CG.4814, CG.7707, G.30, and Supporter 4 versus M.26 EMLA and M.7 EMLA in the 1999 NC-140 Semidwarf Apple Rootstock Trial

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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 in 1999. The planting included six replications in a randomized-complete-block design. This trial was planted in several locations throughout the United States and Canada, but only Massachusetts data are reported here. Means from 2005 (seventh growing season) and cumulative means are included in Table 1 and

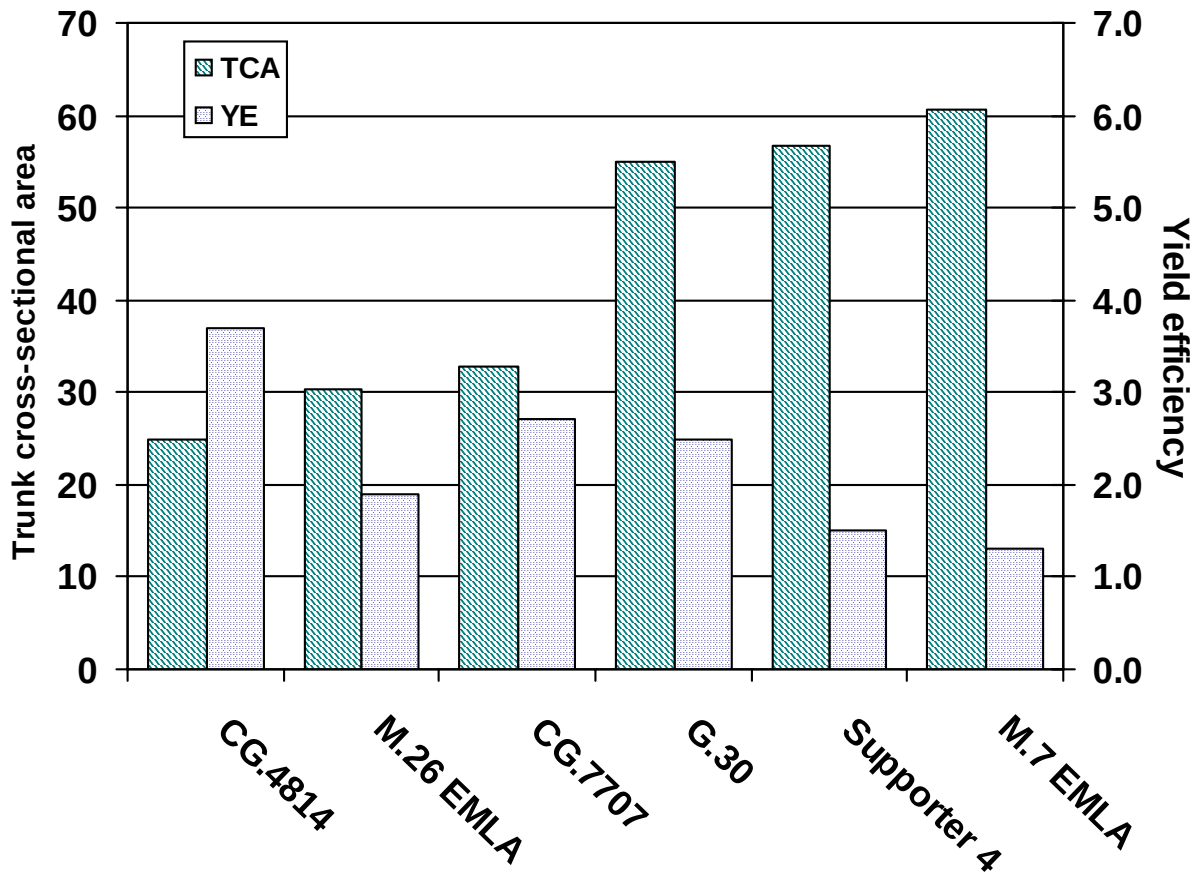

Figure 1. Trunk cross-sectional area and cumulative yield efficiency of McIntosh trees on several rootstocks in the 1999 NC-140 Semidwarf Apple Rootstock Trial (after seven growing seasons).

Table 1. Trunk cross-sectional area, suckering, yield, yield efficiency, and fruit weight in 2005 of McIntosh trees on several rootstocks in the Massachusetts planting of the 1999 NC-140 Semidwarf Apple Rootstock Trial.[z]

Rootstock	Trunk cross-sectional area (cm^2)	Root suckers (no./tree, 1999-2005)	Yield per tree (kg)		Yield efficiency (kg/cm^2 TCA)		Fruit weight (g)	
			2005	Cumulative (2001-05)	2005	Cumulative (2001-05)	2005	Average (2001-05)
CG.4814	24.8 b	16.5 b	32.7 b	91 b	1.32 a	3.68 a	161 a	167 a
CG.7707	32.9 b	3.0 b	39.4 ab	89 bc	1.21 ab	2.70 b	151 ab	169 a
G.30	54.9 a	6.3 b	53.6 a	134 a	0.99 abc	2.50 b	142 b	159 a
M.26 EMLA	30.2 b	0.0 b	25.6 b	57 c	0.86 bcd	1.90 bc	145 b	162 a
M.7 EMLA	60.6 a	35.8 a	28.0 b	78 bc	0.48 d	1.31 c	155 ab	167 a
Supporter 4	56.7 a	4.0 b	36.6 ab	83 bc	0.67 cd	1.53 c	147 b	162 a

[z] Means within column not followed by the same letter are significantly different at odds of 19 to 1.

Figure 1.

Rootstocks in this trial include G.30 from the Cornell-Geneva Apple Rootstock Breeding Program (a cooperative effort between Cornell University and the United States Department of Agriculture). CG.4814 and CG.7707 are as yet unnamed rootstocks from the same program. Supporter 4 was released from the Institut für Obstforschung Dresden-Pillnitz

At the end of the 2005 season, largest trees were on M.7 EMLA, Supporter 4, and G.30N, and the smallest were on M.26 EMLA, CG.4814, and CG.7707 (Figure 1, Table 1).

Greatest cumulative (1999-2005) root suckering was observed from trees on M.7 EMLA (Table 1). The rest produced statistically similar numbers of root suckers, but CG.4814 seemed to be prone to greater suckering.

G.30N resulted in the most yield per tree in 2005, significantly more than did CG.4814, M.26 EMLA, and M.7 EMLA. CG.7707 and Supporter 4 resulted in intermediate yields (Table 1). Cumulatively (2001-05), trees on G.30 yielded the most, and trees on M.26 EMLA yielded the least.

Trees on CG.4814, CG.7707, and G.30N were the most yield efficient in 2005, and those on M.7 EMLA were the least yield efficient (Table 1). Trees on CG.4814 were the most efficient cumulatively (2001-05), and those on M.7 EMLA and Supporter 4 were the least yield efficient. Although not the most efficient, trees on G.30 and CG.7707 were significantly more yield efficient than those on M.7 EMLA or Supporter 4.

Average fruit weight (2001-05) was not affected by rootstock, but in 2005, trees on CG.4814 produced the largest fruit, and those on G.30N, M.26 EMLA, and Supporter 4 produced the smallest (Table 1).

Trees have not been supported in this trial, at least until they begin to lean significantly. To determine the need for support, we measured tree lean at the end of the season. Tree lean (data not shown) ranged from 6° for trees on M.7 EMLA to 21° for trees on CG.7707; however, variability was high, and no statistically significant differences were observed.

G.30 likely is the rootstock of most interest in this trial. It produced a tree similar in size and greater yielding (70% more) than those on M.7. Note should made of CG.4814. It produced a large dwarf tree, similar in size to those on M.26 EMLA, but yielding nearly double. The only drawback may be its propensity for root suckering.

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