

How is Milk Made? READING- COMPREHENSION 3rd and 4th Grade

Standard: 3R-S1-C6-PO1,PO6; 4R-S1-C4-PO4, PO6

Objective: TSW predict text content using prior knowledge and text features, making inferences to comprehend text.

Materials: “How Does a Cow Produce Milk” Article
Milk Vocabulary Overhead

Procedures:

1. Introduce the milk vocabulary on the overhead projector or by writing the words on the board including the following:

butterfat
pasteurization

homogenization
raw milk

milk processing
udder

Teacher’s guide with definitions

butterfat fat molecules present in milk. Also known as milk fat.

homogenization the reduction in size of fat molecules in milk so they stay mixed evenly throughout

milk processing techniques, including pasteurization and homogenization, used to prepare milk for consumption

pasteurization the method of killing disease-causing bacteria in milk by rapidly heating and then cooling it

raw milk milk that is fresh from the cow and has not been pasteurized or homogenized

teat the projection through which milk is drawn from an udder

2. Ask the students if they’ve seen these words before and if they know what they all mean.
3. Tell them they are about to read an article using these words and have them write down a few sentences about what they think the article will say based on these words.
4. Give students copies of “How Does a Cow Produce Milk” and have them read it either individually or in partners.
5. Explain to students that using vocabulary words when reading can help them understand the meaning of the article, and that they can often figure out what words mean by looking at them in how they are used with the words around them in a sentence.
6. As they are reading, have them highlight any of these above words as they see them.
7. When they are finished reading, put them in groups and assign each group one of the words from the article. Have them discuss what they think it means in their groups.
8. Come back to the overhead or board and then have each group take turns describing what their word was, how it was used in the article and what they think it means now.
9. Either collect and read out loud or have students read their predictions and confirm if their predictions about the vocabulary words matched the articles or not.

Assessment:

Teacher observation, student individual predictions

Extensions/Alternative Strategies:

Gifted- Have students create a chart or index cards of the vocab words and check off any of them that they hear during the Shamrock Farms Farm Tour. They could possibly even bring a notebook and jot down when and in which context it was used.

IEP/ ELL – Create index cards using the key vocabulary words either with photos, in Spanish or using phonics.

How does a cow produce milk ? How does milk get from the cow to the store?

article reprinted from Newton's Apple, <http://www.tpt.org/newtons/11/dairyfrm.html>

You may have heard milk described as "nature's most perfect food." That's because it contains three main nutrients--protein, calcium, and riboflavin--essential for bones and teeth to grow, body tissues to repair themselves, and antibodies to form.

Milking techniques and milk processing have changed a lot since Christopher Columbus brought the first cattle to the Western Hemisphere in 1493. Advancements such as automatic milking machines and computers have improved milk production, safety, and availability.

Milk production begins with the cow. A mature cow eats, on average, 50 pounds of silage and drinks 25 to 50 gallons of water a day. A cow initially chews just enough to swallow. The food goes into the first chamber (called the rumen) of its four-part stomach. Later, the cow burps up small amounts of food and chews it again. The food then goes into the next chamber (reticulum) before passing through the final two chambers (abomasum and omasum), where bacteria and stomach acids work on it. Food provides cows with protein, energy, vitamins, minerals, and bulk. It is also the raw material that makes milk. However, to begin producing milk, a cow must first give birth. The hormones released at birth and the sucking of the calf stimulate the cow to lactate (produce milk) for her calf. Cows produce the greatest amount of milk right after they give birth. If a cow is not milked, she will stop producing milk.

Milk is made and stored in the cow's udder, which is divided into four separate quarters, each having its own milk supply. When laden with milk, each section can be drained through one udder. First the farmer spray-washes the cow with a warm iodine solution to control diseases. The milking machine cups are then attached and draw the milk from the udder into a system of pipes that transports the warm milk to a large storage tank for cooling. This milk is known as raw milk.

A trucker comes to the farm to collect and transport the raw milk to a processing plant. At the plant, milk is tested for acceptable levels of bacteria, and pasteurized by heating it to 77°C (170°F), then cooling it. This kills any harmful bacteria that may be in the milk.

During processing, butterfat is skimmed from the milk. The butterfat is then forced through small holes. This breaks it up into very tiny globules which will stay mixed evenly with the milk. Butterfat is then added back into the milk in proper proportions to produce skim, 2%, whole, and other types of milk. This process is called homogenization.

Once homogenization is completed, the milk goes into big storage tanks where it is cooled. It is agitated and then put into bottles or cartons for delivery. The total time from cow to shelf is 48 to 96 hours!