An Update on the 1994 NC-140 Apple Rootstock Trial

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The NC-140 Technical Committee is comprised of about 75 university and government pomologists from the United States, Canada, and Mexico. During the more than 20 years of this group's existence, several trials have been established, managed, and reported in a cooperative manner. In 1994, a trial was established at 25 locations throughout the United States and Canada, and it is managed by Rich Marini from Virginia Tech. Each

Table 1. Trunk cross-sectional area, yield, yield efficiency, and fruit weight in 1996 of Gala on several rootstocks in the 1994 NC-140 Apple Rootstock Trial in Massachusetts.[z]

Rootstock	Trunk cross-sectional area (in^2)	Yield per tree (lbs)	Yield efficiency (lbs/in^2 TCA)	Fruit weight (average box count)
M.9 EMLA	2.1 def	4.8 cdef	2.6 bcdef	98 bcd
M.26 EMLA	2.8 bc	2.2 efg	0.9 fg	114 de
M.27 EMLA	0.7 i	1.3 fg	1.7 defg	107 bcde
M.9 RN29	2.5 cd	5.7 bcde	2.1 cdefg	96 bcd
M.9 Pajam 1	2.4 de	6.4 bcd	2.8 bcdef	114 de
M.9 Pajam 2	3.0 ab	9.0 b	3.1 bcde	88 b
B.9	1.9 ef	4.2 defg	2.6 bcdef	105 bcd
B.491	0.9 hi	2.6 defg	2.7 bcdef	129 e
O.3	2.0 def	5.7 bcde	2.8 bcdef	112 de
V.1	3.3 a	8.1 bc	2.6 bcdef	100 bcd
P.2	2.1 def	0.4 g	0.1 g	--
P.16	1.2 gh	2.0 efg	1.7 defg	112 cde
Mark	2.3 de	9.2 b	4.3 bc	105 bcde
P.22	0.8 hi	3.5 defg	4.5 b	109 cde
B.469	1.2 gh	4.8 cdef	3.8 bcd	110 cde
M.9 Fleuren 56	1.6 fg	2.9 defg	2.0 defg	104 bcd
M.9 NAKBT337	1.9 ef	3.7 defg	2.1 cdefg	97 bcd
Delicious/M.26 EMLA[y]	1.8 ef	1.3 fg	0.9 efg	61 a
Liberty/M.9 NAKBT337[y]	1.9 ef	13.0 a	7.2 a	96 bcd
Fuji/Mark[y]	2.2 de	8.6 bc	3.7 bcd	95 bc

[z] Means within columns not followed by the same letter are significantly different at odds of 19 to 1.
[y] Delicious, Liberty, and Fuji are pollenizers within each replication.

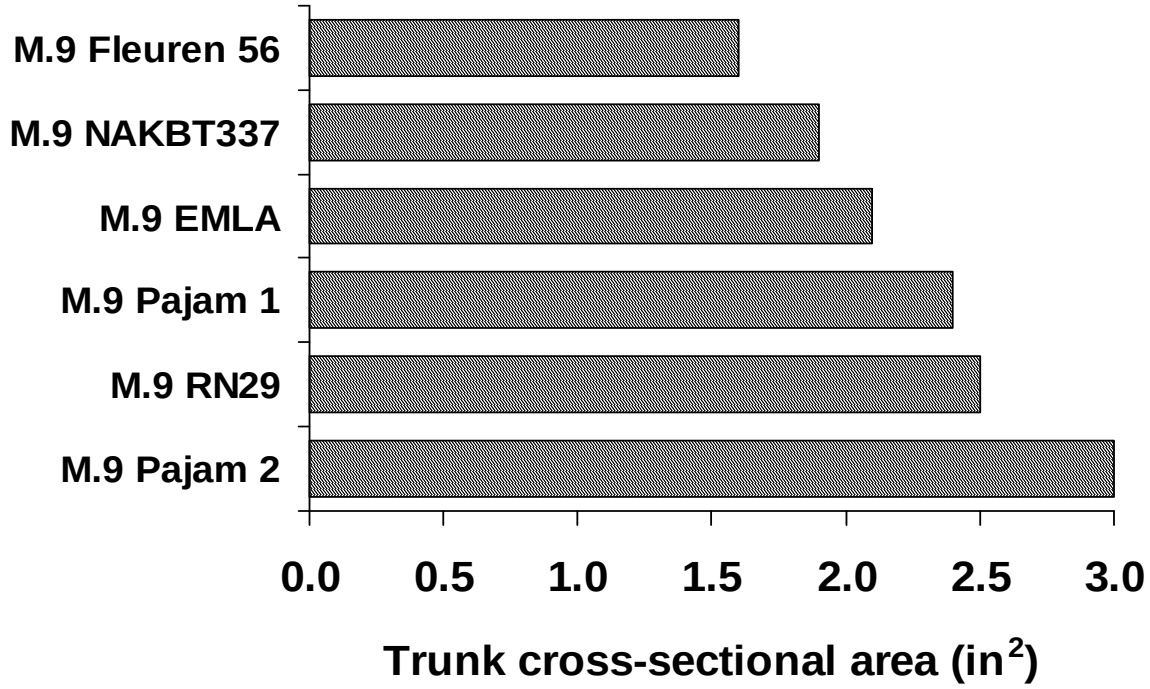

Figure 1. Trunk cross-sectional area in 1996 of Gala on six clones of M.9 in the 1994 NC-140 Apple Rootstock Trial in Massachusetts.

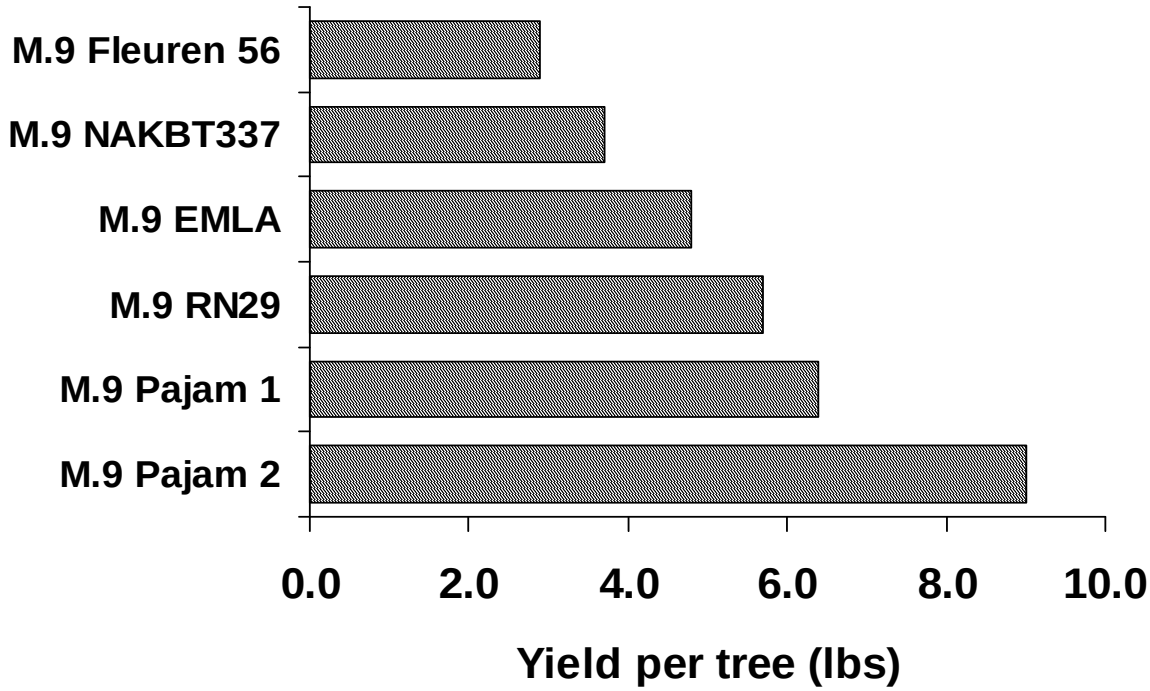

Figure 2. Yield per tree in 1996 of Gala on six clones of M.9 in the 1994 NC-140 Apple Rootstock Trial in Massachusetts.

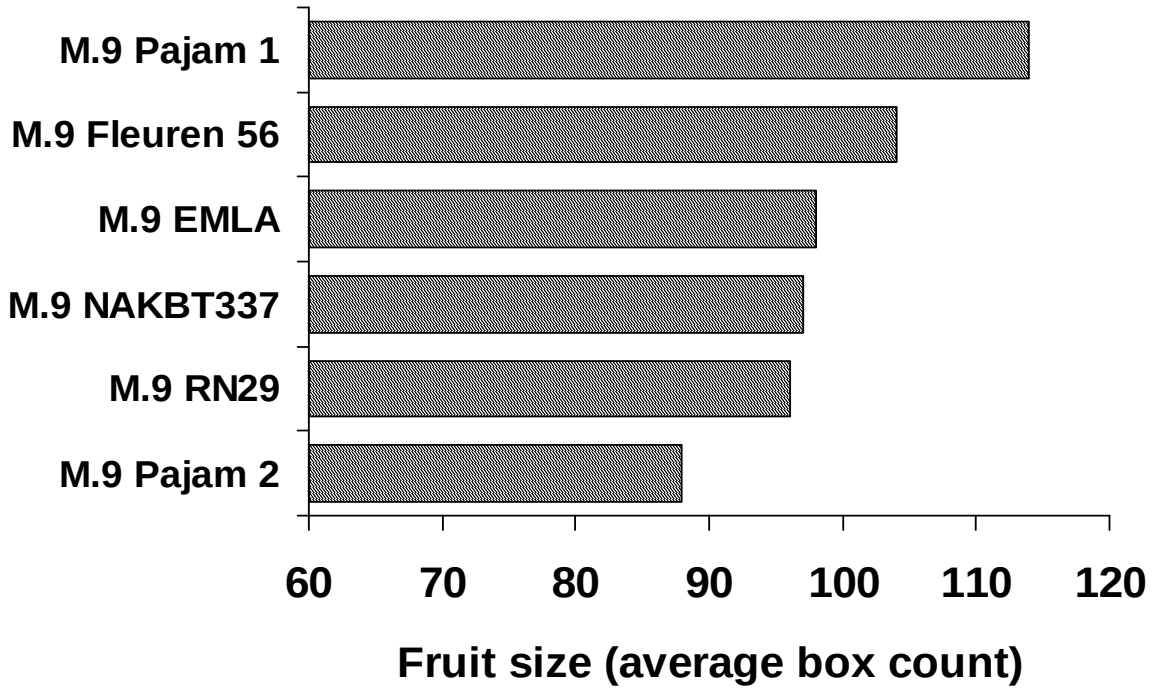

Figure 3. Fruit size in 1996 of Gala on six clones of M.9 in the 1994 NC-140 Apple Rootstock Trial in Massachusetts.

plating includes Gala on 17 dwarf rootstocks, replicated 10 times. The Massachusetts planting is located in Belchertown at the University of Massachusetts Horticultural Research Center. This article will give a brief update on tree performance through the third growing season.

After three growing seasons, the largest Gala trees were on V.1, M.9 Pajam 2, and M.26 EMLA (Table 1). The smallest trees were on P.22, B.491, and M.27 EMLA. The range in trunk cross-sectional area from smallest to largest was more than four fold. Yield per tree in 1996 (Table 1) was greatest for trees on V.1, M.9 Pajam 2, and Mark (ignoring the pollenizers) and least for trees on M.26 EMLA, P.16, M.27 EMLA, and P.2. Relating yield to tree size, yield efficiency (Table 1) was greatest for trees on Mark and P.22 (ignoring the pollenizers) and smallest for trees on M.26 EMLA and P.2. Fruit size (Table 1) was greatest for trees on M.9 Pajam 2 and least for trees on M.26 EMLA, M.9 Pajam 1, O.3, and B.491.

Among these 17 rootstocks, it is particularly interesting to look at the differences among the six M.9 clones in the study. The range was more than expected. Trees on M.9 Pajam 2 were the largest of the M.9-rooted trees, nearly double the trunk cross-sectional area of trees on M.9 Fleuren 56 (Figure 1). M.9 EMLA resulted in a tree intermediate in the range. Yield followed a similar pattern, with trees on M.9 Pajam 2 producing nearly three times the fruit of trees on M.9 Fleuren 56 (Figure 2). Trees on M.9 Pajam 2 produced the largest fruit, averaging between 80 count and 96 count (Figure 3). Fruit from trees on M.9 Pajam 1, on the other hand averaged only a bit larger that 120 count.

Clearly these data are only preliminary. A few more years will be required to begin solid evaluation of these rootstocks, but it is interesting to observe significant differences in these young trees.