

WARGO NATURE CENTER PRESENTS

PLANTS WEEK

Plants are all around us, and we all depend on them! Plants have the amazing ability to combine energy from the sun, carbon dioxide from the air, and water from the ground and turn it in to food! Other forms of life on earth - such as all animals, depend on this energy. Plants are fabulous to learn and study about because they stay in the same place, making them easier to study than something like birds, which may move around a lot. Plant I.D. can be challenging as there are a LOT more plants than birds, they may look different at different times of the year, and learning plant terms can be challenging. Your goal this week is to work through the activities each day to help you learn more about plants and become a better plant scientist (*botanist*). If something is too hard, feel free to skip it and just get outside to enjoy the beauty of plants.



TERMS

Photosynthesis: the process where a plant produces sugar (food) from air (carbon dioxide) and water

Autotroph: living organism that produces its own food

Heterotroph: living organism that consumes other organisms for its food

Multicellular: made of many cells

Angiosperm: plant that produces covered seeds, also called flowering plants

Gymnosperm: plant that produces uncovered seeds, such as pines

Botanist: a scientist who specializes in the study of plants

PLANTS WEEK RESOURCES

CLICK ON THE LINKS BELOW
FOR MORE INFORMATION

[Minnesota Wildflowers](#)

[Minnesota Plants](#)

[Plants of the Eloise Butler Wildflower Garden](#)

[Trees and Forests of Minnesota](#)

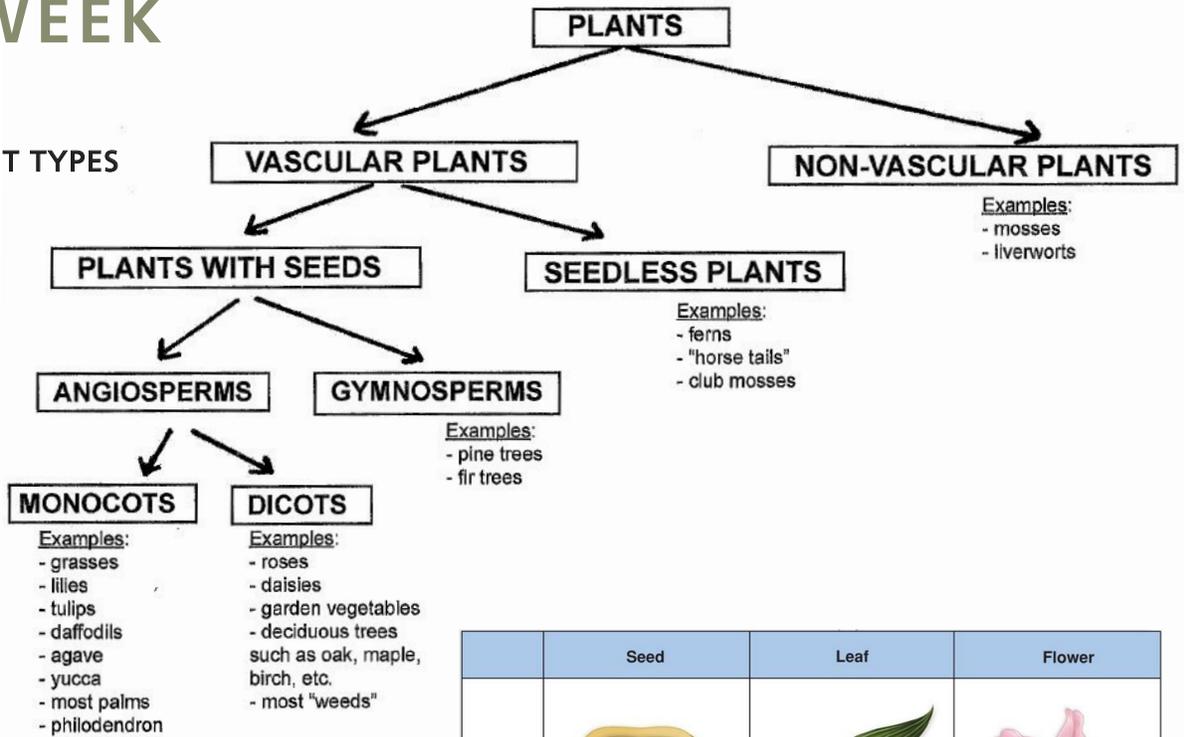


PLANTS WEEK

DAY 1

PLANT BASICS & PLANT TYPES

Scientists split living things into kingdoms - such as the animal kingdom, plant kingdom, fungi (mushrooms and molds) kingdom, etc. Plants represent one of these kingdoms. Just like animals are very different from each other - think about a fly versus a whale - plants are also very different.



A plant is generally defined as a living organism made of many cells (multicellular) that in most cases produces its own food (autotroph) through a chemical process called photosynthesis.

Several features help sort groups of plants. Some plants are vascular while others are non-vascular. This means some have tubes or veins (think of pipes in plumbing) to help move water and food, while others have none (like mosses).

	Seed	Leaf	Flower
Monocots	<p>One cotyledon in seed</p>	<p>Leaf veins form a parallel pattern</p>	<p>Flower parts in threes and multiples of three</p>
Eudicots	<p>Two cotyledons in seed</p>	<p>Leaf veins form a net pattern</p>	<p>Flower parts in fours or fives and their multiples</p>

Within vascular plants some have seeds while others produce spores instead of seeds (like ferns).

Within seed plants we have those with covered seeds (angiosperms) and those with bare seeds (gymnosperms - like pine trees).

Lastly, within angiosperms we have monocots and dicots. Monocots (grasses, lilies, etc.) have one "baby leaf" (cotyledon) as young plants and parallel leaf veins whereas dicots have two "baby leaves" (cotyledons) veins that are not parallel.

CHALLENGE

Today your challenge is to go outside and using the key and illustrations here, try to find one plant in each of the major groups: non-vascular, seedless plant, monocot, dicot, and gymnosperm.

Take photos of a plant in each group or make a drawing. Were any plants harder to find than others?

PLANTS WEEK

DAY 2

FLOWERING PLANT ANATOMY

Flowers are some of the showiest of plants and often those that attract the most attention. To better understand how these plants function and how to identify them it is useful to learn about their anatomy and features.

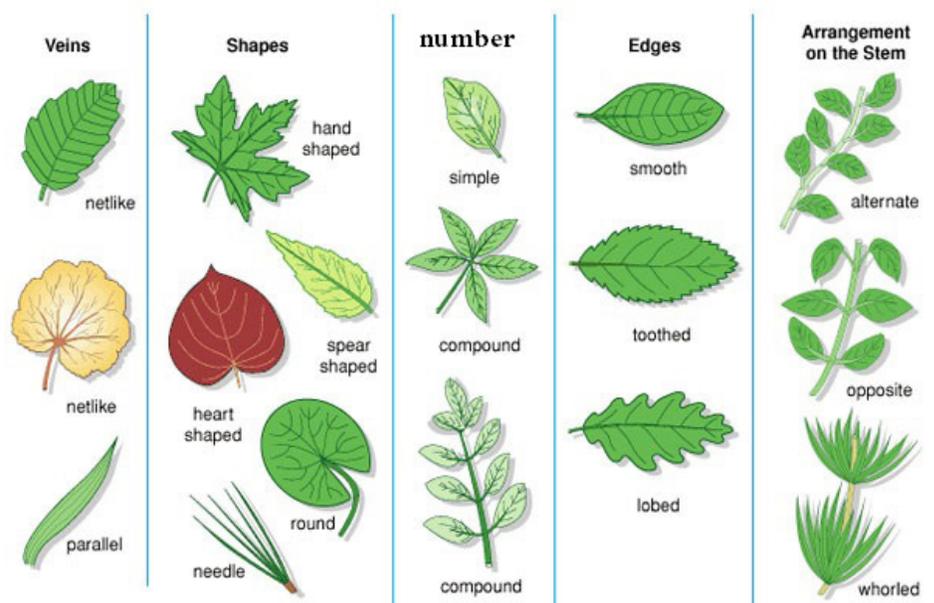
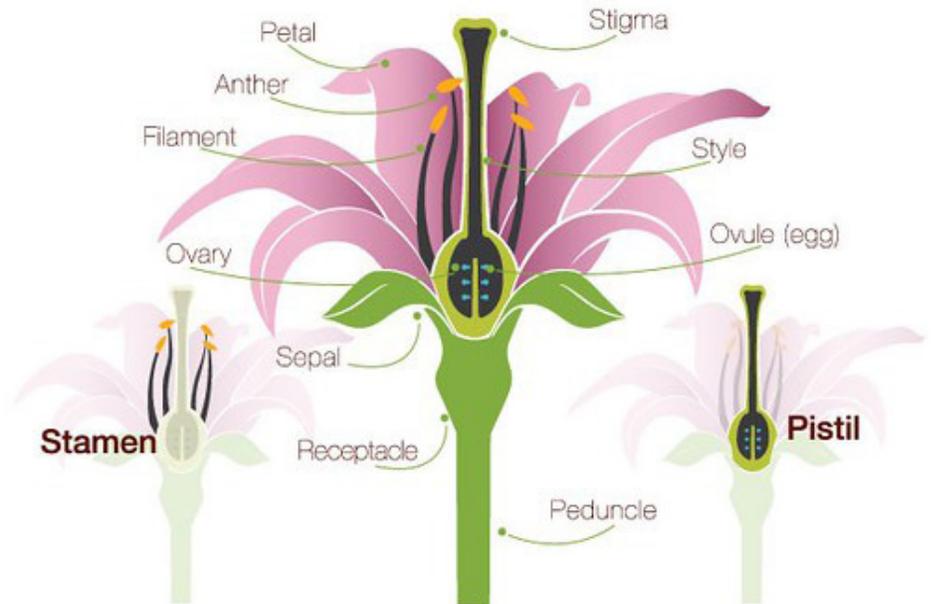
The branching or leaving pattern is very important when identifying plants. We use the term alternate or opposite to describe how the leaves or branches sit along the stem.

Leaves can have different edge types as well, such as being smooth, lobed, toothed, etc.

Leaves can also be simple or compound. In compound leaves, each of the apparent "leaves" is actually a leaflet, making up the whole larger leaf.

Many, but not all flowers are complete. This means they contain all the necessary parts to pollinate and be pollinated. A lily is a clear example of this. Try taking a daylily from a garden or one sold as cut flowers and dissecting it apart.

Can you find the parts labeled in the illustration?



PLANTS WEEK

DAY 3

WILDFLOWER HUNT

Using the chart below, look for a wildflower and fill out the chart. Looking closely at these features will help you get to know the plant better and can help with plant ID. See the example for help getting started.

Based off the characteristics you described for it, trying using the search function at Minnesota Wildflowers to identify your plant: <https://www.minnesotawildflowers.info/page/search>

 <p>Number of flowers on stem One</p>	 <p>Shape of leaf</p>	 <p>How many anthers? Five</p>	
 <p>Is it alone or are there lots together? Lots together</p>		 <p>How many stigmas? Two</p>	
 <p>How big is the flower? One inch across</p>		 <p>Where is it? In grass</p>	
 <p>How high is it off the ground? Four inches</p>		 <p>How many petals does it have? Four</p>	
 <p>What does it smell like? Like apples</p>		 <p>What color is it? Blue</p>	 <p>What shape are the petals? </p>

Number of flowers on stem

Number of flowers on stem

How many anthers?

Is it alone or are there lots together?

How many stigmas?

How big is the flower?

Where is it?

How high is it off the ground?

How many petals does it have?

What does it smell like?

What color is it?

What shape are the petals?

PLANTS WEEK

DAY 3

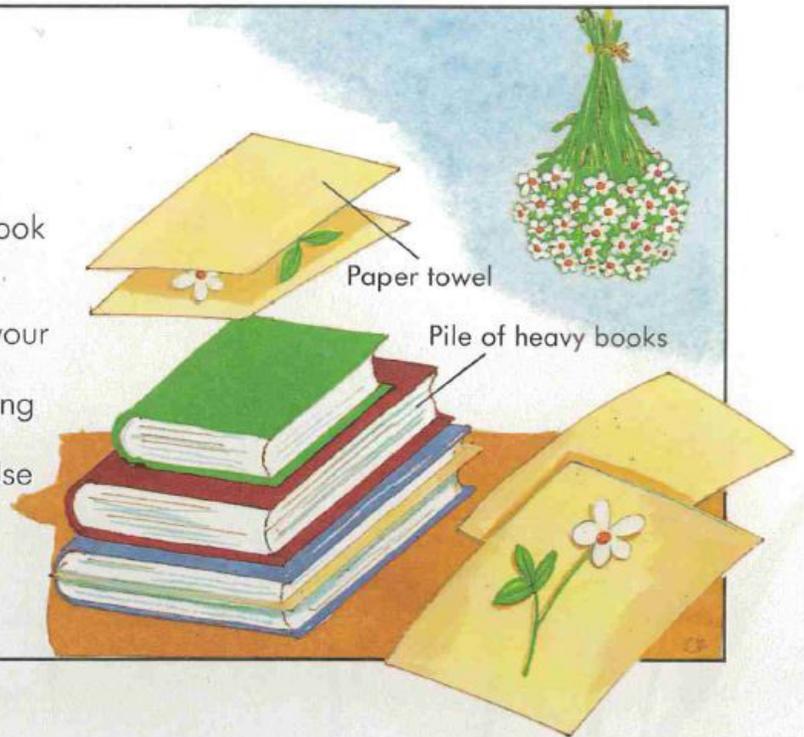
WILDFLOWER HUNT CONTINUED

If you find a wildflower that there are lots of and would like to take into a collection, you can press the flower. Professional *botanists* (people who study plants) collect and preserve plants using this process. Be sure to only do this with common plants and to not take too many. This can also be useful for helping study it later. Be sure to take notes on the color, location, date, and any other important features.



Pressing and Drying Flowers

The best method for pressing flowers is to place a clean sheet of paper in a large book and lay the flower on this. Cover it with a large piece of paper towel and close the book. Pile other large books on top and your flower will be ready after a month. Some flowers can be dried without pressing. Hang these up in a bunch somewhere warm. Many wildflowers are protected by law. Use garden flowers unless you are sure a wildflower is very common.



PLANTS WEEK

DAY 4

VASCULAR TISSUE AND TRANSPIRATION

Except for non-vascular plants like mosses and liverworts, all other plants have vascular tissue (like veins or plumbing). These tubes going through the plants help water and food travel in the plant. The two types are called xylem (water carrier) and phloem (food carrier).

Water is lost from plants through a process called transpiration. Small openings in the leaves called stomata allow air in, but also water out.

A fun experiment to see how much water is lost is to take a plastic bag and cover up some leaves on a tree or bush branch (the more the better) and then tightly seal it with a rubber band. The tree will keep losing water due to transpiration and it will pool up in the bag.

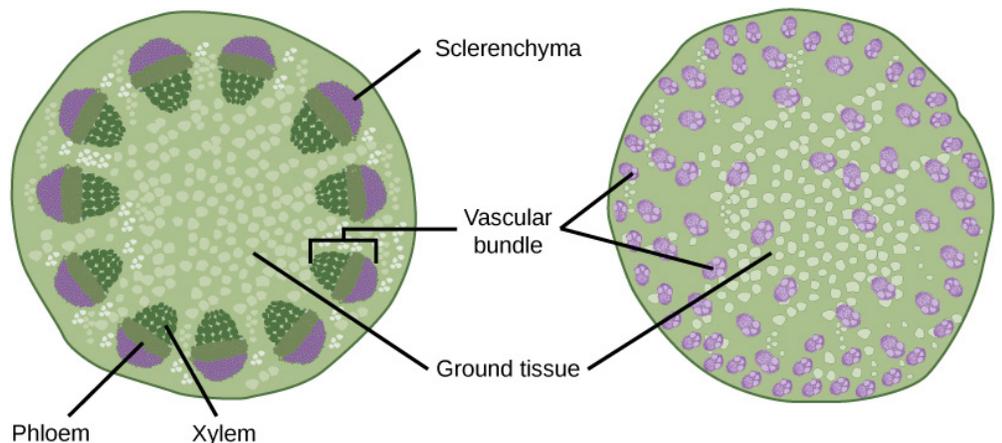
Try this during the day. How much water did you get?

Try a comparison of two roughly equal size branches, but one over the day and one overnight. Which one filled with more water?



Dicot stem

Monocot stem



PLANTS WEEK

DAY 5

PLANTS AND WILDLIFE

Since plants produce their own food, other organisms depend on them to get their energy. Living things that eat other things are heterotrophs. They can be things that eat plants directly (herbivores), eat animals that eat plants (carnivores), or eat animals and plants (omnivores). At the base of all of it though, is the energy from the sun made available by plants through photosynthesis.

Many animals have special relationships with plants. Not all plants are edible to all animal species. Some plants may be edible to one species, but toxic to another. The monarch caterpillar pictured here feeding on butterfly milkweed is an example of this.

Animals and plants have developed these special relationships over long periods of time as part of evolution. It takes many thousands of years for these relationships to fully develop. Changing them too much can harm both plants and wildlife.

Because of this, wildlife does best when it lives in areas dominated by native plants - plants that have existed in an area for hundreds or thousands of years, rather than invasive or non-native plants brought in (usually by humans).

By gardening and planting native species, you can help support these plants and the wildlife that depend on them! A nest of Black-capped Chickadees requires about 6000-10,000 caterpillars to reach adulthood. That's a lot of caterpillars! Native trees such as oaks and maples may support 400+ species of caterpillars, which is great for wildlife like birds that depend on those caterpillars.



Learn about what plants are best in your area by using this guide from the National Wildlife Federation: <https://www.nwf.org/NativePlantFinder/Plants>

To find sources for native plants, try the following nursery guide: <https://bigriverbigwoods.org/learn/native-plant-nurseries/>

The Minnesota Board of Water and Soil Resources has great garden design advice: <https://bwsr.state.mn.us/residential-pollinator-habitat>

PLANTS WEEK

NATIVE PLANT GARDEN

Make a drawing of what your native plant garden might look like.
What plants would you include? What other things would you include?



PLANTS WEEK

CRAFT - VENUS FLY TRAP PUPPET

Supplies

2 paper plates

Paint & brush

Scissors

Glue or stapler

White paper

Instructions

Fold both paper plates in half. Cut one paper plate along that fold. Take the two halves and paint the bottom of the plate green. Take your whole plate and paint green with a red spot in the middle on the side you would eat on. Let dry.

Cut out 2 strips of white paper about 2x11in. Fold in half 3 times then cut on the folds. You should end up with 8 squares for each strip, cut them diagonally to make triangles. Glue triangles to the edge of your plate. Glue or staple the plates together to create a pocket on the outside for fingers to go in.

Add googly eyes. Let everything dry. Send your crafter outside to see how long they can sit still to catch a fly. Or find/make some of your own bug friends for this fly trap to munch on!



To read these books and more search under the
Anoka County Library E-library page.

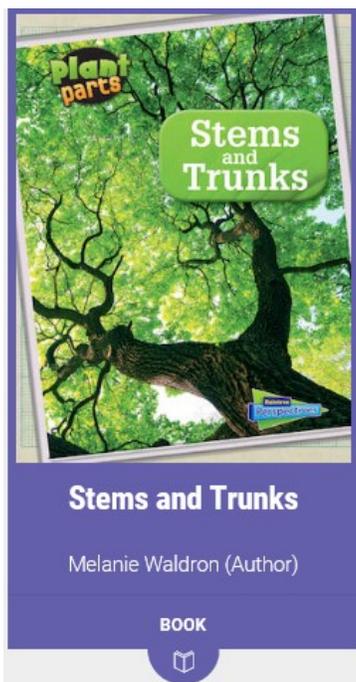
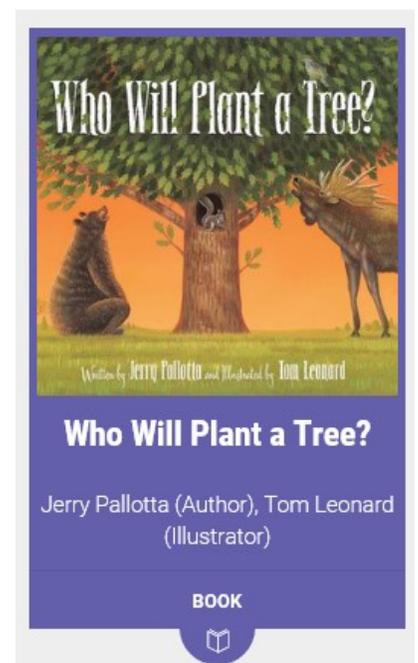
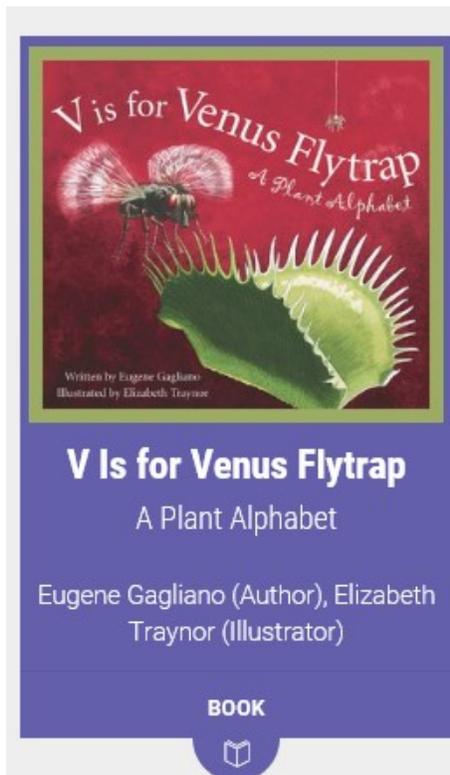
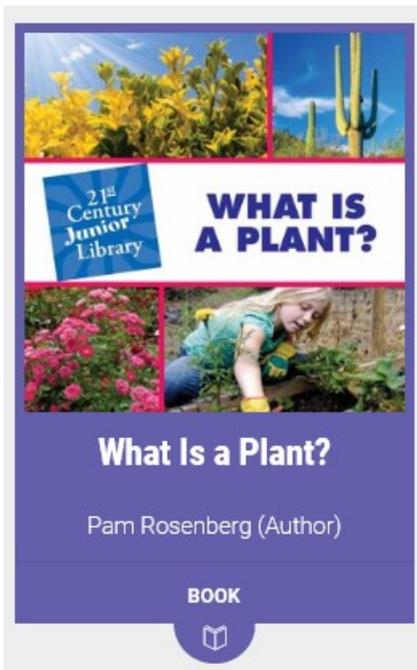
No library card needed!



<https://www.anokacounty.us/2599/eLibrary>

SEARCH WORD FOR THE WEEK:

PLANTS



Anoka County
LIBRARY

Ideas, Information, Inspiration.