Eat Your Flowers

Testing the effects of soil types on edible flowers

Skills: Science

Objective: Students grow flowers in different soil types to determine the effect on flavor.

Background

The culinary use of flowers dates back thousands of years. The earliest recorded reference is from 140 BC. Flower cookery has been traced back to ancient Roman, Chinese, Middle Eastern and Indian cultures. Edible flowers were especially popular during the reign of England's Queen Victoria. Today many restaurant chefs and innovative home cooks garnish their entrees with flower blossoms for a touch of elegance.

Not every flower is edible, nor is every flower part. The stamen and pistil are not edible, but the petals of some flowers are.

Flowers are rich in nectar and pollen. Some are high in vitamins and minerals. Roses, especially rose hips, are very high in vitamin C. Marigolds and nasturtiums contain vitamin C, and dandelion blossoms contain Vitamins A and C. Flowers are also nearly calorie-free.

Vitamin C is a water-soluble vitamin that helps to absorb iron and keeps connective tissues healthy. It is a nutrient that is required in very small amounts. In addition to the flowers mentioned above, it is also found in strawberries, bell pepper and citrus fruits. The richest natural sources are fruits and vegetables. It is also present in some cuts of meat, especially liver.

Vitamin A, a fat-soluble vitamin, plays essential roles in vision, growth and development, the development and maintenance of healthy skin, hair, and mucous membranes, immune functions, and reproduction. Vitamin A can be found in foods such as sweet potato, carrot, kale, apricots, mango, turnip greens, and spinach.

Flowers grown in different locations can have different flavors because of different soil types, fertilizers and environmental conditions. Flowers may taste different at the end of the growing season and can vary from year to year.

Most growers cannot make a living growing only edible flowers. Edibles are usually grown in conjunction with cut flowers, herbs, specialty lettuce, and/or other vegetables. Flowers complement other plants by attracting pollinators and other beneficial insects.

Some common edible flowers are:

basil—flavor is mild, similar to the leaves.

P.A.S.S.

GRADE 6
Science Process—
3.1,2,3,4,5,6; 4.1,3,5; 5:3
Life Science—4.1

GRADE 7
Science Process—
3.1,2,3,4,5,6; 4.1,3,5; 5:3
Life Science—3.1; 4.2

GRADE 8
Science Process—
3.1,2,3,4,5,6; 4.1,3,5; 5.3

Resources Needed

seed packets, seed catalogs and/or gardening books for reference

plant potting containers (small starter flats and small pots for transplanting bedding plants)

3 different growing media (sandy soil, clayey soil, soilless potting substrate)

marigold seeds

sunlit window area or grow-light plant stand

plant markers to label all plants and growing media

notebooks

carnations—surprisingly sweet petals can add color to salads.
dandelions—sweetest when flowers are young; honey-like.
daylilies—slightly sweet with a mild vegetable flavor.
English daisy—mildly bitter taste, used mostly for decoration.
hibiscus—cranberry-like flavor; can be used in salads.
honeysuckle—sweet honey flavor.
pansy—slightly sweet, green or grassy flavor.
violets—sweet, perfumed flavor.
nasturtium—peppery taste.
squash blossoms—similar to squash.

Some **common poisonous flowers** are autumn crocus, azalea, buttercup, butterfly weed, calla lily, Christmas rose, daffodil, delphinium, clematis, foxglove, hydrangea, iris, jasmine, morning glory, lily of the valley, and wisteria, among others. Use a good reference book to make sure flowers are edible before eating them.

Background Sources: National Sustainable Agriculture Information Service; Iowa State University *Horticulture News*; Ursell, Amanda, *Complete Guide to Healing Foods,* "What's Cooking America?" www.whatscookingamerica.net; *Wikipedia, The Free Encyclopedia*, www.wikipedia.org

Activities

1. Read and discuss background.
   —Provide seed packets, seed catalogs and/or gardening books for students to see photographs of the edible flowers listed.
   —Provide samples of some edible flowers for students to taste. (See list in the background.)
2. Students will grow marigolds in three different kinds of growing media. Marigolds are recommended because they are quick to germinate and easy to grow. If time does not permit growing flowers in the classroom, students will plant the flowers in the classroom, grow them at home and communicate results.
   —Divide the class into three groups.
   —Provide copies of the "Scientific Method Format" from the "Resources" section.
   —Review the steps of the scientific method.
   —Each group will answer the question: "Can different growing media affect the flavor of an edible flower?"
   —Students write a hypothesis for the investigation.
   —Students design the experiment.
   —Students gather material.
   —Each group will plant seeds in each of the three growing media.
   —Plant the seeds. Follow package directions for growing.
   —Each group will record the steps and care given its seeds into a notebook.
   —Students will transplant the plants into larger pots as the plants grow.
   — Groups will research information for accelerating bloom time and continue gathering data.

Rules for Eating Flowers

- Eat flowers only when you are positive they are edible. If uncertain, consult a good reference book.
- Just because flowers are served with food does not mean they are edible.
- If pesticides are necessary, use only those products labeled for use on edible crops.
- Do not eat flowers from florists, nurseries or garden centers.
- Do not eat flowers picked from the side of the road.
- Remove pistils and stamens from flowers before eating. Eat only the flower petals of most edible flowers.
- Introduce flowers into your diet in small quantities, one species at a time.
- If you have allergies, introduce edible flowers gradually, as they may aggravate some allergies.
- Enjoy the different flavors and colors that edible flowers add to many foods.

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—When the flowers bloom, set up a blind "sensory room," where panelists (students) are separated.
—Students sample the flowers to compare flavors and determine if there is a difference in taste of the flowers grown in the different media.
—Students analyze data to determine if the hypothesis is supported and if the soil type affects the flavor of the flower.
—Each group communicates its results to the class.

3. Students research online or in the library to develop a list of edible flowers.
—Students visit a local greenhouse or florist to identify edible flowers.
4. Students research foods that contain Vitamins A and C.
—Students will taste-test foods that contain Vitamins A and C (kiwifruit, papaya, Brussels sprouts, kale, mangoes, turnip greens) .
6. Provide food labels from canned fruit and vegetables.
—Students search the RDAs for the amounts of Vitamins A and C in each food.
—Students make bar graphs showing which of the foods provide the greatest percentage of recommended daily allowance (RDA) for each of the vitamins.

Extra Reading

Creasy, Rosalind, *The Edible Flower Garden,* Periplus, 1999.

McGee, Rose Marie Nichols, and Maggie Stuckey, *McGee and Stuckey's Bountiful Container: A Container Garden of Vegetables, Fruits, Herbs, and Edible Flowers,* Workman, 2002.

Vocabulary

culinary—of or relating to the kitchen or cooking
edible—fit or safe to be eaten
nectar—a sweet liquid given off by plants and especially by the flowers and used by bees in making honey
pesticide—a substance used to destroy pests
pistil—the seed-producing part of a flower consisting usually of stigma, style, and ovary
pollen—a mass of tiny particles in the anthers of a flower that fertilize the seeds and usually appear as fine yellow dust
stamen—an organ of a flower that consists of an anther and a filament and produces the pollen
water-soluble—capable of being dissolved in water