



Ecosystem Insights

Advice and Opinions for Organic, Biodynamic, & Holistic Orchardists

Starting an Orchard – Grafting Pt 2

12 February 2016

In the last newsletter (Feb 10), we discussed some of the basics of choosing a rootstock. In this issue we'll focus on the larger rootstocks. As discussed, larger rootstocks have their downside. Principally, that they lack precocity and don't always produce the highest quality fruit because of more interior canopy shade (less interior sunlight and photosynthesis), greater wood to fruit ratios, and reduced air movement. They also grow larger trees that can be more difficult to manage because they are taller and require more attention from your pruning, spraying, thinning, and harvesting practices. These downsides can be overcome, but they are considerations that should be understood before planting a semi-standard or semi-dwarf orchard.

That said, they also have their advantages. Larger trees are sturdier, more deeply rooted, more resistant to drought, more resistant to wet soils (to some degree), and may produce higher quality fruit (from a nutrient density perspective) precisely because they are more deeply rooted and have a greater and more efficient photosynthetic capacity. You may also be able to get away without a trellis or deer fence (though I wouldn't ever recommend planting a tree without a deer fence or some sort). There's always the aesthetics of larger trees providing a more bucolic backdrop to your farm – never discount aesthetics.

On we go.....

ANTONOVKA – Some nurseries offer trees almost exclusively on this rootstock because it is such hardy stock. This is seedling size rootstock of Russian origin. It will give you a very large tree that is extremely cold hardy, so you'll need to plan your orchard with trees planted 20-30 feet apart. In fact, orchards in the early 20th century were planted on 54' x 54' and 40' x 40' spacings to accommodate the large seedling canopy. There are some references to this tree getting only 12-15 feet in height, though my experience is that this all depends on the variety and growing climate. Be prepared for a large tree! Seedling in general, and Antonovka specifically, will give you a very sturdy, long-lived orchard – just take into account it could easily be 10 years before you reach any meaningful production.

BUD 118 – Also of Russian origin, Bud.118 is the first of the larger rootstocks I can actually recommend with great confidence. It still grows a large tree, but with some more precocity (earlier bearing). Like Antonovka, it is very cold-hardy and great for cold sites where growers may need to grow a canopy up and out of the frost zone (though it isn't frost resistant per se). This is more cold-hardy than our next rootstock, but like all of these larger seedling-type trees, be prepared for an 8-10 year wait for full production.

MM.111 – Of English origin, the MM.111 is one of the more vigorous semi-dwarf rootstocks, producing a tree about 85 to 100% the size of seedling (see above). It is resistant to woolly apple aphid and tolerant to fire blight and root rots making it great for sites with less, well-drained soils and/or replant sites. It is fairly winter hardy, but produces moderate amounts of burr knots and root suckers. This rootstock produces a free-standing tree that does not need support – though a little support in the early years never hurts. It is more precocious than seedling and is fairly productive when trees are mature. This is a great rootstock for developing a free-standing orchard, but has largely fallen out favor as high density orchards have become more popular (for obvious reasons).

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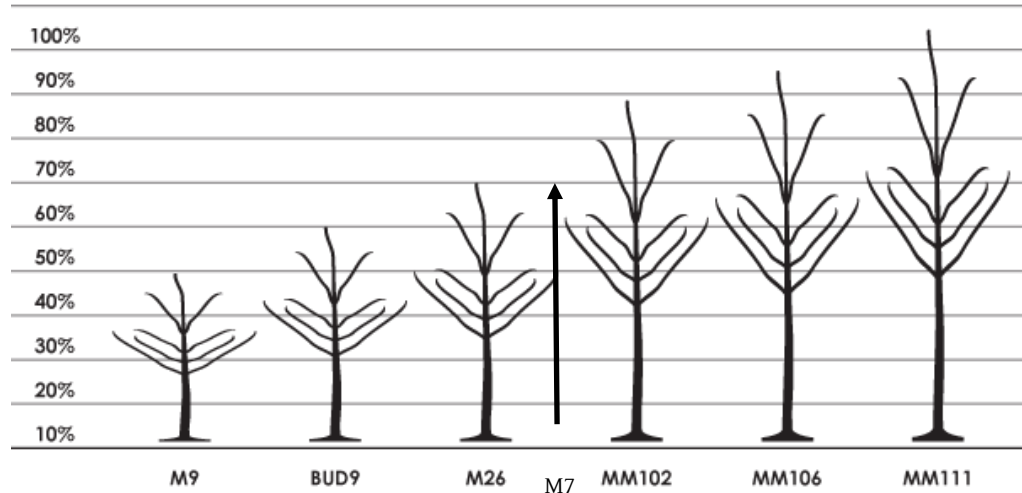


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Starting an Orchard — Larger Rootstocks

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MM.106 – MM.106 is a semi-dwarf rootstock, producing a tree about 60% the size of seedling. It is quite precocious and productive and usually does not need tree support – though a little support in the early years never hurts. It is resistant to wooly apple aphid, but is highly susceptible to crown and root rots, susceptible to fire blight, and is hypersensitive to tomato



ring spot virus – making it a horrible choice for wet and replant sites. This rootstock has been grown widely throughout North America, though it's obvious and well-known issues have kind of shown it the door except for home gardens with well-drained soils.

M.7 – This rootstock has played a much greater role (than the others above) in recent pomological history and the development of the now-standard concept of central leader trees. They produce a semi-dwarf tree about 60 to 70% as big as seedling. Trees are moderately precocious, but may lean with some cultivars and usually require trunk support (a single pole) over their entire lifespan. They also tend to produce many rootsuckers that can be a bit of a management headache. I've worked with M7 a lot over the years and can say it is a very nice rootstock that is productive and easy to manage.

M.26 – I am putting M.26 here, not because it produces a large tree, but rather because it provides a great transitional point to the next section – dwarfing rootstocks and high-density orchards. Traditionally considered a dwarf rootstock, it is undeniably one of the more vigorous dwarfing rootstocks. It is precocious and very productive, produces many burrknots, and is susceptible to crown rot and fire blight. The original strain was laden with viruses (aka 'dirty') and so was subsequently cleaned up and released as M26 NAKB (out of the Netherlands). In general, virus-free rootstocks are slightly more vigorous than ones that contains viruses. Like MM.106, it has fallen out of favor due to collar rot issues and the potential for borer infestation due to the high propensity for burr knots (borers love 'em!).

You can tell from my not-so-glowing assessments of the larger rootstocks that there are only a few that I can actually recommend (Bud.118 and M.7). That's not to say the others don't have a place in 21st century orchards, but rather that the grower – especially novices – need to fully understand what they're getting into. And while larger trees invoke certain bucolic yearnings, they are won't be anywhere nearly as productive as trees produced on dwarfing rootstocks.

There are several great local nurseries that I work with including [Cummins Nursery](#) (Ithaca, NY) and [Wafler's Nursery](#) (Wolcott, NY). As well, [Fedco](#) and [Saint Lawrence Nurseries](#) do a great job and offer a wide selection of varieties on larger rootstocks. They are all excellent nurseries with a great selections for growers of all fruit types.

REMINDER: All newsletters are archived [HERE](#) at the [Know Your Roots](#) web site.

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