An Update on the 2002 NC-140 Apple Rootstock Trial, 2009 Results

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As part of the 2002 NC-140 Apple Rootstock Trial, a planting of Buckeye Gala on 11 rootstocks was established at the University of Massachusetts Cold Spring Orchard Research & Education Center in Belchertown.

Trees are growing well in this irrigated block, but fruit set was lighter than expected prior to 2007 (average yields in 2006 of only 3 kg per tree with 157-g average fruit size). In 2007, fruit set was good and the trees performed well (average yields in 2007 of 38 kg per tree with 186-g average fruit size). In 2008, fruit set was again less than expected (average yields in 2008 of 12 kg per tree with 175-g average fruit size). In 2009, trees performed well, with average yields of 57 kg (about 3 bushels) per tree with 162-g average fruit size (between 96 and 120 count). Although yields suggest a biennial-bearing pattern, trees have bloomed well in the last two off seasons. The planting includes seven replications in a randomized-complete-block design. Means from 2009 (8th growing season) are included in Table 1.

After the 2009 growing season, trees with the largest trunk cross-sectional area (TCA) were on PiAu51-4, followed in decreasing size by those on P.14, PiAu51-11, M.26 NAKB, Supporter 4, M.26 EMLA, M.9 Burgmer 756, M.9 NAKBT337, M.9 Nic 29, B.9 (North America), and B.9 (Europe) (Table 1 and Figure 1). Clearly, P.14 and PiAu 51-11 could be consid-
Figure 1. Relative tree size of Buckeye Gala as affected by rootstock in the 2002 NC-140 Apple Rootstock Trial at the UMass Cold Spring Orchard Research & Education Center, Belchertown, MA.

Trunk cross-sectional area (2009)

Yield efficiency adjust yield based on tree size, giving some estimate of how the tree might perform on a per-acre basis. Generally, yield efficiency is inversely related to tree size, with small trees being much more efficient than large trees. In 2009, yield efficiency was greatest for trees on B.9 (North America), M.9 Burgmer 756, and M.9 NAKBT337 and least for trees on PiAu51-4 (Table 1). Cumulatively (2004-09), B.9 (North America) resulted in the greatest yield efficiency, while PiAu51-4 resulted in the lowest (Table 1, Figure 2).

Fruit size in 2009 was good for trees on all rootstocks, averaging from 143 to 177g, with no significant differences among trees on the different rootstocks. Average fruit size over the fruiting life of the planting (2004-09) was largest from trees on M.9 NAKBT337 and those on M.9 Nic 29 and smallest from trees on B.9 (Europe).

This trial will continue for two more years. At this point, there appears to be little value to either PiAu rootstock, Supporter 4, or P.14.
Figure 2. Relative yield efficiency of Buckeye Gala as affected by rootstock in the 2002 NC-140 Apple Rootstock Trial at the UMass Cold Spring Orchard Research & Education Center, Belchertown, MA.