

How now Alaska cow?

Materials

- jars with lids, or plastic containers with tight lids, 2- to 8-ounce size.
- heavy whipping cream at room temperature
- salt
- crackers or bread
- Alaska map
- empty gallon milk jug, well rinsed
- empty half-pint milk box(es), well rinsed (boxes & gallon optional for visuals on measurements)

Objectives

Show students where our milk products come from; give them an appreciation of Alaska's dairy industry; show a simple liquid-to-solid matter change.

Suggested grade levels

K-3

Alaska Content Standards

Math 1a; E2; Science A2; B1; D1; Geography A1, D1



This project presented by Alaska Agriculture in the Classroom through funding from the Alaska Division of Agriculture and the Alaska Farm Bureau. For information, visit www.agclassroom.org/ak



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Introduction

Did you know Alaskans eat more ice cream per person on average than Americans in any other state — more than 40 quarts a year? Some of that ice cream comes from Alaska cows. Alaska has only about a dozen dairy herds but those cows produce more than 14 million pounds of milk — 1.6 million gallons.

A typical milk cow weighs 1,400 pounds (about twice as much as 4-wheeler) and produces 60 pounds of milk a day, or more than 2.5 pounds of butter, or 6 pounds of cheese. One cow gives enough milk each day for 120 students to have a carton of milk with lunch.

Cows have special stomachs with four chambers. They can eat grass and grain that isn't used for human food and turn it into high-energy people food — like ice cream and cheese. An average cow will drink 35 gallons of water and eat 20 pounds of grain and feed and another 35 pounds of hay or silage.

There are two dairy processing plants in Alaska — one in Anchorage and one in Delta Junction, plus one or two small cheese-making facilities. Milk from Alaska's cows is processed and bottled at the dairy processing plants, or turned into special products like ice cream and cottage cheese.

Butter is a dairy product. It is made from the cream, which has more fats in it than the rest of the milk. Cream is lighter than the rest of the milk, so it floats to the top. It takes 10 quarts of cow's milk to make one pound of butter. Some cows give more butterfat than others. Most of the dairy cows in Alaska are Holsteins, which give the most milk, but the least butter fat.

Directions

Let's make some butter. We'll fill the jars about 2/3 full with whipping cream. The lids must be nice and tight. Next, we'll shake our containers for five to 10 minutes. We will shake the jars until the butter forms.

There will be a solid lump of butter in the jar. Then we will open the jar and pour off any butter fat that remains. If we want salted butter, we can add a pinch of salt. When the butter's ready, we'll eat it on bread or crackers.

Discussion points

Alaska has only two milk-processing facilities in the state. Where is the closest one to you? Are there any dairy farms near your town?

What kind of products can be made from milk?

Why did the buttermilk turn into cream?

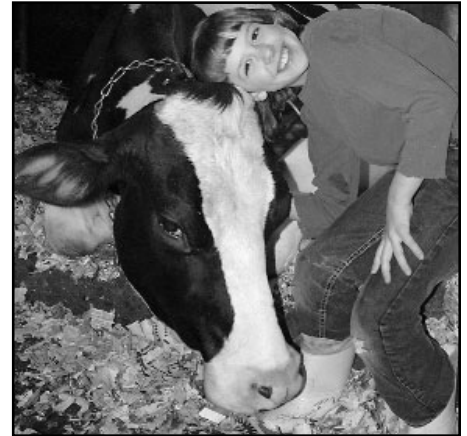
Related websites

<http://www.moomilk.com/tour.htm>

<http://www.matmaid.com>

<http://www.fb.org/brochures/farmfacts/ff2000-2.html>

<http://www.getmilk.com/>



Makayla is an Alaska cowgirl. Meet her on the Alaska AITC webpages.