

## Dear Educator,

Recycling is an important sustainability practice that helps protect our environment. Your students most likely recycle at home, and dairy farmers recycle too — everything from the water they use to the food they feed their cows. In fact, even their cows are recyclers!

This free educational program from American Dairy Association North East (ADANE), created in cooperation with the curriculum specialists at Young Minds Inspired (YMI), highlights the role of recycling on dairy farms to help promote students' own sustainability practices. The program features standards-based activities that support your Common Core Language Arts and Next Generation Science standards for students in grades 2-4.

Please share these materials with other teachers in your school. Although the materials are copyrighted, you may make as many copies as needed for educational purposes. Please use the enclosed reply card to provide feedback, or comment online at [ymiclassroom.com/feedback-adane-recycle](http://ymiclassroom.com/feedback-adane-recycle). We look forward to hearing from you.

Sincerely,

*Richard C Naczi*

Rick Naczi  
CEO

American Dairy Association  
North East

*Dr. Dominic Kinsley*

Dr. Dominic Kinsley  
Editor in Chief  
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For questions,  
contact us toll-free at  
1-800-859-8005 or  
by email at [feedback@ymiclassroom.com](mailto:feedback@ymiclassroom.com).

## TARGET AUDIENCE

Elementary school students in grades 2-4 and their families

## PROGRAM OBJECTIVES

- Create awareness of the role of dairy farmers in preserving and protecting the environment
- Encourage students to make recycling one of their sustainability goals
- Inspire students to examine sustainability practices they and their families can implement

## PROGRAM COMPONENTS

- This one-page teacher's guide
- Three reproducible activity sheets
- A colorful classroom wall poster
- A reply card for your comments, or comment online at [ymiclassroom.com/feedback-adane-recycle](http://ymiclassroom.com/feedback-adane-recycle)

## HOW TO USE THIS PROGRAM

Photocopy the teacher's guide and activity sheets before displaying the poster. Obtain milk cartons or yogurt containers, plates for catching excess water, soil, and lettuce or herb seeds of your choice for Activity 3. To review program alignment with Common Core Language Arts and Next Generation Science standards, visit [ymiclassroom.com/adane-recycle](http://ymiclassroom.com/adane-recycle).

### Activity 1

#### PLANET PROTECTORS: DYNAMIC DAIRY FARMERS!

Begin by holding up an empty milk or yogurt container and asking students if they recycle containers like these at home. Then guide them in a discussion about what it means to recycle (to convert waste into reusable material), and why it's important to recycle (to reduce waste and protect our environment). Show them the video at [youtu.be/Z-874\\_14tCA](http://youtu.be/Z-874_14tCA) (4:25).

Explain that when we recycle, we are practicing sustainability, just like dairy farmers. In fact, dairy cows help farmers recycle. Distribute the activity sheet and have students read Part 1 before they answer the questions. **Answers:** 1. cooling mist in barns, drinking water, wash equipment; 2. newspaper, tires, sand, dried manure; 3. bedding, fertilizer, electricity.

Have students complete Part 2 by listing materials or products they recycle in school and at home. For example, water used to wash dishes (graywater) or saved in clean rinsed-out milk containers when running tap water to get it hot can also irrigate the garden. Answers will vary.

### Activity 2

#### DAIRY COWS: NATURE'S MOO-VELOUS RECYCLERS!

Dairy cows are multi-taskers when it comes to recycling. Their ability to digest foods that cannot be eaten by humans means that they recycle all kinds of "leftovers" as part of their diet. And they turn that diet into milk and its dairy products.

Pair students and give them about five minutes to discuss the foods they think cows might eat, then have them share their ideas with the class. Next tell them that cows eat "leftovers" (called by-products) from foods made for humans — things like peels, seeds, and pulp that could otherwise end as trash in landfills. These by-products are mixed with grain and give cows the nutrition they need, making

# DAIRY RECYCLERS



them natural recyclers. Explain that dairy cows are also *upcyclers* because they turn this recycled food into something new — milk, which humans drink and use to make yogurt, cheese, and ice cream.

Distribute the activity sheet and review the instructions. **Answers:** Part 1 – (left circle) orange peels, cottonseed, leftover vegetables, fruit pulp; (right circle) milk, yogurt, cheese, ice cream. Encourage students to use their imaginations to design cow recycling logos in Part 2.

### Activity 3

#### SUPER STUDENT RECYCLERS!

Tell students they are going to practice recycling and farming by planting lettuce or herb seeds you give them in milk cartons or yogurt containers.

Create small drainage holes in the bottoms of the milk cartons or yogurt containers ahead of time with a nail or similar sharp object. Distribute the cartons, plates for catching excess water from the planters, soil, seeds, and activity sheets, and have students follow the directions in Part 1 to plant their seeds. Depending on your students, you might want to do this together, or let them work independently.

For Part 2, explain that another way of recycling to help plants grow is composting, which converts selected food scraps into fertilizer. Have students read the paragraphs and then work with a partner to answer the questions. If time permits, view this video on composting at [youtu.be/kA3q07paNbE](http://youtu.be/kA3q07paNbE) (2:52).



## FREE!

Be one of the first 100 teachers to return the enclosed reply card or provide feedback online, and receive a set of 36 free **CowPots** and a packet of starter seeds for this activity. CowPots ([Cowpots.com](http://Cowpots.com)) are 100% biodegradable pots made from composted cow manure. After your seeds sprout, CowPots can be planted directly into the ground where they will biodegrade and add value to your soil and plant.



## THERE'S A LOT MORE DAIRY LEARNING ONLINE!

Visit [ymiclassroom.com/adane-lesson-plans](http://ymiclassroom.com/adane-lesson-plans) to explore additional ADANE programs on a wide range of dairy farming topics:

### Nutrition

- Mission Nutrition: Dairy Every Day
- Healthy Farming, Healthy You

### Local Agriculture

- Farm to Table
- Celebrate Farm-to-School Month

### Virtual Dairy Farm Tour

Go to [youtu.be/y-FQsNH0fXI](http://youtu.be/y-FQsNH0fXI) to watch recorded virtual farm tours, and visit [americandairy.com/dairy-in-schools/virtual-farm-tour.html](http://americandairy.com/dairy-in-schools/virtual-farm-tour.html) to learn about and register for future virtual farm tours.

### Farming, Technology, and Sustainability

- Planet Partners
- Discover Dairy Science!
- Dairy Tech
- Water Wise



# PLANET PROTECTORS: DYNAMIC DAIRY FARMERS!

Reproducible Master



Dairy farmers like John Mueller of Willow Bend Farm in Shortsville, N.Y., take great care to ensure their cows are healthy and content.



Dairy cows on recycled bedding at Reinford Farms in Mifflintown, Pa.

**Part 1:** Recycling helps protect the planet by reducing the amount of natural resources we use, such as water. Read the paragraph below. Then fill in the chart.

Did you know that dairy farmers are planet protectors? They care about the environment! They recycle and reuse all kinds of things on the farm. For example, the water they use to cool fresh milk is the same water their cows drink. (Cows like warm water.) Dairy farmers also reuse that same water in misters

to cool off their cows in the summer. They even reuse the water to wash farm equipment. Dairy farmers use recycling to give their cows comfortable beds, too. Cows love to sleep on sand, which can be cleaned and reused repeatedly. They also like to sleep on shredded newspapers, shredded tires, and manure — dried cow waste that has been cleaned and crumbled to make a soft bedding. And manure can be recycled in other ways. Dairy farmers use it to make electricity and as a fertilizer to help their crops grow. That's a lot of recycling!

**1.** Name three ways dairy farmers recycle the water used to cool fresh milk.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

**2.** Name four things dairy farmers recycle to use as cow bedding.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

**3.** Name three ways dairy farmers can recycle cow manure.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

**Part 2:** Are you a planet protector? Look at the chart at the right. On the left side, list ways you and your family recycle and reuse at home and at school. On the right side, list new ideas for recycling to protect our planet.

THINGS WE ALREADY RECYCLE OR REUSE	NEW WAYS WE CAN RECYCLE AND REUSE



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# DAIRY COWS: NATURE'S MOO-VELOUS RECYCLERS!

## Reproducible Master

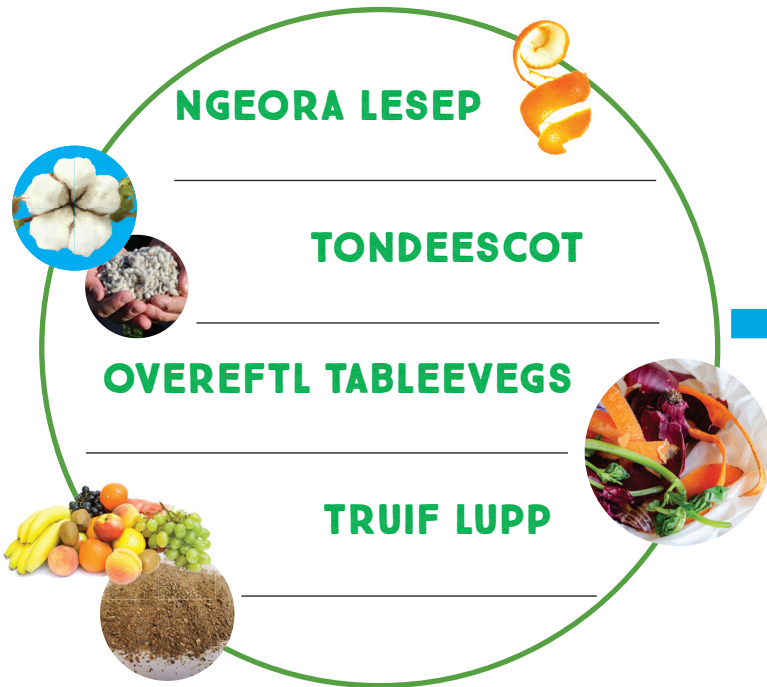
**Part 1:** You've learned that dairy cows are *recyclers* because they can digest and use the nutrients from food by-products that people usually throw away. These foods become part of their balanced diet. And dairy cows are *upcyclers* because they turn those recycled food by-products into fresh, wholesome milk.

Now look at the two circles below. Unscramble the words in the left circle to identify food by-products that cows recycle. Unscramble the words in the right circle to identify new dairy foods that cows produce.



Father-son dairy farming duo Sam Conrad Sr. and Sam Conrad Jr. of Warriors Mark, Pa., stand with their corn crop, which will be used to feed their dairy cows.

## COWS ARE RECYCLERS.



## COWS ARE UPCYCLERS.



Did you know that nearly 80% of what a dairy cow eats cannot be digested by humans?

**Part 2:** Now, get creative. On the back of this sheet, design a recycling symbol that shows how dairy cows are recyclers and upcyclers. Look at this recycling symbol to help you think of an idea.



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# SUPER STUDENT RECYCLERS!

Reproducible Master



**Part 1:** Practice recycling by reusing a milk-carton or yogurt-container “pot” and the materials your teacher gives you to grow your own lettuce or herbs, using these directions:

1. Fill your pot with soil, leaving about an inch of space at the top.
2. Press the seeds gently into the soil to the depth your teacher tells you.
3. Sprinkle the pot with water until the soil is evenly moist.
4. Place the pot on a plate that can catch draining water.
5. Now place the pot in a sunny location and watch your “crop” grow!

## Tips!

Keep the soil moist.  
Be sure to empty the plate as water collects.

Track your crop’s growth each week on the chart.

DATE	HEIGHT

**Part 2:** Now find out how you can keep recycling at home. Read the paragraph below, and work with a partner to answer the questions.

Composting is a way to make fertilizer to help plants grow. It’s easy! You just put kitchen leftovers, like eggshells, fruit peels, and vegetable trimmings, into a container. Then you add a layer of dried leaves that you’ve collected in the fall. Sprinkle some soil over the dry leaves, then keep adding new layers of leftovers and dry leaves. The leftovers contain lots of nitrogen. The dry leaves contain lots of carbon. When they biodegrade after 6-12 months, the nitrogen mixes with the carbon to make fertilizer that you can use to grow vegetables and flowers!



1. Think about how dairy cows recycle leftovers. How is this similar to composting?

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2. Think about what you eat at home and at school. What food items do you throw away or put in the garbage disposal that you could compost? List some below.

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3. In addition to home, where else could families keep a compost container — in a community or school garden? Check out the possibilities and share your ideas in a classroom discussion.



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# DAIRY RECYCLERS

Dairy farmers and their cows both help the planet by recycling. We get to enjoy the great taste and nutrition of the dairy products that result!



We eat **ORANGES**, but don't eat the peels. Cows do! Orange peels are recycled as part of their food.



Comfy clothes are made from **COTTON**. Cottonseeds don't go to waste — cows eat them as part of a healthy diet.



What **DAIRY PRODUCTS** do you enjoy?



We enjoy **CORN** and so do cows! They eat corn cobs and husks — it's all part of how cows help us recycle!



Meet some **LOCAL DAIRY FARMERS!**



Fulper Farm, New Jersey



Ivy Lakes Dairy, New York



Tucker Farm, Maryland



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