Lesson Number: MS.FS.1.2

Tomato Travels

Middle School Food and Agricultural Literacy Curriculum

Precepts

A. Action

A.3 Plan effectively

National Standards

CS.01.01.02.b. Create measurable objectives for a given situation.

ABS.06.02.01.a. Identify the purpose, components and developmental processes of marketing plans.

FPP.01.01.01.a. Discuss the history and describe and explain the components (e.g., processing, distribution, byproducts) of the food products and processing industry.

FPP.02.03.01.a. Explain techniques and procedures for the safe handling of food products.

FPP.04.02.02.a. Identify and describe products derived from fruits and vegetables.

FPP.04.02.03.a. Identify and describe products derived from grains, legumes and oilseeds.

NL-ENG.K-12.12 – Applying Language Skills

NS.5-8.3 – Life Science

NSS-EC.5-8.7 – Markets and Market Prices

Student Learning Objectives

As a result of this **unit** the student will…

Recognize how food product pathways affect consumers.

As a result of this **lesson** the student will…

Illustrate an edible plant food product pathway.

Time

Instruction time for this lesson: 45 minutes.

Resources

Lee, J., Patrick, A., Vaughn, R., Vaughn-Randel, S., & Murphy, E. (2003). *AgriScience Discovery.* Danville, IL: Interstate Publishers, Inc. — Morgan, E., Chelewski, R., Lee, J., &Wilson, E. (2004). *Agriscience Explorations.* Danville, IL: Interstate Publishers, Inc. — National FFA Organization. (2003). LifeKnowledge Precepts and Signs of Success. — Parker, R.O. (1999). Parts of the food industry. Retrieved July 10, 2009. From AgEdNet.com. www.agednet.com.

Tools, Equipment, and Supplies

Writing surface
Overhead projector/transparencies
Chalk/white board
Tortilla chips
Salsa
Small paper plates
Napkins
MS.FS.1.2.TM.A – one per teacher
MS.FS.1.2.TM.B – one per teacher
MS.FS.1.2.AS.A – one per student
MS.FS.1.2.ASSESS.A – one per student
MS.FS.1.2.ASSESS.B – one per teacher

Key Terms

The following terms are presented in this lesson and appear in ***bold italics:***

Production

Processing

Distribution

Marketing

Summary of Content and Teaching Strategies

Objective 1. Illustrate an edible plant food product pathway.

I. **Edible plant food product pathways:** the path the product takes from the farm to fork. The pathways include four segments: ***Production***, ***Processing***, ***Distribution***, and ***Marketing***.

A. Edible plant food products: edible plant food products come from fruits, vegetables, herbs, and other edible plants.

1. Fruit: edible, ripened ovary of a tree, shrub, or vine – apples, peaches or grapes
2. Vegetable: herbaceous plant that has edible parts – lettuce, spinach, cabbage, etc.
3. Crop: a plant grown for its products which can be both edible and non-edible wheat or soybeans
4. Discuss edible plant food products relevant to your local community/region/state.

B. ***Production***: the type of operation or process involved in manufacturing edible plant food products.

1. Farm: land used to raise animals or grow crops.
2. Orchard: specifically for the ***production*** of fruit or nut trees.
3. The ***production*** process includes the selection of plant varieties, cultivation, pest and weed control, growing seasons, and harvest.
4. Handling of unprocessed products, such as freshly picked apples.

C. ***Processing***: the process of converting the original, raw product into a final product ready for ***distribution*** and consumption.

1. Prepared processed foods like applesauce, frozen or canned fruits and vegetables, dried fruits.
2. Cleaning: removes unwanted materials from the food products, like soil or residue.
3. Preserving: prevents the food from spoiling before it reaches the consumer; for example, coating fruits and vegetables like cucumbers with wax.
4. Portioning: dividing the food products into serving sizes and packaging amounts; for example, a bag of grapes or cherries, or a container of blueberries.
5. Packaging: storing the food products in containers; for example, plastic cartons for cherry tomatoes.

D. ***Distribution***: preparing the edible plant food products to be sold.

1. Packaging: types of containers to keep food safe during transportation.
2. Storage requirements – the way the particular food product must be stored to stay fresh, such as temperature-controlled storage of apples.
3. Shelf-life: the amount of time a food product can remain on the shelf without spoiling.

E. ***Marketing***: selling of edible plant food products to the consumer; connecting the consumer to the product.

1. Retail: the selling of products directly to consumers, such as grocery store chains.
2. Wholesale: enterprise that includes buying or selling products to retailers or other wholesalers in large quantities.
3. Restaurants: sells prepared foods to consumers.

Interest Approach

Set up tortilla chips and salsa at the front of the room on small, individual serving paper plates. Greet students at the door and tell them to take a plate back to their seats as they enter the room. Once everyone is seated with their snacks, ask the students to take out a sheet of paper and make a list of the edible plant food ingredients they think are in the salsa and tortilla chips they are eating. When they have finished eating their snacks, ask students to share the ingredients and create a class brainstorming list on the board at the front of the room.

Welcome to class today! As you come in, grab a plate of some chips and salsa.

Once everyone has entered the room and is seated, proceed with the instructions.

While you are enjoying your snacks, take out a sheet of paper and make a list of the ingredients you think are in the chips and salsa. You will have five minutes to finish your snacks and make your lists.

When you are finished, place your plates in the trash can. We will share our thoughts as soon as your pens and pencils are down and the plates are in the trash can.

During this time, students should be able to get up and throw their trash away. Remember to give the students a two-minute warning. Allow students to share their guesses and invite a student volunteer to act as scribe by making a master list on the board.

Great work! Since we are all cleaned up and ready to move on, we need a volunteer to come up and take notes for us on the board.

Pick a student to come up and make the list on the board. Then begin the discussion by asking students to share.

Summary of Content and Teaching Strategies

Objective 1. Illustrate an edible plant food product pathway.

Today we are going to explore how edible plant food products follow a path. Let's be active participants and discuss the pathways.

Examine the chips and salsa. What would be considered an edible plant food product?

Possible responses: fruits, vegetables, tomatoes, corn.

Right!

Use the *Hole-In-One e-Moment*® to teach students the new aspects of the four segments to the edible plant food pathway. To do this, have students imagine they are a tomato plant going through the process of the four segments as you describe the steps of the process. Students will first visualize the experience, then they will summarize the experience by writing a play-by-play of the steps from the perspective of an edible plant food product, and finally they will practice the experience by planting the salsa garden. Each segment will have a story that you will read to the class for the students to visualize, and each story will be followed by a brief discussion. During each section, students will use **MS.FS.1.2.AS.A** to take brief notes specific to edible plant food products. Use **MS.FS.1.2.TM.B** to fill in the notes along with the students to ensure that they are writing the correct information.

Before we begin, you will receive a content outline for edible plant food products. As we learn about the pathways for edible plant food products, we will fill in the content outlines together for each section we discuss. What questions are there?

Pass out the content outlines provided in **MS.FS.1.2.AS.A**.

We just ate salsa, so let's imagine we are a tomato plant. Close your eyes. It's a bright, sunny spring morning. The air is cool and breezy, and the sun is shining. You can smell the rain still in the air from the storm the night before. You hear footsteps in the field. It's Farmer Bob, and he is making his way out to you to check on your health. You feel a slight nudge as he pushes your leaves around while he looks for weeds, pesky insects, and diseases.

Luckily, you are in good health, so Farmer Bob moves on to the next field to inspect the cucumbers. You were planted several weeks ago, so the fruit growing on your vine is almost ready to harvest. You feel heavy from the weight of that fresh, ripe tomato. A few days later, the weight has been lifted because that tomato has been picked.

Open your eyes. Remember, we are going to start filling in our outlines now together. Which of the four stages did we just visualize?

Answer: ***Production***.

Correct! Let's fill this in on our outline.

We just learned that in producing plants, the ***production*** process still takes place on a farm, and we must look out for pests like insects, weeds, and diseases. Farmers, or producers, select the variety of plants they want to grow. Once producers select the plants they want to grow, what are some things they might have to consider before planting their crops?

Possible responses: weather, time of year, growing season, possible pests in the area, tilling the soil, etc.

Producers have to pay careful attention to the environment and the particular crop they are going to plant.

At this point you can give an example of planting a local crop in a place it wouldn't grow – for example, planting oranges in Utah or planting apples in South Florida.

Producers spend a lot of time planning and preparing for the growing season of the crops they decide to produce. What are some other things producers might spend a lot of time planning for?

Possible responses: weather, pests, the process of harvest, etc.

Right! They also have to plan ahead for weather emergencies and pest control if they have an infestation. They have to be prepared for harvest when that time comes around. If producers don't take the time to plan effectively, a successful, healthy crop harvest could be at risk. Think about your own personal lives.

Ask the students the following questions and allow them to share their responses:

Why do you think it's important in your life to plan effectively? How does effective planning help you? What are some things you feel are important to plan for?

Pause for answers.

Great answers!

Harvesting is the process of picking the crops. Different crops grow in different seasons, so harvesting takes place at all different times of the year. What questions do you have so far? OK, great. Let's continue our journey. Close your eyes.

You are quietly resting on the ground when you feel the gentle touch of Farmer Bob. He's back, and he came to take you on a trip. As you are traveling you hear the engine of a large truck, you feel the bumps of the road as you pull into the driveway at the factory. As you are carried inside the building, the air feels cold. You feel yourself quickly moving forward as you are placed in a river of water. You feel the gritty soil rolling off of your skin as you are cleaned. You then travel into another room where you hear voices. The hands you feel on your skin are the inspectors, who carefully search you for cuts, bruises, or other imperfections. You see your friends waving goodbye as you are all separated out by size, and as the others are taken off to be made into tomato sauce and salsa. Next thing you know, you are in the packaging department.

Open your eyes. What segment did we just discuss?

Pause for answer: ***Processing***.

Awesome! You got it! Let's fill in our outlines.

Pause for students to fill in the blank.

With plant products we are searching for bruises or cuts in the produce that might cause them to rot much more quickly than if they were not bruised. That's why packaging is so important: it protects the fruits and vegetables from being damaged. Also, we know that consumers usually don't want to purchase fruits and vegetables that look damaged. We still have to clean the fruits and vegetables to remove dirt. ***Processing*** also makes apples into applesauce or apple juice, cucumbers into pickles, and peaches into delicious canned treats. What questions are there? Great, let's continue our journey. Close your eyes.

You feel clean and refreshed from the cool bath and are safely secure, resting in a crate. You haven't moved in about a day and are beginning to wonder why you are still in the storage room. You hear silence and are surrounded by darkness.

You overhear the workers who have come in to check on the room as they are discussing the plan for ***distribution*** in the next day or so.

With two days left to rest, you save your energy and get some sleep. You want to look your best for your customers.

Open your eyes. What segment did we just pass?

Answer: ***Distribution***.

Yes, ***distribution***! Great! Let's fill in our outlines.

Pause for students to fill in the blank.

When it comes to ***distribution***, the products are packaged and stored but some foods require different temperatures for storage than others. Some fruits and vegetables get coated with a thin layer of wax to keep them fresh while they are at the grocery store. Remember, producers are always working hard to give us, the consumers, the best possible food products. What questions do you have? Great, let's continue.

Close your eyes. After a short ride in the truck, you emerge from the darkness. You are blinded by the light, but you hear a tune on the radio and begin to sing along. You realize you have just arrived at a large store. You are carried off to the unloading dock where the employees carry you to the produce department. Suddenly, you are the center of attention, shiny, red, and beautiful. Feeling confident, you gain the attention of a little old lady who is shopping for ingredients to make spaghetti with tomato sauce. She sees you from the corner of her eye, notices how perfect you are, and can't resist. She takes you home. You have come to the end of the road as she chops you up into little pieces and dumps you into a steaming hot pot. You have been transformed into tonight's dinner. Open your eyes.

What segment was that?

Answer: ***Marketing***.

Correct! Let's fill in our outlines.

Pause for students to fill in the blank.

We know it was ***marketing*** because you ended up at the grocery store, which is what kind of business?

Answer: retail. Fabulous, retail!

Now, we are going to retrace those steps that we just took. In a moment, when I say WRITE, we are going to write a play-by-play of the steps that edible plant food products take to get through all the segments leading from the field to your forks.

Your play-by-play should be a minimum of four paragraphs to include each segment. You can pick any fruit or vegetable you are interested in writing about. If you need more information to help you write your play-by-play, feel free to use a textbook.

To do this, you will need a sheet of paper, a pen or pencil, and your creativity. You will have 20 minutes.

Depending on how long it takes to get through the content, you can use the remainder of class to write the play-by-play, so more than 20 minutes can be given if time permits. Just be sure to leave a few minutes at the end for review.

What questions are there? WRITE!

If you have access to Internet, you can allow students to do research if time permits and resources are available. You can also allow students to finish their play-by-plays for homework if you run out of class time. See **MS.FS.1.2.ASSESS.B** for a rubric.

Review/Summary

We did a fabulous job today playing the role of the tomato plant. Let's see how much you remember. What are edible plant food products?

Possible responses: fruits, vegetables, herbs, crops. Great!

Share with the class the difference between producing edible plant food products and animal food products.

Possible responses: select seeds to plant, weed/pest control, harvest, growing seasons, etc. Awesome!

What about ***processing***? How are edible plant food products processed differently from animal food products?

Possible response: the steps are the same, the products are just handled differently, cleaned to remove soil, fertilizer, etc.

Nice, and what about ***distribution***?

Possible responses: Same steps again, just that they try to keep the products from becoming damaged to make the shelf-life longer, different products are stored for different periods of time with controlled temperatures, etc.

Great! And we know that ***marketing*** is exactly the same. So what were the three types of ***marketing***?

Answer: retail, wholesale, and restaurant. Great job! You did awesome today!

Application

Extended classroom Activity:

Plant a salsa garden. Either outside in a garden or in a large pot (this can vary based on your facilities and the weather/seasons), plant a tomato, onion, garlic, cilantro or parsley, and a pepper in a small salsa garden. Once everything is ready to harvest, make the salsa. Another suggestion is to divide students into groups and allow each group to be responsible for planting and caring for their own salsa garden in class. When everything is ready to harvest, make a large batch of salsa with all the ingredients together as a class.

FFA Activity:

Identify five proficiency areas and/or career development events that involve edible plant food products or correlate with the edible plant food product pathways.

SAE Activity:

Culinary Masters: Have students pick an edible plant food product and choose a project. The student may choose to research different meals the product can be made into and create a poster with all the different foods and a recipe. He or she may make the food product and bring it in for the class to enjoy and make a poster including the recipe. One may go to a restaurant and talk to a chef about how edible plant food products are made and stored. Another may choose to interview an employee in the produce department of a grocery store.

Evaluation

MS.FS.1.2.ASSESS.A

Answers to Evaluation

1. E
2. Any of the following are correct: selection of plant varieties, cultivation, pest and weed control, growing seasons, and harvest.
3. A
4. B
5. A

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Edible Plant Food Product Pathways: Farm to Fork

Name: _____

1. **Edible plant food product pathways are the path the product takes from the farm to fork. The pathways include four segments: _____.**

2. **Edible plant food products come from_____. Examples of edible plant food products include:**
   - Fruits
   - Crops

3. **_____ is the type of operation or process involved in manufacturing edible plant food products. Examples include:**
   - The production process includes the selection of plant varieties, cultivation, pest and weed control, growing seasons, and harvest.

4. **_____ is the process of converting the original, raw product into a final product ready for distribution and consumption. Methods include:**
   - Preserving
   - Packaging

5. **_____ involves preparing the edible plant food products to be sold.**
   - Storage requirements

6. **_____ is the selling of edible plant food products to the consumer; connecting the consumer to the product.**
   - Wholesale

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   - Preserving
   - Packaging

5. **_____ involves preparing the edible plant food products to be sold.**
   - Storage requirements

6. **_____ is the selling of edible plant food products to the consumer; connecting the consumer to the product.**
   - Wholesale

Answer Key

1. **Production, Processing, Distribution, Marketing**

2. **Fruits, vegetables, herbs, and other edible plants.**
   - Fruits
   - Vegetable
   - Crop

3. **Production**
   - Farm: land used to raise animals or grow crops.
   - Orchard: specifically for the production of fruit or nut trees.
   - The production process includes the selection of plant varieties, cultivation, pest and weed control, growing seasons, and harvest.
   - Handling of unprocessed products, such as freshly picked apples.

4. **Processing**
   - Prepared processed foods such as applesauce, frozen or canned fruits and vegetables, dried fruits.
   - Cleaning
   - Preserving
   - Portioning
   - Packaging

5. **Distribution**
   - Packaging
   - Storage requirements
   - Shelf-life

6. **Marketing**
   - Retail
   - Wholesale
   - Restaurants

Name _____

Directions: Read each statement and decide which response is appropriate by circling the correct letter that corresponds with the selected response, or by writing the response in the space provided.

1. **Edible plant food products are edible products that come from:**
   A. Fruits
   B. Vegetables
   C. Nuts
   D. Herbs
   E. All of the above

2. **List two things edible plant food producers must consider when growing crops.**
   A.
   B.

3. **During processing, edible plant food products are cleaned to remove soil and other forms of residue.**
   A. True
   B. False

4. **Edible plant food products all require the same storage requirements before, during, and after distribution.**
   A. True
   B. False

5. **Marketing is the connection between the consumer and the edible plant food product.**
   A. True
   B. False

Play-by-play	0	5	10
Content	Does not include any of the four segments of the edible plant food pathway.	Included two of the four segments of the edible plant food pathway.	Included all four of the segments of the edible plant food pathway.
Followed Directions	Includes fewer than two paragraphs. Does not describe an edible plant food product.	Includes at least two paragraphs. Describes an edible plant food product.	Includes four paragraphs. Describes an edible plant food product.
Complete	Did not complete the assignment on time. Did not write in complete sentences. Play-by-play does not include a start or finish (intro or conclusion).	Completed the assignment on time. Mostly complete sentences. Play-by-play includes a start or finish (intro or conclusion).	Completed the assignment on time. Complete sentences. Start and finish for the play-by-play (intro and conclusion).