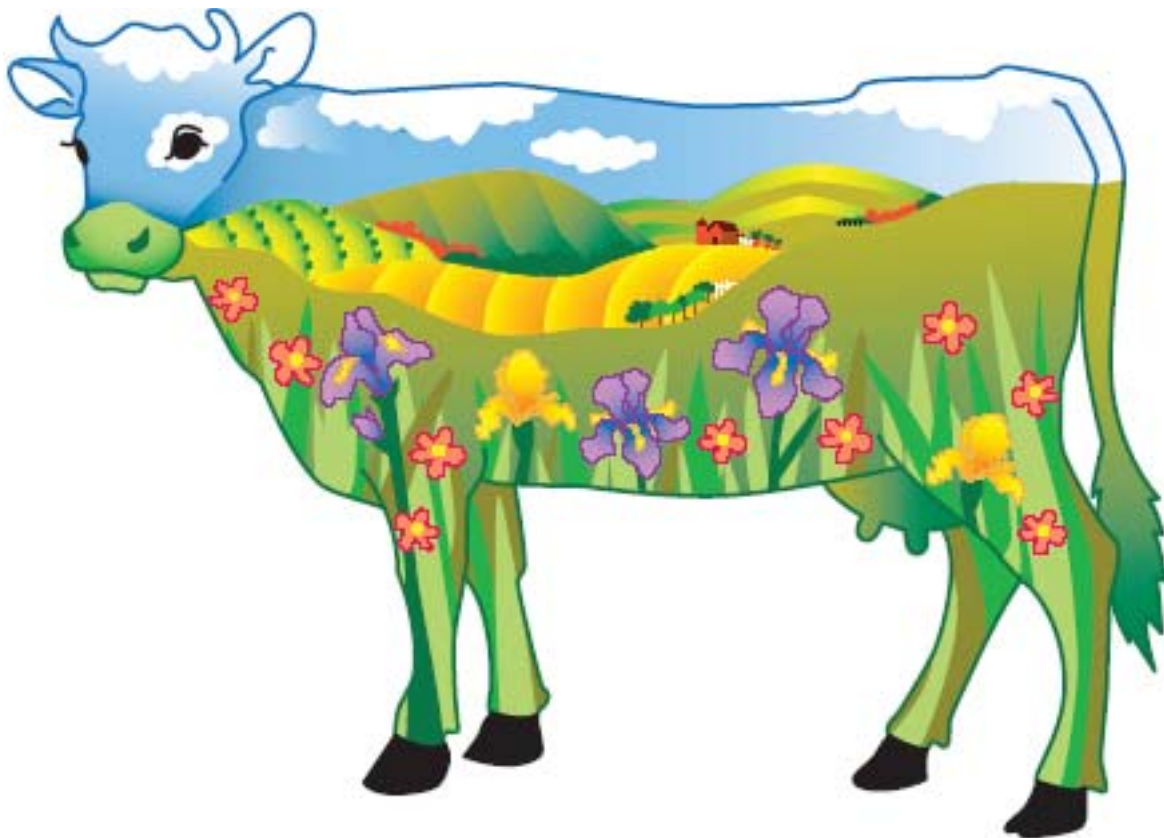


SOLE  
Sciences of Life Explorations:  
Through Agriculture  
Grades 4 and 5



Suggested Month: September



Teacher Guide  
Unit: The Right Plants, The Right Place



## UNIT PLAN

### UNIT TITLE

The Right Plants

### MONTH

September

### GOAL

In this lesson, students will learn that plants - vegetables, flowers, shrubs and trees - should be planted with thought and care to their needs. They are introduced to annuals and perennials and the influence of climate in New York State. Students will consider how variables such as shade, sun, dry or wet soil, and plant size at maturity must be considered before a gardener or farmer plants a seed or seedling.

### OBJECTIVES

Students will:

1. Prepare a report in poster form related to climate and plants, using information from a variety of materials. (NYS Learning Standard 3a: Universal Foundation Skills, Elementary 1 and Standard 1: Language for Information and Understanding, Elementary 1 and Elementary 2)
2. Construct sentences to convey information, using vocabulary related to climate and plant selection. (NYS Learning Standard 1: Communication Skills, Checkpoint A and B)
3. Ask "why" questions about growing conditions to seek greater understanding about the relationship of plants to climate, soil, and water. (NYS Learning Standard 1: Analysis, Inquiry, and Design, Elementary 1)
4. Organize observations of plant growth through classification and the preparation of a table, interpreting the observations to recognize relationships. (NYS Learning Standard 1: Analysis, Inquiry, and Design, Elementary 3)
5. Describe growth characteristics of, and variations between, certain types of plants, i.e. ornamental vs. food plants or annuals vs. perennials. (NYS Learning Standard 1: Science, Elementary 1 - Living Environment)
6. Draw a map of a city in New York State, taking note of its physical features. (NYS Learning Standard 3: Geography, Elementary 1)
7. Identify the significance of geographic locations of cities in New York, in relation to the climatic conditions that affect plant growth. (NYS Learning Standard 3: Geography, Elementary 2)
8. Cite the geographic origins of specific plants. (Food and Fiber Systems Literacy II: History Geography, and Culture, D 4-5)
9. Compare the characteristics of ecosystems in New York state, such as climate, plant hardiness zone, and topography. (Food and Fiber Systems Literacy III: Science, Technology, and Environment, A 6-8)

## TERMS

Vocabulary words are highlighted in bold throughout the student lesson pages.

annuals - plants that can only survive one growing season in a particular growing area

climate - the common weather in an area: temperature, rain or snow, wind and sunshine

deciduous - a tree or shrub that sheds its leaves each year

growing season - the time, usually a period of months, when crops develop, grow, and are harvested

mature - when something has stopped growing and reached its full size

ornamental - for decorative purposes

perennials - plants that live and grow for more than one growing season

*Integrated Pest Management is a specialized form of environmental management wherein scientific research and real world application work together to reduce pests such as insects, diseases or weeds.*

- 1. Properly identify pests*
- 2. Learn the pest/ host biology*
- 3. Sample the environment for pests*
- 4. Determine an action threshold*
- 5. Choose the best tactic*
- 6. Evaluate results*

## SAFETY

General classroom safety practices.

Use caution when handling gardening tools

## Standards Matrix for this Lesson:

### Standards:

Month	Unit	Math/Science/and Technology	English Language Arts	Social Studies	HEALTH	ARTS	Food & Fiber Literacy	CDOS	Other Languages	Interconnectedness
9	The Right Plants	1:7, e1	3a:2, e1	3:16, e1			II D 4-5			
		1:7, e3	1:3, e1	3:16, e2			III A 6-8			
		1:10, e1	1:3, e2							
			1:6, A							
			1:6, B							

### Matrix Key:

NYS Learning Standards arranged by Standard: Category, Level

e = elementary i = intermediate

Categories:

- |   |  |
|---|--|
| 1 Career Development                            | 10 Science                             |
| 2 Universal Foundation Skills                   | 11 Technology                          |
| 3 Language for Information and Understanding    | 12 Interconnectedness: Common Themes   |
| 4 Language for Literary Response and Expression | 13 Interdisciplinary Problem Solving   |
| 5 Language for Social Interaction               | 14 History of the United States and NY |
| 6 Communication Skills                          | 15 World History                       |
| 7 Analysis, Inquiry, and Design                 | 16 Geography                           |
| 8 Information Systems                           | 17 Economics                           |
| 9 Mathematics                                   |  |

## ADDITIONAL RESOURCES

Seed catalogs are a great resource for students to look through. Some companies offer catalogs that include both flower and vegetable varieties. They will give information on the needs of the plant, its life expectancy, and size at maturity. The same is true for shrub and tree catalogs.

## SUPPLIES AND EQUIPMENT

Drawing supplies  
New York State map  
Glue  
Internet or library access  
Scissors  
Styrofoam or plastic cups  
Poster board  
Garden pruners (for teacher use)  
Magazines, plant catalogs, or encyclopedias

## BACKGROUND FOR TEACHERS

Where and When:

Students who have not been exposed to gardening or raising plants may not know that some thought should go into where plants are planted and grown. Plants can be ornamental and used to enhance the landscape around us, or grown for food. Even though most vegetables are raised as seasonal crops (annuals), thought must be put into where and when they are planted. Most vegetables need abundant sun, consistent soil moisture, and enough days to reach maturity before the end of the season.

Human Needs:

It is important to consider what we want from the plant. In a vegetable garden, we want to know what food products or crops we will be able to harvest at the end of the season. With flowering plants, do we want color throughout the season? Do we want plants that will provide shade or privacy, or to attract birds and provide fragrance?

Plant Needs:

When a plant is not right for the site, it will not prosper and may be more susceptible to disease or insect attack. To prevent problems, thought must go into the selection of the plant and its needs. Students will be reminded that some plants can tolerate both sun and shade, and will not do as well if planted in the wrong place. Lessons will reinforce three important needs of plants - sun, water and soil - and other factors: climate, growing season, and size of plant at maturity. The amount of sun needed will vary according to the plant, as will the amount of water, and the soil type and pH. However, most plants need consistent moisture and good drainage. They also need soil that is not compacted, so that the roots can access oxygen and water and have room to spread. Climate affects plants because it includes water, temperature, wind, and sun, and it relates to the growing season, or the amount of time available for a plant to grow, develop, and mature. In a region with a very short growing season, plants that take a long time to mature may not do as well. A plant's size at maturity can be affected by its ability to get what it needs. If it doesn't get the proper nutrients, it may not reach full size. Also, if it is a large plant, it may prevent other plants around it to satisfy their needs.

Vegetables:

Vegetables may be started as small transplants or seeded right out of the packet. Enough room must be given to allow for their size at maturity, and the effect of reduced sunlight as plants grow taller they cast shadows. Many plants need the entire growing season to mature.

## Flowering Plants:

Flowers can be annual or perennial. Annual flowers may not be 'annual' in more temperate parts of the world. Students will be introduced to the 'hardiness zones' map and the effects of climate on how plants succeed. This map is found online and in many seed catalogs. Perennials will be most successful when planted in an area similar to that which they originated from. Many books and online sources offer this information on plants, shrubs and trees.

## Houseplants:

This lesson focuses on outdoor plants, especially vegetables and flowers, but these ideas also apply to a houseplant or one that sits on the windowsill of their classroom. Many houseplants are tropical plants that would never survive outdoors in New York's climate. If we are going to be away from them for a week or two, can they tolerate not being watered? Do they thrive in partial sun situations, or do they grow long and leggy and become yellow?

## Green Thumb:

The notion of having a green thumb is often simply the art of choosing the right plant for the conditions and maintaining the plant according to its needs. Behind every green-thumbed gardener and farmer is an interest in plants and the willingness to learn about and provide for their needs.

## QUESTIONS FOR STUDENTS

What is the right plant?

How do I know if the plant is right for the spot?

Why does it matter?

## INTEREST APPROACH ACTIVITIES

### THE HUNT FOR HABITAT HARMONY

Selecting the right plant is a challenge. Students will learn a great deal from their surroundings by identifying plants growing on the school grounds. The best way is to identify native plants growing in similar conditions.

Conditions can include:

- Amount of sunlight: full sun, partial shade, or full shade
- Soil characteristics
- Moisture and drainage levels
- Types of nearby plants



## Procedure

### Assessing the Environment

1. Students should determine how much moisture and sunlight the planting area gets.
2. Consider drainage. Does the area hold moisture? Soil moisture is difficult to determine.
  - A. To assist in student observation, perform a simple test.
    - i. Clear off a small patch of grass and dig a hole in the ground 6" x 6" wide.
    - ii. Try not to compact the sides of the hole as you dig.
    - iii. Saturate the soil and then fill the hole with water.
    - iv. Observe how long it takes the water to soak into the ground.

continued

3. To determine soil type, check clumps of soil. Try to decide whether it is clay-like (sticky, smooth), sandy (gritty and rough), or a combination. Make a note of the soil type you find in each location.
4. Students may want to draw a map, highlighting sunny areas in yellow, wet areas in blue, etc.
5. Take a walk around the school, writing down the types of plants you find in moist shade, dry shade, moist sun, dry sun, and wet conditions.
6. Create a table like the one below to keep track of your plant findings.

<i>Dry Shade Soil:</i>	<i>Moist Shade Soil:</i>	<i>Dry Sun Soil:</i>	<i>Moist Sun Soil:</i>	<i>Wet Conditions Soil:</i>

7. After your walk, add up the number of plants in each category.

Dry Shade \_\_\_\_\_  
 Moist Shade \_\_\_\_\_  
 Dry Sun \_\_\_\_\_  
 Moist Sun \_\_\_\_\_  
 Wet Conditions \_\_\_\_\_

8. Where were the most plants found? Why do you think so?
9. Where were the fewest plants found? Why do you think so?
10. Were the plants different sizes in the sun vs. in the shade? If so, why do you think that is?
11. Were the plants different sizes in places with different amounts of water? If so, why do you think that is?



# Trench Layering

## Materials:

Pruning shears

Forsythia bush (or other deciduous bush or vine)

Shovel

Knife (optional)

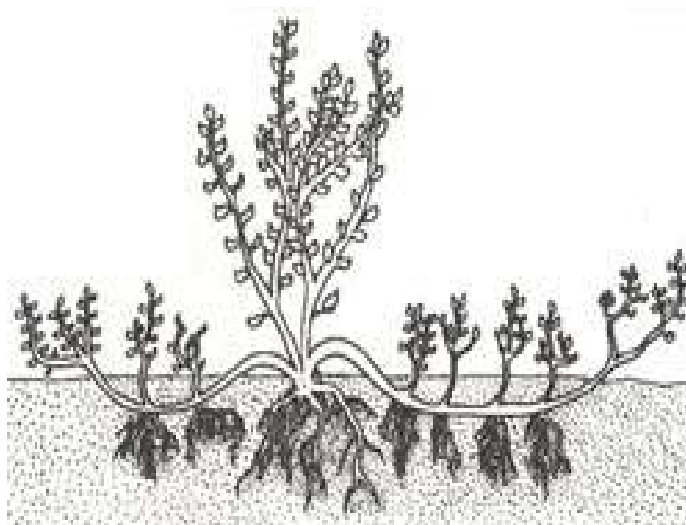
## Background:

Trench layering is a simple method of asexual propagation. The roots are formed on a stem attached to the parent plant. Many deciduous shrubs or vines can be propagated by this method. Forsythia is an example that works well.

## Procedure

1. Dig a shallow trench (5" - 6" deep) near the plant.
2. Take a stem from the plant (still attached) remove the leaves that will be buried and place it in the trench.
3. OPTIONAL: To make the roots grow faster, make a few small cuts (1/16") near the nodes where the leaves were of the stem.
4. Cover the stem with 2 to 5 inches of soil.
5. Observe periodically.
6. After a few weeks, roots will develop along the stem. New roots will form at each node.
7. When the new plant reaches a desirable size, separate the stem from the parent plant using pruning shears.
8. Have the students decide on the right place to plant the stem. To help them with this decision, have them make observations about the area in which the parent plant is growing. Consider important factors such as:
  - Is there enough sunlight?
  - Is there good drainage?
  - Is there enough space for growth?

*(For related activities, refer to student worksheets 3-A & 3-B)*



## SUMMARY OF CONTENT

- I. Introduction
  - A. Discusses the importance of considering size and growing conditions for plants.
  - B. The terms climate, growing season, and mature are introduced.
- II. What is the right plant? (2 pages)
  - A. Discusses plants as grown either for enjoyment or for food.
  - B. Terms used include ornamental, annuals, perennials, and climate.
  - C. A list of common annuals is included.
- III. How do I know? (2 Pages)
  - A. Match the plant to the place it will grow best.
  - B. Pictures and descriptions for each plant.
- IV. Vegetable matching
  - A. Matching activity
  - B. A suggestion for a brief writing activity is included.
- V. Vegetables!
  - A. This page focuses on vegetables, prompting students to think of the needs of specific plants.
- VI. Why does it matter?
  - A. This page reviews annuals, perennials, and climate and explains the importance of choosing the right locations for plants.
  - B. A “hardiness” zones map is included.
- VII. Vocabulary and review
  - A. Definitions and review questions.
- VIII. Lesson Supplements

## TEACHING- LEARNING ACTIVITIES

- I. Introduction
  - A. Read this page aloud as a class.
  - B. Use the discussion questions to get students thinking about the unit’s concepts.
- II. What is the right plant? (2 pages)
  - A. This page can be read aloud as a class or in pairs.
  - B. Students should share their answers with the class.
- III. How do I know? (2 Pages)
  - A. Introduce the activity and complete the first plant together.
  - B. Students may then continue on their own.
- IV. Vegetable matching
  - A. Students may complete this lesson on their own.
  - B. When students complete the writing activity, suggest that they consider a recipe to use their plant in or other reasons for planting it.
  - C. You may wish to have students look up some information on one of the plants.
- V. Vegetables!
  - A. This page could be read aloud in class or individually.
  - B. You may wish to have seed catalogs or packets on hand to discuss growing needs of other vegetables.
- VI. Why does it matter?
  - A. Discuss this page as a review of the unit.
  - B. Discuss the “hardiness” zones map and how it relates to plant survival.
- VII. Vocabulary and review
  - A. Complete individually.
- VIII. Lesson Supplements

## Student Lesson: The Right Plants Introduction

In this lesson, we will talk about choosing the right plants for your garden. This can mean choosing vegetable plants that won't get too big in a small garden, or not placing a shade-loving plant in a sunny part of your yard.

Do you think it is important to know how big a tree will get before you plant it? Why?

If your classroom is going to plant a garden, this lesson will help you start thinking about what plants to choose and where to put them.

Will *every* plant grow in *any* place?

What needs must you consider when choosing plants for your vegetable or flower garden?

We hope you think of three right away: sun, water, and soil.

Also, we must consider climate, growing season, the plant's size when it is mature, and what we want from the plant (food, shade, beauty).

To be successful farmers or gardeners we must be able to answer these questions:

What is the right plant?

How do I know if the plant is right for the spot?

Why does it matter?



## Student Lesson: The Right Plants

### What is the Right Plant?

What is the right plant? Let's think about plants in two ways:

1. Plants we grow for enjoyment, usually because we like the way they look or smell, are ornamental plants. They include flowers, shrubs and trees that may or may not grow edible fruit.

Some ornamental plants have different life cycles.

Plants that only live one growing season in our climate are called annuals.

Plants that grow and get bigger for more than two years are called perennials.

We use both annual and perennial flowers and vegetables in the yard and garden.

Some annual flowers planted in New York State might live for many years if they are planted in the southern United States. This has to do with climate.

What might climate mean? Discuss with a partner and write your answer:

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2. Plants we grow for food

These are vegetables and fruit. Most vegetable crops are annuals, but some are perennials. Most fruits are perennials, too.

Remember:

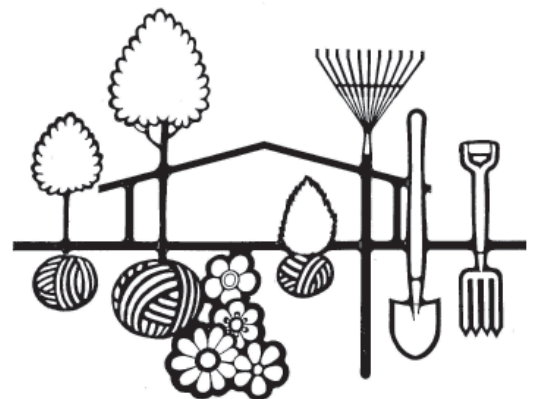
annuals are plants that only grow for one growing season in our area.

Perennials are plants that can live and grow for more than one year.

Can you give an example of one annual and one perennial plant? (It can be a fruit, a vegetable, a flower, or a tree.)

annual: \_\_\_\_\_

Perennial: \_\_\_\_\_



## Student Lesson: The Right Plants

### What is the Right Plant? Common annuals

Sand Verbena.

Love-lies-bleeding

Common Snapdragon

Artemesia (Dusty Miller)

Blue Woodruff

Wax Begonia

English Daisy

Swan River Daisy

Calendula, Pot Marigold

Cupid's Dart

Plume Cockscomb

Crown Daisy, Tricolor Chrysanthemum

Clarkia

Spiderflower, Pink Queen

Cup-and-Saucer-Vine, Mexican Ivy

Coleus

Calliopsis

Cosmos

Dahlia

Cape Daisy, African Daisy

annual Blanket-Flower

African Daisy

Globe Amaranth

annual Baby's Breath

Sunflower

Strawflower, Everlasting

Common Heliotrope

Impatiens

Morning Glory

Sweet Pea

Statice

Edging Lobelia

Sweet Alyssum

Monkey Flower

Four O'Clock

Bells of Ireland

Love in a Mist

Petunia

Portulaca

Sage

French Marigold

Nasturtium

Verbena, Moss Verbena

Pansy

Zinnia

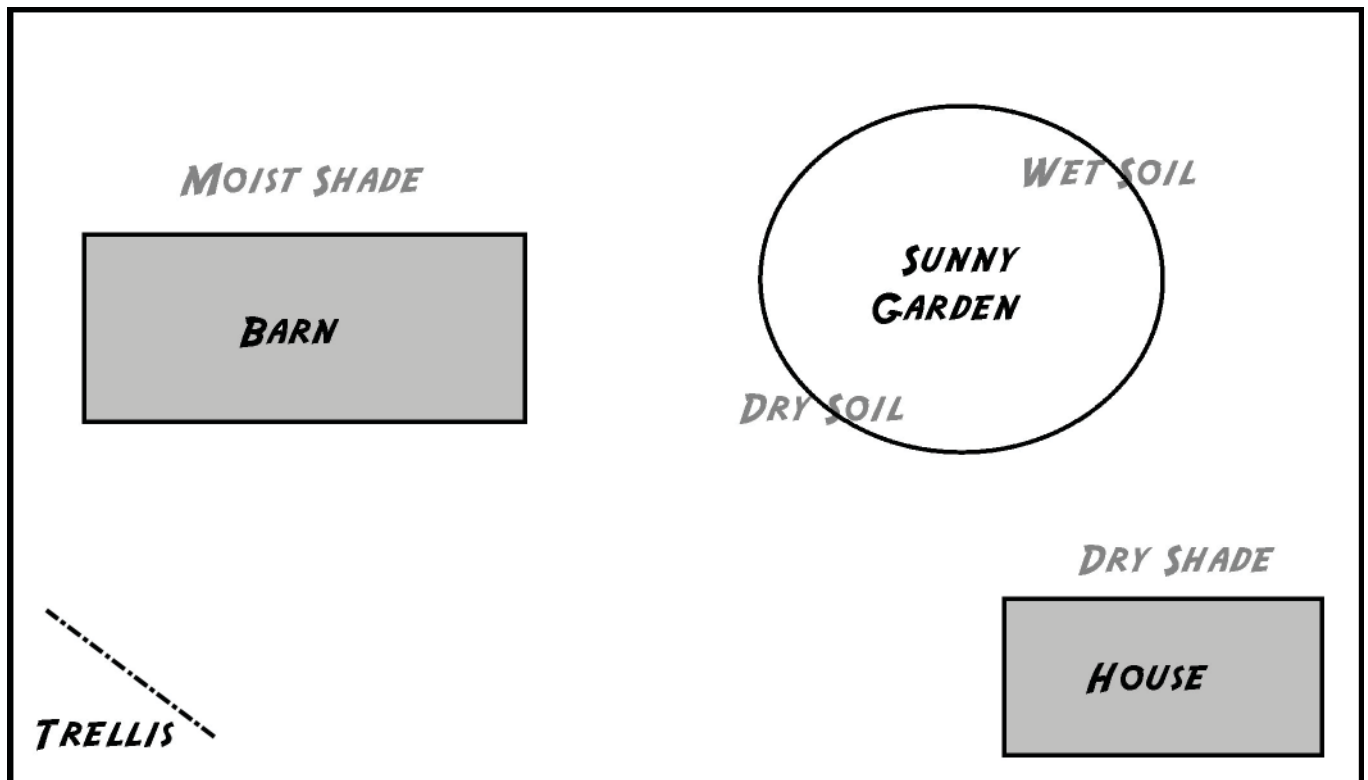


## Student Lesson: The Right Plants

### How do I know if the plant is right for the spot?

Here's a sketch of Mrs MacGregor's yard. She wants her new plants to grow well. On the next page, read the descriptions for each plant, then cut out the plants and put them in the right place! Because perennial flowers, shrubs, and trees are around for a long time, you must think carefully about where you plant them.

The yard has some shady spots and a lot of sunny spots. Some spots are moist, or wet, or dry. Mrs. MacGregor has chosen some plants that bloom in spring, some in summer, and some in fall, so she will have color in her garden all season long.



1



2



3



4



5



6



**Student Lesson: The Right Plants**

How do I know if the plant is right for the spot?

Mrs MacGregor chose these flowers because she likes their colors, shapes and textures. Another important reason to add flowers is to encourage beneficial (helpful) insects in your yard. You may also want more visits by birds and butterflies. Flowers add a cheerful touch to our yards.



**Bluebell**  
Spring  
Dry shade

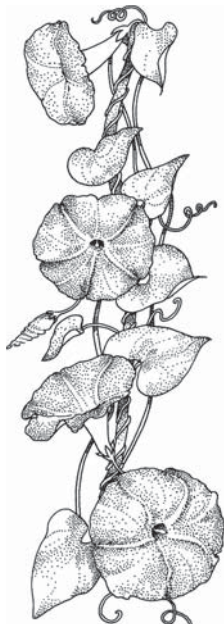


**Chrysanthemum**  
Fall  
Sun and wet soil  
Attracts moths



**Black-Eyed Susan**  
All summer  
Sun and wet or dry soil  
Very sturdy!

**Name:**  
**Blooms in:**  
**Likes:**  
**Special notes:**



**Morning Glory**  
Summer  
Sun, dry soil  
Climbing vine; place on trellis



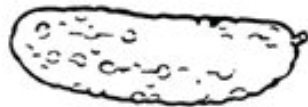
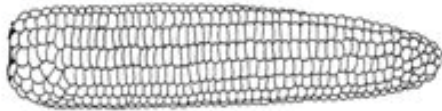
**Iris**  
Early summer  
Sun and moist soil



**Columbine**  
Spring  
Shade and moist soil  
Attracts birds and bees

Student Lesson: The Right Plants  
Match the Vegetable

Match each vegetable and its name



**Carrot**

**Radish**

**Potato**

**Broccoli**

**Bell pepper**

**Corn**

**Cucumber**

On a separate sheet of paper, answer this question: "If I could grow only one kind of vegetable, it would be..." Explain why!



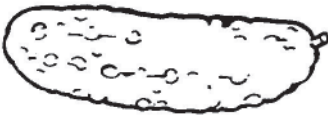
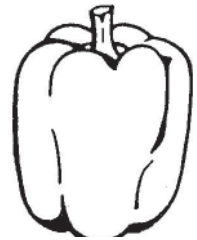
## Student Lesson: The Right Plants Vegetables!

All vegetables need sunshine, moisture, and healthy soil for their roots to grow. Some vegetables need a lot of time to grow, some only need a few weeks. Read the seed package carefully.



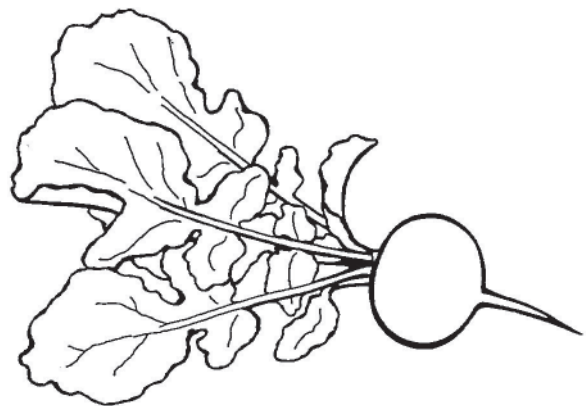
Some vegetables can grow in a pot on your deck or patio, and some get very tall or wide, and need space to spread out. Before planting, make sure they have room to grow and will have enough sun. Carrots and potatoes grow in the ground and are called root vegetables. They need soft, fluffy soil to grow their best. Do you think they would grow as well in heavy, hard soil?

Corn grows tall. Peppers need a lot of sun. If you grew peppers next to corn, they could end up in the shadow of the corn. Could this affect how they grow?



Cucumbers, pumpkins, and other types of plants like peas and beans grow on vines. You may only plant a few seeds and still end up with a plant that's five or six feet across. Would you choose cucumbers or pumpkins for a small garden?

Radishes are one of the smallest and fastest plants to grow. You can plant a radish seed (they are very tiny) and have radishes to eat in about a month. Celery needs a very long growing season. If you wanted to grow something in your school garden that you could plant in May and eat in June, would you choose celery?



Climate is the word we use to describe our weather, not just today's weather, but how the weather is for most of the year. Is the climate in Florida different than in New York? Explain what is different and how it might affect plants.

## Student Lesson: The Right Plants

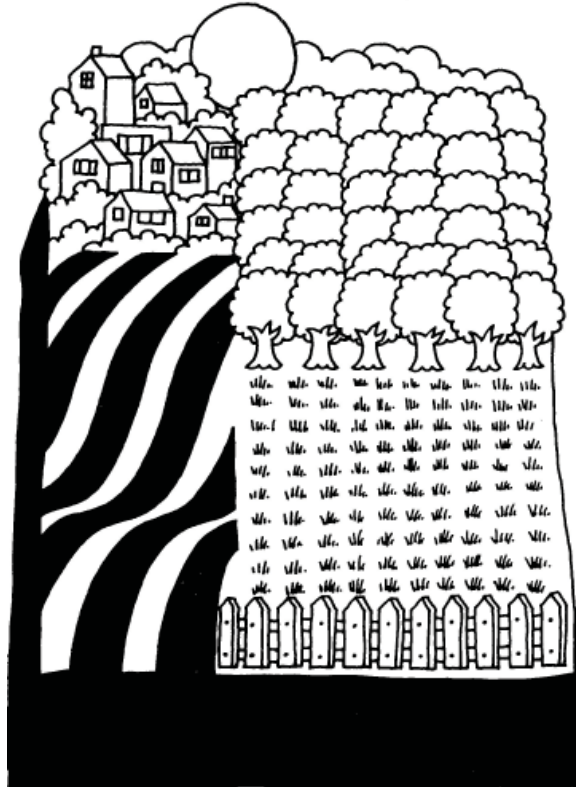
### Why does it matter?

We must know about the plants we want to place in our gardens and yards, in order for them to be successful.

Annuals are plants that grow for only one season in our area. Not all vegetables are annuals.

Many flower plants are perennials. This means that the root system can live through the winter and send up new leaves in the spring.

Climate affects what plants we can grow and when we can plant them. To find out the best time to plant, we can look at a map of the planting zones in the United States. You can find an interactive map at: <http://www.usna.usda.gov/Hardzone/ushzmap.html> Each color on the map represents the average range in temperatures. The blue zones get very cold and not very warm in the summer. The brown zones stay warm all year and might get very hot, especially in summer. Most seed packets have a planting zone map on them.



A major part of having healthy plants is planting them in the right place. You should have fewer problems with disease and insects when perennial plants are in the best spot. Vegetables will also produce better when they have been chosen well and grown under the most favorable conditions. Integrated Pest Management (IPM) starts with making the best choices.

The key to success is: the right plant, in the right place!

## Student Lesson: The Right Plants Plant Hardiness



To be successful farmers or gardeners, we must learn about the needs of the plants and the environment we want to plant in. We must remember to consider the sun, water, and soil conditions, as well as the size of the plant when it is mature. (Don't plant a tiny tree seedling right next to your house! It won't always be small!) Is the plant annual, and does it have a long enough season to grow and flourish? Is it a perennial, and will it be successful where we plant it for years to come?

## Student Lesson: The Right Plants Vocabulary

annuals - plants that can only survive one growing season in a particular growing area

climate - the common weather in an area: temperature, rain or snow, wind and sunshine

deciduous - a tree or shrub that sheds its leaves each year

growing season - the time, usually a period of months, when crops develop, grow, and are harvested

mature - when something has stopped growing and reached its full size

ornamental - for decorative purposes

perennials - plants that live and grow for more than one growing season



*Integrated Pest Management is a specialized form of environmental management wherein scientific research and real world application work together to reduce pests such as insects, diseases or weeds.*

- 1. Properly identify pests*
- 2. Learn the pest/ host biology*
- 3. Sample the environment for pests*
- 4. Determine an action threshold*
- 5. Choose the best tactic*
- 6. Evaluate results*

## Student Lesson: The Right Plants Review

1. Plants that like sun can grow in the shade, too. Will they grow as well as if they were in the sun?

\_\_\_\_\_ yes

\_\_\_\_\_ no

2. Why is it necessary to think about how big a plant might get when we plant it?

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3. What is the main difference between annuals and perennials?

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4. What three basic needs are most important for a healthy plant?

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

# Teacher Information for Student Worksheets

## Student Worksheet 1

### Introduction

Students in New York range from urban dwellers to farm kids, so their exposure to plants, gardens, and crops varies. Their level of knowledge about caring for plants is often determined by the interests of the adults in their lives. This lesson will expose them further to plants. Remind them that plants are grown for different reasons (ornamental or as food), and that they have different life cycles (annuals or perennials), and mature to various sizes. They should know that plants need sunlight, water, and soil to grow.

## Student Worksheet 2-A

### What is the right plant?

Plants are also divided into two other groups:

herbaceous = plants that have soft, green stems and die back to the ground in winter

woody = plants that have woody stems that do not die back. These tend to be shrubs, some vines, and of course, trees. Shrubs are generally smaller and have multiple stems; trees generally have single stems (trunks), although this is not a rule.

Besides annual and perennial, some plants are considered biennial, which means their life cycle (producing seed) takes two years, rather than one.

Answers:

1. Tomato, Zucchini, Marigold, etc
2. Maple Tree, Daylily, etc

## Student Worksheet 2-B

This page contains a list of common annuals for reference and/or discussion.

## Student Worksheet 3-A & 3-B

### How do I know if the plant is right for the spot?

Students should carefully cut out the row of flower illustrations and their numbers. Start students out by asking, "Where should Mrs. MacGregor place plant #1? It likes dry shade." Students will find dry shade on the north side of her house and paste the flower there. You may choose to continue as a group, or students can work on their own. Ask students why there is shade on the north side of the barn and the house.

The activity on page 5 can be extended by asking students to list the number and color of plants by the season they will bloom. How many spring flowers will Mrs MacGregor have? How many in summer? Most of Mrs. MacGregor's plants are perennials. Remind students that plants may get wider each year, but not necessarily taller. In a few years some will go from one small plant with one flower stem to a wider plant with many flower stems. Plant #4 (Morning Glory) is an annual. It is not expected to come back next year. However, it may have dropped seeds (reseeded) and may grow again in the same area. To ensure another morning glory plant, she needs to plant new seeds.



#### Student Worksheet 4

Match the vegetable

common garden vegetables in New York State are pictured. To enhance this activity, have students look up some information on one of the plants. Find out some of the cultivar names, their growth time (number of days from planting to maturity), and something about the crop; sweeter, long storing, pest resistant, quicker to market, etc.

The page asks students to answer a question about growing a vegetable in their own (imagined or not) garden. Suggest they think beyond whether or not it's their favorite food to eat, and consider some recipe or meal they could use it in.

#### Student Worksheet 5

Vegetables!

This page prompts students to think of the needs of specific plants. We suggest you discuss this as a group. Encourage students to think of the needs of some other vegetables. Ex: some peas need a trellis, tomatoes may need a stake, a cage or other support. Tomatoes like hot summers - why?

It is valuable to have access to seed catalogs or seed packets.

Ask students to think of which vegetables have seeds inside the part you eat. Examples are bell peppers, squash, corn, and tomatoes. Some that don't are carrots and potatoes.

#### Student Worksheet 6

Why does it matter?

Many students will be more aware of plants and their differences. This lesson is an introduction to the topic. Hopefully, they will have the chance sometime to plant vegetables or flowers of their own. Students generally enjoy starting seeds and growing things in a garden. It's not only fun, but rewarding. It starts them on a path of appreciation for the natural world around them, and a sense of ownership and responsibility.

Exposure to plants and the environment increases interest in science. Beyond that, this lesson reinforces the message to think before you act.

#### Student Worksheet 7

Plant Hardiness Zone Map

If you have Internet access, we encourage you to visit <http://www.usna.usda.gov/Hardzone/ushzmap.html> for more information. This map may also appear on seed packets and catalogs.

#### Student Worksheet 8

Vocabulary and Review

Vocabulary is provide for student reference.

#### Student Worksheet 8

Review

Students should complete the review questions individually.

Answers:

1. No
2. The plant may get crowded, or crowd other plants, so they don't get enough sun, soil, or water
3. Perennials come up every growing season without being replanted. Annuals need to be replanted.
4. Sun, water, and soil

# Lesson Supplements





## Planning a Small Bird and Butterfly Garden Habitat

Selecting the right plants to attract birds and butterflies takes keen observation. Plant as many of the native plant species you see growing nearby as possible. Also, select and arrange the plants so that they vary in height from taller bushes to groundcovers. The objective is to plan a small area with a mixture of plant densities. Some plants could be planted in clumps, some spaced, and some areas left open. A bird bath could be placed in an open area, which will attract both birds and butterflies and provide a focal point for the garden.

Once the class assesses the area's characteristics, they can brainstorm about which plants are the right choices for the location. The use of plant catalogs and information on native plants may help this process. Individual or collaborative drawings for a small garden could result from the above brainstorming.

File the drawings. If time permits, perhaps the class may follow through and plant the garden the following spring. Before you shop for any of the plants, write down each plant's scientific name to make sure you get the right ones.

### Additional Resources:

Websites: Native Plant List [http://www.enature.com/native\\_invasive/](http://www.enature.com/native_invasive/)  
Wildlife Gardening <http://www.nwf.org/backyard/index.cfm>

Books: National Wildlife Federation: *Attracting Birds, Butterflies and Other Backyard Wildlife*  
*Schoolyard Habitats®: A How-To Guide for K-12 School Communities*  
(available at <http://www.nwf.org>)

