

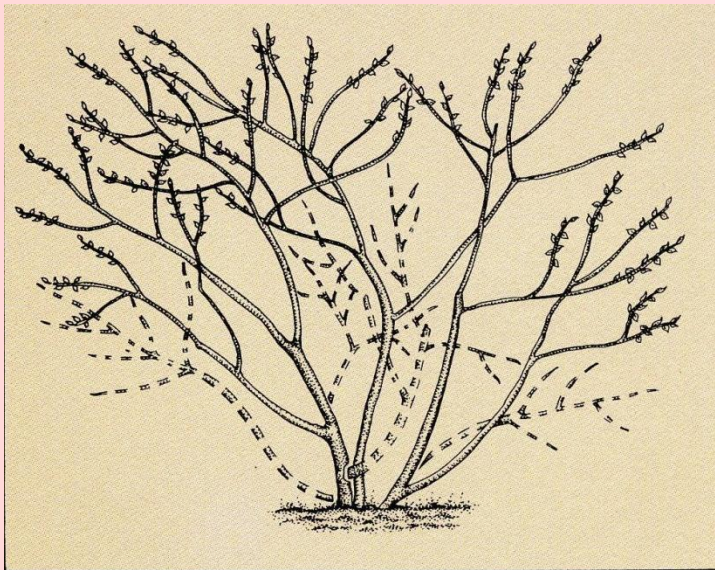


Pruning Berries, Grapes and Kiwi

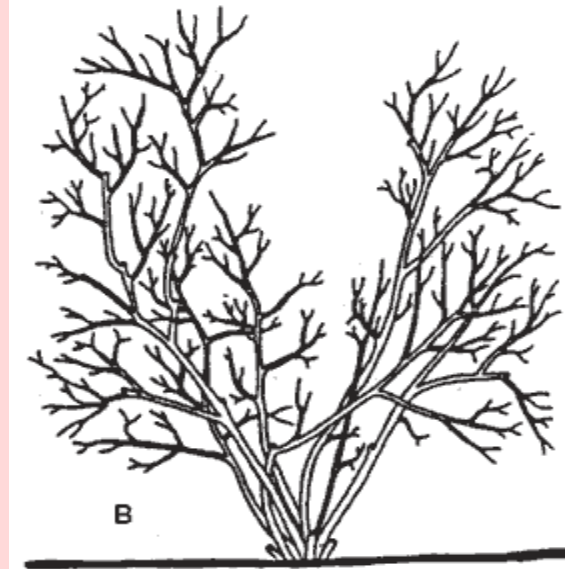


Pruning Blueberries

- Prune to an open vase shape, leaving 4 to 6 large canes to form the vase.
- Thin small canes and small fruiting branches to reduce over fruiting.



A



B

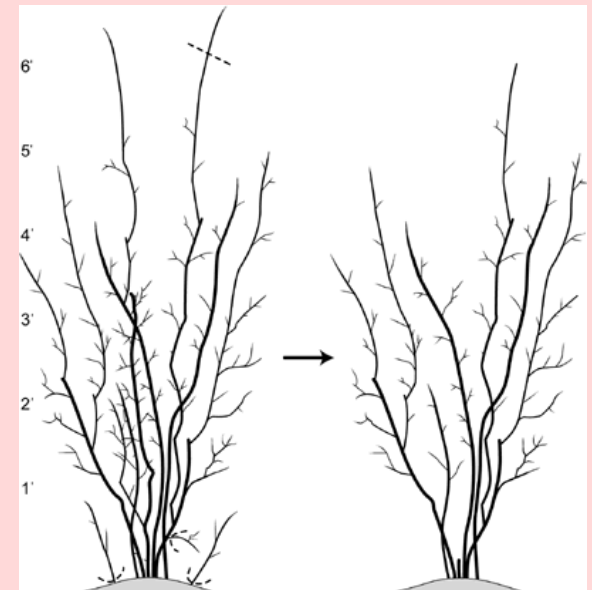
Figure 9.2. Blueberry pruning. A = mature bush showing typical pruning cuts (solid bars) and wood to be removed. B = mature bush after pruning. (courtesy of Virginia Polytechnic Institute.)

Pruning Blueberries

- Fruit is produced from buds on 1 year old wood.



- After 4-6 years, remove and replace 1 or 2 of the oldest canes each year.



Bramble Berries



Blackberries

- Fruit has a solid central core when it is picked.
- Vines can have thorns or be thornless. Thorns are fewer and larger than raspberry thorns and are very sharp.
- Fruit is black or deep purple-red.
- Floricane fruiting – bear fruit on 2nd year wood.

Raspberries

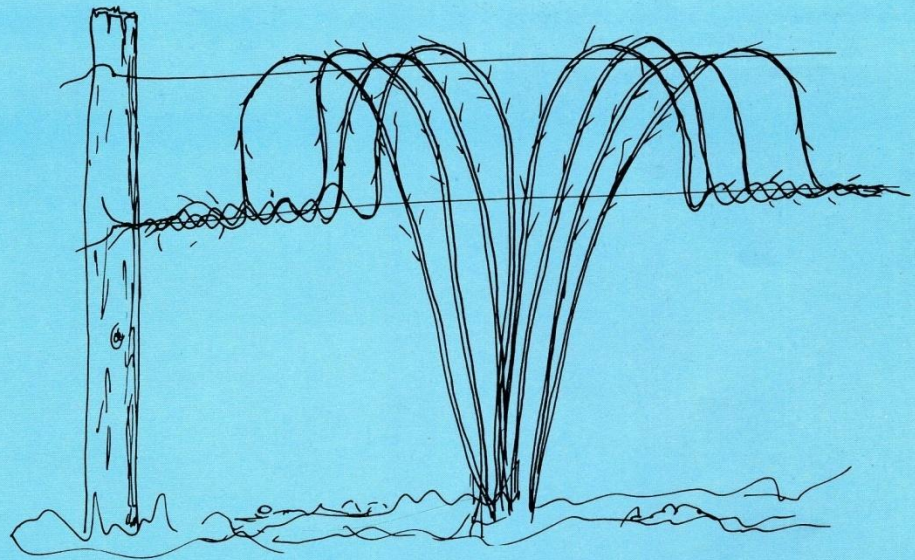
- Central core of fruit remains on stem when fruit is picked.
- Vine has numerous, fine thorns.
- Red, yellow or black colored fruit.
- Primocane fruiting - bear fall crop on current season growth.
- Floricane fruiting – bear fruit on 2nd year wood.

Blackberry

Pruning

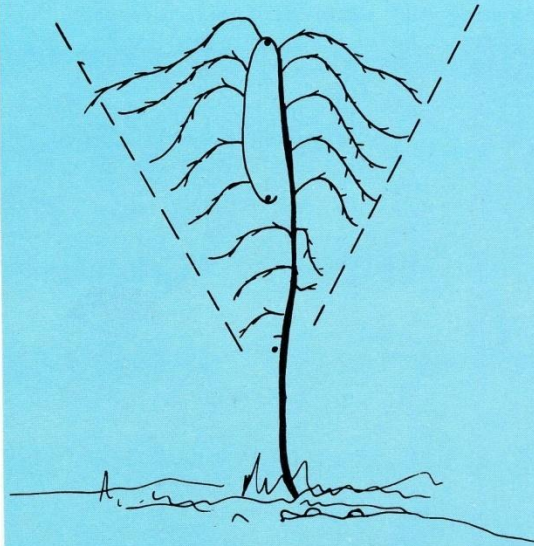
- Fruit is borne on 2nd year canes! (The variety 'Prime Jim' is an exception)
- The old canes die after the crop is matured and they should be removed as early as possible in order to remove sources of disease.
- Vines must be kept off of the ground by using some type of trellis or support system.
- Management of the berry "patch" is essential to keeping the plants healthy and to keep the planting productive.

Blackberry pruning

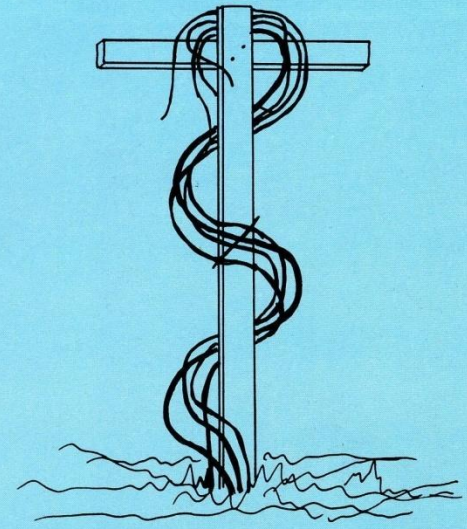


1. Immediately after harvest remove fruited canes and train new ones on trellis. In hot climates new canes will sunburn if left on ground. Trellis only strong, new canes and remove weaker ones. About 8 to 10 canes are sufficient for established plants. A fan-like arrangement of canes is best because it allows for good fruit and leaf development. Several canes can be bundled together for ease of handling. Erect blackberries send up root suckers in addition to new canes that rise from the crown. Pull root suckers out.

Head canes at about 6 to 8 feet in hot climates, 8 to 10 feet in cool climates. The farther berries are borne from the base of the plant, the smaller they will be at maturity.



2. In winter after leaf fall, remove all laterals within 2 feet of the ground. Head any long laterals to 12 to 15 inches. Head shorter laterals less to increase fruit size. The result should look similar to above.



3. Where space is limited, blackberries can also be tied to a post with a crossbar.

Blackberry Pruning

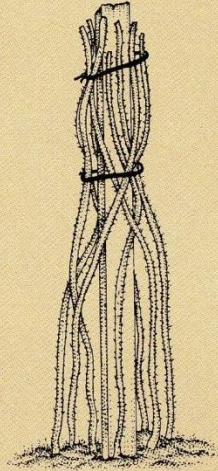
- Cut the canes to the ground after the 2nd year.
- To keep track of canes, mark them with latex paint at the end of each growing season.



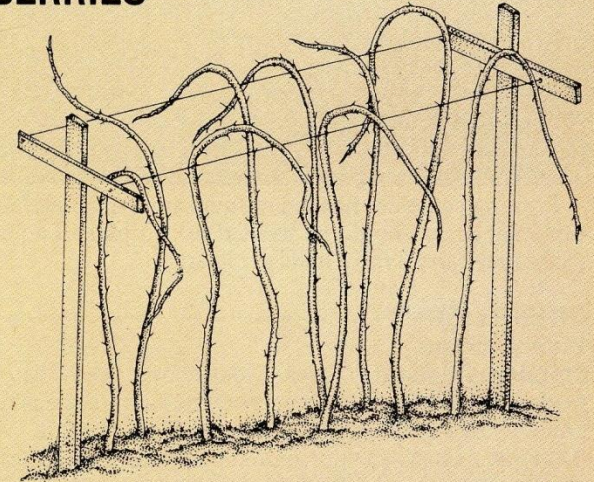
Raspberry Pruning

- Primocane fruiting varieties bear fall fruit on current seasons growth. Cut all canes to the ground each winter.
- Floricane fruiting varieties bear fruit on 2nd year wood. Keep track of canes by marking them with latex paint at the end of each growing season.
- Cut canes to the ground after the 2nd year.

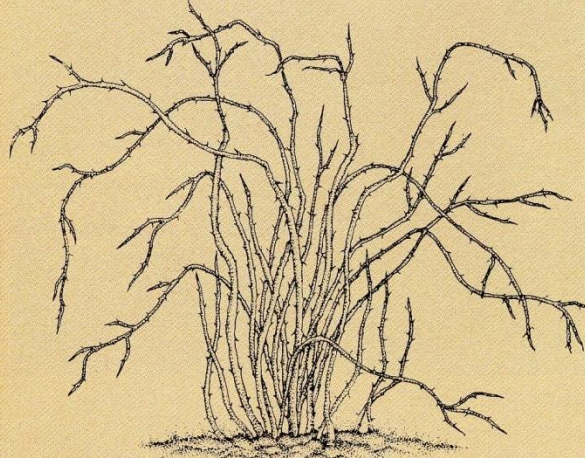
TRAINING AND PRUNING RED RASPBERRIES



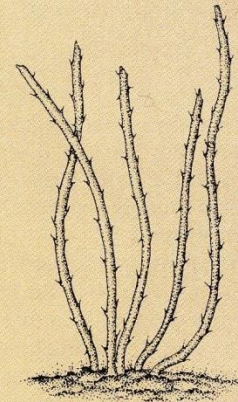
Single red raspberry plants can be trained by tying canes to a stake.



Red raspberries can be supported by two parallel, horizontal wires. Wires are spaced 18 inches apart and held by crossbars. Pull headed canes between wires.



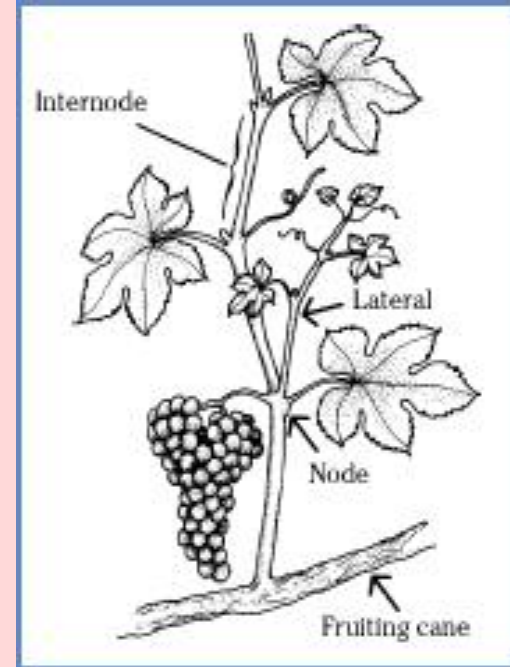
Red raspberries can be left free-standing. If plants are allowed to grow too long, fruit rubs against ground.



To prevent loss of fruit from free-standing raspberry bushes, head all canes over 4-1/2 feet long.

Grape Pruning

- An average of **80% – 90 %** of the grape vine **must** be pruned away every year for the best fruit production!
- Improperly pruned grapes bear little fruit, and the fruit is often of poor quality!
- Grapes bear fruit most heavily on new growth which grows off of one year old wood.



Grape Pruning

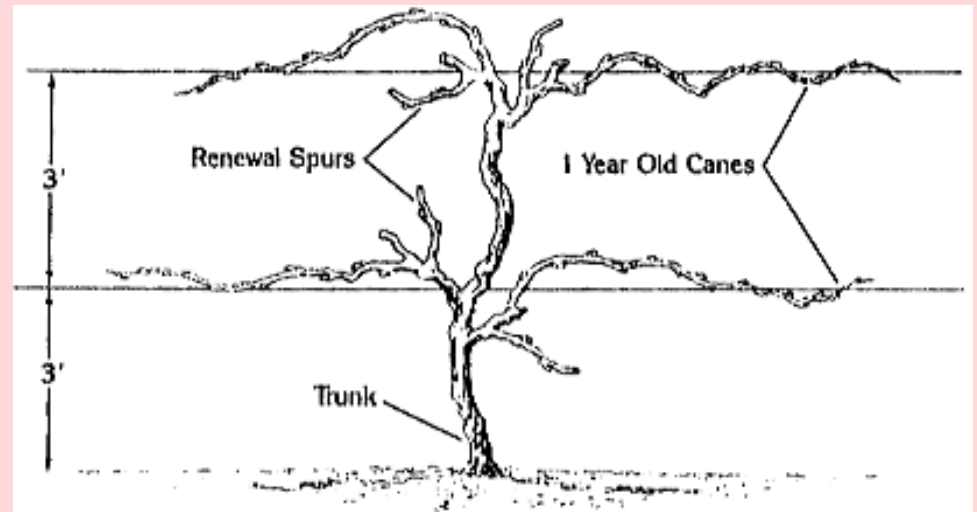
- There are several styles of grape pruning and training systems.



Spur Pruning – Cordon System



Head Training

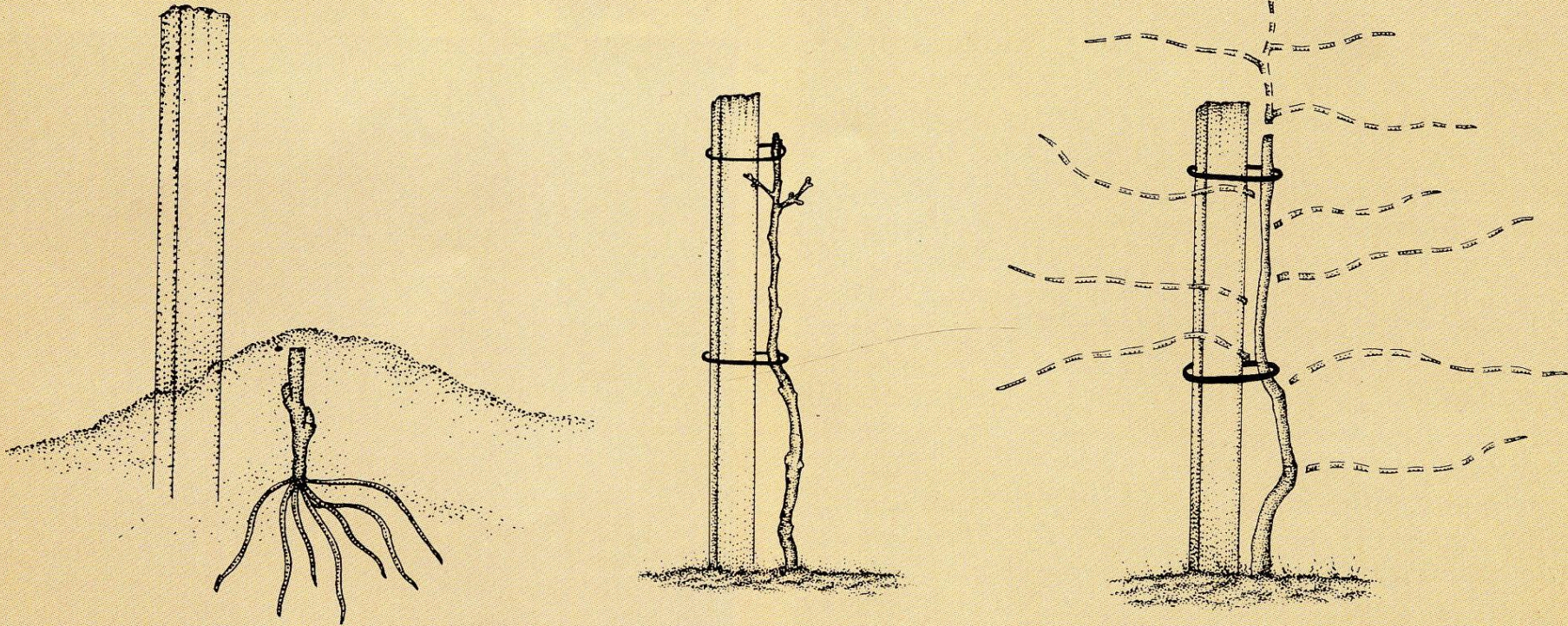


Cane Pruning – Kniffen System

1st Year Pruning

- The main objective of training the young vine is to develop a well-established root system. Select the strongest shoot that grows from each newly planted vine and train it to a stake, twine, or wire so that a straight trunk develops. Prune off all other shoots that grow.

TRAINING GRAPEVINES

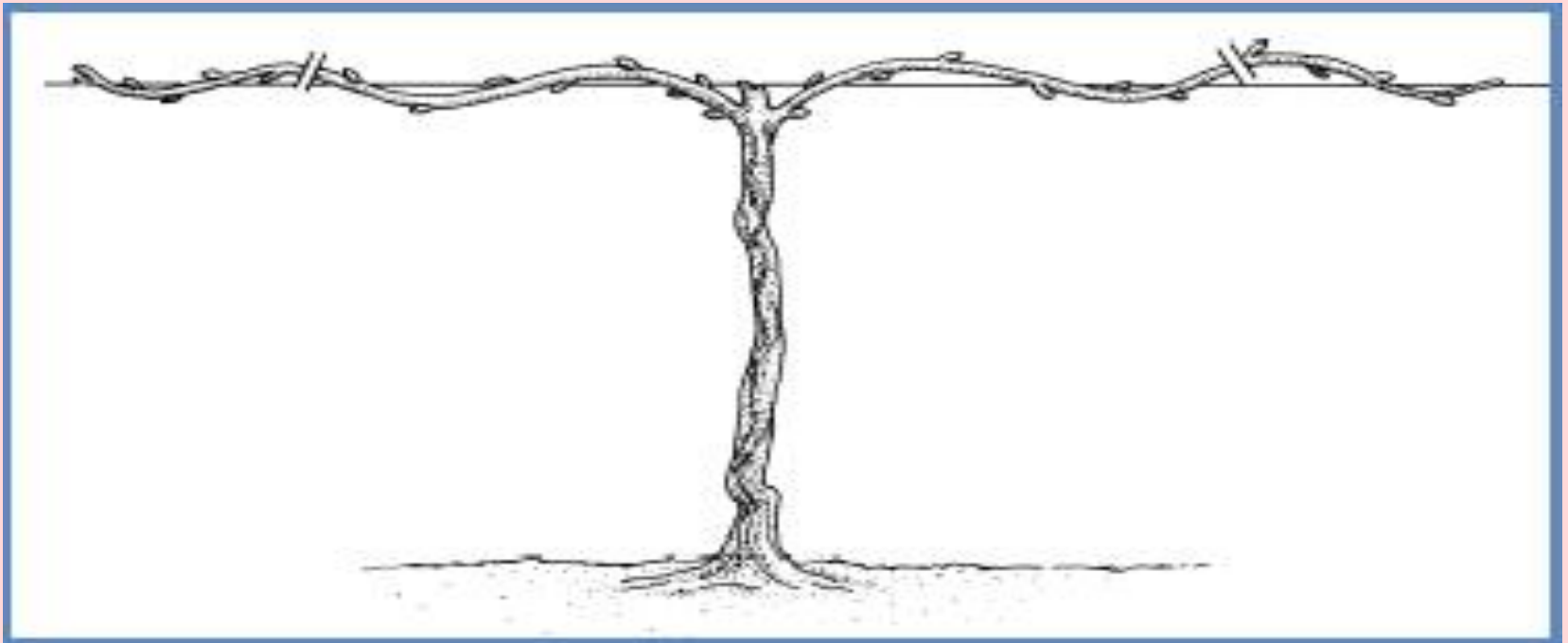


Left: When planting a rooted, pruned cutting of grape rootstock, set it so the top bud is at ground level. Mound soil over the plant. Developing buds will push through to the surface. Center: This shoot is trained to a stake. Tie shoot loosely to the stake and allow laterals to develop. Remove suckers from roots or crown. Right: At the first dormant pruning of the grapevine, remove all but one strong cane. This single cane is pruned back to two or three buds.

2nd Year Pruning

(for both spur-cordon and cane-kniffen systems)

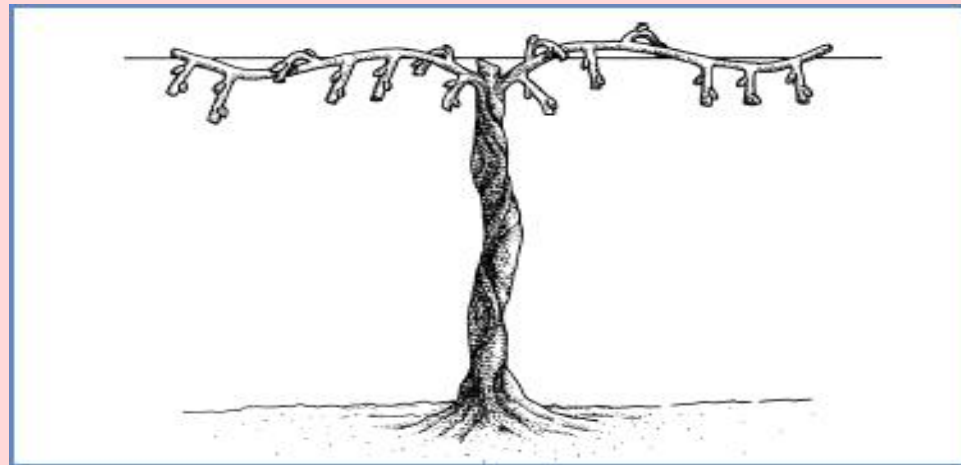
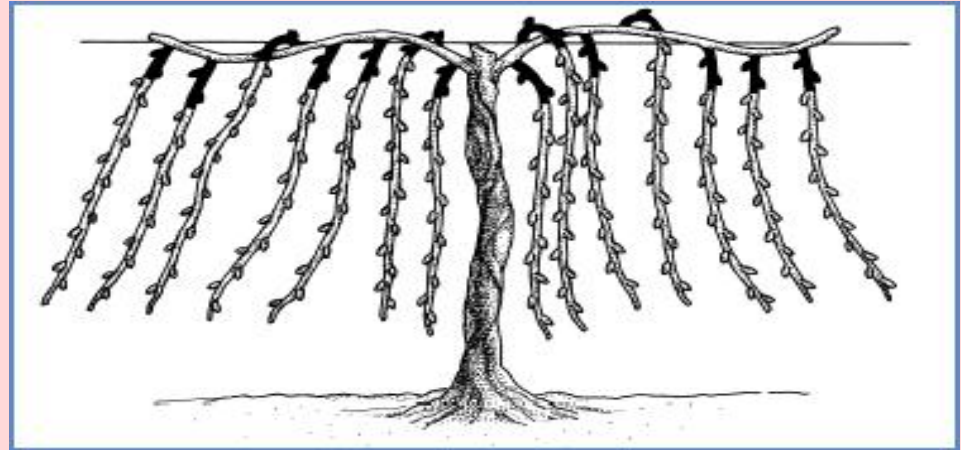
- Select two shoots that grow 2 to 6 inches below the wire. Train these shoots, one on each side of the trunk, along the wire. These shoots will form fruiting canes or arms. Remove all shoots, other than the two you selected.
- Prune back the two canes to seven or eight buds each (14 to 16 buds per plant).
- In the third growing season, shoots grow from buds on 1-year-old canes; fruit is produced on these shoots.



3rd Year Pruning

Spur Pruning – Cordon System

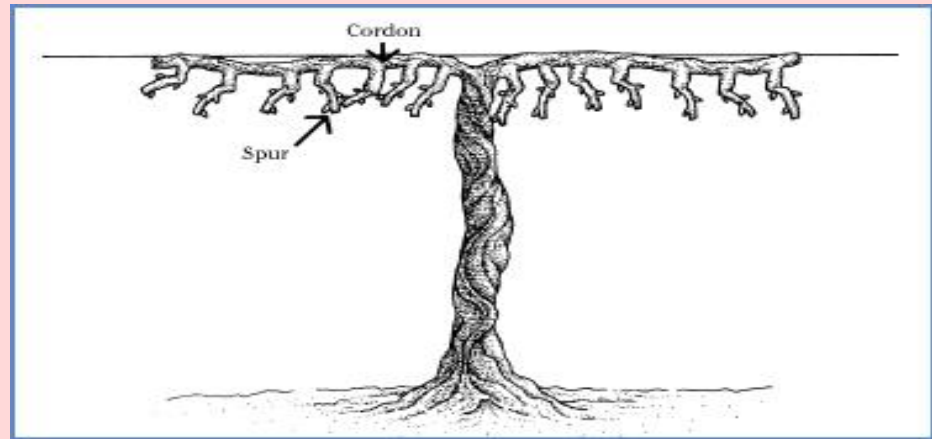
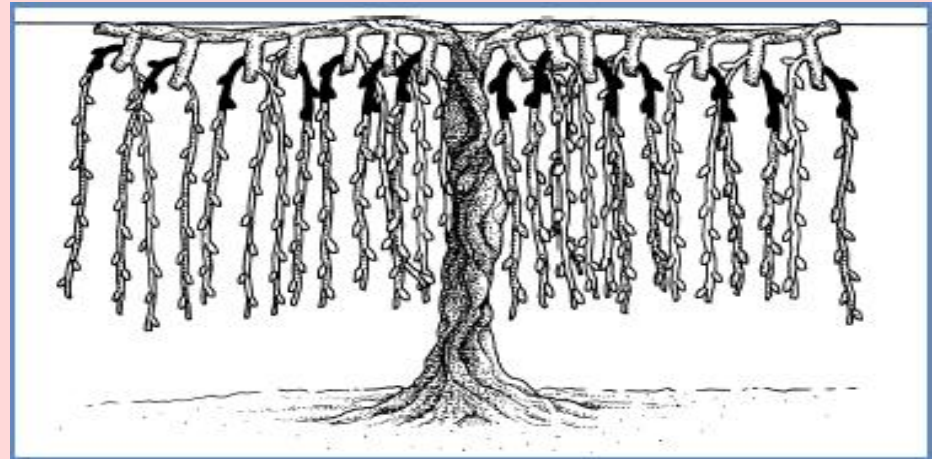
- This simple method requires little or no decision on what to select for fruiting wood. Differences between spur and cane pruning begin during the third winter.
- In the third winter, cut back the selected canes along the cordon to two or three bud spurs. Spurs should be 4 to 6 inches apart. Leave no more than 40 to 50 buds per plant.
- Prune mature plants by selecting spurs, cutting them back to two or three buds, and removing all other canes.



4th Year Pruning and each year thereafter

Spur Pruning – Cordon System

- Prune mature plants by selecting spurs, cutting them back to two or three buds, and removing all other canes.
- In some cultivars, such as the French-American hybrids (for example, 'Interlaken') or American types ('Concord'), the basal buds of canes aren't fruitful; the shoots that grow from these buds do not produce fruit. Thus avoid spur-pruning these cultivars; cane-prune them instead.
- If you're uncertain as to whether the basal buds of a cultivar are fruitful, it's best to cane-prune. However, it's easy to convert from one system of pruning to the other. Thus, if you're interested in spur-pruning, try both methods and compare results for a particular cultivar.
- Prune wine grape cultivars harder than table grapes to promote the development of high-quality grapes. Leave only 20 to 30 buds per vine; many wine grapes are cane-pruned.



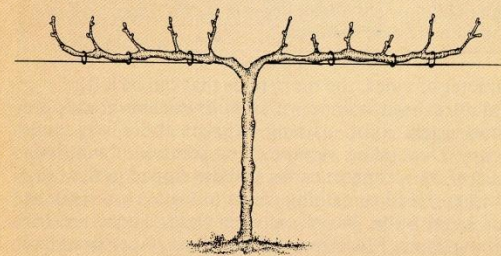
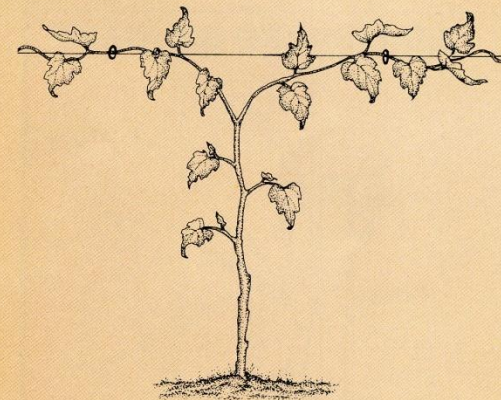
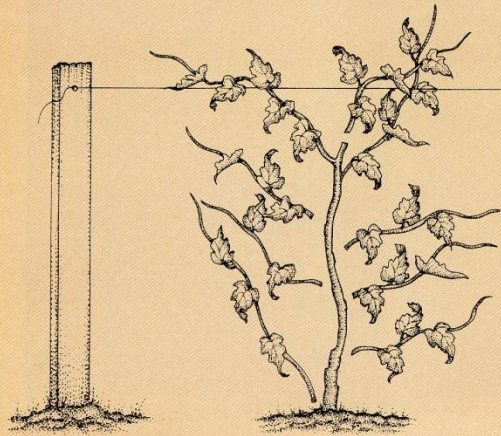
4th Year Pruning and each year thereafter

Spur Pruning – Cordon System

- Prune mature plants by selecting spurs, cutting them back to two or three buds, and removing all other canes.



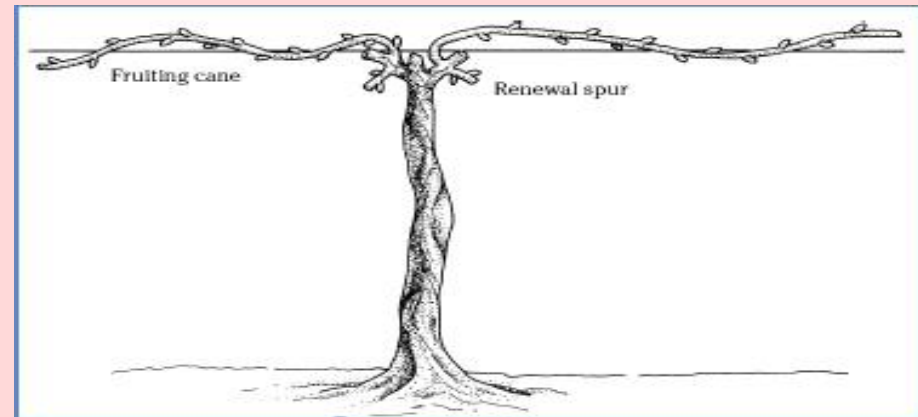
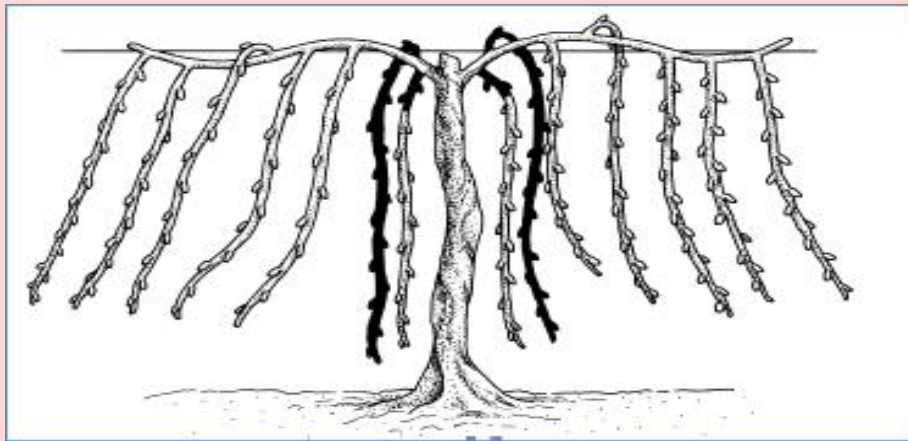
CORDON-TRAINING GRAPEVINES



3rd Year Pruning

Cane Pruning – Kniffen System

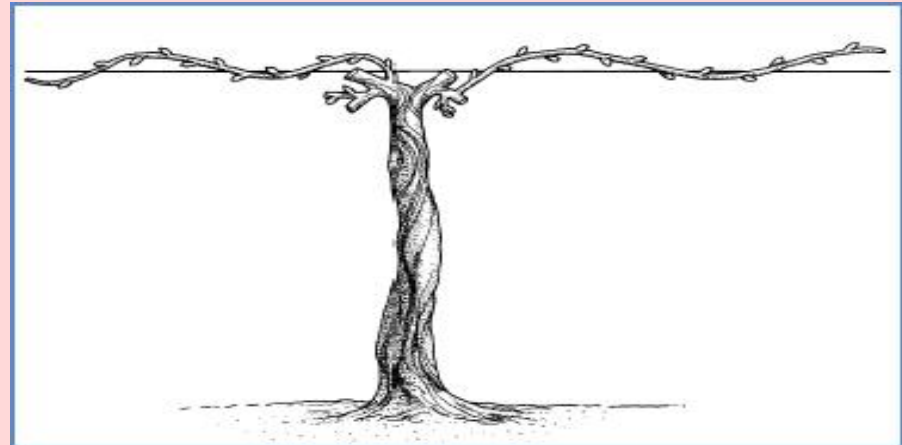
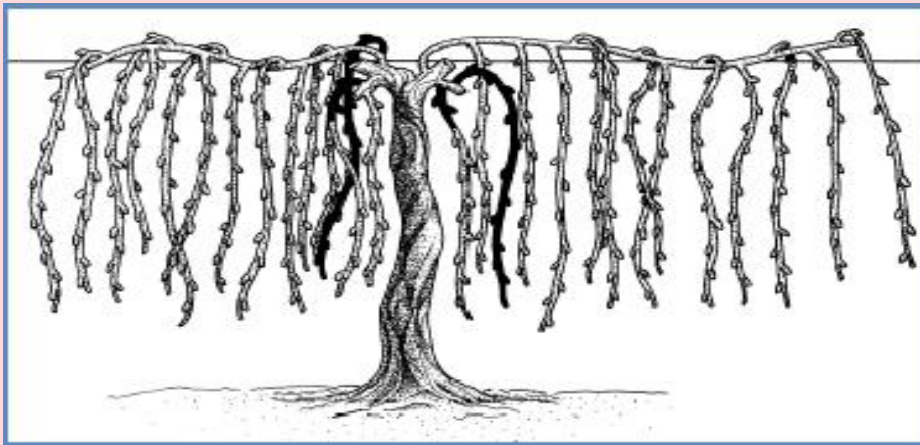
- You must select new fruiting wood and remove the rest (*about 90 percent*) of the canes each year. When you're selecting fruiting canes, be aware that canes differ in fruitfulness.
- The most fruitful canes are those that were exposed to light during the growing season, are not less than pencil width in diameter, and have an average internode length. (Long internodes indicate too much vigor.) It's most desirable to keep the fruiting area as close to the trunk as possible.
- Select two new fruiting canes (indicated by shading) and cut back each to about 15 buds (or 30 per plant. Wrap the canes around the wire and tie at the end.
- Leave a one or two-bud spur near the base of each arm. These renewal spurs will supply the new fruiting canes the following year and thus maintain fruiting close to the trunk.



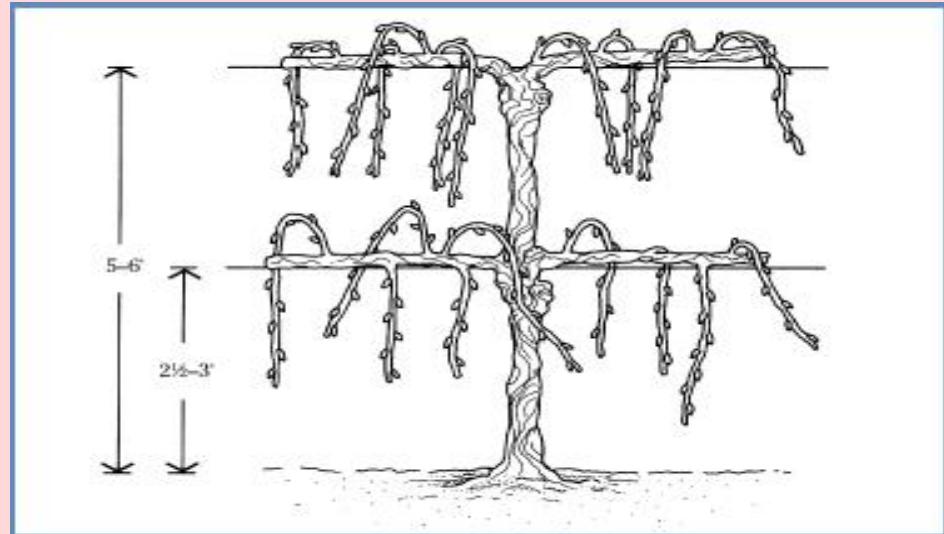
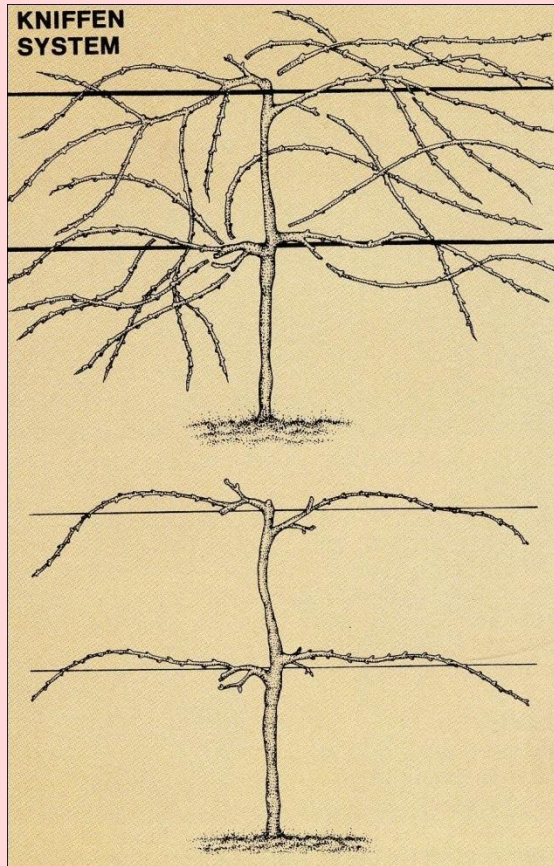
4th and Subsequent Years Pruning

Cane Pruning – Kniffen System

- Prune mature plants yearly to remove all growth except new fruiting canes and renewal spurs. Choose a fruiting cane from each of the renewal spurs.
- If the canes from a renewal spur are undesirable for some reason, choose a cane from a basal bud of last year's fruiting cane.
- Cut back each fruiting cane to 10 to 25 buds (or 20 to 50 buds per plant).
- If necessary, you can replace arms by training shoots that arise from buds near the trunk.



Cane Pruning – Four-cane Kniffen



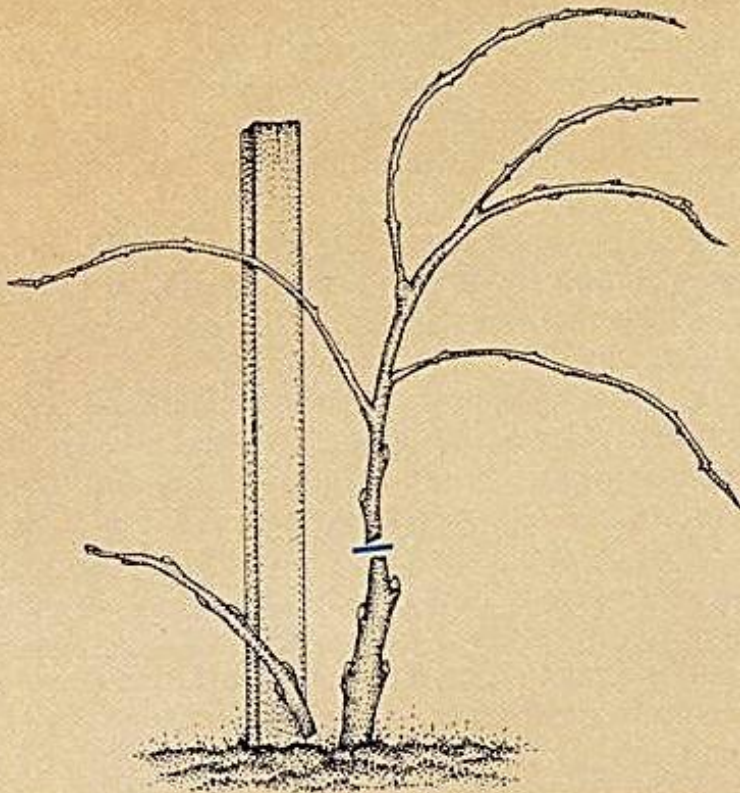
- This is similar to the two-cane Kniffen, but four fruiting canes are trained. A disadvantage of the four-cane Kniffen is that fruit may be of lower quality because shoots from top fruiting canes shade the fruit on the lower canes.

Cane Pruning – Four-cane Kniffen

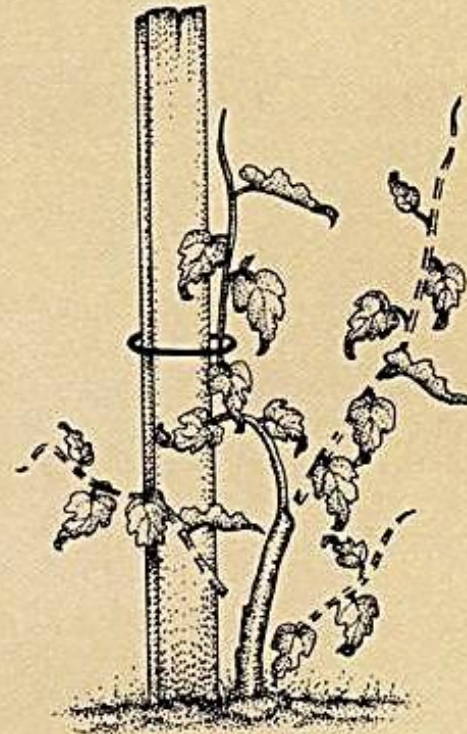


Head training

- Vine trunks are tied to a stake when young and become self-supporting as they grow.



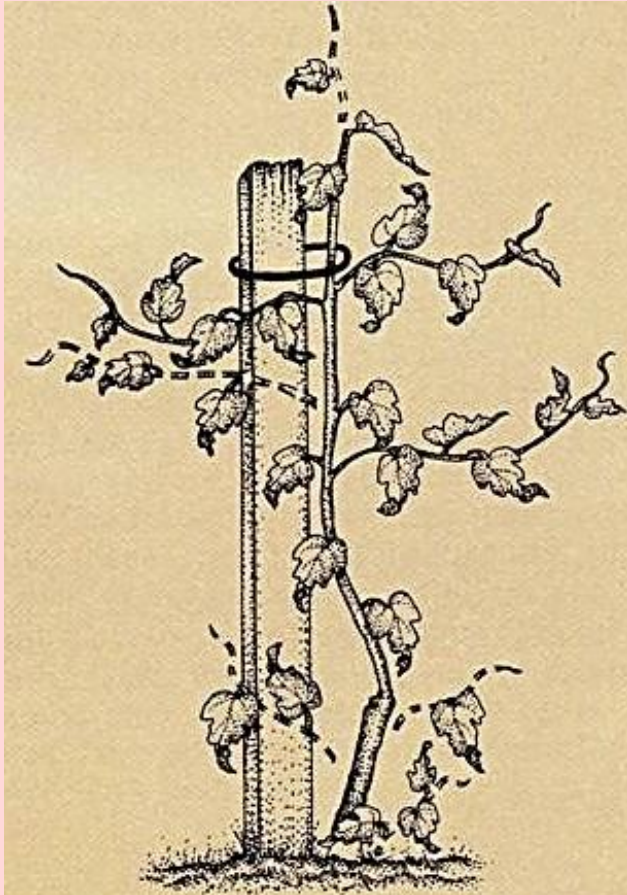
After a few inches of growth in the second summer, the best-positioned and strongest shoot is saved. Other shoots are removed.



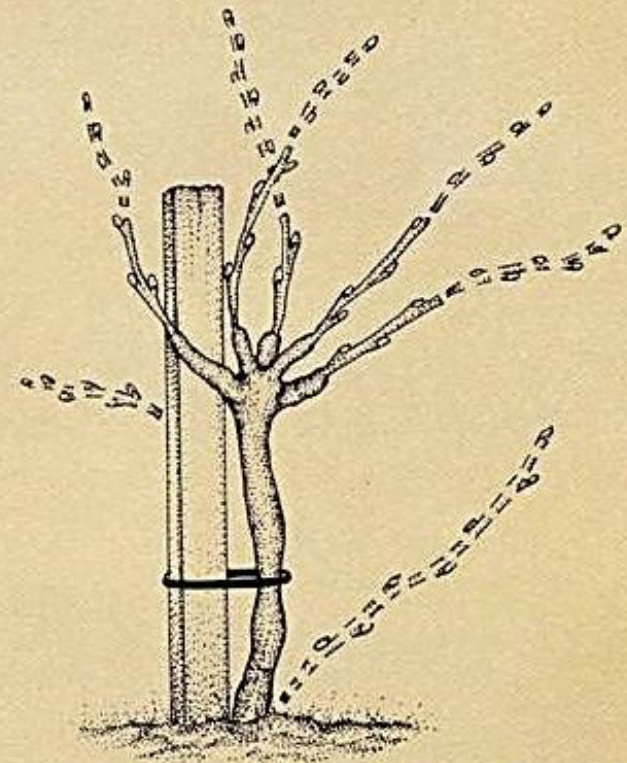
Canes of head-trained vines are cut off at the node or dormant bud. Cut through nodes to destroy buds above where the head is to be formed.

Head training

- This method is inexpensive and requires less space, but yields are lower.



Mature, head-trained vines of European grapes are usually spur-pruned. Prune vines severely to control sprawling growth.



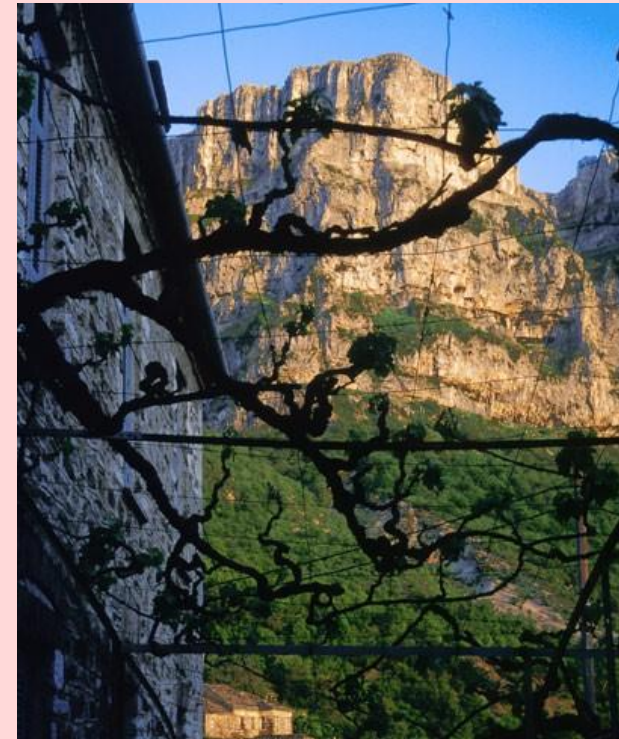
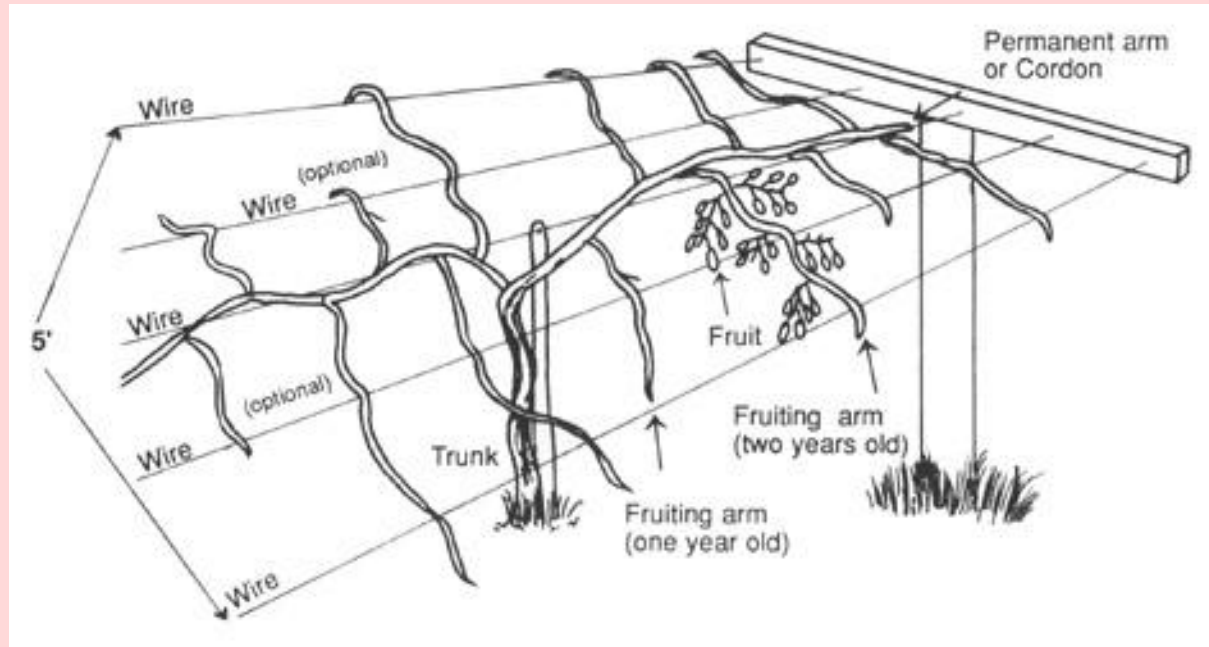
All lateral canes below the middle of the trunk are removed entirely. Weak laterals in the upper half of the vine are also removed.

Head training



Training to an Arbor

- Pruning grapes to an arbor follow the same principles as pruning to a vertical trellis.
- Both cane pruning and spur pruning systems can be applied to an arbor, however spur pruning is often simpler to maintain.



Training to an Arbor



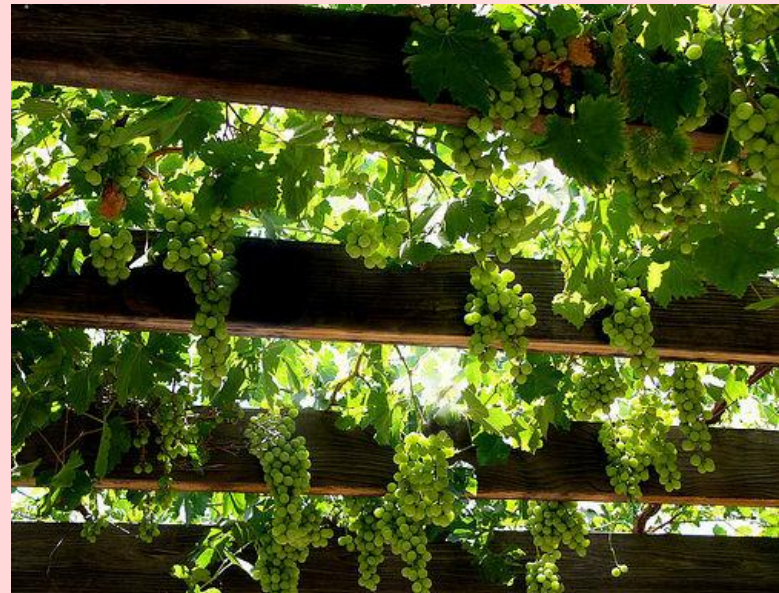
Training to an Overhead Arbor

- When pruning to an overhead trellis, function sometimes compromises fruit production. In some cases more vine is left to provide shade and aesthetic appeal, however this will result in reduced yields or lower quality fruit.



Training to an Overhead Arbor

- The exact shape and size for an overhead arbor can vary with the needs and desires of the grape owners.
- Remember to prune 80-90% of the vine each year for best fruit production.

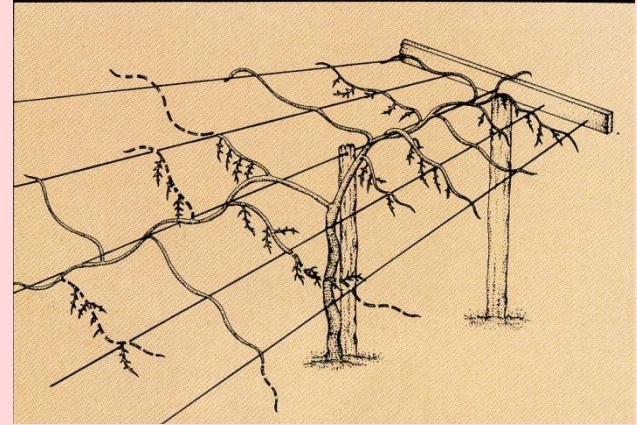


KIWI FRUIT



- There are two main types of kiwi fruit. Traditional - fuzzy (*Actinidia chinensis* and *A. delectiosa*) and fuzz-less (*Actinidia arguta*).
- Vines are cold hardy to 10 degrees and require winter chilling of an average of 350 hours to over 800 hours depending on the variety!
- Normally, plants are either male or female. **Both** are required for fruit production. Only the female plant produces fruit!
- Very vigorous vines require a sturdy trellis system and proper pruning for good fruit production.

Proper Pruning and Training is Required for Fruit Production!



- Annual winter pruning to remove 60% - 85% of the vine is required!
- Fruit is produced on fruiting spurs which occur on laterals which are at least two years old.
- A permanent scaffold branching system is developed which is made up of vine leaders and laterals.

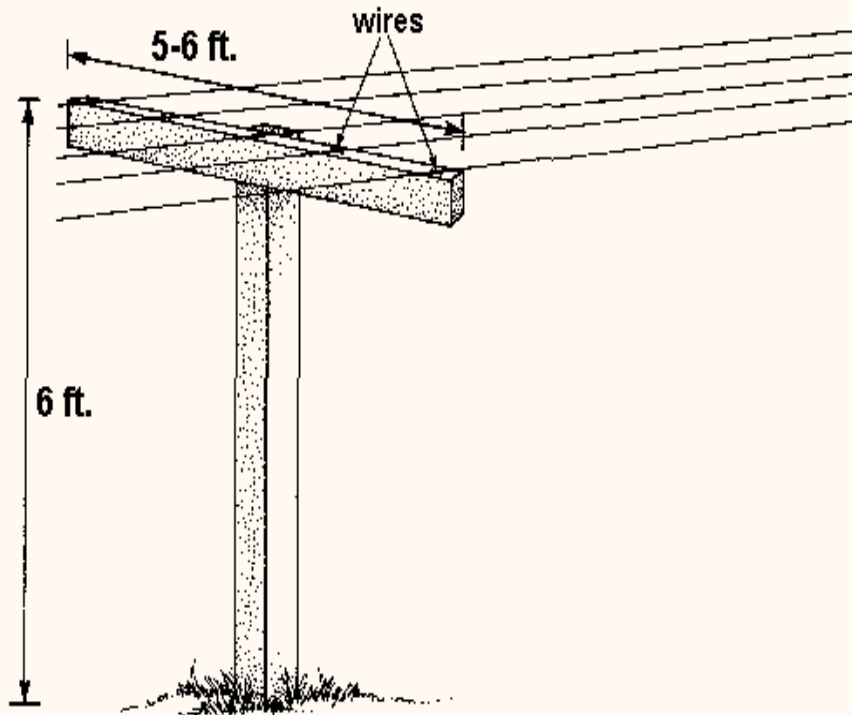
Trellis Systems

- Kiwifruit need a strong trellis and require a significant amount of pruning. They may be grown on an overhead arbor (pergola) or on a T-bar trellis.

T-bar

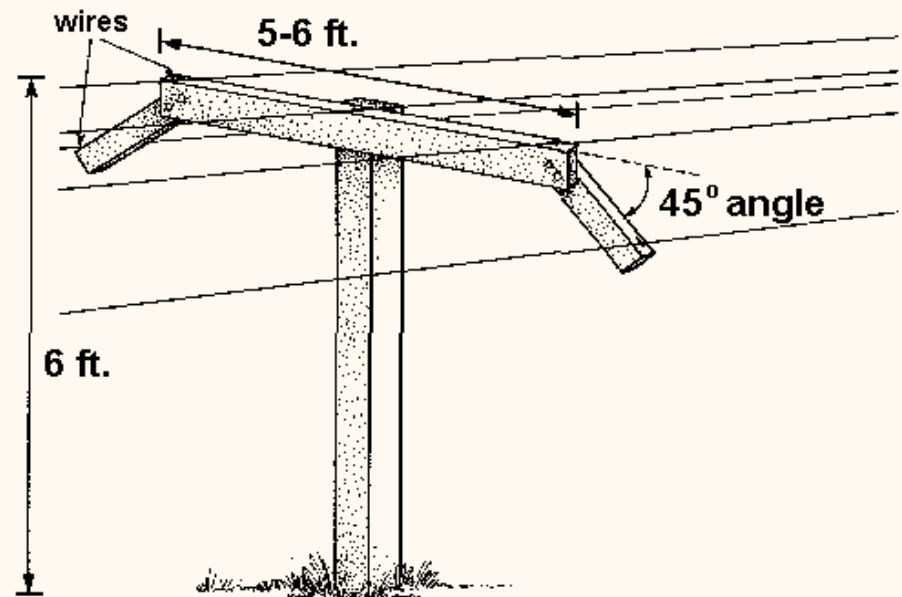
A typical T-bar trellis consists of posts with a 5- to 6-foot (depending on row width) long cross arm extending across the post (Figure 1-A). The kiwifruit fructing canes are tied to wires on top of the cross arm.

Figure 1-A. Standard T-bar Trellis

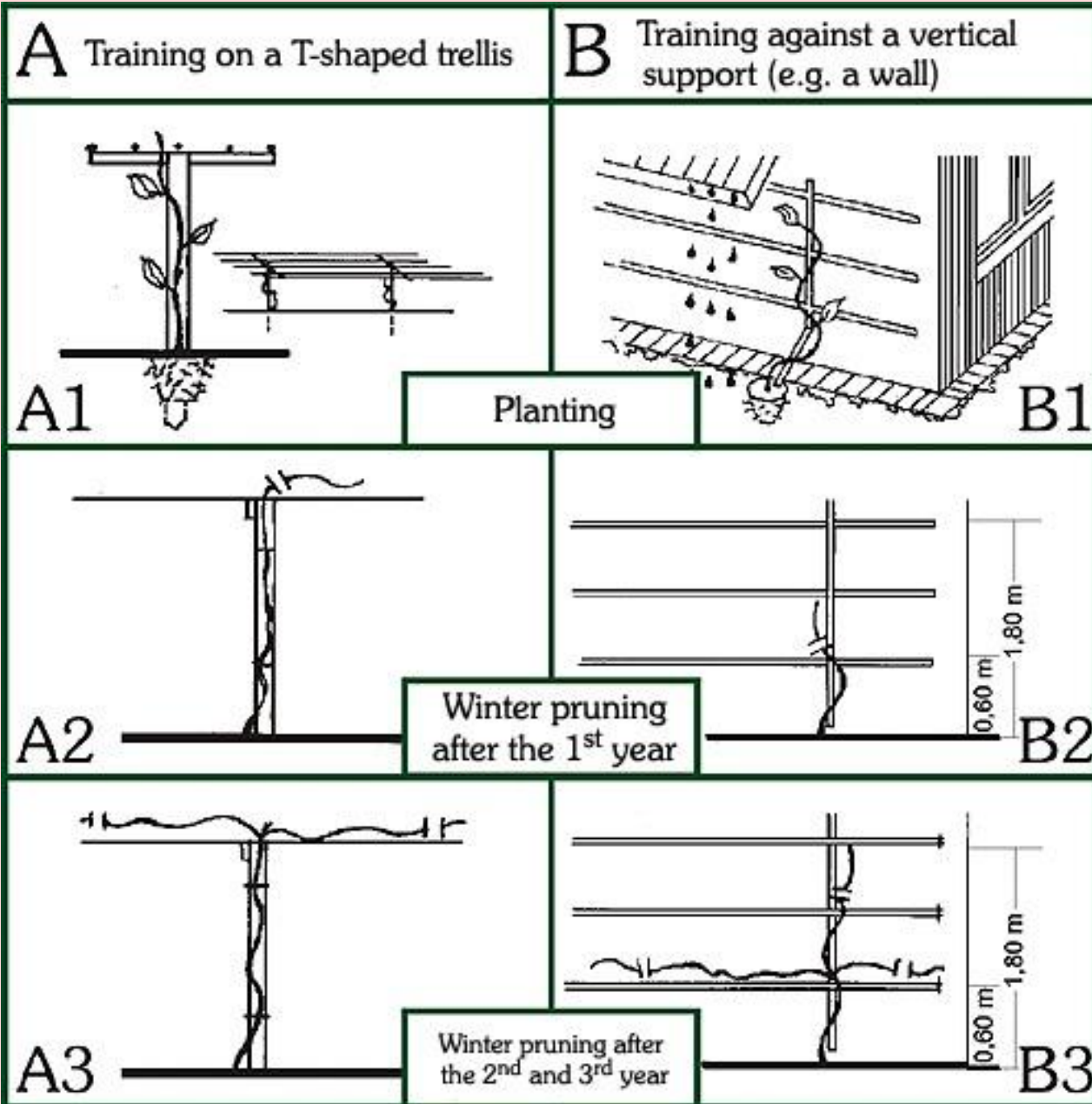


A common modification of the T-bar is the winged T-bar, in which an additional wing and wire are added to each side of the T-bar cross arm (Figure 1-B). Tying down a cane from the center wire onto the two wires pulls it into a more natural curve.

Figure 1-B. Winged T-bar Trellis

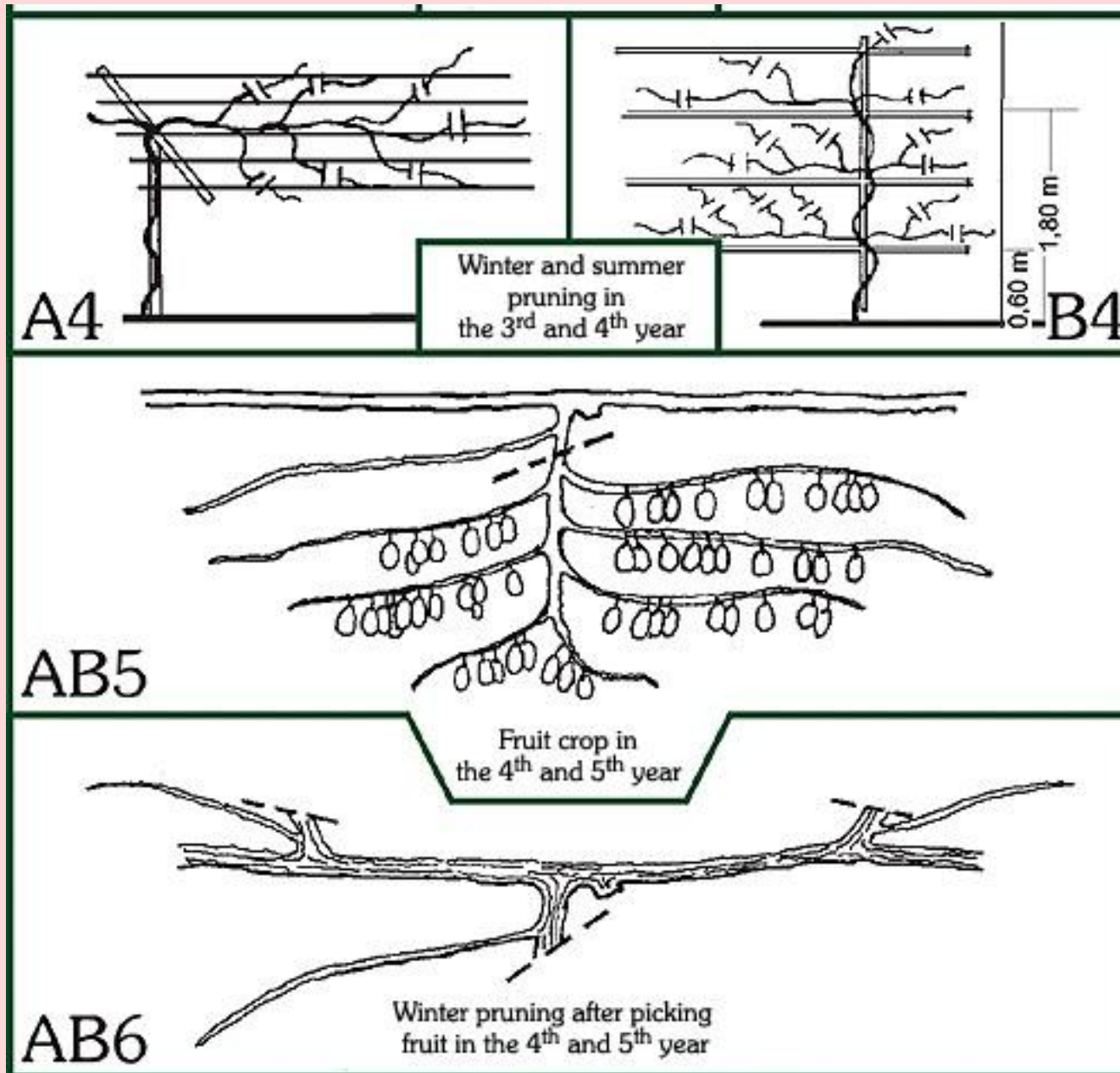


Kiwi Pruning (1st – 3rd year)



- Set plants 8 to 15 feet apart depending on the amount of space available.
- In training a kiwifruit vine on a T-bar trellis, grow the vine as a single trunk to 6 inches below the wire. Then pinch out the top bud and train one shoot in each direction down the center wire to form a permanent arm or cordon.
- On a vertical wall, train a single leader to the top of the wall and develop cordons on either side of the trunk which are spaced at least 3 feet apart in vertical height.

Kiwi Pruning (3rd – 5th year)

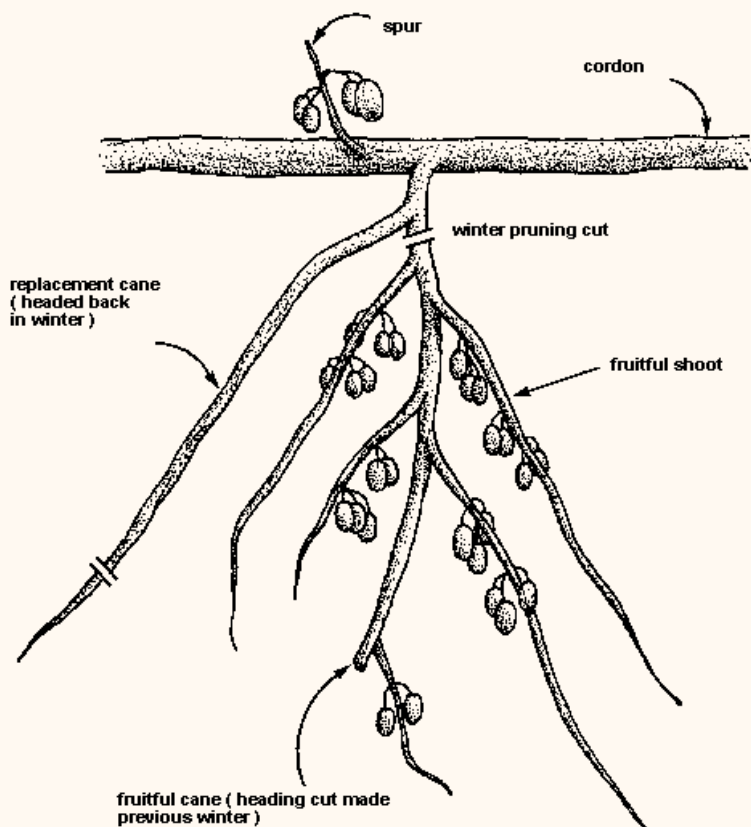


- Allow fruiting arms to develop on both sides every 10 to 14 inches for commercial kiwifruit and every 24 to 30 inches for cold hardy kiwifruit.
- Allow fruiting arms to grow over the edge of the trellis.
- The following year, the buds on these fruiting arms emerge and **fruit is borne on the current season's growth**
- The next winter, remove the old fruiting arm if a replacement arm has grown. If no replacement arm is available, save the old arm and cut off last year's side shoots at 6 to 8 inches.

Replace 1/3 – 1/4 of the fruiting wood each year to keep mature vines productive

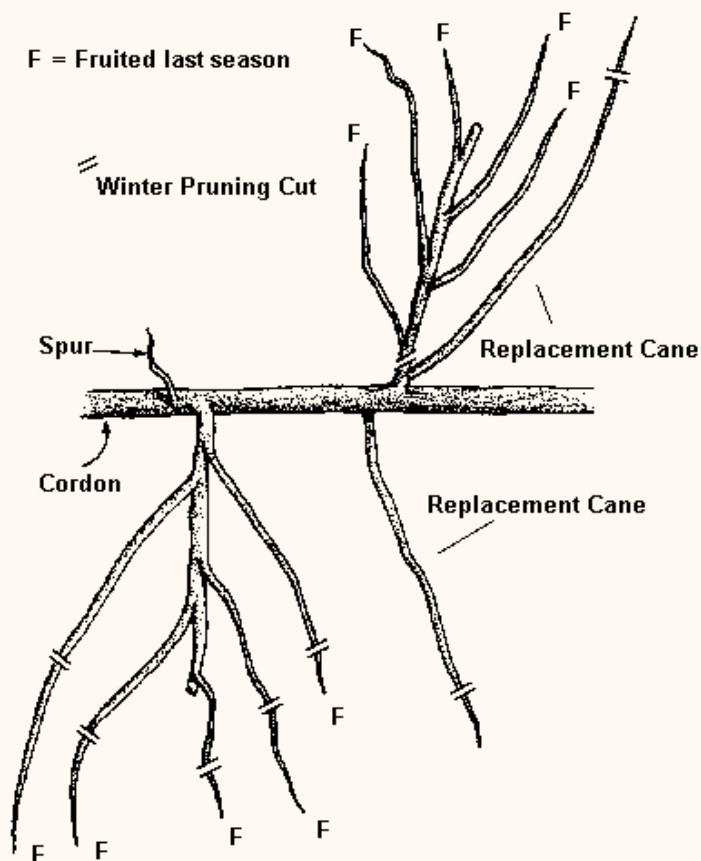
Female vines. When pruning a mature vine, remove about 70 percent of the wood that grew last season. Most of the wood removed is older wood that already has fruited. New fruiting canes usually will have developed at the base of last year's canes. Figure 1 shows a typical fruiting cane that developed from the permanent cordon.

Figure 1. Kiwifruit Cordon in Production



Remove most of the older wood back nearly to the cordon. When necessary, you can leave some second-year canes for fruiting wood if 18 - 48 inches of new growth is present beyond where fruit was formed last season (Figure 2). Head back these fruiting laterals to 2 to 4 buds in fuzzy kiwifruit and 8 to 12 buds in hardy kiwifruit beyond where fruit was formed last year.

Figure 2. Dormant Kiwifruit Cordon





Pruning Berries, Grapes and Kiwi



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