

# LESSONS TAKING US AROUND NJ & THE WORLD!

Lessons compiled by

The New Jersey Agricultural Society's



Program

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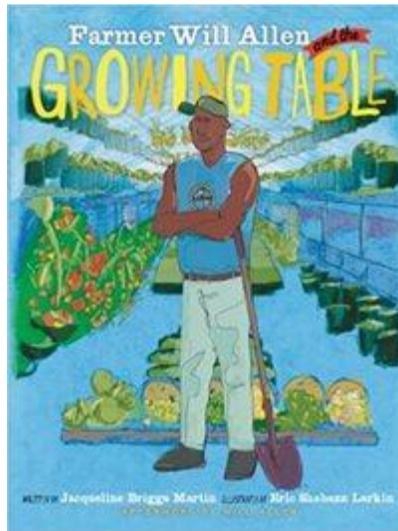
## BOOKS ABOUT GARDENING IN THE CITY

A lesson from the New Jersey Agricultural Society Learning Through Gardening program

### OVERVIEW & PURPOSE

Agriculture doesn't happen only in the country. In fact, you don't need a lot of space to be a gardener who grows healthy and delicious fruits and vegetables. These books show how gardens can sprout among cement and blacktop, and how a garden can grow into a community.

GRADES: PreK-5



### Farmer Will and the Growing Table by Jacqueline Briggs Martin

This book tells the true story of professional basketball player Will Allen, who was bit by the gardening bug when he retired from the sport. He bought a plot of land in the middle of Milwaukee, where “fresh vegetables were as scarce as trout in the desert.” With help from the community, Will turned his plot into a burgeoning garden.

### The Extraordinary Gardener by Sam Boughton

Joe lives in an apartment building in the middle of a city, but he has a wild imagination and dreams of a place full a beauty, color, scent, and song. He attempts to bring his idea to life by planting one little apple seed. It takes a while, but the tree on his balcony grows so beautifully, Joe expands his apartment garden and then shares it with his neighbors.

Anywhere Farm by Phyllis Root

This delightful rhyming book reinforces the idea that you can plant a garden anywhere. “For an anywhere farm, here’s all you need - soil and sunshine, some water, a seed.” Where can you plant your anywhere farm? “An old empty lot makes a good growing plot. But a pan or a bucket, a pot or a shoe, a bin or a tin or a window will do.”

City Green By DyAnne DiSalvo-Ryan

When an unsafe building on their block is torn down, Marcy and Miss Rosa decide to do something with the abandoned lot. They rent the lot for \$1 from the city and begin to clean up the space for a garden. Neighbors passing by offer to help. Soon everyone is digging in the soil and planting seeds, even Old Man Hammer who insisted the garden was a waste of time.

The Curious Garden by Peter Brown

“There once was a city without gardens of trees or greenery of any kind.... as you can imagine, it was a very dreary place.” But a boy named Liam, who loves being outside, finds some struggling wildflowers on an abandoned railway. As Liam learns to care for the plants, they start spreading down the railway, and eventually, all over the city.

**NEW JERSEY LEARNING STANDARDS**

English Language Arts: 1:RI.1.1-4,6 2:RI.2.1-7 3:RI.3.1-7 3:RI.3.1,2,4 4:RI.4.1,2,4 5:RI.5.1,2,



## CENTURY FARM

A lesson from the New Jersey Agricultural Society Learning Through Gardening program

### OVERVIEW & PURPOSE

A Century Farm is a farm that has been continuously worked for 100 years. In her book *Century Farm*, Cris Peterson shares the story of her husband's family farm as it grew from a barn, house, and granary in the 1890s to a thriving dairy farm today. Over the past hundred years, many things on the farm have changed, but many things have also stayed the same. Corn now grows on the same land where timber was cut to build the family house and barn. Cows are milked in the same barn, vegetables grow in the same garden, and one family is still working together to make the farm a viable business. The book is filled with beautiful old photos selected from a century's worth of family albums as well as family pictures taken in recent years.

GRADES: 2-5

### OBJECTIVES

The student will be able to:

- Describe the changes that have taken place in dairy and grain farming over the past hundred years.
- Compare and contrast life on a family farm one hundred years ago and in the present.

### MATERIALS NEEDED

- The book *Century Farm* by Cris Peterson with photographs by Alvis Uptis

### ACTIVITY

Read *Century Farm*, stopping during the reading to highlight the changes that occurred in farming and in the lives of the family over the past 100 years. Younger students make a Venn diagram illustrating how the farming methods and way of life is different now than one hundred years ago and the way that family's life and farming has stayed the same. Older students can write compare and contrast paragraphs describing the changes that have occurred in the lives of the family and the ways that farming life has remained unchanged.

## **EVALUATION:**

Venn diagram or short two-paragraph essay comparing and contrasting life on the family farm in the last century and today.

## **EXTENSION:**

There are many century farms in New Jersey. Are there any in your area? If so, consider inviting a farmer from a local century farm to speak to your class to describe how life and work on his or her farm has changed over the past 100 years.

## **NEW JERSEY LEARNING STANDARDS**

Social Studies: 2: 6.1.2.Geo.HE.2, 4; 6.1.2.EconEM.1, 6.1.2.HistoryCC.3 3-5: 6.1.5.EconNM.3, 4 English Language Arts: 3:RI.3.1,2,4; 3:W.3.2.A-D, W.3.4,8 4:RI.4.1,2,4, 4:W.4.2.A-E, W.4.4,8 5:RI.5.1,2,4, 5:W.5.2.A-E; W.5.4,8



## CHRISTMAS TREES ARE GROWN ON FARMS

A lesson from the New Jersey Agricultural Society Learning Through Gardening program

### OVERVIEW & PURPOSE

Do your students know where Christmas trees really come from? They are not cut from forests, they are grown on farms! This lesson teaches students about Christmas tree farming in New Jersey and also explains how coniferous trees are different from deciduous trees.

GRADES: K-5

### OBJECTIVES

The student will be able to:

- Describe the process involved in growing Christmas trees.
- Describe how coniferous trees are different from deciduous trees.

### MATERIALS NEEDED

- The New Jersey Agricultural Society PowerPoint presentation Christmas Trees Are Grown On Farms: <https://youtu.be/Bk3il4RMWeg>
- Optional: Norway Spruce or Douglas Fir or other evergreen tree seeds
- Seed starter soil
- Black construction paper
- Small plant pots or recycled containers such as milk or yogurt cartons with hole poked in the bottom for drainage
- Small plastic baggies

### ACTIVITY

Ask students if they know where Christmas trees come from. Where do all those trees come from that you see in nurseries and stores in December? Explain that Christmas trees are not cut down in forests. They are grown on Christmas tree farms, including many in New Jersey.

Optional: Ask students to fill out the first two boxes of the graphic organizer How Christmas Trees Are Grown (below).

Show the PowerPoint presentation Christmas Trees Are Grown on Farms, stopping periodically to ask questions and discuss information.

Optional: Plant some evergreen tree seeds to germinate in the classroom.

## HOW TO PLANT EVERGREEN SEEDS

The best seeds to plant in the classroom are Norway Spruce or Douglas Fir seeds because they can be planted directly. Other evergreen tree seeds need special treatment or stratification before planting. Some seeds need a period of cold before they will sprout and some seeds need to be soaked in water. If you use a different variety of seed, be sure to research how to plant it ahead of time. You might be able to find some evergreen seeds from a local nursery or you can dissect closed pine cones and remove the seeds inside.

Fill small plant pots or recycled containers with soil. Seed starting soil is best, but if none is available, you could try using potting soil. Water the soil so that it is moist but not drenched. Place two or three seeds on top of the soil and barely cover them with soil, no more than 1/8-inch deep. Cut squares of black construction paper that are about two inches bigger than the top of the container. Place each container in a warm place on top of a black square. The black square will absorb light and keep your seeds warmer. Place a plastic baggie over the top of each container.

The seeds should sprout in about 10 days. Remove the baggies when you see a sprout. Then place the pots on a windowsill or under a light. Be sure that the pots are kept warm. Transplant the tree seedlings into bigger pots filled with potting soil when they are 3-6 inches tall.

## EVALUATION:

- Completed How Christmas Trees Are Grown worksheet
- Younger students can draw pictures showing how an evergreen tree grows.
- Older students can write a paragraph or essay about how Christmas trees are farmed or how coniferous trees are different from deciduous trees.

## EXTENSION:

Read a book about Christmas tree farming:

For grades K-2: Christmas Tree Farm by Ann Purcell

For grades 3-5: Christmas Farm by Mary Lyn Ray. This book is full of math problems for older students. Wilma and her young helper Parker order 62 dozen evergreen seedlings to start a Christmas tree farm. Year after year, the pair nurture their trees, keeping careful count of how many perish and how many grow into fine, full Christmas trees.

Visit a local Christmas tree farm or invite a local Christmas tree farmer to the classroom to talk to students.

## **NEW JERSEY LEARNING STANDARDS**

Science: K: LS1.C 1: LS1.A 2:LS2.A 3:LS1.B 4:LS1.A 5:LS2.A Social Studies: K-2:6.1.2.Geo.GI.1, 6.1.2.EconEM.1,2; 6.1.2.EconNE.1 3-5:6.1.5.GeoHE.2, 6.1.5.EconEM.1, 2; 6.1.5.EconNM.4, 6



## FROM FARM TO FOOD

A lesson from the New Jersey Agricultural Society Learning Through Gardening program

### OVERVIEW & PURPOSE

Food does not grow in a grocery store. New Jersey farmers help provide consumers with necessary groceries including dairy, meat and produce items. But how do crops and other commodities reach families, schools and grocery stores? Consumers can buy food items at a grocery store or a farmer's market. Some food has to go through different processes in order to be consumed. There are many steps for getting farm items to people.

### OBJECTIVES

Students will:

- Understand the steps food goes through to get from farm to store
- Calculate distances using a map

### MATERIALS NEEDED

- Maps of New Jersey
- Internet access

### ACTIVITY

Discuss with students what happens to food before it gets to them. Use the following information to help them understand food does not appear out of nowhere and there are steps food must go through in order to be eaten.

- Cows are milked and their milk is collected into large tanks. The milk truck comes approximately everyday to pump the milk out of the tanks into the tanker truck. The milk is then taken to the dairy processing plant to be cleaned, pasteurized and bottled.
- Farms can provide eggs for egg packaging companies. The eggs are refrigerated in order to keep them fresh for the necessary period of time until they reach their destination.

- Corn can be taken to a grain elevator where it is kept until it is needed. Sometimes farmers wait to sell the grain until the prices increase or when there is a greater need.

Talk about where food goes after it has been cleaned and processed. Food items arrive in grocery stores, schools, farmer markets and food banks. Food can travel many miles before it reaches the table to be eaten.

Ask students to use the internet to find one of each of these types of New Jersey Farms: a dairy farm, an egg farm, a farm that raises animals for meat(poultry, pork, beef), and a vegetable farm. Students then locate the farm locations on a map of New Jersey and then calculate to find the distance needed for the product to get to their hometown.

Hold a discussion about how food traveled when our nation first began and how it travels today. Determine what impact those differences had on farmers and consumers.

Explain how in the 21st century, the United States has moved from an agricultural society to a more industrial and urban country. Describe the events that led to this and the impact it has had.

### **EVALUATION:**

Students can share the results of the farm research

### **EXTENSION:**

- Take a field trip to a milk processing plant to learn more about how milk goes from cow to gallon in the store.
- Visit a local farmer's market to investigate the fresh NJ produce that people can buy locally.

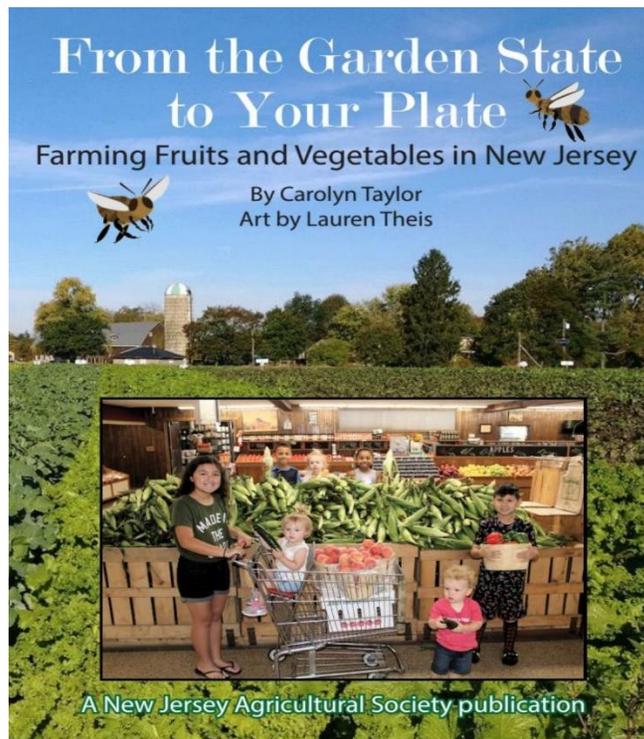
### **NEW JERSEY LEARNING STANDARDS:**

Social Studies: 6.15SV1,6.15HE1;6.15GI1B



## **From the Garden State to Your Plate Farming Fruits and Vegetables in New Jersey ~A New Jersey Agricultural Society Publication**

A lesson from the New Jersey Agricultural Society Learning Through Gardening program



### **OVERVIEW & PURPOSE**

The New Jersey Agricultural Society's children's book From the Garden State to Your Plate is designed to introduce children to agriculture, New Jersey's third largest industry. The book highlights 10 important fruit and vegetable crops grown in New Jersey and includes a map showing the counties in which these commodities are grown. A two-page spread on each fruit or vegetable explains where, when, and how it is grown, plus gives nutrition information. The book also includes information on beekeeping in New Jersey, machines that New Jersey farmers use, and a section on where to find locally grown fruits and vegetables. There are many photos of New Jersey farms. We are hopeful that From The Garden State To Your Plate will encourage your students to learn more about agriculture, to eat more fresh fruits and vegetables, and to visit a local farm or farmers market.

GRADES: 3-5, can be modified for younger grades

## OBJECTIVES

The student will be able to:

- Recognize agriculture as New Jersey's third largest industry.
- Identify some of New Jersey's top 10 crops and describe how they are grown
- Locate on a New Jersey County map where some of the top 10 crops are grown.
- Describe the nutritional value of the fruits and vegetables grown in New Jersey.
- Explain the importance of bees to farming in New Jersey.

## ACTIVITY

Read From the Garden State to Your Plate, Farming Fruits and Vegetables in New Jersey to the class or students read the book individually or in small groups. Students can also read parts of the book in small groups and report the key information to the class. For younger students: Teachers can read and discuss one section of the book at a time.

NOTE: A digital version of the book is available in the Learning Through Gardening Teacher Tool Box at <http://www.njagsociety.org/from-the-garden-state-to-your-plate-childrens-book.html>.

FOLLOW-UP ACTIVITIES: Class Discussion: As a whole class or in small groups, ask the students to discuss what they learned in the book. What surprised them? What did they already know? Do they have questions about agriculture in New Jersey? What might they want to learn more about?

Play the New Jersey M-Ag-nificent Agriculture Quiz Bowl: Divide the class into two teams or have two classes of students play against each other. Randomly select four students to be the first quiz masters for each team and four more to be the second quiz masters. The teacher reads the first statement to the first student quiz master. Quiz bowl statements below are attached. The student must say if the statement is true or false. The quiz master asks their teammates whether they think the answer is true or false. Teammates may not speak but show a thumbs up if they think the question is true and thumbs down if they think the question is false. The quiz master then answers the question. The teacher reads the next statement to the opposing team and so on until all statements have been read. When all four quiz masters have answered a question, they sit down among their teammates and the second group of quiz masters comes up to answer questions.

Investigate additional agricultural topics: Divide students into small groups to research additional topics about agriculture in New Jersey. Here are some suggested topics, but the teacher may assign topics based on student responses in class discussion about questions they had after reading the book.

What other types of farming is done in New Jersey? The book explores fruits and vegetables grown in New Jersey, but there are many other types of agriculture, including:

- Aquaculture: farming fish and shellfish,
- Eggs

- Dairy
- Horses
- Turf: grass for golf courses, football fields, lawns
- Nursery and greenhouse: trees, shrubs, and plants for landscaping, greenhouse growing of plants for commercial farmers and retail customers

Research additional information about the nutrients found in fruits and vegetables: What are vitamins, antioxidants, and minerals, and what do they do for your body? Investigate farming in your county: Where are the local farms and what do they grow? Invite a local farmer to talk to your class.

Research other sources of New Jersey produce: Do your local supermarkets sell produce grown locally? Does your cafeteria use produce that is grown nearby?

Research other fruits or vegetables grown in New Jersey: Have students choose a favorite fruit or vegetable not described in the book and investigate if or how it is grown in New Jersey. Why are some fruits and vegetables not grown in New Jersey? Ask students to research a favorite fruit or vegetable that isn't grown in New Jersey. Why can't it be grown here?

## **EVALUATION:**

Students can demonstrate what they have learned about New Jersey agriculture by: Writing a paragraph or essay about what they have learned about agriculture in the state. Small groups can read portions of the book and present what they have learned to the rest of the class. Students can present what they have learned about New Jersey agriculture to other classes. Students can write short pieces on facts about New Jersey agriculture for the class or school newsletter or website.

## **EXTENSION:**

Arrange a class trip to visit a New Jersey farm so your students can observe first-hand how their food is grown.

## **NEW JERSEY LEARNING STANDARDS**

Science: 3:LS1.B 4:LS1.A 5:LS2.A Social Studies: 3-5:6.1.5.GeoPP.2 , 6.1.5.GeoSV.2, 6.1.5.GeoHE.2 6.1.5.EconEM.1, 2, 4; 6.1.5.EconNM.4 English Language Arts: 3:RI.3.1,2,4, W.3.2.A-D, W.3.4,8 4:RI.4.1,2,4, W.4.2.A-E, W.4.4,8 5:RI.5.1,2,4, W.5.2.A-E; W.5.4,8

## **New Jersey M-Ag-nificent Agriculture**

### **Quiz Bowl**

1. There once were a lot of farms in New Jersey, but today farming is not an important industry in the state. F
2. Blueberry farming was invented in New Jersey. T
3. Most New Jersey tomato plants start their lives in a greenhouse, not in a field. T
4. Sweet corn is eaten by people and animals. F
5. Cranberry bogs are flooded during the harvest because cranberries will float. T
6. Spinach grows well in New Jersey's hot summers. F
7. Most people don't eat soybeans because they are not very nutritious. F
8. Squash plants are tricky to pollinate because they have both male and female flowers. T
9. Cucumbers are 96% water. T
10. New Jersey's state insect – the honeybee – is not native to New Jersey or the continent of North America. T
11. Peaches grow better in weather that is warm all year. F
12. Some New Jersey farms let you pick your own fruits and vegetables. T
13. A farmers' market is a place where farmers buy their seeds. F
14. Compared to other states, New Jersey is not very crowded. F
15. Farmers plant bell pepper seeds into their fields. F
16. An acre is about as big as a football field. T



## GARDEN FOOD CHAIN GAME

A lesson from the New Jersey Agricultural Society Learning Through Gardening program

### OVERVIEW & PURPOSE

Your students should understand that their school garden is an ecosystem that contains many food chains. Instead of talking about those food chains, you can illustrate them easily with this fun food chain game. Students act as herbivores, carnivores, and omnivores as they try to survive by finding food over a large area. The game lends itself to many subsequent conversations about balanced and unbalanced ecosystems.

GRADES: 2-5

### OBJECTIVES

The student will be able to:

- understand that a garden is an ecosystem
- understand and differentiate between balanced and unbalanced ecosystems.

### MATERIALS NEEDED

- Popcorn,
- 3 large bags
- 6" x 6" squares of red, orange, and yellow felt (for 24 students, you will need 16 red, 6 orange, and 2 yellow squares)
- Safety pins (one per student)
- Sandwich bags (one per student)
- Permanent markers
- Optional: 3 hula hoops

### INTRODUCTION

Ask students what all living things need to survive - food, water, air, and sunlight. Living things that live together in a certain area form an ecosystem. Your school garden is an ecosystem.

Ask students for examples of things that live in or near their school garden. Explain that today you are going to look at how creatures in and around our garden get their food. Ask for examples. Ask how do plants get their food? Every ecosystem has at least one food chain, which is the order in which living things depend on each other for food.

Some ecosystems have more than one food chain, which form a food web. Almost all food chains start with plants, which are the only living things that can make their own food.

- Producers: In a food chain, plants are called the producers, because they can produce their own food. Plants capture the light energy from the sun and with it they use water and carbon dioxide to make their food, which is a type of sugar. Plants are found at the bottom of every food chain, because all living things depend on plants for their food.
- Primary Consumers: Some animals eat only plants. These animals are called herbivores. and they are at the next level of the food chain. Herbivores include animals such as rabbits, snails, grasshoppers, cows, and giraffes. On the food chain, they are called primary consumers. They depend on plants for their food.
- Secondary Consumers: On the food chain, secondary consumers are animals that eat the primary consumers. They can be carnivores - animals that eat only meat, or omnivores, animals that eat both plants and meat. Examples of secondary consumers which are carnivores are spiders, snakes, and seals. Examples of secondary consumers which are omnivores are robins, racoons, skunks, and bears. Even animals that only eat other animals depend on plants for their food, because many of the animals they eat are herbivores, which feed only on plants.
- Decomposers: Decomposers are also part of every food web. They are the organisms that eat dead animals and plants and recycle nutrients back into the soil. Decomposers such as worms, roly polies, millipedes and mushrooms are also food for other living things in the food web.

Ask students for examples of food chains in and around their school garden and make a chart of their suggestions. Some garden food chains could include:

- aphid - lady bug - dragon fly
- stink bug - spider - robin
- grasshopper - praying mantis - bat
- beetle - mouse - blue jay
- caterpillar - braconid wasp - wren

Tell students that they are going to play a game that will help them see how food chains work. Ask students to vote on the first food chain they will use for the game.

OPTIONAL: Read the book Food Chains and the Food Web in Our Backyard, Secrets of the Garden, by Kathleen Weidner Zoehfeld.

## ACTIVITY

### PLAYING THE GARDEN FOOD CHAIN GAME:

The game requires a large play area, so it must be played outside or in a large room such as a gym. For the sample game, we will use the chain of aphids - lady bugs - dragon flies. The popcorn is spread over the entire area.

Each piece of popcorn represents a plant. The students will be the primary consumers or one of two different types of secondary consumers. Most of the students will be primary consumers. For a class of 24 students, you will need 16 aphids (primary consumers), 6 ladybugs (the first secondary consumer), and 2 dragon flies (the second secondary consumer).

Briefly discuss why there are so many more primary consumers in an ecosystem than some types of secondary consumers. For example, aphids lay 2,500 eggs and green frogs lay 3,000 eggs, while a red-tailed hawk will only lay five eggs. An ecosystem needs more primary consumers and small secondary consumers because they are food for so many more animals.

Put all of the felt squares with safety pins in a large bag or bowl and have students select one without looking. Students should pin their felt squares onto their shoulders. Pass out the sandwich bags and ask students to mark the halfway point with a permanent marker. Tell students that the sandwich bag represents their animal's stomach and that they must fill their stomachs halfway to survive.

When the game starts, aphids must try to fill their "stomachs" halfway by picking up popcorn while they watch out for the ladybugs. If a ladybug tags an aphid, the aphid must empty the popcorn in its "stomach" into the ladybug's "stomach." Then the aphid must sit on the sidelines because it has been eaten. Ladybugs, in turn, must be on the lookout for the dragonflies who will try to tag them. If a ladybug is tagged, it must empty the contents of its "stomach" into the dragon fly's "stomach" and then sit on the sidelines. Dragonflies can only eat ladybugs, which can only eat aphids, which can only eat popcorn (plants.)

Any animal that is not eaten during the game but does not have its "stomach" halfway full at the end of the game, will also die - of starvation. The teacher should time the game, perhaps starting out with five minutes. Allow students to change roles in each subsequent game and/or switch to a food chain of different animals.

**OPTIONAL GAME MODIFICATION:** If you would like to make the game fairer for your less athletic students, you can place three hula hoops at various points on the playing field. These hoops will represent hiding spaces in which animals can seek protection if they are about to be eaten. If a student jumps into a hula hoop, then the predator can no longer see its prey and must look for prey elsewhere. Tell students that the hiding spaces are only a temporary refuge. They must count to 10 and then leave the hoop. Since predators cannot see the hiding places, they cannot stand at the edge of the hula hoops waiting for prey to emerge. Only one student can hide in a hoop at a time.

## **EVALUATION:**

Students write a paragraph or a few paragraphs about what they learned about food chains and food webs from playing the game.

## **EXTENSION:**

Discuss why unlike in the game, animal species usually do not eat only one food and why animals that do eat only one food, such as pandas or koalas, are at a higher risk of extinction. Ask students to research other insects that are either detrimental or beneficial for their garden and design some other garden food chains that they can use in their game. Ask students to consider what happens when the food chain becomes unbalanced. Do you have to protect your garden from deer? In New Jersey, deer are part of a food chain that is now unbalanced, so that is a good place to start that conversation.

## **NEW JERSEY LEARNING STANDARDS**

Science: 2: LS4.D 3:LS4.B, C, D 4:LS1.A, D 5:LS1.C, LS2.A,B English Language Arts: 2:W.2.2,4,8 3:W.3.2.A-D, W.3.4,8 4:W.4.2.A-E,

Name(s): \_\_\_\_\_ Date: \_\_\_\_\_

## Garden Scavenger Hunt

<p>Pick a vegetable plant to measure. My plant is a _____ plant. It is _____ inches/cm wide. It is _____ inches/cm tall.</p> <p>Place a stick with your name on it next to your plant.</p>	<p>Pick a rain gauge to measure. There are _____ inches/cm of water in the rain gauge. Do you think that is a lot of rain or a little?</p>
<p>Pick a vegetable plant to measure. My plant is a _____ plant. It is _____ inches/cm wide. It is _____ inches/cm tall.</p> <p>Place a stick with your name on it next to your plant.</p>	<p>Look for a creature that lives in the garden. What do you think it is? _____</p> <p>Where did you see/find it? _____</p> <p>Write a sentence that includes two words to describe it.</p>

\*\*What is different in the garden since your last visit?



## GEORGE WASHINGTON CARVER ~ PEANUT WIZARD

A lesson from the New Jersey Agricultural Society Learning Through Gardening program

### OVERVIEW & PURPOSE

Born a slave 150 years ago, George Washington Carver became a world-famous scientist and teacher who revolutionized the American agriculture industry. He was the first African American to be honored with a national monument. In this lesson, students learn about the work of the “Peanut Wizard” to improve the lives of poor Southern farmers following the Civil War. This lesson also looks at peanut farming today. Many of the photos are courtesy of Tuskegee University, Tuskegee, AL.

GRADES: 2-5, can be modified for younger grades

### OBJECTIVES

The student will be able to:

- Describe some of the obstacles George Washington Carver had to overcome to get a good education.
- Describe the work George Washington Carver did to improve the lives of poor farmers following the Civil War.
- List some of the uses George Washington Carver found for peanuts.
- Describe the peanut life cycle.

### MATERIALS NEEDED

- The Peanut Wizard – The Life of George Washington Carver New Jersey Agricultural Society PowerPoint presentation, <https://youtu.be/gNuW8hnYTJ8>
- Peanut seeds
- Potting soil
- Transparent container such as a rectangular container for lettuce from the grocery store or an old fish tank. If you are planting in small groups, you will need enough containers for each group of three or four students. (Transparent containers are not essential but will allow students to observe the development of the peanut pods underground.) Poke holes in the bottom of the plastic container or line the bottom of the fish tank with about one inch of pebbles for drainage.
- Optional: Books about George Washington Carver (see list in Extensions below)

Modification: If students in your class suffer from a peanut allergy, you can plant soybeans instead of peanuts.

## **ACTIVITY**

Tell students that today they will learn about the life of George Washington Carver, who was born a slave and worked hard to get an education to become a world-famous scientist and teacher of American agriculture. Explain that agriculture is another word for farming. Show the PowerPoint presentation *The Peanut Wizard – The Life of George Washington Carver*. Following the presentation, ask students what they learned, what surprised them, or if they have any questions.

Next, tell students that they are going to plant peanuts in the classroom, to observe how a peanut plant grows. This can be done as a whole class presentation, or you can divide the class into small groups of three or four to plant the peanuts. Fill the containers about two-thirds full of potting soil. Add water to the soil so that it is moist but not soaked. Plant peanut seeds about one inch deep and about four inches apart. Place the container in a sunny spot. Water the peanuts when the soil is dry to the touch, again making sure the soil becomes moist but is not soaking wet.

Be patient! Peanut seeds will take up to 14 days to sprout. Peanuts have a long growing season; they take about four months to grow. When the plants are about six inches high, it is time to ‘hill’ them. To do this, gently loosen the soil around each plant and create a hill with this loosened soil. The plant should flower in about 40 days. Do not pick flowers or petals off the plant. They will develop stems called pegs that will extend to the ground.

In New Jersey, peanuts plants can be transplanted outside in mid-May, after the danger of frost has passed. Do not use much fertilizer containing nitrogen on the peanut plants. Harvest the peanuts when the leaves begin to yellow. Pull one plant and check the shells before harvesting the entire crop to be certain about the peanut harvest time. The peanuts should nearly fill the shells. Have students check the roots to see if they have developed nodules for the rhizobia bacteria.

## **EVALUATION:**

Students can write a paragraph (or paragraphs depending on grade level) about what they learned about George Washington Carver’s life and accomplishments. Students can write a paragraph (or paragraphs depending on grade level) describing the unusual life cycle of the peanut plant. Students can make regular observations in a science journal about the development of the peanut plant.

## **EXTENSION:**

Read books about George Washington Carver or ask individual students to read different books and report new facts they learned.

Books on George Washington Carver:

- George Washington Carver, Margo McLoone
- George Washington Carver, The Peanut Wizard, Laura Driscoll
- In The Garden With Dr. Carter, Susan Grigsby
- Journey to Freedom, George Washington Carver, Charles W. Carey, Jr.
- The Life and Times of the Peanut, Charles Micucci
- The Little Plant Doctor, A Story About George Washington Carver, Jean Marzollo
- A Man For All Seasons, The Life Of George Washington Carver, Stephen Krensky
- A Picture Book of George Washington Carver, David A. Adler
- A Weed is a Flower, The Life of George Washington Carver, Alike

Peanuts are not grown in New Jersey, but soybeans are one of the state's top 10 crops. Invite a soybean farmer to your classroom to tell students how soybeans are grown and used in the state.

## **NEW JERSEY LEARNING STANDARDS**

Science: 2:LS2.A 3:LS1.B 4:LS1.A, ESS2.E 5:LS2.A, ESS3.C Social Studies: 2:  
6.1.2.EconEM.1, 6.1.2.HistoryCC.3, 6.1.2.HistoryUP.3 3-5:6.1.5.EconEM.2,  
6.1.5.EconNM.2,4,7; 6.1.5.HistoryCC.4, 7 English Language Arts: 3:W.3.2.A-D, W.3.4,8  
4:W.4.2.A-E, W.4.4,8 5: W.5.2.A-E; W.5.4,8



## HAVE A CHEESEBURGER AND SEE NEW JERSEY!

A lesson from the New Jersey Agricultural Society Learning Through Gardening program

### OVERVIEW & PURPOSE

Students take a tour of New Jersey to discover where all the parts of a cheeseburger are grown. They consult a map to discover the counties where beef, wheat, tomatoes, cucumbers, milk, and lettuce are produced and mark the counties included in their journey. This fun and engaging lesson teaches both the location of the counties in New Jersey and the crops that are grown there.

Grades:3-5

### OBJECTIVES

The student will be able to:

- Locate various counties on a map of New Jersey.
- Define the word commodity.
- List the commodities necessary to make a cheeseburger.
- Identify the counties in New Jersey in which each part of a cheeseburger is grown.

### MATERIALS NEEDED

- The New Jersey Agricultural Society PowerPoint

- presentation Have a Cheeseburger and See New Jersey  
<https://youtu.be/EWNVgx-wuk4>
- A copy of a county map of New Jersey sheet for each student
- A copy of the Have a Cheeseburger New Jersey Commodities Chart for each student
- Colored pencils, markers, or crayons

## ACTIVITY

Ask students, “Who likes cheeseburgers?” Ask them what crops or commodities they would need to make a cheeseburger. Make a list of beef, wheat, tomatoes, cucumbers, lettuce, and milk.

Tell students that they are going to take a tour of New Jersey to see where each commodity that makes up a cheeseburger is grown. Pass out a county map of New Jersey sheet and a Have a Cheeseburger New Jersey Commodities Chart to each student.

Explain to students that as they tour New Jersey to see where the parts of a cheeseburger are grown, they should make a dot on the New Jersey map in each of the counties where that commodity is produced. They should choose a different colored dot for each commodity and make a map key in the bottom corner of the map to show what commodity is represented by each color. If necessary, review what a map key is and how to make one.

NOTE: Show the Have a Cheeseburger and See New Jersey power point presentation, giving the students time after each commodity is introduced to mark on their maps the counties in which the commodity is grown.

## EVALUATION:

Completed map of New Jersey with marks showing counties where the parts of a cheeseburger: beef, wheat, tomatoes, cucumbers, milk, and lettuce are grown.

## EXTENSION:

Have students trace the roots of other popular foods such as pizza or tacos, and finding a travel route to make these foods.

## **NEW JERSEY LEARNING STANDARDS**

Science: 3:LS1.B 4:LS1.A 5:LS2.A Social Studies: 3-5 6.1.5.GeoPP, 6.1.5.GeoSV.2, 6.1.5.GeoHE.2 6.1.5.EconEM.1, 2, 4 6.1.5.EconNM.4 English Language Arts: 3:RI.3.1,2,4, W.3.2.A-D, W.3.4,8 4:RI.4.1,2,4, W.4.2.A-E, W.4.4,8 5:RI.5.1,2,4, W.5.2.A-E; W.5.4,8

*Lesson courtesy New Jersey Agriculture in the Classroom*

# Have a Cheeseburger

New Jersey Commodities Chart

A list of the counties where the parts of a cheeseburger are grown.

<p><b>BEEF</b></p> <ul style="list-style-type: none"> <li>• Hunterdon</li> <li>• Salem</li> <li>• Sussex</li> <li>• Warren</li> </ul> <p>(Farms with 100 or more cows and calves)</p>	<p><b>WHEAT</b></p> <ul style="list-style-type: none"> <li>• Cumberland</li> <li>• Gloucester</li> <li>• Hunterdon</li> <li>• Monmouth</li> <li>• Salem</li> <li>• Somerset</li> </ul> <p>(Farms with 100 acres or more)</p>	<p><b>TOMATOES</b></p> <ul style="list-style-type: none"> <li>• Atlantic</li> <li>• Burlington</li> <li>• Camden</li> <li>• Cumberland</li> <li>• Gloucester</li> <li>• Middlesex</li> <li>• Monmouth</li> <li>• Salem</li> </ul> <p>(Farms of 100 acres or more)</p>
<p><b>CUCUMBERS</b></p> <ul style="list-style-type: none"> <li>• Atlantic</li> <li>• Camden</li> <li>• Cumberland</li> <li>• Gloucester</li> <li>• Salem</li> </ul> <p>(Farms of 100 acres or more)</p>	<p><b>LETTUCE</b></p> <ul style="list-style-type: none"> <li>• Atlantic</li> <li>• Cumberland</li> </ul> <p>(Farms of 100 acres or more)</p>	<p><b>MILK</b></p> <ul style="list-style-type: none"> <li>• Gloucester</li> <li>• Hunterdon</li> <li>• Salem</li> <li>• Sussex</li> <li>• Warren</li> </ul> <p>(Farms with 500 or more milk cows)</p>





## MAKING A GARDEN MAP

A lesson from the New Jersey Agricultural Society Learning Through Gardening program

### OVERVIEW & PURPOSE

What's the first step to planting a vegetable garden? Make a plan! Seeds and seedlings can't be plopped just anywhere in the garden. Different plants require different amounts of space to grow. And plants grow to different heights, so you need make sure that tall plants don't shade the smaller plants. Before you go out to the garden, teach your students how to determine how much space their plants need. Then have them draw a map of their garden on graph paper. This activity gives your students a chance to use their math skills in a real-life setting. It also gives them ownership of the garden from the start.

GRADES: 3-5

### OBJECTIVES

The student will be able to:

- Research the space requirements and height of plants by using seed packets, seed catalogs, or websites.
- Calculate the perimeter and area of the school's garden beds.
- Use graph paper to map out a garden plot according to the space requirements of different plants.
- Plant seeds and/or seedlings according to the garden map.

### MATERIALS NEEDED

- Seed packets, seed catalogs, or access to the Internet
- Garden Planning Chart copies for each student
- Graph paper for each student

### ACTIVITY

Begin a discussion with students about how you will plant your vegetable garden. Ask students what they know about how to plant a garden. What things do they need to

consider? Explain that different plants grow to different sizes and thus need a different amount of space in the garden. If plants are too crowded, they will compete for water and nutrients. Also, taller plants might shade shorter plants from the sun. Ask students where they think they might find information about the space each type of plant needs in the garden.

Discuss what vegetables you will be growing depending on the season. Distribute seed packets or seed catalogs or show students how to find planting directions on the Internet ([www.burpee.com](http://www.burpee.com) and other seed companies are good sources.) Students may work in small groups, but have each student complete his or her own Garden Planning Chart.

Before students begin, explain that very small seeds, such as lettuce, spinach, or radish seeds, cannot be planted one by one in the garden. They are sprinkled in the row and some are later pulled out – this is called “thinning” – if the plants are too crowded.

When students have completed their garden planning charts, take them out to the garden and ask them to measure and calculate the perimeter and the area. Back in the classroom, have students in small groups draw the garden space on graph paper with one square equaling one square foot. Ask the students to then draw a map where the different types of vegetables will be planted according to their space requirements. If your garden is in the ground and not in raised beds, tell students to remember to include walking space between garden beds.

Have each group present their garden plan to the whole class. After students have discussed each plan, ask them to vote on the map they think is the best plan for their garden. Next discuss with students the tasks necessary to plant all the vegetables and list them on the board or on chart paper. Assign everyone a task. Then take everyone out to the garden to plant!

### **EVALUATION:**

Completed Garden Planning Chart and teacher observation of small group participation.

### **EXTENSION:**

Ask older students to create garden maps for younger students who are planting a garden plot, and then have them assist the younger students in following the plan.

Explore varieties of vegetables. Are all lettuces or radishes the same? What varieties are your students planning to plant?

Ask your students to research the differences between hybrid or heirloom tomatoes, sweet and hot peppers, or winter and summer squashes.

Ask students to use algebraic equations when planning the garden.

Ask students to create a garden that includes other shapes such as circles, triangles, and octagons.

Ask students to create a three-dimensional garden that includes fencing, wire cages, or climbing poles.

## **NEW JERSEY LEARNING STANDARDS**

Math: 3.MD, 3.NF 4.NF, 4.MD.A,B 5.NF, 5.MD.A

Name: \_\_\_\_\_

### Garden Planning Chart

Use the information on seed packets, in seed catalogs, or on a website to fill in this information about the vegetables you plan to grow in your garden.

Vegetable	Row Width	Space Between	Plant Height



## MOST “BEAN”-IFICIAL

A lesson from the New Jersey Agricultural Society Learning Through Gardening program

### OVERVIEW & PURPOSE

Soybeans are produced for human food, consumer and industrial products and livestock feed. Soybeans are one of the nation's most fascinating and versatile edible plants. From foods to ink, paints to plastics, soybeans have hundreds of everyday uses. Some of those products are probably in your kitchen or garage right now.

Even though soybeans have been a major food crop in China for over 5000 years, soybeans were not grown in our country until the 1800s. At first soybeans were small and their uses were few until a scientist named George Washington Carver began to find more and more uses for them. By 1904, he developed over 300 useful byproducts of soybeans.

Soybeans touch our lives hundreds of times a day. When we eat, read a newspaper, get into our cars and even when we open our front doors. Soybeans are often called magic beans because they produce so many products. Some of the products made from soybeans include: cereal, cooking, oil, chocolate, hot dogs, candy, baby food, flour, soup, ice cream, vitamins, cookies, printing inks, soap, shampoo, fabric softener, paints, Diesel fuel, plastics, cosmetics, and pet food.

Some other uses for soybeans that scientists have discovered are: biodiesel fuel, soybean crayons, soy ink and building materials.

Biodiesel fuel which can be used in any diesel engine, is made from soybean oil. This fuel is a clean, burning, and biodegradable fuel that can help cities meet federal clean air standards. Unlike petroleum, diesel, biodiesel fuel emits a much lower number of pollutants. It is sold for free and it does not produce explosive vapors. Biodiesel fuel also provides similar horsepower, torque, and MPG as petroleum diesel.

Soybean crayons are made with soybean oil instead of petroleum-based paraffin wax. Soybean crayons provide a brighter and smoother color that don't flake. These crayons can be found under the Prang Fund Pro crayons name at many discount office and supply stores.

Soy ink is also made with soybean oil. Newspapers, commercial printers, and government agencies use soy ink instead of petroleum-based ink because it prints more paper per pound and offers better color reproduction. In fact, over 90% of all US daily newspapers are printed using soy ink.

Biocomposite building material is made with soy flour and recycled paper. A fourth-grade student from Minnesota contributed to inventing this new building material.

Scientists continued research and development until they produced a board similar to wood, harder than oak and lighter than granite. Biocomposite building materials can be used in countertops, furniture plaques and much more.

Grade: 4-5

## **OBJECTIVES**

Students will:

- Identify important dates in the history of the soybean and place those dates in chronological order on a timeline.
- Name products made with soybeans.

## **MATERIALS NEEDED**

- “A Long Line of Soybeans” worksheet
- “Miracle Bean Riddles”

## **ACTIVITY**

Discuss the importance of timelines and why they are a useful tool.

Ask students if they know of any products made with soybeans. Lead them in a discussion about soybean uses and some new products made with soybeans.

PowerPoint available here: <https://youtu.be/qqxrjjZE0oY>

## **EVALUATION:**

Completed worksheets

## **EXTENSION:**

- Contact the NJ Agricultural Society to help find a soybean farmer to be a guest speaker or for a possible field trip.
- Read the book Full of Beans: Henry Ford Grows a Car by Peggy Thomas

## **NEW JERSEY LEARNING STANDARDS**

Science: K: LS1.C 1: LS1.A 2:LS2.A 3:LS1.B 4:LS1.A 5:LS2.A Social Studies: K-2:6.1.2.

## A Long Line of Soybeans

Cut the facts apart. Put the events in the correct order and then use the events to create a timeline.

---

1904 - George Washington Carver discovers that soybeans are a valuable source of protein and oil.

---

164 BC - Soybean curd (tofu) is invented.

---

1995 - New England Journal of Medicine reports that soybean protein consumption reduces LDL cholesterol, the bad cholesterol, by 12.9% and reduces total cholesterol by 9.3%.

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8000 BC. - Animals are domesticated in the Middle East, making the birth of agriculture.

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1922 - The first US soybean processing plant opens in Decatur, IL.

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1990 - The United States grows 51% of the world's soybeans.

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1850 - Civil war soldiers roast soybeans in place of coffee beans when coffee beans became scarce during the war.

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700 BC - Chinese make soy sauce.

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1804 - Soybeans come to America.

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1929 - Soybean pioneer William J Morse spends 2 years in China gathering more than 10,000 soybean varieties for US researchers to study.

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2000 BC - Soybeans are first planted in China for food.  
1997 - Prang starts marketing crayons made from soybeans for back to school sales.

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1987 - Soy ink is used to print newspapers.

---

1940 - Henry Ford demonstrates the strength of the soybean plastic he has developed by taking an ax to the plastic on one of his cars.

---

1860s - US farmers begin to grow soybeans for soy sauce and cattle feed.

---

## Miracle Bean Riddles

Read each riddle and try to name each product that is made with soybeans!

1. This product is used in your bicycle helmet to protect your head.

\_\_\_\_\_

2. Soybeans are used in this industrial product to print newspapers.

\_\_\_\_\_

3. This product makes our hair clean and shiny.

\_\_\_\_\_

4. We use this to wash our hands, wash our clothes, and wash our dishes.

\_\_\_\_\_

5. Eat this for breakfast to start your day off right.

\_\_\_\_\_

6. This food is for very young people. It contains soybeans to provide protein.

\_\_\_\_\_

7. Take these every day to make sure you get your daily nutrients.

\_\_\_\_\_

8. This fuel is environmentally friendly.

\_\_\_\_\_

9. This is used to make many sweets and treats that we love to eat.

\_\_\_\_\_

10. When you're sick, this will make you feel better.

\_\_\_\_\_

Answers:

1. Plastic
2. Ink
3. Shampoo
4. Soap
5. Cereal
6. Baby food
7. Vitamins
8. Diesel
9. Chocolate
10. Soup



## READ ABOUT THE HISTORY OF GROWING FOOD

A lesson from the New Jersey Agricultural Society Learning Through Gardening program

### OVERVIEW & PURPOSE

Before the Industrial Revolution, most people worked a farm or garden to grow their own food. Whatever period of history you are discussing in class, spend a few minutes talking about where people of that time got their food. Here are some great books to read about growing food throughout history.

GRADES: 1-5

#### First Garden The White House Garden and How it Grew By Robbin Gourley

This book tells the story of the kitchen garden planted by Michelle Obama, but it also tells the history of gardens planted on the White House grounds since 1800, when John Adams was the first president to live there. The book includes garden recipes from White House chefs.

#### Farmer George Plants a Nation By Peggy Thomas

Like many people of his day, our first president was also a farmer. When he was 27 years old, Washington inherited Mount Vernon from his brother. Washington invented a plow to make planting easier. And when Washington discovered that years of planting the same crop had depleted the nutrients from his farm's soil, where did he turn – to manure! Your students will be delighted to learn that the father of our country spent a lot of time experimenting with animal droppings!

#### Century Farm One Hundred Years on a Family Farm By Cris Peterson

A century farm is a farm that has been worked continuously by the same family for at least one hundred years. The author lives on a century farm and shows through photos and stories how the farm has changed over the years. There are many century farms in New Jersey. After reading the book, invite a century farmer to talk to your students. They can interview the farmer and write a nonfiction story afterward.

#### John Deere, That's Who! By Tracy Nelson Maurer

Long before the tractor company that bears his name, John Deere invented plows that made it easier to dig through prairie soil. This book shows how Deere developed and tested his plows before he sold them to farmers. Read this book and ask students to research the work of other people who changed the way food is produced such as: Eli Whitney, Cyrus McCormick, Norman Borlaug, and Temple Grandin.

It's Disgusting and We Ate It By James Solheim

Students will be fascinated, and possibly disgusted, by this book that traces unusual food eaten throughout history and around the world. Insects, mice, rotten fish, flowers, robins, and muskrats all appear as delicacies in this book. After reading, students can research unusual food that is currently eaten in other countries or foods eaten in the United States that are not eaten elsewhere.

## **NEW JERSEY LEARNING STANDARDS**

Social Studies: 1-2:6.1.2.Geo.HE.2, 4; 6.1.2.EconEM.1, 6.1.2.HistoryCC.3 3-5:6.1.5.EconEM.1, 6.1.5.EconNM.3, 4, 6. 6.1.5.HistoryCC.3 English Language Arts: 1:RI.1.1-4,6 2:RI.2.1-7 3:RI.3.1-7 3:RI.3.1,2,4 4:RI.4.1,2,4 5:RI.5.1,2,4



## SOY, THE SUPER BEAN

A lesson from the New Jersey Agricultural Society Learning Through Gardening program

### OVERVIEW & PURPOSE

This soybean lesson will show students how the abundant protein of soybeans is included in our diets as well as the myriad of other ways soybeans are used in our daily lives. It introduces legumes and their ability to enrich soil with nitrogen. And there's also a quick trip through the history of soybeans – including Henry Ford's soybean car!

GRADES: K-5

### OBJECTIVES

The student will be able to:

- Name a number of food and non-food products that soybeans are used to make.
- Explain how soybeans can replace nitrogen in the soil.
- Explain the meaning of “crop rotation.”

### MATERIALS NEEDED

- New Jersey Agricultural Society powerpoint presentation Soy, The Super Bean! <https://youtu.be/qqxrijZE0oY>
- Optional: Full Of Beans, Henry Ford Grows a Car. by Peggy Thomas.
- **Optional:** Materials to make soybean ink and/or soybean lip balm (see below).

### PREPARATION

Before starting the activity, use a sharp knife to cut a rectangular hole in one small end of each shoe box. To make creating the maze easier for students, it is a good idea to put together a model shoe box maze according to the instructions below, so that students can visualize their instructions.

### ACTIVITY

Show and discuss PowerPoint.

Make soy ink and lip balm, if desired

### **EVALUATION:**

The student will list various products made from soybeans. The student will write a paragraph or essay or explain verbally how soybeans and bacteria work together to replenish nitrogen in the soil and why this is important to farming.

### **EXTENSION:**

- Read a book about soybeans such as Soybeans In the Story of Agriculture or Soybean AZ, both by Susan Anderson and JoAnne Buggey.
- As homework, ask students to find and make a list of products in their kitchen pantries that contain soy.
- In small groups, students do further research on the work of George Washington Carver and Henry Ford with soybeans.

### **NEW JERSEY LEARNING STANDARDS**

Science: K: LS1.C 1: LS1.A 2:LS2.A 3:LS1.B 4:LS1.A 5:LS2.A Social Studies: K-2:6.1.2.Geo.GI.1, 6.1.2.EconEM.1,2; 6.1.2.EconNE.1 3-5:6.1.5.GeoHE.2, 6.1.5.EconEM.1, 2; 6.1.5.EconNM.4, 6 English Language Arts: K:W.K.2,3 1:W.1.2,7 2:W.2.2,4,8 3:W.3.2.A-D, W.3.4,8 4:W.4.2.A-E, W.4.4,8 5: W.5.2.A-E; W.5.4,8

## How to Make Soy Ink

Printing ink was originally made from petroleum oil, which must be pumped from far underground. Then about 45 years ago, newspaper companies began to experiment with using a renewable resource, and it was discovered that soy made a good base for ink. Not only was it renewable, it provided brighter colors and made recycling easier because the ink was easier to remove.

### MATERIALS (for a class of 24:)

- small paper cups
- 2 teaspoons soybean oil
- 1 teaspoon soy lecithin
- 3 teaspoons (3 packages) unsweetened Kool-aid or other powdered drink (adds color to the ink)
- $\frac{1}{4}$  cup plus 1 tablespoon water
- Sticks or spoons for stirring
- Bowl or other container for mixing
- Paper Q-tips and/or rubber stamps

Note: The soy oil does not mix well with water until the lecithin is added. Soy lecithin is used for mixing fats and oils with water. Lecithin is commonly found in chocolate candy and salad dressing.

### PROCEDURE:

Mix the water with the unsweetened powdered drink mix in a bowl. Add 2 teaspoons soy oil and 1 teaspoon soy lecithin and stir vigorously until any lumps are gone. (You can show students how the oil and water don't mix well until the lecithin is added.) Divide ink into small cups for use by small groups of students. Use Q-tips to write with the ink on paper or use rubber stamps, if available, to stamp images.

## How to Make Soybean Lip Balm

MATERIALS: (for a class of 24)

- Small paper cups
- ½ cup beeswax pellets (Read about beeswax below.)
- 1 cup soybean oil
- Small saucepan
- Stove top or other heat source

PROCEDURE:

Place the beeswax pellets in a small saucepan. Heat on low medium heat. Stir until all beeswax is melted. Add soybean oil to the melted beeswax, stir and remove from heat. Pour 1 tablespoon into each small cup. Let the solution sit until it hardens to a soft solid. Use fingertips to transfer the lip balm from cup to lips, or remove paper cup and use the wax cylinder to coat lips.

### What is beeswax?

A beehive is filled with little rooms called cells where the bees raise their young and store pollen and honey for the winter. These small cells each have six sides – they are hexagons. The bees make these cells out of beeswax. A bee has special parts on its underside, called glands, that produce wax. When the worker bees eat honey, these special wax-producing glands change the sugar into wax. Bees must eat eight ounces of honey for every one ounce of wax they produce. The wax appears as small flakes on the bees' underside. The bees must chew the wax to soften it, so they can shape it into cells. Beeswax is used in many products, including skin lotions, dental floss, jellybeans, gummy bears, candles, and medicine



# THE EARTH AS AN APPLE: HOW MUCH LAND IS THERE TO GROW FOOD?

A lesson from the New Jersey Agricultural Society Learning Through Gardening program

## OVERVIEW & PURPOSE

The Earth may seem like a big place, but the small amount of land available to grow food will surprise your students. This simple activity will demonstrate to them how little land can be used for farming and start a discussion about why this land needs to be preserved.

GRADES: 3-5, can be done as a demonstration for younger students

## OBJECTIVES

The student will be able to:

- Explain how little land there is on earth for food production and why it is necessary to protect that land.

## MATERIALS NEEDED

- An apple for every student or pair of students
- One heavy plastic knife for each child

NOTE: Activity can be done in small groups or by pairs of students.

## ACTIVITY

Explain that by using an apple, we will see how much of the earth's surface can actually be used for food production, and why it is everyone's responsibility to protect this soil wisely to make sure it is available to use in the future.

Teacher tells the students to:

1. Cut the apple into four equal parts. Three parts represent the area of earth that is covered by water. Hold up the fourth quarter, which represents the land.

2. Cut the land quarter into four equal parts:  $\frac{1}{4}$  represents deserts  $\frac{1}{4}$  represents mountains  $\frac{1}{4}$  represents land too cold to grow food  $\frac{1}{4}$  represents land where man can live.

3. Cut the section of land on which we live into quarters: Of the land on which we live,  $\frac{1}{4}$  is too wet for food production  $\frac{1}{4}$  is too dry for food production  $\frac{1}{4}$  is too rocky or steep for food production  $\frac{1}{4}$  is available for food production

4. Hold up the section the IS available for food production The flesh of this piece of apple represents the land we have paved over or destroyed with toxic and nuclear waste.

5. Peel this last piece of apple and hold up the peel: This small bit of peel represents the amount of land available to produce all the food that feeds the world!

Class discussion: Ask students what does this activity tell us? Were you surprised by the results? Given the small piece of land on which we can grow food, what do you think we should do?

## **EVALUATION:**

Students write a paragraph explaining the results of the activity and what people should do as a result. Have students wash and then eat the apples!

## **NEW JERSEY LEARNING STANDARDS**

Science: 3:LS2.C, 3:LS4.C 4:ESS2.E 5:ESS2.A,C, 5:ESS3.C English Language Arts: 3:W.3.2.A-D, W.3.4,8 4:W.4.2.A-E, W.4.4,8 5: W.5.2.A-E; W.5.4,8



## THE THREE SISTERS

A lesson from the New Jersey Agricultural Society Learning Through Gardening program

GRADES: PreK-5

### OBJECTIVES

The student will be able to

- Explain how Native Americans who lived in New Jersey planted their three major food crops to reduce the amount of work they had to do to grow them.
- Explain how corn, beans, and squash plants benefit when planted together.
- Compare and contrast legends Native Americans told about the Three Sisters.
- Explain how the Three Sisters helped the Pilgrims.

### MATERIALS NEEDED

- large, 2-gallon plastic plant pots, one for each group (available for free from garden centers)
- corn, pole green bean, and squash seeds (Be sure to buy pole green beans and not the “bush” type. Pumpkin seeds can be used for squash.)
- Potting or garden soil
- Optional: Copies of The Three Sisters legends and The Pilgrims and the Three Sisters summary for each student.

### PREPARATION

In small groups, have the students plant corn seeds only in the middle of 2-gallon plant pots two weeks prior to this lesson. Four or five corn seeds planted in the middle of the pot is enough. Corn seeds take longer to germinate than the bean and squash seeds, so they should be given a head start.

### ACTIVITY

Explain that the Native Americans who lived in New Jersey were called the Lenni Lenape. The Lenape had to get everything they used and ate from nature. They made clothes from animal hides, built houses from wood and bark, made tools from rocks and bones and hunted for or grew all their food. This means the Lenape had a lot of work to do everyday. Even the littlest children had jobs of chasing the birds and animals out of the gardens.

The Lenape ate three major food crops: corn, beans, and squash. They called these crops the Three Sisters. They planted them in a way that would make tending the garden much easier.

- First, they planted the corn. Do you know what corn looks like when it's growing? (Have younger children stand up straight to look like a corn stalk.)
- Then they planted the beans in a circle around the corn so the bean vines would wind up the corn. This way they would not have to cut a piece of wood to make a stake for the beans. (Have the younger children act out the way the beans would grow around the corn stalk.) The beans also help the corn because beans leave a nutrient called nitrogen in the soil, and corn plants need a lot of nitrogen.
- Last, the Lenape planted the squash around the beans to push out the weeds and to shade the ground to keep the moisture in for all three plants. The squash plants also used the nitrogen provided by the beans. (Have the younger children act out the way the squash spreads out all over the garden.)

Planting different crops together this way is called companion planting. Draw a picture on the board to show the corn stalk, the beans growing around the corn stalk, and the squash spreading out from the beans all over the garden.

Explain that today when we go outside, we are going to plant the Three Sisters in pots so that we can see how the corn, beans, and squash grow together. Earlier we planted the corn because the corn takes a little bit longer to grow. This week we are going to plant the beans and the squash. In small groups (three to five), students plant the Three Sisters in large 2-gallon plastic pots.

Optional Activities: The Three Sisters Legends: Explain that native Americans often told stories or legends to explain things that were happening in nature.

For younger students: Read legend #1 and ask the students which sister represents which of the three plants. How do they know?

For older students: Ask students in small groups to read one of the Three Sisters legends. Ask the groups to retell the legend to the whole class and explain how the legend relates to the way the corn, beans, and squash grow together. Ask the students to compare and contrast the three different legends. The Three Sisters and the Pilgrims:

## **EVALUATION:**

Younger students can name the Three Sisters crops and describe how and why they were planted by Native Americans. Older students write a paragraph or essay about the Three Sisters method of gardening. They can also write a paragraph or essay comparing and contrasting the Three Sisters legends, and/or explaining how the Native Americans helped the Pilgrims to survive their first year in America.

## **EXTENSION:**

Make Three Sisters stew

## NEW JERSEY LEARNING STANDARDS

Science: K:LS1.C 1: LS1.A 2:LS2.A 3:LS1.B 4:LS1.A 5:LS2.A Social Studies: K-2:6.1.2.Geo.HE.2 3-5: 6.1.5.HistoryCC.8: Language Arts: K:RL.K.1-5 1:RL.1.1-4 2:RL.2.1-4 3:RL.3.1-4, W.3.2.A-D, W.3.4,8 4:RL.4.1-4; W.4.2.A-E, W.4.4,8 5:RL.5.1-4,5; W.5.2.A-E; W.5.4,8

There are many legends told by Native American people about the Three Sisters way of planting corn, beans, and squash together. Here are some of those legends.

### **Three Sisters Legend #1**

A long time ago there were three sisters who lived together in a field. These sisters were quite different from one another in their size and way of dressing. The little sister was so young that she could only crawl at first, and she was dressed in green. The second sister wore a bright yellow dress, and she had a way of running off by herself when the sun shone and the soft wind blew in her face. The third was the eldest sister, standing always very straight and tall above the other sisters and trying to protect them. She wore a pale green shawl, and she had long, yellow hair that tossed about her head in the breeze. There was one way the sisters were all alike, though. They loved each other dearly, and they always stayed together. This made them very strong. After awhile a stranger came to the field of the three sisters, a little Mohawk boy. He was as straight as an arrow and as fearless as the eagle that circled the sky above his head. He knew the way of talking to the birds and the small brothers of the earth: the shrew, the chipmunk, and the young foxes. The three sisters, the one who was just able to crawl, the one in the yellow frock, and the one with the flowing hair, were very interested in the little Mohawk boy. They watched him fit his arrow in his bow, saw him carve a bowl with his stone knife, and wondered where he went at night. Late in the summer of the first coming of the Mohawk boy to their field, one of the three sisters disappeared. This was the youngest sister in green, the sister who could only creep. She was scarcely able to stand alone in the field unless she had a stick to which she clung. Her sisters mourned for her until the fall, but she did not return. Once more the Mohawk boy came to the field of the three sisters. He came to gather reeds at the edge of a stream nearby to make arrow shafts. The two sisters who were left watched him and gazed with wonder at the prints of his moccasins in the earth that marked his trail. That night the second of the sisters left, the one who was dressed in yellow and who always wanted to run away. She left no mark of her going, but it may have been that she set her feet in the moccasin tracks of the little Mohawk boy. Now there was just one of the sisters left. Tall and straight, she stood in the field not once bowing her head with sorrow, but it seemed to her she could not live there alone. The days grew shorter and the nights were colder. Her green shawl faded and grew thin and old. Her hair, once long and golden, was tangled

by the wind. Day and night she sighed for her sisters to return to her, but they did not hear her. Her voice when she tried to call to them was low and plaintive like the wind. But one day when it was the season of the harvest, the little Mohawk boy heard the crying of the third sister who had been left to mourn there in the field. He felt sorry for her, and he took her in his arms and carried her to the lodge of his father and mother. Oh, what a surprise awaited her there! Her two lost sisters were there in the lodge of the little Mohawk boy, safe and very glad to see her. They had been curious about the boy, and they had gone home with him to see how and where he lived. They had liked his warm cave so well that they had decided, now that winter was coming, to stay with him. And they were doing all they could to be useful. The little sister in green, now quite grown up, was helping to keep the dinner pot full. The sister in yellow sat on the shelf drying herself, for she planned to fill the dinner pot later. The third sister joined them, ready to grind meal for the Native boy. And the three were never separated again.

*From: <http://blogs.cornell.edu/garden/get-activities/signature-projects/the-three-sistersexploringan-iroquois-garden/a-legend>*

## **The Three Sisters Legend #2**

There once was a family of a mother, father and three sisters. The parents worked hard at providing for the family, but constantly had to beg the daughters for help. They also had to continually stop them from arguing and fighting. The three sisters were different from each other and also unique in their own way. The eldest was tall and slender with long, silky, shiny hair. The youngest was small, but muscular and attractive, and the middle sister was average in height and looks but was beautiful in her giving nature. For whatever reason, although they loved one another as sisters, they would disagree on any little thing and be distracted from doing any work because of these quarrels. The parents tried and tried to get the sisters to help in the garden and help with the chores. When working together they would always fight. When apart they would complain about the others. The work wasn't getting done, and the parents were worried that if this kept up they wouldn't make it through another winter. It was planting time and the work had to be done, but as usual the sisters were too busy fighting. The parents needed help, and it was given to them, but not as they imagined. As the sisters argued in the field they were transformed into three plants. The first a long, tall plant with silk tassel-like hair, the second a broad-leafed plant low to the ground, and the third a

medium-height plant with gentle vines. The plants, of course, were corn, squash, and beans, the Three Sisters.

*From Project I'M READY, Northeastern State University*

### **The Three Sisters Legend #3:**

A woman of medicine who could no longer bear the fighting among her three daughters asked the Creator to help her find a way to get them to stop. That night she had a dream, and in it each sister was a different seed. In her dream, she planted them in one mound in just the way they would have lived at home and told them that in order to grow and thrive, they would need to be different but dependent upon each other. They needed to see that each was special and each had great things to offer on her own and with the others. The next morning while cooking breakfast, she cooked each daughter an egg, but each was different: one hard-boiled, one scrambled, and one over-easy. She told her daughters of her dream and said to them, "You are like these eggs. Each is still an egg but with different textures and flavors. Each of you has a special place in the world and in my heart." The daughters started to cry and hugged each other, because now they would celebrate their differences and love one another more because of them. From that day on, Native people have planted the three crops together—Three Sisters helping and loving each other.

*From <http://www.ncdcr.gov/Portals/7/Collateral/Database/F05.legend.three.sisters.pdf> Legends and Myths: The "Three Sisters" as told by Shelia Wilson from Tar Heel Junior Historian 45:1 (fall 2005)*

### **The Three Sisters Legend #4**

The term Three Sisters emerged from the Iroquois creation myth. It was said that the Earth began when Sky Woman, who lived in the upper world, peered through a hole in the sky and fell through to an endless sea. The animals saw her coming, so they took the soil from the bottom of the sea and spread it onto the back of a giant turtle to provide a safe place for her to land. This Turtle Island is now what we call North America. Sky Woman had become pregnant before she fell. When she landed, she gave birth to a daughter. When the daughter grew into a young woman, she also became pregnant (by the West Wind). She died while giving birth to twin boys. Sky Woman buried her daughter in the new earth of Turtle Island. From her grave grew three sacred plants—corn, beans, and squash. These plants provided food for her grandsons, and later, for all of humanity. These special gifts ensured the survival of the Iroquois people.

*From Project I'M READY, Northeastern State University*

## **The Pilgrims and the Three Sisters**

The Pilgrims who arrived in Plymouth, Massachusetts in the winter 1620 were not experienced farmers and were not familiar with the harsh climate and poor, rocky soil of New England. The seeds they had brought with them – peas, parsnips, and barley – did not grow. Yet by the next fall, the Pilgrims had enough vegetables to hold a three day feast, which became the first Thanksgiving. And they had stored enough food to last another six months.

They did this with the help of one Native American named Tisquantum, who spoke English. The Pilgrims called him Squanto. A well-known story tells how Squanto taught the Pilgrims to plant corn with dead fish buried beneath the seeds to serve as fertilizer. This is not the whole story.

Squanto actually taught the Pilgrims how to plant corn, beans, and squash together, in a Three Sisters Garden, the way the Native Americans planted them. The Three Sisters vegetables grew together very well. The corn stalk supported the bean vines, which climbed up them. The beans supplied the soil with nitrogen, helping the squash plants and especially the corn plants, which need a lot of nitrogen. The large leaves of the squash plants shaded the ground, preventing the moisture from evaporating and pushing out weeds. Corn, beans, and squash are highly nutritious, which was important for the Pilgrims and the Native Americans.

When eaten together, the Three Sisters are a complete and balanced meal, rich in carbohydrates, protein, vitamins, and minerals. Another benefit is all three vegetables can be stored for long periods of time.

How was the Native American Squanto able to speak English and talk to the Pilgrims? That story is not a happy one. About five years earlier, Squanto was kidnapped by one of the sea captains working for John Smith, the same man who had been rescued near the Jamestown Colony by Pocahontas. This captain, Thomas Hunt, tricked Squanto and some other men of his tribe, kidnapped them, and took them to Spain to sell as slaves. But Squanto was rescued by some friars of the Catholic Church. He was then taken to England, where he began to learn English. An English trading company hired Squanto as an interpreter and sent him to America. When he eventually made his way back to his home, he found that his entire tribe had died from disease.

Squanto went to live with another local tribe called the Wampanoag, who lived near Plymouth, where the Pilgrims landed. Squanto served as an interpreter and peace maker between the Wampanoag tribe and the Pilgrims, and he helped the Pilgrims adapt to the new land.

## Three Sisters Stew

### Ingredients:

- 1 tablespoon vegetable oil
- 2 cloves garlic, minced
- 1 medium onion, diced
- 1 medium green pepper, chopped roughly
- 2-3 cups pumpkin or winter squash cubes, fresh or frozen (If fresh, use 1 butternut squash or 2 smaller squash)
- 1 can (14.5 to 16 ounces) diced tomatoes with juice (or about 1 quart fresh)
- 2 cups cooked black beans (if using canned, rinse and drain)
- 2 cups corn kernels, fresh or frozen (2-3 ears of fresh corn)
- 2 teaspoons ground cumin
- 1 teaspoon dried oregano
- 1 teaspoon salt
- 1 teaspoon pepper
- 2 cups vegetable stock (or chicken stock)
- Optional ingredients  $\frac{1}{4}$  cup chopped fresh cilantro
- 1 can (4 ounces) chopped mild green chiles (or 1-2 finely chopped jalapeño peppers)

### Instructions:

Heat the oil in a large pot. Add garlic, onion, green pepper, and squash. Sauté a few minutes over medium heat. Stir in tomatoes, beans, corn, cumin, oregano, salt, pepper, and chiles (if using.) Cook until hot. Add stock and bring to a boil. Reduce to a simmer. Cover and simmer 30 minutes. Taste and adjust seasoning as desired (you can also add extra broth if it is very thick).

Optional: Add a spoonful of cilantro to individual bowls just before serving.

*Adapted from: art of natural living <http://artofnaturalliving.com>*



## WHERE DOES YOUR CANDY COME FROM?

A lesson from the New Jersey Agricultural Society Learning Through Gardening program

### OVERVIEW & PURPOSE

Pair your Valentine celebrations with some real learning by having your students investigate what their candy is made of and where it comes from. Your students no doubt will be surprised to learn that although their chocolate bar looks nothing like the green plant on the windowsill, almost all its ingredients come from plants! Encourage your students to trace the source of sugar to sugar beets in the Midwest and sugar cane in Louisiana, and chocolate to cacao beans in the rainforest. Then plant some sugar beets in your classroom. They can be transplanted right into your garden in the spring.

**GRADES:** This lesson can be modified for grades K-5. Kindergarteners and first graders as a class can track the source of chocolate to cacao beans in the rainforest. Second and third graders can work in small groups to investigate the source of one or more ingredients in a piece of candy. Fourth and fifth graders in small groups can divide the ingredients in a piece of candy and each research the source of one. All students will enjoy sampling the candy at the end of the lesson!

**CAUTION:** This lesson involves the handling – and eating – of various candy products. Carefully check your students' food allergies and do not use a candy that contains a product (such as peanuts) to which a student may be allergic.

### OBJECTIVES

The student will be able to:

- Describe how most of the ingredients in candy come from plants
- Track one or more ingredients in a piece of candy back to the agricultural source
- Observe and describe the life cycle of a sugar beet

### MATERIALS NEEDED

- The Learning Through Gardening PowerPoint presentation “Where Does Your Candy Come From?” <https://youtu.be/00q3CMSWwml>

- Samples of the candy you will investigate for the source of its ingredients. If you are working with kindergarteners or first graders, you might want to limit your investigation to cocoa or cocoa and sugar. For higher grades, you should pick the number of ingredients to investigate based on the age and capabilities of the students. Here is an example of candies and their ingredients that can be researched:
  - Hershey's chocolate bar: chocolate, sugar, soybeans
  - Jellybeans: sugar, corn syrup, pectin (apple)
  - Reese's peanut butter cups: sugar, cocoa butter, peanuts
  - Conversation hearts: sugar, corn starch, corn syrup
  - Junior mints: sugar, chocolate, peppermint oil (mint)
  - Older students may choose to bring in a sample of the candy they want to research and select ingredients to investigate by reading the label.
- Read-aloud books related to candy research:
  - Chocolate, A Sweet History by Sandra Markle
  - From Cacao Bean to Chocolate by Ali Mitgutsch
  - How Monkeys Make Chocolate by Adrian Forsyth
  - The Story of Chocolate by C.J. Polin
  - The Official M&Ms History of Chocolate by Red, Yellow, Green, and Blue
  - Check out: [www.sucrose.com](http://www.sucrose.com) "How Sugar is Made" [www.kids-cooking-activities.com/how-is-chocolate-made](http://www.kids-cooking-activities.com/how-is-chocolate-made)

## ACTIVITY

Hold up a chocolate bar and ask students if they know what it is made of? Ask if they know where those ingredients come from? Tell them that you are going to become candy researchers who will learn the ingredients of your favorite candy and where they come from. Show and discuss the Learning Through Gardening PowerPoint presentation "Where Does My Candy Come From?"

Kindergarten and first grade: Explain the meaning of the word 'ingredient.' Show the students where to find the list of ingredients on the candy wrapper. Read some ingredients the students will recognize – sugar, milk, chocolate, cocoa butter – and write them on the board. Ask students if they know where chocolate comes from. Read one of the books on chocolate production or show a video on YouTube of the process of making chocolate. Show the students some raw cacao beans and ask, do they look like chocolate?

Second through fifth grade: Make sure the students understand the meaning of the word 'ingredient.' Show students where to find the list of ingredients on the candy wrapper. Divide the students into small groups, each with a different type of candy. You can either ask each group to choose one or more ingredients (depending on the students' age and capabilities) or assign ingredients to the groups.

For older students, you may want to choose candy that includes ingredients not covered in the power point such as corn starch, pectin, or cinnamon. Tell students they will research where the ingredients come from and how they are grown. Students can use reference books from the library or the Internet for their research. Students use the

Candy Investigation Worksheet to record the information they find. Once the students have completed their research, have the small groups report their findings to the whole class. Discuss the results and ask if the students were surprised by any of them. Students eat the candy.

### **EVALUATION:**

Completed Candy Investigation Worksheet. Report to class on research findings. Science journal recording of the observations of the sugar beet life cycle.

### **EXTENSION:**

Top off your discussion of the sources of candy ingredients by planting some sugar beets in your classroom. Like all beets, sugar beets are a cool-season vegetable that can be transplanted outside in New Jersey in mid-April and harvested in June. You will want to give your sugar beets a head start by planting them indoors around mid-February to early March because sugar beets are larger than other beets and take longer to grow. Sugar beet seeds are inexpensive and easy to find on Amazon or other Internet sources.

### **HOW TO GROW SUGAR BEETS IN THE CLASSROOM:**

In the classroom, plant sugar beet seeds in 4-6 inch pots filled with potting soil. Plant two or three seeds per pot, about 1 to 1.5 inches deep. When the plants are two inches high, thin the pots to one plant by removing the stem and leaves of the smallest plants. Don't pull out the plants to thin them as it may disturb the roots of the remaining plant. In mid-April when you plant your other cool-season vegetables, gently remove the sugar beet plants from pots and transplant them into your school garden. The plants now should be spaced about 8 inches apart, in rows about 12 inches apart, so the beets underground have plenty of room to grow. The beets should pop up above the ground when they are ready to harvest. You can check to see if your beets are ready to harvest by pulling one with large leaves to see how big they are. Students can record their observations of the sugar beet life cycle indoors and outdoors in their science journals.

### **NEW JERSEY LEARNING STANDARDS:**

Social Studies: 6.15SV1,6.15HE1;6.15GI1B

Name \_\_\_\_\_

## Candy Investigation Worksheet

The candy I researched is \_\_\_\_\_

The ingredient I researched is \_\_\_\_\_

My ingredient is made from  
\_\_\_\_\_

which can be found in \_\_\_\_\_  
(what parts of the world.)

What I learned about how this ingredient is grown and prepared:

- 1.
- 2.
- 3.
- 4.



# WHERE IN THE WORLD DO THESE COOKIES COME FROM?

A lesson from the New Jersey Agricultural Society Learning Through Gardening program

## OVERVIEW & PURPOSE

Grades 3-5

## OBJECTIVES

Students will:

- Identify and label continents on a blank world map
- Identify and label specific countries on a world map
- Understand that many products we use are grown in other countries and imported to the United States.
- Learn that the ingredients of one item: a chocolate chip cookie, can come from many different countries.

## MATERIALS NEEDED

- "Where in the World do those Cookies Come from?" worksheet
- Colored pencils

## INTRODUCTION

To import is to bring products into a country from another country. Our country imports many products including cocoa, cinnamon, vanilla, olive oil, wool, coffee, various fruits, rubber, sugar, tea, machinery, cars and clothing. Products grown in the US during a certain season but not all year are often imported during the offseason. This primarily includes certain fresh fruits and vegetables. Occasionally, an agricultural product such as sugar will be imported to the United States in its raw form, then processed and packaged in America. In 1998, the United States imported \$37 billion of agricultural products.

To export is to sell products to another country. The United States exports or sells to other countries: wheat, soybeans, soy products, beef, pork, and other feed grains. These are just a few of the products we export. We can export these products because they can be grown, raised or produced in the United States, and we grow more than we need. In 1998, \$53.7 billion worth of American agriculture products were exported. The countries we export most to are Japan, Canada, South Korea, Mexico, China, Taiwan, and the Netherlands. Importing provides

the United States with the goods we need and want that are not produced here. Exporting provides other countries with American goods.

Trade and marketing are very important to American agriculture. US farmers grow much of the food that feeds the world. Sales of US commodities to Japan, the European countries, Canada, and Mexico helped to make America the largest exporter of agricultural commodities in the world. Sales of value-added products such as processed or packaged foods to other countries from the US are increasing each year. Frozen vegetables and boxed cereal processed and packaged in the United States, can now be found in supermarkets around the world.

## **ACTIVITY**

Discuss importing and exporting. Give everyone a chocolate chip cookie and a worksheet. Discuss the ingredients needed to make chocolate chips cookies and guide students to realize that with importing, we would not be able to make these delicious cookies.

Guide students in completing the worksheet.

## **EVALUATION:**

Worksheet

## **EXTENSION:**

- Allow students to eat chocolate chip cookies while completing the activity
- Follow recipes and make cookies (students can bring in ingredients)
- Take a survey of your students' favorite cookies. Students can then graph the results.

## **NEW JERSEY LEARNING STANDARDS:**

Social Studies: 6.15SV1,6.15HE1;6.15GI1B

*Adapted from Minnesota Agriculture in the Classroom Ag Mag Volume 10, Issue 2.*

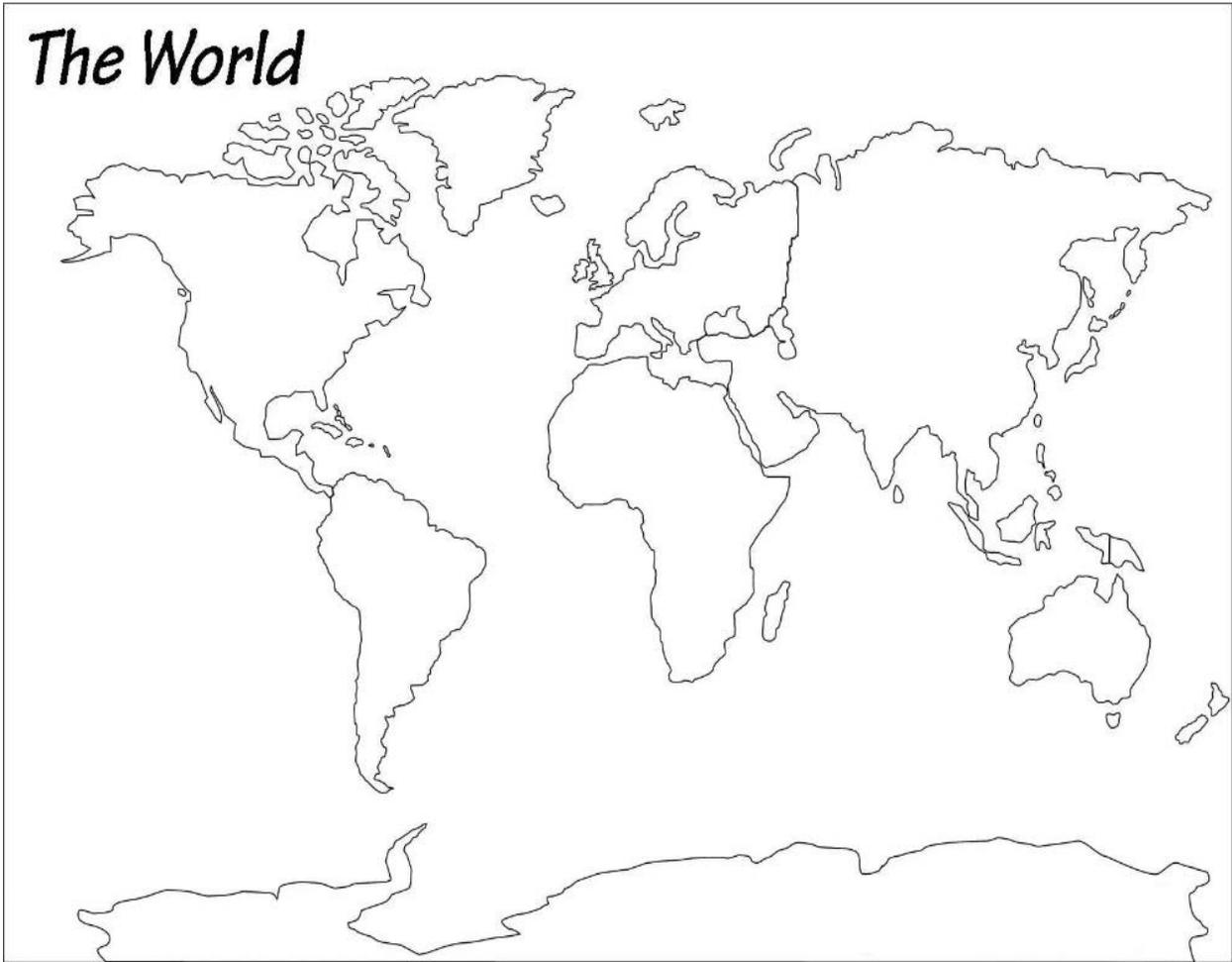
## Where in the World do those Cookies Come From?

When you're hungry for chocolate chip cookies, it's a lucky thing that we can buy and sell food all over the world. That's the only way to get everything you need for the recipe. Hard to believe? Some of the ingredients are only grown in other countries. Here's the scoop on where those ingredients may have come from.

First, label all the continents on the map. Then, use a world map to locate each country named in the clues; Label on the map using the letters as listed below where the country is.

<u>Ingredient</u>	<u>Where?</u>	<u>Label</u>
Cacao (for chocolate chips)	Ivory Coast	CH
Vanilla	Mexico	V
Nuts	Greece	N
Butter	US	B
Cinnamon	India	C
Eggs	US	E
Flour	US	F

# *The World*





## WHY PEOPLE NEED PLANTS

A lesson from the New Jersey Agricultural Society Learning Through Gardening program

### OVERVIEW & PURPOSE

This lesson teaches students how important plants are to people. We use plants for food, shelter, clothing, fuel, medicine, and many other things. While learning how plants live and grow, it's important for students to understand how much we get from plants.

GRADES: K-3, can be modified for older students

### OBJECTIVES

The student will be able to:

- Name many of the things people depend upon plants for – including food, shelter, and clothing,

### MATERIALS NEEDED

- Examples of things made from plants, which can include: cotton, clothing, flour, wooden blocks, sugar, maple syrup, fruit, paper, vegetables, biodegradable plastic fork or spoon, balloon filled with air, perfume, chocolate

### ACTIVITY

Organize students into small groups. Without explaining the purpose of the lesson, give each group the same number of some of the plant products listed in the Materials section. (Tell the students to ignore the balloon and focus on the air inside.) It is not necessary for each group to have the same items. Ask the groups to discuss what is the same about all the items and where they came from. If necessary, guide the groups toward the conclusion that all the items came from plants.

Make a We Use Plants For chart on the board or large paper, with categories of shelter, food, clothing, and other. Bring the whole class together and ask students to complete the chart. Students can either write their answers or draw and color a picture of the item and add it to the chart. Discuss how everything we eat and many things we use come directly or indirectly from plants. Encourage your students to brainstorm other things that come from plants.

## **EVALUATION:**

Students will list several things people use that come from plants

## **EXTENSION:**

Have students write letters to plants thanking them for providing all the resources that they do. Make a collage of things that come from plants.

## **NEW JERSEY LEARNING STANDARDS**

Social Studies: K-2:6.1.2.EconET.1, 6.1.2.EconEM.1, 6.1.2.EconEM.2 3:6.1.5.EconEM.2