



Explorations in Agriculture

Ice Cream in-a-Bag

Explore the process involved in taking a raw agricultural product (milk) and making it into ice cream.

Recipe

In Pint-Sized Plastic Ziplock Bag

- 1/2 cup of milk
- 1 tablespoon of sugar
- 1 teaspoon vanilla
- Spoons

In Gallon-Sized Plastic Ziplock Bag

- 1/3 cup salt
- 4-6 cups of ice cubes

Activity

1. Distribute one pint-sized and one gallon-sized plastic bag to each student.
2. Add the milk, sugar, and vanilla to the pint size Ziploc bag and seal it shut.
3. Add the ice and salt to the gallon-sized Ziploc bag.
4. Put the sealed pint-sized bag inside the gallon bag, seal the outer bag. SHAKE
5. After 3-5 minutes, check the pint-sized bag by squeezing gently. If the milk, sugar, and vanilla mixture has turned from a liquid to a soft solid, the ice cream is ready to eat. If the mixture is still liquid, shake longer.
6. If the ice cream is ready – eat and enjoy! Give one spoon to each student. They can eat the ice cream directly from the bag.



Classroom Connections

Social Studies – Students can research the origins of ice cream’s ingredients. Discover the process of taking a cow’s milk from the farm and making it into ice cream. Make a food chain or food web illustrating the process for making ice cream. Afterwards, ask students to think of the closest dairy farm or milk processing plant.

Science – Instruct students to write down the physical properties of ice cream such as freezing point, melting point, smell, color, volume of the ice cream in the bag, etc.

Discuss with students the phases of matter – solid, liquid and gas. Identify which phases were involved in the ice cream making process.

Math – Students can use fractions to calculate how many cups of milk were used to make their ice cream. Students should then convert the cups into gallons. How many gallons of milk did the class use for the activity? On average, a dairy cow will produce 6-7 gallons of milk per day. Based on how many gallons of milk a cow produces in a day, what fraction of her daily production was needed for the students to make their ice cream?



Academic Standards

Minnesota/Common Core Language Arts Standards and Benchmarks

2.2.3.3 Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.

Minnesota Science Standards and Benchmarks

2.2.1.2.1 The physical properties of materials can be changed, but not all materials respond the same way to what is done to them.

Additional Resources

- www.mda.state.mn.us/MAITC
- www.midwestdairy.com/nutrition-and-health/dairy-nutrition/
- www.idfa.org/news-views/media-kits/ice-cream/the-history-of-ice-cream
- **Minnesota Map of Dairy Product Processing Plants**

Concept and content for this Agventure is adapted from California Agriculture in the Classroom.



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