

# Comparing McIntosh Apple Trees on Geneva and Supporter Rootstocks: An Update on the 1999 NC-140 Semidwarf Apple Rootstock Trial

Wesley R. Autio, James S. Krupa, and Jon M. Clements

*Department of Plant, Soil, & Insect Sciences, University of Massachusetts*

As part of the 1999 NC-140 Semidwarf Apple Rootstock Trial, a planting of McIntosh on six rootstocks was established at the University of Massachusetts Cold Spring Orchard Research & Education Center. Trees in this trial have performed reasonable well (average 2008 yield of 3.2 bushels per tree with 174-g average fruit size); however, leaning has been an issue with some. No staking was provided until a tree leaned, since it was hoped that these semidwarf trees would be fully self supporting. The planting included six replications in a randomized-complete-block design. Means from 2008 (10<sup>th</sup> and final growing season) are reported here.

At the end of the 2008 season, largest trees were on M.7 EMLA, Supporter 4, and G.30N, all significantly larger than those on M.26 EMLA, CG.4814, and CG.7707 (Table 1). Greatest cumulative (1999-2008) root suckering was observed from trees on M.7 EMLA (Table 5). We all know M.7 to produce many suckers, but we were surprised that G.30 also produced quite a few suckers as well.

M.7 EMLA resulted in the greater yield per tree in 2008 than did M.26 EMLA, CG.4814, and CG.7707, with trees on G.30N and Supporter 4 yielding intermediately (Table 2). Cumulatively (2001-08), trees on G.30N yielded more than those on CG.4814,

CG.7707, or M.26 EMLA, with trees on M.7 EMLA and Supporter 4 yielding intermediately and similar to both extremes (Table 2).

In 2008, trees on CG.4814 and those on CG.7707 were more yield efficient than those on M.26 EMLA, M.7 EMLA, or Supporter 4 (Table 2). Cumulatively (2004-08), CG.4814 resulted in the most efficient trees, followed by those on CG.7707, M.26 EMLA, and G.30N (Table 2). Trees on M.7 EMLA and Supporter 4 were the least yield efficient.

Largest fruit in 2008 were harvested from trees on CG.4814, M.7 EMLA, and Supporter 4, and the small-

Table 1. Trunk cross-sectional area, tree height, canopy spread, and root suckering in 2008 of McIntosh trees on several rootstocks in the Massachusetts planting of the 1999 NC-140 Semidwarf Apple Rootstock Trial.<sup>z</sup>

Rootstock	Trunk cross-sectional area (cm <sup>2</sup> )	Tree height (m)	Average canopy spread (m)	Root suckers (no./tree, 1999-2008)
CG.4814	45 b	2.7 b	3.7 b	34.5 b
CG.7707	54 b	2.6 b	3.6 b	8.2 b
G.30N	105 a	3.3 ab	4.3 ab	30.5 b
M.26 EMLA	50 b	2.9 ab	3.6 b	3.5 b
M.7 EMLA	121 a	3.5 a	4.6 a	104.3 a
Supporter 4	101 a	3.4 a	4.1 ab	18.4 b

<sup>z</sup> Means within columns not followed by a common letter are significantly different at odds of 19 to 1.

Table 2. Yield, yield efficiency, and fruit weight in 2008 of McIntosh trees on several rootstocks in the Massachusetts planting of the 1999 NC-140 Semidwarf Apple Rootstock Trial.<sup>z</sup>

Rootstock	Yield per tree (kg)		Yield efficiency (kg/cm <sup>2</sup> TCA)		Fruit weight (g)	
	2008	Cumulative (2001-08)	2008	Cumulative (2001-08)	2008	Average (2001-08)
	CG.4814	51 cd	225 bc	1.1 a	5.0 a	194 a
CG.7707	56 bc	239 bc	1.1 a	4.5 ab	182 ab	168 ab
G.30N	78 ab	334 a	0.8 ab	3.2 cd	184 ab	167 ab
M.26 EMLA	33 d	182 c	0.7 b	3.6 bc	161 b	165 b
M.7 EMLA	80 a	290 ab	0.7 b	2.5 d	194 a	175 a
Supporter 4	59 abc	258 ab	0.6 b	2.7 d	193 a	172 ab

<sup>z</sup> Means within columns not followed by a common letter are significantly different at odds of 19 to 1.

est came from those on M.26 EMLA (Table 2). Others resulted in intermediate size. On average (2001-08), largest fruit were from trees on CG.4814 and M.7 EMLA, and the smallest were from trees on M.26 EMLA (Table 2).

In this trial, CG.4814, CG.7707, and M.26 EMLA

all are better categorized as large dwarfs. Among the two new semidwarfs, G.30 stood out in the early years of this planting, producing high early yields much more like a dwarf tree. After 10 years, it is settling down into a yield pattern more similar to M.7 EMLA than dwarf rootstocks.

