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Dwarf Apple Trees

Dwarf apple trees have been planted extensively in recent years in both commercial orchards and in home gardens. There are a number of advantages to growing dwarf apple trees, but also some unique problems which must be dealt with. The commercial grower finds that size control obtained with dwarf trees often reduces problems of maintenance, including spraying, pruning, and picking; as well as inducing earlier bearing and providing an opportunity for increased fruit production per acre through high density plantings. The home gardener also finds that size control and early bearing are to advantage.

SIZE CONTROL METHODS

Two methods are used currently to control the size of the apple tree. One method is to bud or graft regular varieties onto rootstocks, which restricts the growth so that the tree behaves like a dwarf. Another is to graft a piece of dwarfing stem section (interstem) into the normal tree stem. Both methods develop small-statured trees that produce fine quality fruit.

SIZE CONTROL ROOTSTOCKS

Most size controlling rootstocks now used in this country have come from Europe. The East Malling Fruit Research Station, East Malling, Kent, England, has done outstanding work in this field, developing a series of rootstocks that give different degrees of dwarfing for apple trees. Consequently, the grower can select rootstocks which will produce very small trees (full dwarf); those which are intermediate in size (semi-dwarf); or those which are only slightly dwarfing.

DWARF ROOTSTOCK HARDINESS

Cold tolerance is a special problem in Minnesota because of our climate and we must keep in mind that all of the presently used dwarfing rootstocks will be injured if root temperatures drop to +18°F to +22°F. Hardy seedling rootstocks, however, can withstand +14°F without injury. Thus a major disadvantage is the necessity to protect from winter cold.

Studies in Minnesota with dwarfing rootstocks have shown that they are reasonably hardy in southern Minnesota when grown under sod. However, in winters with very little snow, severe injury and often death has been observed in the trees grown under clean cultivation. Consequently, it is advisable to mulch trees, at least for the winter. Mulch can consist of grass clippings, straw, or hay. Apply the mulch to a depth



Haralson apple on M7 rootstock at 6 years of age.

of 6 to 8 inches in an area covering the "drip line" (branched area) of the tree.

FULL DWARF

M9 is a full dwarfing rootstock. It is of much interest to the home gardener, but is relatively unimportant to the commercial grower. The wood and roots are brittle and the tree must be stake or trellis supported. Some suckering is evident with this rootstock; however, this is often reduced when the trees are budded high and planted deeper in the orchard. Early yields of fruit, often in the 2nd or 3rd year, can be expected. Suggested spacing between trees is 8 feet.

SEMIDWARF

Trees growing on M26 are larger than those on M9. Also, although the anchorage of trees on M26 is better than those on M9, some type of support is often necessary for individual trees. Most apple varieties growing on M26 are precocious (early bearing). Laboratory tests with M26 rootstock indicate a greater degree of winter hardiness than M9. Suggested spacing is 10 feet.

M7 has been a very popular rootstock for a semidwarf tree. It has proven to be productive for commercial orchards, precocious, and propagates well. M7 does sucker readily if planted too shallow; consequently, it is a good practice to set the trees deeper than they stood in the nursery row. Care should be taken to keep the graft union 2 inches above the ground line to prevent the scion (everything above the graft) from rooting and the tree reverting to a standard size tree. A few trees may require staking. The trees should be spaced 12 to 14 feet. M7 seems to be the least hardy of all the dwarfing rootstocks.

M106, a hybrid rootstock, is similar to M7. Some of its good properties are resistance to wooly apple aphid, a good root system, productiveness, very precocious, and lack of suckering. This rootstock appears to be more susceptible to collar rot than are other stocks. However, this disease is not currently a problem in Minnesota. McIntosh, Golden Delicious, and Red Delicious appear to be well suited to this rootstock. M106 will produce trees somewhat larger than those on M7 and should be spaced 12 to 14 feet.

SLIGHTLY DWARF

M111 rootstock is more vigorous than M106 or about 25 percent dwarfing. It is not as precocious as M106. It tends to produce more upright trees of vigorous growing varieties and branch spreading is essential. The rootstock is well anchored, productive, and is adapted to a wide range of soil types. (It appears to tolerate drought conditions more than other rootstocks and also appears to be the hardiest.) The suggested tree spacing is 14 to 16 feet for vigorous growing varieties such as McIntosh.

HARDY INTERSTEMS AND ROOTSTOCKS

M8 generally is used as a dwarfing interstem (stem section) between a winter hardy, seedling rootstock, and a normal tree stem. Generally a tree 6 to 8 feet tall is produced. Disadvantages include brittle wood and wind breakage near the inter-

stem. M8 may not prove satisfactory in Minnesota. Alnarp 2 (Swedish origin) and Robusta 5 (Canadian origin) both are considered hardy rootstocks. Their use in Minnesota as size-controlling rootstocks has not proven satisfactory.

CULTURE OF DWARF APPLE TREES

Dwarf apple trees should be planted into well prepared, rich soil and given ample water to assure strong, early growth.

Pruning at planting time should be similar to that given standard fruit trees. In succeeding years it is important to maintain a strong central leader (particularly on precocious varieties). This is done by removing the fruit from the leader and heading back the side branches which tend to compete with the central leader. Side branches should be well spaced to keep the tree balanced.

The naturally weak or shallow roots of some of the dwarfing rootstocks suggest that they should be staked to prevent leaning and eventual breakage of the developing tree. This is especially true with M9, M26, and M7. Tie the tree securely—but not tightly—to a stout stake driven into the soil close to the trunk.

Rabbits and mice are likely to damage small dwarf trees, especially if mulched, unless preventive measures are taken. Enclose the trunk's base with a cylinder of ¼-inch mesh hardware cloth. Make this cylinder at least 6 to 8 inches in diameter and extend it from about an inch below the soil level to the first branch. Baiting with poison grain also effectively reduces the mouse population.

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Average tree size from several size controlling rootstocks.

