An OUTREACH program of the College of Agricultural Sciences

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Robert Gleim

Master Gardener

FRUIT TREE BASICS

Adapted from **Fruit Production for the Home Gardener**

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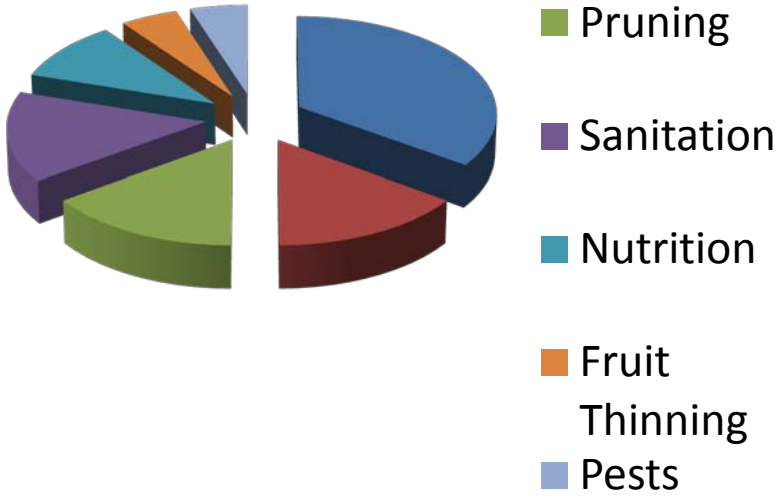
Common Symptoms vs Causes

Symptoms

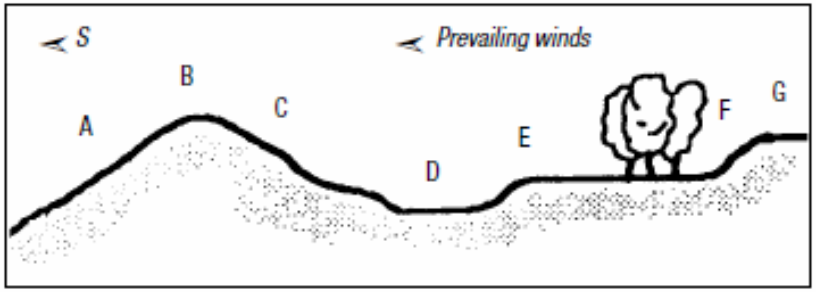
Causes



PROPER PLANNING

Site Selection

- Is your site suitable for growing fruit trees?
  - While most fruits can be grown in PA, not every variety will thrive or survive at every location.
- The ideal site is:
  - On **rolling or elevated land** so that cold air can drain during spring frosts & freezes
  - Has **lots of sunlight** (10+ hrs), early morning sunshine is important for drying dew from the plants
  - Has **good water drainage**,
    - Avoid soils and sites that are not well drained.
    - Stone fruits (peaches, cherries, and plums) are the most susceptible to poor drainage
    - If water stands for more than 24 hours after a spring rain, the soil is probably not drained well enough for fruit production.
  - **Protected from prevailing winter winds**



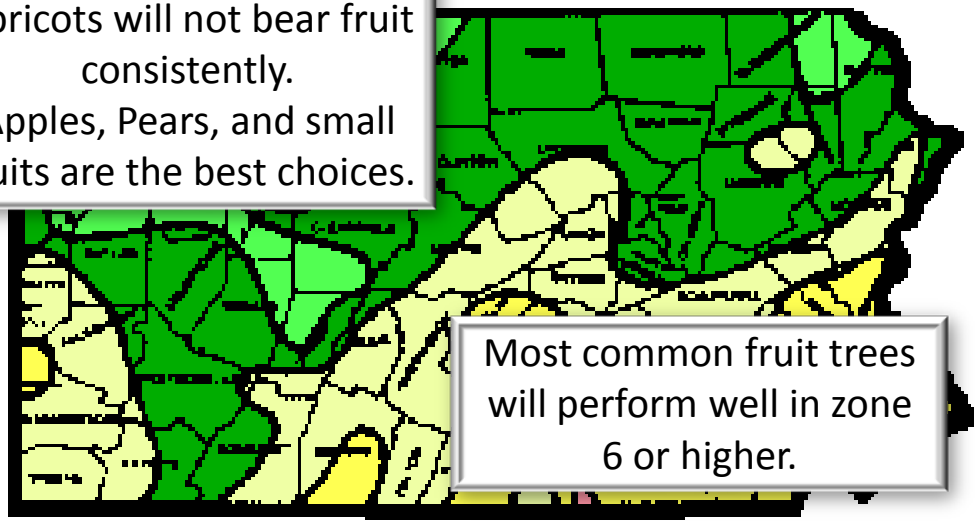
Site Selection

- Allow adequate tree spacing
  - Less crowded plants will get more air circulation & sunlight and dry more quickly.
  - Ideal spacing of at least 1.5 x mature tree height
- Vegetation competes with fruit trees for resources (nutrients, water and pollinators), provide a moist environment for disease organisms, and often harbor insects and small animals such as rabbits and mice.
  - Vegetation under fruit trees can reduce yields by 25%
  - At a minimum, remove all grasses and weeds at least 3 ft from the trunk of trees

Variety Selection

- Select varieties suited to your area
  - Look around your area and visit some local orchards to see what works well where you live. Ask local growers at the farm markets about their favorite local fruits. Most local growers are eager to share their knowledge
  - Choose varieties that are rated for your hardiness zone number

Peaches, Nectarines and Apricots will not bear fruit consistently.
Apples, Pears, and small fruits are the best choices.



Most common fruit trees will perform well in zone 6 or higher.

Variety Selection

Pollination Requirements

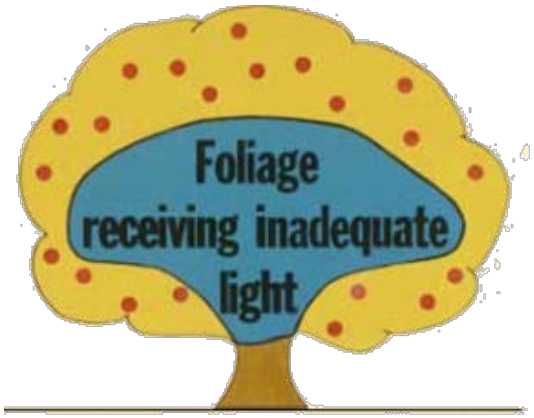
- All fruit trees in Pennsylvania require pollination.
- Fruit trees are either "self-fertile" or require "cross-pollination"
  - Self-fertile will set fruit with their own pollen, and therefore require you to plant only one variety or plant.
    - Peach, Nectarine, Apricot, Sour Cherry
  - Cross pollination requires two or more varieties planted close to each other to set fruit
    - Apple: Cross-pollination is always needed to produce an adequate fruit crop.
    - Pear: Some varieties are partially self-fertile, but planting at least two varieties is best to ensure cross-pollination.
    - Plum & Sweet Cherry: about half of the varieties are self-fertile and half are not. To be on the safe side, provide pollinizers.
- Conditions necessary for satisfactory cross-pollination
  - Bloom periods must overlap
  - Must produce viable pollen
    - Closely related varieties do not pollinate each other
  - Must be grown in close proximity (~100 ft)
  - Bees and other insects must be present and active at bloom

Additional Selection Considerations

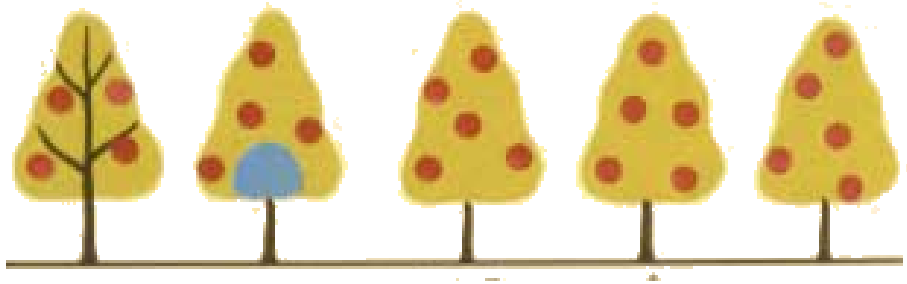
- Rootstock Types
  - Dwarf (8'-10‘ height),
    - Use dwarfing rootstocks, if possible.
      - Smaller trees have smaller canopies and dry off faster
      - Take less room & plant more trees in less space
  - Semi-dwarf (12'-16‘ height), and
  - Full sized also called "Seedling" (15'-30‘ height).
- Select disease resistant varieties if they are available
  - Varieties are not resistant to all diseases that occur in Pennsylvania, they are resistant to the major ones
  - Minimizing the need for spraying
- Don’t Forget Harvest Dates
  - Choosing some early, mid season and late season fruits will give you a more usable harvest than if they become ripe in the same week.
- Plant Quality
  - Nursery plants listed as "certified" (true to name) and "virus tested" or "virus indexed" are recommended.
  - Buy the best trees you can that are free from disease and insect problems.
    - Poor quality trees may never recover
    - Purchase well-grown, heavily rooted, one-year-old plants of all fruits
  - If buying container grown trees, choose a medium size tree. Avoid the largest trees.

GENERAL MAINTENANCE

Pruning Fruit Trees

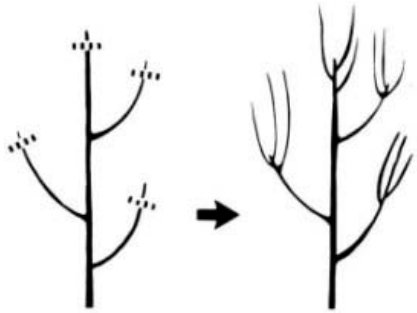


- Why Prune?
  - Increase sunlight penetration
  - Develop a desired tree shape
  - Maintain the tree at a desired size
  - Improve tree strength
  - Make spraying easier
  - Improve air circulation within the tree, which will reduce the potential for disease
  - Remove less productive wood
  - Promotes uniform ripening
  - Improve fruit quality

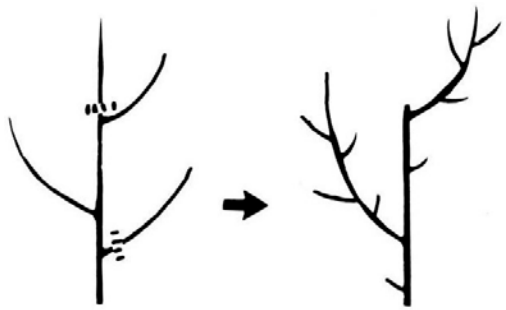


Pruning Basics

- Prune late in the dormant season to minimize cold injury.
  - March - April
- There are only two types of pruning cuts.
  - *Heading cut*. This type of cut involves shortening a limb or shoot by removing a portion off the end.
    - Heading cuts result in a thicker and denser canopy and reduce light levels within the tree.
    - Encourages shoot growth and reduces flower buds
  - *Thinning cut*. A thinning cut is the removal of an entire shoot back to its point of origin.
    - Thinning cuts do not induce excessive vigorous regrowth and open the tree's canopy to allow more sunlight into the interior.
    - Associated with increased flower bud production
- Excessive pruning encourages excessive shoot growth
  - Do not remove more than 30% of the trees canopy in a season



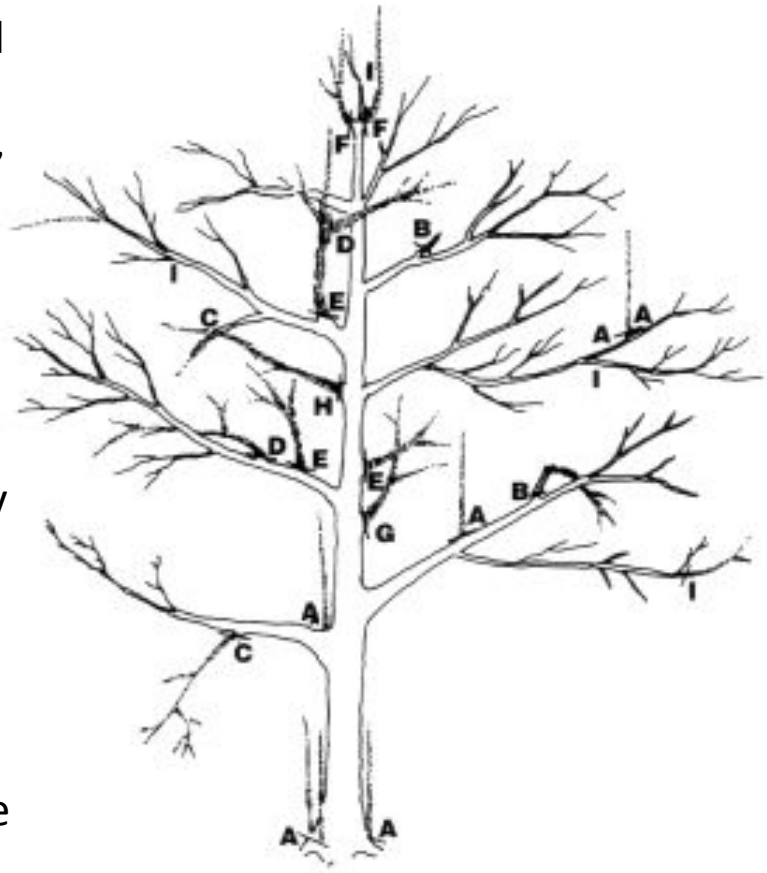
Heading Cut



Thinning Cut

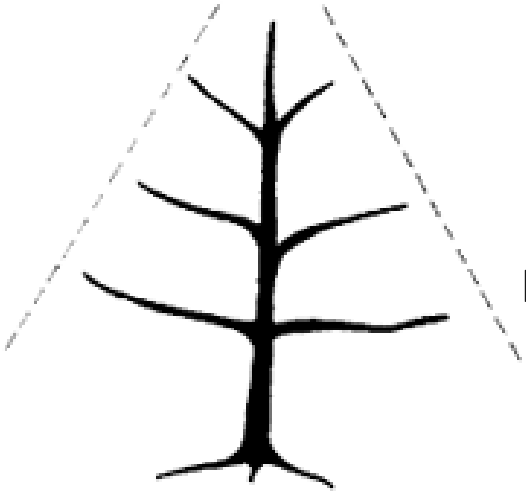
General Pruning Guidelines

- A. Suckers or watersprouts are vigorous vegetative shoots which drain nutrients needed for fruit production.
- B. Stubs or broken branches result from storms, heavy fruit loads, or improper pruning.
- C. Downward-growing branches develop few fruit buds and eventually shade or rub more productive scaffold branches.
- D. Rubbing branches create bark injury which also invite insects or disease.
- E. Shaded interior branches develop less quality fruit and limit access for harvest.
- F. Competing leaders result when suckers near the top of the tree are allowed to grow taller than the central leader.
- G. Narrow crotches result in weak limb joints
- H. When several branches originate at the same point on the trunk joints are weaker.
- I. Heading cuts are used to limit or redirect the growth of the central leader or branches.

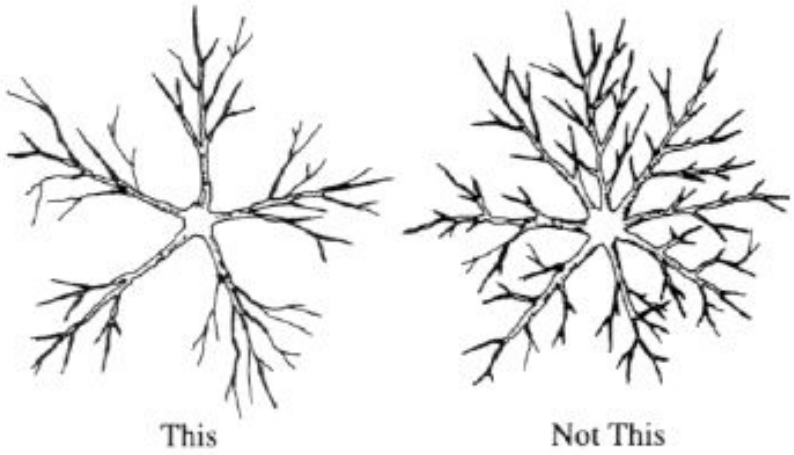


Pruning Mature Apples and Pears

- Tree Shape and Form
  - The preferred method of pruning pome trees is the **Central Leader System**.
    - The shape of a properly trained central leader tree is like that of a Christmas tree.
    - The lowest scaffold branches will be the longest and the higher scaffold branches will be progressively shorter
- Visualize a tree as seen from above without its leaves. From the trunk branches radiate out like the spokes of a wheel.
  - In order to allow sunlight and spray penetration, and to allow access for harvesting, it is necessary to thin out some of these "spokes."



Space scaffold branches to allow access.



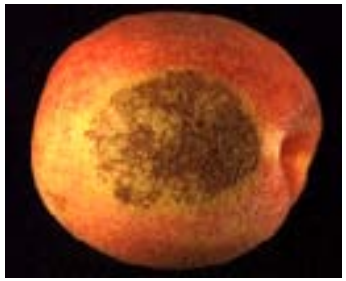
Pruning Stone Fruit Trees

- Tree Shape and Form
  - The preferred method of pruning stone fruit trees is the **Open Center System**.
  - With the open center system, the leader is removed, leaving an open center.
    - Instead of having a central leader, the tree has 3 to 5 major limbs, called scaffolds, coming out from the trunk.
  - All stone fruits are very susceptible to brown rot.
    - Open-center trees allow better air circulation and light penetration within the tree--both important factors in reducing the development of brown rot on fruit.

Sanitation Controls

- Remove, burn, or bury all pruned, dead and diseased wood.
- Remove all rotted fruit from within the tree & from the orchard floor and dispose of it.
- Rake and burn leaves and other litter under the tree to destroy overwintering disease and insect habitats.
- Cultivate. Do not let sod grow within 3 feet of the tree trunk.
- Eliminate weed hosts. Many insects and diseases overwinter in weeds.

Peach Scab



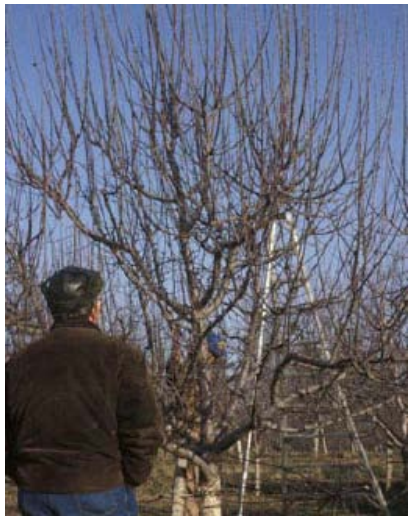
Peach Rust

Brown Rot

Cytospora Canker

Nutrition Maintenance

- Test & amend the soil at least 1 year prior to planting
  - Most fruit trees desire a soil pH of 6.0 to 6.5
- Generally, fruit trees need some fertilizing each year
- DO NOT OVER FERTILIZE
  - This leads to excessive vegetative growth at the expense of flower production
  - Apply fertilizer in early spring (late March – early April)
  - Do not use lawn fertilizers: Mostly Nitrogen
    - Causes excessive vegetative growth
  - Peaches, Plums, Cherries:
    - 0.5 lb/year of age =>5 lbs max of 10-10-10 fertilizer
  - Apples & Pears:
    - 0.25 lb/year of age of 10-10-10 fertilizer
      - Dwarf: 2.5 lbs max
      - Semi-Dwarf: 5 lbs max
      - Standard: 10 lb max
- Keep fertilizer away from the trunk of the tree.
  - Broadcast near drip edge.
- Older (5+ years) fruit bearing trees should average 12 to 18 inches of shoot growth per year. Nonbearing young trees should average 18 to 30 inches



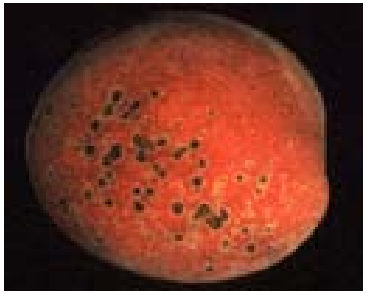
Fruit Thinning

- Thinning is done for several reasons.
  - First, a certain portion of the fruit is removed so that the remainder will develop adequate size and quality.
  - Second, the thinning process serves to increase the plant's ability to form flower buds for the next year--provided the thinning is done early enough.
    - Helps prevent Bi-Annual bearing
  - Thinning also reduces the total load on the branches and reduces breakage. Thinning is necessary for apples, nectarines, pears, plums, and peaches.
- Hand thinning is the easiest and safest way to remove excess fruit.
  - Hand thin fruit when the fruits are the size of the end of your little finger--about 1/2 inch in diameter.
  - Simply start at one end of a branch and systematically remove fruit, leaving one fruit every 6 to 10 inches. It is best to cut the fruit off rather than pulling the fruit. Cutting the fruit will lessen the chance of damaging the spur.
  - Be sure to leave only one fruit at a given site. Where doubles or triples are left, insects and disease will be difficult to control.
- Keep in mind that only 7 or 8 percent of the tree's fruit are needed to set a full crop of fruit.

Pest Control

Spraying Pesticides

- Because fruit trees have many insect and disease pests, growing quality fruit in Pennsylvania is difficult without some pesticide use.
- If you do not wish to use pesticides, you can employ many other tactics to reduce pest numbers in your fruit plantings.
  - You should be aware of the possibility that you will lose a significant portion of your crop to insects and disease, especially during wet years
- Before using any pesticide, read the label & follow all safety precautions on the label.
- "Days-to-Harvest Intervals" (DHIs) or "Preharvest Interval" (PHI).
  - The period of time that must pass before fruit can be harvested after the application of a particular pesticide.
  - Pesticide residues on plants degrade to harmless byproducts over time.
  - Little or no toxic residues remain either on the fruit or in the environment if the pesticide is used according to label instructions.



Bacterial Spot

Sooty Blotch & Flyspeck

Fireblight

Apple Scab

Selection of Pesticides

Powdery Mildew

- Selection of the proper pesticide depends on
  - Pest being controlled
  - Fruit tree type
  - Weather/environment
  - Developmental stage of the fruit
- The basics
  - General-purpose (GP) fruit sprays are available at retail outlets.
    - A GP-Product usually includes one or more insecticides and fungicides.
  - Dedicated Insecticide
    - Carbaryl or Malathion
    - Horticultural Oil
  - Dedicated Fungicide
    - Captan
    - Lime Sulfur
    - Copper

Peach Leaf Curl

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