



EXPLORING FOR PLANTS WE USE PRE-and POST - VISIT ACTIVITIES

Your class will soon be attending an Exploring for Plants We Use program at Brooklyn Botanic Garden. In this program we will introduce the students to a variety of “useful” plants including plants we eat, plants with medicinal value, and plants from which we gather fibers to make cloth and paper. We have included activities here that could be done before or after your class visit to enhance your students’ exploration of *ethnobotany*: the scientific and anthropological study of how human cultures cultivate, use and value the plants in their environments.

The following questions can motivate conversations with your students to prepare them for learning about plants we eat and use for other purposes. You don’t need to provide exact answers to all of the questions; they are meant to stimulate interest in, and an awareness of, the topic. For example, you may play games with your students relating to the questions, or your students may wish to make drawings of some of their own answers.

Inquiry Starters:

- *What is your favorite food? Why? Did you ever wonder where this food comes from?*

Trace a few of your students’ favorite foods back to their origins, having the students provide the answers. For example: We get pizza from a pizzeria. Pizza chefs make the pizza from dough, tomato sauce and cheese. The dough is made from wheat, a grain that is grown on a farm, the tomato sauce is made of tomatoes and herbs and spices that are grown on a farm as well, and the cheese is made by processing the milk we get from dairy cows. What do cows eat? Grass- another plant! What about other toppings we might eat on pizza? Where do they come from?

- *What if you were living in New York City 250 years ago? There are no grocery stores near you. You have to grow all of your own food. What plants would you grow? Why?*
- *Imagine what the world would look like if there were no plants. What colors would the earth be? Why would it be those colors?*
- *What things do plants need in order to live and grow?*
- *Do people need plants? What other things besides food do plants provide for us?*

PRE-VISIT (or POST-VISIT) ACTIVITIES (*Grades K - 2*) EXPLORATIONS AND INVESTIGATIONS

❖ Dr. George Washington Carver: Botanist

Objectives:

1. To introduce or enhance student's acquaintance with one of the great botanists of modern times, Dr. George Washington Carver
2. To familiarize students with the work of plant scientists and guide them to identifying themselves as botanists

Materials:

Biographies of Dr. Carver (See suggested books below)

Chart paper and markers to record students' responses to discussion

Read one or more of the biographies written about Dr. Carver aloud to your class. Start a discussion of Dr. Carver's life and work and record students' responses

- *Dr. Carver became curious about plants when he was your age. What are you curious about?*
- *George actually was a scientist long before he went to college. What did George do when he was your age that a scientist does? (Make observations, ask questions, try to find answers, study what other people know about the natural world – read books)*
- *Are you scientists? Yes! What do you all do that scientists do?*
- *Dr. Carver made a great discovery about peanuts. What was that discovery? How did it help farmers grow their crops in a better way?*
- *Most people did not eat peanuts when Dr. Carver made his famous discovery but he wanted to encourage farmers to grow peanuts. What did this scientist have to do to encourage farmers to grow peanuts? (He had to invent ways for peanuts to be used – over 100 ways! – and teach people about them.)*

George Washington Carver: The Peanut Wizard by Laura Driscoll
New York: Grosset and Dunlap, 2003

A Picture Book of George Washington Carver by David A. Adler
New York: Holiday House, 1999

A Pocketful of Goobers: A Story About George Washington Carver
by Barbara Mitchell
Minneapolis, Minnesota: Carolrhoda Books, Incorporated, 1986

A Weed is a Flower: The Life of George Washington Carver by Alike
Englewood Cliffs, New Jersey: Prentice-Hall, Incorporated, 1965

❖ What Seeds Can We Find in the Supermarket?

Objectives:

1. To guide students to the understanding that fruits contain seeds with a focus on edible fruits
2. To discover characteristics that seeds and fruits have in common and characteristics that distinguish them from one another
3. To lead students to the understanding that plants produce fruits that are edible so that people and other animals will eat them and thus disperse their seeds!

Materials: Various fruits and vegetables from the supermarket

Pie plates
Labels
Markers or crayons
Paper towels
Plastic knives

Visit the fruit and vegetable section of a supermarket. Ask the children to suggest what things have seeds in them. Their list *might* include:

Peaches	Oranges	Peppers
Cherries	Grapefruit	String beans
Pears	Peas	Pumpkins
Grapes	Cucumbers	Lemons
Apples	Tomatoes	Avocados
Mangoes	Coconut	Papaya
Banana	Guava	Genipe
Starfruit	Kiwi	Tamarind
Prickly Pear – Cactus Pear	Cherimoya	Loquat
Cantaloupe	Winter Melon	Persimmon

If possible, take back a sample of the things suggested. If children suggest foods such as beet or radish or potato **do** include them in your purchase so you can all discover together back in the classroom which foods in fact hold seeds.

DO ALL FRUITS HAVE SEEDS?

HOW ARE SEEDS ARRANGED IN DIFFERENT FRUITS?

Upon returning to the classroom, children may cut or break open the various foods to look for the seeds. Children will discover that some vegetables such as tomatoes, cucumbers, and green peppers contain seeds, and are therefore fruits. Carrots and radishes, however, are not fruits, as they will realize.

For such fruits as peaches, cherries, plums, and apricots, it may be necessary to introduce the use of the word “seed” instead of or equivalent to “pit”.

Ask the children to describe the way in which the seeds are placed in the fruit. They may note that some seeds are scattered, clustered, alone, or arranged in

rows. Ask the children to describe the “container” itself. They may note such characteristics of the fruit as color, size, shape, odor, taste, and texture.

Remove the seeds from opened fruits; wash them off and blot them dry. Sort them into aluminum pie plates. A stick with a label may be attached to each plate.

- *What did you purchase that you thought might have seeds inside but did not?*
- *If those items are not fruits, what parts of their plants are they – could they be roots or leaves or stems?*

HOW MANY SEEDS ARE THERE IN EACH KIND OF FRUIT?

Ask the children to select a fruit which has only *one* seed in it. Then ask them which have a *few* seeds in them. Ask the children which fruits have *many* seeds in them (watermelon, pumpkin, green pepper). Ask students to estimate the number of seeds that are inside fruits that have quantities of seeds. Record the estimated numbers of seeds inside on a chart next to the name of the fruit that contains them. Now have children actually count the number of seeds each fruit contained. *How close are the actual counts to the estimates?*

HOW CAN SEEDS BE CLASSIFIED?

Have students identify properties/characteristics of the seeds that can be used to categorize them. Students might suggest color, shape, texture, size as criteria for their classification system.

DO YOU THINK THESE SEEDS WILL GROW?

Students should plant 3 – 4 seeds of each type in containers with drainage: flower pots or recycled plastic or juice containers that have many holes punched in the bottoms for good drainage. Use a soilless potting mix and plant medium sized seeds $\frac{1}{4}$ - $\frac{1}{2}$ inch below the soil surface, smaller seeds less than $\frac{1}{4}$ inch below the surface. Make a label for each pot – use popsicle sticks or write on masking tape attached to pots. Write the name of the fruit the seeds came from and the date the seeds were planted.

❖ “Our Favorite Plants to Eat” Cookbook

There are about 30,000 plants that are known to be edible by people, but only about a hundred are actually grown and eaten on a regular basis. Out of the hundred plants that are commonly eaten, people in most parts of the world usually eat only about 30. Why? The main reason is that people usually eat plants that grow easily where they live. In the United States, modern transportation and refrigerated storage make it possible to have a wide variety of fresh produce available in big supermarkets all year ‘round. However, local customs and cultural traditions still have a huge influence on what people eat

and in some parts of our world, people only have access to locally grown/raised foods.

How many plants did we eat this week? Did we eat more stems than leaves?

Ask your students to keep a list of all the different plants they ate in the last few days. Don't forget to count the "hidden" plants like the grains in cereal and bagels. They should continue to identify which part(s) of the plant they ate. Have them compare their lists with one another. Challenge them to try and eat twice as many different plants the following week, or twice as many leaves or stems!

Our Favorite Plants to Eat – Make a Cookbook

Talking about food always makes people hungry and everyone likes to eat!

- ☼ Have students talk about their favorite foods to eat.
- ☼ *What are some special foods their families enjoy that are unique to cultural traditions and/or native countries?*
- ☼ Collect a family's favorite recipe from each child. Children can interview their families to record the ingredients and directions.
- ☼ Design a recipe page "template" for children to use so recipes have a uniform format though each page can be given an individual child's touch with their illustrations or even photos
- ☼ Special note should be made of all of the ingredients used that come from *plants*. There are many creative ways to do this – highlighting or underlining the plant ingredients or writing them in green!
- ☼ Celebrate with a family pot-luck! Invite families to bring their favorite dishes to a classroom open house celebration of the plants we eat!

Read about the favorite foods of children from other parts of the world in

Children Just Like Me by Barnabas and Anabel Kindersley
New York: DK Publishing and UNICEF, 1995

A Life Like Mine: How Children Live Around the World Edited by Amanda Rayner
New York: DK Publishing and UNICEF, 2002

❖ Taste Test

Objectives:

1. To guide students to the understanding that some plants have edible parts
2. To engage children's use of their senses of taste and smell in making observations of edible plant parts and explore the relationship between those 2 senses in experiencing flavors
3. To lead students to the understanding that people may only eat particular parts of a plant, for example, the roots, though a plant has many other parts that enable it to live and grow

Materials: Various fruits and vegetables

Cutting boards

Plastic knives

Plates

Soft scarf or cloth for a blindfold

Prepare a sample plate of a variety of bite-sized snacks, with anything from green peppers and tomatoes to mangoes and lettuce. Have the students take turns tasting them while wearing a blindfold and holding their noses so they can neither see nor smell what they are eating. Let them try and figure out what foods they are actually tasting. You may want to keep a chart of their guesses to see who can identify the most fruits and vegetables by taste alone.

- *Which foods are the easiest to identify? Which ones are the most difficult?*
- *Did other senses besides taste help to identify the food?*
- *What kinds of textures could the students feel with their tongues?*
- *How is the texture of celery different from that of a carrot?*
- *Why do we eat carrot roots but not carrot leaves? Rabbits might love to eat the carrot leaves, though!*

Read More About Edible Plants

Growing Vegetable Soup by Lois Ehlert

San Diego: Voyager Books/Harcourt Brace and Company, 1987

This colorful, collage-style book illustrates vegetable and fruit structures accurately and talks about the parts we eat while teaching us how to plant and nurture their growth in the garden.

Tops and Bottoms by Janet Stevens

San Diego: Harcourt Brace and Company, 1995

Do we eat the tops or the bottoms? Clever Hare knows his basic botany and is able to trick Bear out of the tasty parts of his crops until Bear learns some botany, too!

Pick, Pull, Snap! Where Once A Flower Bloomed by Lola M. Schaefer
New York: Greenwillow Books/HarperCollins Publishers, 2003
A variety of plants we eat are illustrated in beautiful detail. This book is useful as a scientific reference but also can be read as a picture book illustrating edible plants growing in a garden and the children who are caring for them.

Vegetables in the Garden: A Scholastic First Discovery Book by Pascale de Bourgoing and Gallimard Jeunesse
New York: Cartwheel Books/Scholastic Incorporated, 1994
This book is an excellent scientific reference for this topic for the early childhood classroom. Explains why tomatoes are fruits and not vegetables and enables young scientists to see both outside and inside the plants we eat. Explores the "inside/outside" of fruits and vegetables and how carrots can look like round circles or long sticks.

Visit the Web

Plant Parts and Plant Parts Game: Biology of Plants Missouri Botanic Garden

<http://www.mbgnet.net/bioplants/parts.html>

What parts of plants do we eat? See if you can identify the edible parts of common food plants by playing this game.

The Edible Schoolyard: Garden Lessons and Kitchen Lessons Martin Luther King, Jr. Middle School, Berkeley, California

<http://www.edibleschoolyard.org>

Great gardening and cooking lessons from one of the model school garden programs in the United States.

Garden-Based Learning: Lesson Plans and Activities

<http://www.hort.cornell.edu/gbl/pubs/index.html>

Resource booklets support teaching and learning about apples, potatoes, rice, the Three Sister's Garden (Native American tradition), and peanuts through science, horticulture, math, language and visual arts areas

Kids Growing Food

<http://cerp.cornell.edu>

Administered by New York Agriculture in the Classroom at Cornell University, Kids Growing Food provides mini-grants, conferences, curriculum and teacher training to help maintain a school garden for hands-on learning.

National Gardening Association – Kids Gardening

www.kidsgardening.org

Lesson plans to support classroom and outdoor garden-based learning along with expert advice on how to start and maintain edible, herbal, and ornamental plants of all kinds indoors and outdoors.

PRE-VISIT (or POST-VISIT) ACTIVITIES (*Grades 3 – 8*)

Ethnobotany: How People Use Plants

During the Exploring for Plants We Use program at BBG your students do the work of ethnobotanists; they make connections between plants and the uses and useful things people have found for them or made from them.



Meet an Ethnobotanist: Dr. Mark Plotkin: Dr. Mark Plotkin, a botanist from Harvard University, traveled to the Amazon Rainforest with the desire to discover plants that could be used for medicine. He soon discovered that before he could locate these valuable plants he had to first gain the trust of the native, indigenous people of the Amazon lands. As his acquaintance with the Shamen, the men who had the knowledge of plants and how to use them to heal, grew, Dr. Plotkin realized that not only was the rainforest endangered, the understanding of its rich resources was endangered as well. The elder Shamen by tradition would only teach their sons about the healing plants. But their sons no longer wanted to stay on the tribal lands in the Amazon: they wanted to live and work in cities. Dr. Plotkin realized that if the young men left, the knowledge of their fathers, grandfathers, and generations of men before them would die in one generation. He set up a program, “The Shaman’s Apprentice Program”, to keep the young men in the rainforest and the rich understanding of the plants in the tribal lands.

Learn More About Dr. Plotkin and the Shaman’s Apprentice Program

- The Amazon Conservation Team: an organization that is carrying on Dr. Plotkin’s work with indigenous cultures and medicinal knowledge. Go to <http://www.amazonteam.org/>
- Mark Plotkin: One of “35 Who Made a Difference”
<http://www.smithsonianmag.com/science-nature/plotkin.html>
- Lynne Cherry, author of *The Great Kapok Tree*, wrote a book for youth about Dr. Mark Plotkin’s work:
The Shaman’s Apprentice: A Tale of the Amazon Rain Forest, by Lynne Cherry and Mark J. Plotkin, San Diego: Harcourt, Brace and Company, 1998

Where Does Food Come From?

Ask your students this question. Chart their responses: *Can anyone trace the origins of their breakfast or lunch back to the farms and ranches where their food was raised?*

Here are some resources for guiding students' understanding about the path of the foods we eat from "farm to table":



Visit Your Local Greenmarket: The Council on the Environment for New York City operates farmer's markets in all 5 boroughs. *What produce is for sale in October? In December and January? In April? In June? Why do the fresh fruits and vegetables differ from season to season? What are farmers selling that was made from fresh produce but is now preserved (pickles, cider, jams and jellies, wine)?* Free tours of the Greenmarket in Union Square in Manhattan are offered. Visit <http://www.grownyc.org/greenmarket/education> to learn more about educational resources in the market.



Connect to Local Farmers: Many of the farmers that sell their produce, fresh eggs and dairy products, fresh seafood, wool and meat have websites that describe their farms and how they operate. Visit their page on the Greenmarket website at

<http://www.grownyc.org/greenmarket/ourfarmers>



Cycles of Life on the Farm: New York State Agriculture in the Classroom has a series of lesson plans to guide student learning about everything from compost to cows. Go to their lesson plan page at <http://www.nyaged.org/aitc/resources/lesson.htm>



Living Off the Land in NYC:

What did the people who lived in the Greater New York City area eat



In pre-colonial times?



In colonial times?



At the turn of the 19th into the 20th century?



Explore traditional means of growing, preparing, and enjoying food here in the U.S. and in other countries with **Slow Food USA** whose mission is to promote the food traditions that are part of our country's cultural identity. Visit their website at www.slowfoodusa.org



Visit historic houses and farms in New York City. In Brooklyn, *Lefferts Historic House* interprets the lives of Native Americans, Africans, and Europeans in early colonial times:(718)789-2822; *Weeksville*, Brooklyn is a restored Free Black community at 1700 Bergen Street where the homes and gardens have been restored as they were in the 19th Century; *Pieter Claesen Wyckoff House Museum* in East Flatbush, Brooklyn has a working farm year 'round:(718)629-5400; Visit the *Queens County Farm Museum* in Floral Park:(718)347-FARM; Staten Island's *Historic Richmond Town* interprets community life in 17th and 18th Century New

York:(718)351-1611; Manhattan had farms, too, back in the day, a sample of which can be visited at the Dyckman Farmhouse Museum in Washington Heights: (212)304-9422; Van Cortlandt House Museum is the oldest house in the Bronx and stands on what was once the plantation of a Dutch family that settled there in the late 17th Century:(718)543-3344

🌱 **Native Americans** who lived in the Greater New York area obtained food by hunting, gathering, fishing, shellfishing, and farming. Among the peoples who raised food crops in our region were those who grew “The Three Sisters” crops. Two excellent curriculum resources for teaching and learning about this Iroquois practice are:

1. The Three Sisters: Exploring An Iroquois Garden, Marcia Eames-Sheavly, New York: Cornell University, 1993:
<http://blogs.cornell.edu/garden/files/2009/04/three-sisters-exploring-an-iroquois-garden-1.pdf>
2. In The Three Sisters Garden: Native American Stories and Seasonal Activities for the Curious Child, JoAnne Dennee, Jack Peduzzi and Julia Hand, Montpelier, Vermont: Common Roots Press/Food Works, 1995

Native American Heritage Program: Lenape Culture

<http://www.lenapeprograms.info/Food/food&recipes.htm>

Plants That Heal Us

During the program at BBG, students observe and learn about several plants valued for their medicinal properties which may include peppermint, garlic, and aloe.



Aloe vera

Aloe vera is used to treat skin and hair conditions as well as digestive complaints.

Here are some guiding questions to support student research on *Aloe vera*:

- *Aloe is native to Africa. Where is the plant grown in the world today?*
- *How did Aloe travel from Africa to these other places around the globe and who planted it in those places?*
- *What do people value from the Aloe plant?*
- *Why do plants like this one have chemicals in them that can be used to heal people?*
- *How do you think people first discovered the healing qualities of Aloe?*
- *What other plants do you know of that are valued for healing, for medicinal use?*

Resources for Learning More About Medicinal Properties of *Aloe* .

National Institutes of Health

<http://nccam.nih.gov/health/aloevera/>

Mayo Clinic

http://www.mayoclinic.com/health/alo-vera/NS_patient-

[Aloe](#)



Flora Delaterre, Plant Detective: Flora investigates the medicinal properties of plants and teaches people about her discoveries on a radio program. Her website has wonderful resources to read and to listen to. Go to <http://www.floradelaterre.com/home.html>



Herbal Tea: Students may already be familiar with herbal remedies. Many cultural traditions apply the healing powers of plants to common ailments and chronic conditions. Ask your students

- *Does anyone use herbal remedies at home?*
- *What plants are used in these remedies? What parts of the plants?*
- *How is the remedy made – is it a tea or a lotion?*

Peppermint has a number of medicinal applications including its use as an aid to digestion. Chamomile is also used as a digestive aid and is said to have a relaxing, calming effect. Teas are made from the leaves of peppermint and from the flowers of chamomile, for example.

- ✱ Have an herbal tea party! Purchase herbal teas from the grocery store such as *Celestial Seasonings*. Have students read the labels and make a list of the plants used to make the tea. The company website also has ingredients lists for each product at <http://www.celestialseasonings.com/products/category.html/herbal-teas>
- ✱ Offer students the opportunity to sample an assortment of brewed herbal teas. Have honey on hand to sweeten teas but suggest that students try the tea first before adding a sweetener.

Plants We Weave and Write On

Fibers made by plants are used to make threads that are woven into cloth and twines that are woven into ropes and nets. During the program at BBG, students may observe a cotton plant with its fibrous fruit, an *Agave* plant whose leaves are the source of tough sisal fibers and a papyrus plant, used by the people of Egypt to make paper since ancient times.



Make Paper: Paper is made from plant fibers, often from tough wood fibers that have to be smashed into pulp that can be formed into sheets. Here is a recipe for making paper that begins with fibrous stems that can be easily chopped into pulp in a kitchen blender – celery is the main ingredient!

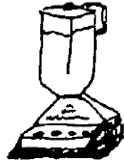
From Pulp to Paper

Beth Krumholtz

• make your own paper from plants and vegetables •

* recommend for age 5 and older *

Materials:



regular kitchen
blender



celery



Small screen on wooden frame,
you can make yourself or buy
at hardware store (approx. 6"x8" or 9"x12")



plastic tub, small, yet large
enough for screen to fit inside
(14" x 18") (4"-5" deep)



sponge



colored tissue paper



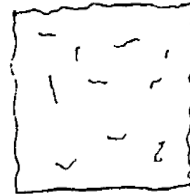
towel

Vocabulary:

coaching
pulp

Facts: Traditionally paper is made
from wood pulp, but it can also
be made from other plant and/or
vegetable fibers and pulps. It
is a wonderful form of recycling.

Sheet of hand made paper

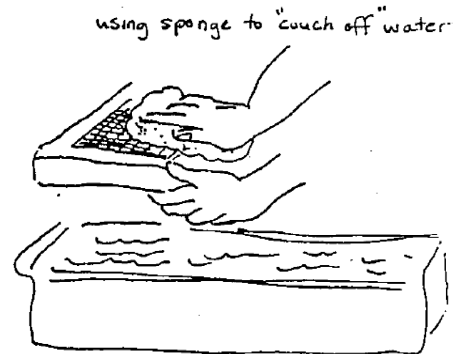
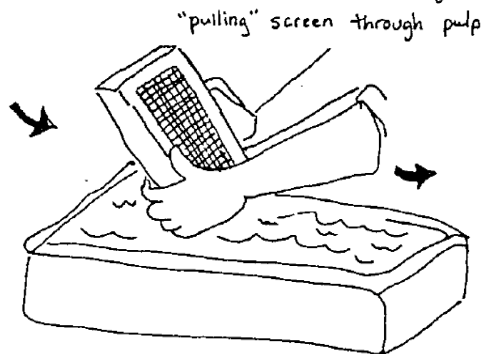


Did you know that the wasp was the first paper maker?
The wasp's delicate nest is made from wood fiber.

(continued)

Instructions for making handmade paper:

- 1) Fill the blender $\frac{2}{3}$ with water and add 3 stalks of chopped celery. Blend for 2-3 minutes. Examine your fibrous pulp. How does it look? smell? feel?
- 2) Add small bits of colored tissue paper to the pulp if you want colored paper. Blend 2-3 minutes
- 3) Fill your tub with the mixture (may take 3-4 blender fulls).
- 4) Standing directly over the tub of paper pulp, hold your screen with both hands, immerse it into the tub with arms outstretched and then "pull" toward your body, raking through the pulp and then lift and let it drain for a minute.
- 5) Using your sponge gently "couch off" excess water (to couch means to blot)
- 6) Your towel should be spread out to be used as a drying table. Take your screen which is holding your paper and flip it gently onto the towel. It will take 1-3 days to dry depending on humidity. You may want to try many colors and various vegetables and plants for future paper making adventures. Extra pulp can be strained and preserved in the refrigerator.



Did you know you can also make your own paper by recycling dryer lint, newspaper, old fabrics and more?

Additional Resources

Some excellent resources for background information and classroom activity ideas include:

Garden-Based Learning: Lesson Plans and Activities

<http://www.hort.cornell.edu/gbl/pubs/index.html>

Resource booklets support teaching and learning about apples, potatoes, rice, the Three Sister's Garden (Native American tradition), and peanuts through science, horticulture, math, language and visual arts areas

Plant Cultures: Explore the Plants and People of South East Asia

<http://www.plantcultures.org/>

Plants that have been used by people in Southeast Asia for centuries are examined in a variety of ways for their contributions to and roles in art, horticulture, history and geography

Celebration of the International Year of Natural Fibers

<http://www.naturalfibres2009.org/en/index.html>

How many natural fibers can you name? Some come from animals like sheep and alpaca. Others are spun by animals – silk. Many come directly from plants. How people learned to cultivate and weave natural fibers and how they continue to practice traditional textile craft is explored in depth on this site.

Seeds of Change Garden: The Plants of the New World

<http://www.mnh.si.edu/archives/garden/welcome.html>

Before 1492, European cooks did not have potatoes or tomatoes and Asian cuisine did not have the heat of chili peppers. The Seeds of Change Project of the Smithsonian celebrates the horticultural exchange that was one outcome of European voyages to the New World in the late 1400's.

Curriculum Guides

Seeds of Change: Learning From The Garden

Judy Mannes and Marsha Rehns

Parsippany, New Jersey: Dale Seymour Publications, 2001

Cultural Uses of Plants: A Guide to Learning About Ethnobotany

Gabriell DeBear Paye

New York: The New York Botanical Garden Press, 2000

“Just the Facts” About Plants

Here are some facts about plants to support your teaching and learning about plants in preparation for the **Exploring for Plants We Use** program at BBG. We suggest you use this background information to enhance your own understanding and guide students’ understanding. Many of these concepts and facts will be explored with your students during the workshop program, in particular the topic of plant parts and their uses so if they don’t come up in your pre-visit discussions we will introduce students to them during our program together.

1. What do plants need to grow? Plants require carbon dioxide and oxygen from the air, varying amounts of light, water, and warmth to live. They need space to grow and minerals for healthy growth and structure.
2. Photosynthesis - is the process by which green plants can make their own food. “Photo” means “light,” and “synthesis” means “to place together.” During photosynthesis, carbon dioxide (CO₂) and water are brought together chemically to make food in the form of sugars (carbohydrates) for the plant, and oxygen. The green pigment chlorophyll traps the light energy from the sun that is used for this process. All of the green parts of plants are able to make sugars. The oxygen given off by plants as a result of photosynthesis sustains most living things on Earth. Plants are the only multicellular organisms that can make their own food.
3. Plant Parts – A typical plant consists of six major parts:

ROOT: absorbs water and minerals, anchors the plant, stores food and water

STEM: transports sugars, water and minerals to the various plant parts, serves as support for other plant parts including leaves, flowers and fruits

LEAF: usually has the most surface area for photosynthesis and has pores (stomata) through which gases can be exchanged with the air

FLOWER: contains the reproductive organs of the plant that give rise to the seeds; part of the flower becomes the fruit

FRUIT: contains the seeds and is a vehicle for seed dispersal

SEED: contains the embryo (baby) plant and often a food supply to support the early growth of the seedling.

4. Fruit or Vegetable? Can you think of what beans, walnuts, tomatoes, apples, cucumbers, milkweed pods all have in common? If you said that they are all the part of the plant which holds the seeds you were correct. Most people agree that apples, oranges, pineapples and mangoes are fruits but you will spark a lively discussion when you suggest that pumpkins, tomatoes, cucumbers and peppers are also fruits.

Botanists, the scientists that study plants, define *the part of the plant that holds and disperses the seeds the fruit.* Therefore pumpkins, tomatoes, peppers, cucumbers, and string beans are all fruits.

Botanically, a *vegetable* is a root (carrot, radish, beet), stem (sugar cane, asparagus), leaf stalk (celery) or leaf (cabbage, collards, mustard greens, lettuce) that we eat. Broccoli and cauliflower “florets” are the unopened flower buds of their plants! Other edible flowers include squash blossoms and *Nasturtium*.

Horticulturists and farmers often used a broader definition of a *vegetable* to be *any edible part of a plant*. They would therefore say that a fruit can also be called a vegetable.

5. Are all Fruits or Seeds Edible? The purpose of the fruit is to disperse the seeds to locations at some distance from the parent plant. Why? If a plant’s seeds all germinated right under them the seedlings and the parent would be competing for survival. If the seeds can be dispersed far and wide there will be a greater chance that seedlings will grow into mature plants. The range of the plant’s species will increase.

Sweet, juicy fruits are produced by plants specifically to lure animals to eat them, swallow the seeds and ‘poop’ them out or discard them somewhere farther away from the parent plant. Not all fruits are sweet and juicy, however! Some fruits and/or seeds are designed to “fly”, some are designed to “float”, and some are designed to “hitchhike” on the fur or feathers of animals.