

Pizza Garden

Bring the importance of nutrition & eating locally grown food to life with a subject all students love!

Gardening Connection:

Grow fruits, vegetables and herbs in the garden, while learning about math and nutrition, then use the produce to make pizza!

Time Required:

5 – 50 minute class periods + garden growth time

Grade Level:
Adaptations for Grades K-12

EDUCATOR NOTE:

Teachers with limited space can grow plants in a container. See resources section for container gardening ideas if you are short on space.

To grow the pizza ingredients suggested in this activity, the best time to plant is early-mid May for an August harvest and pizza party.

OBJECTIVES

Students will be able to:

1. Understand the care for plants typically used as pizza ingredients
2. Appreciate locally grown food and how it is a vital component of a healthy diet
3. Apply grade level math concepts into the real-world application of planting a garden

BACKGROUND

Pizza foundations came from the Greeks who baked large, round flat breads and covered them with oil and herbs. In the 18th century, Italians called the flat breads pizza. In the late 1800's, Queen Margherita of Italy was served a pizza representing the colors of the Italian flag: Red (tomatoes), White (Mozarella Cheese) and Green (Basil). Pizza did spread to America, France, England and Spain, but did not become a favorite until after WWII when American and European soldiers returned and wanted to enjoy the foods they had during war.

Basic planting and garden knowledge are the only necessities for successfully planting a school garden educating students about pizza, vegetables, herbs, math and science.

MATERIALS

- Handouts of pizza ingredient resource <http://www.kfb.org/ageducation/agedimages/Did%20You%20Know%20Pizza.pdf>
- 9 vials or film canisters
- 9 pizza sauce herbs (dried or fresh) – Basil, Oregano, Thyme, Parsley, Marjoram, Rosemary, Fennel, Bay Leaf, Cumin
- Herb flash cards
- Pizza ingredient plants – tomatoes, peppers, herbs, onions, etc.
- Garden tools
- Kitchen access or food prep/cooking tools

Subjects

Agriculture
Health/Nutrition
Math

Vocabulary

Herb – Any plant with leaves, seeds, or flowers used for flavoring, food, medicine, or perfume
Area
Volume
Perimeter

Project Connections

PLT: Pass the Plants, Please

PROCEDURES

Engage

Turn to your neighbor and tell him or her about your favorite food. How many of you had pizza on your list? Now share your favorite pizza toppings. Did you know that every single pizza topping comes from agriculture? Did you know today Americans eat 22.5 pounds of pizza a year! As a nation that means we eat 90 acres of pizza per day. An acre is about the size of a football field so that means as a nation we eat 90 football fields of pizza each day! Only hamburgers sell more often than pizza. Today we are going to start looking at where some of our favorite toppings come from as we grow our very own pizzas!

Pizza Ingredients from Kansas

As foods go, most of us can agree pizza is awesome because we can put so many different ingredients on it to make everybody happy. We can grow several of those ingredients ourselves in our school garden. Which favorite toppings will we not be able to grow in our garden? Favorite toppings like cheese, pepperoni and sausage need to be processed in facilities different than the school garden. Let's take a look at the history of those ingredients and how they get to our pizza.

Print off the resource at

<http://www.kfb.org/ageducation/agedimages/Did%20You%20Know%20Pizza.pdf> and cut each ingredient paragraph out separately and tape in various locations around the classroom.

When you hear "Find the Facts," Stand up, Work as a class and find the seven slips of paper taped around the classroom (or hidden in an outdoor learning environment). Try to form even numbered groups (depending on class size) at each slip of paper. What questions do you have? Find the Facts!

Now that you have your slip of paper, in your group, have one student read out loud about your ingredient and circle what your group believes to be the 20 most important words. Rewrite your paragraph in your own words.

Set the students up in a Kagan Cooperative Learning Strategy – The Wagon Wheel. Half of the students will create an inner circle; the other half will face the inner circle forming an outer circle. The inner circle will have 20 seconds to share their new paragraphs. Then the outer circle students will share their paragraph with the partner facing them. The outer circle will rotate clockwise with the inner circle staying in place. The process will repeat around the circle and all students will learn about the pizza ingredients grown in Kansas.

Pizza Herbs

Now that we have a good handle on the ingredients we can't grow in our garden, let's explore some of the pizza toppings we might be able to grow ourselves. When you listed your favorite pizza toppings earlier, chances are an herb didn't top your list. Our pizza sauces would be very bland without this essential ingredient. Herbs became very popular in the US after WWII as American soldiers returned with a love for European and Asian flavors. Fresh herbs add flavor and aroma to your pizza dish.

Organize the pizza herbs (see materials section) into vials or film canisters, and print off herb flash cards (*cut flash cards on the dotted line, fold in half on solid line*). Explain to students that the herbs in these vials can be used to spice up the tomato base of your pizza sauce. The herbs in the vials correspond to the herbs pictured on the 9 flash cards. Working as a class, and using some trial and error – use your senses of sight and smell to match the plant with its aroma.

Explore

A pizza garden can be constructed based on amount of space allowed in your garden. See the Kansas School Gardens Online Curriculum <http://www.kansasgreenschools.org/welcome-kansas-school-gardens-curriculum> for more information about planning and planting a school garden.

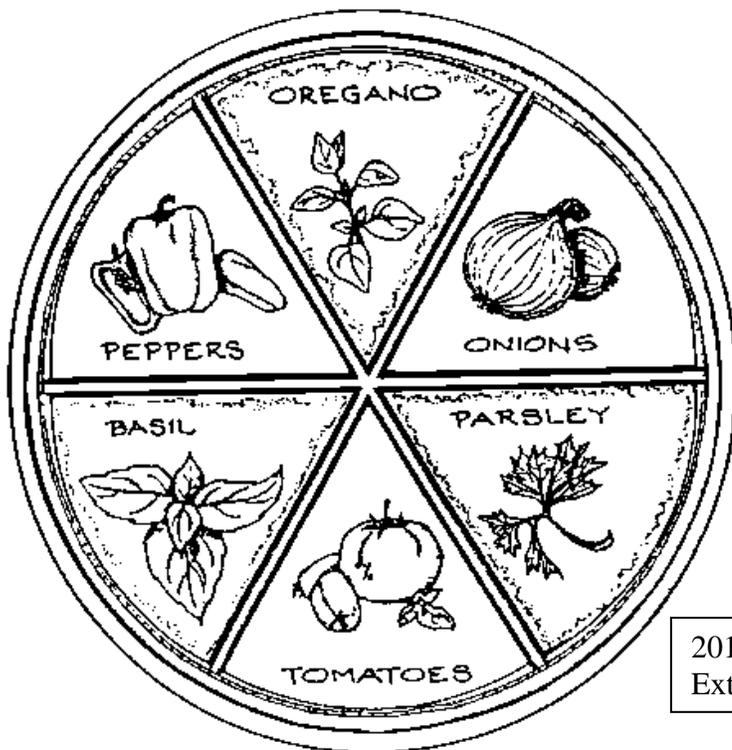
Tips to create a pizza-themed garden:

Small Scale Pizza Garden (see resources section for tips on container gardening)

- Use a large container or several smaller containers
- Plant dwarf varieties of tomato, pepper, and herbs together in a container

Medium-Large Size Pizza garden

- Choose an area in full sun at least 6-8 hours of the day
- Create a circle 48-96 inches in diameter (again depending on space available).
- Raised beds are an option using metal or plastic edging
- Borders and wedges can be defined using materials that best fit your needs; bricks, pavers, wood boards
- Put a stake upright in the proposed middle of circle. Attach a string the length of radius. Keeping the string tight, walk around in a circle to create the border. Divide the circle into six equal wedges.
- Allow the tomato its own wedge and provide support
- 3-4 plants of other pizza ingredients (peppers, basil, parsley, oregano, onions, etc) can be placed in the remaining wedges.



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Streamlined Pizza Garden

- If space is limited, try growing just one or a few of these ingredients
- Supplement locally purchased produce for ingredients not grown at the school

Planning and creating a pizza garden provides an excellent opportunity to apply math concepts learned in the classroom.

Ideas to incorporate math concepts into garden planning with students:

Area (expressed in square feet or square yards) – Determine how much fertilizer, seed, or sod, how many plants to buy to fill a bed at the recommended plant spacing.

Rectangle/Square Areas = Length x Width

Triangular Area = Base x Height/2

Circular = Measure from center of circle to edge (radius) x itself x 3.14 (pi)

Irregular Shape = Divide into smaller geometric shapes, calculate the area of each, and add them together

Volume (expressed in cubic feet or cubic yards) – Determine soil amendments, mulch, compost, soil, potting mix, gravel. Measure the depth you need to fill and multiply this times the area

Perimeter Determine fencing or edging

Circumference of a circle = Diameter x 3.14

Explain

Analyze Garden Progress!

Keep a calendar of garden progress. On a classroom calendar, record garden events. Chart when the tomato plant sets its first flower till how long it takes to ripen on the vine. Encourage students to write hypotheses as to how long they believe it will take for garden milestones to be reached. The calendar can be used in future years to help ensure all produce ripens at roughly the same time. Math can be incorporated by creating different charts of progress.

Vegetable Nutrition!

- Using the USDA's <http://www.choosemyplate.gov/> have students check out the resource links, especially "Why is it important to eat vegetables."
- Check out <http://www.fruitsandveggiesmorematters.org/> for a fruits and vegetables nutrition database. The website provides information on how to select, store, nutrition benefits and a facts panel on most of the produce you will grow in the pizza garden.
- A Kansas Ag in the Classroom resource <http://www.ksagclassroom.org/classroom/lesson/download/2010%20Ag%20Wise/Vegetables%20Fact%20Sheet.pdf>
- Create markers for each plant being grown in the pizza garden. Cut out 6" 1x4's and nail to a stake. Allow students to decorate and paint the front with the name of the plants growing in each wedge. On the back students will record the nutritional benefit facts learned from the above websites with a sharpie. Example: Front – Bell Peppers Back – Fat Free, Low Sodium, High in Vitamin C, High in Anti-oxidants

Elaborate

Pizza Party!

Once produce is ready to be harvested, plan a pizza party for the students. Encourage them to try new vegetables and herbs that they helped grow! See resources section for classroom management and safety tips for classroom cooking.

Pizza Recipes and Tips for Cooking Pizza in the Classroom:

Tomato Sauce Base:

1. Bring a 2 qt pot of water to a boil. Score an x in the skin of 5 lbs of tomatoes. Boil for 6 minutes.
2. Place blanched tomatoes in cold water to cool. Once cooled – easily remove the skin from tomatoes.
3. Cut tomatoes into small chunks. Drizzle olive oil in a skillet and heat. Simmer tomatoes and 3 cloves of crushed garlic, 1 ½ t. of salt and 1 T. of sugar for 15 minutes in a sauce pan.

Elementary – Prepare tomato sauce base prior to class. Pre-chop remaining herbs and pizza toppings.

- Use saltine crackers as a crust for mini-pizzas
- Fill dixie cups with tomato sauce base – 1 per student.
- Fill bowls with crushed parsley, oregano, basil and thyme. Instruct students to sprinkle a small amount of herbs into their cups.
- Students will pour sauce on crackers and top with additional ingredients (pepperoni, sliced eggplant, peppers, onions, mozzarella cheese)

Middle Level – Provide students the pizza sauce recipe – Math Moment: Students will convert the recipe that will make 20 6-inch personal pizzas to the amounts needed to make 1 individual 6-inch personal pizza.

- Provide store-bought dough or pre-baked crust or have students make their own.
- Based on classroom supplies, pizza can be placed in oven, microwave, griddle, skillet on a hot plate or eaten cold if dough is pre-baked.

High School – Allow students to create their own recipe for pizza sauce by providing the raw ingredients: tomatoes, peppers, garlic, onion, herbs, salt, and sugar.

- Students should record amounts and steps on a recipe card.
- Stations can be set up around the classroom with skillets on hot plates.
- Students can then use their sauce to create the rest of the pizza with other garden grown toppings.

Evaluate

Have students choose a pizza ingredient and develop a poster presentation to display in a hallway gallery, lunchroom, or area near the school garden. The poster presentation may include:

- A photograph or drawing of the ingredient
- The origin or history of the ingredient
- How and why the ingredient is used to flavor pizza and other dishes
- Growing conditions necessary to produce the ingredient
- A story or notes about growing the ingredient in the school garden

Extension Ideas

- Domino's Behind the Pizza – An interactive website with videos and games showcasing how a pizza chain grows, harvests and processes favorite pizza ingredients. A map is used to show where ingredients such as pepperoni, mozzarella and spinach are farmed and produced in the United States. <http://more.dominos.com/behindthepizza/#/home>
- Pizza Bingo – Create 3x3 square bingo fraction cards with pictures of pizza cut into different wedges with pieces missing. Call out fractions like $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{8}{8}$, etc.

Related Readings:

Celebrate Wheat by Dan Yunk – Published by Kansas Farm Bureau (to order: <http://www.kfb.org/ageducation/purchase.htm>)

Grow Your Own Pizza: Gardening Plans and Recipes for Kids by Jeff McClung

Resources:

Flash Card information about herbs adapted from

<http://www.pallensmith.com/articles/grow-and-go-together-pizza-sauce-herbs>

Videos and how-to articles

<http://www.hgtv.com/video/how-to-grow-a-pizza-garden-video/index.html>

Pizza Garden planting tips

<http://lancaster.unl.edu/hort/youth/pizzagdn.shtml>

Container gardening

<http://www.ksre.ksu.edu/library/hort2/ep31.pdf>

Growing vegetables in pots

<http://www.ksre.ksu.edu/library/hort2/mf2873.pdf>

Tips for cooking in the classroom

<http://decal.ga.gov/documents/attachments/CookingClassroom.pdf>

www.californiahealthykids.org/Pages/articles/cooking.ppt

Basil

A tender annual, basil is one of the easiest herbs to grow. Plant basil after the soil has warmed in late spring. Give the plants full sun, plenty of water and fertilize every 2 or 3 weeks. Harvest regularly and pinch off flower spikes so they don't produce seed and you should be able to harvest right up to the first frost.



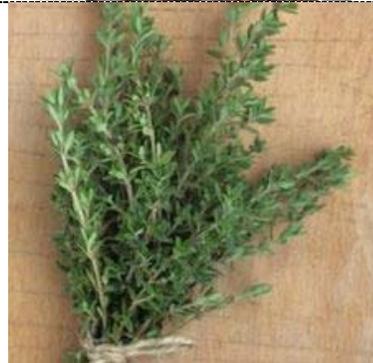
Oregano

Plant oregano where it can spill over a wall, into a path or over the edge of a container. Give full sun; in the South it needs afternoon shade, very well-drained soil and a moderate amount of fertilizer. The flavor is strongest just before it blooms, but you can snip the leaves at anytime.



Thyme

Thyme prefers full sun and well-drained soil and grows well as a ground cover or in a rock garden. Fertilize several times during the growing season. You can begin harvesting the first year by snipping sparingly until the plants have gained some size.



Parsley

Also known as Italian parsley, this parsley has flat, serrated leaves and a slightly spicier taste than curled parsley. Grow in full sun or part shade in moist, well-drained soil. Harvest the mature outer leaves regularly to increase production. Use in containers or as an edging for beds and borders.



Marjoram

Sweet marjoram is a low growing plant that makes a nice ground cover or edging. Plant it after the danger of frost is past in full sun to part shade in well-drained soil. Harvest leaves as needed. Marjoram keeps its full flavor after it is dried.



Rosemary

A native of the Mediterranean, it prefers a warm, sunny and dry environment. It is not cold hardy throughout the country; most varieties will not survive below 15 to 20 degrees F. Cut rosemary stems at any time. The blooms are edible too.



Fennel

To grow fennel you just need full sun and soil that is loose, rich and well drained. Every part is edible from seed to leaf to bulb like base. Not only does it look great growing in the garden; it's one of the best plants you can have for supporting beneficial insects such as ladybugs, lace wings, paper wasps as well as many butterfly larvae.



Bay Leaf

It prefers rich, well-drained soil that has a sunny exposure. Plant your tree away from other plantings. Once it gets started, it will need room to spread out. This isn't a shrub. Because it's considered an herb, it's easy to underestimate bay's growth potential. This is a tree that can last many decades, so give its location some serious thought. Because it likes its soil relatively moist and doesn't like to dry out, consider mulching, and don't forget to water it regularly while it's young.



Cumin

Cumin flowers in the middle of summer with white or pink flowers; its seeds should be harvested for use in the kitchen. As soon as the pods of cumin go brown they should be harvested. The pods should be dried, then rubbed; this will release the cumin seeds from the pods, which can then be used directly in culinary dishes or stored in an air tight container for future use.

