**The relationship between agriculture and the economy**

Pillar 6 B. Identify agriculture as an important industry in America

 (Grades 4th – 8th)

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| **Websites**: (A) <https://www.ers.usda.gov/data-products/ag-and-food-statistics-charting-the-essentials/ag-and-food-sectors-and-the-economy.aspx> (B) <https://www.tn.gov/agriculture/article/ag-eac-economic-impact> (C) <https://farmersmarketcoalition.org/education/stimulate-local-economies/> **Hands On**: <http://www.agclassroom.org/teacher/matrix/lessonplan.cfm?lpid=255&grade=3,6,9&author_state=0&search_term_lp=industry>  |

A Day Without Dairy

Purpose

In this lesson, students will create, read, and interpret graphs relating to the economic importance of the dairy industry and be challenged to understand the economic consequences of a day without dairy.

Materials

**For class:**

* Index cards for vocabulary review

**For each group:**

* Markers
* Scissors
* Glue or paste

**For each student:**

* “Day Without Dairy” activity sheet
* Empty, clean, single-serving milk carton
* Graph paper

Essential Files (maps, charts, pictures, or documents)

* [A Day Without Dairy Worksheet](http://naitc-api.usu.edu/media/uploads/2015/06/02/A_Day_Without_Dairy.pdf)
* [A Day Without Dairy Worksheet Key](http://naitc-api.usu.edu/media/uploads/2015/06/02/A_Day_Without_Dairy_KEY.pdf)

Vocabulary

**Agricultural economist:** a career to collect data and analyze graphs to determine the best marketing options for farmers

Background Agricultural Connections

This lesson is part of a series called, *Milk Matters: Discovering Dairy*. These lessons introduce students to the history, production, nutritional value and economic significance of the dairy industry. Other related lessons include:

Interest Approach – Engagement

1. Place a series of dominos where your class can see. If dominoes are not available you could also stand several books up in a row.
2. Ask your students what would happen if you knock down one of the dominoes.  Your students should recognize that tipping one domino over will have a chain reaction and the remaining dominos will also be tipped over.  Sometimes this is called a "domino effect."  Review with your students that the dairy industry is a portion of agriculture that provides milk to our diets.  Ask your students what would happen without the dairy industry.
3. In this lesson, students will:
	* Create, read and interpret graphs related to dairy’s economic impact; and
	* Explore the economic consequences of a day without dairy.

Procedures

**Activity 1: Economy of the Dairy Industry**

1. Take a poll of the class to determine students’ favorite type of cheese: Mozzarella, American, Cheddar or Swiss. Create a chart on the board to record students’ responses to the poll. Ask students what type of graph should be used to illustrate the information. Students can work in groups or as a class to create the appropriate graph.
2. Review with students the purpose of graphs in displaying important information. A large part of an economist’s job is collecting data, creating graphs and interpreting those graphs to determine changes in the market. Why would it be beneficial for someone in the dairy industry (or any other agriculture industry) to be interested in the changes within the agriculture market?
3. Explain that economists and dairy farmers alike use graphs to determine the importance of dairy product sales in the economy. In this lesson, students will create and read different graphs to better understand the role of dairy in our daily lives.
4. It may be helpful to work with students in creating a “word wall” of vocabulary words they will read and write during the lesson. Place definitions of challenging vocabulary words on the board, depending on grade level. Pass out index cards featuring corresponding vocabulary words to each group. Groups take turns matching their vocabulary word to the correct definitions. Direct students to orally use the words in a sentence and/or record the definitions on a separate piece of paper.
5. Students complete the “Day Without Dairy” activity sheet.
6. Discuss the economic impacts of a day without dairy. Work with the students to estimate the quantity of milk consumed daily in California (or substitute your state). For example, poll the class to determine the amount of dairy products the class consumes daily. Use multiplication to estimate the amount of dairy products consumed by the entire school, city, state and country. Discuss with the class:
	* The amount of money lost in a day without dairy
	* The dairy industry’s impact on jobs and employment
	* The basic concept of supply and demand
	* If California stopped producing milk, how would we get dairy products? How would this affect prices at the store?
7. Review activity. Students review their learning by creating “A Day Without Dairy” milk carton. Students decorate a milk carton depicting newly-acquired concepts on each side. If time allows, they can make their carton colorful and creative.
	* **Side 1**
		+ Title: A Day Without Dairy, Drawing, Name
	* **Side 2**
		+ Answer the following question, using complete sentences, on lined paper. What would a day without dairy be like? A year? Paste your response to the milk carton.
	* **Side 3**
		+ Paste a copy of the bar graph you created illustrating exports from the United States, Canada and Russia.
	* **Side 4**
		+ On a separate piece of paper, list all vocabulary words learned, including definitions. Paste your list to the milk carton.

**Concept Elaboration and Evaluation**

After conducting these activities, review and summarize the following key concepts:

* The agricultural industry is valuable to our daily life.
* Farmers care for their animals needs by providing food, water, and shelter.
* The dairy industry plays a part in our economy.

**Variations**

* Students create a chart reflecting the data graphed for cheddar cheese production in California (found on "A Day Without Dairy worksheet). Using the chart they created, students find mean, median, mode and range.
* Students work in groups to make milk carton review tools, substituting the pint-sized container with a half-gallon milk carton. Students summarize their findings in front of the class.

Essential Links

* [California Foundation for Agriculture in the Classroom](http://www.cfaitc.org/)

Enriching Activities

* Students work in groups to determine statistics they would like to discover about the dairy industry. Students research and collect the needed information, determine the appropriate type of graph to use and create a graph that accurately represents the information they collected. Groups take turns presenting their findings to the class.
* Students visit the grocery store and record the prices for commonly consumed dairy products. Students keep a “My Day of Dairy” food journal and determine the amount of money spent on the dairy products they personally eat each day.
* Students research factors contributing to dairy product sales. What causes an increase or decrease? Use online tools, write a letter to a dairy farmer or invite a dairy farmer to your class to ask these (and other) questions.
* Visit the *Interactive Map Project* website and view the [Dairy Cattle Inventory](http://nefbmap.org/map.php?P=37&PV=0) map. As a class identify the highest milk producing states and discuss the factors which could contribute to the success of dairy farms such as climate, open space, etc. Identify where your state ranks in dairy cattle production and discuss the factors contributing to the statistic.

Suggested Companion Resources

* [Clarabelle](http://www.agclassroom.org/teacher/matrix/resources.cfm?rid=11) (Book)
* [Eating Fractions](http://www.agclassroom.org/teacher/matrix/resources.cfm?rid=136) (Book)
* [Has a Cow Saved Your Life?](http://www.agclassroom.org/teacher/matrix/resources.cfm?rid=418) (Book)
* [Milk Comes From a Cow?](http://www.agclassroom.org/teacher/matrix/resources.cfm?rid=381) (Book)
* [The Cow in Patrick O'Shanahan's Kitchen](http://www.agclassroom.org/teacher/matrix/resources.cfm?rid=195) (Book)
* [The Milk Makers](http://www.agclassroom.org/teacher/matrix/resources.cfm?rid=146) (Book)
* [Brittlelactica: Planet in Need](http://www.agclassroom.org/teacher/matrix/resources.cfm?rid=87) (Multimedia)
* [Consider the Source- Cheese](http://www.agclassroom.org/teacher/matrix/resources.cfm?rid=276) (Multimedia)
* [Dairy in the Mountain West: Our Family of Farmers](http://www.agclassroom.org/teacher/matrix/resources.cfm?rid=551) (Multimedia)
* [From Moo to You Video](http://www.agclassroom.org/teacher/matrix/resources.cfm?rid=811) (Multimedia)
* [Make Mine Milk](http://www.agclassroom.org/teacher/matrix/resources.cfm?rid=225) (Multimedia)
* [NMSU Field Trip: Milk](http://www.agclassroom.org/teacher/matrix/resources.cfm?rid=747) (Multimedia)
* [The Journey of Milk](http://www.agclassroom.org/teacher/matrix/resources.cfm?rid=234) (Multimedia)
* [Dairy Reader](http://www.agclassroom.org/teacher/matrix/resources.cfm?rid=25) (Booklets & Readers)
* [Discover Dairy](http://www.agclassroom.org/teacher/matrix/resources.cfm?rid=176) (Website)

Sources/Credits

This lesson was funded in 2008 by the California Milk Advisory Board and the California Farm Bureau Federation. To meet the needs of California educators, Milk Matters: Discovering Dairy was created to meet the Curriculum Content Standards for California Public Schools. The unit also includes a collection of relevant resources about the dairy industry.

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**Background teacher information about Farmers Markets:**

Farmers Markets Stimulate Local Economies

With little fanfare, the nation’s several thousand farmers markets are growing jobs and strengthening local and regional economies. As demand grows for fresh local food, and shoppers seek relationships with the farms that make such food possible, farmers markets represent an important retail option that bolster local economies in communities large and small.

* Growers selling locally create 13 full time jobs per $1 million in revenue earned. Those that do not sell locally create 3.
* For every $100 spent at a farmers market, $62 stays in the local economy, and $99 stays in state.
* 41% of shoppers at Portland (Oregon) Farmers Markets said that their main reason for shopping at these markets was to support the local economy.
* In Iowa and Oklahoma, every dollar spent at farmers markets led to an additional $0.58 – $1.36 in sales at other nearby businesses.
* Wyoming’s economy was bolstered by more than $2.2 million in 2012 from sales at the state’s farmers markets.
* In 2011, Glenwood Sunday Market in Chicago, Illinois had an estimated economic impact of $1.3 million, including sales to other businesses made possible by the market.
* A 2010 study by USDA’s Economic Research Service compared producers selling salad mix, blueberries, milk, beef and apples locally with producers of the same products selling to mainstream supply chains. “In all five cases, nearly all of the wage and proprietor income earned in the local market chains is retained in the local economy”.
* At the Crescent City Farmers Market in New Orleans, 32% of Market shoppers spend money at nearby businesses, resulting in $3.2 million in projected gross receipts and an annual contribution of $151,621 to local sales tax revenue.
* The 52 producers of the Williamsburg Farmers Market in Virginia generated an estimated $48,969 in state sales tax in 2011, supporting the state economy.
* Boise, Idaho’s Capital City Public Market generated an estimated $4.5 million in economic activity for the local economy in 2011.
* A Virginia Cooperative Extension report showed if households in Southern Virginia spent 15% of their weekly food budget on locally grown food products, $90 million in new farm income would be created for the region.

Research shows, too, that farmers markets spur spending at neighboring businesses.  A 2010 study of the [Easton Farmers Market](http://www.eastonfarmersmarket.com/%22%20%5Co%20%22Easton%20Farmers%20Market%22%20%5Ct%20%22_blank) in Pennsylvania, for example, found that 70% of farmers market customers are also shopping at downtown businesses, spending up to an extra $26,000 each week.

The 52 producers of the [Williamsburg Farmers Market](http://www.williamsburgfarmersmarket.com/) in Virginia generated an estimated $48,969.84 in state sales tax in 2011, supporting the state economy.  Thirty-two percent of [Crescent City Farmers Market](http://www.crescentcityfarmersmarket.org/) shoppers in New Orleans report spending money at nearby businesses, resulting in $3.2 million in projected gross receipts and an annual contribution of $151,621 to local sales tax revenue.

A 2011 [Economic Research Service report](http://www.ers.usda.gov/Publications/ERR128/) found that fruit and vegetable farms selling into local and regional markets employ 13 fulltime workers per $1 million in revenue earned, for a total of 61,000 jobs in 2008. Comparatively, fruit and vegetable farms that are not selling locally employed only 3 full–time workers per $1 million in revenue.

**“Farmers markets are the ultimate green sector of the economy. They are stand-out successes in and spurring sustainable economic development.”** *Bernadine Prince, President, Farmers Market Coalition*

**“Farmers Markets are the most genuine type of commerce. Selling at the market**
**allowed us to start our business slowly and focus on building our brand and customer base. It gave us confidence. We wouldn’t be here without the market.”***Freddy Kaufmann, Owner, Proper Sausages, Miami Shores, Florida*