Fruit Trees Pruning and Training

Reasons for Pruning

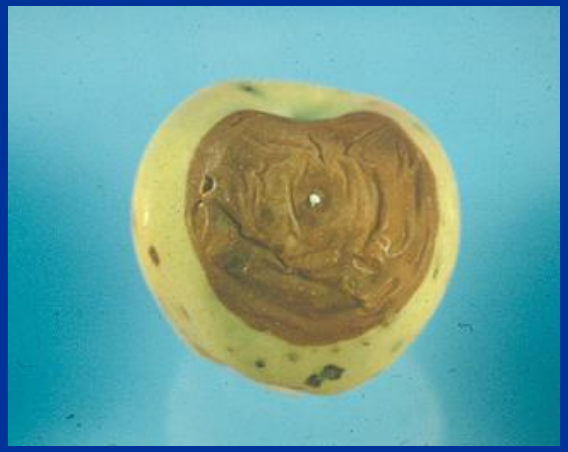
- Reduce tree size
- Control tree shape
- Make trees structurally strong

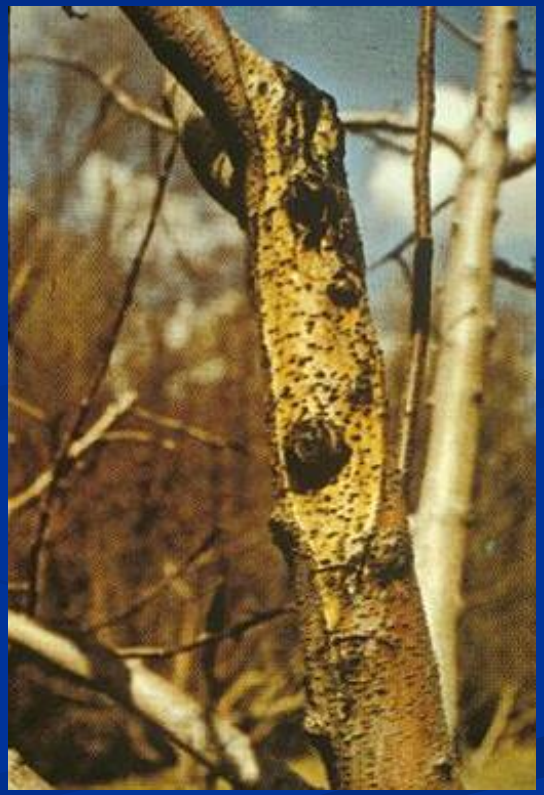
Reasons for Pruning

- Improve light penetration
  - Flower bud initiation
  - Fruit color
  - Pest control

Reasons for Pruning

- Removal of diseased wood
  - Fruit rot control





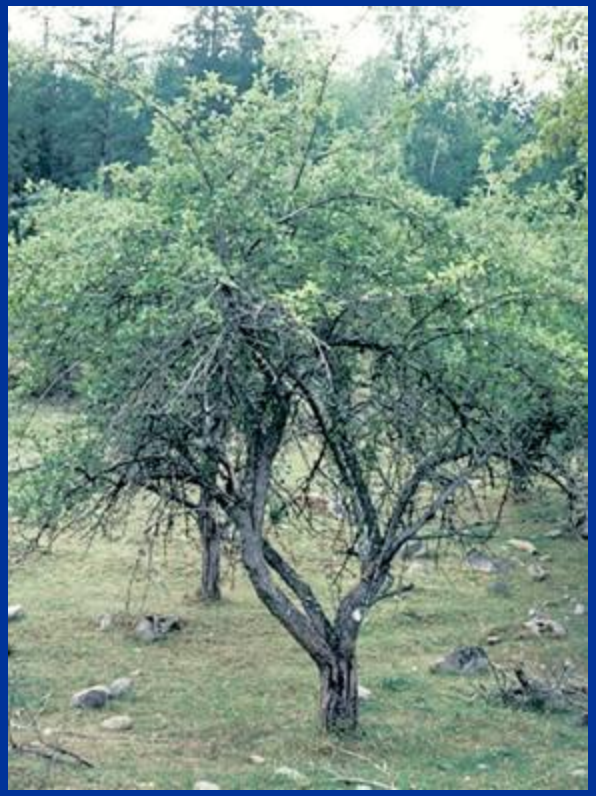
Reasons for Pruning

- Partially reduce crop load

- Facilitate cultural operations

Reasons for Pruning

- Keep the crop close to the ground



What happens if you do not prune?

- *Earlier fruiting*
- *Less light penetration*
- *Poor spray coverage*
- *More difficult to manage*

When to Prune

- Dormant season
- Summer pruning

- Pinching competitive laterals in young leader to keep leader growing strong

Summer pruning apples and pears allows sunlight to ripen the fruit and ensures good cropping the following year

All pruning is dwarfing, but summer pruning reduces growth much more than equivalent pruning during the dormant period

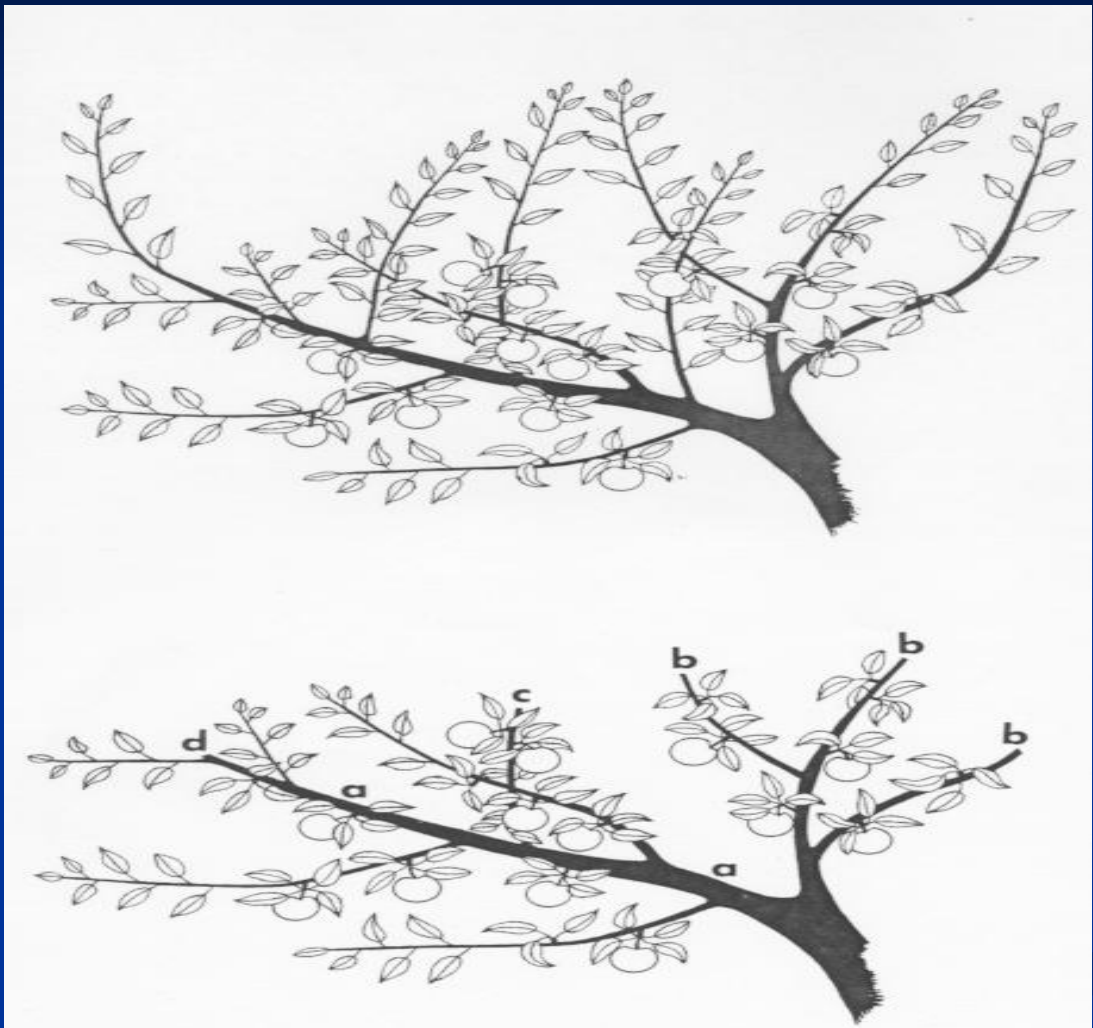
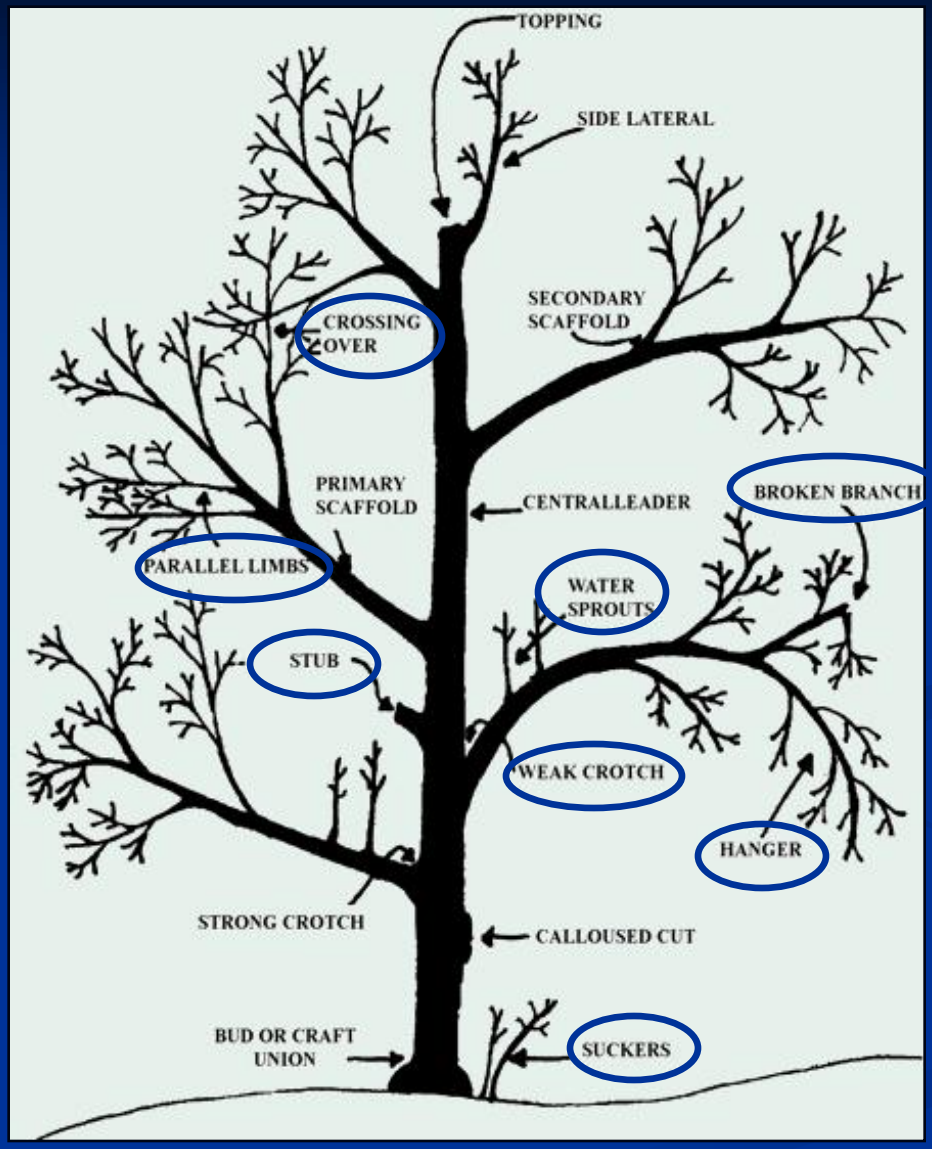
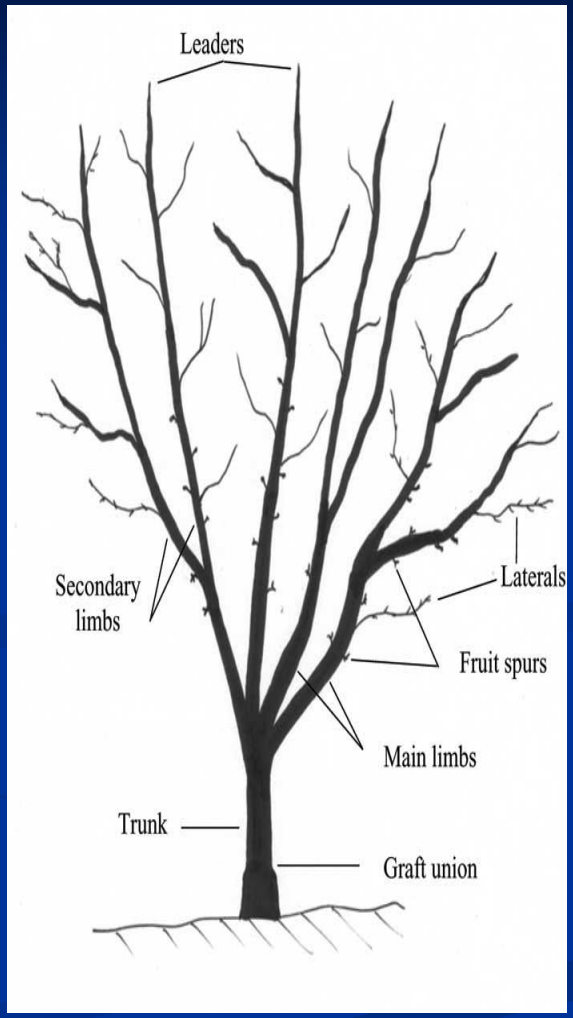
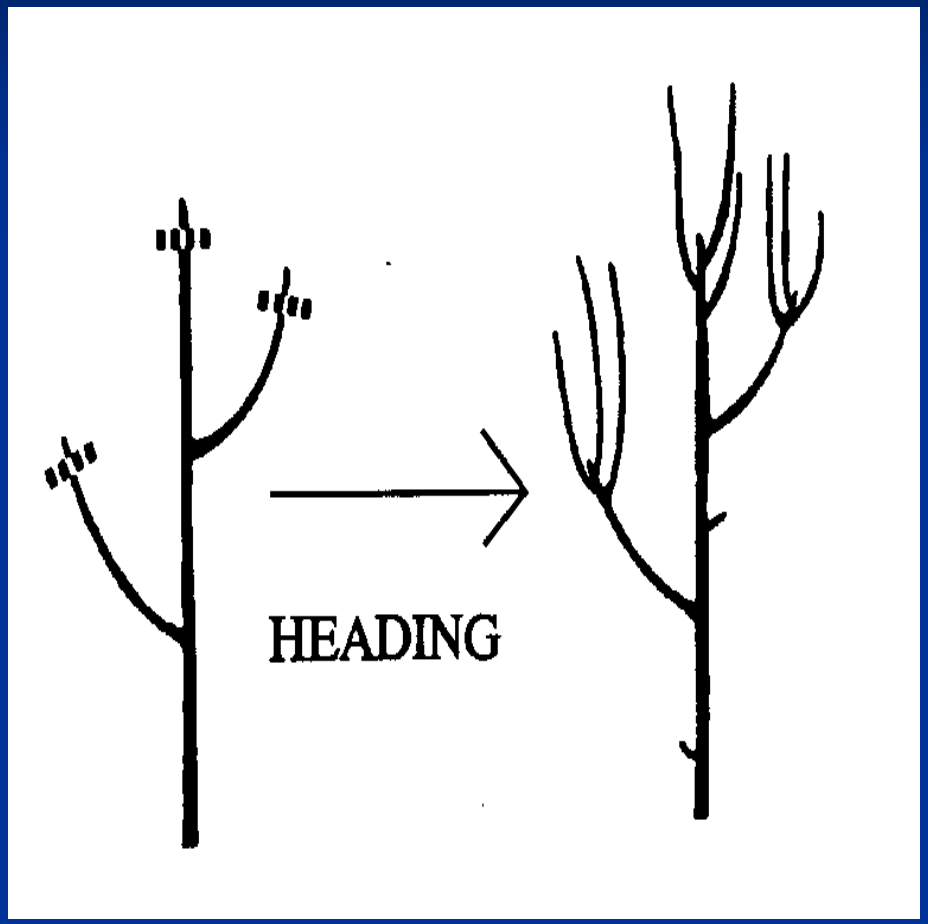


Figure 26. Summer pruning. Top: *section of the top of a typical vigorous tree. Note the upright growth and the shading of the fruits.* Bottom: *proper summer pruning. The vigorous watersprouts have been removed* (a); *the current season's growth has been removed from the upright branches* (b); *the undesirable upright, but fruiting branch has been headed back just above the cluster of fruit* (c) *and will be removed in the dormant pruning; and the upturned branch has been headed back to a weak lateral* (d).


TOPPING
SIDE LATERAL
SECONDARY SCAFFOLD
CROSSING OVER
PRIMARY SCAFFOLD
CENTRALLEADER
BROKEN BRANCH
PARALLEL LIMBS
WATER SPROUTS
STUB
WEAK CROTCH
HANGER
STRONG CROTCH
CALLOUSED CUT
BUD OR CRAFT UNION
SUCKERS

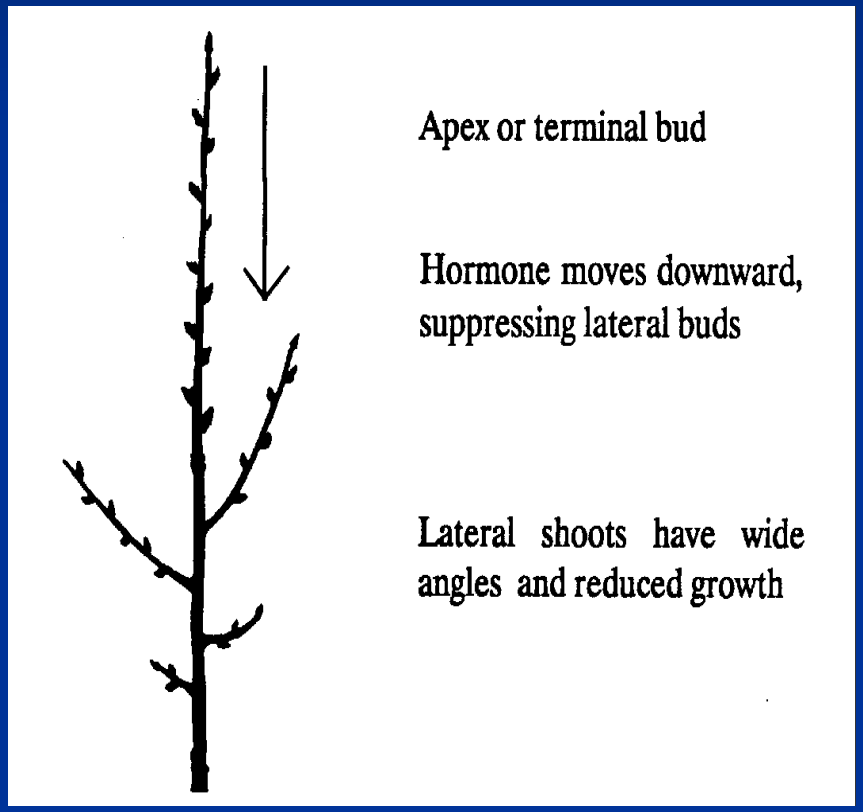

Leaders
Secondary limbs
Laterals
Fruit spurs
Main limbs
Trunk
Graft union

Types of Cuts



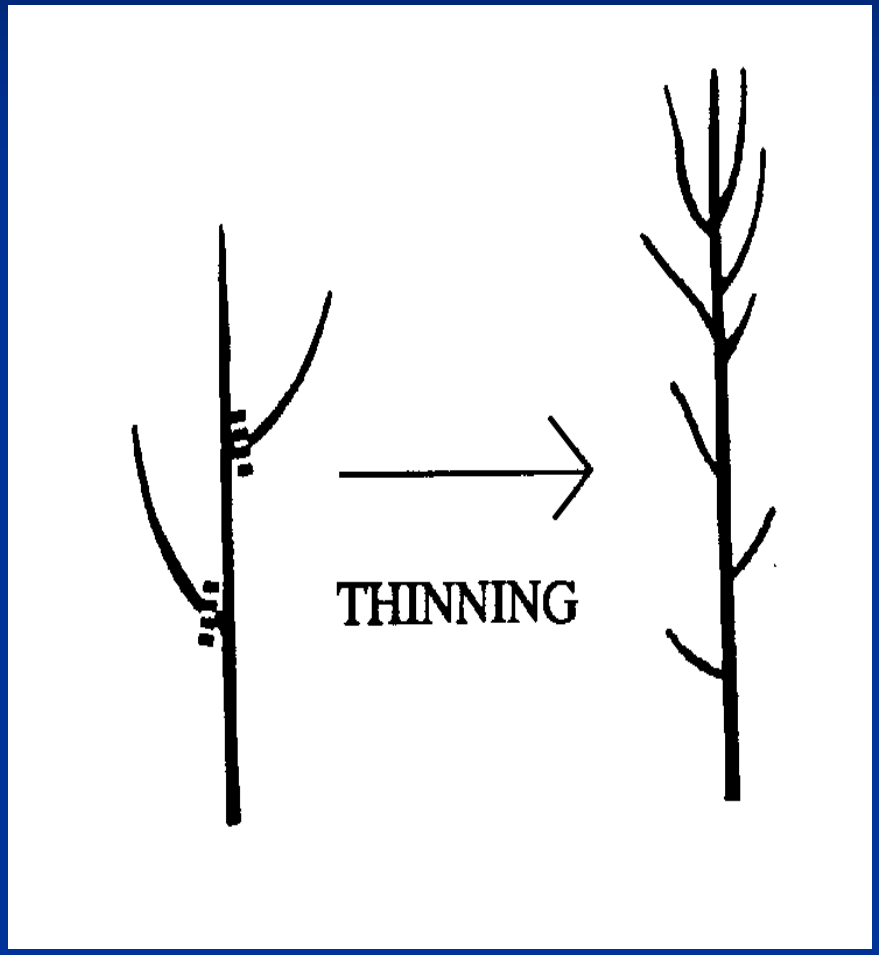
- Heading Cut

  - *Remove part of the branch*
  - *Stimulate bud break near cut*
  - *Stimulate localized branching*



- Inhibits lateral bud break
- Inhibits lateral shoot growth
- Affects branch angle

Types of Cuts

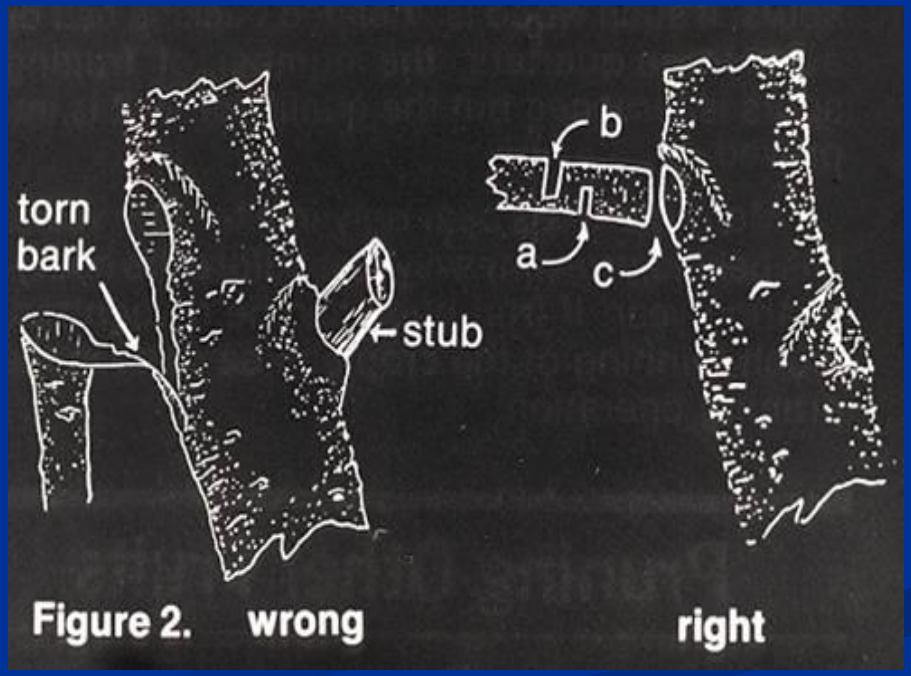


- *Remove branch at point of origin*
- *Least invigorating cut*
- *Promote light penetration into canopy*

Avoid Leaving Branch Stubs

Pruning

Pruning

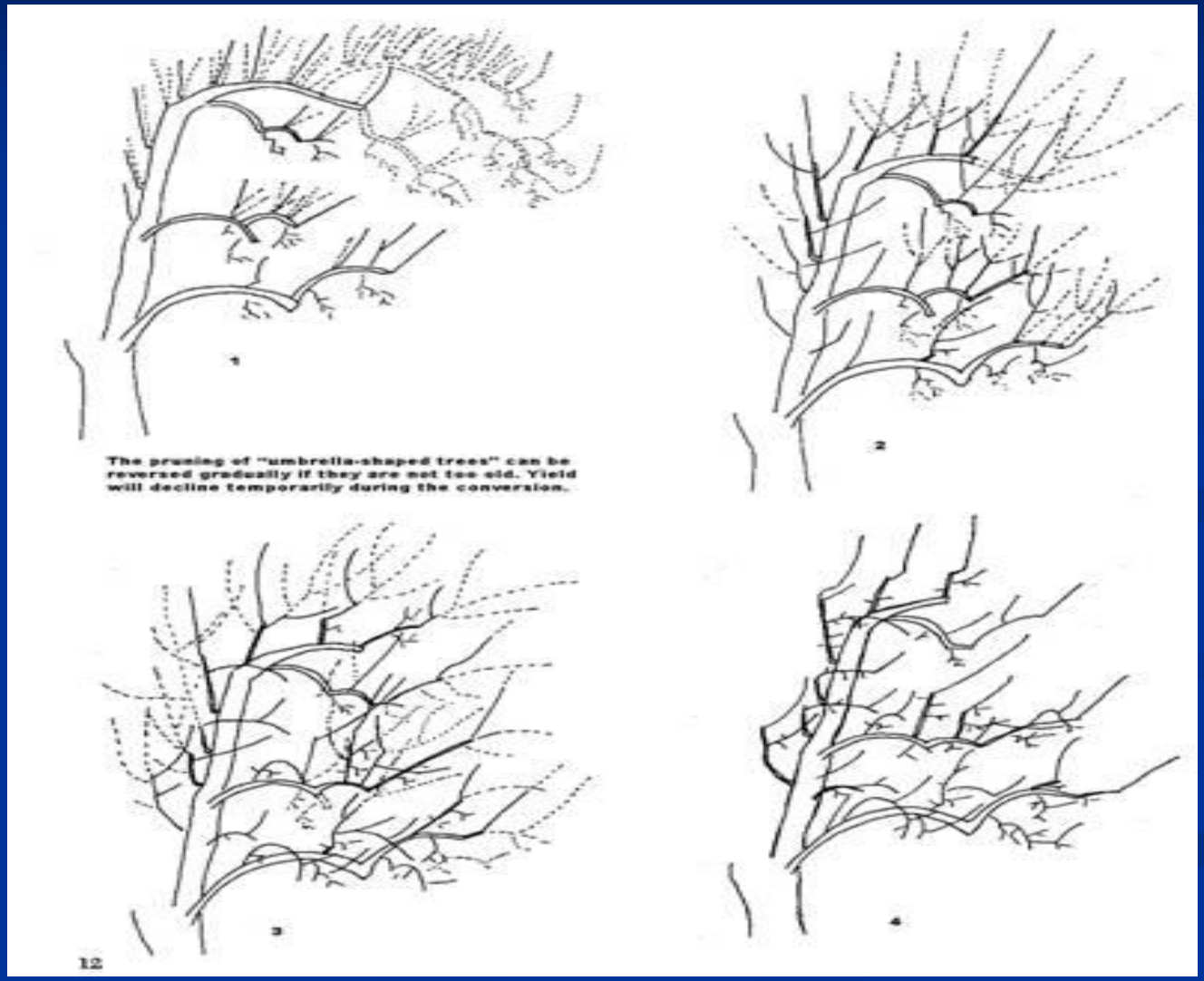


Pruning Neglected Trees

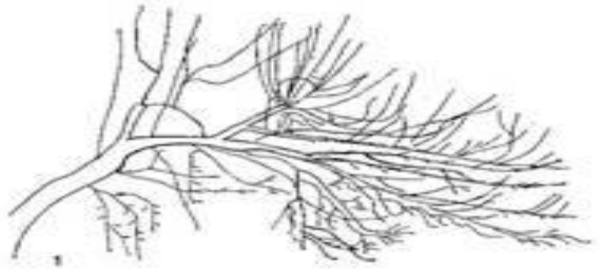
Pruning Neglected Trees

- Remove dead wood
- Reduce tree height
- Cut out 3-4 large branches
- Cut back to outward growing branches

Pruning Neglected Trees



Pruning Neglected Trees

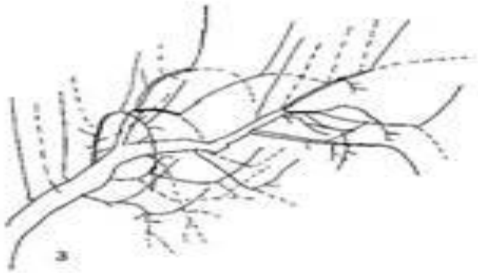


1

The top limbs in an old "umbrella tree" have many suckers that shade the lower portion of the tree.

2

Thin the suckers and do not head those left. Remove most of the downward hanging fruiting wood in order to allow light onto the lower limbs and to prevent further spread.



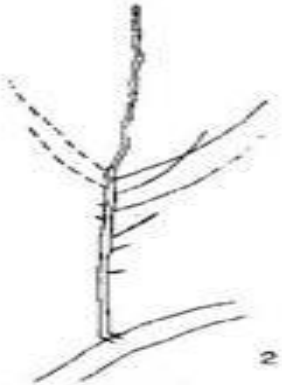
3

The unheaded suckers will fruit and bend over in the third year.

13

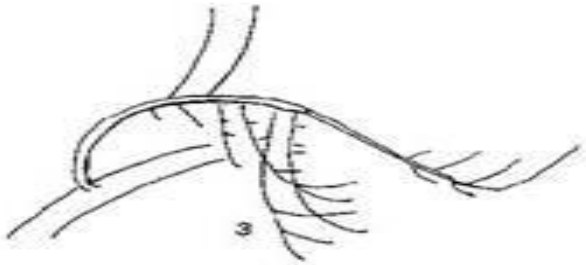
1

One-year apple shoot with no flower buds, left unheaded.



2

Same shoot after second season, with flower buds.

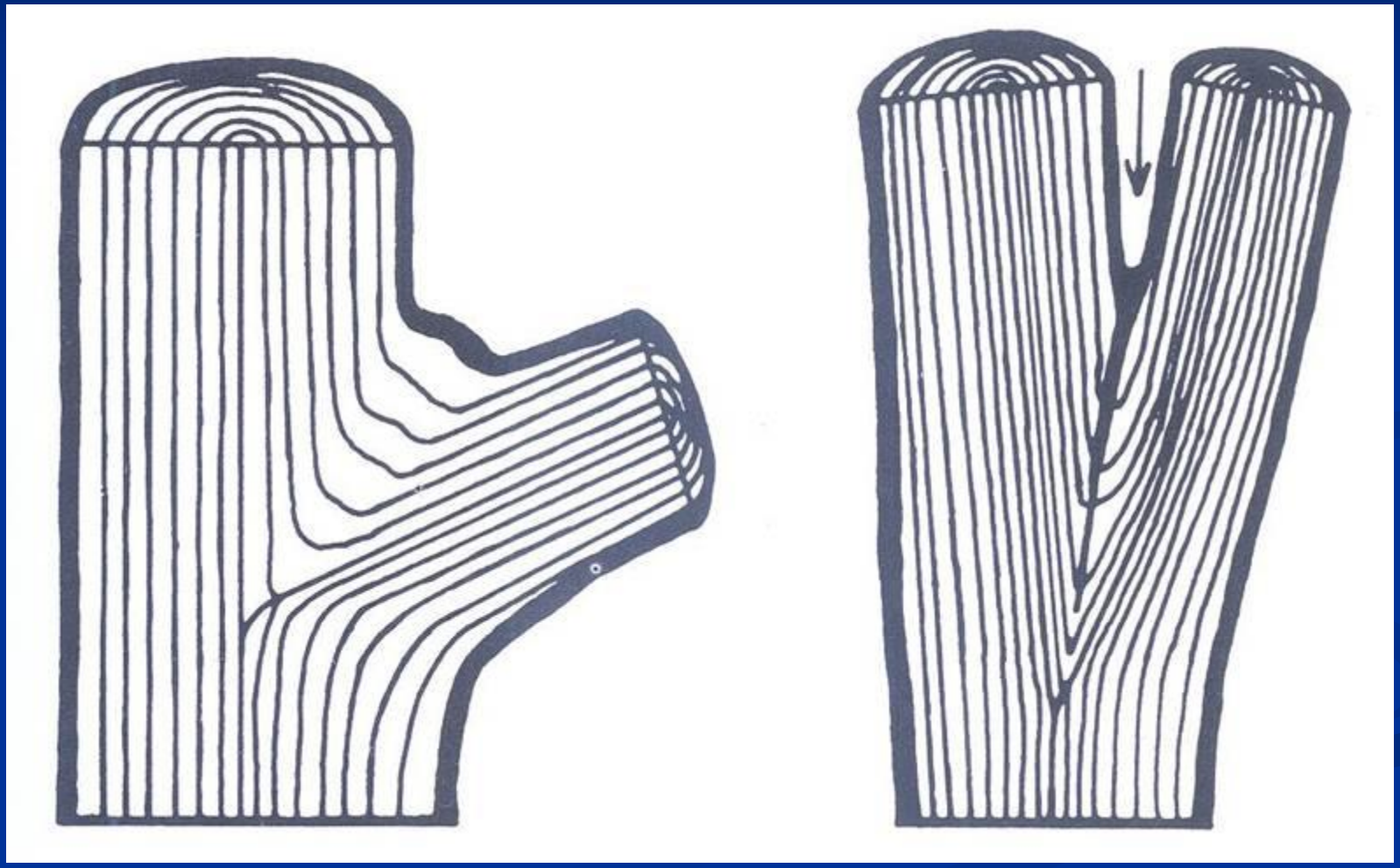


3

Same after fruiting in third season.

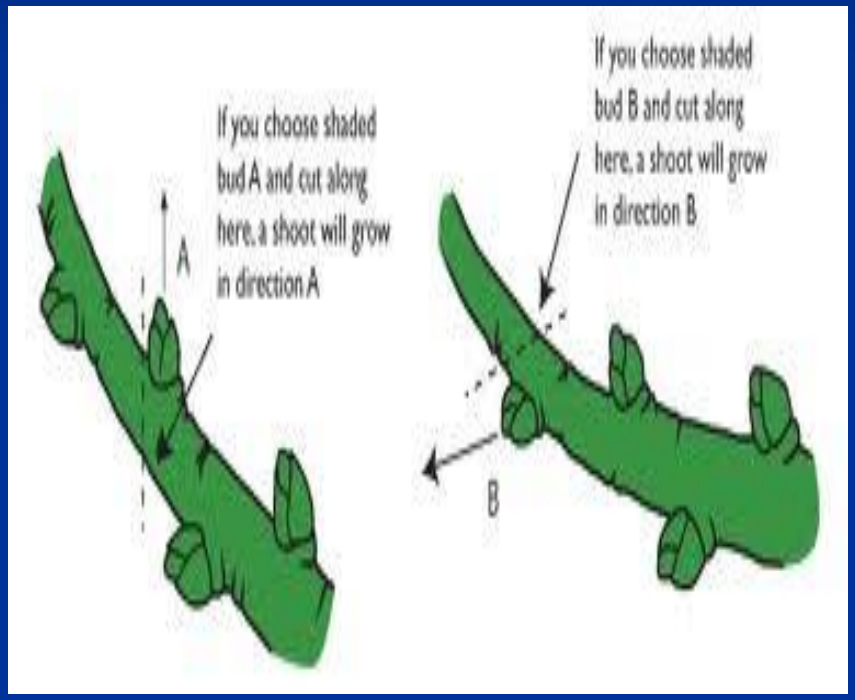
Pruning Neglected Apple Trees

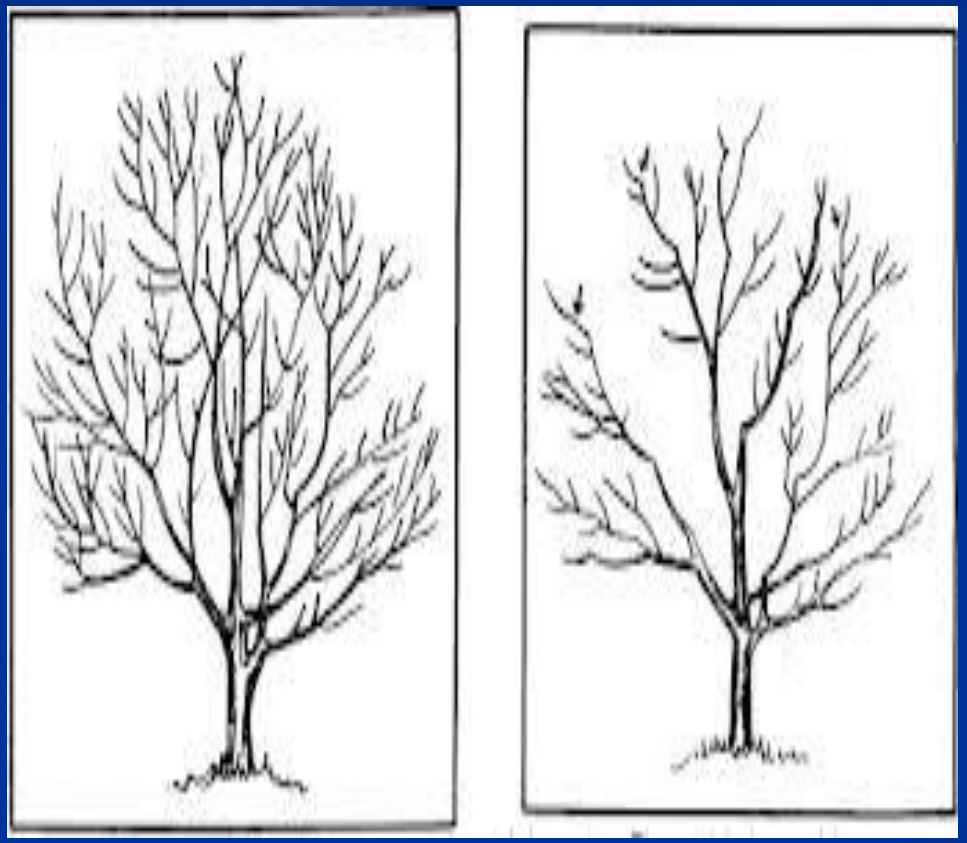
Remove Narrow Branch Angles

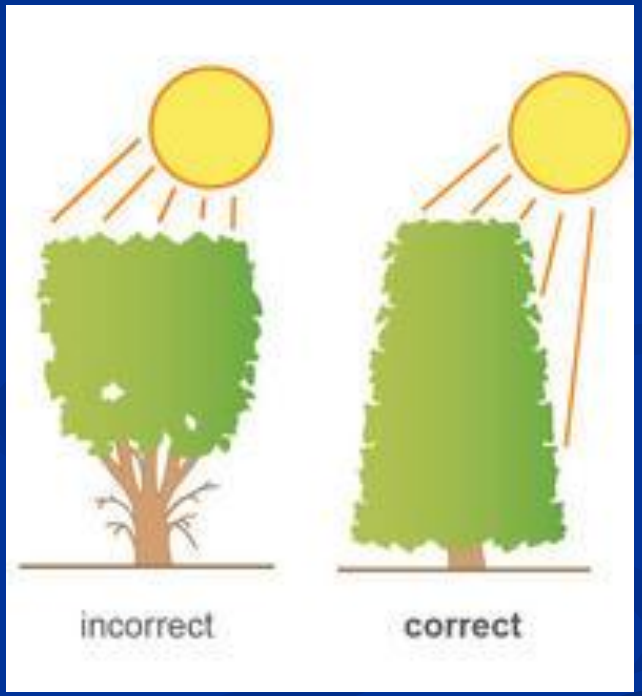


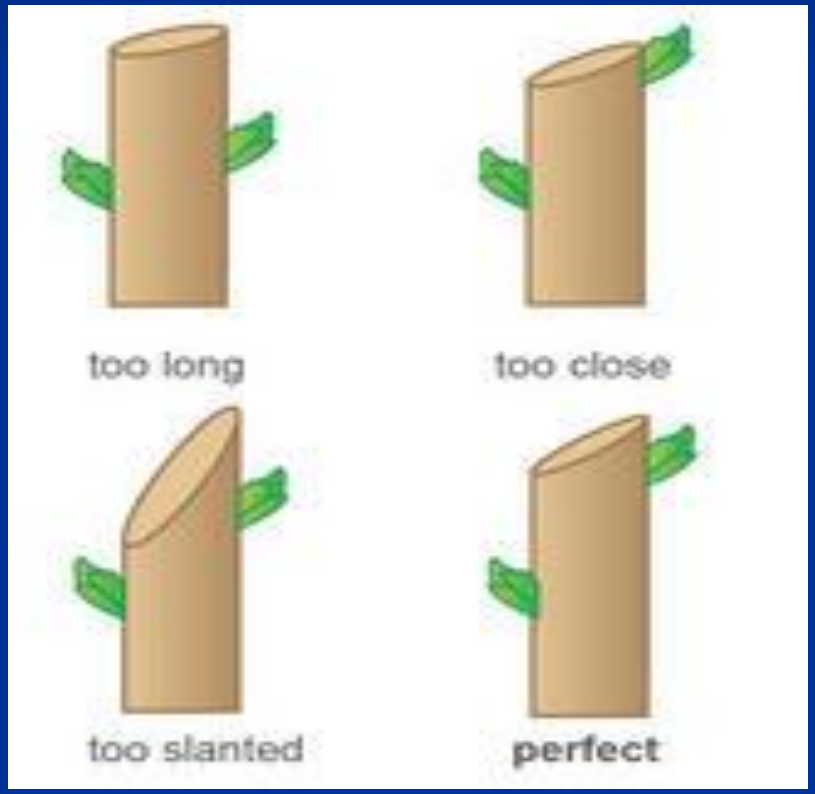
Strong

Weak


If you choose shaded bud A and cut along here, a shoot will grow in direction A
A
If you choose shaded bud B and cut along here, a shoot will grow in direction B
B

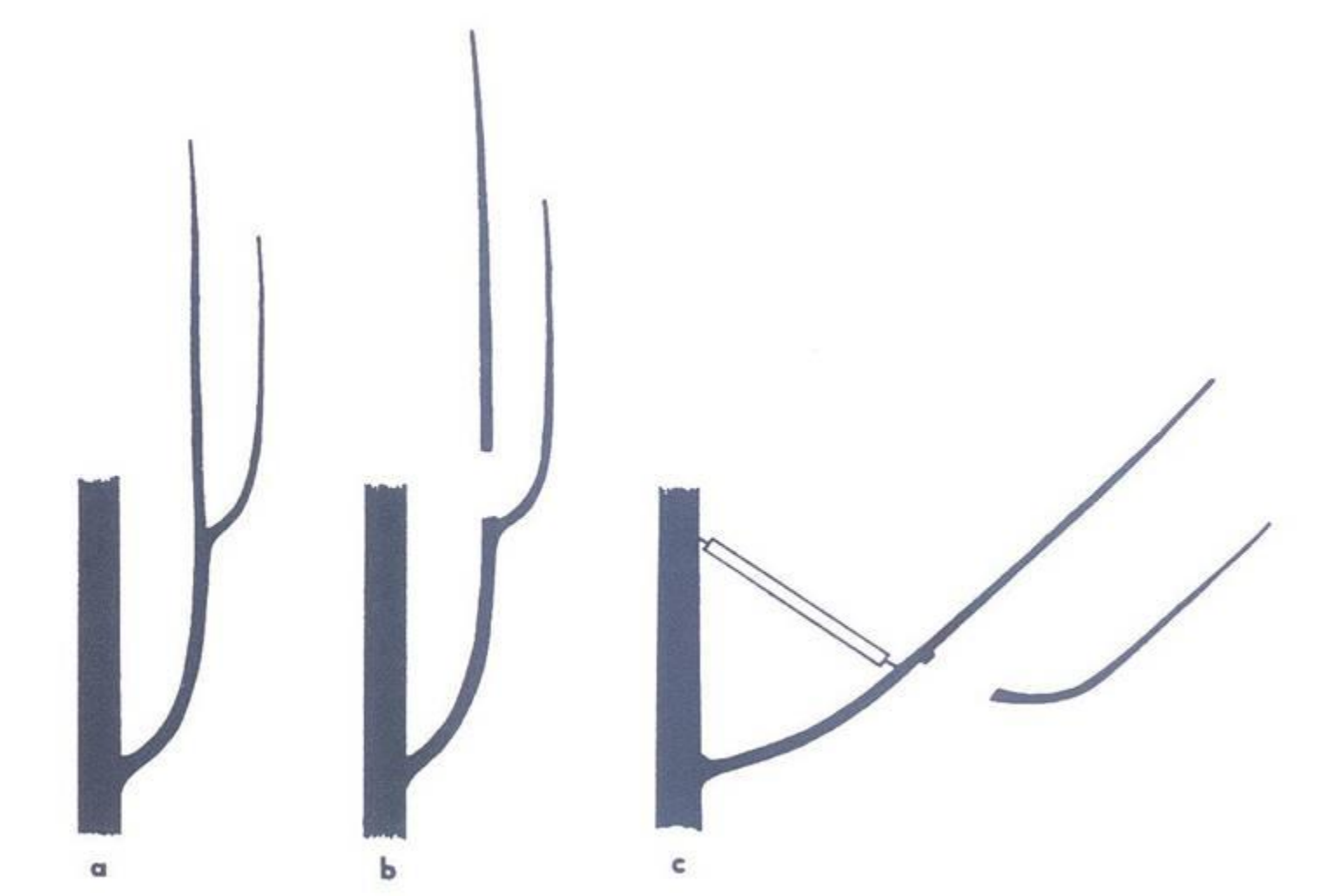



incorrect
correct

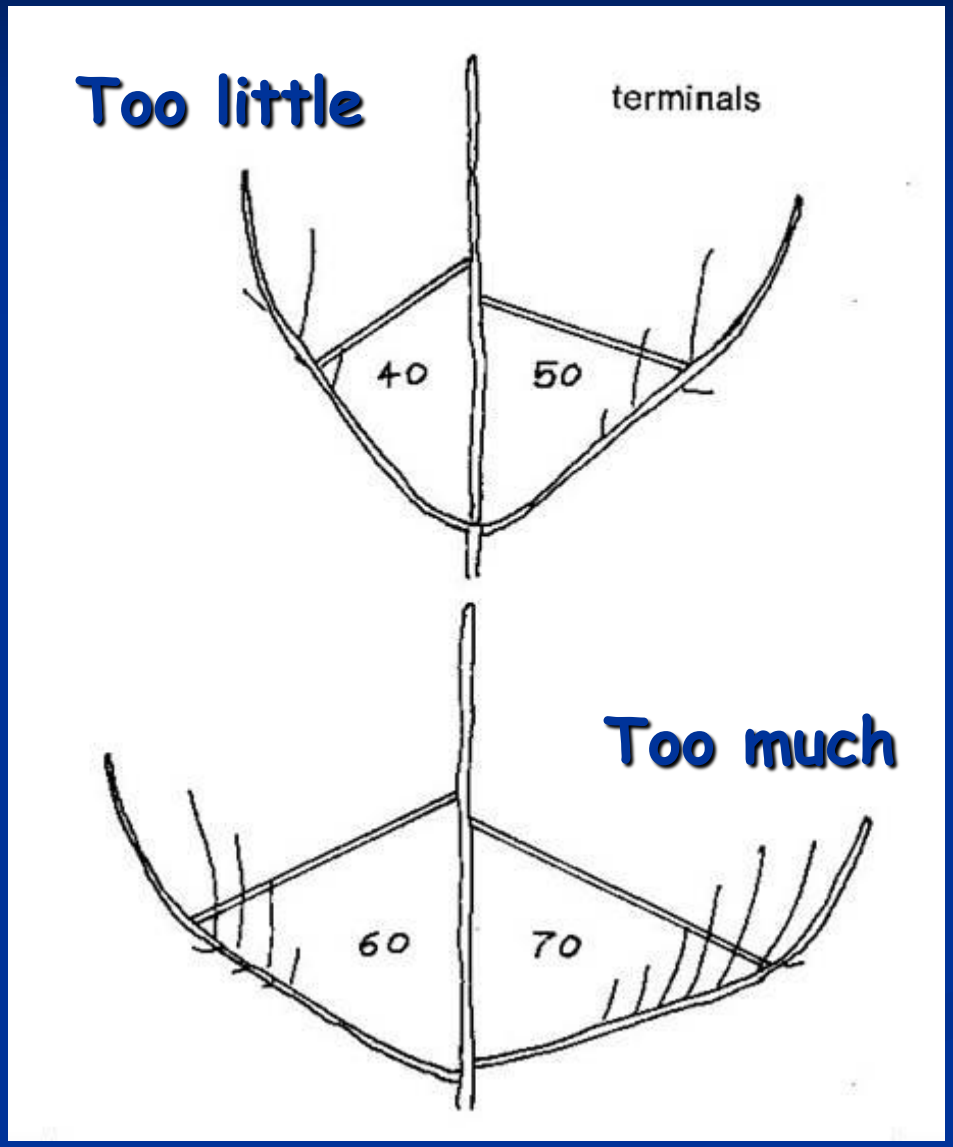

too long
too close
too slanted
perfect


A

Branch Spreading



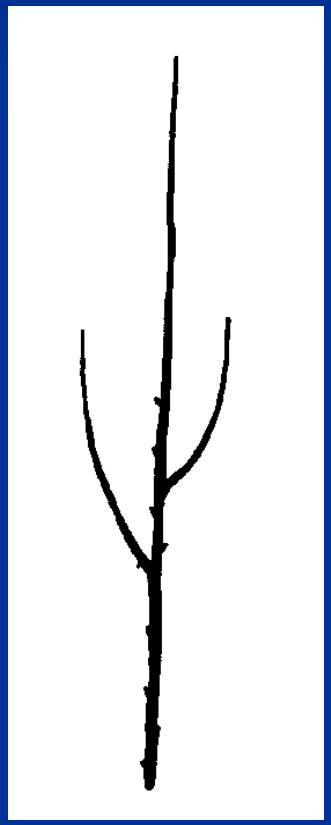
Branch Spreading



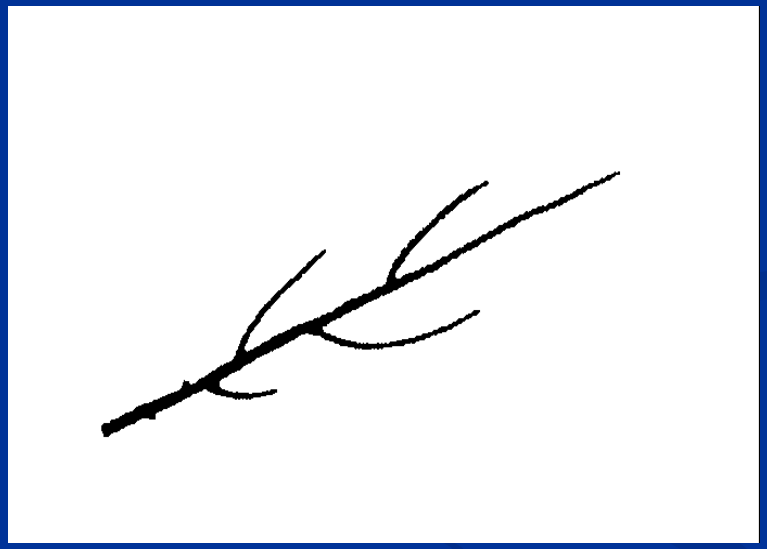
- Opens tree up for sunlight and spray penetration
- Reduces shoot and limb vigor
- Encourages flowering

Bend Branch Towards Horizontal

- Decreases amount of auxin moving from tip



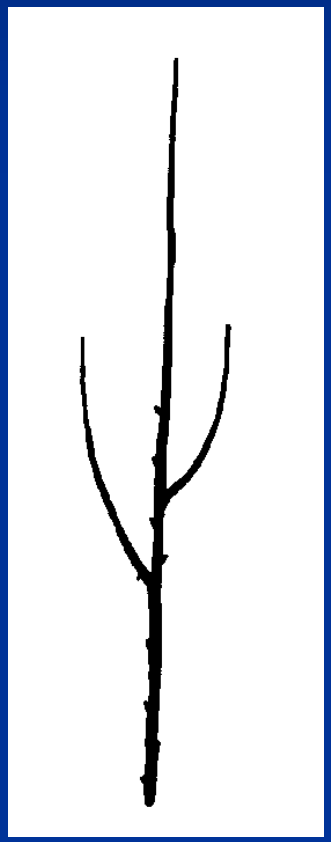
Bend to a 45 to
60 degree angle



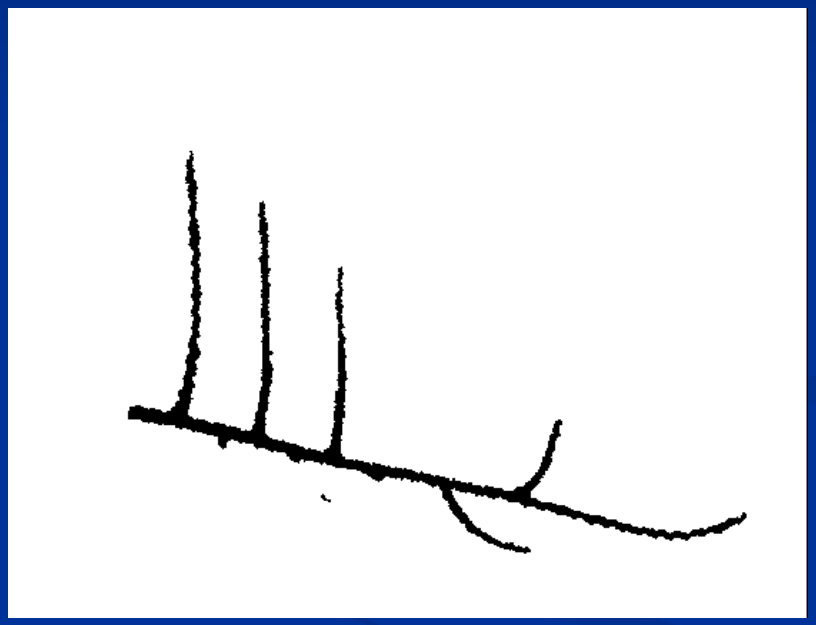
Increase lateral branching
Decrease terminal growth

Bend Branch Towards Horizontal

- Decreases amount of auxin moving from tip



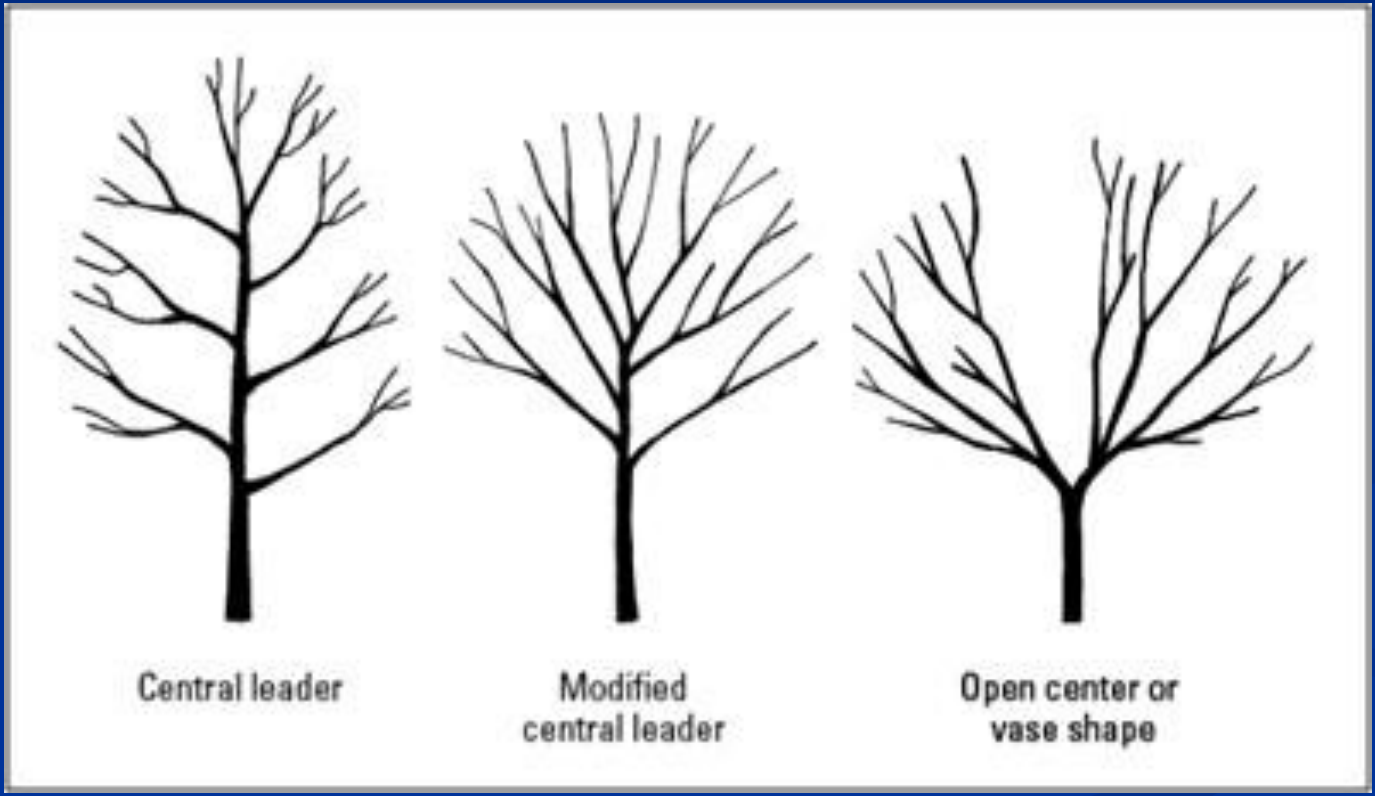
Bend below the horizontal



Increase lateral branching
Buds at highest point break
Decrease terminal growth

Apple Limb Spreading

Fruit Trees Training



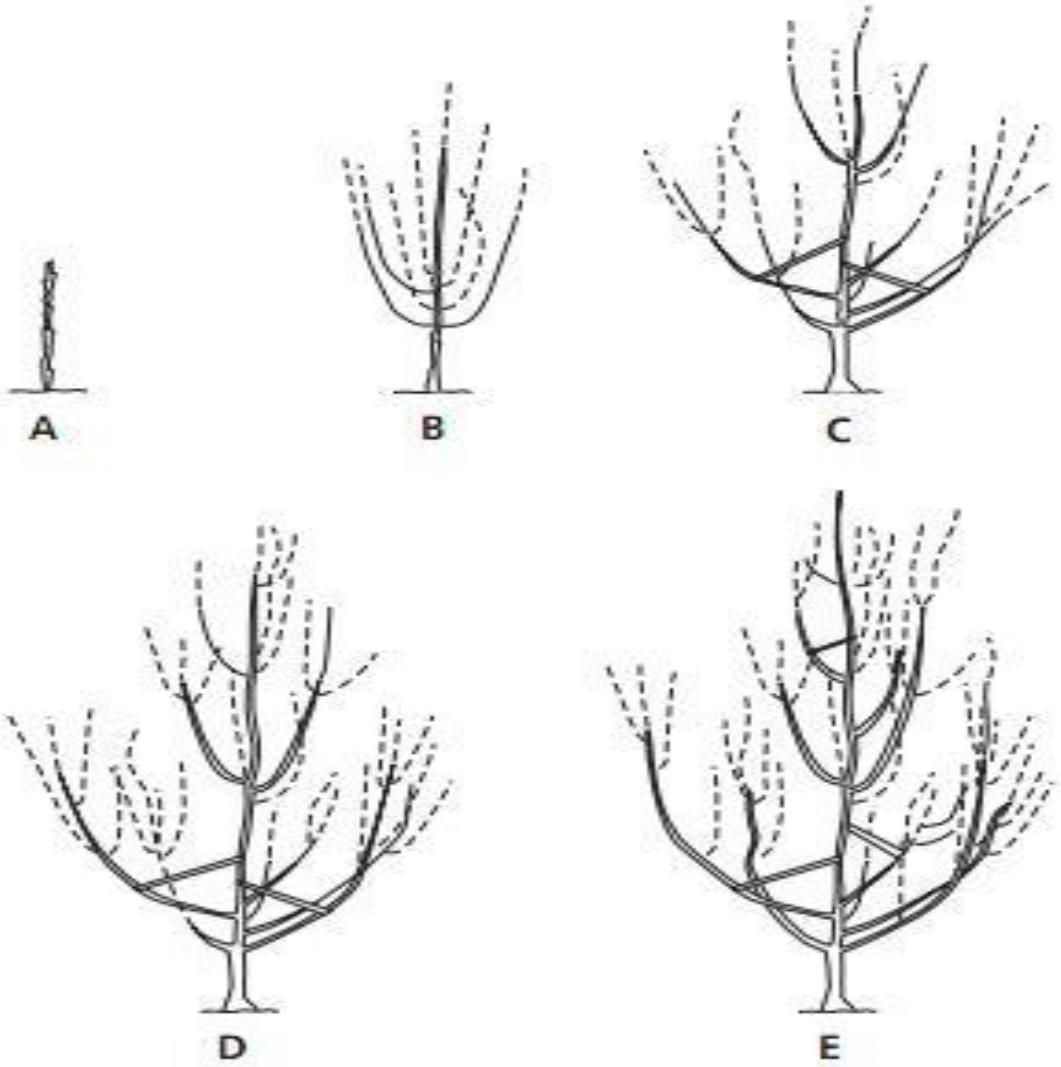
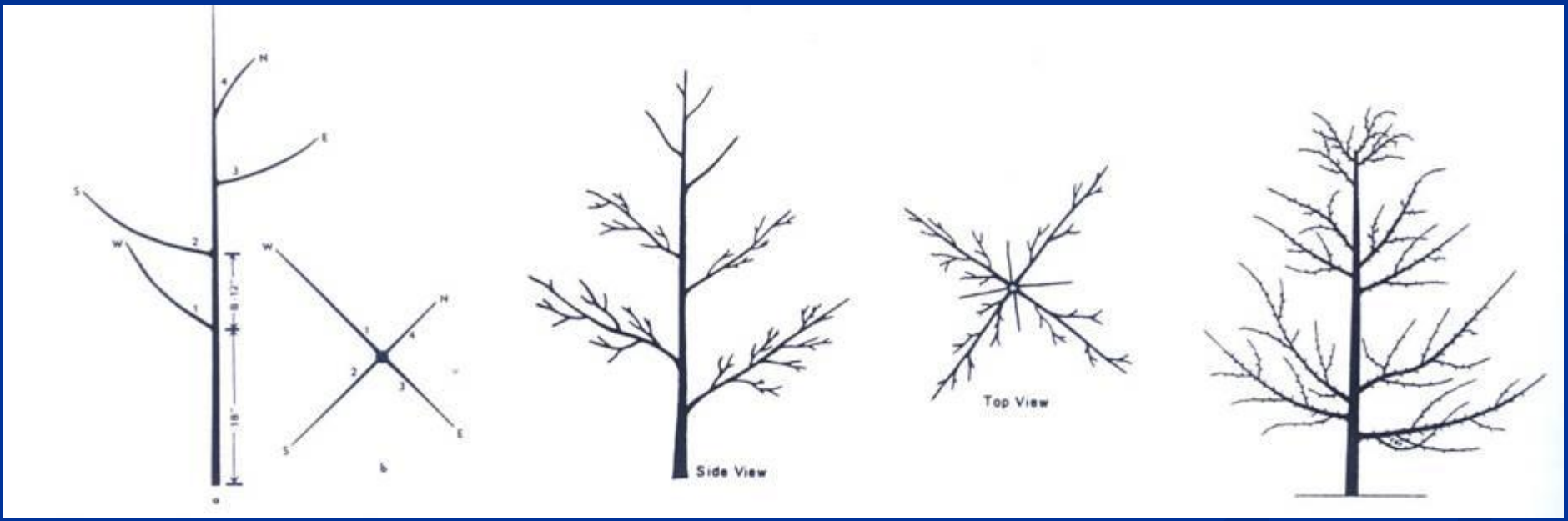
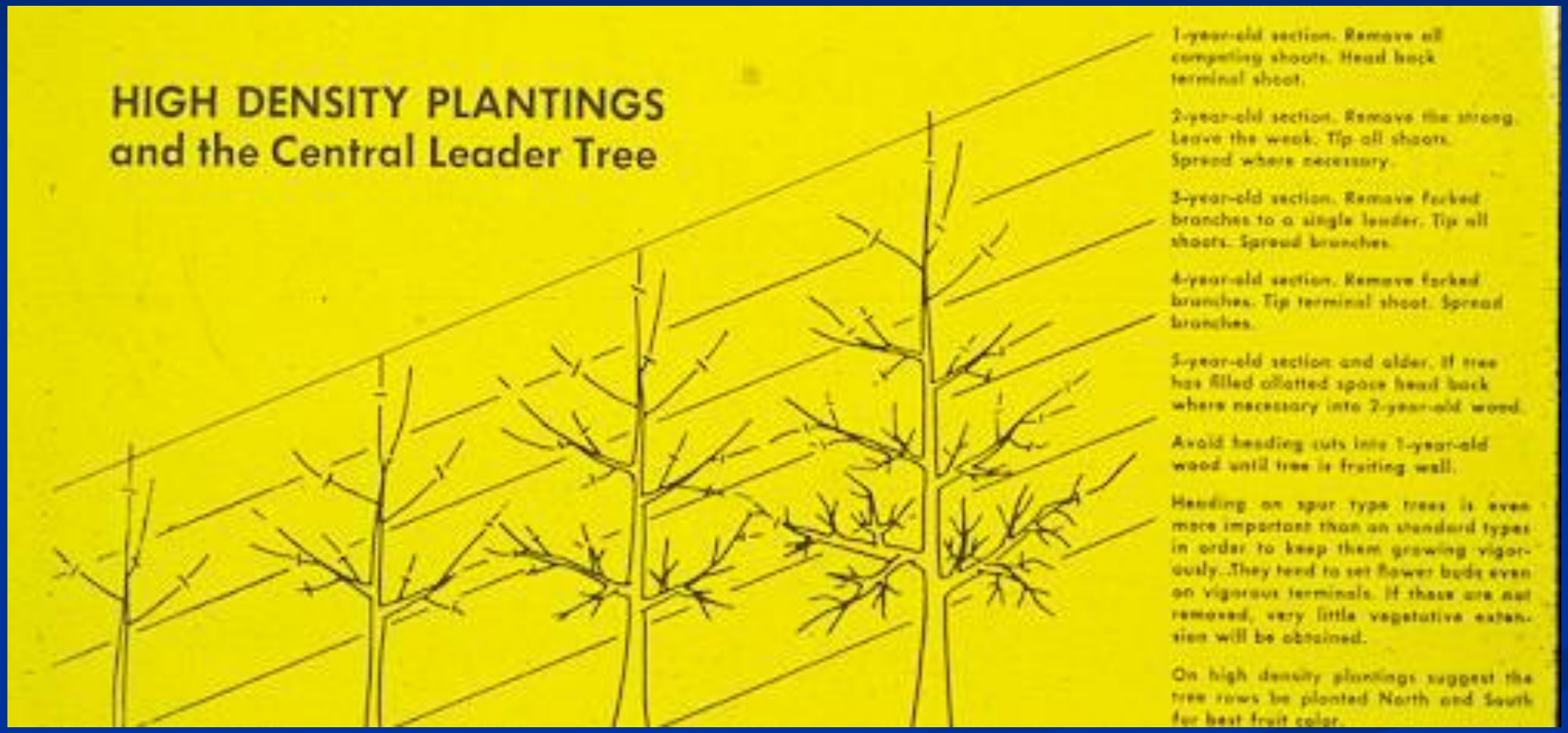


Figure 2. Central leader pruning method. (A) Bare root tree at planting time. (B) First tier of scaffold branches and reestablished central leader. (C) First tier of branches staked into desired position as second tier of branches is established. Branches developed in the third (D) and subsequent (E) years are spaced evenly around and up the central leader. Note the 45° angle of branch attachment formed by using spreading bars.

Apple Central Leader Pruning

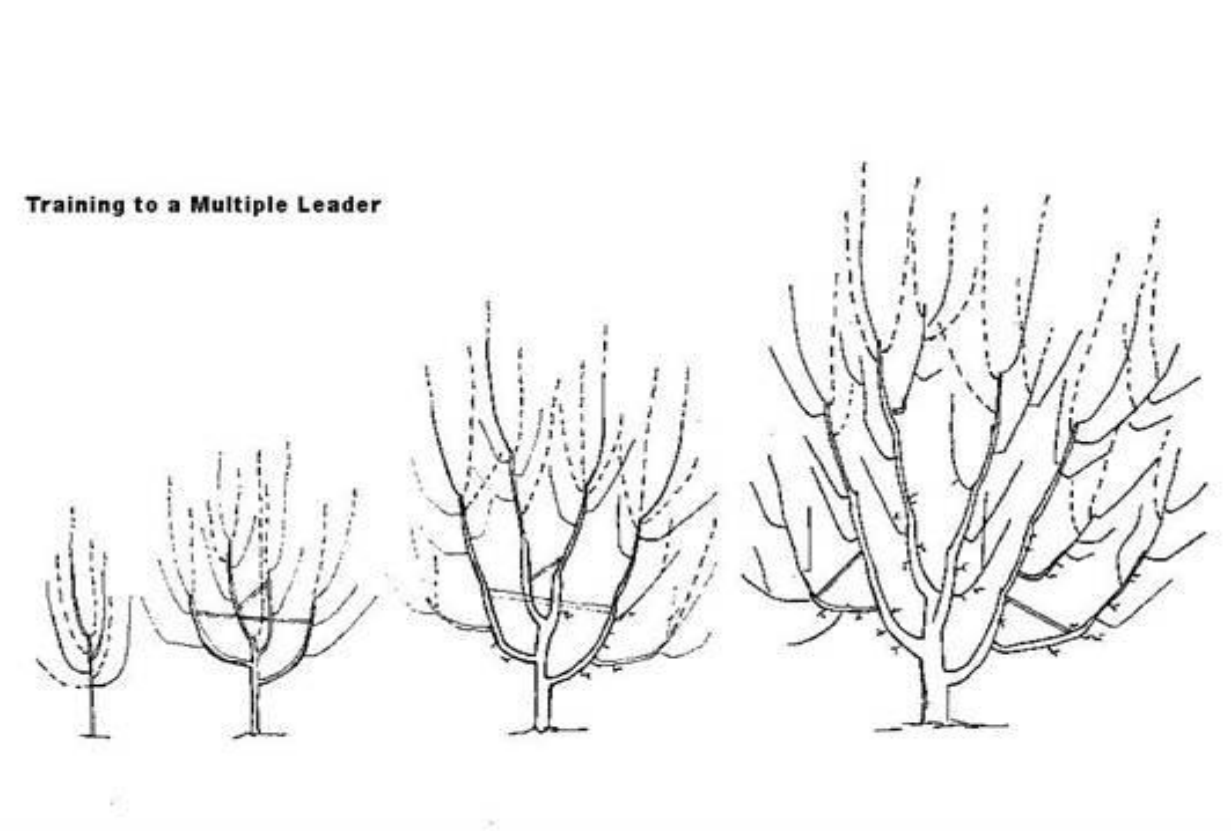


Apple Pruning

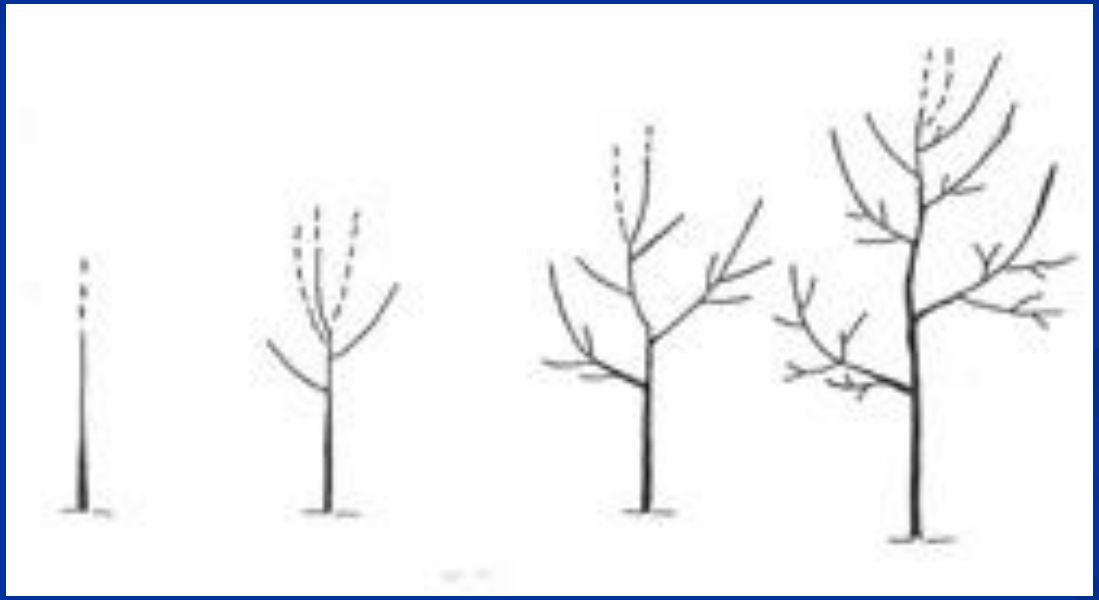


Central Leader Tree

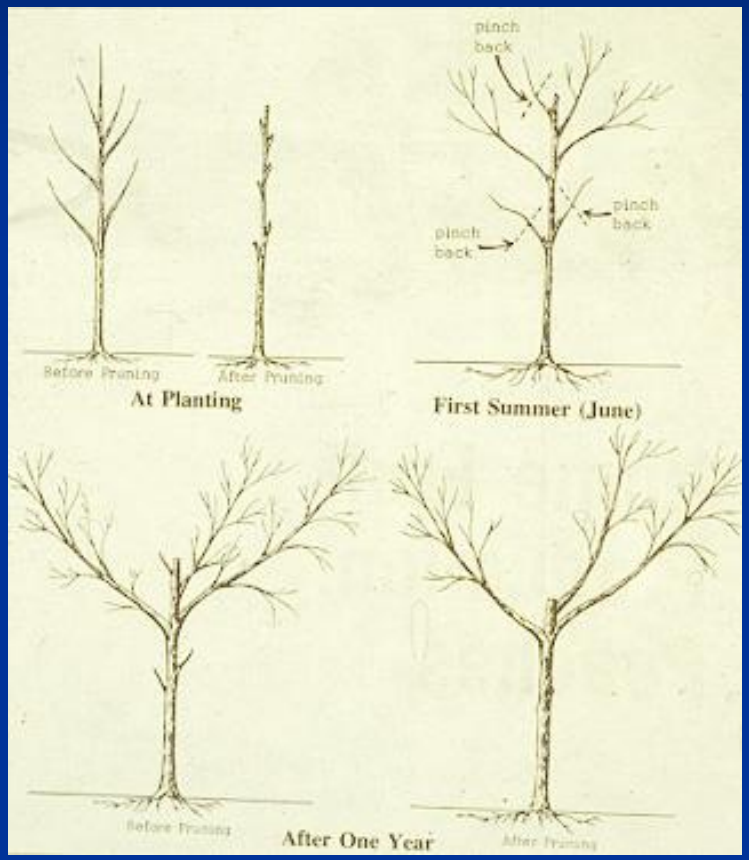
Pear Pruning – Multiple Leader

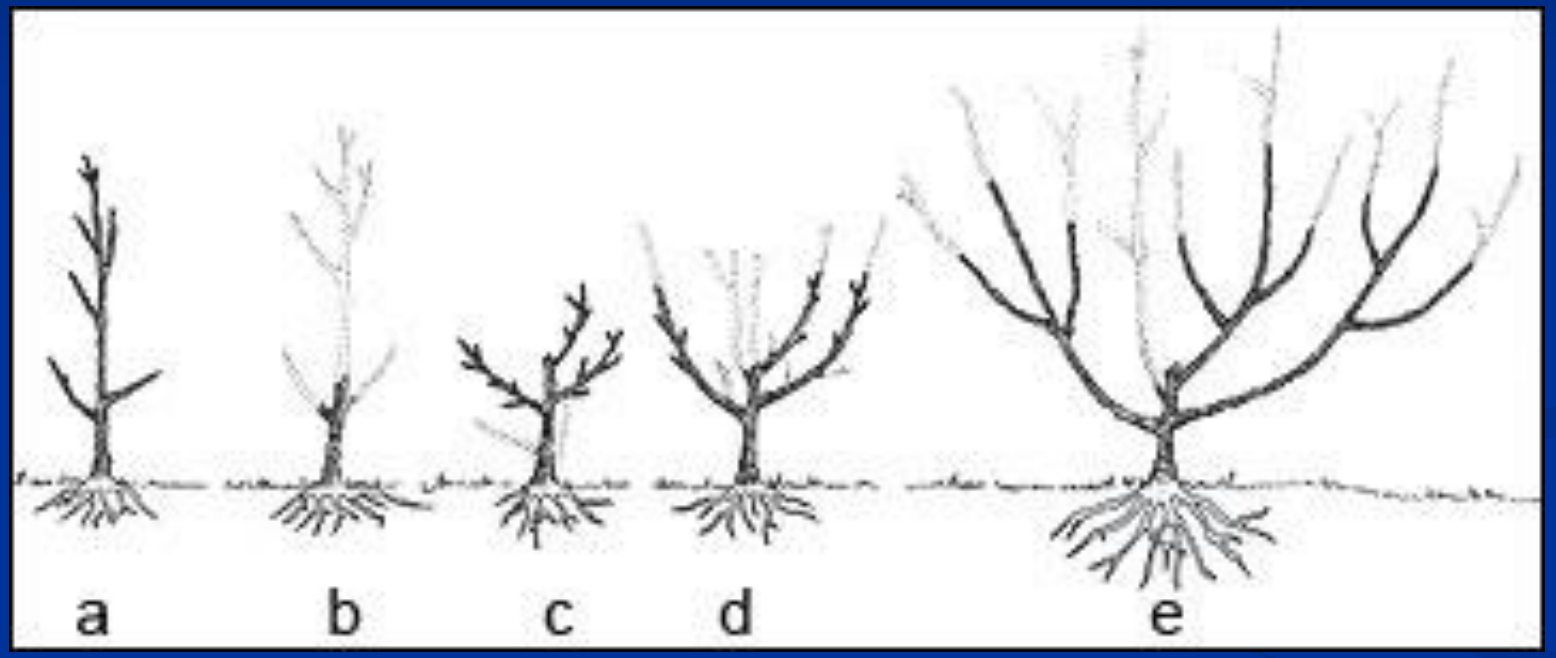


Modified leader

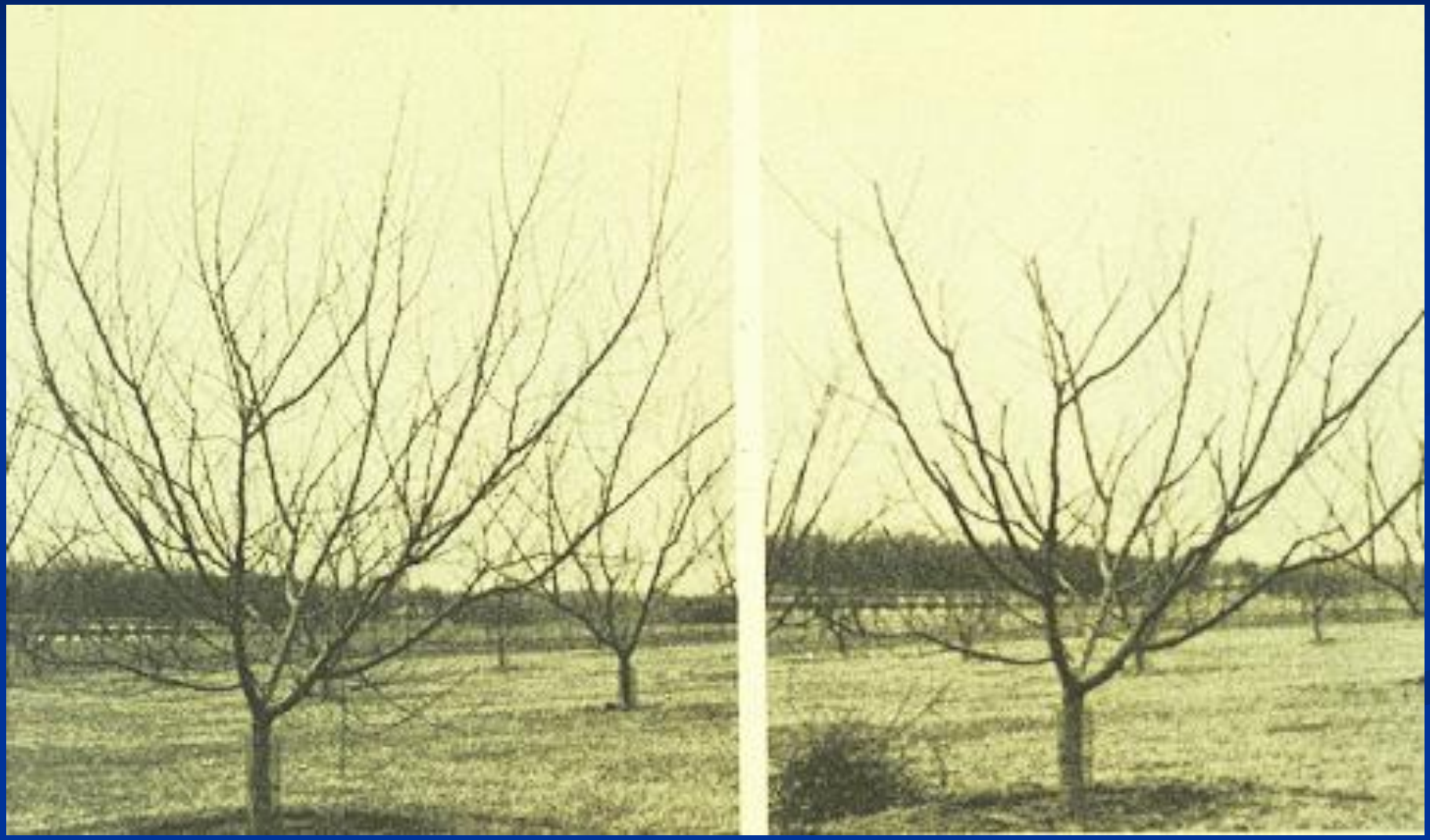


Peach Pruning – Open Center or Vase




a
b
c
d
e

Peach Pruning



Peach Pruning

Peach Pruning

Table 1. Fruiting wood characteristics and pruning of fruit trees

Type of tree	Location of fruiting buds				Spur life (years)	Type of training system	Amount of pruning for mature trees
	On long shoots		On short shoot or spurs				
	Laterally	Terminally	Laterally	Terminally			
almond	minor	—	major	—	5	open center	light (thinning)
apple	minor	very minor	—	major	8–10+	central leader, open center, or modified central leader	medium
apricot	minor	—	major	—	3	open center	heavy
cherry, sweet	minor	—	major	—	10–12	open center	light
fig	major	—	—	—	bears on 1-yr and new shoots	open center or modified central leader	various
nectarine	major	—	minor	—	1–2	open center	heavy
peach	major	—	minor	—	1–2	open center	heavy
pear, Asian	minor	very minor	—	major	6–8	central leader or open center	medium to heavy
pear, European	minor	very minor	—	major	8–10	central leader or multiple leader	medium
persimmon	major	minor	—	—	bears on new shoots	modified central leader	light (mainly thinning)
plum, European	very minor	—	major	—	6–8+	open center	medium
plum, Japanese	minor	—	major	—	6–8	open center	heavy
quince	major	minor	—	—	bears on new shoots	central leader or open center	light (mainly thinning)
walnut	minor on young trees	major on young trees	minor on mature trees	major on mature trees	8–10	modified central leader	light (thinning)