

DWARF FRUIT TREES

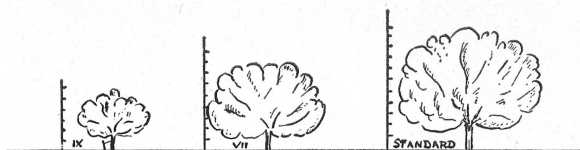


Golden Delicious on EM IX set out in 1955. Photo made in the fall of 1958.

WHICH ROOTSTOCK?

Fruit trees are propagated by grafting the desired variety to a rootstock. By selecting special rootstocks it is possible to grow all of our apple varieties and many pear varieties as so-called "dwarf" or miniature trees. Peaches, plums, and cherries may also be dwarfed if grown on the proper dwarfing rootstock.

When you buy dwarf trees, be sure to specify the rootstock desired.



Effect of Malling rootstocks on size of apple trees

Dwarf apple trees require a rootstock known as *Malus EM IX*, whereas apple trees of intermediate size are grown on *Malus EM VII*.

Pears are generally dwarfed by grafting on quince rootstock such as Angers quince, but not all pear varieties will grow on quince. The following varieties are entirely compatible with quince and can be grown as dwarfs: Duchess d'Angouleme, Beurre Hardy, Flemish Beauty, and Beurre Diel. Anjou, Bartlett, Clapps Favorite, Dana Hovey, and Tyson might survive, but the trees will break easily at the point of union and should therefore always be supported by a stake. Bosc, Seckel, and Sheldon will grow poorly or not at all on quince rootstock. They can be dwarfed, however, by double-working as illustrated on page 3.

Peaches can be dwarfed by grafting the desired varieties either on *Prunus besseyi* or *Prunus tomentosa* rootstocks. Certain plums and prunes, such as Beauty, Pearl, and Pacific plums and Italian and Stanley prunes, can also be grown as dwarf trees on *Prunus besseyi*.

The dwarfing effect of certain rootstocks used for cherries, such as Mahaleb cherry seedlings and certain Morello cherries, is somewhat less than that of rootstocks used for apples, peaches, pears, or plums.

SPACING AND OTHER PRECAUTIONS

Spacing required for each tree depends on the final size the tree will attain. Apples grown on EM IX and dwarf pears, peaches, and plums can be spaced 12 to 15 feet apart. Semi-dwarf apple trees on EM VII and cherry trees on Mahaleb rootstocks require from 15 to 20 feet between trees and between rows.

Apple and pear trees on size-controlling rootstocks must always be planted with the union between the variety and the rootstock slightly above ground level. Where this is not done, the tree, particularly apple trees grown on EM IX, may form their own roots. In such cases the dwarfing

effect of the rootstock will disappear and the trees will grow to a large size. Furthermore, the root system of EM IX is brittle and trees on this stock must be supported by a stake or by a trellis. Recent tests have shown that when trees are budded higher up on EM IX stock and then planted deeper can be grown without support.

Dwarf peach, plum, and cherry trees and apple trees on the EM VII do not need support.

The greater the size-restricting influence of the rootstock, the more important it is to plant the trees in a good, fertile, well-drained soil. All fruit trees will do best when grown in a sunny location.

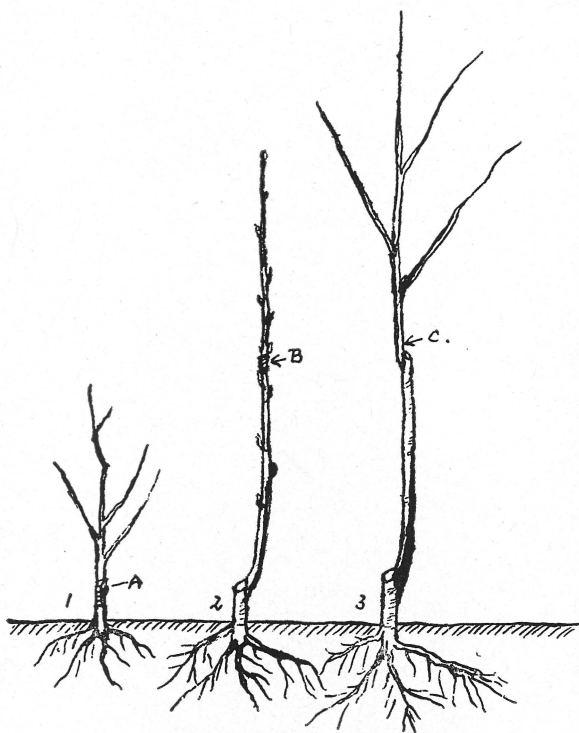


Diagram showing steps in double working a pear variety incompatible with the quince dwarfing rootstock. 1A, compatible variety such as Beurre Hardy, Duchess d'Angouleme, or Old Home budded to quince rootstock; 2B, the summer following budding described in 1A, incompatible variety is budded into whip of the compatible sort at B; 3C, how the double-worked 2-year tree will look.

VARIETIES AND POLLINATION

Satisfactory fruit set depends to some extent on proper pollination. It is thus necessary to plant

varieties that bloom at about the same time. Golden Delicious, Macoun, Northern Spy, and Rome Beauty bloom from one to two weeks later than other varieties and might best be planted together. Baldwin, Golden Delicious, Jonathan, Rhode Island Greening, and Rome Beauty are most likely to set some fruit with their own pollen, but the fruit set can be increased by having at least one good pollinator, such as Red Delicious and Cortland, among the varieties planted. (For detailed information on pollination of tree fruits see Cornell Extension Bulletin No. 720.)

Apples differ in their susceptibility to scab. McIntosh, Cortland, and Macoun are very susceptible; whereas Baldwin, Cox Orange, Jonathan, Lodi, Red Delicious, Golden Delicious, Graven-



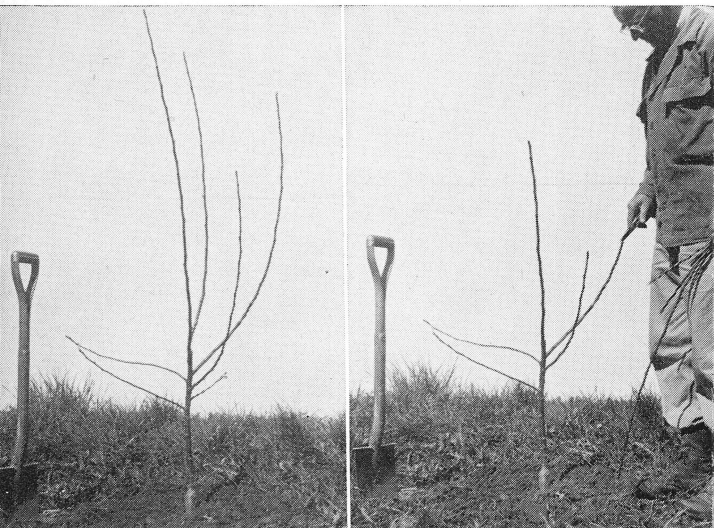
Eleven-year-old Rhode Island Greening tree on EM IX in full bloom

stein, Northern Spy, and Rhode Island Greening can be more easily kept in healthy foliage and clean fruit with home garden spray practices. (For fruit disease and insect control consult Cornell Extension Bulletin No. 665.)

Most pear varieties are self-sterile and require cross-pollination, but Duchess d'Angouleme and Flemish Beauty will most likely set fruit with their own pollen.

PRUNING AND TRAINING

It is best to do little or no pruning of dwarf trees the first few years after planting. When planting a two-year-old tree, two to three well-spaced lateral branches and a leader are selected and all other shoot growth removed. Each re-



Pruning the dwarf tree; left, before pruning; right, during pruning.

maining branch is then cut back to two-thirds of its original length, with weaker lateral branches cut back to a lesser degree or not at all. A one-year-old tree is cut back to a height where the future head of the tree is desired, that is, 12 to 18 inches measured from the ground.

Heavy and annual pruning will delay fruiting. However, after the tree has been bearing four to five years and is slowing down in vegetative growth, one might prune dwarf apple trees severely in early spring. In such a case, it is safe to cut back the main branches as well as the leader to fruit-bearing, older wood. Following each pruning the crop will be reduced for one to two years, but, on the other hand, new shoot growth to carry future crops will be stimulated and a sturdy, well-shaped tree will result. Where branches are too close together, it is desirable to cut out the weaker ones in early spring, thus thinning out the tree.

The bush-type dwarf tree is easier to grow and maintain; however, all the fruits mentioned here

can be trained to various espalier forms when grown on dwarfing stocks. Espaliers shaped to special forms require a great deal of care, particularly complicated pruning and tying. The inexperienced gardener or one not inclined to spend much time on maintaining his trees will derive greater satisfaction by growing the bush-type tree.

Dwarf fruit trees are planted and cared for in substantially the same way as are standard trees. By placing a mulch consisting of hay, straw, lawn clippings, or composted leaves around newly planted trees and by adding additional mulch every year, trees planted in good garden soil can be kept in vigor without additional fertilization.

YIELDS

Apple trees on EM IX under the above cultural practices will often bear a few fruits the second year after planting, depending upon the variety. Baldwin, Cortland, Cox Orange, Reinette, Gravenstein, Grimes Golden, Golden Delicious, Jonathan, McIntosh, Rome Beauty, and Rhode Island Greening may bear from 6 to 13 pounds of fruit the third year after planting, whereas Red Delicious and Northern Spy may not start bearing until the third or fourth year after planting. A 10-year-old apple tree on EM IX will produce about 100 pounds of fruit.

Apples as well as pears will need fruit thinning in early June if it appears that too heavy a fruit set has taken place. Only one fruit to the spur should be left and all excess fruit removed. In addition to such thinning, it may be necessary to reduce the crop further by removing single fruits from some of the fruit spurs. An overload of fruit will result in poor fruit size and an excessive drain on the vigor of the tree. Also, it may induce a biennial bearing habit, that is, a heavy crop followed by no crop the next year.

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Additional information on the dwarfing of fruit trees will be found in Experiment Station Bulletin No. 783.

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