

## Selecting rootstocks



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As avocado nurserymen, we're often asked what specific avocado root-stocks we recommend. That's going to be a tougher question all the time, and that's because there is a large assortment of semi-experimental rootstocks, all vying to be *Phytophthora cinnamomi*-tolerant, retain a good color and good health, tolerate salts, and support large crops of today's popular fruiting varieties.

Our first response to such a question is to focus on the idea that, whatever you do, go for clonal rootstocks. The principle behind this idea is quite simple. In order to maximize yield, one needs tree uniformity. One of the biggest unseen predators of avocado yields is a few stunted trees in some of the orchard, even if the balance of the planting has a full well-developed canopy. The developed part, of course, carries the whole. Add to this tenet the fact that maximum tree uniformity is fostered by uniform conditions and identical trees, and it is clear that clonally-stocked trees are preferable. A little sharp pencil work will underline the point.

Now! What rootstock shall we recommend? Our response becomes a bit less definite, since it depends in large part upon the grove conditions. Today, we're trying to find rootstocks that do special things for us. One of these, for instance, is the Borchard. This stock was originally selected because it was the sole surviving healthy type in a nursery that failed because of intense chlorosis. The Borchard was first cloned and grafted to Hass about seven years ago, and it has been tried in limited numbers in several locations in which chlorosis is a problem. Reports from the field have been surprisingly positive. The most dramatic response came from a large and respected avocado company not known for fuzzy thinking or naive and expensive experiments. That

company recently ordered nearly one thousand of these Borchards with Hass tops. They are performing well in areas where survivability was previously a problem due to limey conditions. I feel confident in saying therefore, that the Borchard is a successful Special Purpose rootstock.

Borchard, incidentally, has shown up well in initial salt-tolerance trials. It has some competition in this arena, however. Among the competitors are the *Phytophthora*-tolerant candidates, G755 and Toro Canyon.

For the most part, of course, growers are not principally interested in rootstocks selected specially for salt tolerance or non-yellowing color; they're looking for *Phytophthora*-tolerance, or resistance to the *effects* of *Phytophthora* (i.e., root rot). The question as to which of these stocks is superior for this purpose is easy to pose and *very* tricky to try to answer. As most readers already know, Duke #7 and G6 clonal rootstocks have long been preferred for this purpose, and in many cases have given satisfactory performance. The results have been variable, however; and so the search continues actively for superior replacements of these stocks. In this article, I am attempting to express where we are in this search from the *perspective of an interested commercial nurseryman*.

First, let me say that the Duke #7 has to remain, for now, the conservative's best choice in areas in which it has performed well. A few years ago, the story got out that G6 was superior to it. Our reports from the field, however, reveal few growers who prefer it to Duke #7 and a great many who prefer Duke #7. In any new orchard, therefore, Duke #7 in my opinion remains a viable contender for at least half the trees that will be planted. The status of G6, I think, is in doubt.

This brings me to another general consideration. Should one, as a grower, plant trees on a single preferred rootstock? Or should one mix them up? I say mix them up—into at least two kinds, planted on such a pattern as to either choose the best performing when thinning the orchard, or leaving two kinds alternately spaced in the permanent spacing.

Now *that's* a non-answer for you! *Question*: Does one do A or B? *Answer*: One does A or B after thinking about it.

Consider two things, though. First, we don't know which of the *Phytophthora*-tolerant stocks is superior as a fruit producer, so we would like to buy a little time to decide. The second consideration is that it is always safest to have two clones in your permanent planting. This is because one of them may succumb to some future ailment quicker than the other, in which case one would prefer to have at least *half* his trees unaffected.

So much for generalities. What most people want to know about root-stocks is, which ones are most tolerant of *Phytophthora* and at the same time grow properly and support large crops? The answers, of course, are not yet in. Dr. Michael Coffey has put together some promising variety plots in *Phytophthora*-infested areas, but these are new and still on Ridomil®. It will be a while before these plots give us the answers we are seeking. In the meantime, I am willing to *guess* on some of the rootstock candidates I know best, and place my guesses on a chart that considers multiple features of rootstocks. Here goes:

**ONE MAN'S OPINION—EVALUATION OF CLONAL ROOTSTOCKS  
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	<i>Phytophthora cinnamomi</i> Tolerance	Dark Green Color	Salt Tolerance	Tree Size	Cropping
G 755	5	3	4 (?)	4	4(?)
G 1033	?	?	4(?)	?	?
Thomas	4	4 (?)	?	5	4(?)
Toro Canyon	4	4	4	4	4
Parida Par	4	3	?	4	4(?)
Parida 1	5	5	?	3	4(?)
Duke #7	3	5	4	4	4
G6 Par	2	4	2	4	4
Borchard	1	5	4 (?)	4	?

Graded 1—5 (1 is poorest, or smallest; 5 is best, or largest).

Now! I've just done a reckless thing in writing this chart. If you doubt it, just ask a scientist. Somebody has to guess, however, because growers have to guess — and they want someone else's (*anybody* else's, I guess) opinion.

There are apt to be some objections to some of these guesses, too. Pi has performed as well as any in *very limited* trials where Ridomil® has *not* been used. In its most extensive planting, where Ridomil® *has* been used, it has not performed so well statistically. In the latter case, its performance may be related to the fact that it was planted with undue frequency, on some of the poorer soils in the plot.

One question that keeps cropping up is that of the three distinct clones (A, B, and C) of G755. Which is preferred? Well, none is preferred, since we don't know enough. C has been the most mentioned only because it was initially seen as very vigorous in its ungrafted state. That seems irrelevant to me; I want to know how it performs in a grafted state in an infested location. It is my opinion that any of the three clones does well under these conditions.

The answers are certainly not in regarding which rootstocks are best for *Phytophthora*-tolerance. Here, you have one man's unsystematically formed opinion. If you want to see for yourself how these opinions were formed, call Brokaw Nursery. If we have enough response, we'll set up a tour to try and justify our prejudices and opinions. Meantime, Happy (anxious?) Guessing!