1-1-1963

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PRUNING CITRUS TREES

By H. S. ARGYLE, Horticultural Instructor

PRUNING is one of the less important operations in citrus culture but if properly carried out it can contribute to the economy of production and the general well-being of the orchard.

Pruning deciduous fruit trees is a major job which has been evolved over the years into a well defined system. It enables pome or stone fruit growers to anticipate with reasonable accuracy the results of their efforts to control growth and regulate crops.

These reasons for pruning are not generally applicable to citrus trees and though pruning plays a part in their management there are no accepted standards to guide the citrus grower. Without interference from climate, disease or other unfavourable conditions citrus trees are able to grow to maturity and produce full crops of fruit for many years with no pruning at all. In fact it can be said with good reason that pruning is a check rather than a stimulation to normal growth. With a few exceptions pruning citrus trees, other than for removal of spent wood, is justified only to overcome an abnormality due to some outside influence, and when this is necessary it should be done with moderation.

When young trees are transplanted from the nursery to the orchard, heavy pruning is recommended. Later, routine work should be confined to the removal of dead and spent wood. Pruning in some form may also be needed to control disease and insect pests or to simplify the harvesting of the crop or some other orchard work. Old trees may need fairly heavy pruning to restore health and production; this should be done only when the trees have not responded to fertilisers, irrigation or soil management.

Whenever possible citrus trees should be pruned back to some existing lateral growth. Except in the initial pruning of young trees, lopping of branches should be avoided. The regrowth from headed limbs is usually unsatisfactory and may have to be corrected by pruning later on. All cuts should be made close up against the parent branch; short stubs are untidy, harbour disease and do not heal properly. When large saw cuts are necessary the bark and wood should be pared with a sharp knife and then waterproofed with paint, wax or bituminous compound. Sloping cuts heal better than horizontal cuts.

HABIT OF GROWTH

The principles of pruning citrus will not be fully appreciated unless the natural growth habits of the different varieties are understood.

New growth, generally tends to adopt an erect position and as long as this is maintained the growth is localised in the terminal portions with little activity in the lateral buds. As the branch extends, the weight of leaves and fruit and the effect of shade from foliage higher up will gradually force it to a more horizontal position. As this is happening the terminal growth subsides and one or more of the lateral buds on the top side and lower down the branch will become active. These shoots grow erect and eventually the more vigorous one or two become dominant. More of the original sap flow is re-directed to the stronger of the new shoots at the expense of growth further along the parent limb and this limb then settles down to produce fruit.

The usual sequence of citrus growth is shown in Fig. 1 on the branch of a Eureka lemon. The small shaded branch hanging low in the centre of the picture is the oldest visible growth on this limb. Though
Fig. 1.—Branch of a Eureka lemon tree showing the normal growth pattern of citrus. The weight of the fruit has bent the main limb over and vigour of the terminal growth has subsided. Two daughter shoots now predominate; later they will droop and produce lateral shoots and so maintain a regular cycle of new growth overlaying the old still productive it has been bent by the weight of succeeding shoots to a pendulous position and is already being overshadowed and suppressed by the daughter branch on the right. This daughter branch is probably two years old. It is in full production and has been forced into a horizontal position by the weight of its leaves and fruit. When this happened two of the lateral buds on the top side of the branch were stimulated into activity and are shown growing strongly erect.

As the shoots of the new generation grow and mature they also become top-heavy and gradually droop towards a horizontal position. Terminal growth dominance declines and so the growth cycle goes on from season to season. Eventually through age or because of disease the vigour and number of these upright shoots gradually diminishes until all regrowth has stopped except for the periodic replacement of minor twigs and leaves. When trees reach this stage pruning can be useful for restoring lost vigour. The amount of pruning should depend mainly on the condition of the tree, the season of the year and partly on the vigour of the variety. The lemon is a strong and upright grower and reacts well to pruning—especially Eureka which is an exception to many of the recommendations generally accepted for citrus. Grapefruit, with its more pendulous growth, does not tolerate much cutting.

**HANDLING YOUNG TREES**

Young trees suffer a serious check when transplanted from nursery rows to the orchard. Regardless of care taken when lifting, damage to the root-system cannot be avoided and contact of roots with the soil is completely broken for several days or sometimes longer. After planting it is some weeks before the roots can re-establish themselves and until then they do little to support the tree. During this time the young growing trees may be subjected to conditions much more severe than those in the shelter of the nursery.

If the balance between the reduced and inactive root system and the tree top is not restored by pruning, the tree is likely to collapse completely or suffer another serious check. Pruning at this time should involve heavy cutting and the removal of most of the foliage.

*It is better to err on the severe side than to risk acute moisture stress through under-pruning.*

At this stage the basic framework of the tree can be planned.

Two to four well matched shoots which are evenly spaced around the trunk and arising about 12 inches to 15 inches from the ground should be selected. If the chosen branches are mature and long enough they should be headed to about six inches immediately above a suitable bud. All other growth can be cut off.

If a suitable foundation to build a framework has not been established in the nursery, or the head has been allowed to branch too high, the tree can be safely headed at the required height and a new head grown from dormant buds around the trunk. Make sure the selected buds are healthy and undamaged before docking the tree. Trees with high heads are more subject to buffeting and damage from wind and give the trunk less protection against sunburn.
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Figure 2 shows three trees six months after planting. The left and centre trees have had no attention by pruning after transplanting.

Tree (2a) has a good frame and would have developed well if the top growth had been reduced to match the loss of roots. As this was not done the top collapsed and was lost except for some regrowth low to the ground from which the tree must be rebuilt.

Tree (2b) survived with only partial defoliation but has no shape and must be supported by a stake (removed temporarily for the picture). Compare these two trees with the tree on the right (2c) which has been pruned to a well balanced framework and is now sturdy and growing strongly. Both the unpruned trees could have been handled in the same way with every prospect of getting the same good result.

Young trees at planting should be pruned on the lines suggested and all shoots which appear on the trunk below the main branches and any others which are misplaced or overcrowded should be pinched off. Without further interference the trees will naturally shape themselves and little, if any, pruning will be needed for many years.

The development of rampant sucker-type growth in the following months may be a problem. If possible these suckers should be preserved; later they lay over and form valuable branches. When this growth is particularly vigorous and obviously out of balance with the rest of the tree the shoot can often be successfully checked by tying it down in a horizontal position. These shoots should be trained while still pliable but only if suitably located, otherwise they should be removed.

Figure 3 is a good example of how this type of growth can be made to conform to the general shape of the tree. The branch on the right of the picture was
Fig. 3.—The limb on the right was erect and the whole tree unbalanced. By forcing this branch to hang, valuable growth has been preserved and the shape of the tree has improved. The urge to grow has been checked at the terminal and redirected to some of the lateral buds further back on the branch.

Fig. 4.—Neglected sucker growth on a Navel orange tree. This strong limb will continue to flourish at the expense of more productive and accessible parts of the tree. It should be removed upright and still growing strongly before being bent over and held in position by a string attached to a stake or suitable weight. Had this branch been allowed to remain erect without restraint it could have monopolised a big share of the tree's vigour at the expense of other equally important branches.

If a remedy is sought by pruning, the usual procedure would be to head the limb back to one of the small shoots seen near the top of the bend. The outcome when strong shoots are treated this way is not always satisfactory and the new leader may itself repeat the pattern of growth already being corrected. Bending the limb over as illustrated has checked the terminal vigour naturally and the urge to grow has dissipated to other parts of the tree.

Figure 4 shows what can happen when such a shoot is allowed to grow unchecked. Originating low down in the centre of the tree the shoot has extended upwards without branching until it has broken through the canopy. In this favourable position it has continued to thrive and will eventually spread like an umbrella forming a second storey and suppressing more accessible and productive parts of the tree. The possibility of bending this branch now to a more useful and less dominant position seems remote and the alternative is to remove it.

This article will be continued in next month's Journal of Agriculture with Part 2. Pruning the Mature Tree.
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