Summer Pruning of Apple Trees

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Esteban Herrera, Extension Horticulturist

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The art of pruning apple trees is well understood by most fruit growers. Pruning the orchard is necessary and has a direct effect on the aims of successful orchard management.

Most pruning should be done during the dormant season and before spring growth. Summer pruning is sometimes needed, especially in young trees. All pruning has a dwarfing effect on the tree, but summer pruning is more dwarfing. Summer-pruned trees, with the resulting reduced leaf area, make less root growth than tress not summer pruned. The net result is the tree as a whole makes less growth than it would have had the pruning been done in the dormant period. The dwarfing influence of summer pruning is most pronounced in early summer when the tree is completing its branch extension growth. Dwarfing becomes progressively less after this period and may actually be insignificant two to three weeks before leaf fall.

Summer pruning is ideally adapted to intensive orcharding, but it has only recently gained significant acceptance. This partially is due to a misunderstanding of the nature of summer pruning and how it can be used to control growth and fruiting.

Generally, summer pruning is confined to one-year-old shoots. On shoots headed during the dormant season, two or three vigorous shoots usually develop from the buds immediately below the cut. One or two of these shoots can be removed entirely early in the season to direct growth into a single shoot. This should be done while shoots are only a few inches long so little actual leaf area is removed. If shoots are headed by pinching rather than complete removal, regrowth will take place and pinching will be of little value.

A lack of development of lateral buds on the previous season's shoots, a condition known as blind wood, is a characteristic of some varieties. During the first year or two, delayed heading, which may be considered as a type of summer pruning, will often force shoots from the blind wood area. This should not be carried on beyond the first few years and should only be practiced on the most vigorously growing trees.

Typically, summer pruning is a selective training procedure aimed at weakening vegetative growth while promoting flower initiation. It consists of cutting current season's shoots back to three to five mature leaves after they have grown about a foot, and about the diameter of a pencil, and have started to become woody at the base. Flowering spurs often develop at pruning cut sites as a result of weakening the vegetative growth, but flowering is also increased throughout the tree because of better light penetration.

An alternative procedure, developed in France by L. Lorette about 55 years ago, is to cut the shoot about $^1/_4$-inch to $^1/_2$-inch above its base, leaving a short stub. This ensures regrowth will come from the less well developed buds near the shoot base. Growth from these buds is weaker and more readily transformed into fruiting wood. The Lorette method is preferable to leaving longer stubs, which not only produce more regrowth, but are usually stiffened in an upright position as a result of the pruning.

The best time for pruning current season shoots is at the time of, or just before, terminal bud formation. Summer pruned spur-type trees grow less than standard types. The dwarfing resulting from summer pruning is proportional to the percentage of the total leaf area removed and

should not be carried to extremes. Weak trees do not respond well to summer pruning and are often stunted.

Summer pruning can be used to particularly good advantage in intensive orchards where control of vigorous vegetative growth is difficult. In such cases, dormant pruning tends to aggravate the problem by increasing vigor. In moderately vigorous trees, summer pruning may be desirable to weaken vegetative growth at a specific point in the tree. This would apply to upright vigorous shoots, which originate on the main scaffold limbs of central leader trees, or to vigorous growth in the top of the tree that is gaining dominance over the lower limbs.

Pruning early in the summer (eight weeks after bloom) has caused flower initiation in the same year indicated by an increased bloom the following year. However, it seems , in some cases, summer pruning has a cumulative and delayed effect on flowering with a lag of almost two years between summer pruning and its tangible effect on flowering. Experience on other apple areas of the country shows summer pruning can be conducted as a once-over operation each year anytime from eight weeks after bloom until mid-August, although the short term response is influenced to some extent by timing. The continuation of a summer pruning program on a yearly basis is more important than the exact timing.

In summary, summer pruning can accomplish the following: (a) reduce the vigor of the tree or dwarf it, (b) promote development of side shoots, (c) favor flower bud development, and (d) direct growth into selected shoots.

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