

## Milk Production and Marketing

### Potential Guest Speakers

- Local milk committee member
- DFO board member

### Roll Calls

#### Milk Production

- Name one thing you need to do when you milk the cows
- What is one factor that affects how much milk a cow gives?
- Name one aspect of maintaining a dairy farm that must be done so that milk is permitted to be shipped from the farm.
- Name something that most dairy farms have to sell other than milk
- What is one thing that could affect the milking temperament of an individual cow?

#### Milk Marketing

- What is your favourite dairy product?
- Name one milk product that you can buy in your local grocery store
- Name one of milk's 15 essential nutrients
- If someone told you that people should not purchase milk because it is too fattening and unhealthy, what would you say?
- If someone told you that they would not buy milk in the store because cows are pumped with hormones and other drugs, how would you react?
- Bring in an advertisement for a milk product to show the rest of the club
- What is one factor that affects the types of foods that you buy? (i.e. price, country of origin, organic, cleanliness, physical appearance, advertising, brand name, local, etc.)

## Project and Take Home Activity Ideas

1. Review Dairy Farmers of Ontario requirements for Grade A status on your own farm. Do you have all of the required elements? What could you do to improve the attributes of your farm to increase milk quality?
2. The way cows behave when they are being milked is part of their temperament. Some of this milking behaviour is inherited by the cow from her sire and dam. Work with your own or another herd, and along with the person who milks the cows regularly, try to figure out where a cow gets her milking temperament from. Begin by giving each cow in the herd a milking temperament score on a scale of 1 to 5, with 1 being very quiet and docile during milking and udder preparation, 3 being average behaviour and 5 being very nervous or jumpy animals that quiver when they are touched. Next, summarize the herd according to the sires of the cows. What is the average temperament score for the daughters of each bull? Which bulls had daughters mostly scoring in the ones and twos? Find out what kind of milking temperament the dams of the low scoring cows had. Does your experiment show that temperament is inherited? Try to list some environmental causes that might influence milking temperament. Does the age of the cow seem to have any relationship to her milking temperament?
3. Create a poster advertising a milk product
4. Compare labels on real and imitation mozzarella cheese. Write down the similarities and differences and report on them at the next club meeting.
5. Work with you school to feature dairy products at the canteen or cafeteria. Coordinate a group to survey students on why they like or dislike different dairy products. Create a report of the results.



**Activity: Milking Time Magic Crossword**

**Purpose:** To review milking equipment, parts of the udder, etc.

**Age Group:** All members

**Preparation & Equipment:** copies of “Milking Time Magic” crossword puzzle on the following page, pencils

**Instructions:**

- Hand out copies of crossword puzzle for members to complete; could be done during the meeting or as a take home activity that would be reviewed at the following meeting

**Debrief:** Take up answers to the crossword puzzle and answer any questions members may have relating to it.

**Crossword Solution:****Across:**

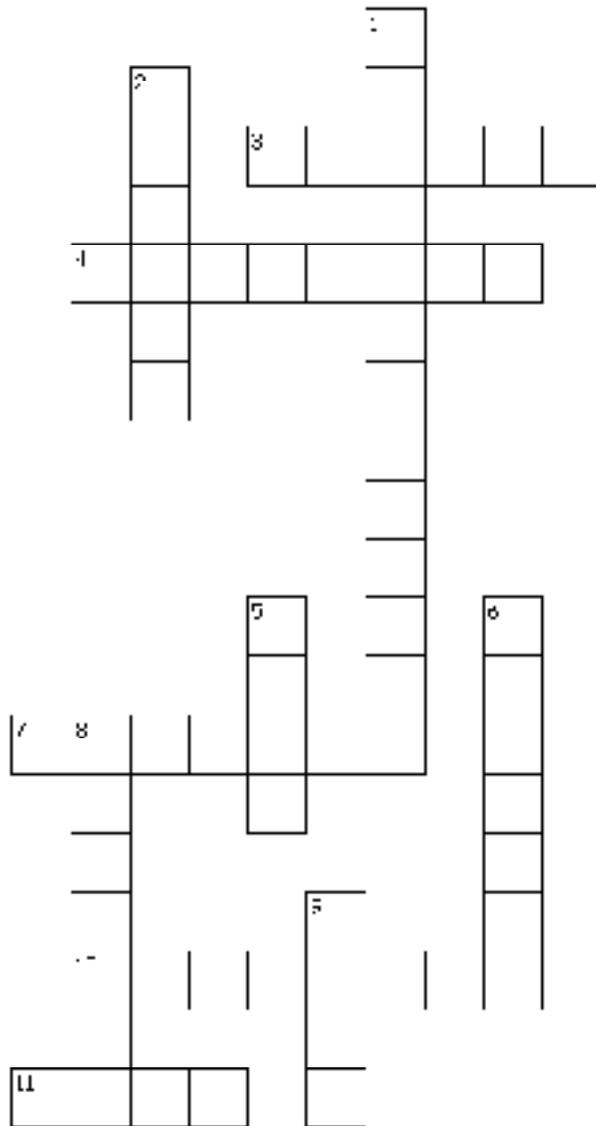
3. filter
4. bulk tank
7. massage
10. oxytocin
11. milk

**Down:**

1. pulsation rate
2. vacuum
5. teat
6. let down
8. alveoli
9. four



## Milking Time Magic Crossword



### Across

3. should always be clean and in good condition, sometimes called a liner
4. where milk is stored on the farm
7. phase of the pulsation cycle where the inflation collapses around the t
10. the hormone responsible for milk let down
11. phase of the pulsation cycle when the inflation is open and in vacuum

### Down

1. is the number of pulsation cycles in one minute
2. space from which most of the air is removed
5. duct system includes this cistern and the udder cistern
6. washing, drying and massaging the udder before milking causes this
8. tiny milk holding sacs in the udder
9. number of functioning well balanced quarters a cow should have



**Activity: Milk Nutrient Comparison**

**Purpose:** To compare the nutrients in milk to those in soft drinks.

**Age Group:** All members

**Time Allotted:** 10 minutes

**Preparation & Equipment:** Collect empty pop and milk containers. The more different products you gave for analysis, the longer the activity will take (i.e. soft drink, 2% milk, skim milk, chocolate milk, etc.).

**Instructions:**

- Members should compare the nutrients in milk with those in soft drinks, creating charts similar to the one below:

<u>Nutrients</u>	<u>Milk</u>	<u>Pop</u>
Calories	_____	_____
Protein	_____	_____
Carbohydrates	_____	_____
Fat	_____	_____
Sodium	_____	_____

**Debrief:** Which beverage is more nutritious? Which do members prefer to drink? Did the members look at serving sizes? If both beverages had the same serving size, how would they compare?



**Activity: Milk Product Taste Testing**

**Purpose:** To taste the differences between different types of milk products (i.e. varying fat percentages) and/or products that are and are not made from milk (i.e. real versus imitation mozzarella cheese)

**Age Group:** All members

**Time Allotted:** 10 minutes for taste testing; report on findings could be discussed or done as a take home project for a senior member or youth leader

**Preparation & Equipment:** various milk products or a milk product and an imitation product, sample cups, paper and pencils

**Instructions:**

- Members should be asked to conduct a blind taste test of the products available. The results can be compiled as a group or by a senior member.

**Debrief:** Discuss that a blind taste test is when you taste something but you do not know which product it is, so that you do not have a biased opinion. Did everyone like the same products? Which tastes better, real or imitation cheese? Higher or lower fat milk?



**Activity: Milk Cheque Comparison**

**Age Group:** All members; more in depth analysis can be done with senior members.

**Time:** 10 minutes for milk cheque analysis and 5 minutes to debrief during a meeting

This activity could also be a take home exercise for members.

**Materials:** Two milk cheques, one from a summer month and one from a winter month

**Instructions:**

- Compare a herd's milk cheque from a hot summer month to that of a cool spring month and answer the following questions.

Compare the values of the milk cheques. Which one is higher?

Which one indicates higher milk production?

Which one has higher component levels?

Do you notice any other differences?

Why do you think the numbers change?

**Debrief:** It would be expected that the cool spring milk cheque would be higher, with higher production and component levels than the one in the summer. This is because during the summer cows are very hot and under heat stress, causing their production levels to decrease. Grazing in the summer if they are not kept on good pasture could also cause a decrease in production. Bacteria levels could be higher in the summer due to bacteria being able to grow faster when it is hotter. It is possible that the milk cheque will not show these differences. That could be related to the farm having an excellent ventilation system to combat heat stress or other factors such as nutrition changes or stage of lactation.



**Activity: Milking the Cows the Right Way**

**Purpose:** To introduce or review the proper steps in milking a cow.

**Age Group:** All members

**Time:** 10 minutes

**Preparation & Equipment:** copies of the “Milking the Cows ... the Right Way” worksheet found on the following page

**Instructions:**

- Divide the members into small groups, giving each group a copy of the “Milking the Cows ... the Right Way” worksheet and tell them to place the steps in the proper order. Have all groups start at the same time. The first group finished, with the steps in the correct order, wins.
- If a cow is available for a milking demonstration to reinforce this activity – that is ideal; however, it should not be expected that a host farmer should leave a cow un milked for this activity.

**Debrief:** Review the steps and why they are important. Why is it important to do them in the proper order? What other areas of your life/farm use guidelines to ensure health and safety?

**Correct milking order:**

1. Milk your cows at the same time every day. Provide a clean, stress-free environment and routine for milking
2. Wash the teats with a warm sanitizer solution or pre-dip solution
3. Dry teats using a new towel for each cow
4. Squirt a few streams of milk from each quarter into a strip cup to look for any problems
5. When the teats look full of milk or within 30-40 seconds of washing the udder, attach the milker unit to each cow
6. During milking, adjust the milker to make sure the cow milks evenly
7. Do not overmilk. Cows usually take 4-6 minutes to milk out
8. When milk flow stops, shut off the vacuum to the claw and remove the milker.
9. Dip the teats in a teat dip.



## Milking the Cows...the Right Way

Number each step in the proper order.

- \_\_\_\_\_ Wash the teats with a warm sanitizer solution or pre-dip
- \_\_\_\_\_ Squirt a few streams of milk from each quarter into a strip cup to look for any problems
- \_\_\_\_\_ Milk your cows at the same time every day. Provide a clean, stress-free environment and routine for milking
- \_\_\_\_\_ During milking, adjust the milker to make sure the cow milks evenly
- \_\_\_\_\_ When the teats look full of milk or within 30-40 seconds of washing the udder, attach the milker unit to the cow
- \_\_\_\_\_ Dip the teats in teat dip
- \_\_\_\_\_ Do not overmilk. Cows usually take 4-6 minutes to milk out.
- \_\_\_\_\_ Dry the teats using a new paper towel for each cow
- \_\_\_\_\_ When milk flow stops, shut off the vacuum to the claw and remove the milker.



**Activity: Exploring the Udder**

**Purpose:** For members to learn how milk is produced in the udder and how the inside of the udder is made up.

**Age Group:** All members

**Time Allotted:** 20 minutes

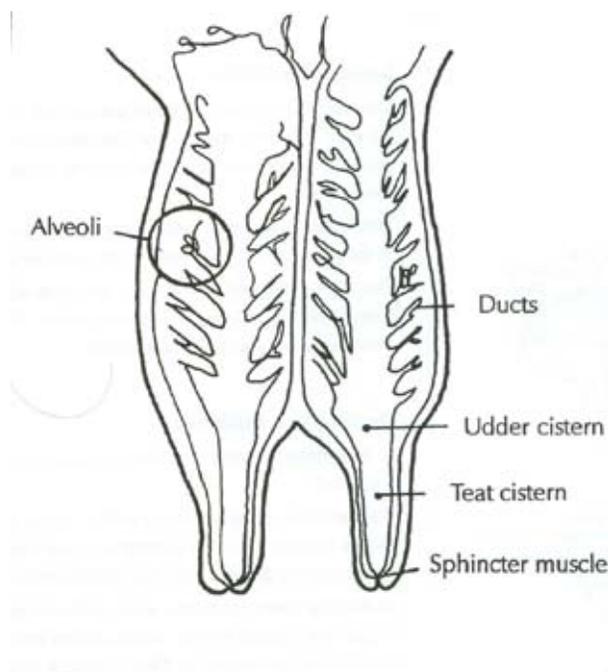
**Preparation & Equipment:** chart paper with a diagram of the inside of an udder drawn on it or use the diagram from the “Exploring the Udder” worksheet on the following page, labels copied and cut out from the “Exploring the Udder” worksheet, tape

**OR**

an udder that can be dissected or is already dissected

**Instructions:**

- The group can take a look at the diagram of the inside of the udder and compare it to the outside of the udders of cows in the barn.
- Have the members place labels on each part of the udder.
- If an udder is available for dissection, invite a vet to help the members with the dissection or to demonstrate a dissection



**Debrief:** Discuss how each of the parts of the udder works to help produce milk. Discuss oxytocin and milk let down. Why do members think it's important to know how an udder works from the inside out?



**Activity: Learning About Lactation Curves**

**Purpose:** Members will gain a better understanding of what a lactation curve is, why it is shaped the way it is, and where the data comes from to create it.

**Age Group:** Members ages 12 and over

**Preparation & Equipment:** Copies of “Daisy’s Production Data” and “Milk Production Charts”, pens or pencils

**Instructions:**

- Using the sample cow “Daisy” or a cow from a DHI Cow Summary Report, ask members to complete charts of milk and component production.

**Debrief:** After how many days in milk did Daisy (or other cow) reach peak milk production? Did Daisy have a persistent lactation curve? In what months were her fat and protein percentages the lowest? The highest? How could you feed Daisy differently to alter her production numbers in a future lactation?



**Activity: Milk Production and Quota**

**Purpose:** To introduce members to milk marketing and the quota system and how milk production is affected.

**Age Group:** Senior members

**Time Allotted:** 20 minutes

**Preparation & Equipment / Instructions:**

- Invite a member of the local milk producer committee who would be a good guest speaker to introduce members to the concept of quota and how it affects farmers.

**Debrief:** Make sure that members understand how quota affects milk production on a farm.



**Activity: DFO and Milk Marketing**

**Purpose:** Members should discuss DFO (Dairy Farmers of Ontario) and its role in milk marketing to help understand the purpose of the organization. In other provinces, substitute with your provincial equivalent.

**Age Group:** Senior members

**Time Allotted:** 10 minutes

**Preparation & Equipment:** None required

**Instructions/Debrief:**

- This discussion could be led by a volunteer or youth leader or a member of the local dairy producer committee. The following questions should be discussed:
  - What is the DFO (or your provincial equivalent)?
  - When was it formed and why?
  - How does it market milk in Ontario?
  - Do other provinces or countries have similar systems?
  - How does DFO advertise milk and why?
  - What have been some of the recent changes made to DFO policies?



**Activity: Milk Quality**

**Purpose:** For members to learn what on-farm milk quality is and why it is essential.

**Age Group:** Senior members

**Time Allotted:** 15 minutes

**Preparation & Equipment:** chart paper and markers or paper and pencils, resources from Dairy Farmers of Ontario, *Milk Producer* magazine, or your provincial equivalent.

**Instructions:**

- Split members into three discussion groups. Each group must create a list of the tests that are done to determine milk quality and composition. Using the chart paper the groups should write down how these things affect milk quality, how they affect the consumers of milk, the health hazards associated with poor milk quality, and what a farmer can do to improve his or her poor milk quality tests.

**Debrief:** Why is having good milk quality important? How does food quality in general affect our lives? The types of tests discussed by members could be fat and protein composition, freezing point tests, somatic cell counts, bacteria tests, water quality tests, disease testing for Johne's and Leucosis, etc.



**Activity: Farm Inspection**

**Purpose:** To introduce members to the requirements that farm facilities must have in order to be permitted to ship milk for human consumption.

**Age Group:** All members (older and younger members paired)

**Time Allotted:** 30 minutes

**Preparation & Equipment:** pencils and copies of the “Farm Inspection” Worksheet on the following page. The activity must be done on a dairy farm that has all of the necessary elements to have current Grade A status to ship milk.

**Instructions:**

- Set the scene. Senior members are Farm Inspectors from the Dairy Farmers of Ontario and newer members are their trainees. Divide the club into groups, and have older members working with one or two less experienced members. Senior members could also complete the activity on their own.
- The reason for the inspection is to double check the requirements for Grade A status on the farm. The checklist on the “Farm Inspection” report should be filled out. Members should feel free to add any comments or questions they may have.
- When finished the groups can share their results.

**Debrief:** Discuss how farmers ensure that the milk that leaves their farms is healthy for people to drink. Why are the different areas of the checklist important? Can members think of anything on their own farms that would improve the quality of their milk production facilities?

**Alternate Activity:** Visit a farm that used to be used for dairy production but is not anymore. Make an inspection, based on the Farm Inspection Report, to determine what would need to be done for the farm to be able to ship milk today.



**Farm Inspection Report**

<b>EXTERNAL</b>			
General Appearance		Pipeline Slope	
Farm Yard and Lane		Pipeline Attachment	
Building Maintenance		Inlet Position	
Loading Area		Plate Heat Exchanger	
Hose Port		Vacuum Regulator Screens	
Truck Receptacle and Switch		Dumping Station and Lines	
<b>MILKHOUSE</b>			
Size		Bucket Milkers	
Contained (doors, windows)		Strainer	
Clean and Tidy		Milk Pails	
Floor Drainage		<b>MILKING PARLOUR</b>	
Impervious Floor		Walls and Ceiling	
Walls and Ceiling		Floors and Cow Platform	
Fly Control		Drainage	
Chemical Storage and Labelling		Lighting	
Approved Chemicals		Fly Control	
Viewing Area		<b>HOLDING AREA</b>	
Adequate and Protected Lighting		Floor Surfaces	
Adequate Clearance		Fly Control	
Sink/Wash Vats		Ventilation	
Equipment Racks		Ramps/Steps	
Hose and Nozzle		Gates	
Hot Water Temperature		<b>COW HOUSING</b>	
Potable Water		Number of Stalls	
<b>MILKHOUSE WASTE</b>			
Washwater disposal		Stall Size/Partitioning	
Trapped Drain		Stalls Clean and Dry	
<b>COOLING EQUIPMENT</b>			
Dust Cap		Alleyways	
Bulk Tank Port Lighting		Walls and Ceiling	
Exterior Surfaces		Ventilation/ Air Quality	
Interior Surfaces		Lighting	
Current Wash Procedures Chart		Box Stalls	
Interval Timer		Calf Pens	
Cooling Indicator Light		Absence of Other Species	
Sampling Procedure		Fly Control	
Tank Thermometer/ Recording Thermometer		Rodent Control	
Cooling and Storage Temperature		Drinking Water	
Tank Size		Feed Bunks/Mangers	
Tank Rad		<b>BARN YARD</b>	
Sediment Test		Surface	
<b>MILKING EQUIPMENT</b>			
Current Wash Procedures Chart		Drainage	
Cleaned Immediately After Use		Cow Exercise Yard Scraped and Clean	
Sanitized Before Use		<b>MANURE STORAGE</b>	
Safety Switch		Run-off Control	
Inflations		Storage Capacity	
Jetter Cups		Restricted Cow Access	
Claw		<b>COWS</b>	
Vacuum Hoses		Clean	
Milk Hoses		Body Score Condition	
Receiver Jar		Feet and Legs	
Diverter Plugs/Valves		Udders Clean and Dry	
Sanitary Trap		Udder Preparation/Post Dip	
Gaskets		<b>INHIBITORS</b>	
Milk Filtration		Posted Procedures	
Air Injector Screens		Storage	
Milk Meters		Temporary Records	
Milk Flow Sensors		Permanent Records	
Pipeline Surfaces - Interior		Animal Identification	
Pipeline Surfaces- Exterior		Access to an Inhibitor Tester	
		<b>PASTURE AREA</b>	
		Surface Area	
		Drinking Water	



**Activity: Tour of a Local Dairy**

**Purpose:** To introduce members to milk marketing beyond the farm level as well as the variety of products made from milk.

**Age Group:** All members

**Time Allotted:** An entire meeting would need to be devoted to this type of field trip.

**Preparation & Equipment:** Arrange with a local dairy to take a tour of their facilities if this is permissible. A video to watch of a dairy could be an alternative.

**Instructions:**

- Take members for the tour. Make sure you have a member thank the tour guide.

**Debrief:** At the end of the tour or at the next club meeting, follow up with some questions to make sure the members gained something from the experience. What types of milk products did they see? What steps does the dairy do to ensure food safety? What did you learn? What are some jobs associated with the milk industry at the dairy?



**Activity: Consumer Perceptions**

**Purpose:** To help members understand that sometimes consumers who do not live on farms may have different opinions or ideas than they do. The people who buy the milk affect its marketing. Members can learn about this by role playing different situations with consumers.

**Age Group:** All members

**Time Allotted:** 25 minutes

**Preparation & Equipment:** None required

**Instructions:**

- Divide the members into small groups (two or three) and give each group one of the following scenarios. (**Hint:** Give more difficult topics to senior members)
  - o a nutritionist with the DFO and a person who believes eating animal products is wrong appear on a talk show
  - o your friend says she doesn't drink milk anymore because she thinks it has too much fat
  - o a farmer discusses with another farmer whether he should breed animals for fat or protein
  - o a consumer who won't eat regular milk products (he's afraid of the antibiotics used to treat the cows) discusses the issue with a dairy farmer she meets at the local store
  - o your friends tease you at a restaurant because you ordered milk instead of pop. Justify your decision.
- Each group has a few minutes to come up with a short skit based on the scenario they were given. Then, each group should present its skit.

**Debrief:** What are some of the issues facing milk marketing with regards to consumer perceptions? What are the best ways to fight and/or work with these perceptions to sell more milk? How can farmers change their practices or how their milk is marketed to meet consumer demands?



**Activity: You're the Director – Making Healthy Lifestyle Choices...With Milk**

**Purpose:** To help members understand milk's benefits and get them thinking about the importance of marketing and advertising milk products.

**Age Group:** All members

**Time Allotted:** 45 minutes

**Preparation & Equipment:** Containers for different milk products, clothes for costumes, portable CD player and music, paper and pens, markers and chart paper, video camera to tape commercials if available)

**Instructions:**

- Divide the club into groups of three. Each group is responsible for coming up with a 15 to 30 second advertisement for a milk product. They can also create their own milk product to advertise if they wish (although this will take more time).
- Ask them to consider if their product is for adults or young people, how they would use milk's health benefits to their advantage in a commercial, what TV show the commercial might appear on, and so on. Let them get as creative as they want with music, costumes and other props. The point is to have fun!
- After each group is finished, they can take turns presenting their commercials. If the group is comfortable with it, videotape the commercials and show them at your Achievement Program or local fair.

**Debrief:** Why is it important to advertise a product? What are the health benefits of milk that you can use to promote the product? Why do you drink milk?



**Activity: Milk's Journey**

**Purpose:** To help members learn about the journey milk takes from the farm to the store shelf

**Age Group:** Junior members

**Time Allotted:** 45 minutes

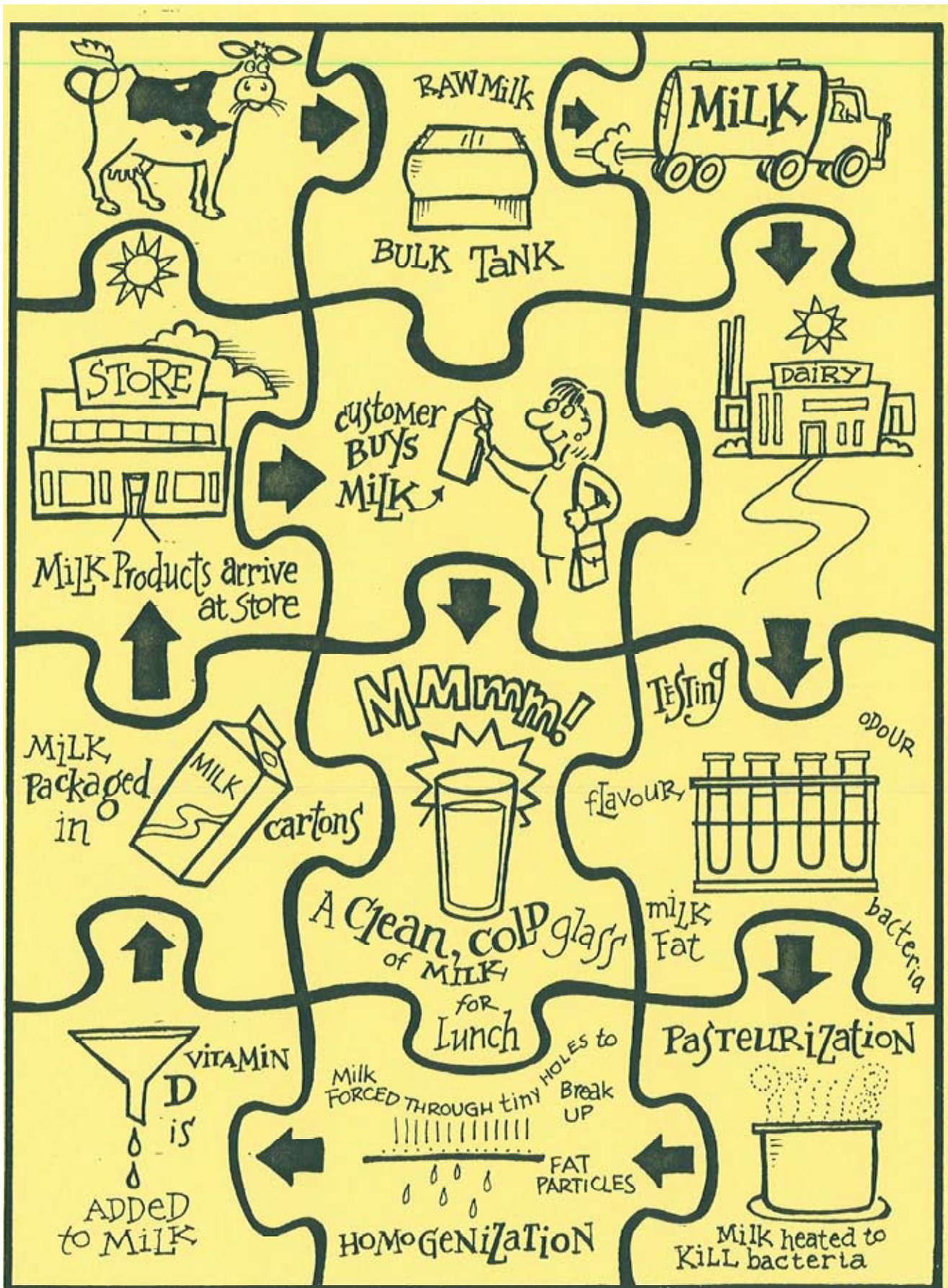
**Preparation & Equipment:** copies of the "Milk's Journey" puzzle from the following page cut out and mixed up, magazines containing milk advertisements, pencils (regular and coloured), glue, scissors, paper and markers.

**Instructions:**

- Give the group the puzzle, and have them try to put the pieces back together. (**Hint:** if you have a large group, use more than one puzzle.)
- Once the pieces are back together, the members can each choose a step in the process about which to create a poster. If there's not enough time for members to complete the poster at the meeting, they can finish it as their "Before the Next Meeting" activity. Display the posters at the next meeting, and even at your Achievement Program!

**Debrief:** Why does milk have to go through so many steps to get from the farm to the store? (e.g. to make sure it's a healthy drink; it takes many steps to process milk properly; there are rules about how milk is produced and shipped)





**Activity: Lactation Curves**

**Purpose:** To learn about milk production levels over the course of a cow's lactation, and how to read the information contained within a lactation curve.

**Age Group:** All members

**Time Allotted:** 15 minutes

**Preparation & Equipment:** Copies of "Daisy's Production Data" and "Milk Production Charts", pens or pencils

**Instructions:**

- Members can either be asked to plot the lactation curve for a cow that they have at home or for the animal whose records are shown below. The points should be plotted on the graph and a smooth curve should be drawn to connect them.

**Debrief:** What is the shape of the curve? Why does it start lower and then peak higher? What causes the decline in the curve? Does this cow have a persistent lactation curve or not? How do you know? After how many days in milk did Daisy (or other cow) reach peak milk production? How could you feed Daisy differently to alter her production numbers in a future lactation?

## Daisy's Production Data

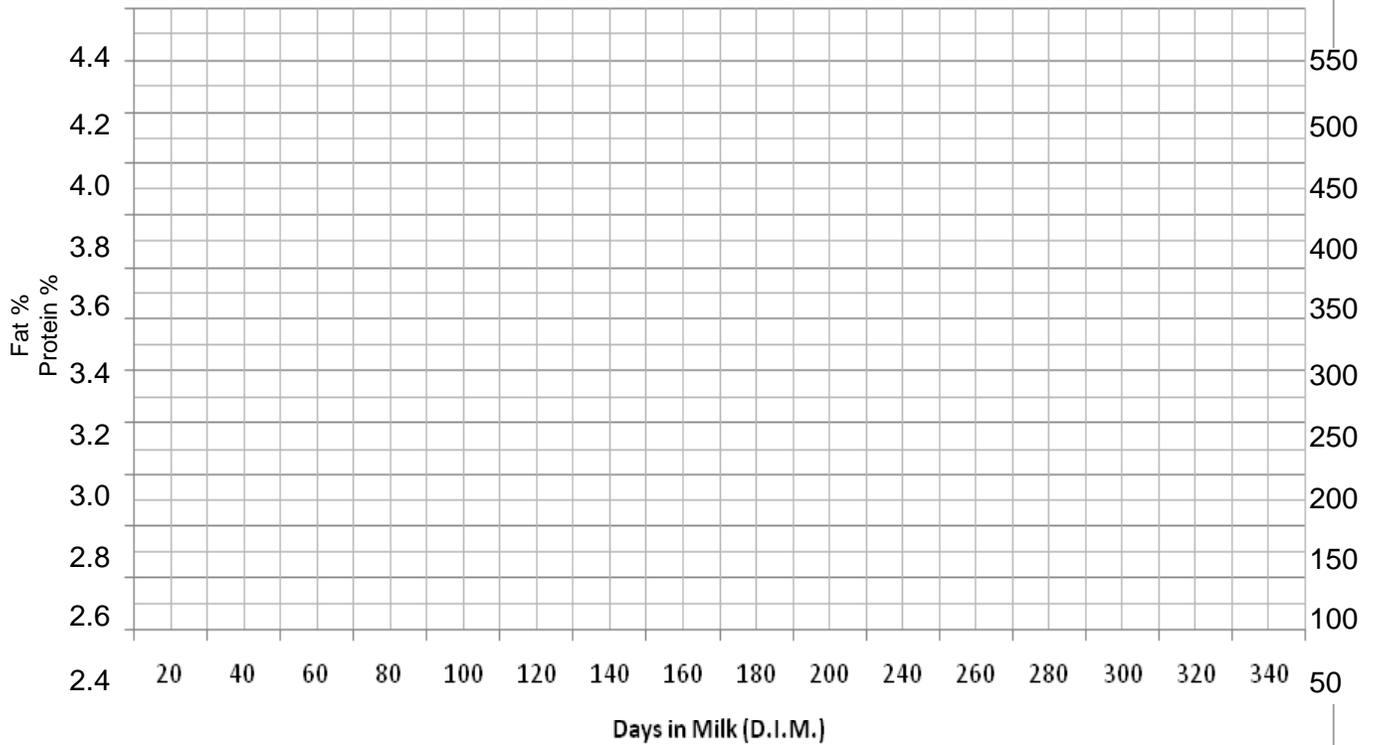
Date	Milk given (kg)	Fat (%)	Protein (%)	Days in Milk
April 7	29.7	4.33	3.89	9
May 10	38.1	3.20	3.05	44
June 8	35.8	3.31	3.13	76
July 10	33.4	3.37	3.05	108
August 10	30.9	3.45	3.22	139
September 20	27.9	3.55	3.59	180
October 17	24.2	4.19	3.77	207
November 21	21.2	4.77	3.88	242
December 19	17.2	4.55	3.70	271
January 18	14.9	4.25	3.60	301
February 22	12.4	4.35	3.70	336



Milk Production Worksheet

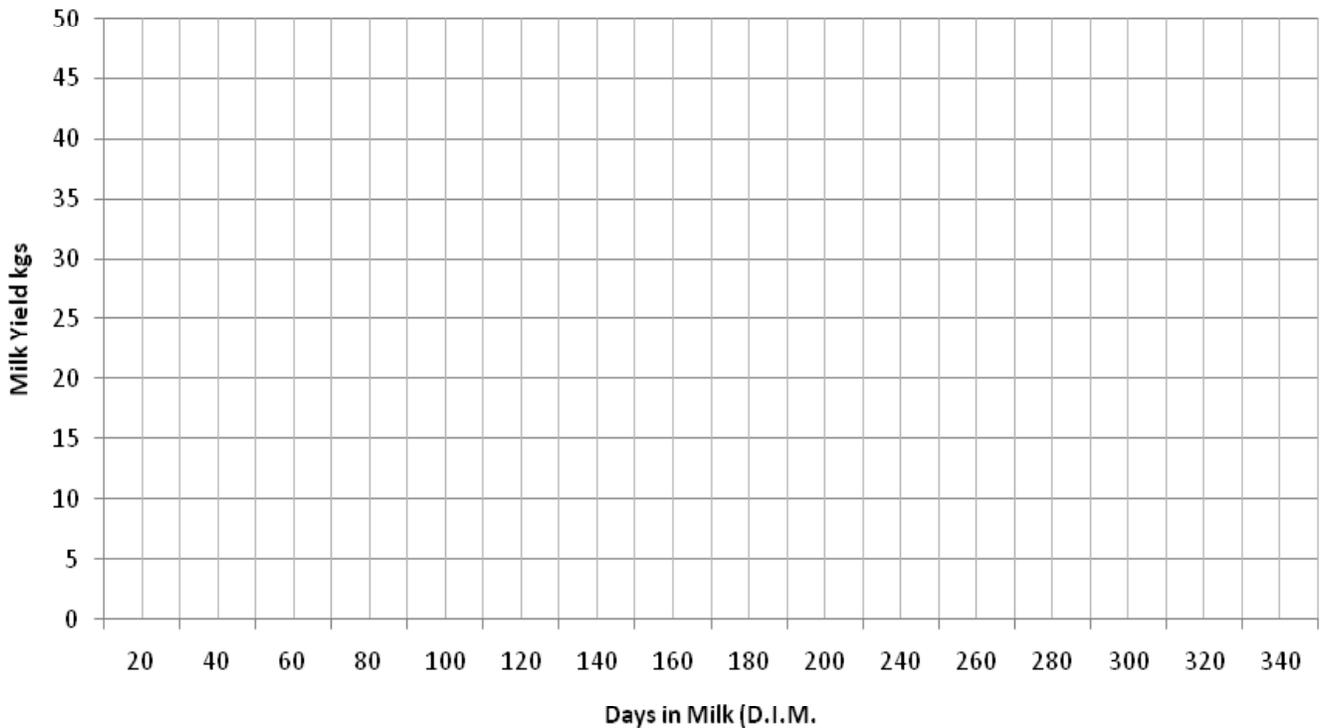
### Milk Composition by Days in Milk (D.I.M.)

(connect the dots to show the progress)



### Milk Yield by Days in Milk (D.I.M.)

(connect the dots to show the progress)



**Activity: I Didn't Know That Came from Beef!***Adapted from: Ontario Cattlemen's Association [www.cattle.guelph.on.ca](http://www.cattle.guelph.on.ca), Accessed July 1, 2008.***Purpose:** To teach members that there's more derived from beef (bull calves and cull cows) than just food.**Age Group:** Junior Members**Time Allotted:** 15 minutes**Preparation & Equipment:** Provide a list (on a flip-chart or blackboard, etc) of by-products of the beef production system such as:

Beef soup	Luggage	Leather belts
Chewing gum	Shampoo	Printing ink
Paints	Soaps	Insulin
Photographic film	Crayons	Medicine
Candles	Toothpaste	Buttons
Cosmetics	Soccer ball	Asphalt
Marshmallows	Computer disks	Pet food
Glue	Antifreeze	VCR tape
Ice cream	Car polishes	Shortening
Candies	Rubber tires	Sausage casing
Floor wax	Jello	Band aids
Fabric softeners	Shoes	
Sporting goods	Mayonnaise	

**Instructions:**

- Ask members to group the by-products into four categories: products that we eat, products that we wear, products that are part of our household and products that are used to help society. Illustrate your categories and the products in each category in a diagram. Place a check-mark beside the ones that are used almost every day.

**Debrief:** Do the people in your house own many of those by-products? Were you surprised that some of the items come from cattle? Why? Consider your life without those products and share the consequences.