

# Agricultural Literacy Curriculum Matrix

Nebraska Agriculture in the Classroom

## By Land, Air, or Sea

### Grade Levels

3 - 5

### Purpose

Students will discover how agricultural commodities are transported from producers to consumers.

### Estimated Time

2 hours

### Materials Needed

#### **Interest Approach — Engagement:**

- *Pickles to Pittsburgh* by Judi Barrett

#### **Activity 1: Modes of Transportation**

- 8 1/2" x 11" pieces of blank paper, 2 per student
- *Small Transportation Pictures*, 1 set (half sheet) per student

#### **Activity 2: Moving Commodities**

- *Supply Chain Cards*, 1 commodity set per group (cut cards apart)

- Follow Milk's Journey From Farm to Store (<https://www.youtube.com/watch?v=1LEGI6SF4Jc>) video
- The Turbana Banana Journey (<https://www.youtube.com/watch?v=sqHMKj04WQ0>) video
- A Christmas Tree's Journey (<https://www.youtube.com/watch?v=2zF3gF36o10>) video
- Fish Transportation from Senegal with Air France KLM Cargo ([https://www.youtube.com/watch?v=0-xw5XU0PFo&index=6&list=PLiUfd658tHYMx4\\_LqT5GyTDyPLqIruQyb](https://www.youtube.com/watch?v=0-xw5XU0PFo&index=6&list=PLiUfd658tHYMx4_LqT5GyTDyPLqIruQyb)) video
- CGB Grain (<https://www.youtube.com/watch?v=CBwpqc-ifSw>) video
- *Supply Chain Cards Answer Keys*, 1 commodity page per group

### Activity 3: Shipping Scenarios

- *Commodity Cards*
- Hat, bag, or box
- *Large Transportation Pictures*

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

- Commodity Cards ([https://cdn.agclassroom.org/media/uploads/2018/08/13/Commodity\\_Cards\\_4.pdf](https://cdn.agclassroom.org/media/uploads/2018/08/13/Commodity_Cards_4.pdf))
- Large Transportation Pictures ([https://cdn.agclassroom.org/media/uploads/2018/07/27/Large\\_Transportation\\_Pictures.pdf](https://cdn.agclassroom.org/media/uploads/2018/07/27/Large_Transportation_Pictures.pdf))
- Small Transportation Pictures ([https://cdn.agclassroom.org/media/uploads/2018/08/13/Small\\_Transportation\\_Pictures.pdf](https://cdn.agclassroom.org/media/uploads/2018/08/13/Small_Transportation_Pictures.pdf))
- Supply Chain Cards ([https://cdn.agclassroom.org/media/uploads/2018/08/08/Supply\\_Chain\\_Cards\\_2.pdf](https://cdn.agclassroom.org/media/uploads/2018/08/08/Supply_Chain_Cards_2.pdf))
- Supply Chain Cards Answer Keys ([https://cdn.agclassroom.org/media/uploads/2018/08/08/Supply\\_Chain\\_Cards\\_Answer\\_Keys.pdf](https://cdn.agclassroom.org/media/uploads/2018/08/08/Supply_Chain_Cards_Answer_Keys.pdf))

## Vocabulary Words

**agribusiness:** the business of agricultural production; the range of businesses related to producing, processing, and distributing agricultural products

**cargo:** goods carried on a ship, plane, or vehicle

**commodity:** a product of agriculture that can be bought and sold

**consumer:** a person who purchases the goods and services offered by a producer

**consumption:** using something; how much of something has been used

**distribution:** the action or process of supplying goods to stores and other businesses that sell to consumers

**export:** to send goods or materials to another country

**import:** to receive goods or materials from another country

**insulate:** to separate from conducting bodies by means of nonconductors to prevent transfer of electricity, heat, or sound

**perishable:** likely to spoil or decay

**processing:** in agriculture, the alteration or modification, for the purpose of storage, transport, or sale, of an agricultural product

**producer:** a person who provides services or creates, grows, or manufactures goods that people buy

**production:** an article or substance produced by labor

**reefer:** refrigerated shipping container for transporting perishables, having its own stand-alone cooling system

**shelf-stable:** not likely to spoil or decay

**supply chain:** the sequence of processes involved in the production and distribution of a commodity

**transportation:** the movement of people or goods from one place to another

## Did You Know? (Ag Facts)

- Horsepower is a unit used to measure the power of an engine. The term was originally developed to compare the power of steam engines with the power of draft horses.<sup>1</sup>
- Over 32 million trucks are on the road every day in America.<sup>1</sup>
- On average, milk is transported to the grocery store within two days of leaving the local dairy farm.<sup>1</sup>
- Containers can be placed on trucks, ships, trains, and planes without unloading the cargo.<sup>1</sup>

## Background Agricultural Connections

How does food get to the grocery store? The term **supply chain** is used to describe the sequence of processes involved in the **production, processing, and distribution** of a **commodity**. The chain begins with the equipment farmers (the **producers**) need to produce food, such as seeds, fertilizer, and machines. Farmers plant, maintain, and harvest crops or raise animals. The food is cleaned, processed, and packaged before being shipped to grocery stores and into the hands of **consumers**. Each step in the chain is part of **agribusiness**, a term used to describe the range of businesses related to producing, processing, and distributing agricultural products.

Transportation is a critical part of the supply chain. Some regions cannot produce certain foods due to population density, seasons, and climate and soil conditions. In the United States, food is shipped an average of 1,500 miles before being sold.<sup>2</sup> The five main modes of transporting agricultural products are trucks, trains, airplanes, cargo ships, and barges. Trucks provide fast delivery and controlled temperatures for **perishable** food. There are many different types of trucks used to move agricultural products. Tanker trucks carry liquids, including milk, in enclosed cylinders. Milk tankers have special stainless steel bodies which are heavily **insulated** to keep the milk cold during **transportation**. Milk tanker drivers are trained milk graders. Tanker drivers evaluate milk for food safety based on temperature, sight, and smell.<sup>1</sup> Container trailers move shipping and storage containers. The containers can be transferred onto a cargo ship, barge, or train. A flatbed trailer has a level surface with no sides or top. They are used for quick loading and unloading and for loads of abnormal size.<sup>1</sup> Dry vans are non-refrigerated trailers used for carrying **shelf-stable** foods. **Reefers** are refrigerated trailers used for carrying perishable items. In reefers, the temperature is carefully monitored while food products are being moved.<sup>1</sup> Logging trailers are used to carry logs, and livestock trailers move farm animals. Weigh stations are monitored by highway patrol officers who may check the weight of the truck and driver logbooks which contain driving hours, routes, and load contents. Refrigerated rail cars, also known as reefers, have been in development since the 1860s and are still used today. Stocked with ice blocks to keep produce chilled, the first reefers relied on icing stations located at regular intervals along the track. Starting in the 1930s, reefers were made using large pieces of plywood (due to the lack of steel during World War II) and cooled by circulating fans. Modern day reefers have a variety of new technological features. GPS, data logging systems, and remote diagnostic testing allow customers and train companies to monitor their **cargo** with real-time data.<sup>1</sup> Airplanes are the fastest of all types of transportation. Air transport is used for high value and perishable products that need to travel long distances. Careful packaging, handling, and refrigeration allows these commodities to be shipped to destinations all over the world.<sup>1</sup>

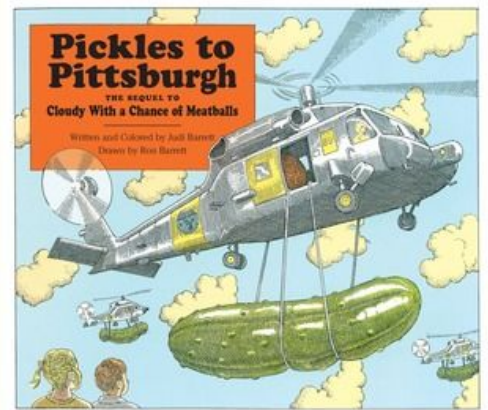
Cargo ships include container ships, bulk carriers, and refrigerated reefer ships. Cargo ships can hold as many as 18,000 shipping containers. Ships are used to transport large quantities of items across oceans and seas.

Barges are flat-bottomed vessels that are self-propelled, pushed, or towed. Barges are mostly used to carry freight on smaller in-land waterways. Barge transportation is important to U.S. agriculture because it provides low-cost transportation from major production areas to coastal areas for export to foreign markets.<sup>3</sup>

GPS, mobile scanners, and smart phones are used to track agricultural products from the producer to the consumer. This real-time data increases delivery efficiencies and food safety.

## Interest Approach - Engagement

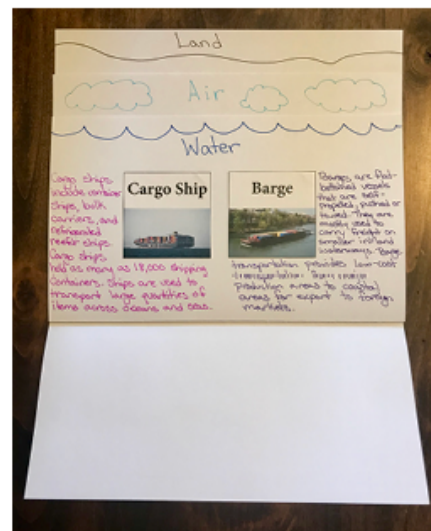
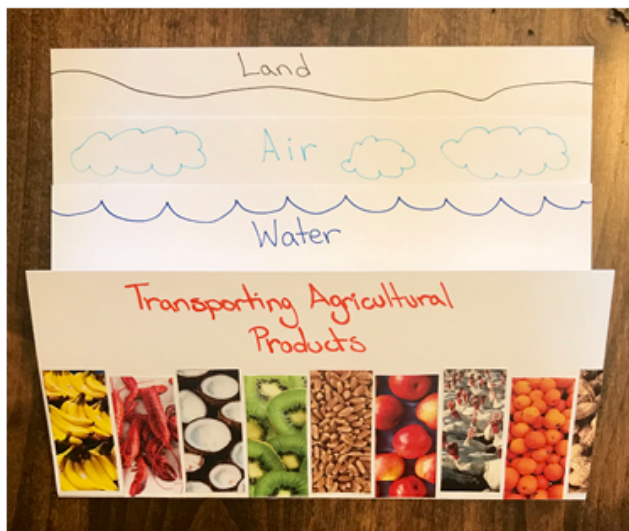
1. Read the book *Pickles to Pittsburgh* by Judi Barrett.
2. As a class, discuss the differences between fiction and non-fiction books. Ask the students, "What type of book is *Pickles to Pittsburgh*?" (fiction)
3. Ask the students to identify the different modes of transportation the Falling Food Company used to ship the food around the world.
4. Discuss the idea that, even though this book is fictional, some of these same modes of transportation are used in real life to get agricultural products from producers to consumers.



## Procedures

### Activity 1: Modes of Transportation

1. Use the information in the *Background Agricultural Connections* to discuss the five major modes of transportation used to ship agricultural products—truck, train, airplane, cargo ship, and barge.
2. Create a "Look Book" to identify the benefits and limitations of each mode of transportation. Stack two sheets of 8 1/2" x 11" paper, and place the back sheet one inch higher than the front sheet. Bring the bottom of both sheets upward and align the edges so that all four layers are one inch apart. Crease the papers.
3. Add a title to the Look Book by writing "Transporting Agricultural Products" on the top of the bottom layer. Label the other layers "Land," "Air," and "Water."
4. Have the students glue the *Small Transportation Pictures* under the correct labels and write the benefits of each mode of transportation underneath the pictures.



## Activity 2: Moving Commodities

1. Organize students into five groups. Assign each group a different commodity (milk, bananas, Christmas trees, fish, and soybeans), and provide the groups with *Supply Chain Cards* for their commodity.
2. Ask the groups to arrange their cards in the order they think each task is performed throughout the process of getting the product from the farmer to the consumer.
3. Have the groups watch the video below that corresponds with their assigned commodity and use the information from the video to make any necessary adjustments to their card sequence.

- Milk: Follow Milk's Journey From Farm to Store (<https://www.youtube.com/watch?v=1LEGL6SF4Jc>)
- Bananas: The Turbana Banana Journey (<https://www.youtube.com/watch?v=sqHMKj04WQ0>)

- Christmas Trees: A Christmas Tree's Journey  
(<https://www.youtube.com/watch?v=2zF3gF36o10>)
  
- Fish: Fish Transportation from Senegal with Air France KLM Cargo  
([https://www.youtube.com/watch?v=0-xw5XU0PFo&index=6&list=PLiUfd658tHYMx4\\_LqT5GyTDyPLqIruQyb](https://www.youtube.com/watch?v=0-xw5XU0PFo&index=6&list=PLiUfd658tHYMx4_LqT5GyTDyPLqIruQyb))
  
- Soybeans: CGB Grain (<https://www.youtube.com/watch?v=CBwpqc-ifSw>)

4. Provide each group with their commodity's *Supply Chain Cards Answer Key*, and instruct them to check their card sequence by comparing it to the answer key.
5. Provide time for each group to share the journey their agricultural product took to get from the producer to the consumer with the class.

### **Activity 3: Shipping Scenarios**

1. Place the *Large Transportation Pictures* in a line on the floor, bulletin board, or white board.
2. Students can work individually, as partners, or in groups. Place the *Commodity Cards* into a hat, bag, or box. Have students take turns choosing one card. Each card includes a commodity and where that product was grown or raised.
3. Provide the students with access to computers or tablets to locate where the product was grown or raised on a map.
4. Comparing the location of where their product was grown or raised to where they live, have the students to determine the main mode of transportation they think would be best for shipping the commodity on their card to their local grocery store. Have them place their commodity card underneath the correct transportation picture. Note that there may be more than one correct option.
5. Ask the students to explain their choices to the class.

### **Concept Elaboration and Evaluation**

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

- The supply chain is the sequence of processes involved in the production, processing, and distribution of a commodity.
- Transportation is a critical part of the supply chain.
- The five main modes of transporting agricultural products are trucks, trains, airplanes, cargo ships, and barges.

We welcome your feedback





([https://usu.co1.qualtrics.com/jfe/form/SV\\_4HhIVpN4L8IC2IT](https://usu.co1.qualtrics.com/jfe/form/SV_4HhIVpN4L8IC2IT))! Please take a minute to tell us how to make this lesson better or to give us a few gold stars!

## Enriching Activities

Play the My American Farm interactive game Harvest This ([http://myamericanfarm.org/classroom/games/?gid=harvest\\_this](http://myamericanfarm.org/classroom/games/?gid=harvest_this)).

Explore how to create a scale model of a shipping container (<https://iframe.agclassroom.orghttps://learnaboutag.org/resources/bites/18port.pdf>), build an aluminum foil cargo ship model ([https://iframe.agclassroom.orghttps://learnaboutag.org/resources/bites/18port\\_ship.pdf](https://iframe.agclassroom.orghttps://learnaboutag.org/resources/bites/18port_ship.pdf)), and watch the video What's in the Box? (<https://www.youtube.com/watch?v=Jp-o1RoagLY&feature=youtu.be>) to learn more about agricultural commodities that are shipped around the world.

## Sources

1. <http://learnaboutag.org/resources/wgo/16.pdf>  
(<https://iframe.agclassroom.orghttp://learnaboutag.org/resources/wgo/16.pdf>)
2. <http://www.foodsystemprimer.org/food-distribution/>  
(<http://www.foodsystemprimer.org/food-distribution/>)
3. <https://www.ams.usda.gov/services/transportation-analysis/barge>  
(<https://www.ams.usda.gov/services/transportation-analysis/barge>)

## Suggested Companion Resources

- Mapping Meals Activity (<https://iframe.agclassroom.org/nebraska/resource/88/>)
- The Very Hungry Western Caterpillar (<https://iframe.agclassroom.org/nebraska/resource/847/>)
- Grow! Raise! Catch! (<https://iframe.agclassroom.org/nebraska/resource/935/>)
- How to Make an Apple Pie and See the World (<https://iframe.agclassroom.org/nebraska/resource/343/>)
- 40 Maps that Explain Food in America (<https://iframe.agclassroom.org/nebraska/resource/536/>)
- Ag Census Web Maps (<https://iframe.agclassroom.org/nebraska/resource/856/>)
- Interactive Map Project (<https://iframe.agclassroom.org/nebraska/resource/452/>)
- Quiz: Can you name a food by looking at where it comes from? (<https://iframe.agclassroom.org/nebraska/resource/550/>)
- Mandarin Oranges: Protecting the Flavor of This Popular Fruit (<https://iframe.agclassroom.org/nebraska/resource/526/>)

- My American Farm (<https://iframe.agclassroom.org/nebraska/resource/434/>)

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