

Avocado Breeding—Progress Report

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Variety improvement. Vince Weng has helped Gray Martin set up a computerized record-keeping system for all our future avocado selections. They believe that this will make the keeping and especially the retrieval of our data significantly more efficient. I have somewhat reluctantly gone along — "you can't teach an old dog new tricks" — trusting in their expertise.

In the past year, 155 new seedlings graded sufficiently high in both the field and laboratory analyses to merit entering into the computer. Of these, about one-third are more interesting at this point, of which 30 have been topworked in Field 46 with the much appreciated assistance of Larry Rose and other members of the Nurserymen's Section (Oliver Atkins and his propagator, Steve Howerzyl, and Steve Maddock). All these and earlier selections will be carefully studied in future months.

About 3,500 seedlings were planted out spring, 1989, mostly frost replacements, most of them on the Clinton Coghill property. But unfortunately, that property has now been sold. We are in earnest discussion with the new owners to try to keep that major plot. The Joe Filipe seedlings have been topworked in good part, again unfortunately. The Bob Lamb major planting has excellent maintenance, as have a number of smaller-scale cooperators. Set has generally been delayed by cold winters and last April's heat.

Breeding for Phytophthora Resistance. We have largely completed the grafting over of our isolation plots to new and more promising breeding parents. The 'Thomas' is emphasized. This grafting, plus the weather extremes, means that only about 550 seeds were available this fall and winter to turn over to Fred Guillemet and John Menge. We have added an additional isolation plot.

Hass and H670. After 6½ years, we were forced to terminate a major comparison of the two, on four different rootstocks. Over that truncated length of time, there was no significant advantage for our virus-free H670. We do not know if this was due to viruses moving up from our rootstocks. After the April 1989 heat, 'H670' set significantly better at the South Coast Field Station and reportedly on at least one private property. Of our four rootstocks, clonal 'Duke 7' averaged highest 'Hass' set.

Drought tolerance. With increasing water pressures and costs, we are trying to import apparently drought-hardy rootstocks from Guatemala, for testing in California. Unfortunately, severe USDA methyl bromide treatment that is mandated to safeguard us against pests and diseases has so far killed all of our budwood. We are working on solutions to the problem.

The 'Gwen' variety. We are still ferreting out its strengths and its weaknesses. It continues to be a usually remarkably productive producer of high-quality fruit. A serious concern to us has been tree height in some situations; we are trying out different suggestions for economical height control. We are determining precise indications of 'Gwen' fruit maturity.

Tree dwarfing. With our major breeding aim of more top-quality fruit on smaller trees, we are also looking at the 'Colin V33' as a possible dwarfing interstock. This could conceivably achieve smaller, heavier-bearing commercial trees in one step. Like our height-control studies, this experiment is just beginning.

Avocado propagation. We need improved methods for our own breeding needs, and these should also be of value to the industry generally. Our first step was the UC Avocado Propagation Bulletin, now out, and which I hope will be useful to many of you. We have begun a major experiment to compare results from three different topworking approaches: spring bark graft; summer sucker graft; and delayed, next-spring sucker graft. Gray Martin is working out successful methods for summer budding outdoors.

Conclusion

Avocado breeding, by its nature, requires many years for commercial testing of new selections. Possibly, we now have the selections needed to significantly improve the California avocado variety choice year 'round, plus better *Phytophthora-resistant* rootstocks; more likely, our best selections will be in the years immediately ahead.