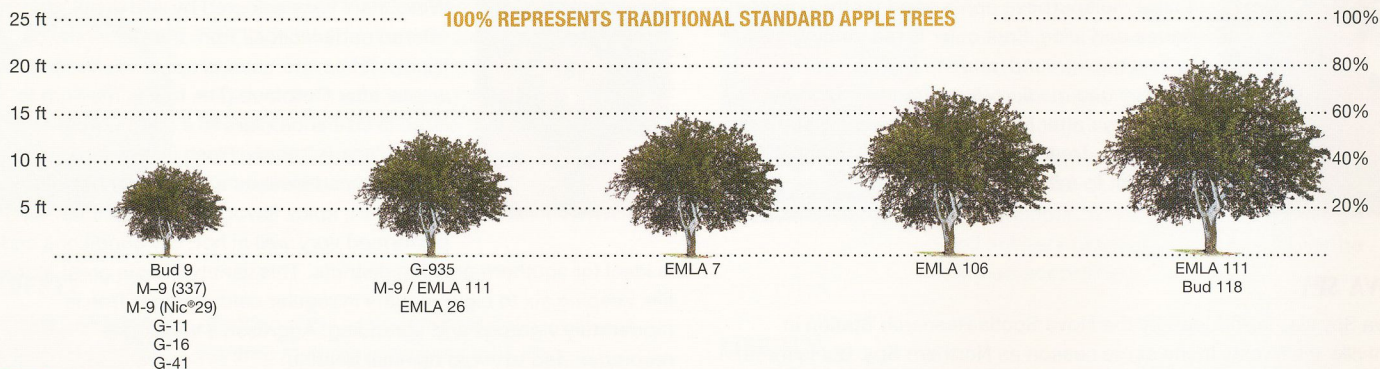


# APPLE ROOTSTOCKS

The use of clonal rootstocks for apples began in the mid-1900s. Selections from the East Malling Research Station, Kent, England, were introduced to commercial fruit production as a means to control tree vigor, promote early fruiting and improve tree efficiency. The widespread acceptance of this technology led the way for rootstock breeding in the United States, Poland and the former Soviet Union. The M and EMLA rootstocks from East Malling, the Bud rootstocks from the former Soviet Union and more recently, the G rootstocks from Geneva, New York, have become the most commonly used rootstocks for apple production in the United States and throughout the world.



## BUD 9

The most dwarfing rootstock we currently offer, Bud 9 produces a tree typically smaller than M-9, though some northern/colder districts have observed vigor much closer to M-9. Bud 9 is very winter hardy, resistant to collar rot and somewhat less susceptible to fire blight than M-9. Tree support is recommended when using this rootstock.

## M-9 (337)

A dwarfing rootstock, ideal for high-density plantings. M-9 (337) is a virus certified clone of the original Malling 9 and has been used successfully throughout the world. Trees on M-9 (337) are very precocious and tolerant of a wide range of soil and climate conditions. Due to the poor anchorage of this rootstock, tree support is essential in establishing trees.

## M-9 (NIC®29)

Nic®29 originated in Belgium and is one of the more vigorous clones of the M-9 series. This root establishes a more developed root system in the nursery, making it a good choice for replant sites or for combining with scions that require more vigor. Fire blight susceptibility similar to other M-9 clones.

## GENEVA® 11 (G-11)

Developed from a cross of Malling 26 and Robusta 5, G-11 produces a tree similar in size to M-9 (337). Shows higher yield efficiency than EMLA 26 and similar to M-9. It has moderately high resistance to fire blight, has good resistance to Phytophthora root rot, but is not resistant to woolly apple aphids. Although more vigorous than G-16, it does not express the virus sensitivity of G-16.

## GENEVA® 16 (G-16)

Geneva® 16 produces a tree similar in size to trees on M-9 clones. Its desirable characteristics include high-yield efficiency and resistance to burrknots and root suckers. Geneva® 16 shows strong resistance to fire blight and some tolerance to apple replant disease. Due to virus sensitivity, G-16 is available only with certain scion combinations.

## GENEVA® 41 (G-41)

Developed by Cornell University in Geneva, NY, G-41 is also similar in size to M-9. This root has very high resistance to fire blight and woolly apple aphids. G-41 is a hardy root and does very well on replant sites. It has proven to grow a productive tree with good fruit size and quality.

## GENEVA® 935 (G-935)

Also developed as part of the Geneva program, G-935 is closer to EMLA 26 in vigor. This root expresses the same high resistance to fire blight and replant disease, but is not considered resistant to woolly apple aphids. Tree is hardy and productive with little incidence of rootsuckering. Due to virus sensitivity, G-935 is available only with certain scion combinations.

## M-9 / EMLA 111 INTERSTEM

The interstem M-9 / EMLA 111 produces intermediate trees similar to EMLA 26. Advantages include a well anchored, collar rot-resistant EMLA 111 tree, with the dwarfing and precocity of the M-9 interstem.

## EMLA 26

Ideal for high-density plantings, EMLA 26 produces a dwarf tree between M-9 and EMLA 7. Freestanding on strong soils, EMLA 26 usually requires staking on less fertile sites. EMLA 26 does not tolerate wet feet and is susceptible to fire blight and woolly apple aphids.

## EMLA 7

The most widely planted freestanding semi-dwarf rootstock. EMLA 7 trees exhibit an open spreading-type growth similar to peach trees in size. The trees size fruit well in a dry season. Trees are relatively well anchored, but support is recommended on weak sites. EMLA 7 has a tendency to rootsucker.

## EMLA 106

Somewhat larger than EMLA 7, the EMLA 106 is better anchored. Resistant to woolly aphids, it seldom rootsuckers and performs best on dry sites. It is extremely susceptible to collar rot and should not be planted in wet sites or heavy clay soils.

## EMLA 111

A vigorous semi-dwarf, EMLA 111 produces a tree somewhat larger than EMLA 106. Trees are well anchored, resistant to collar rot and woolly aphids. A good selection for heavy, poorly drained soils.

## BUD 118

Another of the Budagovski rootstock series, BUD 118 produces a vigorous tree, similar in size to EMLA 111. This rootstock is winter hardy, resistant to collar rot and adaptable to a wide range of soil types. Bud 118 is considered more precocious than EMLA 111 and although freestanding, BUD 118 does not anchor as well as EMLA 106 or EMLA 111.