



What's Growing On In Virginia?

Virginia Foundation for Agriculture in the Classroom
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Virginia State Dairymen's Association



Maryland & Virginia
Milk Producers Cooperative Association, Inc.

COOPERATIVE MILK PRODUCERS



Dairy Farmers of America



About the Newsletter

What's Growing On In Virginia? is a semiannual publication for Virginia educators and those who want to connect children with agriculture through education.

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For additional information and activities, visit our website at
AgInTheClass.org or call **804-290-1143**

What's Growing On In Virginia?

AGRICULTURE IN THE CLASSROOM

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Dairy is good for you and then some

The former dairy industry advertising slogan “Milk Does a Body Good” still holds true today.

Milk products contain essential vitamins and minerals that are good for your health. One cup of milk has 30 percent of your daily calcium requirements, 25 percent of necessary vitamin D, 17 percent of your protein needs and 10 percent of the required vitamin A.

And in Virginia, dairy does the economy good too! It is the third largest agriculture sector, with \$396.6 million worth of products sold annually, according to the 2013 National Agricultural Statistics Service. There were 640 commercial dairy farms in the state that year, and the top four dairy-producing counties were Rockingham, Franklin, Augusta and Pittsylvania.

Dairy cows can be found across the state, and they come in all varieties and colors. The most well-recognized dairy cows are black and white Holsteins, but red and white Holsteins are growing in popularity as well. As you travel across the state, you also will see brown Swiss, red and white Ayrshires, orange and white Guernseys and fawn-colored Jersey cows.

Dairy cows are like magicians, because they turn grass and grains into milk! A cow eats feed and then the ingredients are broken down in her four stomach compartments. The digested feed moves to the small intestine, and nutrients are absorbed into the bloodstream and carried to the udder. Milk is produced in the cow's udder from milk fat, milk protein and sugar.

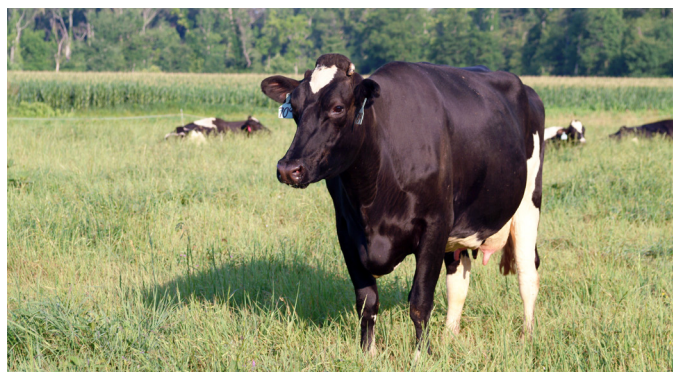
Only female dairy cows can produce milk. Females are called heifers, and after two years they have their first calves. Once a heifer has a calf, she is called a cow. All female dairy cows must have a calf to produce milk. Cows are milked for about 305 days following the birth of a calf and then rest for about two months before beginning the cycle again. A new lactation cycle begins when the next calf is born.

Male dairy cattle are called bulls or steers.

In 2013, each dairy cow in Virginia produced an average of 7 gallons of milk a day, enough to make 6 pounds of cheese or 2.8 pounds of butter. According to NASS, the total amount of milk produced in the state that year was 202.6 million gallons!

Cows are milked two to three times a day, in the morning and the evening. Automated milking machines take 4-6 minutes to milk each cow. Robotic milking machines are becoming more popular and can milk cows even faster. The milk is then stored in a bulk tank at the farm before it is picked up to be taken to a processing plant.

(continued on the next page)



The black and white markings identify this dairy cow as a Holstein. These may be the most well-recognized breed of dairy cow.



These Holsteins are being milked in a robotic milking parlor. Such operations are becoming more commonplace.

In 2012, Virginia was home to seven commercial milk processing plants, in Rockingham County, Lynchburg, Springfield, Newport News, Richmond, Winchester and Franklin County.

In Virginia, almost all of the milk produced in 2013 was used and consumed in the form of fluid milk dairy foods. To produce this much milk, an average cow consumes 40 gallons of water and as much as 85 pounds of feed a day – a combination of hay, grain and silage, which is fermented corn or grass.

There were 640 licensed commercial dairy farms in Virginia in 2013 with an estimated 94,000 milk cows. The average Virginia dairy farm has a herd of about 147 milking cows.

Beef cattle are raised for their meat, and dairy cows are bred to produce milk. However, while dairy cows are bred to produce milk, the steers are raised for meat just like beef cattle.

Milk sold through co-ops

In Virginia, most dairy farmers belong to cooperatives, and their milk and its products are distributed through those co-ops.

Co-ops market their members' milk products at competitive prices and pool their collective buying power to purchase agricultural equipment and supplies for them. Some co-ops have staff to help members with milk production, getting equipment loans and sharing their concerns with elected officials.

Raw milk often is sent to a co-op's processing plants, where it can be made into whole, lowfat and reduced-fat milk as well as buttermilk, flavored milk and eggnog. Some co-ops also operate manufacturing plants that use milk to produce butter, ice cream, cheese and condensed milks that are sold as ingredients for baby food and frozen dinners.

One of the larger cooperatives that Virginia dairymen belong to is the Maryland and Virginia Milk Producers Co-op Association. Started in 1920, this co-op is owned and operated by nearly 1,500 dairy families from Pennsylvania to Alabama, with its headquarters in Reston, Va. It markets member milk throughout the mid-Atlantic and Southeast regions and operates three fluid processing plants, including Marva Maid; one manufacturing plant; a farm supply equipment division; and a majority interest in Valley Milk LLC.

Virginia dairymen are members of other milk cooperatives, including Cooperative Milk Producers in Blackstone; Cobblestone Milk Cooperative in Chatham; and the Southeast division of Dairy Farmers of America. All four cooperatives have been ranked in the nation's Top 50 milk cooperatives by Hoard's Dairyman magazine. Dairy Farmers of America was No. 1, Maryland and Virginia Milk Producers Co-op Association was ranked 13th, Cobblestone came in at 37 and Cooperative Milk Producers was 44th in the nation. Dairy Farmers of America supplies milk and milk products to Food Lion and Kroger stores nationally. Kroger has a processing facility in Lynchburg, so Virginia milk is taken there and sold in Virginia Kroger stores.

Bonus Activities:

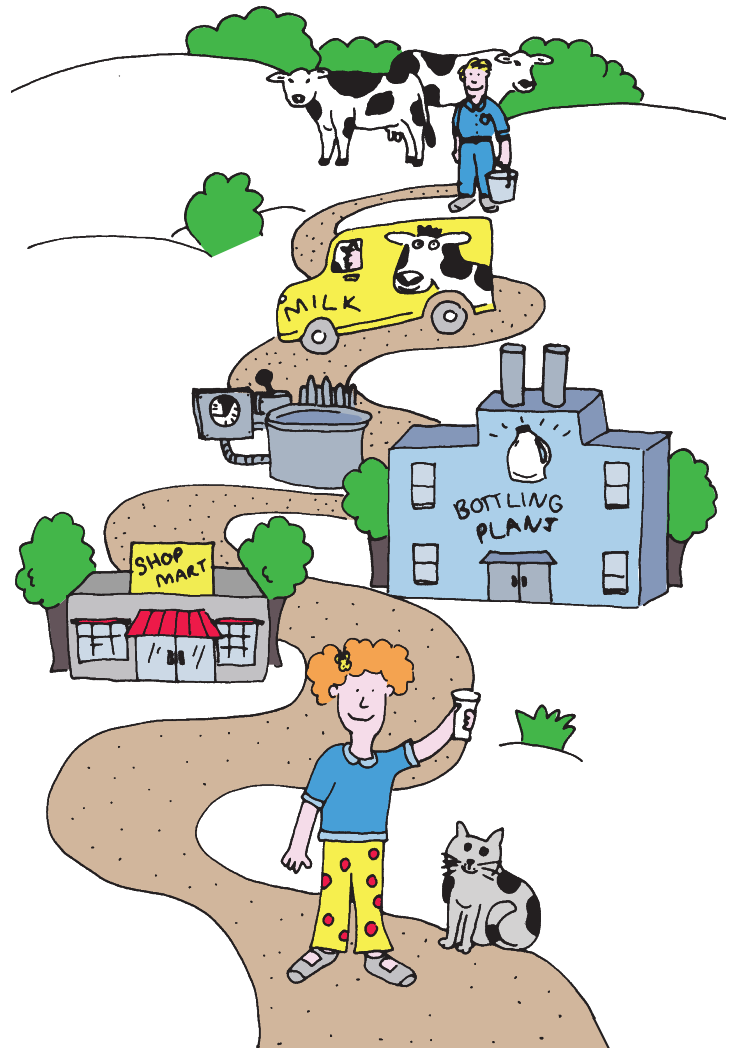
Butter Making:

Fill a small container halfway full with heavy cream. Put the lid on, and start shaking the container. After 10-15 minutes you will be able to strain the buttermilk off from the solid butter. Students may then try it on a cracker.

For companion worksheets to complement your butter making, visit naitc-api.usu.edu/media/uploads/2014/06/17/BetterButter.pdf

From Cow to Cup:

Great care is taken to provide you with each glass of healthy, delicious milk. Beginning with the farmer who milks the cows twice a day using automated equipment and then continuing to the specially designed milk truck that picks up the milk from the farm and keeps it cold on the way to the processing plant. At the plant the milk is tested, pasteurized and processed so that it is ready to go to the store and then into your cup.



LESSON PLAN >> PRESCHOOL

Sym-MOO-try Cow

SOL:

Math: 3.17, 4.14, 5.15

Health: 3.1, 4.1, 5.2

Objective:

to identify a line of symmetry; define and investigate symmetry using paper folding; and identify half versus whole.

Materials:

- "11 x 17" white paper
- scissors
- cow template
- sponge paint brushes
- black and pink tempera paint
- glue
- black marker
- optional: black yarn and "googly" eyes

Background Knowledge

The most widely recognized dairy cow is the Holstein, which has black and white spots. The spots are similar to people's fingerprints in that no two cows have the same pattern of spots. Dairy farmers milk their cows at least twice a day. One cow can produce up to 90 glasses of milk a day; 200,000 in her lifetime. In fact, a cow's udder can hold as much as 50 pounds of milk! Dairy is Virginia's third largest agricultural commodity

Procedure

1. Pass out templates, and have students cut them out.
2. Pass out "11 x 17" paper. Have students fold sheets in half horizontally.
3. Line up the straight edge of the template on the fold. Trace, and then cut it out.
4. Use sponge brushes to make black spots on one half of the cow. Use the pink for the insides of the ears and the nose.
5. Close the cow along the fold, and press lightly to transfer the paint.
6. Open the cow up to see the whole, and ask students to describe their observations. Point out that the spots are symmetrical across the fold.
7. Let the paint dry, then add eyes and black yarn for hair. You also may use a black marker to draw the nose.

Extension

Farmers use ear tags to track breed lines in cows. Have students make their own ear tags for their cows, using their birthdays as the tag numbers.

—Original lesson adapted from Alabama Agriculture in the Classroom.



Agriculture in the Classroom

Connecting Children to Agriculture

AgInTheClass.org

Sym-MOO-try Cow Template

Place on Fold



LESSON PLAN >> ELEMENTARY SCHOOL

Bone Up on Calcium

SOL:

Science: 4.1
Health: 4.1

Objective:

to conduct an experiment to demonstrate the benefits of calcium on bones.

Materials:

- 2 chicken bones
- vinegar
- milk
- 2 jars with lids
- journals to record observations

Background Knowledge

Milk and other dairy products are excellent sources of calcium, which helps build strong bones and teeth. The My Plate food guide recommends that you get at least three servings of dairy each day. Doing so can improve bone mass, which is especially important during childhood and adolescence, when bone mass is being built. Vitamin D helps the body absorb calcium, which is why milk typically is fortified with vitamin D.

Procedure

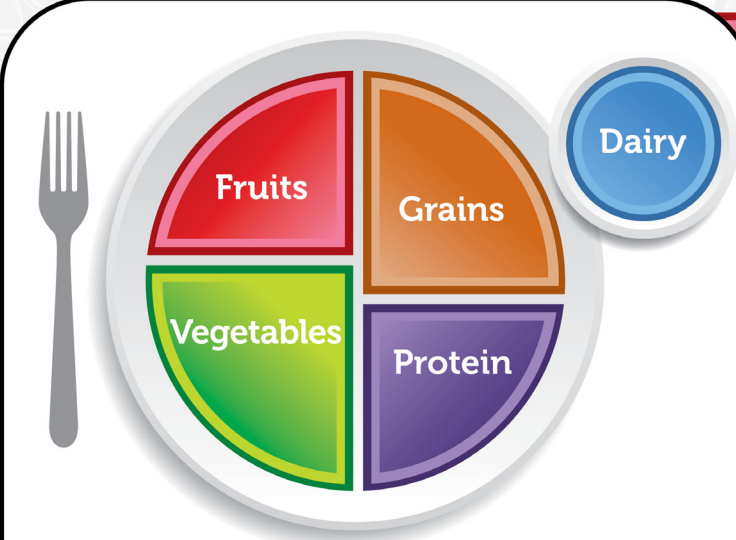
1. Share the My Plate food guide, and point out that milk and other dairy products are part of a healthy diet. Ask students to share their favorite dairy products.
2. Now ask students if they know why milk “does a body good.” Explain that dairy products are an excellent source of calcium, and that calcium is essential for healthy bones.
3. Show students the two chicken bones, tell them that you will be placing one in a jar of vinegar, which is an acid, and one in milk, which has calcium. Ask them to make predictions of what they think will happen to the bones.
4. Place one bone in a jar of vinegar and one bone in a jar of milk. Place a lid on each jar.
5. Remove the bones after two days, and try to bend the tips. Have students record what happens, then return the bones to the jars.
6. Wait an additional two to three days, and remove the bones. Try to bend them in the middle. Then try to cut them with scissors. Which one is softer? Have students record their observations. The bone that was placed in the vinegar should have become brittle after the acid caused it to lose calcium.



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ChooseMyPlate.gov

FOCUS ON FRUITS
Fruits may be fresh, canned, frozen, or dried, or 100% juice. Make half your plate fruits and vegetables.

VARY YOUR VEGETABLES
Include dark green, red, orange, beans and peas, starchy, and other varieties.

MAKE AT LEAST HALF YOUR GRAINS WHOLE
Eat more whole grains such as whole wheat, bulgur, oatmeal, whole cornmeal, and brown rice.

GO LEAN WITH PROTEIN
Choose from a variety of meat, poultry, seafood, beans and peas, eggs, soy foods like tofu, nuts and seeds.

GET YOUR CALCIUM RICH FOODS
Choose fat-free or low-fat milk, yogurt and cheese.

NATIONAL NUTRITION MONTH 2013
GET YOUR PLATE IN SHAPE

SIMPLY GOOD NUTRITION
by Charmelle



Getting your daily recommended servings of milk helps build the strong bones that keep you active.

LITERARY CORNER

Clarabelle: Making Milk and So Much More,
Cris Peterson, Boyds Mills Press
ISBN: 1620915901

Cows, Robin Nelson, Lerner Publications
ISBN: 0761340572

Cows on the Farm, Mari Schuh, Capstone Press
ISBN: 0736809929

Milk: From Cow to Carton, Aliki, Harper Collins
ISBN: 0064451119

Out and About at the Dairy Farm, Andy Murphy,
Picture Window Books, ISBN: 1404801660

Milk and Cheese (Healthy Eating), Nancy
Dickmann, Heinemann, ISBN: 1432939890

The Milk Makers, , Gail Gibbons, Aladdin
ISBN: 0689711166

Louis Pasteur and Pasteurization, Jennifer Fandel,
Capstone Press, ISBN: 0736878963

AITC Program Highlights

Attend the National AITC Conference this June

Join us for "Unbridled Possibilities" at the 2015 National Agriculture in the Classroom Conference in Louisville, Ky. The conference, scheduled for June 16-20, is sure to be packed with engaging workshop sessions, speakers and tours. It will send you home with new and exciting ideas you can integrate into your classroom. For more information, visit agclassroom.org/conference2015/.

AITC grant success stories

AITC has continued its mini-grant program by giving more than \$10,000 to schools and teachers for agriculture-themed programs and projects. From hatching chickens to growing their own salad ingredients, students across the state have been able to benefit from this program. The next grant window opens this summer, and the application deadline is in September. For more information and an application, visit AgInTheClass.org.

Online agriculture map

AITC is excited to introduce our latest resource, the online agriculture map. An extension of our perennially popular agriculture maps, the online map allows teachers and students to view brief videos for each region of the state. Students will learn about the geography of each region, along with information about the agricultural products found there.

