

Sweet Cherries for the Home Grounds

Although climatic requirements for growing sweet cherries are exacting, homeowners have been growing sweet cherries successfully in California for many years. This leaflet provides information not only on climatic and soil requirements but also on varieties, rootstocks, and pollination. Suggestions are made on planting and care of sweet cherries.

Soil

Cherry trees grow best in deep (at least 4 feet), well-drained loam soils. They will tolerate less desirable soil, but may do poorly on excessively sandy, heavy or wet soils.

Climate

Some very exacting climatic requirements must be met to grow this crop successfully. To break dormancy, the trees need considerable winter chilling from November through February. Ordinarily they get sufficient winter chilling in the northern and central coastal areas, the Sacramento-San Joaquin Valley area, and the foothills of the Sierra-Nevada mountains. However, in southern California, chilling is usually inadequate unless trees are grown above 2,000 feet elevation. In addition, cherries should be grown in an area that is relatively frost-free following the beginning of bloom. Frost can limit cherry production at higher elevations.

Sweet cherries are not well adapted to the high summer temperatures common to many parts of the interior valley. High temperatures are believed to cause double or "spur" fruit (fig. 1) which are considered "off-grade" by commercial growers and

shippers. However, such fruit may not be particularly objectionable to the homeowner. High summer temperatures also can cause tree stress and sunburning of limbs. Once limbs have been sunburned, they are susceptible to attacks by insects and disease organisms.

Rainfall between bloom and harvest can increase disease problems and when rain occurs near harvest, fruit may crack and become nearly worthless.

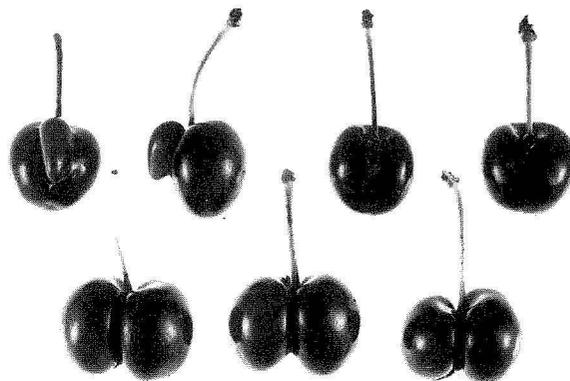


Fig. 1. High summer temperatures are usually considered the cause of double and "spur" fruits. The top row of cherries illustrate spur fruit, while the bottom row shows doubles.

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Apart from these limitations, which may discourage some home gardeners from planting them, sweet cherries are a rewarding and delicious crop when grown successfully.

Varieties

Table 1 describes some characteristics of sweet cherry varieties that have been grown successfully in California

Pollination

Sweet cherry varieties will not set fruit with their own pollen. Instead, they require cross-pollination from another variety. Also, certain varieties such as Bing, Lambert, and Royal Ann will not pollinize each other. Table 2 is a chart showing the value of various varieties as pollenizers for other varieties. In order for a variety to be an acceptable pollenizer, it must be both cross-compatible and have sufficient bloom overlap with the variety to be pollinated.

The actual transfer of pollen is done by insects, usually the honey bee. Therefore, trees must be planted close enough together, usually within 100 feet is sufficient, for the insects to carry the pollen. If only one tree is desired, a pollenizing variety can be grafted into a major limb; to be successful, the pollenizing limb should consist of at least one-fourth of the entire tree. Another alternative, if space is limited, is to plant two trees of cross-pollinating varieties in the same hole and then train them as though they were a single tree.

Young cherries may be 5 to 8 years old before they begin to produce substantial bloom and bear significant crops. Very vigorous trees may take even longer to begin bearing.

Rootstocks

Sweet cherries in California are grown on one of three rootstocks: Mahaleb, Mazzard or Stockton Morello. These three rootstocks have somewhat different characteristics, as described below. (For additional information on diseases, see the disease section of this leaflet.)

Mahaleb is the most common rootstock used in California. This rootstock gives slight dwarfing, and often there is some overgrowth at the graft union;

however, the union is generally strong. The Van, Larian and Early Burlat varieties sometimes do not do well on this rootstock and may be partially incompatible with it. Mahaleb is highly susceptible to gopher damage and root rotting fungi. However, this stock is resistant to bacterial canker. This rootstock is best adapted to light-textured (sandy to sandy loam) well-drained soils.

Mazzard is a sweet cherry seedling and gives the best union with the top variety. This rootstock usually produces larger trees than Mahaleb or Stockton Morello and trees on Mazzard are frequently slower to come into bearing. Mazzard is moderately resistant to oak root fungus, water-molds, and gophers but is susceptible to bacterial canker.

Stockton Morello is the most dwarfing of the three rootstocks. Cherry varieties grown on the rootstock generally are somewhat smaller than when grown on Mahaleb. However, trees on Stockton Morello usually are not greatly dwarfed and can still be quite large. Varieties generally have the poorest union and greatest over-growth on this rootstock although the unions are normally satisfactory. The Chapman and Early Burlat varieties are incompatible with this stock. This is the preferred rootstock for heavy or wet soils, although trees on Stockton Morello will not do as well under these conditions as when planted on good soils.

Planting

Cherry trees should be planted when they are dormant—usually in January to March. Normally they are sold “bare root,” so care must be taken to keep their roots from drying. Plant trees as soon as possible after purchase. If a delay is unavoidable, cover the roots with soil, sand, or sawdust (but not higher than the original soil line in the nursery), and keep the roots moist but not excessively wet. Trees $1/2$ to 1 inch in diameter, measured just above the soil line, often grow better than smaller or larger trees.

Do not plant in soil that is too wet. The soil should be friable and not doughy or dripping wet when squeezed in the hand. Dig the planting hole wide enough so that the trees' roots spread naturally without crowding. Digging the hole a few inches wider than needed is often desirable. Before planting, cut off any broken, badly damaged or dry roots, and cut back any roots longer than 10 to 12 inches.

TABLE 1. SOME CHARACTERISTICS OF SWEET CHERRY VARIETIES GROWN SUCCESSFULLY
IN CALIFORNIA

Variety	Bloom ¹ season	Harvest ² season	Fruit color	Fruit ³ size	Fruit firmness
Bing	Mid	Mid	Dark	Large	Firm
Black Tartarian	Early	Early	Dark	Small to medium	Soft
Early Burlat	Early to mid	Early	Dark	Medium to large	Soft to mod. firm
Jubilee	Late	Mid	Dark	Large	Moderately firm
Lambert	Late	Late	Dark	Large	Firm
Larian	Mid	Early to mid	Dark	Large	Moderately firm
Mona	Mid	Early	Dark	Large	Soft to mod. firm
Royal Ann ⁴ (Napoleon)	Mid	Mid	Light	Large	Moderately firm to firm
Van	Mid	Mid	Dark	Medium to large	Firm

¹ Cherries usually bloom from mid March to mid April, depending on the location, variety and season.

² Cherries usually ripen during May and June depending, on the location, variety and season.

³ Fruit size also depends on crop load and growing conditions.

⁴ Used mainly for processing (canning and brining).

TABLE 2. VALUE OF VARIETY AS POLLENIZER*

Variety to be pollinated	Bing	Black Tartarian	Early Burlat	Jubilee	Lambert	Larian	Mona	Royal Ann	Van
Bing	0	x	x	x	0	x	x	0	x
Black Tartarian	x	0	x	0	0	—	x	x	—
Early Burlat	x	x	0	0	0	x	x	x	x
Jubilee	x	0	0	0	x	0	0	x	0
Lambert	0	0	0	x	0	0	0	0	x
Larian	x	—	x	0	0	0	—	x	—
Mona	x	x	x	0	0	—	0	x	x
Royal Ann	0	x	x	x	0	x	x	0	x
Van	x	—	x	0	x	—	x	x	0

* x means acceptable pollenizer; 0 means unacceptable pollenizer; — means value is unknown.

Plant the trees no deeper and preferably 1 to 2 inches higher than they were in the nursery. Planting deep is a dangerous practice because it enables crown rot fungi to attack the trunk more easily and kill the tree. Soil should be firmed but not compacted around the roots. Water the tree immediately after planting to prevent the roots from drying and to help settle the soil around the roots. After watering, some additional soil may be needed to level the ground line if settling occurs. Do not put fertilizer in the planting hole; it could cause root damage.

After planting, the tree should be cut off at about 24 to 30 inches above the ground to balance the roots that were lost during the digging process in the nursery. To prevent sunburn damage, whitewash the trunk prior to any bud swelling or growth; the top 6 to 8 inches should be left unpainted. Take care to paint the tree trunk down to the soil surface; if settling exposes unpainted trunk areas, these should be painted. Commercial whitewash materials made for this purpose or white interior waterbase paint can be used.

Fertilization

Usually California soils have an adequate supply of most mineral elements needed for plant growth except for nitrogen. Thus, yearly applications of nitrogen usually are necessary. A full-grown, bearing cherry tree may need about 1 pound of actual nitrogen per year. Small 1- to 2-year old trees need only about $\frac{1}{4}$ to $\frac{1}{3}$ pound per year. Do not apply fertilizer in the planting hole or during the first season until the tree is growing (usually several months after planting). Often trees may not need supplemental nitrogen the first year; however, if growth is weak and the leaves have a yellowish-green color, a small amount (2 to 3 ounces of actual nitrogen) can be applied. The fertilizer should be applied under the tree in a ring at least 18 inches away from the trunk. Following application, the fertilizer should be worked several inches into the soil with a hoe or shovel or the material applied just before an irrigation or rain.

The following amounts of various commercial fertilizers contain approximately 1 pound of actual nitrogen (N):

- 5 pounds ammonium sulfate (21% N)
- 3 pounds ammonium nitrate (33% N)
- $6\frac{1}{2}$ pounds calcium nitrate (15.5% N)
- $2\frac{1}{4}$ pounds urea (45% N)
- 10 pounds 10-10-10 (10% N)

Irrigation

Irrigation is one of the most important practices in growing sweet cherries. Insufficient soil moisture causes poor growth and weak trees which are subject to pest and disease attack. In addition, insufficient soil moisture can cause smaller, poorer quality fruit. On the other hand, excessive irrigation, especially during fall and spring, can subject the tree to root and crown rots.

As a rule, cherry trees in California require irrigation during the growing season because of the variation in rainfall and its inadequate distribution throughout the year. It usually rains during the winter months, but cherries require the most water for growth and fruit production during the summer. If winter rains do not wet the entire root zone, an irrigation should be applied during winter or very early spring to overcome this deficiency.

During the growing season, young trees with smaller root zones need to be watered about every 2 weeks, while older trees with more extensive root systems require deeper, less frequent irrigations. The entire root zone should be rewetted with each irrigation. Merely sprinkling the surface or wetting the top few inches of soil does little good. Trees growing in light sandy soils need more frequent irrigation than those growing in heavier soils, since the water-holding capacity of a light soil is much less than that of a heavy soil. Less irrigation is needed in cooler coastal areas and in areas of high rainfall than in hot, dry interior regions.

Generally, mature cherry trees should be irrigated once or twice before harvest, depending on winter rainfall, weather conditions and type of soil. Trees should be irrigated soon after harvest and approximately every 3 to 4 weeks through August.

Cultivation

Cherry trees in home orchards usually need no cultivation except for shallow hoeing or rototilling to control weeds. Weeds compete with the trees for moisture and nutrients and, therefore, should be kept down. Do not hoe or work soil that is too wet to crumble; such handling tends to compact soil, making it less pervious to water and root growth.

Cherry trees should not be planted in lawns. The irrigation requirements of lawns and trees differ; a well-watered lawn is irrigated too frequently for trees

and this can increase their susceptibility to root and crown rots. Trees require deeper irrigation than lawns. Also, the grass competes with the trees for moisture and nutrients.

Training and pruning

For cherries, a vase-shaped (open center) tree is often desirable as it allows light throughout the tree for good fruit production and permits easy picking of fruit. To obtain this shape, the trees should be headed (cut off) at 24 to 30 inches above the ground at planting.

After the first growing season, three or four main scaffold branches usually can be selected. These should be spaced equally around the tree and positioned about 6 to 9 inches apart vertically on the trunk, if possible. If these limbs are 30 to 36 inches or longer, they should be cut back to 24 to 30 inches in length to promote secondary branching (figs. 2, 3). Limbs that compete with these major branches and very low limbs should be removed; weaker growth and limbs growing more horizontally can be left to become future fruit bearing wood.

Ideally, each primary scaffold should divide into two secondary branches. If more than two upright secondaries are present, these additional limbs should be removed. Head secondary limbs at 24 to 30 inches above the primary scaffold limbs to promote tertiary branching. At the end of the second or third growing seasons, other unwanted or competing limbs can be removed (figs. 4, 5). Following the formation of tertiary branches, very little pruning is necessary until after the trees start bearing. Excessive pruning in the early years after the framework of the tree has been established can delay the time when a cherry tree will start bearing.

Dormant pruning of young cherry trees is best done late in the dormant period—just before or as the buds are beginning to swell in the spring. Pruning at this time reduces the chance of disease entering the pruning wounds.

Bearing cherries require less pruning than most fruit trees. However, some pruning is needed to let light into the tree to prevent the shading out of fruiting spurs and wood. The center of the tree should be kept moderately open to allow sunlight to penetrate the tree, but not so open that the limbs will sunburn.

In areas of high summer temperatures, cherry trees should be pruned to grow relatively upright and to

prevent long, arched or flat limbs exposed to sunlight. On such limbs, excessive fruit doubling is likely to occur, and sunburning of limbs can be a problem.

A cherry tree should be pruned to confine it to its allotted space and desired height in the yard. However, if a vigorous tree is planted in too small a space, excessive pruning may be necessary to hold the tree in bounds, and few cherries may be produced under these conditions. Trees that have grown too high or too wide can be shortened by cutting the limbs back to short lateral branches. Often this method is better (especially on older trees) than cutting limbs off at a given length and leaving a stub, which may continue to die back. Cutting out limbs larger than 2 inches in diameter should be avoided as much as possible. During pruning, remove dead, diseased, broken and interfering limbs.

Harvesting and handling

Cherries with dark skins and flesh (such as Bing) can be picked when the fruit reaches a solid to dark red or nearly black color. The longer the fruit is left on the tree (until it begins to shrivel), the better the flavor. However, the longer the fruit is left on the tree, the more subject it becomes to bird damage and rotting. Cherries usually are picked with the stem attached to prevent injury to the fruit. Take care not to break or remove the spur (fruiting twig) from the tree; the spur is required for crops in future years.

Avoid bruising or injuring the cherries during harvesting and handling. Moisture can be lost more rapidly from such injuries, and fruit rotting organisms can enter even minute breaks in the skin. Damaged cherries may deteriorate more rapidly.

Keep the harvested fruit as close to 32° F as possible, without freezing the cherries, to slow deterioration and rotting. Also, refrigeration under a fairly high relative humidity lessens moisture loss and fruit shrivel.

Pest control

Compared to many other fruit crops, cherries are relatively free of insect pests. For information on the control of insects that attack sweet cherries, refer to Leaflet 2249, "How to Control Insects and Diseases in Your Home Orchard", available from University of California Cooperative Extension (farm and home advisor) offices located in most counties.

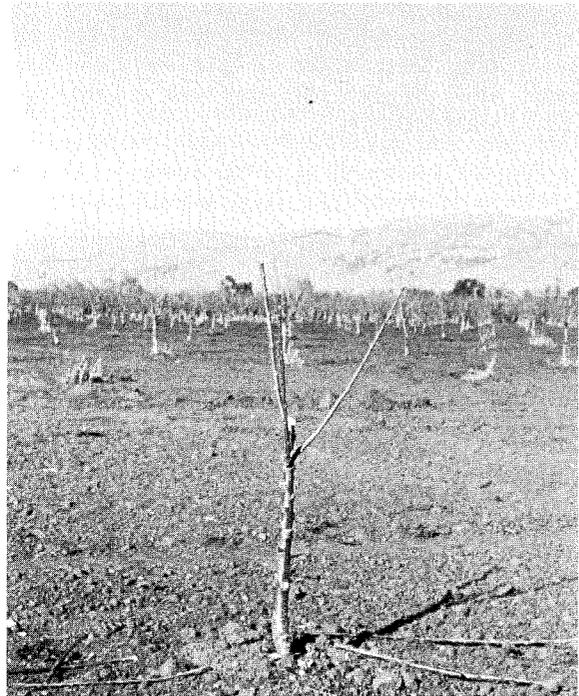
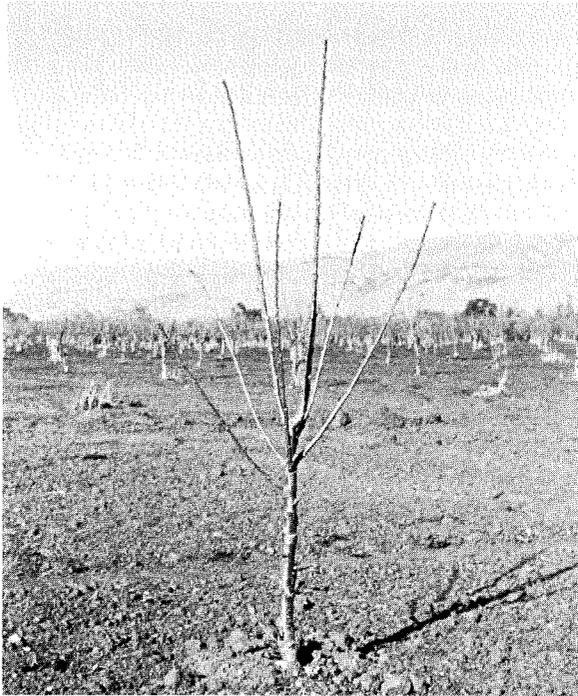


Fig. 2(left). Sweet cherry tree at the end of the first growing season before pruning. Fig. 3(right). Same tree as fig. 2 after pruning. Primary scaffold limbs have been selected and headed to encourage the formation of secondary branches. Low and interfering limbs have been removed.

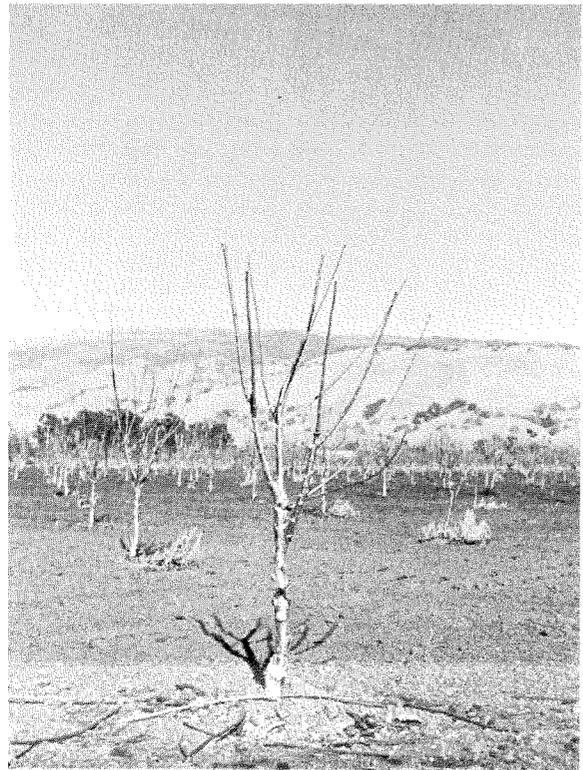
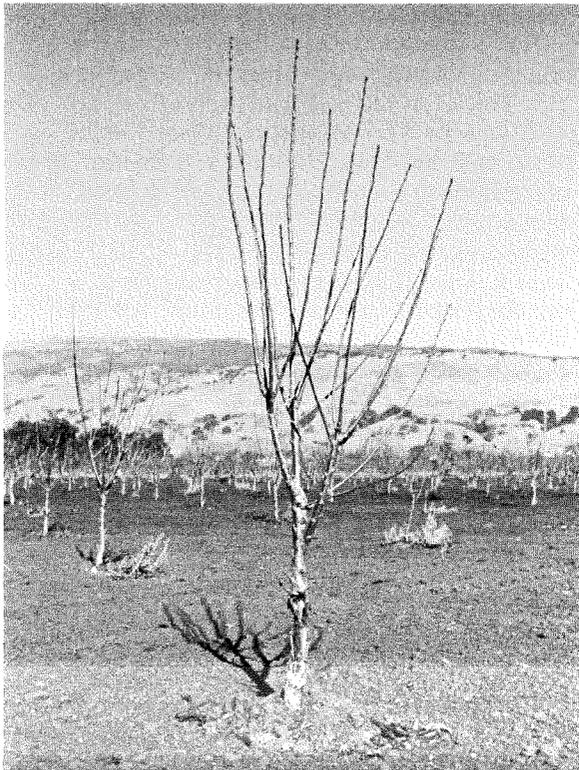


Fig. 4(left). Two-year-old sweet cherry tree before pruning. Fig. 5(right). Same tree as fig. 4 after pruning. Secondary limbs have been selected and headed to encourage further branching. Again, low and interfering limbs have been removed.

Bird damage to sweet cherries is often severe and there is no good, economical way of preventing it. Noise or scare devices may help but often cannot be used in populated areas. A tree or two in the home orchard can be covered shortly before harvest with a net for bird protection; a frame can be constructed over the tree, and a net placed on the frame. However, this practice often is difficult and expensive.

Pocket gophers can injure or kill a cherry tree, particularly a tree on Mahaleb rootstock, by feeding on the roots or on the crown of the tree close to the soil line. If they completely girdle the tree, it will soon die. Trapping usually is the best method of controlling gophers in the home orchard. For information on controlling gophers, refer to OSA-n30 (Leaflet 2622), "Controlling Pocket Gophers and Moles," (also available from University of California Cooperative Extension farm and home advisors offices).

Some common cherry diseases

Buckskin—one of the more serious diseases of cherry. This disease is caused by a small, virus-like infectious agent (mycoplasma) and is found both in the central valley and coastal areas north of San Francisco. Buckskin can kill or severely reduce the productivity of trees. Affected trees on Mazzard and Stockton Morello rootstock have fruits that are smaller in size and fail to mature as well as being conical in form, insipid to taste and typically buckskin colored. Leaves are chlorotic and pale in mid-summer, and affected limbs lack new growth. Trees on Mahaleb rootstock are affected more rapidly and may die within several weeks (similar to the effect of girdling by gophers). The disease is spread by leaf hoppers (insects) which often build up in the hedges.

Control is difficult, but a couple of precautions may be helpful: avoid planting cherries near privet hedges and keep insects under control. Planting the Mahaleb rootstock and then grafting the sweet cherry variety into the Mahaleb scaffold branches is helpful, because loss may be limited to individual limbs rather than the entire tree.

Bacterial canker—also known as gummosis or soursap. This disease can kill young cherry trees. Trees in their second to eighth year are most susceptible; bacterial canker is not a serious problem with mature trees. Masses of amber-colored gum are produced on affected branches and wood becomes depressed or malformed (cankered). The infection does not move below ground level and diseased trees character-

istically produce strong shoots from the base of the trunk. The bacterium causing the disease is only active during late winter-early spring.

Unfortunately, there are no consistently successful control measures for bacterial canker. Some observations suggest that delaying pruning until bud swell may make the tree less susceptible. Individual diseased limbs can usually be removed and the tree framework restored by careful pruning.

Brown rot—causes fruit loss in wet seasons. Fruits become covered with a gray-brown mold and rot on the tree or soon after harvest. This fungus disease can be controlled with a fungicide spray in early bloom. See "How to Control Insects and Diseases in Your Home Orchard," U.C. Division of Agricultural Sciences. In areas where brown rot is serious, sprays should be repeated at petal fall and two weeks before harvest.

Crown and root rot—caused by water-mold fungi. Cherry trees cannot withstand prolonged periods of free moisture near the base of the trunk or crown, especially during fall or spring. If this occurs, it can lead to infection by one of the water-mold fungi (*Phytophthora* spp.) which produce a canker resulting in death of the bark tissue. The canker is sometimes evident because of gum exudation. If it girdles the trunk, the tree will die. First apparent symptoms may be a wilted, declining appearance of limbs or the entire tree—especially in spring.

Plant the tree on a raised mound if waterlogging is a problem and always keep the soil well below the graft union. Keep weeds and water away from the trunk. Mahaleb is the most susceptible rootstock to water-mold damage, so where this disease is likely to be a problem, other rootstocks are suggested. In the early stages of crown rot, a tree can sometimes be rescued by digging a trench around the crown to expose the top roots and facilitate drying out. If this is done, be sure to protect the roots from sunburn by placing rocks over them—this will also help drainage. Do not let water collect in these trenches during rains or irrigation.

Some species of *Phytophthora* may attack a tree's small feeder roots, resulting in a gradual decline and possible death of the tree.

Oak root fungus—also known as Armillaria root rot. This disease is prevalent in many parts of the state where oaks or fruit trees have grown. It persists for many years on roots of trees, the stumps of which have long been removed. The external symptoms are

similar to the girdling effect of gophers or crown rot disease: trees become progressively weaker and eventually collapse. The fungus infects the roots, then grows up the tree between the bark and wood to produce white, fan-like plaques of fungus material. The plaques and mushroom-like odor of the fungus are easily detected by cutting under the bark near soil level. Honey-colored mushrooms are sometimes produced by oak root fungus, and in wet seasons, scores of these may appear near the base of an affected tree.

Chemical control of oak root fungus on home grounds is not usually feasible. It is more practicable to grow other trees (such as black walnut, fig, persimmon) which are tolerant of the fungus. Lists of such plants are available from University of California Cooperative Extension. Mazzard rootstock exhibits moderate resistance to oak root fungus.

Cherry crinkle and deep suture—two genetic abnormalities are discussed because of their frequent occurrence, especially in Bing and Black Tartarian

varieties. With crinkle, the leaves are misshapen, deformed, and mottled with deep indentations and have a light green-silver appearance; fruits are pointed and small. Deep suture produces leaves that are longer and narrower than normal, some straplike and dark green with a high gloss. The fruit symptom is one of "deep suture" since the fruit crease is much deeper than normal. However, high summer temperatures may cause a condition in fruit similar to deep suture. With both crinkle and deep suture the amount of fruit produced on affected branches is greatly reduced.

These disorders are not infectious and will not spread from one tree to another, although they can be perpetuated by propagation (grafting or budding). Trees may not show symptoms for several years and then suddenly develop symptoms in one or two shoots. Affected branches should be cut out so that a framework of unaffected limbs can be developed.

Home garden cherry trees are occasionally affected by other disease problems, but the above mentioned are most frequently seen.

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