

DWARFED FRUIT TREES

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VERY DWARFED OR SMALL-SIZED apple and pear trees are particularly well adapted for growing in small gardens where space is limited, or as ornamentals on the lawn or along the shrub border. They are also desirable for planting in larger gardens where it is impractical to grow standard-sized trees.

Certain dwarfed fruit trees are not recommended for planting in orchards intended for commercial fruit production. Some are brittle-rooted, inclined to be short-lived, and are grown with the support of a trellis. Others are of semi-dwarf form which require no support and are suggested for commercial use.

As compared with an average, well developed standard tree, the smaller sized, dwarfed trees have several advantages for the commercial grower and the home gardener:

1. They begin to bear at an early age.
2. They can be conveniently pruned and sprayed.
3. Small hand dusters and sprayers can be used effectively for insect and disease control when grown in the garden or around the home.
4. The fruit is easily harvested from the ground or with short ladders.
5. Under favorable conditions the fruit is highly colored and above average size for the variety.

How Dwarfed Trees Are Produced

A dwarfed tree is produced by grafting or budding a desired variety onto a special type of root system, commonly known as the "rootstock," which restricts or "dwarfs" the growth of the scion variety grafted upon it.

Apple, pear, peach and plum are the only common fruits which can be dwarfed successfully at present,

as no satisfactory dwarfing rootstocks have been found for the cherries, apricots, and nectarines. Standard trees of most stone fruits are small, however, as compared with standard apple trees, and it is possible to restrict their growth by pruning.

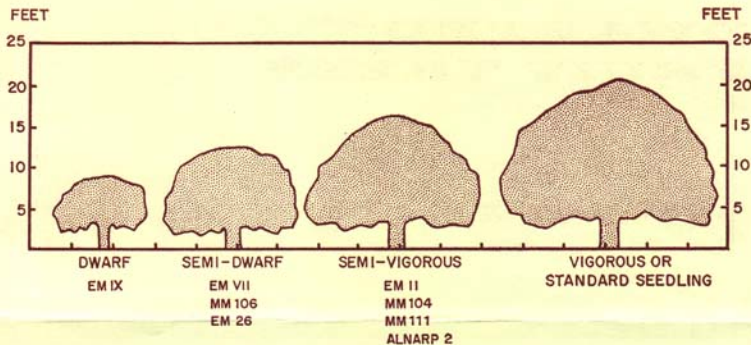
Dwarfed Apple Trees

The preferred rootstocks now used for dwarfing apple varieties were selected at the East Malling Research Station, Kent, England, and are generally termed East Malling (EM) or Malling Merton (MM) rootstocks. They differ in the size of trees produced and in adaptability to soil and climate. They are designated EM II, EM VII, EM IX or as MM 104, MM 106, MM 109 and MM 111.

EM IX is the most dwarfing rootstock and commonly produces a tree from 5 to 7 feet tall and with a spread of 3 to 6 feet. This particular rootstock requires support. To prevent blowing over, the head should be formed by starting the lower limbs at about 6 to 12 inches from the ground. EM IX furnishes an excellent rootstock for apples to be trained as espaliers or cordons on a trellis, wall or fence.

EM VII and MM 106 produces the next smallest tree, commonly permitting the variety to grow to 10 or 12 feet in height, about the size of a small sour cherry tree. They are sometimes referred to as "semi-dwarf."

Other commercially important rootstocks are EM II, MM 104, MM 109 and MM 111. These rootstocks permits the variety to grow to about two-thirds the size of a standard apple tree.



Relative size of apple trees on different rootstocks

New Apple Rootstocks

East Malling 26 is a new promising rootstock which produces a tree larger than EM IX but smaller than EM VII. It is a sturdy rootstock worthy for trial when it becomes available. Another rootstock, Alnarp 2 (A2) which compares with EM II, but is more cold resistant, merits trial in areas where cold injury may be a problem.

Dwarfed Pear Trees

Dwarfed pear trees are produced by budding the desired variety onto specially selected strains of quince (Angers). Commonly grown varieties attain a height of 8 to 10 feet on the quince rootstock. Their value at the present time is for the home gardener.

How to Order From the Nursery

Dwarfed trees may be purchased directly from the nurseryman's supply, or the trees may be contracted from the nurseryman two or three years in advance of planting. The advantage of contracting a certain nurseryman to bud the desired variety on specific rootstocks is to be able to specify the variety, strain and rootstock or to supply the buds from selected trees to assure a certain strain of a variety for planting. A deposit is often required with the order at the time the contract is made.

Regardless of how ordered, the grower should make sure that he obtains *certified trees*; certified as *true-to-strain*, *true-to-variety*, and *true-to-rootstock*. Further-

more, each tree or bundle of trees should bear a label stating the name of the strain, variety and rootstock, for example, Vance Delicious/EM II.

Certain variety/rootstock combinations are better than others, such as Jonathan and Red Rome on EM II; McIntosh and Golden Delicious on EM VII for heavy soils and on EM II for sandy soils. The spur-type Delicious grows slowly, and hence is more favorable on EM II or MM 104.

Planting Trees

Trees should be planted in late March or early April. The hole should be dug large enough to hold the roots without crowding. Set the tree in the ground 12 to 14 inches when possible but always be sure the bud union is 1 to 2 inches above the ground line. As soil is tamped in the hole, place the roots in their natural horizontal position so that the tree will be well anchored. In areas where prevailing winds are strong, lean the tree 10 degrees into the wind. If the roots are dry, soak the tree overnight before planting. During the first two years, water the trees when the soil becomes unfavorably dry using 2 to 4 gallons per tree.

Spacing the Trees in the Orchard

High production with smaller trees can be obtained only by planting more trees per acre. For the more vigorous varieties such as Delicious, Northern Spy and Stayman Winesap on EM II or VII, a permanent

tree spacing of 20 x 25 feet (87 trees per acre) or 20 x 30 feet (72 trees per acre) may be favorable.

A less vigorous variety such as Jonathan on EM II, would give high production spaced 18 x 26 feet (93 trees per acre). To obtain high production during the first 10 to 12 years when the trees are small, a planting plan of 10 x 30 feet or 10 x 25 feet with the idea of later removing every other tree leaving the planting 20 x 30 or 20 x 25 feet is worthy of consideration. The exact planting scheme depends on the topography of the site and the preference of the grower.

Culture and Pruning of the Trees

For good fruiting the fourth and fifth years after planting, the trees require continuous care. This includes proper fertilizing, spraying, pruning and control of competing grass and weeds. Beginning with the second year, terminal growth should average 18 to 30 inches to provide vigorous bearing branches by the fourth year. Clean cultivation the first 3 to 4 years is recommended.

Suggested fertilizer practices for fruit trees are given in *Extension Folder F-224*, while commercial procedures for pest control are given in *Extension Bulletin 154*. Weed control measures for orchards are described in *Extension Folder F-241*.

Pruning of young dwarfed trees is similar in principle as for standard trees in that it should be held to a minimum, pruning only enough for proper training. Light selective pruning of young trees will give early bearing while heavy pruning will delay bearing.

Newly set trees should be headed 30 inches from the ground-line. If the trees to be set are already branched, select the best 2 or 3 well-spaced branches and remove the others. Head the leader to 14 inches above the top lateral branch and cut back the lateral branches 18 to 24 inches in length. In the succeeding years, select 4 to 6 more well-spaced branches on the central leader. Remove as few potential spur-bearing branches as possible. After the tree is in bearing, an occasional main branch can be removed. Eliminate any branches which interfere with easy access to the fruit, but continue to keep the trees compact and well balanced to provide maximum bearing surface.

Fruit Thinning

Blossoms on two- and three-year-old trees should be removed at the time of *pink* or at *full bloom* before they begin to develop into fruit so not to stunt the

growth and development of the trees. In the fourth year, all of the blossoms and fruit should be removed from the upper 2 to 3 feet of the terminal leader to prevent retardation in height of the trees. This practice should be continued until the desired height is attained. The remaining portions of the tree should be thinned, spacing the fruits 4 to 6 inches apart with only one fruit per spur. After 7 or 8 years when the trees have reached full size, chemical thinning may be worthy of consideration to encourage annual bearing. (See the Fruit Spraying Calendar, *Extension Bulletin 154*).

Dwarfed Apple Trees For the Home

Favorable dwarfed apple trees for planting around the homes are the so-called "Clark dwarf" and those on rootstock EM IX. The rootstock EM IX produces a tree 5 to 7 feet in height and requires a trellis or a stake for support. The "Clark dwarf" tree is dwarfed by using a dwarfing interstem piece rather than a dwarfing rootstock.

The "Clark dwarf" tree develops to a height of 6 to 8 feet, the ultimate height being dependent upon the care during the first five years after planting. Trees of these two types are sprayed easily with a small hand sprayer or with a spray unit attached to the garden hose.

The program of pest control for home grown fruit is given in *Extension Folder F-17*. Fruit trees should be sprayed, fertilized and pruned annually in order to harvest quality fruit. The cultural practices outlined in this folder apply to dwarfed trees grown for commercial purposes and those grown around the home.

Other Dwarfed Fruit Trees for the Home

Dwarfed pear trees with Quince A rootstock and with Old Home as an interstem piece are available along with those budded directly on other quince rootstocks. Peach and plum varieties budded on Nanking cherry make small and fruitful trees which develop in size to about $\frac{1}{3}$ that of standard trees. Tart cherries such as Montmorency, North Star and Meteor can be grown also in the garden. The latter two varieties are dwarfing to some extent. Dwarfed sweet cherry trees are not yet available.

A complete list of fruit varieties suggested for Michigan is given in *Extension Folder F-116*.

