of your life in which people are divided into groups for good reasons (i.e. school, driving age, drinking age, sports teams, etc.)?



Activity: Qualities of Heifer Housing

Purpose: This game helps members learn what the ideal heifer housing should provide heifers and why

Age Group: All members

Time Allotted: 10 minutes

Preparation & Equipment: "Mix and Match" cards from the following page, chart paper and markers

Instructions:

- Divide the group into two or three teams. Give each team a set of the "Mix and Match" cards found on the following page, all mixed up.
- The first team to match the housing "qualities" with the "reasons why" wins
- Have the winning team read out their matches. The other teams should check to make sure the matches are correct.

Debrief: Are there other "qualities" or "reasons why" that should be added to the list?



Heifer Housing Mix-and-Match

Cut out the “Quality” and “Reason Why” cards for this mix-and-match game.

| | | | |
|----------------|--|-------------------|--|
| QUALITY | grouped by age and size | REASON WHY | <ul style="list-style-type: none"> • bigger, older heifers compete with younger ones |
| QUALITY | easy to move animals from one group to another | REASON WHY | <ul style="list-style-type: none"> • less labour for farmer and less stress on the heifer |
| QUALITY | easy to watch | REASON WHY | <ul style="list-style-type: none"> • can catch health and feed problems and watch for heats |
| QUALITY | treatment and breeding area | REASON WHY | <ul style="list-style-type: none"> • heifers require care such as vaccinations and breeding, and this makes those things easier |
| QUALITY | easy bedding and manure removal | REASON WHY | <ul style="list-style-type: none"> • reduces labour and keeps the housing clean |
| QUALITY | frost-proof water | REASON WHY | <ul style="list-style-type: none"> • even in the winter, animals need water all the time |
| QUALITY | good ventilation | REASON WHY | <ul style="list-style-type: none"> • damp, smelly, stale air makes animals sick |
| QUALITY | comfortable stalls and bedding | REASON WHY | <ul style="list-style-type: none"> • cows that feel good are less stressed and stay healthier |
| QUALITY | low labour | REASON WHY | <ul style="list-style-type: none"> • the less time you have to put in, the lower your labour costs |

Activity: Heifer Housing Match Up

Purpose: For members to learn about some different types of heifer housing, what they might look like, and what would describe them.

Age Group: All members

Time Allotted: 10 minutes

Preparation & Equipment: pictures of free stall, tie stall, bedded pack, open front, and slatted floor heifer barns, cut outs of the chart on the following page

Instructions:

- Divide the slips of paper and pictures up amongst the members (can be given to groups, or each member could be given a slip of paper to match up with other people, etc.)
- Match the picture with the name of the housing type and the description of the housing

Debrief: Take up the answers to the housing matching cards:

1 – C – a

2 – E – c

3 – B – d

4 – A – e

5 – D – b



Heifer Housing Match Up Cards

| Picture | Name | Description |
|--------------------------------------|-------------------------|--|
| 1 (picture of free stall) | A Open Front Barn | a Provide stalls in the rest area and heifers move freely about the enclosed barn |
| 2 (picture of tie stall) | B Bedded Pack Barn | b Pens or free stalls may be used to house heifers. Manure falls to gutters or storage beneath the barn |
| 3 (picture of bedded pack barn) | C Free Stall Barn | c Heifers are tied in stalls or penned in small groups |
| 4 (picture of open front barn) | D Slatted Floor Barn | d This is a good choice if plenty of bedding is available |
| 5 (picture of slatted floor barn) | E Tie Stall Barn | e This simple, economical post and beam cold structure is single sloped and open to the south |



Activity: Having a Heifer Building Plan

Purpose: Members will learn how to plan within a set of constraints, such as time, building locations, and so on. Heifer housing facilities will be used as a building example for this plan.

Age Group: Senior members

Time Allotted: 20 minutes

Preparation & Equipment: paper and pencils

Instructions:

- Divide the senior members into three groups (if there are enough members). Hand each group some paper and pencils.
- Set the hypothetical farm situation: This farm needs to be redesigned because the farm is expanding its operations by 50 cows. The three owners have decided to create different plans to solve the problem of not having enough room on the current farm.
- Then, one group decides where to build a new heifer building, another group decides which building to remodel to build a heifer barn, and one group can redesign the whole farmstead, with the exception of moving the farmhouse and the trees. (If there's time, they can add more detail to the plan, such as redesigning the main barn, calf housing, and so on)
- Tell each group to be as detailed as possible in their plans and the reasons why they made their decisions. But, they only have 20 minutes to complete the task.
- After each group is done, they can all share their results.

Debrief: Is it easier to plan from scratch or from what is already there? How did the constraints, such as time and the building locations, affect your decisions, your creativity...? What's the best atmosphere for making major decisions such as these?



Activity: Exploring Heifer Housing

Purpose: For members to learn to analyze the host farm heifer housing facilities and be able to report back on their findings

Caution: Check with the host farmer first to make sure it is okay to explore the heifer housing facilities on the farm

Age Group: All members

Time Allotted: 30 minutes

Preparation & Equipment: pens and paper

Instructions:

- Divide the club into small groups.
- Tell the groups to write down all the characteristics of heifer housing they can think of. Then send them off to explore the heifer housing on this farm. Sometimes heifers are housed in a few different buildings on the farm.
- Each group must write down a description of the type of barn, and the pros and cons of the housing set-up based-on the qualities of good housing (see Resource Guide for reference). Tell them to really put themselves in the place of the animals. Is the housing comfortable, draughty, clean?
- Why not take a seat in it to find out? If they find problem areas, have them write down suggestions to solve these problems.
- When the groups are finished, have them meet back and share their findings. Keep all the levels separate for these discussions.

Debrief: What kind of problems, and positives, did you find? How did you apply what you learned about heifer and dry cow housing to offer solutions to these problems?



Activity: Stall Sketch

Purpose: To compare a real stall to the ideal measurements and discuss how changes could be implemented to increase cow comfort.

Age Group: All members

Time Allotted: 15 minutes

Preparation & Equipment: tape measures, pencils, and copies of the “Tie Stall Sketch” Worksheet from the following page

Instructions:

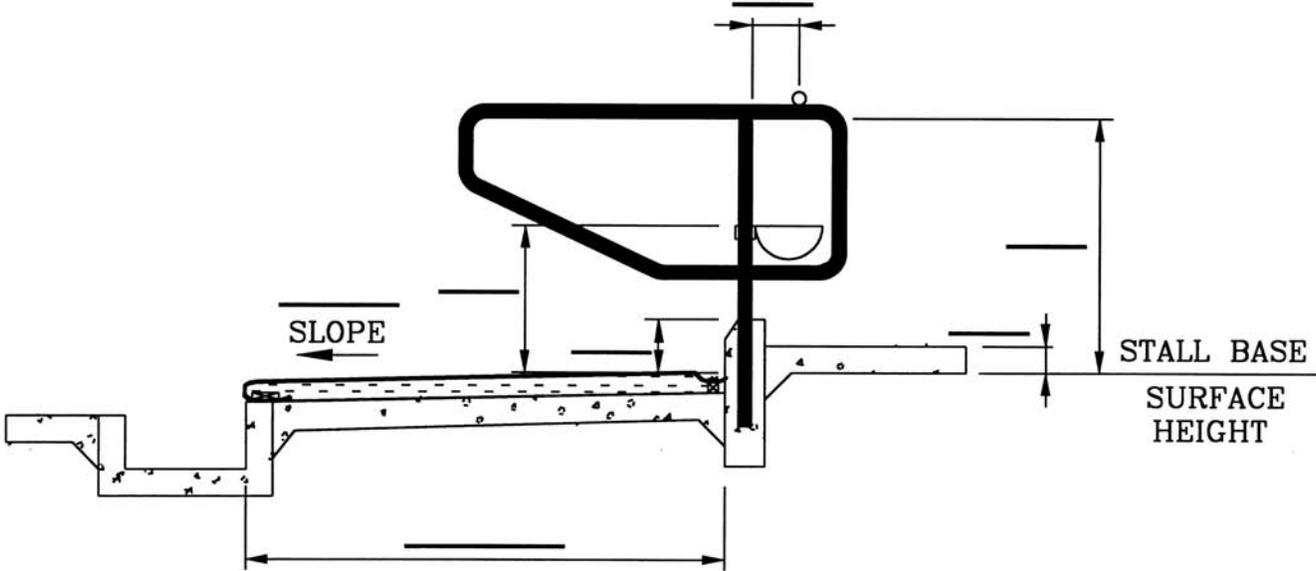
- Divide members into small groups and give each group a copy of the “Tie Stall Sketch” worksheet. Ask members to measure the dimensions of a stall in a tie stall barn as shown on the worksheet.
- Have members compare these measurements to the ideal measurements found in the Resource Manual.

Debrief: Do the stalls resemble the ideal barn stalls? What could the farmer do to improve cow comfort?

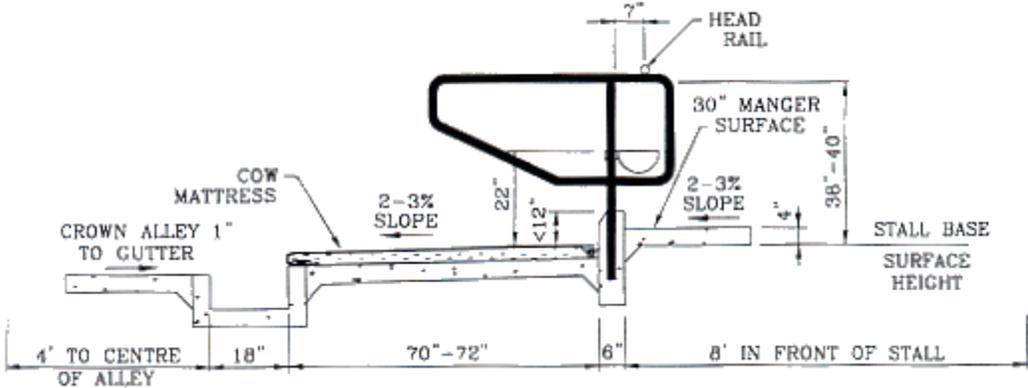


Tie Stall Sketch Worksheet

Your measurements:



Ideal measurements:



Activity: Mechanics of a Milking Machine

Purpose: To see a milking machine in action and get a hands on feel for it. This is the best way to understand how it works.

Age Group: All members

Time Allotted: 20 minutes

Preparation & Equipment: a number of milking machines that have been taken apart (senior members could take them apart prior to the activity); bucket of water, or cows at milking time; copies of the "Parts of a Milking System" worksheet from the following page; pencils

Instructions:

- Start out by demonstrating the 'sucking' power of a milking machine.
- Check the pulsation rate to make sure it is 50-60 pulses per minute
- Preferably, you can actually milk a cow, or have a senior demonstrate how to milk a cow. There may not be an un milked cow available for your meeting, so you can also use a bucket of water to demonstrate the vacuum effect of a milker.
- Place the teat cups into the bucket of water and let the members see how the water gets sucked in the unit. Talk about why and how this happens. In other words, discuss the concept of vacuum.
- Give each group a milking machine with all of the pieces taken apart. From here members can pick up the pieces, study them and think back to the machine they saw in action.
- Have each member draw or trace the various parts of the milking machine beside the corresponding part name on the worksheet. They can then explore the barn and sketch the other parts of the milking system as long as it is okay with the host farmer.
- Once the groups are finished, each group is responsible for explaining the name of one part of the milking system to the rest of the club, and then putting that part back onto the milking machine, if applicable.
- Finally, discuss how to maintain milking equipment. This includes cleaning the milking equipment daily, and testing the entire system twice a year to find problems with the vacuum pump, vacuum regulator, vacuum gauge, pulsators and inflations.

Debrief: Why is it important to know and take care of all of the parts to a milking system? Why is maintaining equipment important for all areas of the farm? How does this apply to something in your own life (e.g. bike, car, computer, your health)?



Parts of a Milking System

| | |
|-----------------|--------------------------------|
| Pulsator | Milk Receiver Jar |
| Teat cup shells | Bulk tank |
| Teat cup liners | Vacuum pump |
| Milk hoses | Vacuum regulator or controller |
| Vacuum hoses | Vacuum gauge |
| Milk claw | Pulsator vacuum line |
| Pipeline | |



Activity: Proper Milking Procedure

Purpose: For members to learn about proper milking and sanitation practices and their requirements on dairy farms

Age Group: All members (useful to group older and younger members together for this one)

Time Allotted: 20 minutes

Preparation & Equipment: Copies of Standard Operating Procedures (SOPs) worksheets found on the following pages, pencils, completed SOPs for guidance.

Instructions:

- Explain to members that Standard Operating Procedures are step by step instructions to show how to do certain things on the dairy farm.
- Divide members into groups and have each group fill out an SOP for either a tie stall or free stall milking barn. Then discuss and compare answers using the completed SOPs as a group.

Debrief: Why are Standard Operating Procedures important? Make sure that members know that farmers are expected to post these SOPs in their milk houses as part of the Canadian Quality Milk Program. What do they tell you? Make sure that members consider the SOPs to be step by step instructions for milking procedures so that anyone coming into the barn would know how to do the milking procedures. What other activities could SOPs be created for?



Standard Operating Procedures - Pre-Milking Management

Purpose: To ensure that all milk contact surfaces are sanitary prior to milking.

Farm Name: _____

Date: _____

| SOP | Work Details |
|---|--------------|
| Bulk Tank Wash Procedures | |
| <i>If tank is empty, ensure it has been washed, run the sanitize cycle, let drain, close the valve and secure dust cap.</i> | |
| Preparation of Milking Equipment | |
| <i>Sanitize pipeline 30 minutes prior to milking and ensure complete drainage.</i> | |
| <i>Prepare equipment and supplies for milking.</i> | |



Standard Operating Procedures - Milking Management

Purpose: To ensure that milk is harvested in a way that prevents contamination and promotes udder health.

Farm Name: _____

Date: _____

| SOP | Work Details |
|--|--------------|
| Prepare Teats for Milking | |
| <p><i>Dip / Wash Strip Dry Apply</i></p> | |
| <p><i>Post dip all teats using a non-return teat dip cup.</i></p> | |
| Treated Animals / Animals with Abnormal Milk | |
| <p><i>Milk treated animals according to treated animal milking procedures.</i></p> | |
| Turn Bulk Tank Cooler On (if Tank Empty at Beginning of Milking) | |
| <p><i>Turn cooler on once milk has reached bottom of agitator.</i></p> | |



Standard Operating Procedures - Post-Milking Management

Purpose: To ensure milking equipment is cleaned immediately after use to prevent bacterial growth.

Farm Name: _____

Date: _____

| SOP | Work Details |
|---|--------------|
| Bulk Tank Wash Procedures | |
| <i>If tank is empty, ensure it has been washed, run the sanitize cycle, let drain, close the valve and secure dust cap.</i> | |

Contact Information

Service for milking equipment is provided by: _____



Activity: Looking at Feed Storage (Options)

Purpose: Whether on a farm or in a meeting room, this activity will give members a sampling of different feed storage facilities.

Age Group: All members

Time Allotted: 15 minutes

Preparation & Equipment: You could either get the host farmer to discuss the different feed storage options that he or she uses OR gather pictures of different feed storage facilities (a Youth Leader could collect photographs)

Instructions:**Option 1 – Discussion Only**

During the activity ask questions about what these structures store, the labour required to use them, and the equipment and maintenance each storage facility needs.

Option 2 – Working in pairs or teams, have members look at the characteristics of different feed storage facilities. Have each group come up with advantages and disadvantages of their storage area. Have the groups present their findings to the whole club. You may want to start a large chart on which each group could record. The chart on the following page contains some of the points you might hear.

Option 2 with a twist – Members could present their type of feed storage as an advertisement, trying to sell that storage system to the other members. Knowledge of disadvantages could be used to minimize their impacts or to prepare for questions that other members may ask.

Debrief: How do feed storage facilities affect feeding programs?



Activity: Safety Lessons

Purpose: Members will learn to avoid dangerous situations. The discussion will point out the hazards of feed storage facilities and the precautions farmers and 4-H members can take to prevent accidents

Age Group: All members

Time Allotted: 30 minutes

Preparation & Equipment: Farm safety brochures to hand out - in Ontario, you can get them from the Farm Safety Association - www.farmsafety.ca or 519-823-5600 - in other provinces, contact your provincial equivalent.

Instructions:

- Discuss the dangers certain storage facilities present to farmers and visitors to the farm
- Divide the club into groups, mixing members of all ages
- Each group should present a role play about silo gas or grain bin safety to the rest of the club. The role play can involve someone "saving the day" or someone making a dangerous mistake. But be sure that each group does something a little different. Some example situations are:
 - you catch your neighbour playing in an empty grain bin
 - when you're filling a grain bin, someone decides to climb up and check its progress
 - you're filling the silo today
 - a couple of weeks after you fill the silo, your neighbour wants to climb inside to see what it looks like
 - someone's trapped in a silo
 - someone's trapped in a grain bin
- Present the role plays, then discuss them

Debrief: Why is having a safety plan in place important on a farm? How do you teach people who visit your farm about safety? How do you avoid dangerous situations on your own farm? What about dangerous situations off the farm?



Activity: Looking at Farmsteads

Purpose: For members to understand the purpose of different areas on a farm and their location relative to one another.

Age Group: All members

Time Allotted: 15 minutes

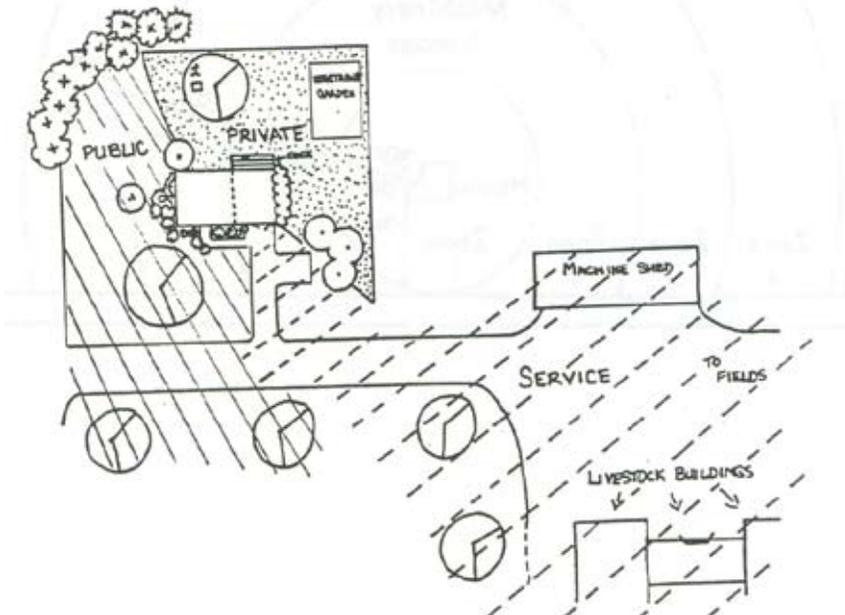
Preparation & Equipment: pieces of paper and tape or sticky labels with the names of different aspects of the public, private and service zones of the farm written on them, large pieces of chart paper, markers

Instructions:

- Explain to members that you can look at farms in terms of the public, private and service areas
- On a large sheet of paper, make 3 lists, asking members to think of things that are found in each of the service areas (chart below lists some answers)
- Draw a farm layout on another sheet of chart paper (such as the diagram below) and ask members to shade the areas on the farm that are used for each purpose with different coloured markers

Debrief: It can be helpful to look at the service areas when developing an existing farmstead or planning out a new facility. Explain that not all farmsteads fit nicely into these areas. There are many factors which can stop a farmstead from fitting in: topography, drainage, soil type, climate, water, sewage, and electricity. Municipal by-laws are also important to adhere to when building structures.

| PUBLIC | PRIVATE | SERVICE |
|--|---|--|
| What people first see (needs to give a good impression) <ul style="list-style-type: none"> • Area along laneway • Road entrance • Trees, lawns, shrubs, • Area visible from road | Informal and visible from the house <ul style="list-style-type: none"> • Garden • Children’s play area • Deck, patio, pool • Recreation areas | The farm business areas <ul style="list-style-type: none"> • Driveway, garage • Workyard • Farm buildings and farm work areas |



Activity: You Be the Judge – Farmstead Planning Selection

Purpose: To practice practical judging and analytical thinking skills. To apply knowledge of good farmstead planning.

Age Group: Senior members

Time Allotted: 20 minutes

Preparation & Equipment: paper and pencils, copies of the “Sample Farmsteads” on the following page.

Instructions:

- Discuss farmstead planning considerations with the members (see Resource Manual). Then hand out copies of the “Sample Farmsteads” on the following page. Give members 15 minutes to assess the farmsteads and decide if each one was designed well or poorly. Which layout would they pick if they were designing their own farmsteads?

Debrief: Review the positive and negative points of the farmsteads, making sure to include the following points:

Farmstead A – barn smells may be a problem since some winter winds come from the northwest, if the house was further west and the barn further north this problem would be solved

Farmstead B – the curved driveway avoids a straight opening in the windbreak, but may create problems with drifting snow. The alternate drive is useful for moving some of the farm traffic away from the house, but it is difficult to see who’s coming and going from the house. If the alternate drive was used, it would be better to have the house and machinery shop locations switched

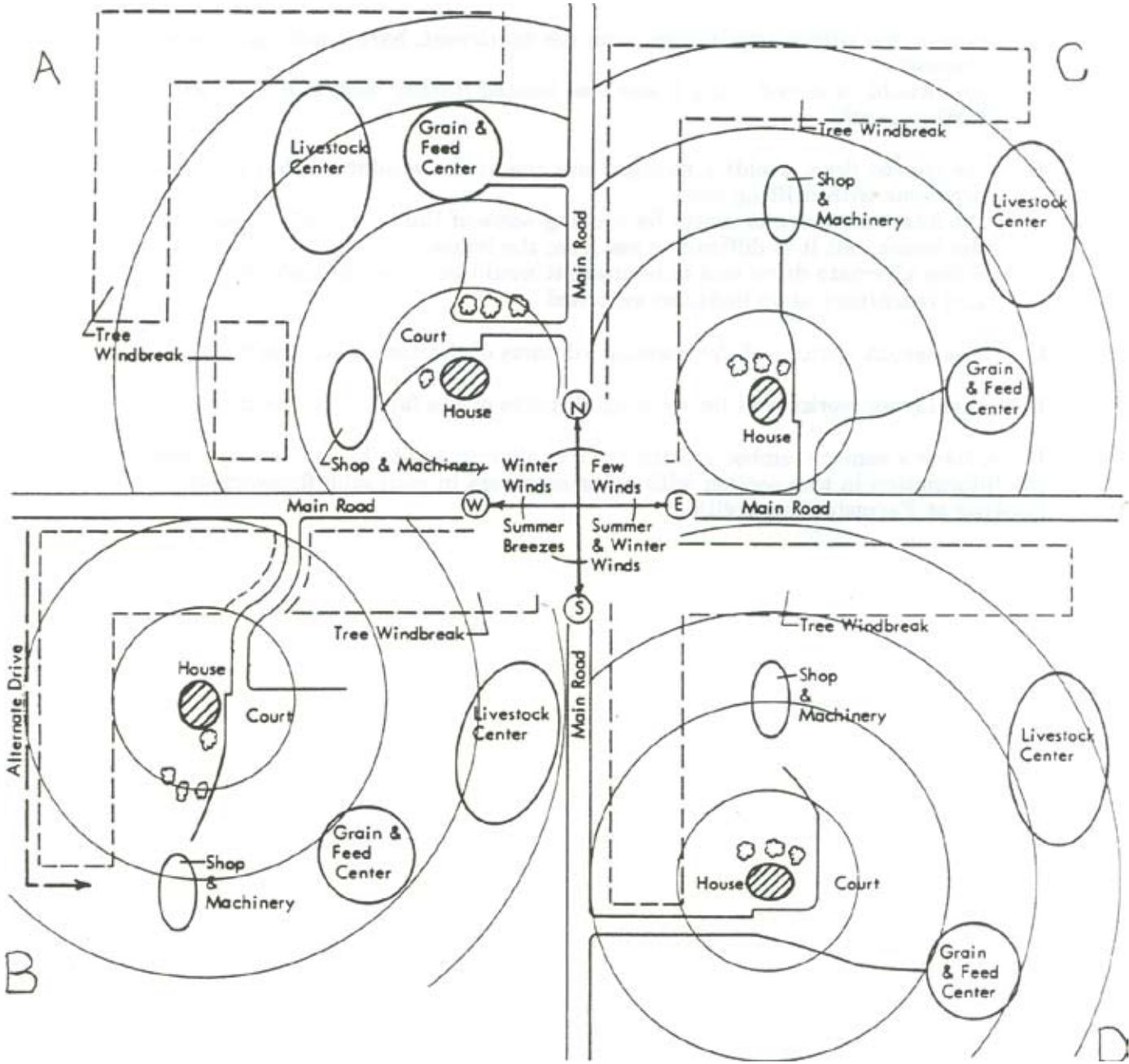
Farmstead C – this layout works well for viewing all parts of the farm from the house

Farmstead D – this layout works well for viewing all parts of the farm from the house

Discuss with members that by discussing the advantages and disadvantages of the farmsteads and by selecting the one(s) they think are the best, the members have actually judged the farmsteads. Judging is not always ranking a class of items, but instead can involve making decisions based on desirable and undesirable qualities in a group of items.



Farmstead Planning Selection Activity



Activity: Evaluating Farmsteads

Purpose: For members to apply their knowledge about farmstead planning by assessing an existing farmstead

Caution: *Don't forget to ask permission from the host farmer to conduct this activity*

Age Group: All members

Time Allotted: 20 minutes

Preparation & Equipment: paper, pencils

Instructions:

- Divide members into small groups and give each group paper and pencils
- Have each group sketch the farmstead you are visiting, including buildings, power lines, waterways, livestock areas, driveways and windbreaks.
- Then, groups should identify which service areas are located in the different parts of the farmstead. Does it fit into sections?

Debrief: Discuss how well the farmstead fits into separate public, private and service areas. Note that it is not always possible to have the ideal plan.



Activity: My Space – Your Space

Adapted from: Manitoba Senior Dairy 4-H Manual, draft printed 2000

Purpose: To teach members about the importance of planned development in rural areas, where farming and non-farming people meet

Age Group: All members

Time Allotted: 20 minutes

Preparation & Equipment: copies of “My Space – Your Space” worksheet found on the following page, pencils

Instructions:

- Members are responsible for planning the settlement of a new area, with several components included (as outlined in the worksheet). The components are to be put into the squares of the grid. For example, a dairy farm requires one space while a golf course requires three spaces.

Debrief: Was it difficult to fit the parts of the settlement into the grid? Do you see any potential conflicts between rural and urban or the environment in your graph? What happens when the needs of different groups of people collide? Who decides who gets what? How do they compromise?



My Space – Your Space Worksheet

Assume you are responsible for the settlement of a new area. Put each of the items on the following list in the squares or plots in the graphic below. For example, a dairy farm requires one space while a golf course requires three spaces:

| PLOTS | | | |
|------------|---------------|--------------|---------------|
| Item | Spaces Needed | Item | Spaces Needed |
| Grain farm | 3 | Dairy farm | 1 |
| Beef farm | 2 | Town | 6 |
| Lake | 3 | Golf course | 3 |
| Park | 2 | Poultry farm | 1 |
| Hog farm | 2 | | |

| | | | | | |
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Activity: Ventilation Demonstrations (Several Options)

Purpose: To show members how to detect humidity and air movement inside barns

Age Group: All members

Time Allotted: 5 minutes per demonstration

Preparation & Equipment: Listed below with instructions for individual variations

Instructions:

- Option 1 – Humidistat test – The barn may have a humidistat installed that can be checked for the humidity level in the barn. Otherwise, inexpensive humidistats can be purchased at a hardware store. These inexpensive ones will be suitable for demonstration purposes, but are not sufficient to stand up to continuous use in a barn.
- Option 2 – Wet Hand Test – This is a good activity to do with members, especially since it is interactive and involves no supplies. Have members get their hands wet and hold them in the air to get the effect of the air moving against their hands. Use a fan to get more air speed and ask members whether their hand feels cooler or warmer. Remind members that even at low air speed, calves and cows can feel the difference in temperature caused by drafts.
- Option 3 – Smoke pencil – This is an excellent demonstration of air speed and drafts in a barn. This option is more expensive due to the cost of smoke pencils, but they can be obtained through stores selling household safety items. Turkey basters with plastic nozzles, make good bulbs for smoke pencils. Cut the end of the nozzle so the glass tubes fit snugly when inserted. Cut a small hole in the rubber bulb to let the air in. Break the ends of the smoke tube using pliers or vice grips. Insert the tube into the nozzle and squeeze the bulb. The smoke created is the same weight as the air and follows the currents exactly. Caution: The smoke created is sulfuric acid vapour. Use carefully and avoid breathing the fumes directly. Dispose of the tube as directed when finished.
- Option 4 – Fogger – A fogger may also be used to demonstrate air movement in a building. Because they can be dangerous, an experienced person should do this demonstration.

Debrief: Discuss the importance of ventilation. Why do barns need good ventilation? If the building you are in has a good ventilation system, take a tour and discuss the different aspects of the system.



Activity: Ventilation Case Studies

Purpose: For members to apply their knowledge about ventilation to think of solutions to hypothetical ventilation problems

Age Group: Senior members

Time Allotted: 15 minutes

Preparation & Equipment: paper, pencils

Instructions: Members can work individually or in teams to come up with solutions to the following case studies.

CASE STUDY 1

In October, a new employee at Happycow Dairy Farm found the naturally ventilated tie stall barn drafty. Warm, moist air remained close to the ceiling of the barn while cool air moved across the bottom.

Solution: Temperature stratification (horizontal division of warm and cool air) is usually caused by poor inlet control and inadequate mixing and distribution of air within the barn. Adjust the air inlets to allow sufficient air into the barn.

CASE STUDY 2

Last fall, the Smiths installed a new fan in their mechanically ventilated warm tie stall barn for their 40 milking cows. Several of the dairy calves, which were raised in individual pens inside the milking barn, developed pneumonia during the winter. "Some days the barn seemed really warm, and other days they were really cold." Commented John, who milks regularly.

Solution: The first step is to install a thermostat, so you know what the temperature is in the barn. Calves are likely developing pneumonia because of the rapid changes and range of temperature. Oversized ventilation equipment is often the cause. Installing thermostats and connecting them to the ventilation equipment to keep the temperature from fluctuating more than 3°C will help to solve the problem. Thermostats should be installed 3-4m away from the sidewall of the barn, hung from the ceiling and free to swing in case they are hit by equipment or animals. In short buildings, they should be installed in the middle of the length of the barn. In larger buildings, install several thermostats, making sure they are all adjusted to the same temperature.

CASE STUDY 3

Sara's naturally ventilated dairy barn is usually well ventilated with a fresh and clean air supply. This hot day in August, there is a strong wind blowing from the south. At the far end of the barn, the north end by the maternity pen, the air has a strong odour and is obviously not circulating.

Solution: When wind is blowing parallel to the building, zones of poor circulation can develop near the ends of the barn. Open the windows at the ends of the building to help improve air circulation in these areas.

Debrief: Compare the members' ideas to the suggested solutions. Were they similar? Discuss whether some of their options may or may not work.



Activity: Manure as a Resource Demonstration

Purpose: To give members an understanding of the amount of manure produced by cattle each day

Age Group: All members

Time Allotted: 5 minutes

Preparation & Equipment: water, containers, 1 litre container for measuring

Instructions:

- Demonstrate how much manure is produced by the dairy animal by measuring out the following amounts in water:
 - Dairy calf (0-3 months old) – 5.4 litres of manure per day
 - Dairy heifer (6-15 months old) – 14.2 litres of manure per day
 - Dairy cow (545 kg) – 45.3 litres of manure per day

Debrief: Discuss with members that each of these measurements is for only one animal, each day. Emphasize the number of days per year and also the number of animals in a herd. Remind members that these values are averages. The amount and nutrient (nitrogen, phosphorus, potassium) content varies with the type and age of animal, feed consumed and animal health. Smaller breeds will produce less manure than larger breeds. Given the large volume of manure, it is important to handle and store manure properly.



Activity: The Manure Cycle

Purpose: To help members understand how manure is recycled and fits into agricultural production

Age Group: All members

Time Allotted: 10 minutes

Preparation & Equipment: 3 copies of cut outs of parts of the manure cycle found on the following page

Instructions:

- Cut out the parts of the manure cycle, given on the following page. Divide your members into three teams. Give each team one set of parts. Have the teams race against each other to be the first to place the parts together to form the manure cycle

Debrief: Discuss the different methods of doing each of the parts of the manure cycle. Display the completed cycle by sticking the parts up on the wall. Along with each part, you may want to post a list of the different methods used to do it.



Manure Cycle Parts

| | | |
|---|----------------------------|-----------------------------------|
| CROPS ARE SEEDED | MANURE IS COLLECTED | MANURE IS SPREAD ON FIELDS |
| MANURE IS WORKED INTO THE SOIL | MANURE IS STORED | CROPS ARE USED BY ANIMALS |
| MANURE IS MOVED TO SPREADING EQUIPMENT | CROPS ARE PRODUCED | MANURE IS MOVED TO STORAGE |



Activity: Manure Handling I

Purpose: To teach members different ways of handling manure (solid, liquid, semi-solid)

Age Group: All members

Time Allotted: 10 minutes

Preparation & Equipment: paper and pencils

Instructions:

- Divide the members into three small groups. Assign each group one type of manure handling method: solid, semi-solid or liquid. Give each group some paper and ask them to write down at least three advantages and three disadvantages of their method. The groups can then come together and share their answers.

Debrief: Discussion of answers. Ask members what methods they use at home or have seen used.

Activity: Manure Handling II

Purpose: To teach members different ways of handling manure (solid, liquid, semi-solid)

Age Group: All members – this may be a good activity to have a senior member lead

Time Allotted: 10 minutes

Preparation & Equipment: slips of paper that have the advantages and disadvantages of the different methods of manure handling written on them, chart paper with the headings solid, semi-solid and liquid

Instructions:

- The disadvantage and advantage papers should be distributed to club members, who will then try to put them under the correct heading (manure storage method that it belongs to).

Debrief: Discussion of answers. Ask members what methods they use at home or have seen used.



Activity: Liquid Manure System Safety

Purpose: To enforce safe manure handling and storage methods

Age Group: All members

Time Allotted: 10 minutes

Preparation & Equipment: copies of the “Liquid Manure System Safety” worksheet on the following page; pencils.

Instructions:

- Ask members to complete the worksheet.

Debrief: Discuss the answers to the match up and the true or false questions. Talk about the reasons for the answers and what the potential dangers are.

Answers for Match ‘Em Up:

1. C
2. A
3. D
4. B

Answers for True or False:

1. True
2. False – hydrogen sulphide or manure gas can kill humans and animals
3. True
4. False – Never let the manure pit fill completely (leave at least 0.3m to 0.6m to allow space for gas)
5. True
6. True
7. True



Liquid Manure System Safety

Match 'Em Up – Draw lines to match the corresponding items in the left column to those on the right

- | | |
|------------------------------|--|
| 1. manure gas | A. enter a liquid manure system without without wearing a self contained breathing apparatus |
| 2. never | B. produces manure gas, carbon dioxide and methane |
| 3. liquid manure systems | C. clear, colourless gas which may smell like rotten eggs |
| 4. decomposing animal manure | D. dangerous because of gases produced |

True or False

In the box on the right, indicate if each statement is true or false.

1. See your doctor immediately if your respiratory tract is irritated after exposure to manure gas.
2. Hydrogen sulphide is not dangerous.
3. Remove all animals and people from the building during pumping and agitation of liquid manure.
4. It's okay to let your manure pit fill completely
5. Manure gas is just as dangerous in spreader tanks as in liquid pits
6. In some municipalities, bylaws state that you must fence around your liquid manure pits
7. You should wear a self-contained breathing apparatus if you must enter a liquid manure pit or a spreader tank.



Activity: Elements of an Efficient Dairy Facility**Purpose:** To teach members about the elements of a dairy facility that help it run properly**Age Group:** All members**Time Alloted:** 20 minutes**Preparation & Equipment:** Before conducting this activity, ensure that you have permission from the farmer to tour the facility for the purpose of a scavenger hunt. Then, stick numbered sticky notes to the 'answers' to the clues given to the members (listed in the chart below) throughout the barn. This will help introduce members to various aspects of a dairy operation that help to make the farmer's job easier.**Instructions:**

- Give members a list of clues such as the ones on the following page.
- During this exercise, members will have to find various elements of the facility that assist in the smooth operation of the farm they are visiting.
- Members should be asked to write the number from the sticky note down as the answer next to the corresponding clue. Note that not all farms will have every component listed in the chart.

Debrief: Leaders should review the clues, where they were located, and what each item was. How do these features of the dairy barn help the farmer?

| CLUE FOR MEMBERS | ANSWER |
|--|---|
| I mix and mix and mix, so that the farmer doesn't have to do it all by hand. | TMR Mixer |
| I am the magic button that saves a lot of backbreaking effort when cleaning out the cow stalls | Control for stable cleaner |
| Catch your cows and heifers in here for vaccinations, breeding, and other reasons, to save a rodeo trying to catch them | Chute or self locking head gate |
| When someone new walks in the barn they might need some recent cow updates. I give them the temporary cow treatment records they need | Wipe board or other board displaying temporary records |
| My, it's windy today! I help make sure the cows are comfortable by keeping it windy every day | Barn fan |
| Feeding grain can be a time consuming task. I make it faster and easier. | Grain cart, manual or motorized, automatic feeder, etc. |
| Once upon a time, horses were used, but now the horses are too slow. I have the power of many horses and help with farm operations | tractor |
| Farmers used to use buckets, but now I transport milk from the cow to the bulk tank. | Pipeline |
| Farmers knees used to hurt a lot, but since I came along, the farmer's knees don't hurt and it requires less bedding to keep the cows comfortable. | Pasture mats, or other comfort mats in the cow stalls |
| A farmer cannot work well without me because he or she will not be able to see. | Lights or light switch |

Activity: Testing the Water

Purpose: To emphasize the importance of clean water.

Age Group: Junior members

Time Allotted: 20 minutes

Preparation & Equipment: "Testing the Water Worksheet" from the following page; six prepared glasses of water (some with drops of food colouring added, salt in one, onion power in one, milk in one, one clean); blindfolds; pens and pencils.

Instructions:

- Set out the glasses of water on a table.
- Hand out the worksheet and ask members to record their answers.
- Ask the members to rank each glass by sight. Would they drink the glass of water? Yes or no?
- Ask for two volunteers to test the water by smell and by taste. Let them know that nothing in the water will make them sick. Blindfold them. Ask them to report their findings to the group. Would they want to drink the glass of water? Record answers on the worksheet.
- Compare the results of the sight, smell and taste tests. Why did the answers differ?

Debrief: What is water used for on a dairy farm? Why is it important? How do we assess water quality?



Testing the Water Worksheet

Record your observations and answer the question "Would you drink the water (yes or no)?" in each column

| Glass | Sight | Smell | Taste |
|-------|-------|-------|-------|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |



Activity: Getting Along with the Neighbours

Purpose: To learn how to resolve conflicts and respond to negative attitudes towards agriculture.

Age Group: All members

Time Allotted: 20 minutes

Preparation & Equipment: A list of role play situations for members.

Instructions: Pair up members. Then give each pair a role play situation. For example, a neighbour:

- Complains about tractors making noise early in the morning
- Complains about the noise of cows “mooing” in the pasture
- Threatens to report you to the Farm Practices Protection Board about the smells and noises from your farm
- Complains about the smell of manure from your farm
- Complains about the slow farm vehicles hogging the road
- Thinks that the chemicals you’re spraying are blowing in his yard
- Complains that he or she has a fly problem and it’s caused by your farm
- Believes your farm polluted the local stream

Give each pair 5 minutes to come up with a role play about the situation they were given. One partner should play the role of the farmer and the other the role of the neighbour and they should act out the situation for the rest of the club. After each role play, discuss with the group the situations and responses the pair devised.

Debrief: Why is it important to understand your neighbour’s perspective? How does this help you resolve conflicts? Name one way to prevent problems with neighbours before they happen.



Activity: Creating an Environmental Farm Plan (EFP)

Purpose: Members learn how to make a farm environmentally safe.

Age Group: Senior members

Time Allotted: 1 hour

Preparation & Equipment: copies of “Improving the Environment” worksheet found on the following page; farm environmental resources (i.e. OMAFRA Factsheets) and 4-H Dairy Resource Guide; pens or pencils.

Instructions:

- Divide the members into small groups. Explain that they will create their own version of an Environmental Farm Plan using the worksheet as a starting point.
- Give them the choice of studying the farm they’re on now or focusing on one of their home farms. They can focus on areas such as manure management, wash water, silo seepage, erosion and chemical use. (Giving each group a couple of areas to focus on will save time). They can also include timelines and future goals for the EFP.
- After the groups have worked for 40-45 minutes, they can come back together to discuss their EFPs.

Debrief: Why is having an EFP an effective way to keep a farm’s environment healthy? Why would a farmer spend valuable time creating an EFP?



Activity: Keep your Water Clean, Clear and Cool!

Source: Manitoba 4-H Dairy Manual, 2000.

Purpose: To teach members about the importance of clean water and water purification in a fun way.

Age Group: Junior members

Time Allotted: 15 minutes

Preparation & Equipment: Pour water into large containers and add pollutants (Styrofoam packing peanuts, dirt, pine needles, leaves, marbles, or rocks); cheesecloth; food colouring; various kitchen utensils.

Instructions:

- Divide members into small groups and give each group some utensils, including a ladle and strainer or slotted spoon.
- Have the teams race against each other or the clock to see which can remove the most pollutants from their container. If the activity is done outdoors, use only natural pollutants. You can also provide additional containers so teams can filter their water through the cheese cloth.

Debrief: Discuss the methods used by each team to clean their water. Were they successful in getting it clean? Would they drink it? How can farmers prevent pollution of water on their farms?

