



Extending the Knowledge and Resources of the
University System
to the People of Waupaca County and
Wisconsin

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Delicious Dairy



Grades: K-5

Total Lesson Time: 30-45 minutes

Lesson Overview

Students involved in the Farm to School AmeriCorp classroom will learn about dairy products.

Objectives

Students will fulfill educational expectations by meeting school standards and benchmarks in:

1. Reading and Language Arts: Using general skill and strategies of the reading process.
2. Mathematics: Understand and apply basic measurement skills.
3. Science: Appreciate the process of growing and eating healthy food.
4. Social Studies: Learn about relationships between themselves, farming and local environment.

Preparation

1. Students should wash and sanitize hands before working with foods.
2. Assemble activity props, pictures, and equipment for session.

Procedures

Introduction

Hand out items to students to make butter (takes 5-10 minutes of vigorous shaking)

In groups of 3 or 4 have students put the Dairy Process steps in order. (about 2 minutes) for 4th grade and higher. For younger students: Show pictures of the different breeds of Dairy cows.

Dairy Cow Breeds

Holstein

Brown Swiss

Jersey

Guernsey

Milking Shorthorn

Ayrshire

Dairy Facts and Trivia:

- A mature cow will eat 20-25 pounds of grain, 40-60 pounds of silage, 30 pounds of hay and drinks about 15-25 gallons of water each day (about a bathtub full). The average Wisconsin cow gives 56 pounds (about 6.5 gallons) of milk per day.
- 90% of Wisconsin cheese is sold out-of-state
- The average American eats 31 pounds of cheese each year
- It takes 10 pounds of milk to make 1 pound of cheese and 12 pounds of milk to make 1 gallon of ice cream
- One gallon of milk weighs 8.6 pounds
- 89% of Wisconsin farms are family owned
- Wisconsin was named “*America’s Dairyland*” in 1939
- Wisconsin ranks number 2 in milk production and ranks number 1 in cheese making

Wisconsin Production

Wisconsin has 14,490 herds with over 1.2 million dairy cows. The average number of cows per farm is 86. Wisconsin accounts for more than 1/5 of the nation’s total dairy exports. The average dairy cow generates more than \$17,000 in economic activity. There are 202 dairy plants including 116 cheese plants.

Nutrients in Milk and Dairy Products

Calcium	Builds strong bones and teeth, keeps gums healthy
Phosphorus	Generates energy in cells, strengthens bones
Water	Maintains body temperature, carries nutrients and oxygen to cells
Niacin, Riboflavin	Helps cells produce energy
Carbohydrates	Produce energy to fuel your muscles
Vitamin A	Assist with normal vision, helps you see at night
Protein	Grown and Build muscles and other tissues
Vitamin B12	Produces red blood cells
Vitamin D	Absorbs and deposits calcium and phosphorus in bones and teeth
Potassium	Helps muscles move and contract, keeps blood pressure in balance

Fact: *Chocolate milk has the same essential nutrients as white milk: calcium, protein, vitamin A, vitamin D, phosphorus, potassium, magnesium, carbohydrate, niacin, and riboflavin, vitamin B-12. Milk is also 90% water.*

How much dairy should we have in our diet every day? 3 glasses of milk or dairy rich foods

Dairy foods (excluding butter) provide the following percentages of nutrients in the national food supply:

73% Calcium, 33% phosphorus, 31% riboflavin, 19% protein, 16% magnesium, 21% vitamin B-12, 17% vitamin A, 10% vitamin B-6.

Tasting Activity

During the lesson the students will have been shaking their jar filled with heavy cream to produce butter. Have students drain off the buttermilk. Students can try their butter on crackers.

Writing activity

Tell about a day in the life of a cow. Whatever comes to mind, use your imagination! What did your cow do during the day, what breed is she? Is she a big cow or a small cow, calf, heifer?

Breeds of Dairy Cows

Ayrshire

The Ayrshire breed originated in the County of Ayr in Scotland, prior to 1800. She was an efficient grazer; noted for her vigor and efficiency of milk production. She was especially noted for the superior shape and quality of her udder. The composition of her milk made it ideally suited for the production of butter and cheese by the early Scottish dairymen.



provided by Hoard's Dairyman

Brown Swiss



provided by Hoard's Dairyman

Switzerland, The native home of the Brown Swiss breed of cattle, is a very rough and mountainous country. The climate is very enjoyable most of the year with an average mean temperature of about 50 degrees F. much like Wisconsin. Switzerland has been noted as a cheese producing country for many years, and in the summer many of the dairy herds are taken into the mountainous regions and are grazed on the abundant pastures and meadows that result from the heavy rainfall.



provided by Hoard's Dairyman

Guernsey

The Isle of Guernsey, a tiny island in the English Channel off the coast of France, is the birthplace of the Guernsey cow. The Guernsey cow is known for producing high-butterfat, high-protein milk with a high concentration of betacarotene, a building block of Vitamin A. Being of medium size, Guernseys produce their high quality milk while consuming 20 to 30 percent less feed per pound of milk produced than larger dairy breeds.

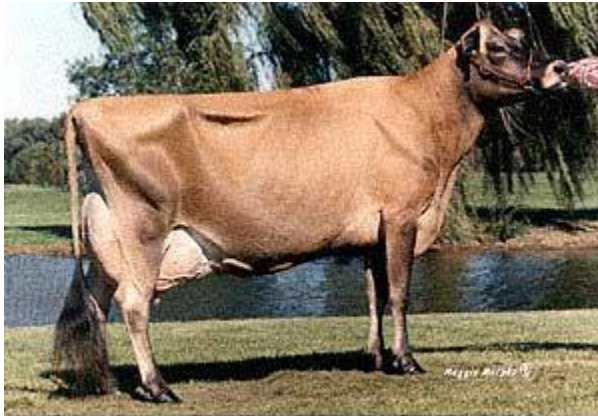
Holstein

The Holstein cow originated in Europe, in what is now the Netherlands. Holsteins are large, stylish animals with color patterns of black and white or red and white. A healthy Holstein calf weighs 90 pounds or more at birth. A grown-up cow weighs about 1500 pounds and stands 5 feet tall at the shoulder. The normal milk producing life of a Holstein cow is six years.



provided by Hoard's Dairyman

Jersey



provided by Hoard's Dairyman

The Jersey breed originated on the Island of Jersey, a small British island in the English Channel off the coast of France. The Jersey is one of the oldest dairy breeds, used for milk for more than 600 years. With an average weight of 900 pounds, the Jersey produces more pounds of milk per pound of body weight than any other breed. Most Jerseys produce 13 times their bodyweight in milk each year.

Milking Shorthorn



One of the oldest recognized breeds in the world, Shorthorn cattle started in Northeastern England. Shorthorns are either red, red and white, white or roan, the last named color being a very close mixture of red and white, and found in no other breed of cattle. The Milking Shorthorn is a gentle animal, efficiently converts feed into milk and has a long productive life.

Shake and Make Butter

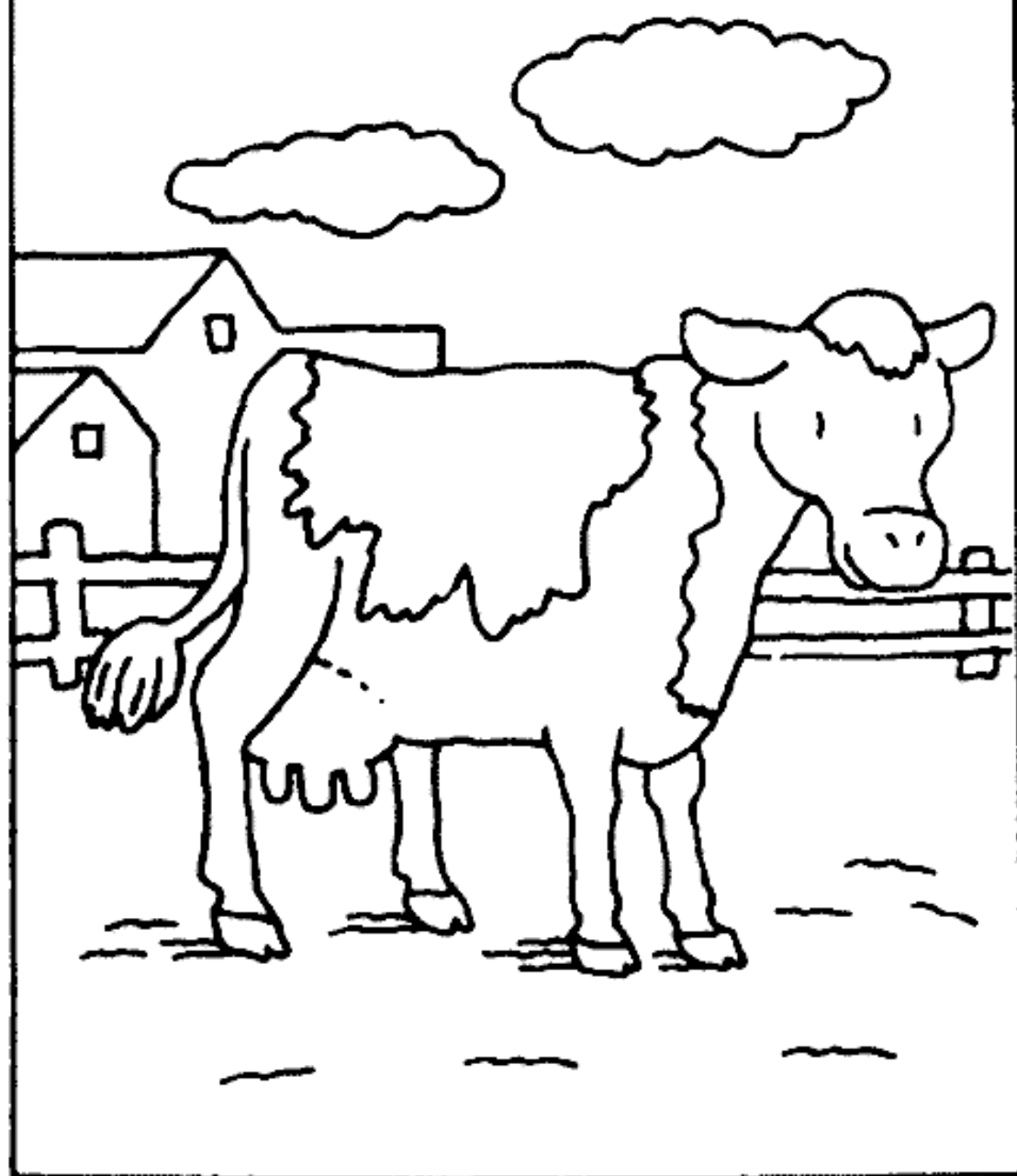
Making butter is easy and it produces a light fresh taste. You need:

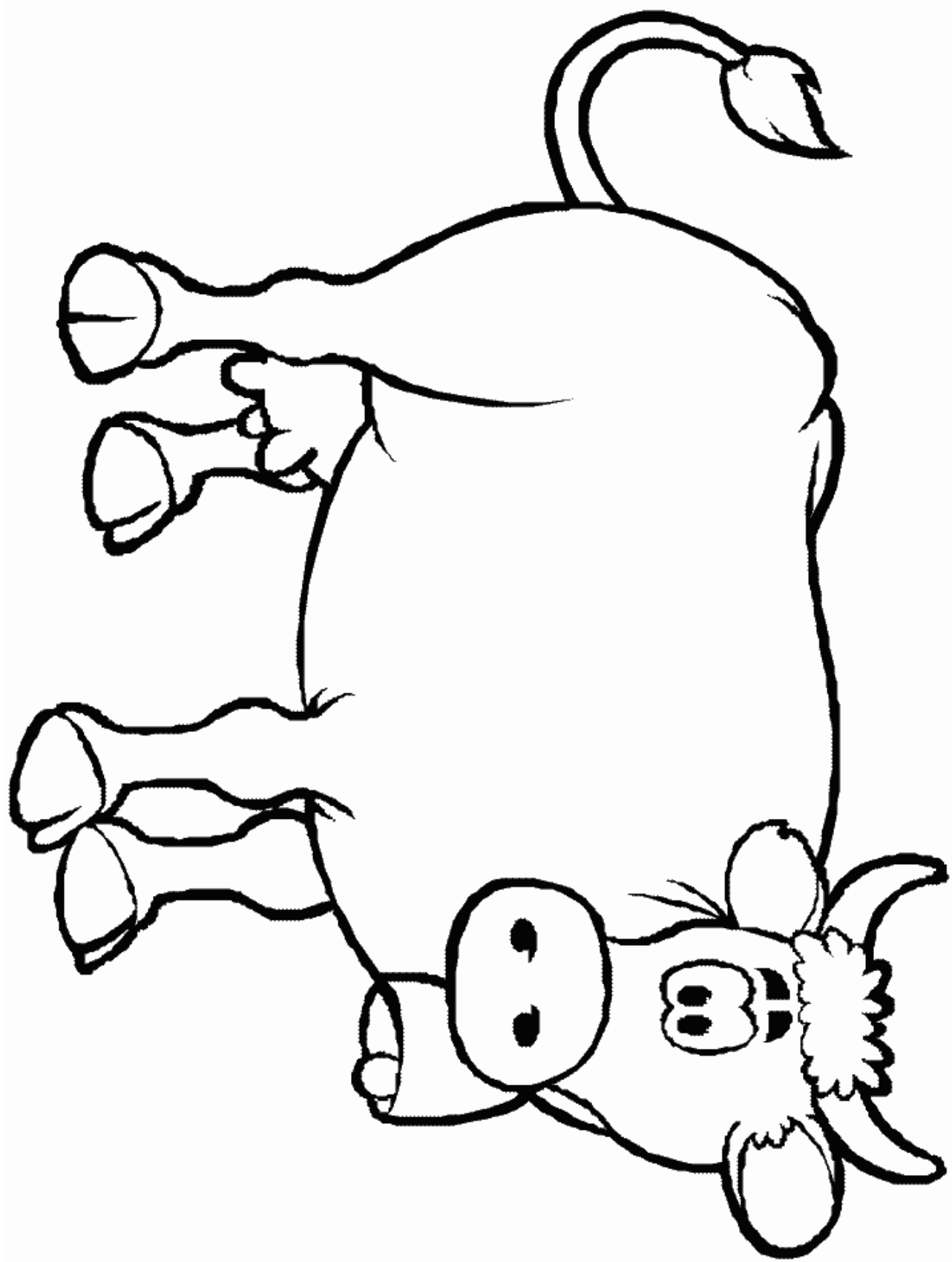
1-2 cups heavy whipping cream

Various options:

- Use the freshest cream you can. Salt to taste before working, a few pinches.
- Have the cream around 60°F before churning.
- Fill jar about 1-4 to 1/2 full. Put on cover. Shake in a jar instead . Shake about once a second. Add a marble to speed things up. This is fun with kids, but expect it to take between 5-30 minutes, depending on the shaking.
- The cream will go through the following stages: Slosly, frothy, soft whipped cream, firm whipped cream, coarse whipped cream. Then, suddenly, the cream will seize, its smooth shape will collapse, and the whirring will change to sloshing. The butter is now fine grained bits of butter in buttermilk, and a few seconds later, a glob of yellowish butter will separate from milky buttermilk. Drain the buttermilk.
- You can eat the butter now -- it has a light taste !
- *Yield:* About half as much butter as the amount of cream you started with.
- Culture the cream before churning. Add a few tablespoons cultured yogurt, buttermilk, or sour cream to the two cups of whipping cream. Let sit about 12 hours at warm room temperature to thicken and ferment before churning. It should taste delicious, slightly sour, with no aftertaste.
- Use some butter making tools, such as a churn, paddle for working, or molds for forming the finished butter.









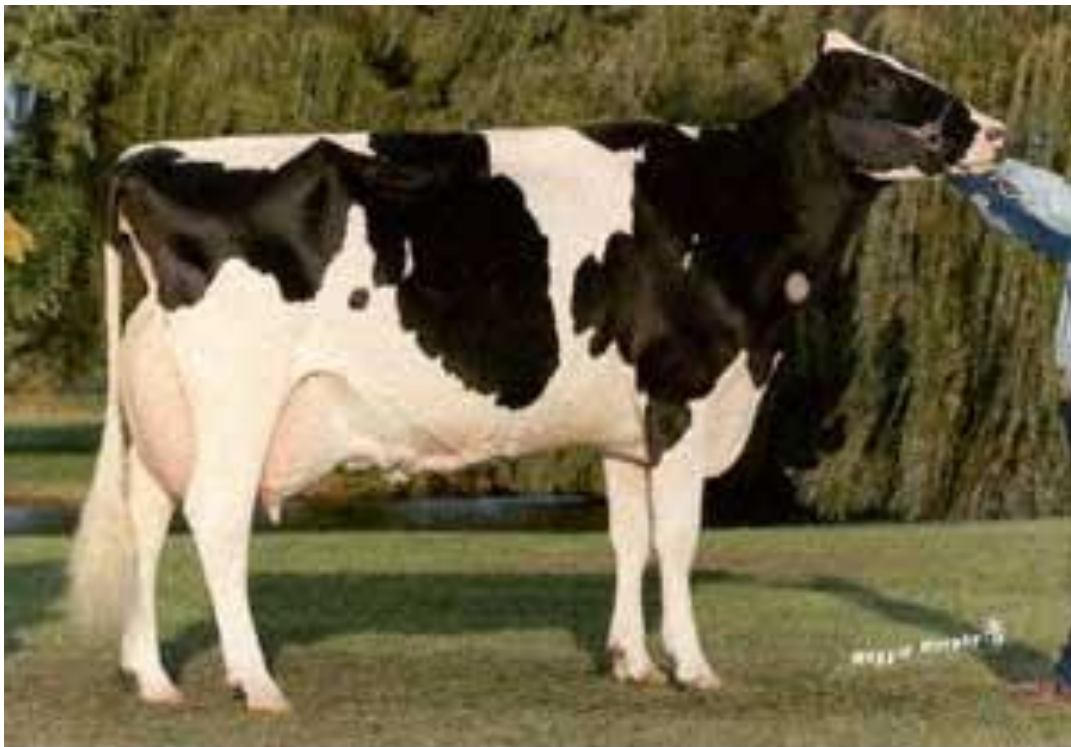
Ayrshire Dairy Cow



Brown Swiss Dairy Cow



Guernsey Dairy Cow



Holstein Dairy Cow



Jersey Dairy Cow



Milking Shorthorn Dairy Cow