

Forestry Pt 1

2022 Envirothon Topic



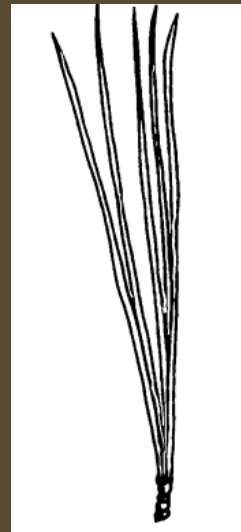
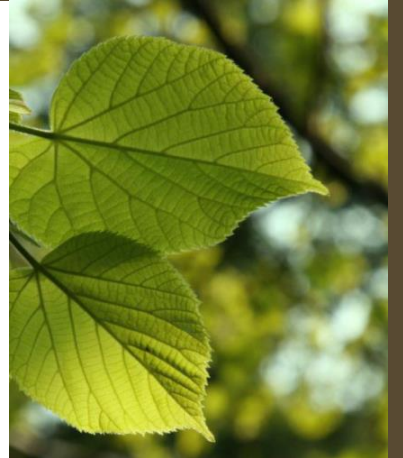
Learning Objectives

- Understand typical tree growth and life cycle.
- Cause and effect between the environment and tree health.
- List products and uses of ten PA hardwoods.



Easy Tree Identification components.

- Leaf Type:
 - **Scale like-** Thin, flat, and closely appressed, typically found in evergreen species.
 - **Broad and Flat-** very common in local deciduous trees. .
 - **Needles-** Needles in PA can be found sharp in pines, or blunter like hemlocks.

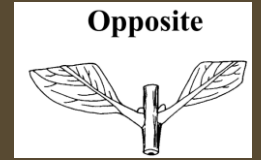


Leaf Arrangement

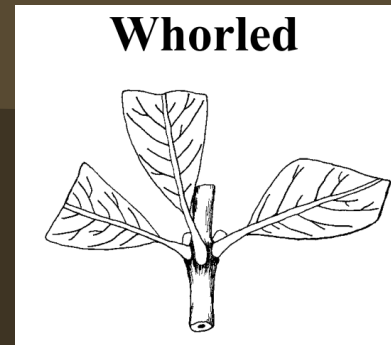
- Alternate- The **Petioles** or leaf stalk and points of attachment are staggered.



- Opposite- The Petiole points are directly across from each other.

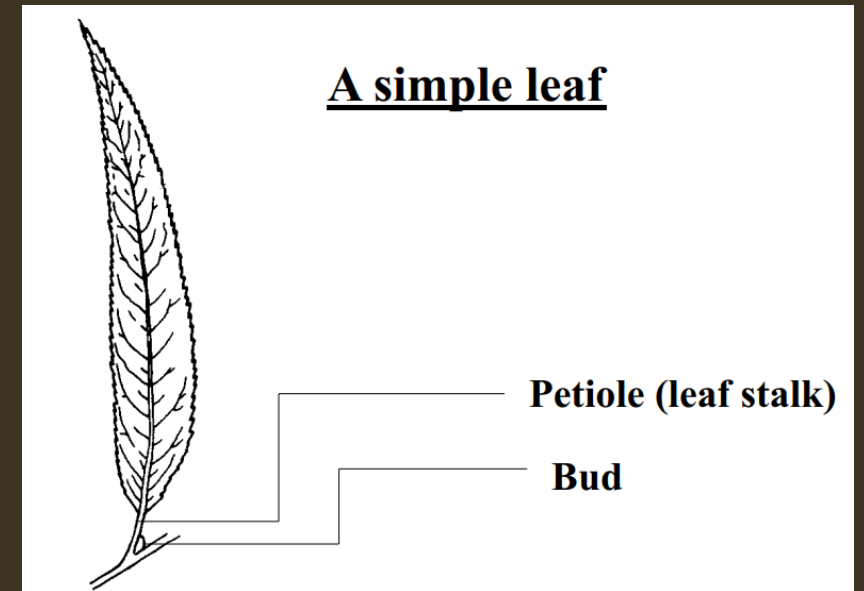


- Whorled- Three or more Petiole points in the same spot along stem.



Simple Leaf

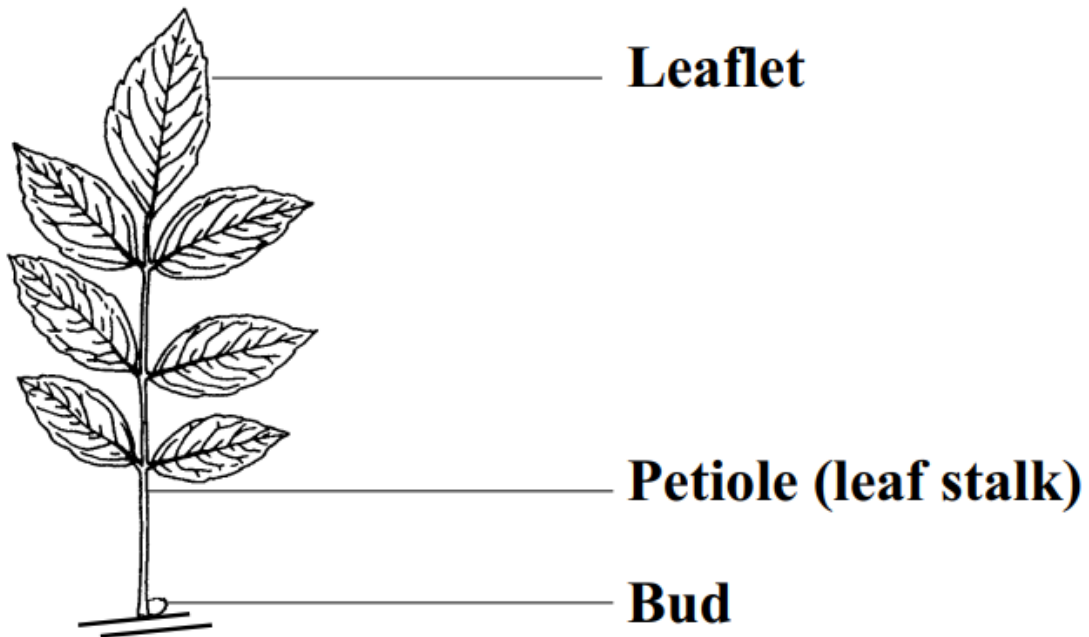
- One main leaf, not divided into leaflets.
- Common in alternative arrangement.
- Each leaf attached directly to a bud.



Compound Leaves

- Pinnately Compound :
 - Divided into **Opposite** Leaflets.
 - One bud for all of leaves where twig and leaf stalk attach

A Compound Leaf

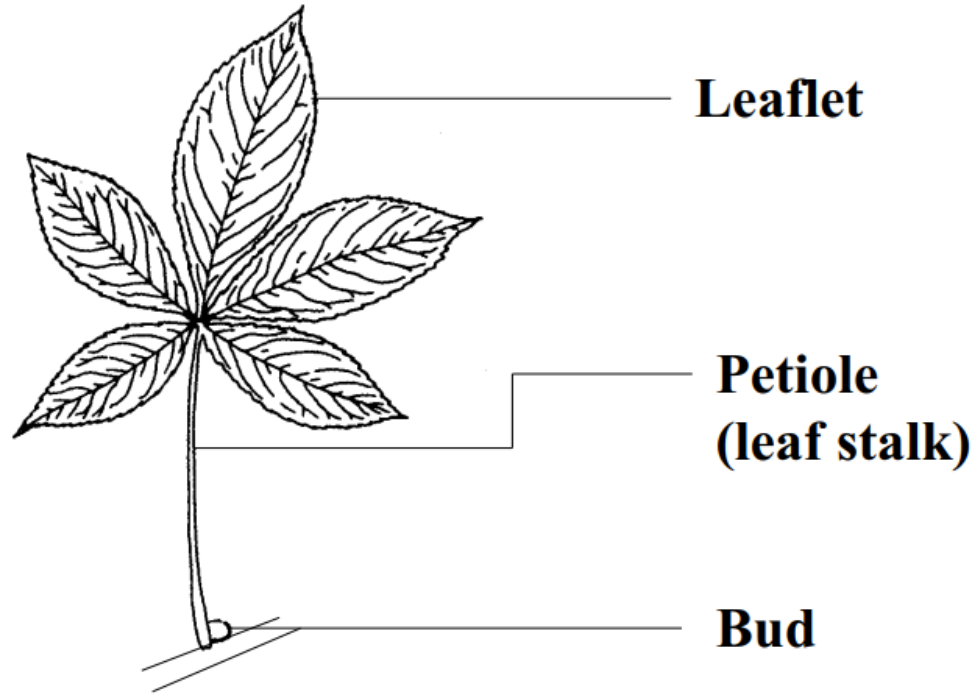


Pinnately compound



Compound Leaves

A Compound Leaf



Palmately compound

- **Palmately Compound:**

- Leaflets attach at a common point.
- One bud again where the stalk meets the twig.
- Whorled arrangement.



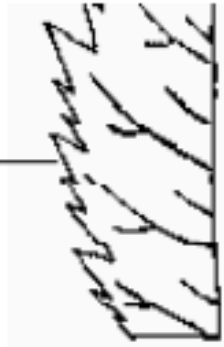
Serrate



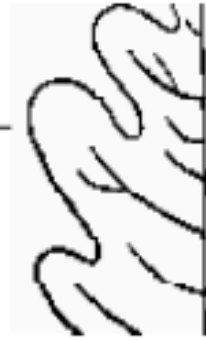
Dentate



**Double
serrate**



Lobed



Entire



Leaf Margins:

The edges or margins of the leaf are also used in identification.

Serrate leaves- margin with sharp forward directed teeth

Double serrate leaves- each sharp, forward directed tooth bears small teeth

Dentate leaves- margin with sharp teeth that point directly outward

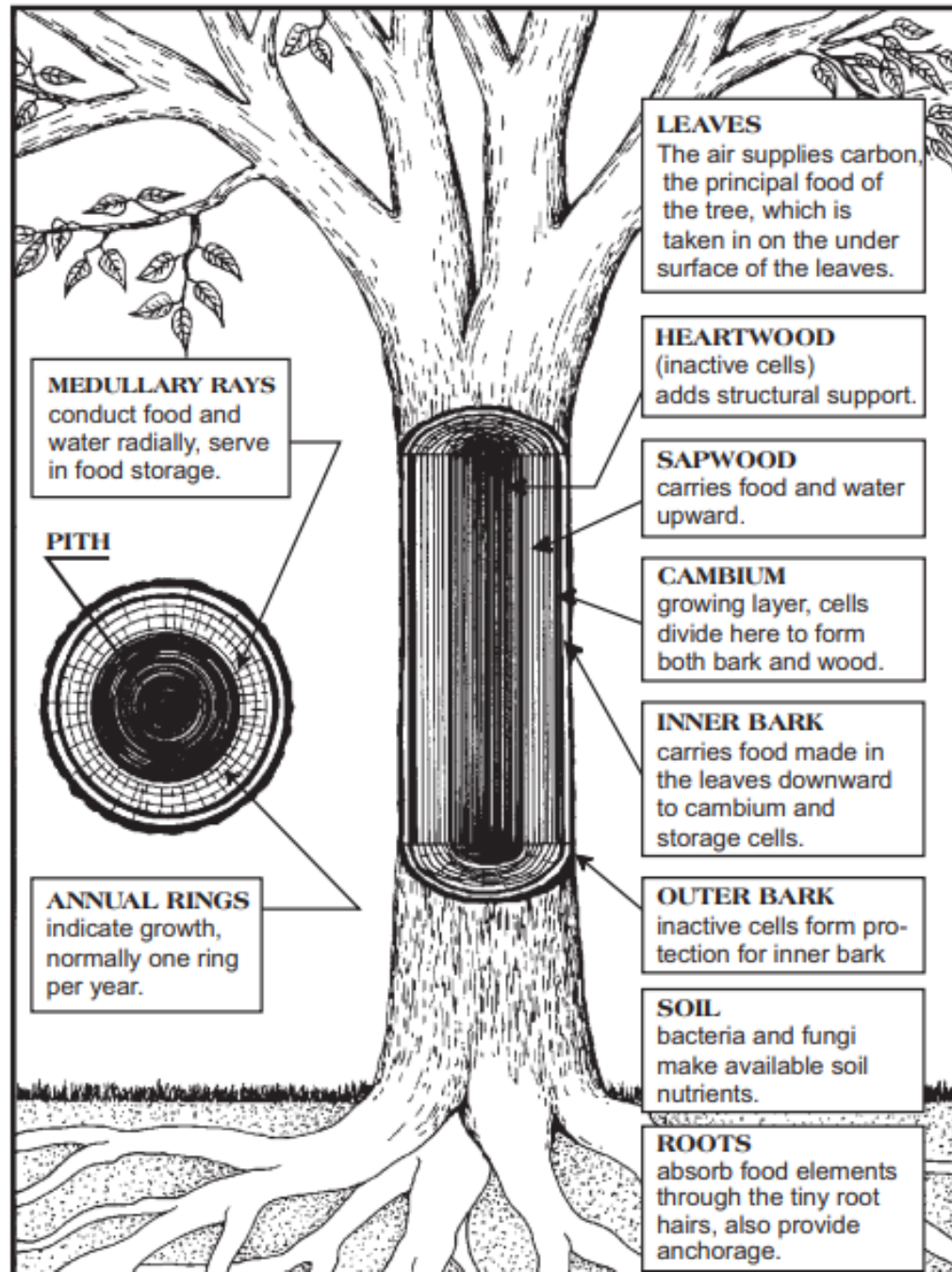
Lobed leaves- margin with relatively large, rounded projections (memory aid: think of ear lobe)

Which is serrated, which is Dentate?





Diagram Showing Functions Of Different Parts Of A Tree



Tree Growth Cycle

- **1 Seed:** Nature Disperses seeds differently, By means of wind, water, animals ext.



- **2 Sprout:** Not all seeds can germinate, need proper conditions. (Water, food source/ soil nutrients, and sunshine)



- **3 Seedling:** If sprout goes well, the stem will begin to stiffen and grow upward for sunlight. The root system now spread to upper soil horizons. Now begin to compete for sunlight.



- **4 Sapling:** Now considered a small tree. Size typically found at a nursery, 1-4 inches wide. May transplant into yard, but too young to reproduce.



- **5 Mature:** All conditions are met. Now the tree will begin to grow as large as the species will allow. It will flower and fruit and gain the ability to reproduce seeds. Optimum time for harvest. You can extend life and health by proper pruning.



- **6 Decline:** External stresses begin to threaten trees health. Pest, diseases, unfavorable conditions.



- **7 Snag:** The tree now begins to die, fall apart and return to the soil to be decomposed by soil microbes becoming energy for new generations of life.



Cause and Effect of Environmental Factors

- **Light:** The amount of light present effects the manufacturing of plant food.
 - **More Light means :** More stem length, more vibrant darker intensity of leaf color, denser canopy more flowering, more growth in general.
 - **Less light:** Results in yellowing leaves, short height, less foliage density
- Light Thicker Canopy
- Less Light, Thinner Canopy.



Moisture:

Too Much Moisture: in the air can cause trees to lose the lack of air circulation. Makes it more difficult for trees to evaporate water, which is part of transpiration process. When this occurs, the tree will eventually rot.

Not Enough Moisture: Trees still need some moisture in their climates to grow. Lack of moisture can stunt nutrients and growth.



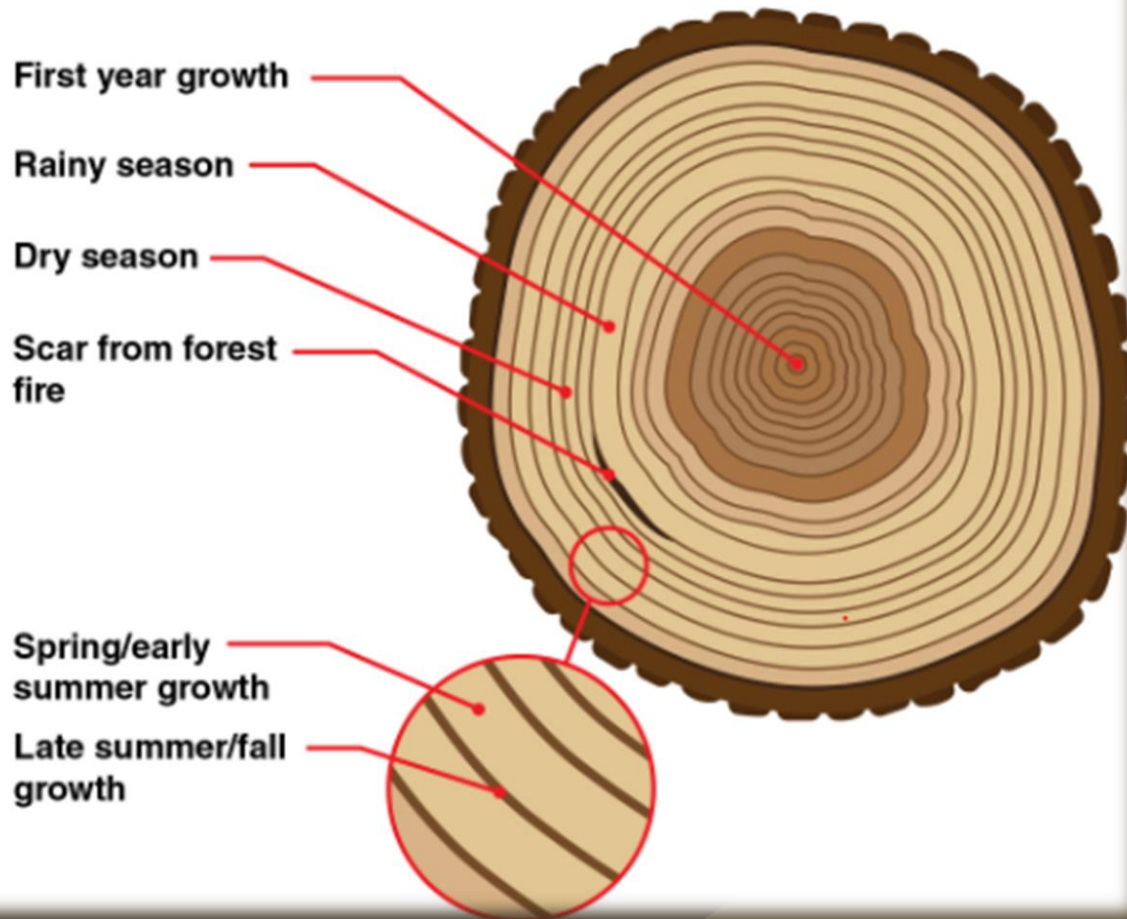


Soil health and Forestry

- **Good Soil Conditions:** Loam- Usually a mix sand and silt, or silt and clay. Most ideal conditions. Good drainage, loose enough for root development, full of organic matter, microbes, nutrients, and retains enough water for plant life. Allows trees to grow to full potential.
- **Poor Soil Conditions:** Sand, too loose, dry, no moisture retainment, low nutrients. Clay packed too tightly, low nutrients, little air flow, too much moisture. Results in poor grade undeveloped trees, loss of reproduction.

Reading Tree Rings

Cookies



- Using a science called **Dendrochronology** we can use tree rings to age and determine past climate based on features found in segments of tree cookies.
- Each ring represents one year.
- Light colored rings represent growth in early spring.
- Dark colored rings represent growth in Late summer to fall.
- Wider, more developed rings indicate ideal climate conditions.
- Thin underdeveloped rings may represent un-ideal climates, such as drought, or cold, low rain years.

What do you see?



Ten Important PA Hard Woods

- Be able to identify ten PA Hardwoods.
- List products and Uses of each.



- **Black Cherry (*Prunus Serotina*):** Most economically valuable in PA. Used in furniture making. Making Veneer. Considered a high-quality finish for cabinets, paneling, molding ext.
- **Northern Red Oak (*Quercus Rubra*):** 2nd most valuable in PA. Again, used for high quality furniture, Veneer, and wall paneling.
- **Red Maple (*Acer Rubrum*):** Most common tree species for available wood. Used for furniture, instruments, and wall paneling.



- **White Oak (*Quercus Alba*):** Used for furniture, but best uses include Barrels and ships. Very resistant to water and decay.

- **Chestnut Oak (*Quercus Prinus*):** Bark is rich in Tannins which used to be used for tanning leather. Current uses are for ships and barrels due to water resistance.

- **Sugar Maple (*Acer Saccharum*):** Used for decorative items because of unique wood grain patterns. Good for furniture, bowling alleys, and floors because of strong grain.

- **Yellow Poplar (*Liriodendron Tulipifera*):** Unique yellow color makes good used for construction, furniture, veneer, and carvings.



- **American Beech (*Fagus Grandifolia*):** Good for food containers because the wood is tasteless. Can also be used for hardwood flooring, furniture, ext.
- **Hickory (*Carya spp.*) :** Good for flooring, Tool handles, ladders, dowels, and sporting goods.
- **White Ash (*Fraxinus Americana*):** Very shock resistant. Good for tools, bats, hockey sticks. Also good for furniture, paneling, floors, Ext.



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