

VARIATION IN GRAFT COMPATIBILITY OF *ANNONA GLABRA* AS A ROOTSTOCK

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Additional index words. Pond apple; *A. diversifolia*, ilama; *A. reticulata*, custard apple; *A. squamosa*, sugar apple, anón; *A. cherimola*, cherimoya; atemoya; scion, graft union, incompatibility.

Abstract. Most annonas grown in Florida are susceptible to root diseases and cannot grow in poorly drained soils. Having a rootstock that could tolerate flooding would greatly expand the area in which annonas could be grown in Florida. *Annona glabra* can grow permanently in several feet of water, but has been inconsistent in its ability to form healthy graft unions with other annonas. Seeds from two adjoining *A. glabra* trees were planted in separate groups, labeled "North" and "South". Twenty-four seedlings from each tree were grafted with scions of *A. diversifolia* var. 'Genova Red'. All the grafts took and grew. After two months the 24 grafts on "South" seedlings yellowed; within eight months they were all dead. All 24 grafts on "North" seedlings grew vigorously.

Annona glabra prefers to grow along canal banks and in low-lying areas prone to flooding. It appears that it would make a good rootstock for growing other annonas in low areas.

In Boynton Beach, Florida, we have been experimenting with growing superior *Annona* species and hybrids on *A. glabra* rootstocks since 1980. Before 1997, we had not been keeping track of which exact trees were the sources of our *A. glabra* seed. This added confusion to our results, even with large batches that we were planning to sell. With the mix of *A. glabra* seedlings we were using, we observed that some clones of *A. reticulata* would not grow at all on *A. glabra*, while other clones grew vigorously. Some *A. cherimola* grow vigorously on *A. glabra*. As of yet, we have not been able to grow *A. squamosa* at all on *A. glabra*. Most annonas that have grown vigorously on *A. glabra* have not been productive; exceptions are *A. muricata*, *A. diversifolia*, and some atemoya × *A. reticulata* hybrids.

Four plants of *A. diversifolia* var. 'Pajapita' grew well on *A. glabra* and produced heavily; however, above the graft unions these trees slowly developed a black corky infection, which killed them after seven years in the field. For the last three years we have grafted *A. diversifolia* 12-18 inches (33-45cm.) above the soil level and, so far, have not seen this problem again.

In 1996, we observed extreme variability in vigor in a group of approximately 100 *A. diversifolia* we had grafted onto *A. glabra* seedlings. We decided to see if our rootstocks could be causing the variability. We collected seed from two fruiting *A. glabra* trees at the nursery, which we identified as "North"

and "South". Approximately 100 seedlings from each tree were grafted with various *Annona* species and hybrids. Originally we did this work in the nursery for our own information—publishing was an afterthought, so we did not keep detailed records of the results. However, we were able to see that most of the grafts grew better on the "North" seedlings and after two years of observation all trees on the "North" seedlings appeared healthier, with greener foliage.

With the scion *A. diversifolia* var. 'Genova Red', the results were striking and memorable. The 24 grafts of 'Genova Red' on "South" seedlings all lived and grew but began to yellow and decline after two months, and were dead within eight months after grafting. The 'Genova Red' grafts on 24 seedlings from the "North" tree remained green and grew vigorously, with no sign of graft incompatibility, and were sold after one year.

These results seem especially surprising when one knows the origin of both the "North" and "South" seed stock trees. They were both grown from seeds collected along a 100 foot stand of trees on a canal bank in Boynton Beach, Palm Beach County, Florida.

We have heard reports from Laymond Hardy in West Palm Beach that he has been able to grow 'Gefner' atemoya on some clones of *A. glabra* rootstock, but not on many other clones. Richard Wilson at Excalibur Nursery in Lantana, Palm Beach County, Florida, for the past three years has been grafting and selling several annonas on *A. glabra* seedlings which are from one tree in Delray Beach; the scions include *A. muricata* var. 'Wilson Seedless', and the atemoyas 'Bradley', 'Gefner', and 'Priestley'. Wilson also grafted a few *A. squamosa* onto *A. glabra*; about one graft in twenty took, grew and fruited during one year before he sold them.

Other experimenters' results have also differed from ours and from each other's results, presumably because the scion varieties and seed batches tried were different (Bezerra and Lederman, 1996; Sanewski, 1988; Vidal, 1993). Our results and these reports make it evident that further research on using *A. glabra* as a rootstock should take into account not only which variety is the scion, but also which tree is the source of the *A. glabra* seedlings.

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