

ROOTSTOCKS

Probably just as important as variety selection is the selection of rootstock for height, soil, moisture and suckering to name a few. This eBook covers general information for rootstocks and specific information for individual rootstocks. Twenty-two apple, 11 pear, 3 Asian pear, 6 cherry and 10 stone fruit rootstocks are described.

GENERAL INFORMATION ABOUT ROOTSTOCKS

There are four primary factors controlling tree size: rootstock, *vigor of cultivar*,* soil fertility, and climate. Generally rootstock is the primary factor in tree height. Rootstocks have been selected to control the size of the tree. Then vigor of the *variety* grafted on the rootstock will cause a variance in tree height. This is followed by soil fertility and climate. This is why a size range is given for any rootstock that you select.

The lower portion of a fruit tree is called the *rootstock*. This is the portion of the tree that has been grafted over to a specific variety or cultivar. Different rootstocks provide opportunities for everyone to enjoy the thrill of growing your own fruit. If you have limited growing space you could choose a super-dwarf rootstock that limits the height of your tree to as little as 5 feet! There are possibilities and sizes to match almost any need. Lastly, pruning has a great impact on size. When the tree has reached the height that you want, the easiest, most effective way to keep fruit trees at that height is through summer pruning.

BEWARE OF MINI-DWARF, DWARF, SEMI-DWARF, AND STANDARD LABELS

These terms that may (usually) be seen on labels for fruit trees have little meaning for the average consumer. For example, semi-dwarf is a tree that is smaller than standard. That's nice! Just how tall is a standard tree? (See below). You may also see on the label, "50% of standard size." If the nursery does not or will not name the rootstock for you, my suggestion is DO NOT DO BUSINESS WITH THEM! The nursery should be able to tell you the specific name of the rootstock. It is only with that name that you will have a rough estimate of tree size. You may be shocked that the "semi-dwarf" that you purchased grows to 20-24 feet tall. No matter the name of the rootstock, you will also be told that you can prune the tree to keep it the height that you want. This is a valid statement, but why fight genetics. In the long run, genetics will win.

SUGGESTIONS ON CHOOSING ROOTSTOCKS

In many cases, 10-20 different rootstocks will produce the same size of tree. Then, how do you make a choice that you will not regret? To take the confusion out of choosing your rootstock, you need to make some decisions in advance. You need to determine tree size, winter hardiness, soil type present, staked or free-standing tree, irrigation or no irrigation, sucker vs non-suckering, burrknots vs no burrknots and disease

resistance wanted in your rootstock. Knowing these characteristics of the rootstock in advance will make your selection wiser and easier.

* italicized terms are defined in the glossary except for scientific names which are always italicized.

JUST HOW LARGE IS A “STANDARD” TREE ANYWAY?

When reading the descriptions of dwarf and dwarfing rootstocks, you will come across statements like this: “produces a tree 50-60% of standard.” Nice statement, but do you know how large a standard tree is? Most of us do not know. So, 50-60% of what tree height? The following information will partially answer the question. Partially, because variety, soil fertility, early cropping and climate all play a role in determining tree height.

HEIGHT AND WIDTH OF SELECTED STANDARD UNPRUNED TREES IN FEET

	HEIGHT	WIDTH
Almond	35	30
Apple	40	40
Apricot	30	30
Asian Pears	20	15
Cherry (Sweet)	45	40
Cherry (Sour)	15	10
Chestnut	50	40
Cornelian Cherry	25	25
Fig	35	50
Hazelnut	20	20
Medlar	20	10
Mulberry	35	35
Nectarine	25	25
Paw Paw	25	20
Peach	25	25
Pear	40	25
Persimmon, American	30	25
Persimmon, Asian	20	20
Plum, Japanese	15	20
Plum, European	25	15
Quince	20	20
Walnut, Black	150	100
Walnut, English	60	60

INTRODUCTION TO APPLE ROOTSTOCKS

Standard apple trees are 40 feet tall with a 40-foot diameter.

All apple rootstocks are either seedling or clonal. Seedling rootstocks will produce a standard sized tree with variable characteristics due to sexual reproduction. Whereas, clonal rootstocks are asexually reproduced, hence the characteristics are the same. In selecting rootstocks, consider the vigor to the scion (what is grafted on to the rootstock), soil fertility, cold hardiness, burrknots, root suckers, and disease and pest resistance.

Historically many rootstocks have been selected from the wild and bred for particular traits. The following is a brief explanation of the meaning of some of the symbols and numbers in naming apple rootstocks. Be advised that you will only have a vague estimate of your tree size by selecting rootstocks that are named, Super-dwarf, Dwarf, Semi-dwarf, Semi-vigorous or Vigorous. These terms are vague making them close to meaningless. About all that is communicated by these terms is that Super-dwarf is smaller than Dwarf and Dwarf is smaller than Semi-dwarf and Semi-dwarf is smaller than Semi-vigorous.

Malling Series

Beginning in 1912, the East Malling Research Station in England selected, classified and named a series of vegetative (asexually) propagated apple rootstocks that ranged from very dwarfing to very invigorating in their effect on the *scion* cultivar. The dwarfing influence of these various rootstocks does not extend to the fruit, however, fruit size, especially on young dwarfed trees, is often larger than on standard sized trees. The more dwarfing the rootstock the earlier the tree bears fruit and the larger the fruit. The letter M is used to designate rootstocks from the Malling series, g., M.9.

Malling–Merton Series (MM)

The John Innes Horticultural Institution in England and the East Malling research Station began working jointly in 1928 on breeding a new series of apple rootstocks to provide resistance to woolly apple aphids and to give a range in tree *vigor*. The letter MM is used to designate rootstock from the Malling–Merton series, e.g., MM.111.

Budagovski Series (B or Bud)

Dr. Budagovski, was the most successful apple rootstock breeder in old Soviet Union (Russia), at the college of Horticulture in Michurinsk where temperatures drop to -55°F. These rootstocks are very cold hardy that is it will survive harsh cold environments. Knowing where the rootstock was developed will give you some indication to its cold hardiness The Budagovski series of rootstocks are identified with a B, e.g., B.491.

Poland Series (P)

Dr. S. W. Zagaja at Skierniewice, Poland, made original crosses in 1954. The Poland breeding program was started with three hardy apple cultivars ('Antonovka', 'Longfield' and 'Glogerowka') crossed with M.9 and M.4 and about 3,000-hybrid



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