



FARMERS CELEBRATE EARTH DAY, EVERY DAY

LESSON 3: SUSTAINABLE FARMING SUSTAINS THE WORLD

OVERVIEW

In this lesson, students will learn about farmers' efforts throughout the United States to develop sustainable farming, production and manufacturing, supply chain, and community support practices. They will learn about and present the winners of the [2021 U.S. Dairy Sustainability Awards](#) and examine both the problems each winner addressed and the solutions that were developed in response.

TIME

One to two 45-minute classes

OBJECTIVES

In this lesson, students will:

- Summarize text information about dairy sustainability award winners;
- Use a provided visual aid to identify and describe the problem-solution process of a specific award winner; and,
- Develop and deliver a presentation highlighting the award winners' contribution to sustainability practices in farming and production.

STANDARDS

NGSS

MS-ETS1-1—Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.

MS-ETS1-2—Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

CASEL FRAMEWORK

SELF-MANAGEMENT: The abilities to manage one's emotions, thoughts, and behaviors effectively in different situations and to achieve goals and aspirations. This includes the capacities to delay gratification, manage stress, and feel motivation & agency to accomplish personal/collective goals. Such as:

- Setting personal and collective goals
- Using planning and organizational skills

MATERIALS

In addition to common classroom materials and an internet connection, students will need:

- Award Winner Headlines slide for classroom projection
- Multiple copies of the winner profiles in the [U.S. Dairy Sustainability Awards Booklet](#) (enough for each group of two to three students to select one winner to study) or electronic copies to disseminate
- Access to presentation materials (physical or multimedia resources)
- Problem-Solution Framework handout

PREPARATION

1. Familiarize yourself with each award winner so you can field questions as you present the headlines for students to review.
2. Arrange the classroom to accommodate groups of 2-3 students.
3. Prepare the handouts and arrange them in separate piles by headline (if printed).

KEY TERMS

- **Environmental Sustainability:** the quality of not being harmful to the environment or depleting natural resources, and thereby supporting long-term environmental health
- **Supply Chain:** the entire sequence of steps that are involved from collecting raw materials to bringing them to the consumer
- **Creamery:** a place such as a dairy farm, processing plant, or business establishment where dairy products are processed or sold
- **Digester:** an apparatus in which substances are softened or disintegrated by moisture, heat, or chemical action
- **Biogas:** any gas fuel derived from the decay of organic matter, such as the mixture of methane and carbon dioxide produced by the bacterial decomposition of manure, garbage, or plant crops
- **Renewable Energy:** any form of energy that is naturally replenished within a human lifetime, such as biomass, solar, wind, tidal, wave, and hydroelectric power, and that is not derived from fossil or nuclear fuel



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INTRODUCTION

Ask students what awards they know or have heard of, either in their own lives or in society overall. Allow students to share what they know about different award types, and then ask them why awards are important, or useful, in society. Elicit responses including that awards can spark innovation or progress in different areas of life. Then summarize some of these responses:

Performance awards encourage performers to improve their abilities; science awards encourage scientists to discover or create innovative solutions to problems; athletic awards encourage athletes to practice their sports and learn new techniques to become the best they can be at them.

Explain that one problem facing society today is the need for more sustainable production of food and energy, and that today's lesson will focus on awards that are given to those farmers who have successfully created processes for doing just that. Students will look at problem/solution outcomes in a variety of awarded U.S. Dairy Sustainability Award winners.

LESSON PROCEDURE

Step 1

Introduce students to the [U.S. Dairy Sustainability Award Winners](#) for 2021. Scroll through the list of categories and summarize what each category is focused on (e.g., farming itself, dairy production of items like cheese, moving supplies and products from the farm to you, improving communities, and—in the case of 2021 – reacting to problems created by the pandemic). Have students reflect on the categories and think about which they are most interested in learning about.

Step 2

Show the **Award Winner Headlines** slide provided and give students a few minutes to read the headlines and decide which one they would like to learn more about. Provide brief summaries of the winning strategies if the headlines are not informative enough. In particular, the headline “Framework Helps Wisconsin Industry Identify Proof Points” will most likely need explanation. The award is for the development of a handbook to

help farmers and all members of the dairy supply chain improve conservation practices and demonstrate their successes.

Step 3

Have students select an award winner and partner in groups of two or three based on who they selected. Allow them a few minutes to read and highlight the summary pages so that they have a good understanding of what the award winner did to earn their award. Then, have them work in their pairs or small groups to research their award winner's practices and successes. They should take notes and collect images from their online research that they will use in a presentation to the class.

Step 4

Have students consider the project or program their award winner developed and the impact it had or is having on sustainability in the environment. Students should use the Problem-Solution Framework handout to examine what the problem is, what caused the problem, what negative effects result from the problem, and what the award winner developed as a solution for the prob-



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lem. Circulate as students complete the activity and elicit additional responses from them. Reconvene as a class and have students share their statements with each other to discuss and clarify their thoughts.

Step 5

Have students work in teams to create presentations about their award winner, as well as the problem and solution addressed in the project. Have them use their additional research and video or images they found to give the audience a clear understanding of what the project entails and how it contributes to sustainability in dairy farming and/or the community.

Provide or post a copy of the provided presentation assessment rubric for students to refer to as they work on their presentations.

Step 6

Allow time for all groups to make their presentations to the full class.

REFLECTION

How is the work and attitude of the award winners you learned about relevant to your life? Can you apply anything you learned to your own health and/or the health of the environment?

ASSESSMENT

Use the provided rubric to evaluate student presentations.

EXTENSIONS

Create a set of local farmer trading cards. Have students research farms in your state or region and find out about the farmers who produce local foods and dairy products. Use this [example from Loudoun County, VA](#) to have students create a set of farmer trading cards to highlight the various people they learn about. [The Fuel Up to Play 60 Dairy Council Locator](#) can connect you with your regional dairy council if you need help finding local farms.