



# Lesson Plan

## 5 of 8

## Supply Chain

Created: 02/2020 by the National FFA Organization

*Description: Valent USA is a leader in sustainable solutions for a changing world, and maintaining the ability to continue feeding the growing population requires sustainability. Through this lesson series, students will have the opportunity to learn about the importance of sustainability throughout the Agriculture, Food and Natural Resources Value Chain.*

### STUDENT LEARNING OBJECTIVES:

After completing these activities, students will ...

1. Identify the components of the food supply chain.
2. Explain which direction products and capital flow through the supply chain.
3. Differentiate between agricultural imports and exports.
4. Generate the costs of a food product using recipe costing.

**TIME REQUIRED:** 90 minutes

### RESOURCES:

1. How Chocolate Is Made, [https://youtu.be/P\\_JuQCikWUc](https://youtu.be/P_JuQCikWUc)
2. How it Works? How is Chocolate Made?, <https://www.howitworksdaily.com/how-is-chocolate-made/>
3. National FFA Food Science and Technology CDE Handbook, <https://FFA.app.box.com/s/s4ontbt7o2dnvwhhzpgz06xctb1hs4u2>

### EQUIPMENT AND SUPPLIES NEEDED:

1. A large plain chocolate bar
2. Index cards
3. A copy of the "Go Get It" worksheet for each student
4. A copy of the "Which Way Are You Traveling?" worksheet for each student
5. A copy of the "Sourcing and Determining Costs" worksheet for each student
6. Internet access to play the video in real time or embed it in a PowerPoint ahead of time

### THIS QUICK LESSON PLAN WOULD WORK WELL AS:

1. A recipe costing lesson for a food science unit.
2. An introduction to the food science and technology career development event (CDE).
3. An overview of agricultural imports and exports.

### THESE ACTIVITIES ARE ALIGNED TO THE FOLLOWING STANDARDS:

#### FFA Precept

- FFA.PL-A.Action: Assume responsibility and take the necessary steps to achieve the desired results, no matter what the goal or task at hand.
- FFA.PL-C.Vision: Visualize the future and how to get there.
- FFA.PL-E.Awareness: Understand personal vision, mission and goals.
- FFA.PG-I.Professional Growth: Assume responsibility for attaining and improving upon the skills needed for career success.
- FFA.PG-J.Mental Growth: Embrace cognitive and intellectual development relative to reasoning, thinking and coping.
- FFA.CS-M.Communication: Effectively interact with others in personal and professional settings.
- FFA.CS-N.Decision Making: Analyze a situation and execute an appropriate course of action.

#### Common Core – Reading: Informational Text

- CCSS.ELA-Literacy.RI.9-10.4: Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the cumulative impact of specific word choices on meaning and tone (e.g., how the language of a court opinion differs from that of a newspaper).

#### Common Core – Speaking and Listening

- CCSS.ELA-Literacy.SL.9-10.1: Initiate and participate effectively in a range of collaborative discussions (one-on-one,

in groups, and teacher-led) with diverse partners on grades 9-10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.

- CCSS.ELA-Literacy.SL.9-10.2: Integrate multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally) evaluating the credibility and accuracy of each source.

#### *Common Core – Math Practices*

- CCSS.MP1: Make sense of problems and persevere in solving them.
- CCSS.MP2: Reason abstractly and quantitatively.
- CCSS.MP3: Construct viable arguments and critique the reasoning of others.
- CCSS.MP4: Model with mathematics.
- CCSS.MP5: Use appropriate tools strategically.
- CCSS.MP6: Attend to precision.

#### *AFNR Career Ready Practices*

- CRP.02. Apply appropriate academic and technical skills. Career-ready individuals readily access and use the knowledge and skills acquired through experience and education to be more productive.
- CRP.04. Communicate clearly, effectively, and with reason. Career-ready individuals communicate thoughts, ideas and action plans with clarity, whether using written, verbal and/or visual methods.
- CRP.05. Consider the environmental, social and economic impact of decisions. Career-ready individuals understand the interrelated nature of their actions and regularly make decisions that positively impact and/or mitigate negative impact on other people, organizations and the environment.
- CRP.06. Demonstrate creativity and innovation. Career-ready individuals regularly think of ideas that solve problems in new and different ways, and they contribute those ideas in a useful and productive manner to improve their organization.
- CRP.07. Employ valid and reliable research strategies. Career-ready individuals are discerning in accepting and using new information to make decisions, change practices or inform strategies.
- CRP.08. Utilize critical thinking to make sense of problems and persevere in solving them. Career-ready individuals readily recognize problems in the workplace, understand the nature of the problem, and devise effective plans to solve the problem.

#### *Partnership for 21<sup>st</sup> Century Skills*

- Communication
- Critical Thinking and Problem Solving
- Flexibility and Adaptability
- Initiative and Self-Direction
- Leadership and Responsibility
- Think Creatively

### **LESSON PLAN:**

#### **1. *Bell Ringer:* (10 minutes)**

- a. As students enter the room, have a chocolate bar on display. On the writing surface, pose the question "Where does chocolate come from?"
  - i. Allow students to talk amongst themselves as they try to determine their answer, and then have them record their answers.
  - ii. After students have had time to record their answers, ask three to five students to share their answers with the class.
- b. Show the video "How Chocolate Is Made," [https://youtu.be/P\\_JuQCikWUc](https://youtu.be/P_JuQCikWUc).
  - i. If students have access to internet-connected devices, provide the following website, <https://www.howitworksdaily.com/how-is-chocolate-made/>, for them to look through independently. If student devices are not available, display the site at the front of the room and then review as a class.
    1. Note: You may use the site that is linked [here](#) or choose to find a different video or website to show. The intent is that students will see cacao as it is grown on the tree, the fermentation and roasting process and how it gets to the final form of a chocolate bar, hot chocolate, etc.
  - ii. After reviewing the site, students will update their original response to reflect the process they learned from the video.

#### **2. *Introduction:* (20 minutes) **Go Get It!****

- a. On index cards, write the following terms (one word per card) to represent the steps in the food supply chain. You will need one index card per student.
  - i. Farmer
  - ii. Processor
  - iii. Distributor
  - iv. Retailer
  - v. Consumer

- b. Place the index cards around the room and have students move about the room to locate one index card each. When they find the index card, they are to gather in a group with five classmates that have different titles on their cards. (Each group should have all five steps in the supply chain.)
- c. Once students are gathered into their groups, they need to line up in the order they believe that food moves through the supply chain.
- d. The teacher should do a visual check, and when students are lined up, ask them to identify the order of the supply chain. To add to this activity, ask students to explain the way food moves through the supply chain and the way money moves through the supply chain.
  - i. Food will move from Processor to Consumer.
  - ii. Money will move from Consumer to Processor.
- e. Hand out the "Go Get It!" worksheet to each student and have them record their responses based on the activity.
- f. Note: If you do not want students to retrieve index cards on their own, you can hand out cards to students as they walk in the door or have them taped to their chairs prior to class beginning.

### 3. *Activity 1:* (30 minutes) **Agricultural Exports and Imports**

- a. Background: Farmers across the country produce and sell an abundance of agricultural commodities in a variety of ways. Some are sold directly to the consumer via farmers markets or small retailers, but the majority of commodities are sold or contracted to a wholesaler who then sells the product to processors that manufacture a variety of products. The wholesaler will then distribute the products to retailers and ultimately the product will end up in the hands of the consumer. Nations rely on each other for many agricultural products because of differing climates, soil types and other factors.
- b. Ask students to recall the video they watched earlier and explain where chocolate is grown.
  - i. As students respond, pose the question "How do we have chocolate in the U.S. if it is not grown here?" (Student responses will vary.)
  - ii. Explain that when a product is not available in the U.S., it has been imported for our use. (Examples include chocolate, coffee, bananas, pineapple etc.) Conversely, products grown in the U.S. can be exported to other countries. (Examples include rice, beef, fruits, vegetables and other grains.) Additionally, we will import commodities in the U.S. that may be grown here but are not available year-round. (Examples include strawberries and avocados.)
- c. With this knowledge, students will now take their trail mix recipe (from Lesson 3) and determine which of the commodities in their product are imported and where they are imported from and which of the products are exported and where they are exported. Hand out the "Which Way Are You Traveling?" worksheet to each student. Students will research each of their trail mix ingredients and determine if they are imported or exported. To record their information, students will create "passport stamps" with the name of each ingredient and where it is coming from or going. Students can then share their product "passports" with their classmates.

### 4. *Activity 2:* (30 minutes) **Finalizing the Trail Mix Product and Determining Costs**

- a. Background: A component of the National FFA Food Science and Technology Career Development Event (CDE) is for students to determine the costs of a food product. In this activity, students will determine the cost to make one serving of their trail mix product. Students will need to utilize their math skills and calculate costs based on volume. The teacher may choose to have students calculate the cost by hand or have them use a program such as Microsoft Excel or Google Sheets. Each student will need a copy of the "Sourcing and Determining Costs" worksheet. Consider having students visit the USDA APHIS website for help: <https://www.aphis.usda.gov/aphis/home/>.
- b. Ask students to take out their trail mix recipe cards. Make sure that students have the amount of each ingredient used listed on their recipe cards. (Example: 6 ounces of almonds, 2 ounces of raisins, 12 ounces of chocolate candies, etc.)
- c. The instructor may choose to provide a list of common ingredients and prices to the students or have the students find this information. Students may visit a grocery store website and find the costs of the raw ingredients. Students need to use ounces as their unit of measurement.
- d. Using this information, students will need to determine the final cost of their product.

5. *Follow-up:* Have students defend the final cost of their product as being realistic and affordable for the consumer.
6. *Leveling Up:* Have students explore the Northern American Free Trade Agreement (NAFTA) and investigate the benefits to agriculture production.
7. *Exit Ticket:* Students will turn in their recipe costing document and answer the question "What other costs need to be considered when pricing your trail mix?"

NAME: \_\_\_\_\_

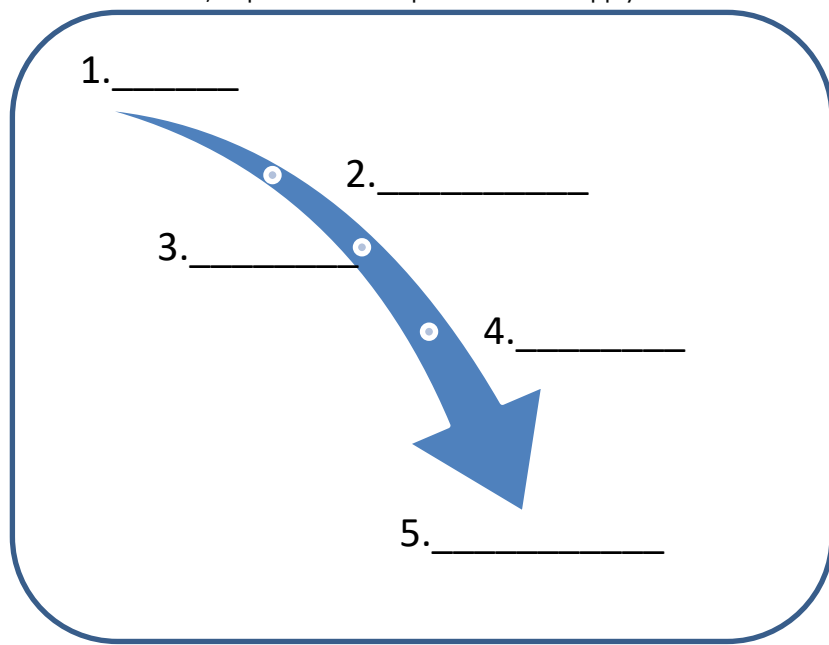
Aligned to the following standards:  
FFA.PL-A; FFA.PL-C; FFA.PL-E; FFA.PG-I; FFA.PG-J; FFA.CS-M; FFA.CS-N; CCSS.ELA.RI.9-10.4; CCSS.ELA-SL.9-10.1; CCSS.ELA-SL.9-10.2; MP1; MP2; MP3; MP4; MP5; MP6; CRP.02; CRP.04; CRP.05; CRP.06; CRP.07; CRP.08

## Go Get It

### DIRECTIONS:

Around the room you will find index cards. Select one card and then gather with four others that have different names on their cards. Once the group has gathered, line up in the order you believe that products flow through the supply chain.

On the lines below, capture each step in the food supply chain:



Draw a diagram, similar to the one on the left, showing how money flows through the food supply chain.

How might an event, such as a pest outbreak in a crop, impact the supply chain?

NAME: \_\_\_\_\_

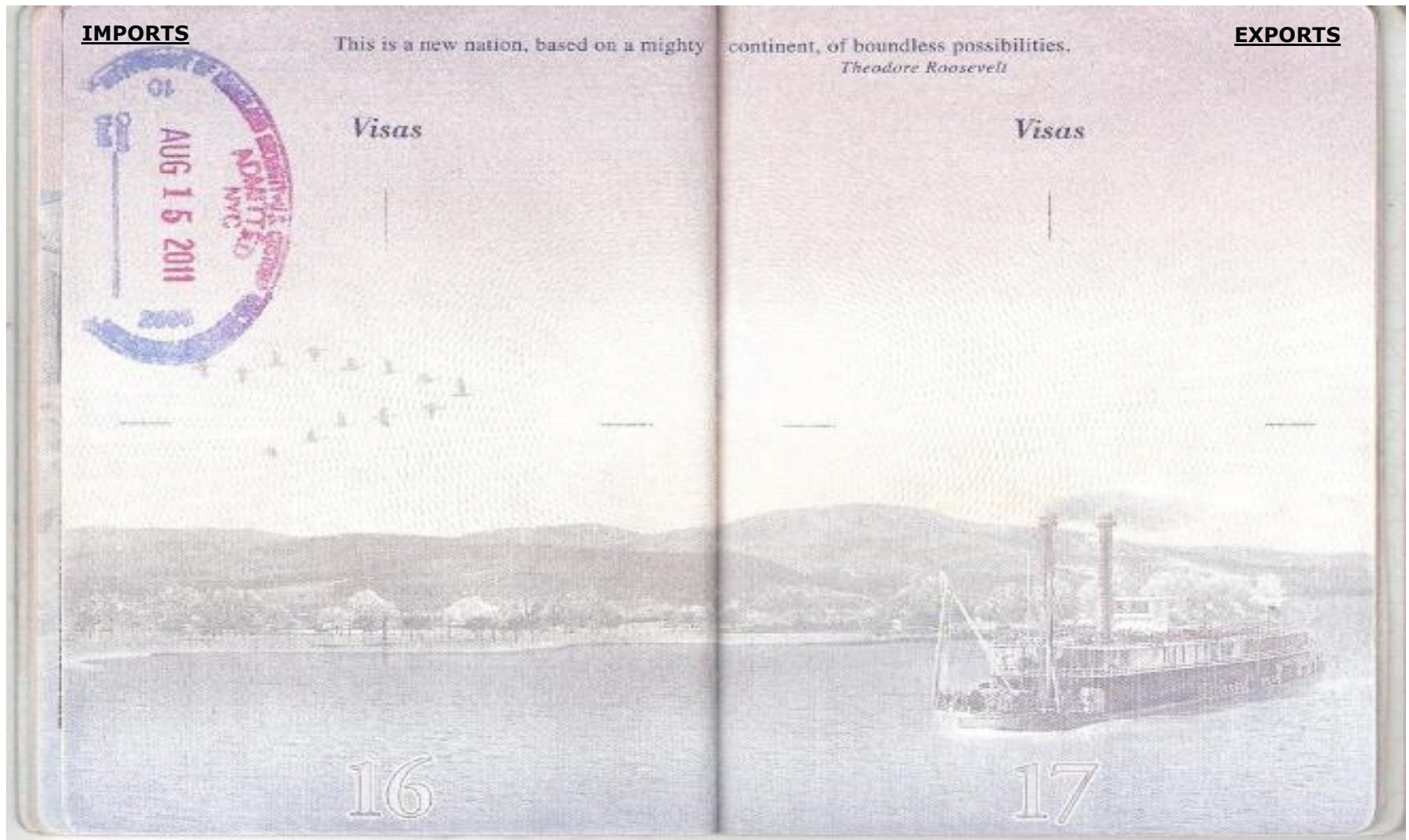
## Which Way Are You Traveling?

Aligned to the following standards:

FFA.PL-A; FFA.PL-C; FFA.PL-E; FFA.PG-I; FFA.PG-J; FFA.CS-M; FFA.CS-N; CCSS.ELA.RI.9-10.4; CCSS.ELA-SL.9-10.1; CCSS.ELA-SL.9-10.2; MP1; MP2; MP3; MP4; MP5; MP6; CRP.02; CRP.04; CRP.05; CRP.06; CRP.07; CRP.08

### **DIRECTIONS:**

Many of the products that are utilized for food products are both imported and exported. To gain a better understanding of where your trail mix products are being imported from and exported to, create a one of a kind passport stamp (example shown on the passport below) for each product. The stamp should include artwork as well as the name of the product (Ex. coconut) and where the product is being imported from/exported to (Ex. Germany). Be sure to place the products on the proper side of the passport, import or export.



NAME: \_\_\_\_\_

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## Sourcing and Determining Costs

### DIRECTIONS:

Using your trail mix recipe, research the cost of each commodity. Calculate the price per unit of each commodity in your product and then determine the total product cost. All amounts must be in ounces.

### *My Trail Mix Recipe:*

| INGREDIENT                 | AMOUNT (UNITS) | MARKET PRICE/UNIT | COST PER BATCH | TOTAL COST |
|----------------------------|----------------|-------------------|----------------|------------|
| Example: Chocolate Candies | 10 ounces      | \$1.00/ounce      | \$10.00        |            |
|                            |                |                   |                |            |
|                            |                |                   |                |            |
|                            |                |                   |                |            |
|                            |                |                   |                |            |
|                            |                |                   |                |            |
|                            |                |                   |                |            |
|                            |                |                   |                |            |

1. Is the total cost of your product reasonable? Why or why not?
2. Is the "total cost" of your recipe the price you will charge the consumer?
3. What other costs should be considered before determining the sale price of your product?

NAME: \_\_\_\_\_

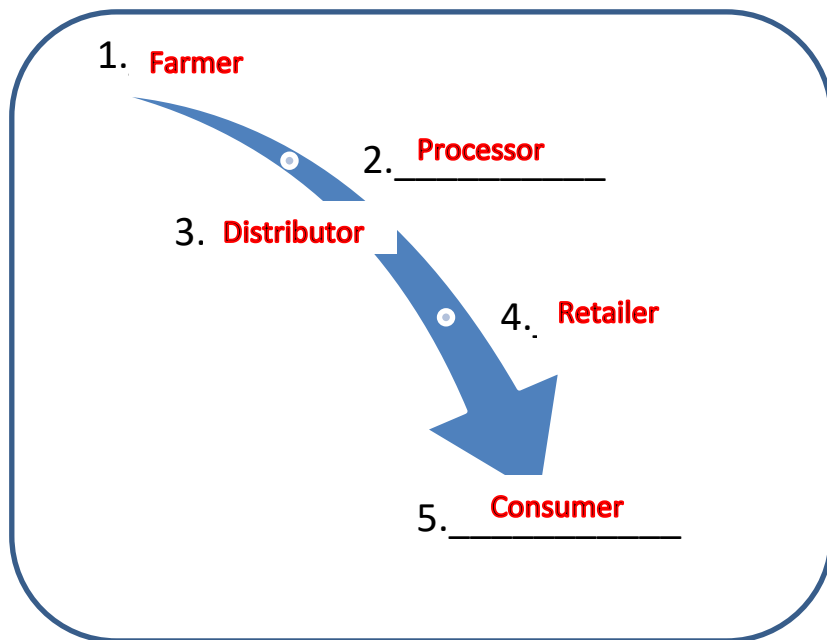
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## KEY: Go Get It

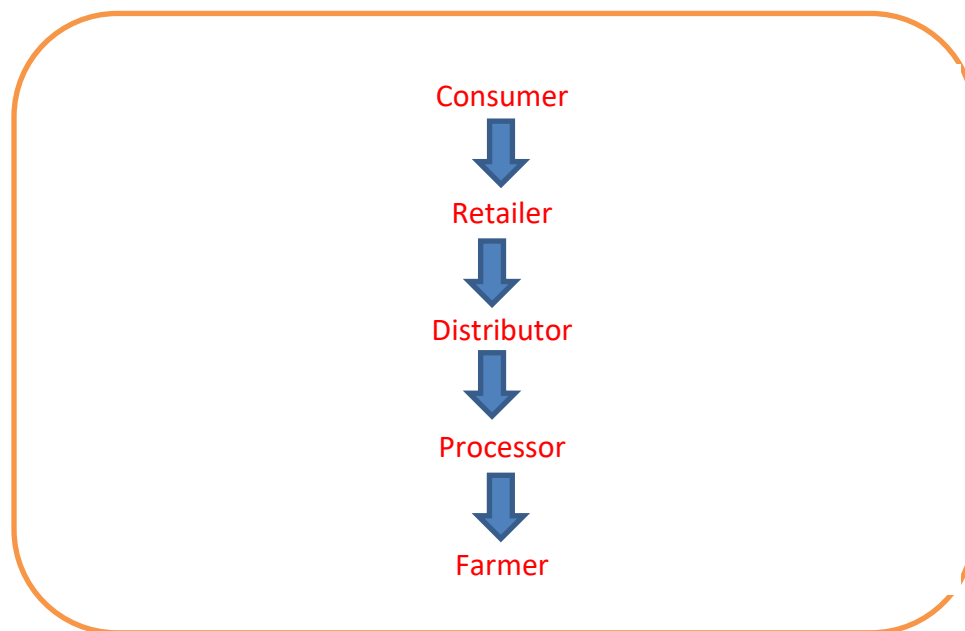
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Draw a diagram, similar to the one on the left, showing how money flows through the food supply chain.



How might an event, such as a pest outbreak in a crop, impact the supply chain? **Answers will vary.**