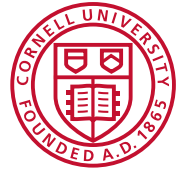


Cornell Cooperative Extension

Cornell Garden-Based Learning



Herbaceous Plants



20 minutes

Learning Objective(s): Participants will...

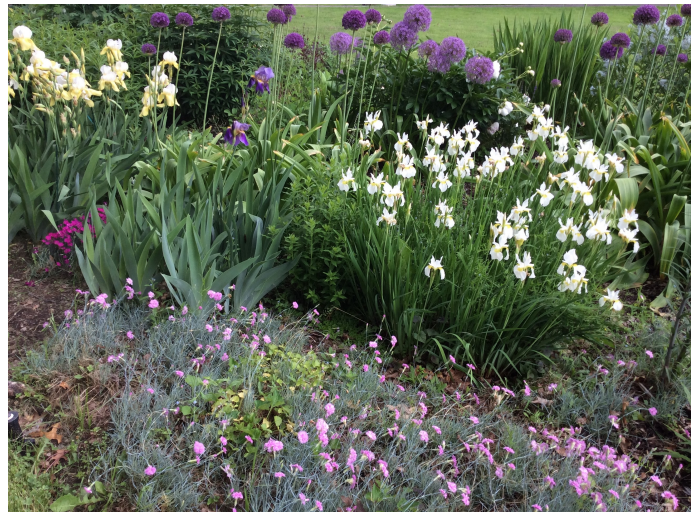
- Examine herbaceous plants that are commonly used in NYS landscapes.
- Distinguish similarities and differences between annuals and perennials.
- Discuss the functions of main plant parts, including leaves, stems / shoots, roots, and buds.
- Identify different types of leaf margins, shapes, bases, tips, and arrangements.

Supplies:

Handouts:

Materials:

- Several herbaceous plant samples with intact leaves, stems and roots
- Plant part labels that you have created per description below
- Herbaceous plant ID book or online herbaceous plant ID database



Instructions:

Each student will be given a set of five labels. Each set of labels includes one type of leaf margin, shape, base, tip and arrangement. The labels of leaf margin, shape, base, tip and arrangement are differentiated by five different colors to aid in distribution of labels during the reset between rotations. Students will place their labels on the appropriate plant samples. Each sample will have more than one label. After the labels are placed, students will identify the plant sample based on the labels placed on it.

After the plant samples are identified, we will discuss functions of the plant parts. Individually or in pairs, please answer the questions on each plant part, listed below:

Leaf parts: blade, petiole, margin, and stomata

What is the function of each leaf part?

What is the process of photosynthesis and transpiration?

What are the pigments involved in photosynthesis?

Building Strong and Vibrant New York Communities

Diversity and Inclusion are a part of Cornell University's heritage. We are a recognized employer and educator valuing AA/EEO, Protected Veterans, and Individuals with Disabilities.

Stems/Shoots:

What is the function of stems / shoots?

What are the differences among rhizomes, stolons, bulbs, corms, and tubers?

Roots:

What is the function of roots?

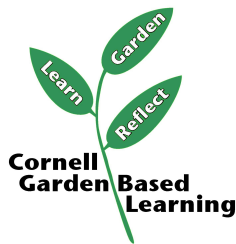
Which plants have fibrous roots? And which plants have tap roots? Please give some examples.

What is the difference between a tap root and a fibrous root?

Nodes (Buds):

Where are nodes located in plants?

What is the function of the nodes?



Date Published: April 2019

Author(s)/Contributor(s): Jingjing Yin

Reviewer(s): Michelle Podolec, Fiona Doherty

Labels

Leaf margins:

Entire (smooth)	Crenate (rounded teeth)
Lobate (lobed / indented)	Serrate (coarse teeth curved forward)
Undulate (widely wavy)	Dentate (symmetrical angular teeth)
Denticulate (fine angular teeth)	Elliptical (oval shaped with small or no tapering)

Labels

Leaf shapes:

Lanceolate (pointed at both ends; base widest)	Linear (thin; sides parallel)
Oblong (Wide parallel sides, tapered ends)	Spatulate (spoon shaped)
Ovate (egg shaped; widest at base)	Obovate (egg shaped; widest at tip)
Reniform (kidney shaped)	

Labels

Leaf blade bases:

Acute (less than 90 angle)	Cordate (heart shaped)
Hastate (triangular lobes)	Sagittate (arrowhead shaped)
Oblique (assymetrical)	Truncate (squared off)

Labels

Leaf tips (apex):

Obtuse (greater than 90 angle)	Acuminate (curving inward; fine point)
Cuspidate (long, then, sharp point)	Emarginate (notched in toward base)
Mucronate (short abrupt tip)	

Labels

Leaf arrangement:

Opposite leaf arrangement	Alternate leaf arrangement
Whorled leaf arrangement	Pinnately compound leaf
Palmately compound leaf	Simple leaf
Parallel venation	Pinnate venation

Labels

Leaf arrangement:

Palmate venation	Net (Reticulate) venation
Leaflet	Rosette