



KIWI
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INTRODUCTION

Kiwifruit, which has replaced the old English name of 'Chinese gooseberry', are native to the mountains and hills of southwestern China where they grow wild in trees and on bushes. Commercial plantings were made in New Zealand about 1930 and have become widespread over the last 20-30 years.

There are over 50 species in the genus *Actinidia* to which the kiwifruit belongs. All are long-lived perennial vines or creepers. The plants are dioecious which means that male and female flowers are found on different plants. Thus, one male plant is needed for each 3-4 female plants for pollination. Male plants do not produce fruit. Fruit range from round to oblong in shape and from smooth-skinned to hairy. Flesh color may be green, orange, yellow or red.

A. deliciosa or fuzzy kiwi are what most people are familiar with. Hayward is the most popular variety and is usually the one found in fruit markets. Hayward has a high winter chilling of 600 to 800 hours of chilling making it an unreliable fruiter in Zones 8b and 9 but there are varieties available that work in our area (see variety list on last page).

A. arguta or hardy kiwi are more cold hardy than the fuzzy kiwifruit. Fruit is about $\frac{1}{2}$ the size of *A. deliciosa*. The skin of *A. arguta* is smooth and edible. Fruit are greenish-yellow in color and acidic until ripe. When ripe they are very sweet and juicy. The flavor is considered better than that of the fuzzy kiwifruit. Many varieties of *A. arguta* have been developed for Zones 8b-9 (see variety list on last page).

PLANTING AND CULTURE

SITE SELECTION AND PLANTING

Well-drained soil is a must for a kiwi. Water the plants adequately, but not excessively. Select a planting site that has good air drainage, and one that is protected from high winds and is not frost prone. Avoid heavy clay soils. Plants do best when the soil pH is around 6.5. Set plants 15-18 feet apart in the row and rows 20 foot apart. Dig a planting hole approximately three times the width of the pot and at the same depth as the root ball. Set that soil aside and mix it 50/50 with either aged mushroom compost, aged manure, or rotted pine bark & aged manure/compost. Remove the plant from the pot and place in

the planting hole. Kiwi roots are easily bruised so don't roughen the root ball. To avoid burying too deep, make sure plant is positioned with the top most roots at the soil line. Fill the planting hole with the mix of soil and organic matter; gently tamp it in. Water thoroughly to settle the roots and eliminate air pockets. **Do NOT put fertilizer in the planting hole.** Only apply fertilizer if it is the correct time of year (see Fertilization section below). Apply mulch 3 feet out from plant to control weeds and pull mulch a couple of inches away from the trunk for good air circulation.

FERTILIZATION

We use and recommend the Espoma line of organic fertilizers. Espoma's Citrus Tone is a good choice for kiwi vines. When not available look for an organic mix that contains an analyst of roughly 5-2-6. Make sure it contains iron, zinc, manganese, magnesium, molybdenum, copper and boron. These minor elements are very important to plants and most soils are low in these elements. Application rates vary according to type and age of plant, so read the instructions on the bag and fertilize accordingly. Spread the fertilizer evenly under the entire canopy of the plant avoiding a 2-inch area around the trunk. Water or rake in. For Zones 8a-10, fertilize 3 times each year in February, May and late July/early August. For plants further north (Zone 7), fertilize 2 times each year in March and June/July. **Never fertilize after August** (July in Zone 7) as this will promote new growth late in the year which will be subject to freeze damage.

BUILDING A TRELLIS AND TRAINING THE VINES

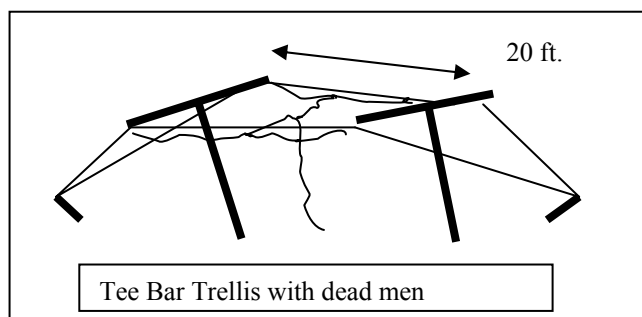
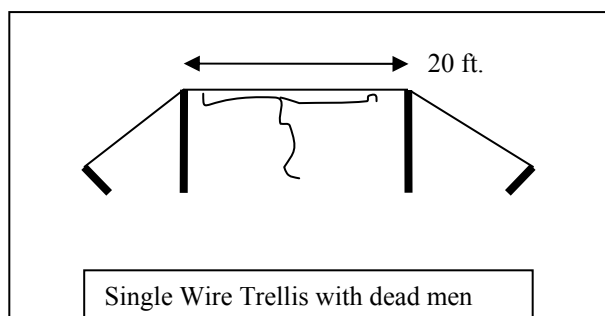
You do need to train kiwi to a trellis to get them to fruit. It's a little more work to start with, but the result is a long-lived, productive vine. The single wire trellis is the simplest method, and the one most used by commercial growers. Two and three wire horizontal trellises offer great possibility for use as living fences. The tee bar trellis is our personal favorite. It offers the greatest yield for the least amount of labor in pruning and is the easiest to pick. Overhead arbors are beautiful additions to the orchard and offer a wonderful place to sit and rest and enjoy the view. They're a little more work to set up and prune, but well worth the effort. We'll explain the single wire and tee bar trellises here, but the same construction principles apply to all trellises. For any trellis, choose sturdy materials designed to last the life of the vine. Posts should be pressure treated lumber at least 4X4 in diameter and 8 ft. long; wire should be at least 9 gauge in diameter. Your goal in training your kiwi vine is to grow the vine in a form that will produce fruit over many years. The basic shape (modified somewhat depending upon the trellis you've built) is a single trunk 5-6 ft. high and 2-4 arms each 10 ft. long. For a single wire trellis, you'll train the vine to a single trunk and 2 arms, each 10 ft. in length with fruiting spurs at 6 in. intervals. For any double wire trellis (including the tee bar), you'll have 4 arms, each 10 ft. long with fruiting spurs at 6 in. intervals. For an arbor, you'll figure out how to shape your vine's arms over the top of the arbor while keeping the 2 or 4 arm structure.

SINGLE WIRE TRELLIS: Set 8 ft. main posts 20 ft. apart, sinking posts 3 ft. deep. Sink dead man support posts 3 ft. deep approximately 7-8 ft. from each end post in your row of grapes, angled away from the last main post. Attach trellis wire from the end dead man post, across the top of the main posts and to the end dead man post using heavy duty wire staples. Install turnbuckles between the end posts and the dead man posts so the trellis wire can be tightened as needed over time.

Year 1: Your goal is to train the vine to the trellis, developing a single trunk. Choose the strongest shoot on the vine and remove any extra shoots. Use a stake tied to the trellis to wind the shoot around so it will grow to contact the trellis in the middle of the 2 main posts. Pinch the shoot tip off when the vine reaches the trellis level.

Year 2: Your vine should have reached the level of the trellis and you should have pinched out the tip. Several shoots will form at the tip. Choose the strongest 2 shoots and train them along the trellis wires in opposite directions. You're done when the arms reach 10 ft. long and the vine looks like an elongated "T".

Do not allow the arms to wind around the wires. Shoots will grow from the young arms and all should be allowed to grow to produce the first fruiting spurs. Remove all extra shoots from the trunk as needed.

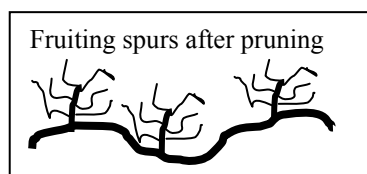


TEE BAR TRELLIS: Set main posts 20 ft. apart, sinking posts 3' deep. Sink dead man support posts 3 ft. deep approximately 7-8 ft. from each end post in your row of grapes, angled away from the last main post. Nail a 4 ft. bar to each main post to form the top "T" of the tee bar. Attach 2 trellis wires to one of the end dead man posts, continuing to the ends of each T bar, and then ending at the end dead man post. Use heavy duty wire staples. Install turnbuckles between the end posts and the dead man posts so each trellis wire can be tightened as needed over time.

Year 1: Your goal is to train the vine to the trellis, developing a single trunk. Choose the strongest shoot on the vine and remove any extra shoots. In the middle between 2 main posts, tie a string between the wires and tie a second string to the middle of the first string. Twine the vine around the dangling string and train it to reach the string between the trellis wires. Pinch the shoot tip off when the vine reaches the trellis level.

Year 2: Your vine should have reached the level of the trellis and you should have pinched out the tip. Several shoots will form at the tip. Choose the strongest 2 and train them along the string between the trellis wires. Pinch tips of the 2 arms when they reach the wires (the vine should be in the shape of a "T" at this point). Two shoots will grow from each of the 2 tips you pinched back and they should be trained in opposite directions along the wires to a length of 10 ft. per arm. There will be a total of 4 arms in an "H" shape when viewed from above, attached to the main trunk in the middle of the bar in the "H". Do not allow the arms to wind around the wires. Shoots will grow from the young arms and all should be allowed to grow to produce the first fruiting spurs. Remove all extra shoots from the trunk as needed.

PRUNING FOR FRUIT



Fruit is produced on new shoots developing from the previous year's growth. In Year 3, canes produced the previous year should be pruned to leave approximately 6 to 8 buds in January or February. These canes will produce several shoots that will fruit during the following summer. These new shoots will be cut back to 6 buds. the next winter, forming the first fruiting spurs.

Depending upon the growth rate of the plants, spurs will need to be thinned in Year 5 or 6 after planting. During the winter pruning, remove every other shoot, aiming for a fruiting spur every 6 in. on each arm. Choose spurs on the top of the vine, if possible. Allow a few extra shoots to grow from the arms to form replacement spurs as the vine ages.

PRUNING MALE PLANTS

Since male plants do not produce fruit they can be particularly vigorous. These plants are pruned immediately after flowering and the flowering shoots are cut back to vigorous new growth closer to the leader. Male plants are not pruned during the dormant season so that maximum flowering is achieved.

WATER

Irrigation is important. Lack of water will reduce fruit size, reduce flower numbers, and induce early fruit drop. Drought will also induce leaf drop and early fruit ripening which leads to uneven ripening and poor fruit flavor. Water stress also delays the development of vine maturity and appears to reduce vine fall hardiness. Kiwi vines respond exceptionally well to microsprinkler irrigation. The first year is a critical time for the establishment of a new kiwi. Water thoroughly twice a week. Soak the entire root system deeply - this usually takes 40-50 minutes. Kiwis should receive at least 1 inch of water each week for best growth and fruit production. Water regularly, especially during dry periods.

FRUIT DEVELOPMENT AND HARVEST

Flowering normally occurs on 3 year old vines. The fruit quickly sizes after pollination and reaches its full size in the middle the summer. However, the remaining portion of the season is required to mature the fruit. Harvest usually takes place in late September and the fruit are picked before they are ripe. Fruit taste better when picked, refrigerated and ripened as opposed to ripened on the vine.

To determine when to pick, harvest a few fruit and allow them to soften for a few days. When fruit ripens to a suitably sweet flavor, harvest all of the fruit and refrigerate them. Fruit will store in the refrigerator for five to six weeks. Removal from the refrigerator initiates softening and ripening and should be done several days before eating. All of the hardy kiwi varieties have a similar flavor. Hardy kiwi often reach sugar levels of 20 percent and are considerably sweeter than the fuzzy kiwifruit. The fruit also contains large quantities of the enzyme actinidin, which will tenderize meat.

DISEASES AND PESTS

Phytophthora crown and root rot is one of the more serious diseases of hardy kiwi. It causes weak plant growth and the development of small yellow leaves. Terminal growth may be stunted or die back. Plants often collapse and die during hot weather. This disease occurs on heavy wet clay soils and these soil types should be avoided when planting. Over irrigation can also lead to Phytophthora root rot.

Hardy kiwi plants are also damaged by root knot nematodes. Two-spot spider mites can build up on plants during hot, dry weather, particularly on greenhouse grown plants and occasionally outside. Japanese beetles will do some leaf feeding. There are several reports of cats digging up the roots and clawing the plants and foliage. Hardware-cloth or chicken wire trunk protectors are recommended for this problem.

VARIETY LIST - FOR MORE VARIETIES GO TO OUR WEBSITE

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Fuzzy Kiwi

DARLEEN'S KIWI-Local find from the Tallahassee area. Fruit is large with excellent flavor.

BARBAS -Male used to pollinate Darleen's female kiwi.

Smooth Kiwi

KEN'S RED - One of the largest smooth skin kiwi. Very prolific with a deep red skin. Red flesh is tangy sweet. Needs a male pollinator.

ANNA - Hardy variety that does well on the northern edge of 8b .Large red blushed skin with a green center. Tangy sweet with a pineapple aroma. Late ripening. Needs a male pollinator.

LONE STAR or PANAMA - Found growing in Panama City Florida. This variety doesn't need a male pollinator. Fruit ripens in late August and is long and thin brown skinned with an emerald green center. Flavor is sweeter than most.

MALE ARGUTA - Pollinates up to 4 females. Use with all female Arguta.