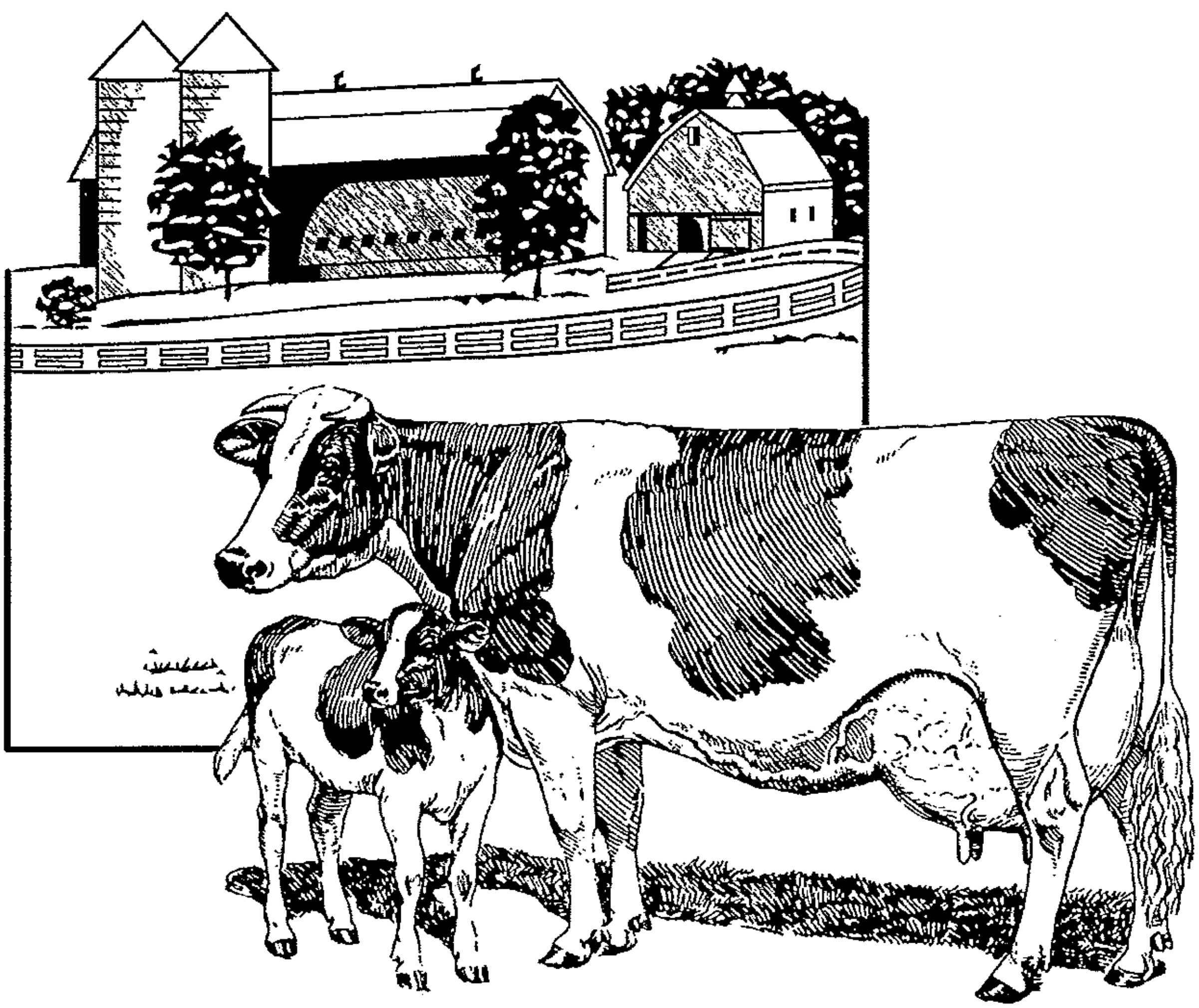
Come to the Farm

Prepared by Sandra Wyndham

British Columbia Agriculture in the
Classroom Foundation
Summer Institute 1998 Unit Plan
for grade One



Summer Institute 1998 was sponsored by:

BCID Fund
Beef Cattle Industry
Development Fund

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Summer Institute for Educators

This document is the result of the author's participation in the BC Agriculture in the Classroom Foundations' Summer Institute for Educators. This third year level course in curriculum design is offered through the University of British Columbia's Office of Continuing Professional Education.

Participants (20 educators from Kindergarten to Grade 12) spend one week at the Montfort House Rural Resource Centre situated on UBC's Farm on Vancouver Island. Here they develop a number of practical teaching strategies for their classrooms using examples drawn from the agricultural, environmental, economic and nutritional concepts featured in the Bc Integrated Resource Packages for their particular grade or subject area.

The agricultural community sponsors participants for the costs of learning resources, tuition, meals and accommodation.

Participants taking the course for credit create teaching modules such as this to share with other educators from around the province.

Applications can be made on the BC AITC web site at www.aitc.ca/bc or directly at the AITC office. Contact Lindsay Babineau at 604-556-3088 for an application form.

Core funding for BC Agriculture in the Classroom Foundation's Summer Institute for Educators 1998 was provided by:

- the Beef Cattle Industry Development Fund

Teacher sponsorship was provided by:

- Abbotsford Chamber of Commerce Agriculture Committee
- Bank of Nova Scotia
- BC Broiler Hatching Egg Commission
- BC Cattlemen's Assocation Public Affairs Committee
- BC Chicken Marketing Board
- BC Farm Women's Network
- BC Horticultural Coalition
- BC Institute of Agrologists-Okanagan Branch
- BC Milk Producers Association
- BC Turkey Marketing Board
- Chilliwack Chamber of Commerce Agriculture Education Committee
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- CIBC, Agriculture Division
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- Mr. Rod Bailey
- Mainland Dairymen's Association
- Nechako Regional Cattlemen
- North Okanagan Livestock Association
- Peace River Regional Cattlemen's Association
- Royal Bank, Agriculture Division
- South Cariboo Livestock Association
- Toronto Dominion Bank
- Whitta Farm

BC Agriculture in the Classroom Foundation is supported by:

British Columbia
Ministry of Agriculture, Food and Fisheries

Agriculture and Agri-Food Canada Agriculture et Agroalimentaire Canada

Investment Agriculture Foundation of British Columbia

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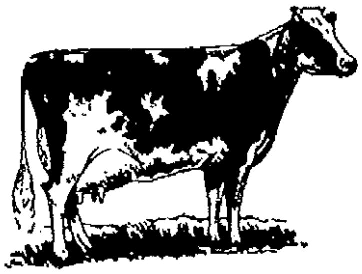
Dairy



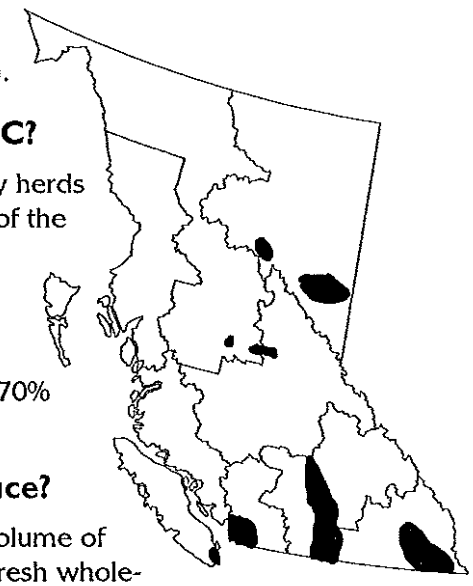
> ***Interesting Facts About The Dairy Industry***
>
> *Dairy is the highest value agricultural commodity in BC after poultry and eggs. Twenty percent of all BC farm cash receipts are from dairy.*

What makes up a dairy herd?

The term cattle can be applied to both animals used for meat (beef) or milk (dairy). Herds of dairy cattle are raised for the production of milk. Cows (females) are mammals. They produce milk for their young. Fortunately for us they produce more than their calf requires.

Dairy bulls are difficult to handle on the farm. They are housed in separate facilities. Breeding is done artificially.

The most common dairy breed is the Holstein, the black and white cows often seen in pastures. Other breeds are the Ayrshire (red and white) and the Jersey (tan and black).



Where is milk produced in BC?

Most of the approximately 800 dairy herds are in the Fraser Valley. About 20% of the herds are on Vancouver Island. And an additional 30%, located in the North Okanagan, East Kootenay, Bulkley Valley, Cariboo and Peace regions. The Fraser Valley produces 70% of BC's milk.

How much milk do we produce?

BC dairy farms produce an annual volume of approximately 600 million litres of fresh wholesome milk. The average herd size is 80 cows plus additional replacement calves and heifers. The average cow produces 30 litres of milk each day and is milked for 10 months each year. This equals more than 9,000 litres of milk per year per cow. That's an average of 100 glasses of milk per day.

How is milk produced?

Before any cow produces milk, she must first become a mother. When a dairy cow reaches about 15 months in age she is bred, usually by artificial insemination. After 9 months she has a calf and produces milk. The cow can produce milk for the next 10 months.

A cow that is being milked can eat up to 40kg of grass, forage and hay a day and drink up to 170L of water a day. That's almost a bathtub full. A cow's diet is supplemented with feed, such as barley, wheat, soybean and canola meal. These are formulated and fed according to the energy, protein and other nutritional needs of the animal.

At milking time the cows go into a milking barn. When a cow is standing ready to be milked her udder and four teats are rubbed and cleaned. An extension of the milking machine is attached to each teat. The action of the machine simulates the suckling action of a calf nursing. The milking machine draws the milk from the cow and collects the milk in a holding tank. The milk is then quickly cooled.

Cows are milked twice and sometimes three times a day, usually at the same times each day. All equipment used for milking is thoroughly cleaned and sanitized before and after each use.

Dairy farms are inspected and certified before they can produce milk. All milking equipment, milking procedures, the milking parlour and barn are inspected. Everywhere the cows go must be kept clean and well maintained. Dairy farmers use computers to keep track of how much each cow eats, how much milk each cow produces, and even to match a particular cow with a particular bull for breeding. They also use computers to find information (Internet) and for financial accounting.

What does milk look like when I use it?

We drink fresh milk (whole, 2%, 1%, skim and chocolate) and use milk products such as cheese, yogurt, sour cream, whipping cream, cottage cheese, evaporated milk, sweetened condensed milk and skim milk powder. BC produces cheddar, mozzarella, parmesan, colby, gouda, farmer, edam, monterey jack, feta, quark, cottage cheese and ricotta cheese.

Milk is made of 89% water and 11% solids. The nutrients, such as calcium, riboflavin, vitamin A and protein are in the solids. Milk, cheese and yogurt are easy ways for most people to get the amount of dietary calcium recommended by Health Canada.

What happens after the milk leaves the farm?

Milk is picked up from the farm by a tanker truck, which is certified before it can carry milk, every second day. The licensed driver takes a sample from each farm to ensure the milk meets quality and safety standards. Before the milk can be unloaded, it is tested for antibiotic residues. If residues are found, the entire shipment is destroyed and the farmer responsible receives a heavy fine (thousands of dollars) and also pays for the entire truckload of milk.

To ensure the safety of milk, it is pasteurized. This is the process of quickly heating milk to 72°C and rapidly cooling it to 4°C. This kills any harmful bacteria that may find its way into milk. Pasteurizing milk helps keep milk fresh longer by destroying organisms that cause spoilage. The milk is also tested at a certified laboratory for temperature, acidity and flavour, before it is accepted. Tests for bacteria, water contamination and somatic cell counts are also done regularly. The level of somatic cell counts is an indicator of animal health and quality. Other tests are carried out from time to time to ensure the purity of the product.

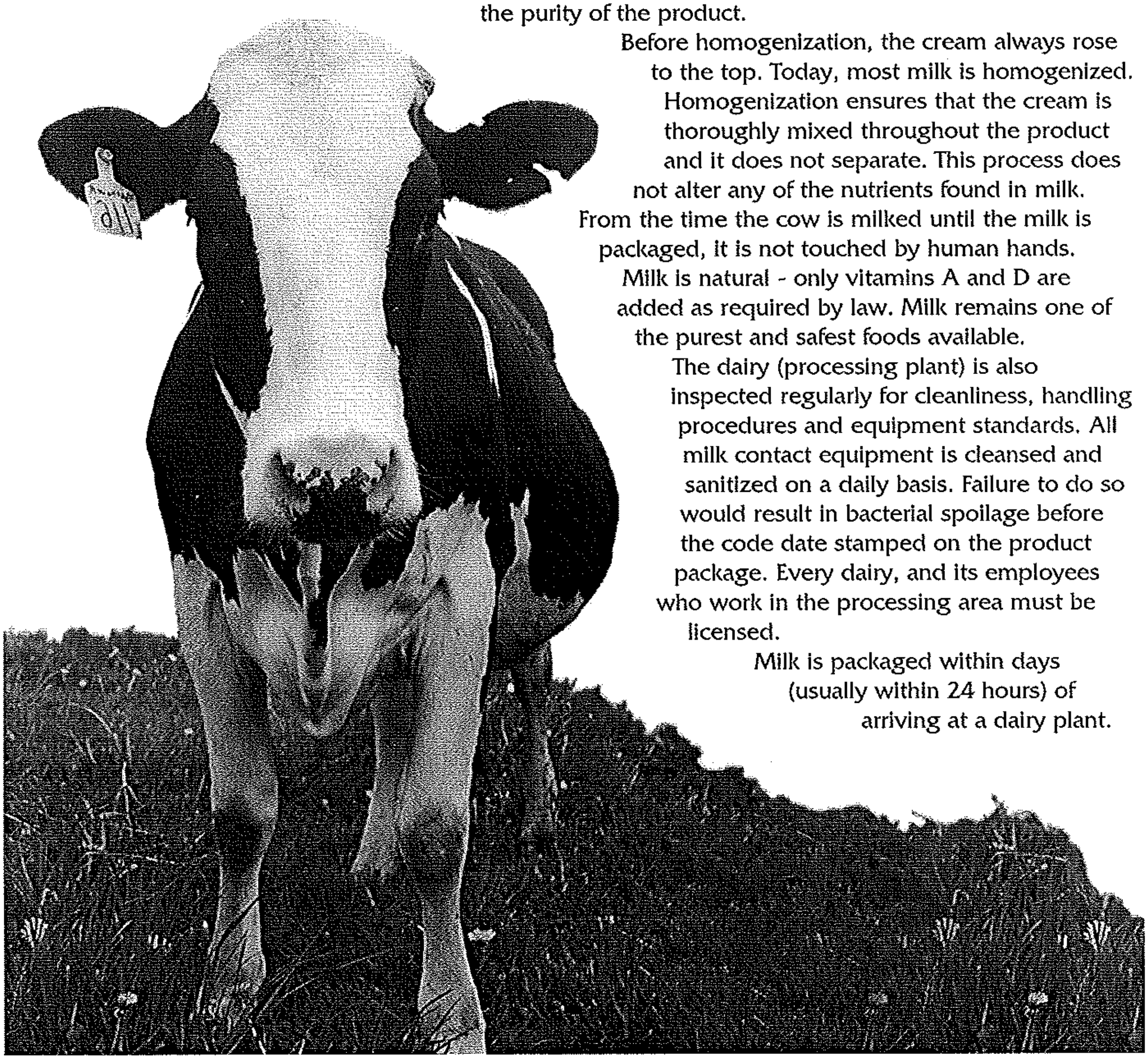
Before homogenization, the cream always rose to the top. Today, most milk is homogenized. Homogenization ensures that the cream is thoroughly mixed throughout the product and it does not separate. This process does not alter any of the nutrients found in milk.

From the time the cow is milked until the milk is packaged, it is not touched by human hands.

Milk is natural - only vitamins A and D are added as required by law. Milk remains one of the purest and safest foods available.

The dairy (processing plant) is also inspected regularly for cleanliness, handling procedures and equipment standards. All milk contact equipment is cleansed and sanitized on a daily basis. Failure to do so would result in bacterial spoilage before the code date stamped on the product package. Every dairy, and its employees who work in the processing area must be licensed.

Milk is packaged within days (usually within 24 hours) of arriving at a dairy plant.



Packaged dairy products are also regularly tested at a certified laboratory for composition, to ensure the product contains what it claims. This is also the final checkpoint to ensure the product meets the established standards of bacteria, coliforms, yeasts, moulds and other potential contaminants. Dairy products at retail outlets are subject to random sampling as a further check for safety, quality and composition.

The majority of milk produced in BC is sold as fluid milk, while the rest is manufactured into semi-fluid and solid products such as cheese, ice cream, yogurt and cottage cheese.

Nutritional Facts:

A 250 ml glass of milk provides a big percentage of your recommended daily allowance of vitamins and minerals: 25% vitamin D, 15% vitamin B-12, 17% protein, 29% calcium, 23% phosphorus and 23% riboflavin.

What challenges do dairy producers face?

Dairy farms are truly environmentally sustainable. The majority of feed cows eat is produced on BC farms and the cows' manure is recycled by incorporating it back into the fields where the feed is grown. Manure is very useful to farmers because it adds nutrients and organic matter, which help sustain and build the quality of the soil.

Dairy cows are also able to utilize a variety of perennial forage crops, which also improve the soil and protect it from erosion during the fall and winter months.

Further challenges facing today's dairy producers include:

•Meeting environmental requirements.

•Surviving a market that is increasingly competitive on a global scale.

•Increasing input costs for such things as feed (grain), equipment and labour, with decreasing revenue.

•Dealing with increasing competition for land use (e.g., urban push, increasing land values, etc.).

Who's involved in getting the milk from the farm to the table?

- Dairy farm owners, managers and staff (milkers, herdsmen, field personnel)
- Breed associations
- Artificial insemination technicians
- Dairy herd improvement advisors
- Veterinarians
- Milking equipment, farm equipment, building and facility suppliers
- Feed producers and nutritionists
- Dairy processor field representatives
- Government inspectors and advisors
- Government and university researchers
- Milk tank truck drivers
- Milk product deliverers
- Store employees

Contacts and other resources:

BC Ministry of Agriculture and Food
BC Dairy Foundation
BC Agricultural Council
BC Milk Producers Association

Unit Plan for *Come to the Farm*

Level: Early primary

Introduction: This unit plan titled *Come to the Farm* consists of ten lessons to be taught over a tow to three week period. The unit plan includes three field trips and four cooking activities to enrich the discussions and writing activities. This unit will consist of discussions about farms and farm families and food products. The children will view films, read and listen to stories, cook with and taste farm products and visit a dairy farm, a milk processing plant and a local grocery store.

Teaching Strategy: Cooperative small group, large group and individual learning.

New Vocabulary: Domestic, cow, calf, bull, pasteurize, dairy homogenized, milking machine, ghee.

Materials:

- Pocket chart and tag board cut in 2 1/2" by 10" strips.
- Chart paper
- The following student pages: I *Wonder, We Made Ice Cream Today, Where Does Our Food Come From?, Trip to the Farm* word search, *Say Hello to the Cow*—a BC Dairy Foundation Booklet,
- Videos: *Lets go the Farm, What Can You Find on the Farm?, The Bayview Dairy Farm*
- A box of crackers, Zip-lock bags, vanilla, sugar, milk, table salt, butter, live yogurt, saucepan, sieve, 2 large jars, paper towels, a thermos, stove or hot plate.
- A collection of photographs of both wild and domestic animals. (for the extension activity)

Advance Preparation:

1) Arrange the field trip to a dairy farm in your area, a milk procession plant and a local grocery store.
2) Send home a notice announcing the field trips, ask for parent drivers and describe how the children should dress for the field trips.
3) Notify parent drivers and fill out transportation forms.
4) Photocopy all student pages.
5) Collect the materials for making the butter, ice cream, Yogurt and ghee.

Procedure:

<u>Day One:</u>

1) Read the book *What's One My Plate?* by Ruth B. Gross
2) Use this story to have the children predict where each type of food comes from, then make a large web about where this food comes from on chart paper to add to as the story progresses. In this story each page asks a question about where a certain food comes from then it answers the question.

3) Follow up Activity: Ask the children to make their own food webs. They could draw pictures and write about their four favourite foods and show where they think each type of food comes from. After the webs are completed the children could read their web to a partner. These "Web" pages can be put together as a booklet to add to the class library.

4) Provide a variety of food pictures collected from magazines for the children to sort. Categories such as "Food I Like"/ Food I Don't Like" or "Vegetables/ Fruits", could be used.

<u>Day Two:</u>

1) We will begin our lesson by discussing and predicting what we might see, hear or smell when we visit a farm. The children will be asked to think about all the things they see as they view the video *What Can You find on the Farm?* (10 min.) .

2) In the large group the class will brainstorm things they know about a farm and the things they wonder about a farm. This discussion will centre around what animals live on a farm, what the farm family does to look after the animals and what the basic needs of the animals are. The teacher will put the childrens' ideas on the tag board cards and put them under the headings of "Know" or "Wonder," in the pocket chart At a later time the teacher will transfer these ideas to a "Know - Wonder - Learn Chart" which we will add to as we discover new things about or have more questions to ask.

3) The children will return to their desks and use -their *I Wonder* student sheet to print three questions that they have about a farm or farm animals. They can share these questions with a partner sitting beside them. The teacher will keep these sheets to give back to the students tomorrow when they go on their field trip to the dairy farm.

<u>Day Three:</u>

1) The class will visit the dairy farm for a talk and tour of the barns and farm site. The children will have an opportunity to feed the cows or calves, look at the farm machinery, listen to the farmer describe his job and the dairy cows, view cows being milked by machine and, hopefully, have a chance to try to milk a cow by hand.

2) During the tour or after we have seen the milking, the children will be given a time to use their *I Wonder* sheets and ask the questions they write down yesterday.

<u>Day Four:</u>

1) The students will discuss and brainstorm things they know and wonder about the dairy farm they visited yesterday. Emphasis can be put on making the children more aware of how the life cycle of the dairy cow contributes to the production of food and how materials are recycled on a farm (i.e. hay and grain are grown, then consumed by the cow and their manure is returned to the ground to fertilize the crops). We will add these ideas to the "Know - Wonder - Learn" Chart and begin to add some ideas under the "Learned"" section.

2. View the video *Lets Go to the Farm.*

3) The whole class can participate in the following "cooking" activity. It could also be presented to a group five or six students at a centre by a parent helper while the teacher works with the rest of the class on a writing activity about their trip to the farm.

Butter Making Activity :

The students will sit in a circle and the teacher will pour milk into a sealer jar. The students will pass around the sealer jar and shake it about ten times each. If non homogenized milk is used the students will be able to observe the separation of the milk and cream before the butter making process begins. Regular store bought milk could be used as well. As the students shake and pass the milk jar they can make predictions as to what might happen to the milk, what it might turn into and how long we may need to shake the jar before we see changes in the milk. When the milk has turned to butter the teacher can pour off the milk residue (buttermilk) and have the students take turns spreading some butter on a cracker for them to taste. The students will draw a sequence of pictures and write about how they made butter-using the *We Made Butter* student sheet.

Day Five:

1) Read the story: *The Milk Makers* by Gail Gibbons and review the process Of "Milk Making" as described in the story. Use the picture clues in the story to have the children retell the milk making process. If this book is not available then use the booklet titled *Say Hello to a Cow* produced by the British Columbia Dairy Foundation. This booklet could be coloured and read to the class. It could also be photocopied, one per child, and given out to colour and take home. (See sample in package)
2) Explain to the class that they will be making something that they can eat from milk, sugar, ice and salt. The children could guess what this might be but don't tell.

Ice Cream Making Activity: The students will sit at a large table or several tables with the materials on each table. With the help of the parent helpers, the students will follow the procedure for making ice cream as described on the *We Made Ice Cream Today* sheet. The students will be given a plastic spoon to eat their ice cream then help with the clean up. If parent helpers are not available the teacher can teach this activity in small groups at another time.

Extension Activities:

An extension of 'the field trip to the dairy farm and of the farm theme could be this animal sorting activity.

1) Play the "Who Am I" game where the teacher gives clues as to what animal he/she is thinking about. These clues could be:
   •one clue about what the animal looks like,
   •one clue about what the animal eats and
   •one clue about where the animal lives.

Children can guess these animals and also take turns giving the clues while others guess. The animal photographs could also be used for this activity and after a student guesses the animal they could place its' picture in the pocket chart under the appropriate category: "Animals that live on farms" or "Animals that live in the wild.

2) In the large group use the photographs of a variety of animals to identify and sort these animals into the two categories: "Animals that live on farms/Animals that live in the wild".

Day Six:

1) Read the story : *Milk - from Cow to Carton* by Aliki. Review the milking process through a short question and answer activity. Print questions on cards, mix up the cards and have children volunteer to pick a card to read and discuss.

Day Seven:

1) Prepare for the field trip to the milk processing plant. Prepare all forms and parent notices.
2) Read the story *Milk* by Annabelle Dixon. Read parts of this book and discuss the chapters on *How Does Milk Get to Us?* and *Keeping Milk Clean.*
3) Ask the children to predict what they might see and do at the milk processing plant. Write their ideas on chart paper during the discussion.
4) Have each child make a "flip book" about their predictions.

This booklet may look like:

At the Milk Processing Plant	Title page
I think we'll see____________________	Inside pages where each student prints their words and draws a picture.

Their booklet may look like:

At the Milk Processing Plant

Day Eight:

The children will be in their tour groups and will go to the milk processing plant in order to see how milk and milk products are processed and packaged.

Day Nine:

1) Read the story *Milk* by Annabell Dixon. Review the parts of the story already read. Read and discuss the section titled *We Are Vegetarian.* Discuss what a vegetarian may or may not eat and why some people choose not to eat meat. The family in he story is Hindu and therefore are vegetarian for religious reasons.
2) Make a class graph as to what foods each child likes to eat. Each child could use two stickers to indicate their two favourites from the list provided. Use this graph to count and compare the

favourite types of foods. Emphasize that it is alright to like some foods and not others and we are all different in our food tastes.

3) Demonstrate how to make Ghee, a product made from butter, to the class. This food is used in warm countries such as India because it stores better than butter in the heat. You could also demonstrate making Ghee in small groups with a parent helper. (See instruction sheet). Yogurt is another milk based product that can be easily made with a group of primary students. (See instruction sheet)

Day Ten:

1) Tour a small local grocery store or super market with the class. If possible, arrange a talk and tour by the shop keeper or grocery store personnel. Ask the children to observe the packaged dairy products, and the variety of fruits and vegetables. Each child can bring a clip board to write or draw a list Of what they see at the store.
2) Return to class and ask the class to use their lists to write and draw about what they saw at the store in their Journals.
3) Sing the song, *Corner Grocery Store* as a wind up to this field trip.

* This field trip could lead into a unit of study about nutrition.

IRP. Connections:

Social Studies:

1) Society and Culture: - families have purposes and functions
2) Politics and Law: - families have roles and responsibilities
3) Economics and Technology: - farming is an occupation and farmers are part of a community
4) Environment: - farmers care for the environment and produce safe, nutritious foods

Science:

1) Applications of science: - handling equipment and materials safely - use of the Scientific Thinking Processes such as when we observe, communicate, infer and predict, and apply our knowledge
2) Life Science: - describe the appearance and behaviour of a variety or animals - determine the requirements of a healthy animal-identify the similarities and differences among animal species.
3) Physical science:-identify changes in the property of matter when heated or cooled - identify a variety of changes that can not be reversed

You can make ghee from butter

You need:

- 115 grammes of butter
- a small saucepan
- a sieve
- a jar
- some paper towel
- a hotplate or cooker

How to do it:

1) Warm the butter very gently in a pan until it has melted.
2) Line the sieve with paper towel or a paper coffee filter. Pour the melted butter through it, into the jar. The white bits in the butter should stay on the paper, they are called milk solids. The liquid in the jar is ghee, it is used for deep-frying vegetables or meat. Out of the refrigerator, ghee keeps much longer than butter.

We made ICE CREAM today!

You need:

- pint sized zip-lock bag
- 1/4 teaspoon of vanilla
- 1 tablespoon of sugar
- 1/2 cup whole milk

plus

- 1 gallon sized zip-lock bag
- ice
- 6 tablespoons of table salt

How to do it:

1) Fill the large bag half full of ice.
2) Add the salt and seal the bag.
3) Put the milk, vanilla and sugar into the small bag and seal it.
4) Place the small bag inside the large one and seal again carefully.
5) Shake (or rock back and forth) until mixture is ice cream, about 5 minutes.
6) Wipe off top of small bag. Then open carefully and enjoy!

Make your own yogurt

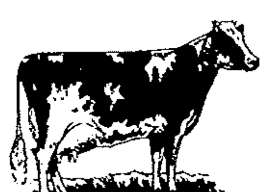
You need:

- 1 tablespoon of plain live yogurt
- 568 ml of UHT (ultra high temperature milk) milk
  This is milk that has been sterilized and can be purchased in tetra packs. Found on your grocer's shelf rather than in the dairy case.
- a saucepan
- a thermos
- a hot-plate or cooker

How to do it:

1) Heat the milk very slowly in a saucepan, don't let it boil.
2) Pour it carefully into the thermos, nearly up to the top.
3) Add the tablespoon of plain live yogurt and stir gently. Yogurt has some "friendly" bacteria in it and they do the work of turning milk into yogurt.
4) Screw on the top of your container and leave it for one or two days. When you open it up, you should have nice creamy yogurt. Try it with some of your favourite jam.

I Wonder



We Made Butter!

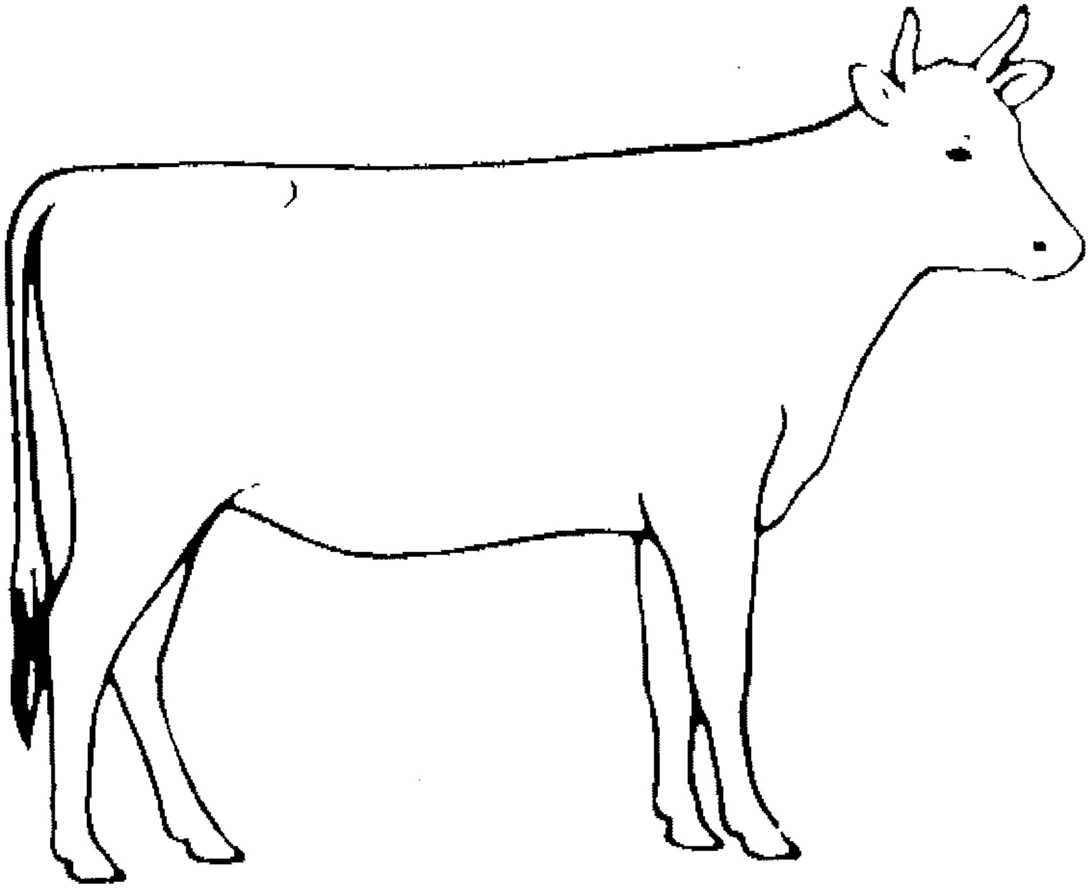
This is a picture of how we made butter.

1.

2.

3.

I'll tell you how we made butter.



Where Does My Food Come From?

Annotated Bibliography of Children's Books with Suggested Uses for the Farm Unit

Aliki, Milk from Cow to Carton,

- describes and illustrates farm life, the process of how cows convert food to milk, how to milk a cow by hand, modem dairy farming and milk processing, homogenization, pasteurization and dairy products.
- milking goats in other countries where there are no dairy cows.
- making goat cheese at home.

Dixon, Annabelle, Milk, A&C Black, London 1987

- excellent photos and project ideas.
- gives reasons for drinking milk and milk products, milking a cow by hand, milk processing and safe milk storage.
- clear photos and instructions of how to make cheese, butter, ghee and yoghurt.

Gibbons, Gail, The Milk Makers, Scholastic Inc.

- gives a clear description of how milk is produced from the cow to the dinner table.
- clear illustrations and useful information about how a dairy cow converts the food they eat into milk.

Gross, Ruth Belov and Isadore Seltzer, What's On My Plate?

- clear, colourful illustrations and descriptions of where food comes from.
- good question and answer format stimulates questioning in a group and makes a good introductory book for a lesson or unit on food.

Gunson, Christopher, Over on the Farm- a Counting Picture Book Rhyme. Scholastic Press. N.Y.

1995

- an early primary counting book.
- charming farm and wild animal illustrations.
- a take off on 'Over in the Meadow'.
- good for brainstorming own poems.

Kalman, Bobbie and Susan Hughes, The Food We Eat (The In My World Senies) Crabtree Publishing Company, 1986

- excellent illustrations and simple descriptions of eight categories of food.
- includes multicultural information such the preparation of food in a vegetarian Hindu family and a Japanese family.
- nutrients in food are explained.

Lawrence, Margaret and Ann Blades, Six Darn Cows, James Lorimer and Company, Toronto, 1979

- charming story of two farm kids who are responsible for bringing the family dairy heard in from the fields each night.

- deals with family responsibilities and problem solving.

McFarland, Cynthia,.Cows in the Parlor, A Visit to a Dairy Farm, Atheneum, 1990 N.Y.

- clear photos depicting all aspects of dairy farm life.
- Jersey cows are the breed milked. Clear, simple text describing the process of raising dairy cows and how they are milked.

Miller, Jane, Farm Alphabet Book Scholastic, Inc. 1981

- good resource for the alphabet centre in an early primary classroom.
- excellent photos and definition of many farm animals and related objects.

Miller, Jane Seasons on the Farm, Scholastic, Inc. 1986

- excellent, clear photos and simple text that takes the reader through four seasons of activity on a mixed farm.
- horses, vegetables, grain, fowl and dairy cows are depicted.

Plourde, Lynn and John Schoenherr, Pigs in the Middle of the Rud Scholastic 1997

- good for humor.
- a simple, repetitive story of an early farm family who meets a series of farm animals while driving their model T. in the country.
- Grandma solves the problem, historical reference.

Wood, Jakki and Rog Bonner, Moo Moo Brown Cow, Gulliver Books, Harcourt Brace & Co. 1991

- early primary, simple repeat language showing a variety of animal that may live on a farm.
- good begining reader or whole group reader with bright illustrations.

Videos

What Can You Do On The Farm? (5 min) source: Surrey Public Library

- asks questions and provides good visuals to support it.

Let's Go To The Farm (30 min.) Vermont Story Works, Author- Mac Parker

- excellent video about a year on a dairy farm in Vermont. This film covers all aspects of dairy farming as a complete unit.
- family farm life, children's activities and responsibilities.

On the Farm - a series of four videos that focus on Summer, Winter and Problems on a farm (30 min each), Filmwest Assoc. Kelowna, B.C.

- a close up look at a family farm from planting to harvest.
- dairy cow growth and milking.
- winter and spring activities on a farm.
- family farm problems and problem solving skills.

The Bayview Daily Farm (23 Min) a University of British Columbia Production - UBC Access 1987

- very detailed description of a dairy farm operation.
- good teacher reference

References

BC Agriculture in the Classroom Foundation - 'A Teacher's Handbook on B.C.'s Agriculture, Fish and Food Business', Ministry of Agriculture, Province of B.C.

B.C. Dairy Foundation. 'Say Hello to a Cow' (booklet)

B.C. Ministry of Education. 'Science and Math I.R.P's'