Saving Water in Home Orchards

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Full-sized fruit and nut trees require large quantities of water to maintain themselves, increase the size of their fruit, and grow new shoots and flower buds to bear succeeding crops. On an average summer day, a bearing tree may transpire from 40 to 60 gallons of water. On a very hot day, a large tree may use more than 100 gallons if that much water is available in the soil.

The amount of water used by orchard trees changes with the climate. In cool coastal areas, trees use the equivalent of about 18 inches of rainfall during the spring and summer growing seasons. In the hot Central Valley, fruit and nut trees transpire about 36 inches of water in a season. About two-thirds of that total is used during June, July, and August. Fruit and nut trees require these amounts of rainfall or irrigation water to grow normally and to produce good crops of well-sized fruits or nuts. In a drought, it is possible to keep trees alive and moderately healthy with as much as one-third less water. Size and quality of the crop will be sacrificed, however.

Crucial Periods

To produce good yields, deciduous fruit and nut trees need some available soil moisture continuously from bloom until harvest. After harvest—in August, September, and later in the fall—these trees can survive on a minimum of soil moisture without tree injury or reduction of the following year's crop. Evergreen trees such as citrus need soil moisture during both summer and fall to maintain leaves and fruit size. Normal soil moisture in the spring is also necessary for fruit set in citrus. Grapes need ample soil moisture in April for the beginning of cane growth and during the early summer for cane and leaf growth and fruit set. Withholding water during late summer and fall does not hurt the vines and increases sugar content in the grapes.

Regardless of irrigation schedules, it is very important to start the growing season with moist soil throughout the root zone. In years with fewer than 10 to 12 inches of winter rainfall, it usually is necessary to irrigate fruit trees 2 to 5 weeks before they bloom to encourage adequate root growth. A second irrigation usually is needed in late May. During June, .July, and August, a reasonable schedule requires irrigating sandy soil every 2 or 3 weeks and heavier loams or clay loams every 3 or 4 weeks. If the weather is unusually cool, intervals can be lengthened.

Watering Home Orchards

How can the family orchardist irrigate fruit and nut trees adequately and still conserve water? Often, much water is wasted by surface runoff during irrigation, and weeds, ground covers, and grass may use water that trees need. To conserve water:

- prevent surface runoff while irrigating
- eliminate weeds or other competing plant growth around trees
- irrigate when the soil is fairly dry

To prevent runoff and ensure that all the water applied stays in the root zone, make a basin under each tree 4 to 6 inches deep, with a good ridge of soil at the outer edge. If the water supply is adequate, extend the basin about 3 feet beyond the outer edge of the tree so that the whole root zone will be wetted. If water is restricted, make the basin only to the outer

edge. In an extreme water shortage, the basin may be limited to one side of the tree. Use a hose or sprinkler to fill the basin. If the land is not level, several small basins or even furrows can be used. To help maintain water pressure and even out the demand on a water distribution system, irrigate trees at night or at other off-peak periods.

The amount of water to apply in a single irrigation depends on the soil's capacity to store water. In the top 6 feet, sandy soils generally hold 4 to 6 inches of water, and loams and clay loams hold from 6 to 12 inches, depending on how fine-textured they are. Because the roots of most fruit and nut trees are in the upper 6 feet, do not apply more than these amounts. Additional applied water will be wasted if it goes below the root zone.

Fruit Thinning

It is usually desirable to thin fruit when they are small so that those remaining will be of good size at harvest. If water is limited, thinning is essential. The easiest way to thin the tree is to cut about one-fourth or one-third of the limbs out of the tree. This pruning is usually completed in winter, but in an emergency it can be done in spring or early summer.

When the young fruit are 1/2 to 3/4 inch in diameter (usually in May), individual fruit can be pulled off the tree by hand or knocked off with a padded pole to prevent injury to the bark on the limbs. The less water available, the fewer fruit should be left on the tree after thinning. Normally, with good water supply, peaches and nectarines are left 8 inches apart. Plums and apricots are left 4 to 5 inches apart, and apples and pears are thinned so that one or two fruit remain per cluster. If water is expected to be in short supply, remove even more fruit, possibly spacing them about twice as far apart as normal. Thinning usually removes more fruit than is left on the tree, so do not be concerned about the number of small fruit left on the ground.

What to Do in a Real Emergency

When the water supply is extremely limited, fruit and nut trees have a better chance of survival if they are irrigated early in the season rather than late. Under these conditions, many deciduous trees can survive on only one to two good irrigations, although they will not size fruit and may produce only a limited number of flower buds for the next year. If the trees run out of water, they adopt a semi-dormant condition for the rest of the summer. When this happens, trees usually drop their leaves, exposing large limbs to the sun. To minimize sunburn, which can be very damaging to trees, paint the upper side of the limbs with white water-based paint that reflects the heat. Of all common fruit and nut trees, almonds, figs, and olives are the most tolerant of drought. Apples, apricots, cherries, pears, prunes, and walnuts are moderately tolerant, and nectarines, peaches, and citrus are least tolerant.

What Other Water Conservation Measures Can Home Fruit Growers Use?

Mulches on the soil can prevent weed growth and minimize surface evaporation. Grass clippings, shredded bark, and dark plastic sheets can be used as mulches. Heavy pruning and crop removal in June can sometimes reduce water loss slightly, but if done too early, it causes extra shoot growth, which increases water use. To guarantee that the soil is dry and to prevent wasting water, wait until a light wilt shows in the leaves in the afternoon before irrigating. This procedure can result in small-sized fruit unless the trees have been very heavily thinned.