

Getting fruit trees off to a good start

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Getting fruit trees off to a good start

- Resources (Handout)
- Tree and Site considerations
- Planting tips
- Training systems & pruning
- General IPM considerations

Fruit tree cold hardiness

Time of year	Type of damage
Nov & Dec	Rapid temperature drop damages trees that have not hardened off for winter.
Jan & Feb	Low temperature damage fruit buds, very low temperatures damage trees
Mar to Jun	Trees become more vulnerable as buds start to open

Fruit types differ in the mid-winter hardiness of their flower buds

Fruit type	Critical temp. (F) for flower injury
Apple	-30
Apricot, Pear, ConCORDS	-25
Blueberries	-25
Tart Cherry	-20
Raspberry	-17
Blackberry	-15
Plum, Sweet Cherry	-15
Peach and Nectarine	-13
European Grapes	-8 to -15



Bloom order

**Bloom
early**

*Fruit types with early bloom
are at greatest risk for
spring frost damage*

Apricot

Japanese Plum

European Plum

Peach/Nectarine

Sweet Cherry

Tart Cherry

Pear

Apple

Concords

**Bloom
late**



Choosing fruit varieties

- Look for varieties that are adapted for your growing area.
- If you plan to do minimal spraying, find varieties with better disease resistance. Be aware that the more resistant varieties may have lesser eating quality.

Choosing fruit varieties



Look for high chill (at least 500 chill hours) varieties for the Michigan climate



Angelus Peach -WHERE TO BUY-

Large freestone with bright red skin over yellow background color. Mild, low-acid yellow flesh. Good shipping qualities. Ripens just after Elberta. Performs well in USDA Zone 6 and is worth a try in slightly colder climates. 800 hours. Self-fruitful.



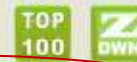
Arctic Supreme White Peach -WHERE TO BUY-

Two-time taste test winner. Large, white flesh, nearly freestone when fully ripe. Red over cream colored skin. Sweet and tangy, fine delicate flavor, firm texture. Peak quality reached a short while after picking. Harvest late July/early August in Central CA. 700 hours. Self-fruitful. (Zaiger)



August Pride Peach -WHERE TO BUY-

Large, all-purpose yellow freestone for mild-winter climates. Sweet, aromatic, rich flavor, one of the very best. Ripens 3-4 weeks after Mid-Pride. Chilling requirement less than 300 hours. Self-fruitful. (Zaiger)



Babcock White Peach -WHERE TO BUY-

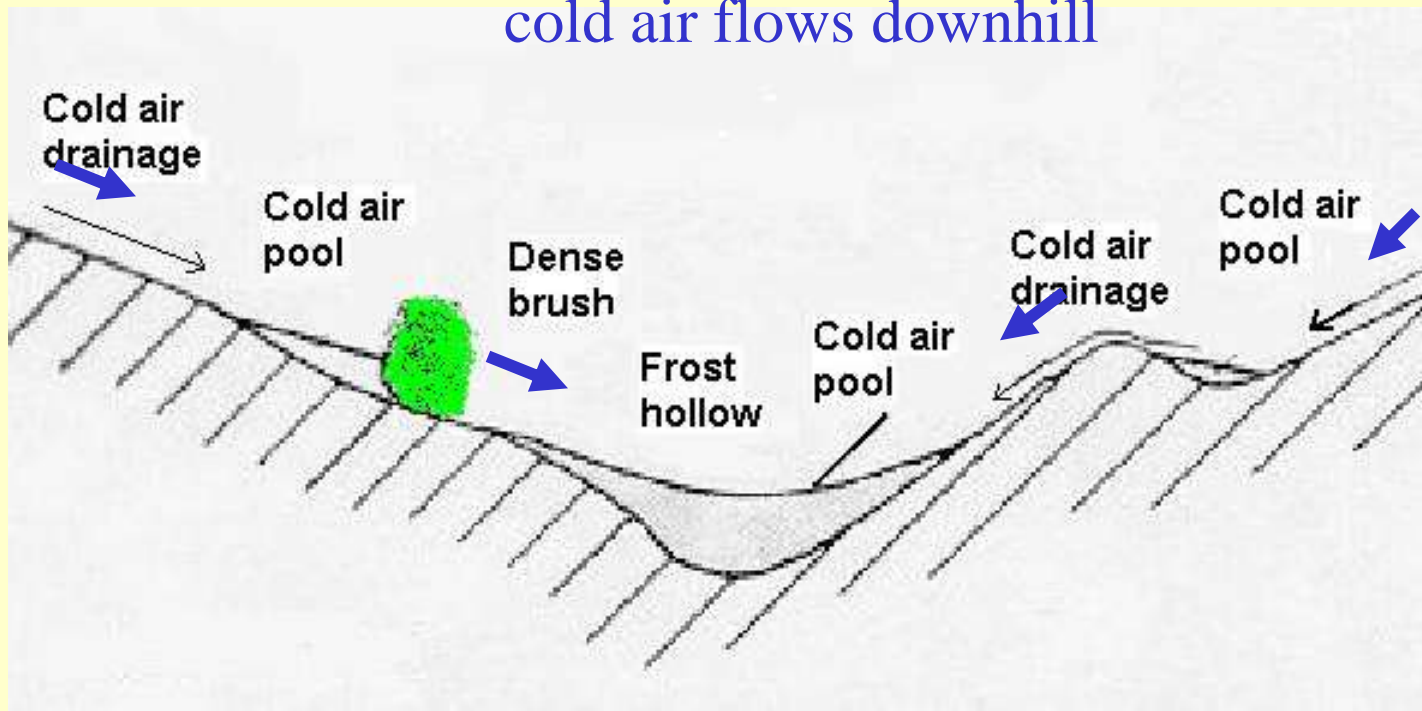
Long-time favorite white-fleshed freestone. Sweet and juicy, aromatic, low in acid. High scoring in taste tests. Ripens mid-July in Central CA. Widely adapted (low chill requirement, yet not early blooming). 250-300 hours. Self-fruitful.



Better fruit sites tend to be on hills where air is warmer on still nights



cold air flows downhill



Site selection for fruit



- Sunlight requirements
 - fruit needs approximately 60% full sun--all day is best
- Soil requirements
 - sandy loam to clay loam
 - good water drainage



for most fruit:

Soil pH best is 6.2 to 6.8, okay is 5.5 to 7.5.

Blueberries and cranberries require pH below 5.5 and perform best at pH between 4.5 and 5, tart cherries are somewhat intolerant of low pH.

Tolerance to poorly drained soil

Worst

peach/nectarine/apricot

mahaleb cherry rootstock

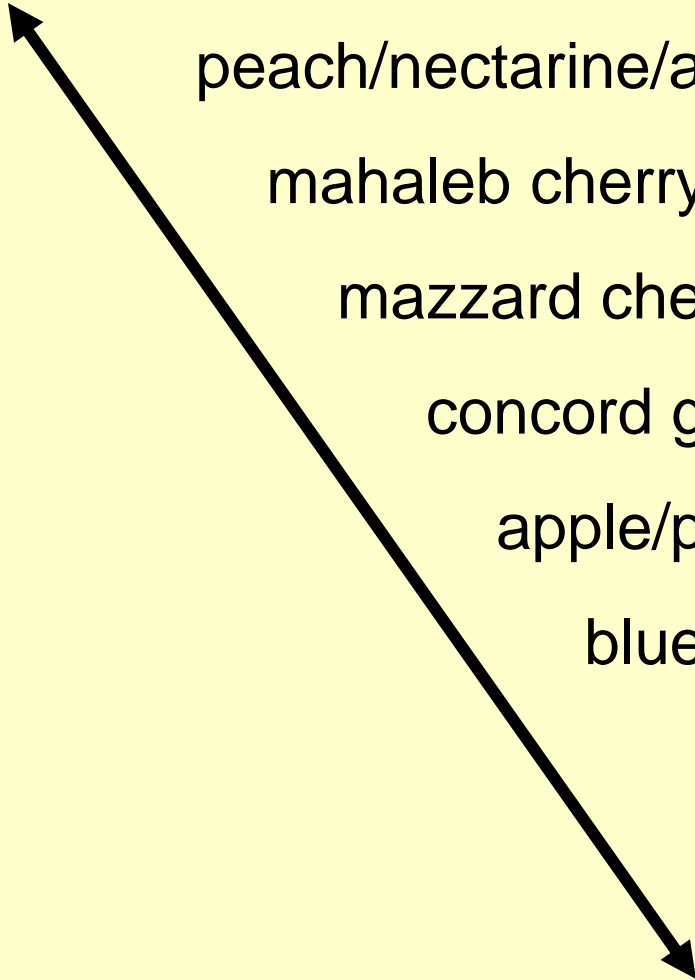
mazzard cherry rootstock

concord grape

apple/pear

blueberry

Best



Build a mound or berm where wet soil is a problem. Also consider tiling for water drainage

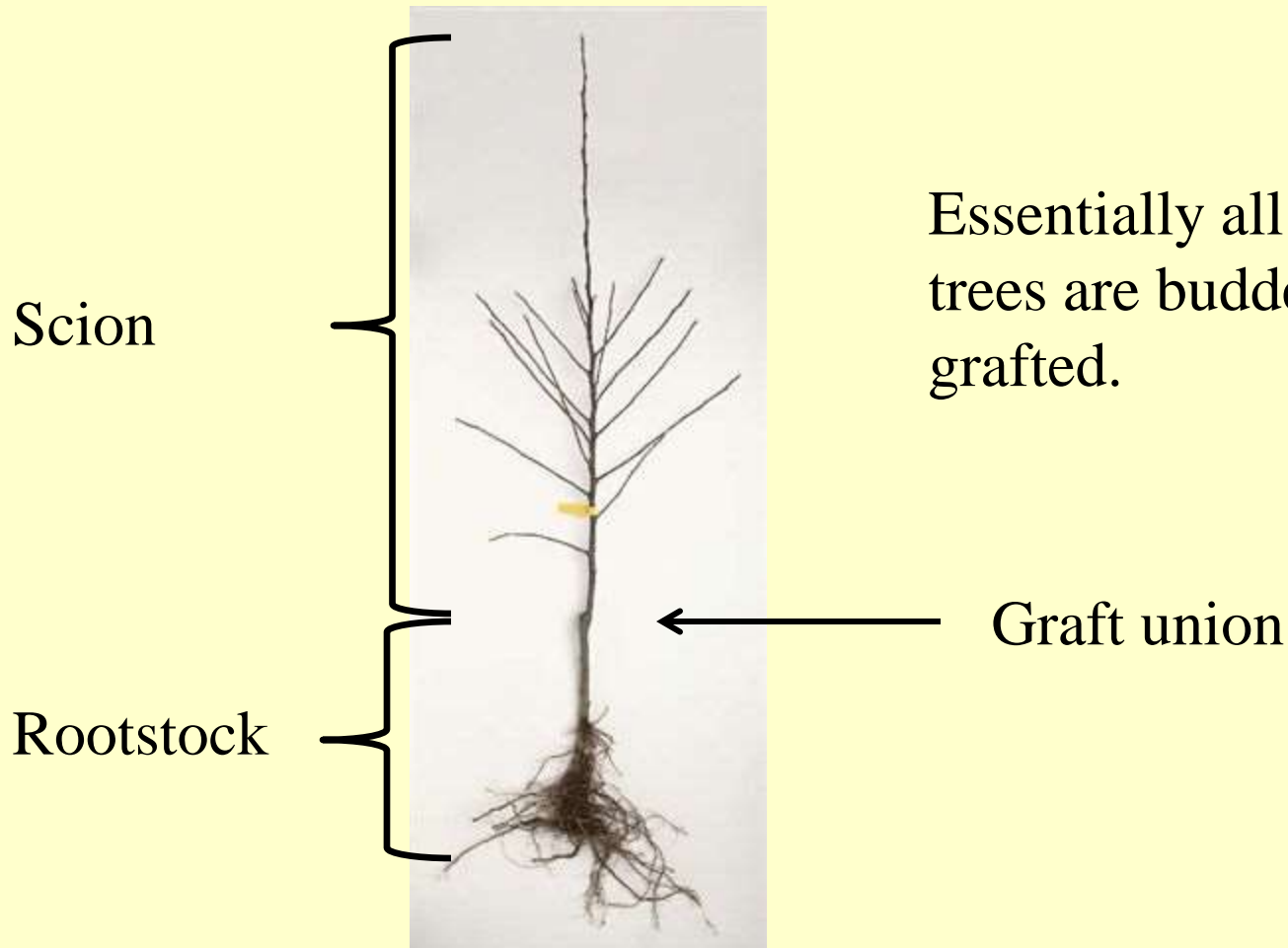


Mound or berm should be approximately 6 inches high in the middle



Drain tile to move water

Anatomy of a nursery tree



Essentially all nursery trees are budded or grafted.

Basic tree anatomy

Fruit trees are budded or grafted on rootstock

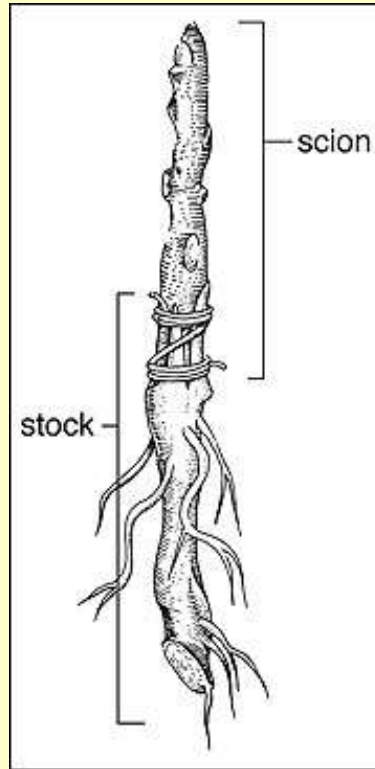
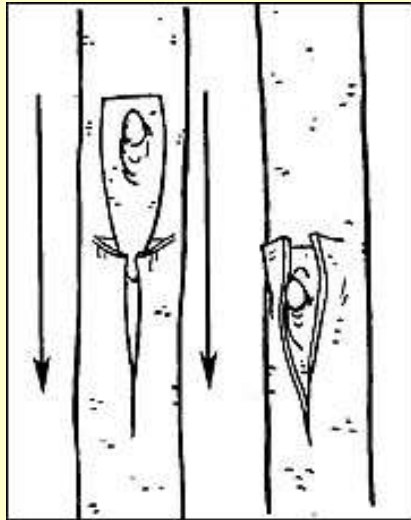


Photo credit: orangepippintrees.com

Chip bud



Bench graft



T-budded (left) versus bench grafted (center) versus knip boom nursery trees

Planting depth depends on the type of fruit tree

- apple & pear – plant so that graft union is above the soil
- peach, plum, apricot – plant so that graft union is at the soil line



Be careful, Plant trees at the right depth

Graft union



Some nurseries will bud peaches like apples with a long shank.

Bark removed to show
Phytophthora
crown rot



Tree is planted too deep. Top roots are at least 8 inches below soil line

Graft union



Tree should be planted so that top roots are close to soil line

Apple rootstock types make a big difference in tree size



standard



semi-dwarf



dwarf



When to plant fruit trees

- For bare-root trees, spring is preferred, fall is 2nd choice. Frost may 'heave' fall-planted trees.
- For container-grown trees, can plant anytime, but prefer spring or fall



Tips on Planting Fruit Trees

- Keep roots from drying out, cut off damaged root tips
- Tamp the soil down around the roots gently while filling the hole. Water to settle the soil.
- Check over the next few days. Make sure that the graft union stays where it should be.



Soak bare root trees for several hours before planting



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Watering in tree



Tips on Planting Fruit Trees

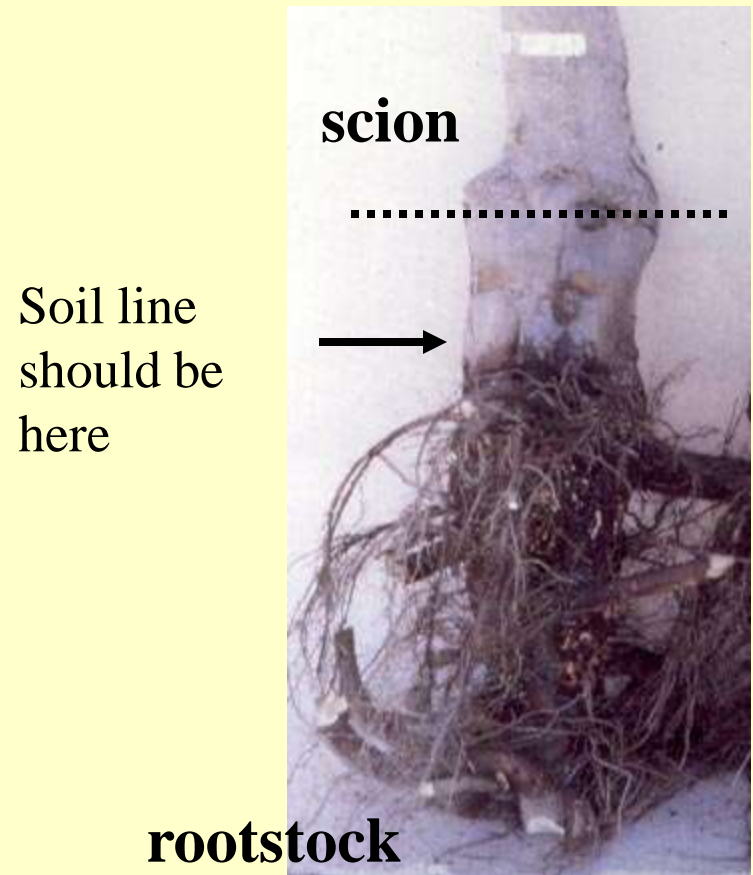
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Apple trees planted too deep can develop scion rooting



This tree was planted too deep and the scion sent down roots, resulting in vigorous tree growth



Reasons for pruning tree at time of planting

- Remove dead & undesirable limbs
- Reduce planting stress by reducing size of the top to match the root system
- Encourage limb development in the desired positions

“Whipping” newly planted tree

A tree is whipped by removing all limbs at time of planting so that the tree looks like a whip

This is done if the original limbs are poor quality or too few.

- by whipping, the replacement limbs that grow will be approximately the same size.



Building good tree structure



Whip the tree at
planting or leave
stubs?

Notching above apple buds to encourage branch growth



Figure 2. Notching was performed with a hacksaw on 10 buds between 30 and 50 inches from the soil surface soon after planting. *J.M. Clements photo.*

Effect of notching above apple buds on branch growth



Figure 2. Notching was performed with a hacksaw on 10 buds between 30 and 50 inches from the soil surface soon after planting. *J.M. Clements photo.*



Figure 4. Untreated tree after one season. *W.P. Cowgill photo.*

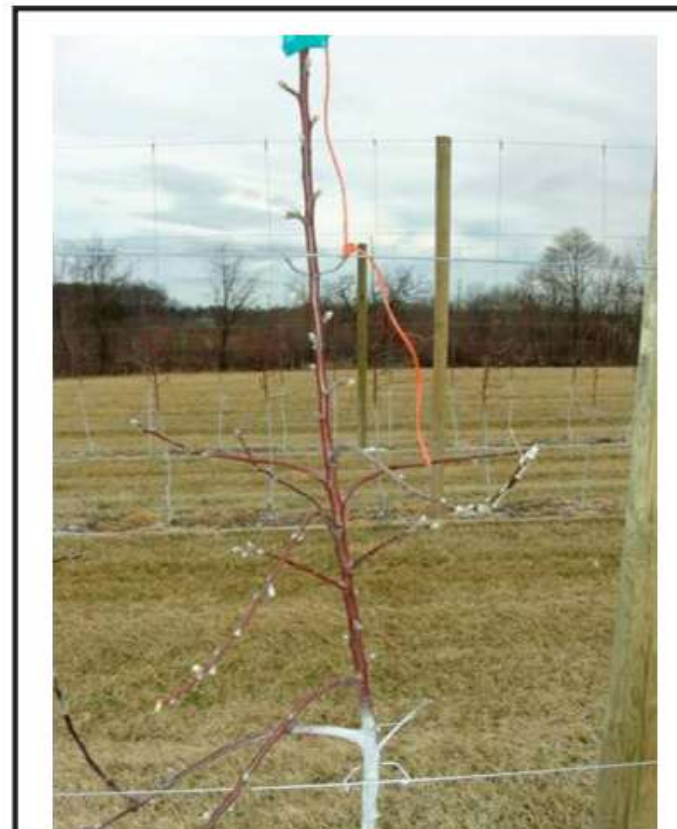


Figure 5. Notched tree after one season. *W.P. Cowgill photo.*

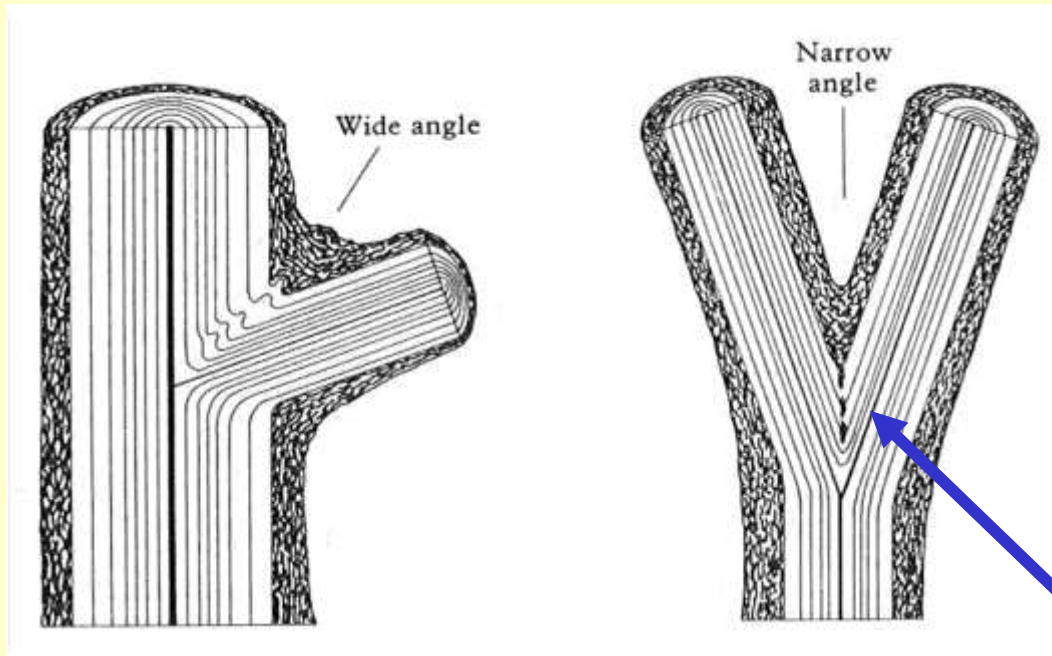
Whipped tree, use of clothespins to get good crotch angles



- Clamp clothes pins on central leader over shoots when 4 to 5 inches long to flatten growth
- Remove clothes pins in a few weeks when growth has lignified (hardened)

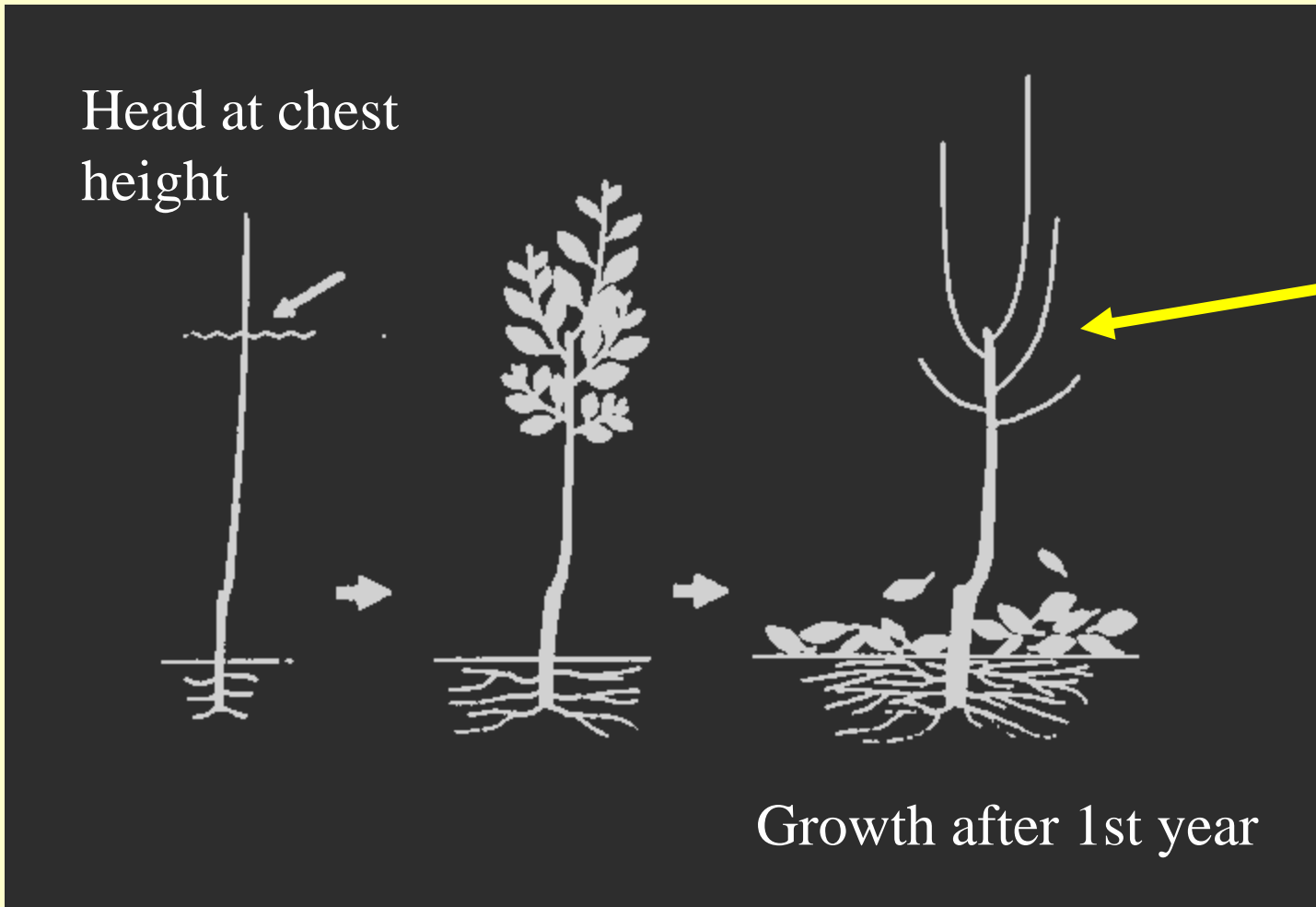


Trees should be trained so that branch angles are wide



Bark inclusions in narrow angle crotches weaken limb

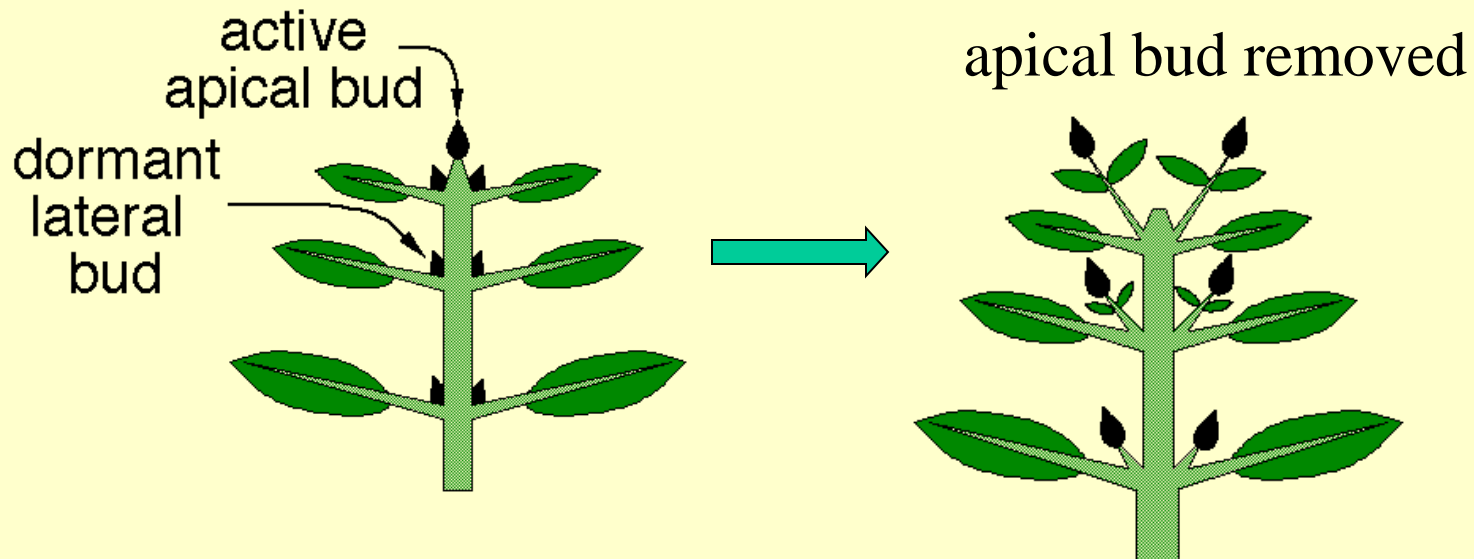
Heading cut at time of planting



Note:
growth
is next
to point
of
heading
cut

Why heading tree limbs encourages lateral bud growth

- Auxin produced by the topmost bud inhibits the growth of lower buds.
- If apical bud is removed, lower buds begin to grow

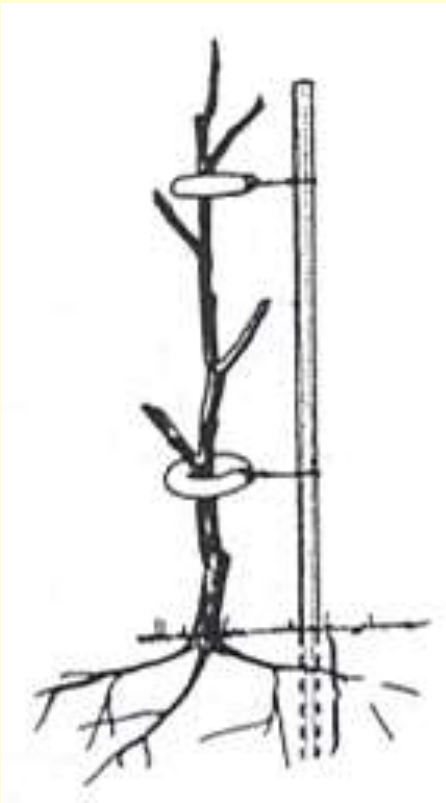


Avoiding Problems Areas on Tree



Remove excess limbs on
lower trunk as soon as
possible

Stake apple trees growing on dwarfing rootstock



Fruit load tipped tree

Tree wraps, tree cages, & tree paint



tree wraps

cage + white latex paint



- plastic tree wraps and cages help prevent rodent feeding.
- white latex paint and wraps reduce trunk damage due to rapid temperature fluctuations due to sunlight in mid winter.
- remove tree wraps in summer to avoid disease & insect problems. Cages can stay on year-round

Latex paint does not protect against extreme low temperatures



Peach trunk splitting
due to -19 F
temperatures in 1994

Pruning Objectives

For Young Tree

Shape tree

Reduce crop to promote growth and prevent limb breakage

For Older Tree

Remove dead, diseased, broken limbs & other undesirable growth

Increase penetration of sunlight and spray applications, increase air movement

Shape tree and control tree height

Thin crop

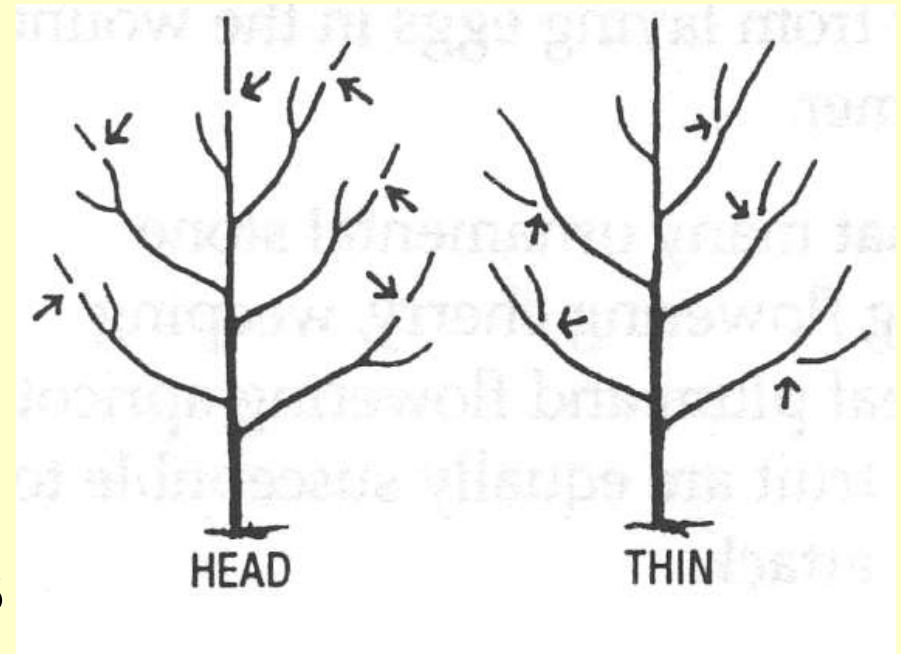
When to Prune



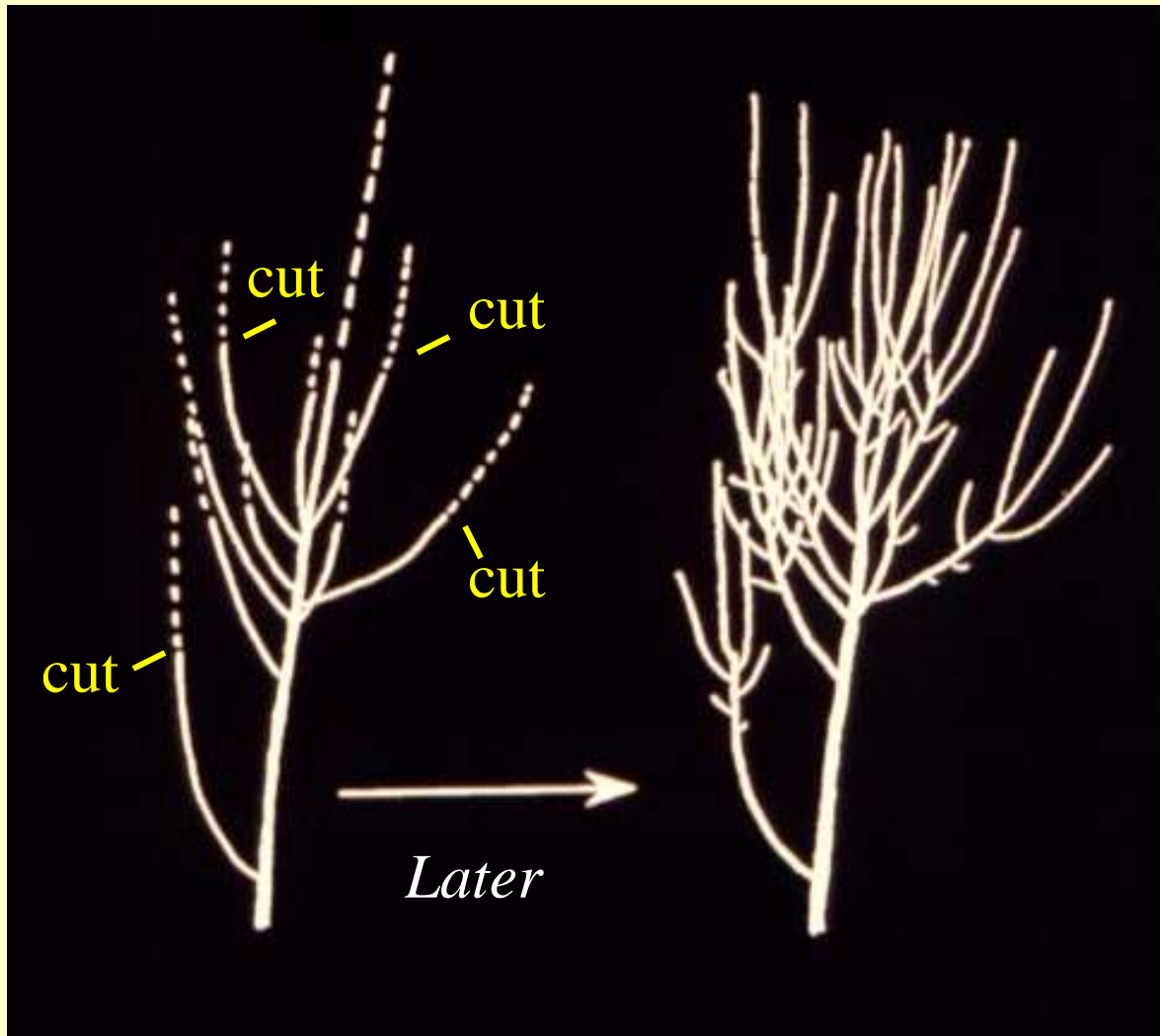
- Best time to prune is during dormant season, in February, March, and April
- Older, larger trees especially apples and pears can be done in February
- Younger trees, especially peaches, plums, and apricots should be pruned closer to bloom (late March to April)

Heading Cuts and Thinning Cuts

- Heading cut -- only the end of the shoot or branch is removed
- Thinning cut -- the entire limb or shoot is removed

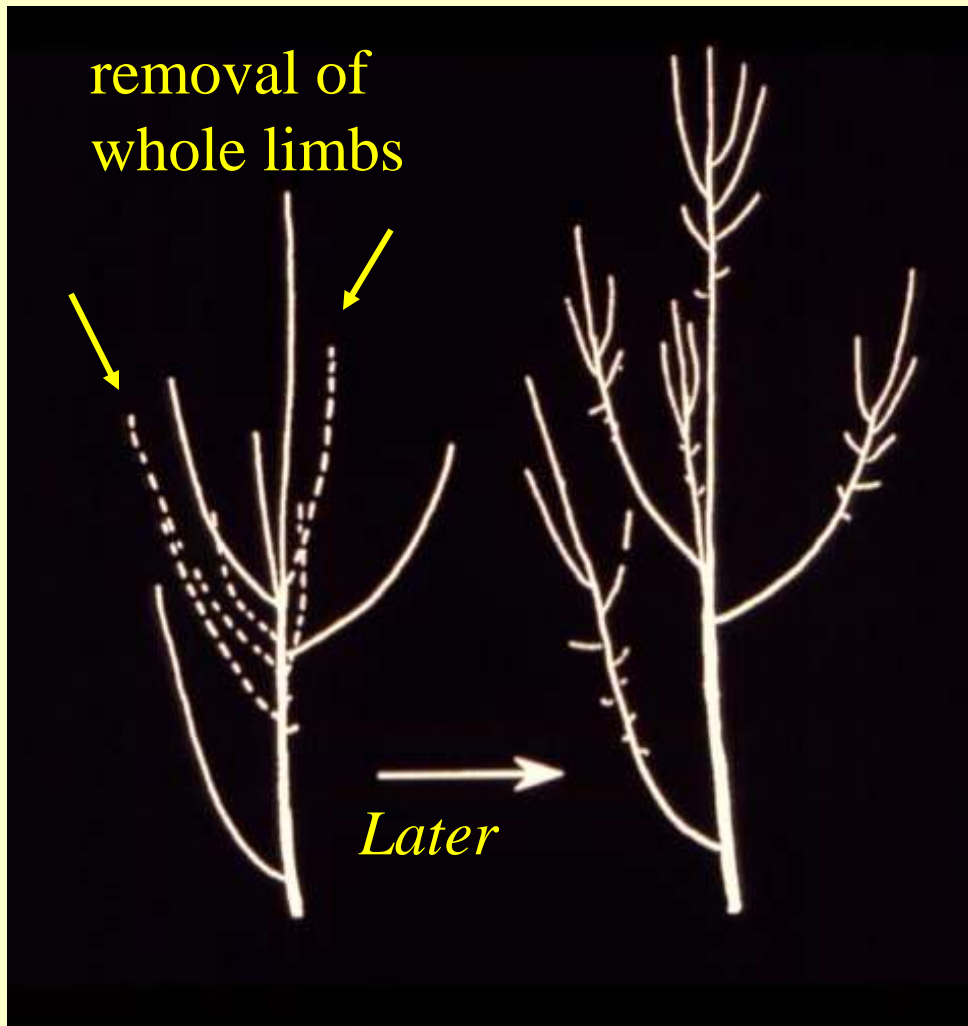


Effect of heading cut on growth



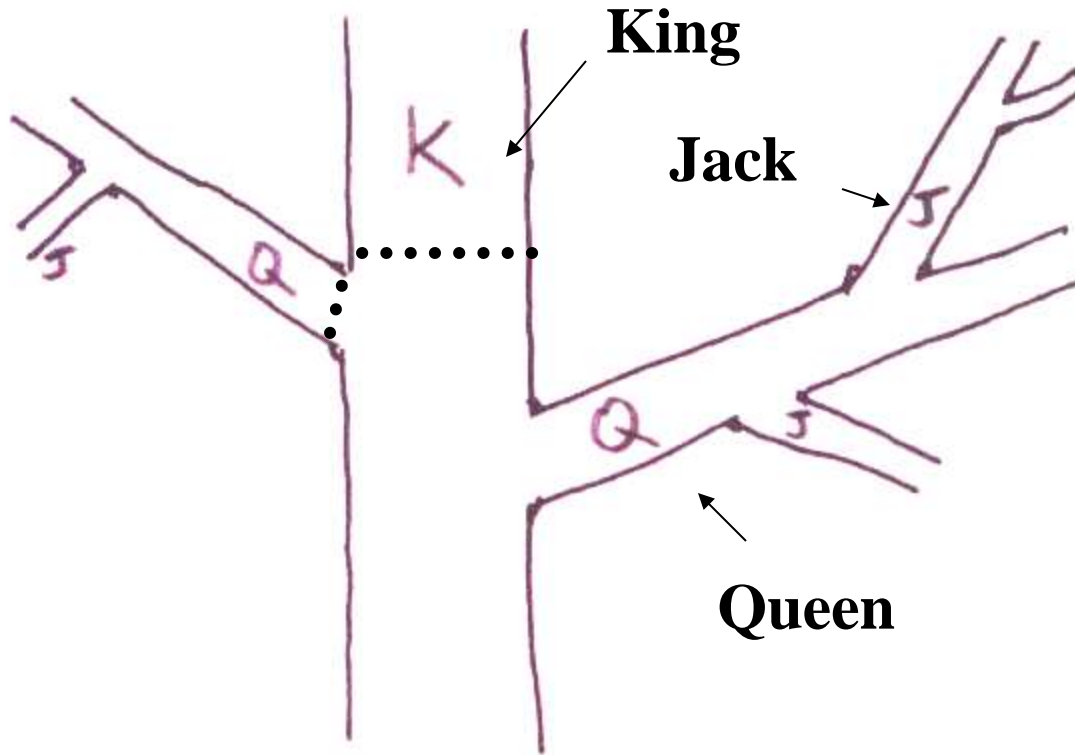
- stimulates growth at point of cut
- may increase shading within tree

Effect of thinning cut on growth



- general rather than local stimulation of growth
- increases light penetration into interior of tree

Hierarchy (e.g., who is the boss) concept of tree training



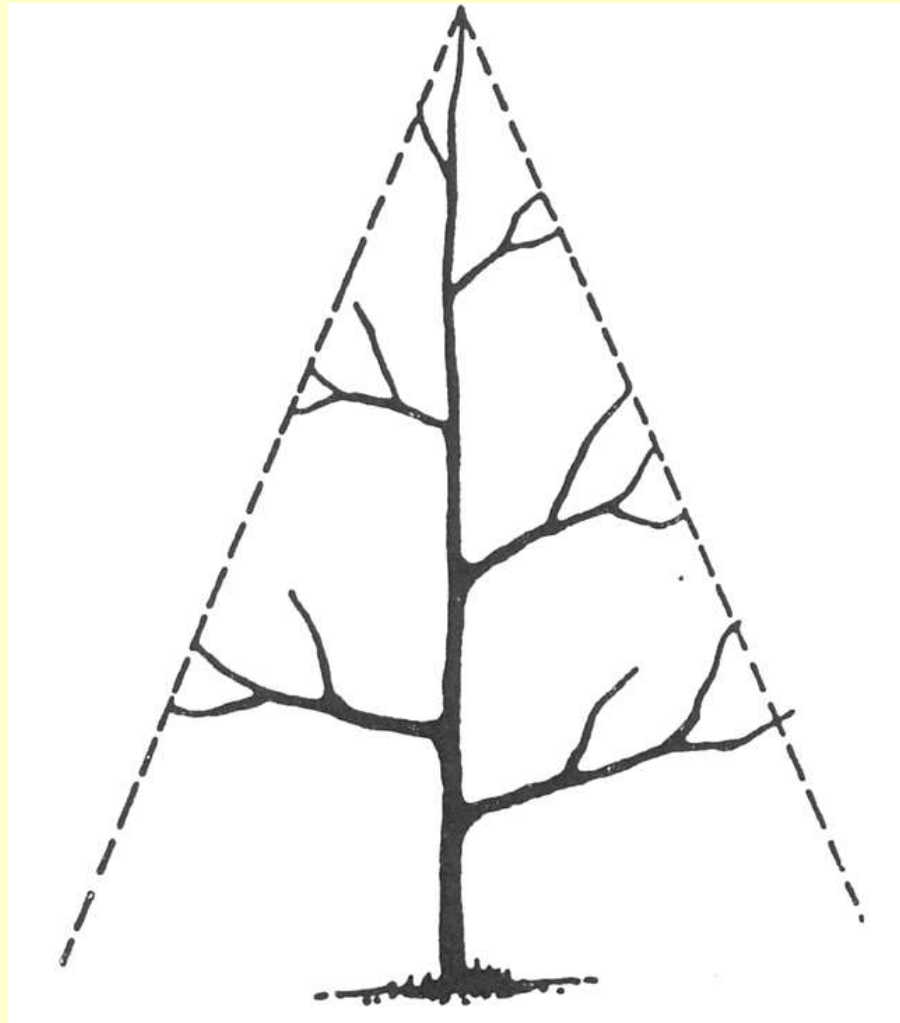
**Train so that limb diameters decrease:
King > Queen > Jack**

Central leader apple



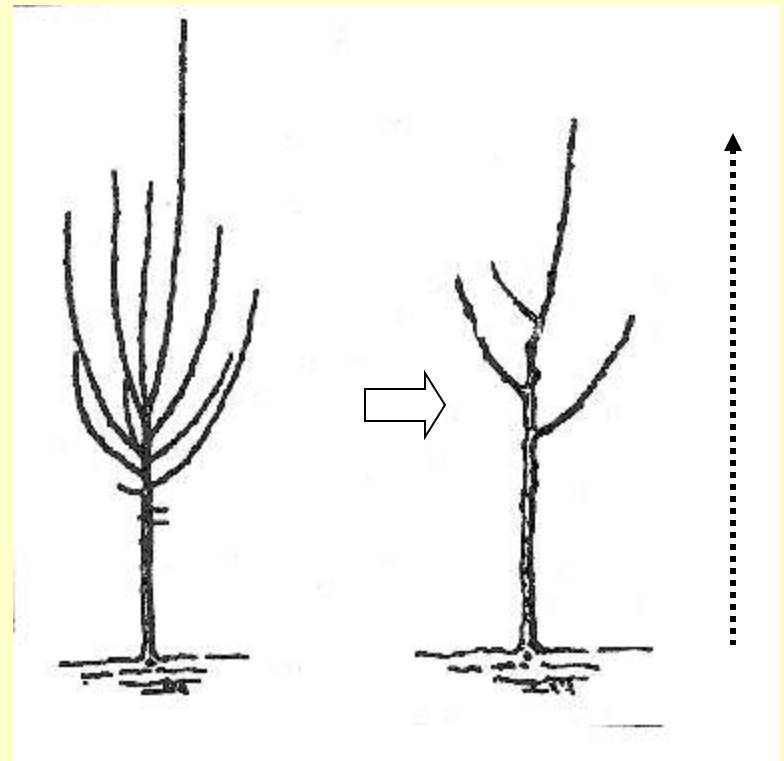
- Works well with apically dominant trees

Pyramid shape of Central Leader Tree



Training Central Leader Tree

- At planting time head central leader to 3 1/2 to 4 feet above the ground
- If 3 to 4 desirable branches are available, head these back by 1/3 to 1/2, otherwise “whip” the tree



Central leader trees

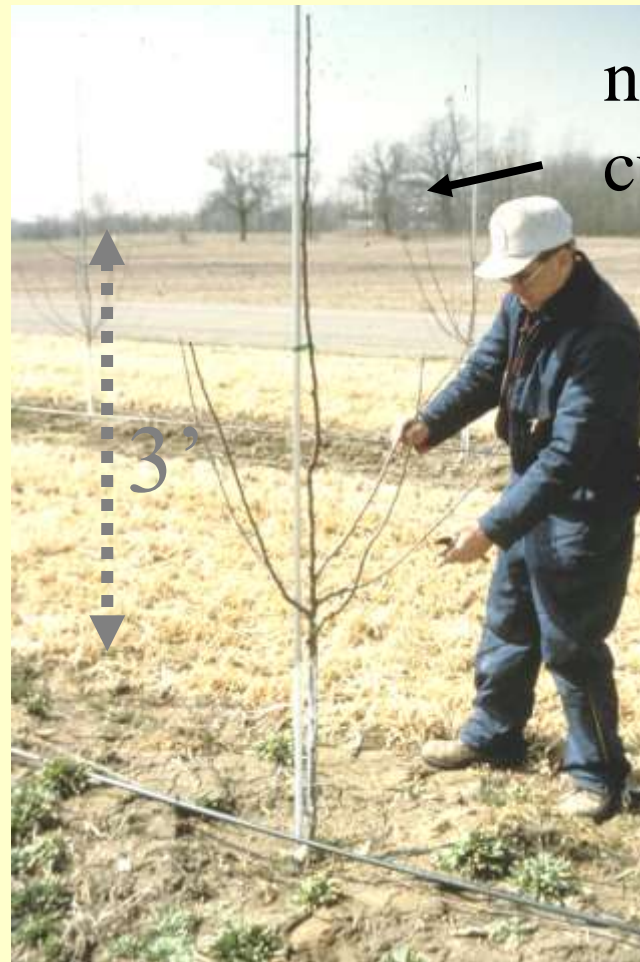


Central leader apple with distinct layers



2nd Growing Season

- **Pruning central leader at the beginning of the 2nd growing season**

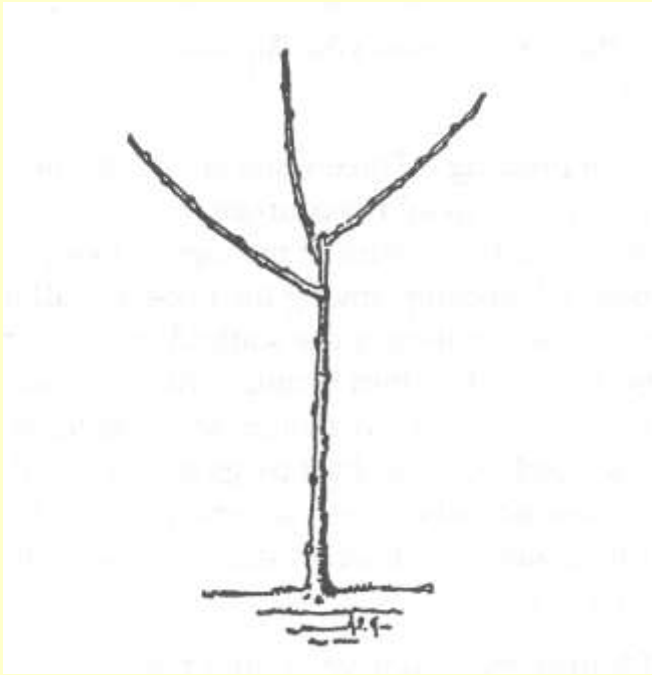


needs heading
cut here

Central Leader Peach



Open Center (vase) Method



- suited for peaches, Japanese plums
- helps to maintain good light penetration to maintain health of tree

Open center peach shortly after planting



- retained 3 limbs

Open center peach



- after pruning at start of 2nd growing season

Open Center Peach Tree



Open center peach before & after



Too many scaffolds on open central peach





European plum is more upright and is usually trained like a central leader apple



Japanese plum has a short central leader and more spreading shape



Central leader
European pear



Central leader
upright Asian
pear



Open center
Asian pear

Photo credit: University of Alabama



Sweet cherry

Central leader



Tart cherry

Open center

Thinning Fruit Crops

Thinning is important to:

- * prevent tree damage
- * encourage young tree development
- * increase fruit size
- * reduce biennial bearing
- * remove poor quality fruit



Thinning Fruit Crops continued

- Thin after “June drop”
- Apples & pears ~ 5” apart
- Peaches ~ 8” apart
- Plums/Apricot may need to be thinned ~ 5” apart

Remove more fruit from young and early ripening trees



Small fruit may drop naturally

Minimum spray program for peaches

Peach leaf curl spray in November or early spring



Oriental fruit moth sprays to protect growing branch tips & fruit



Brown rot spray in bloom if warm and wet, and as the fruit start to color



Apple scab spray season

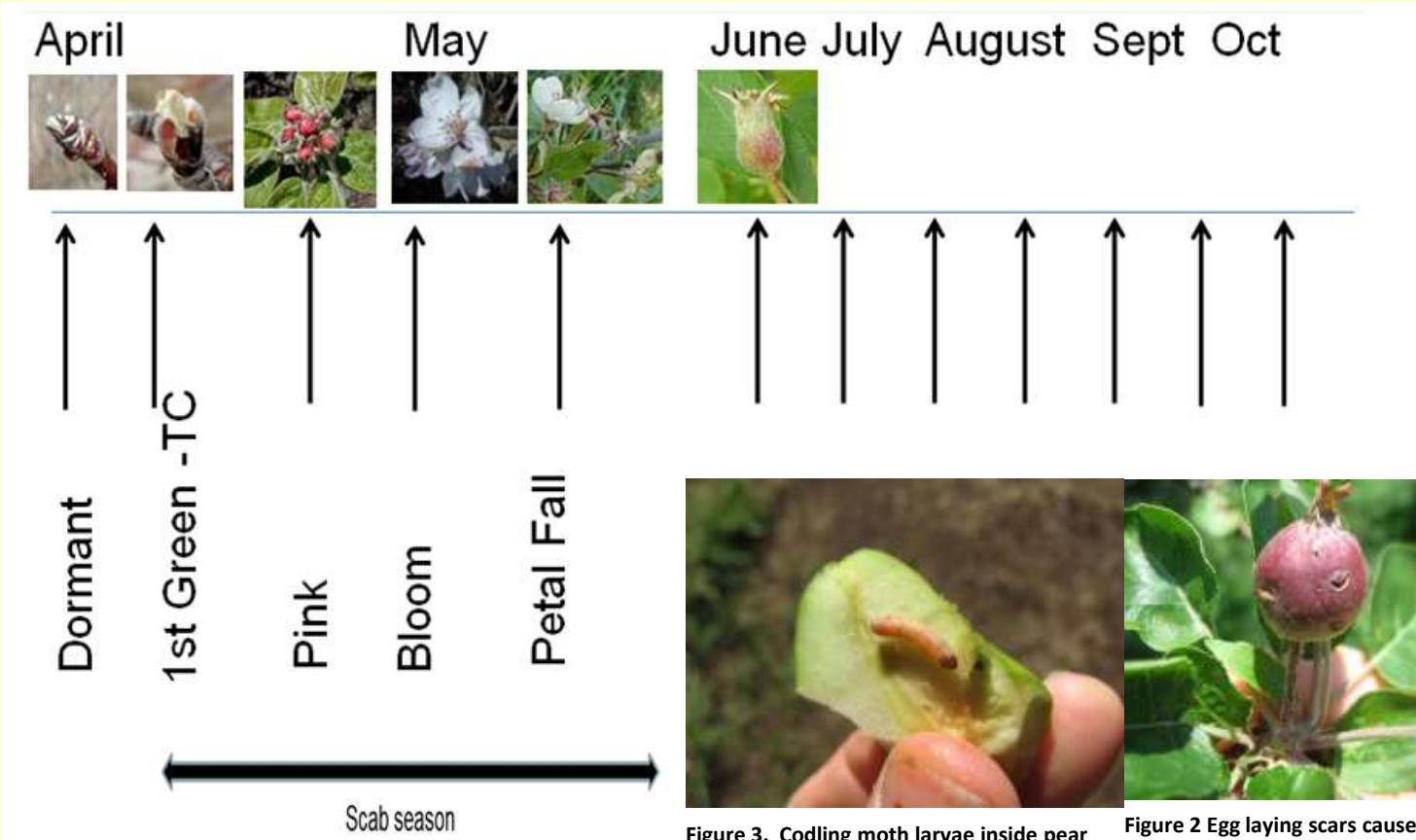
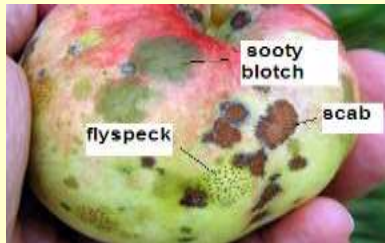


Figure 3. Codling moth larvae inside pear



Figure 2 Egg laying scars caused by the plum curculio.



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