

New CG Rootstocks, G.16, and Supporter 1, 2, and 3 versus M.9 and M.26 EMLA in the 1999 NC-140 Dwarf Apple Rootstock Trial

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

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

As part of the 1999 NC-140 Dwarf Apple Rootstock Trial, a planting of McIntosh on 11 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 (7th growing season) and cumulative means are included in Table 1 and Figure 1.

Rootstocks in this trial include G.16N and G.16T. These are two forms (N liners were from normal stool beds and T liners were from tissue-culture-based stool

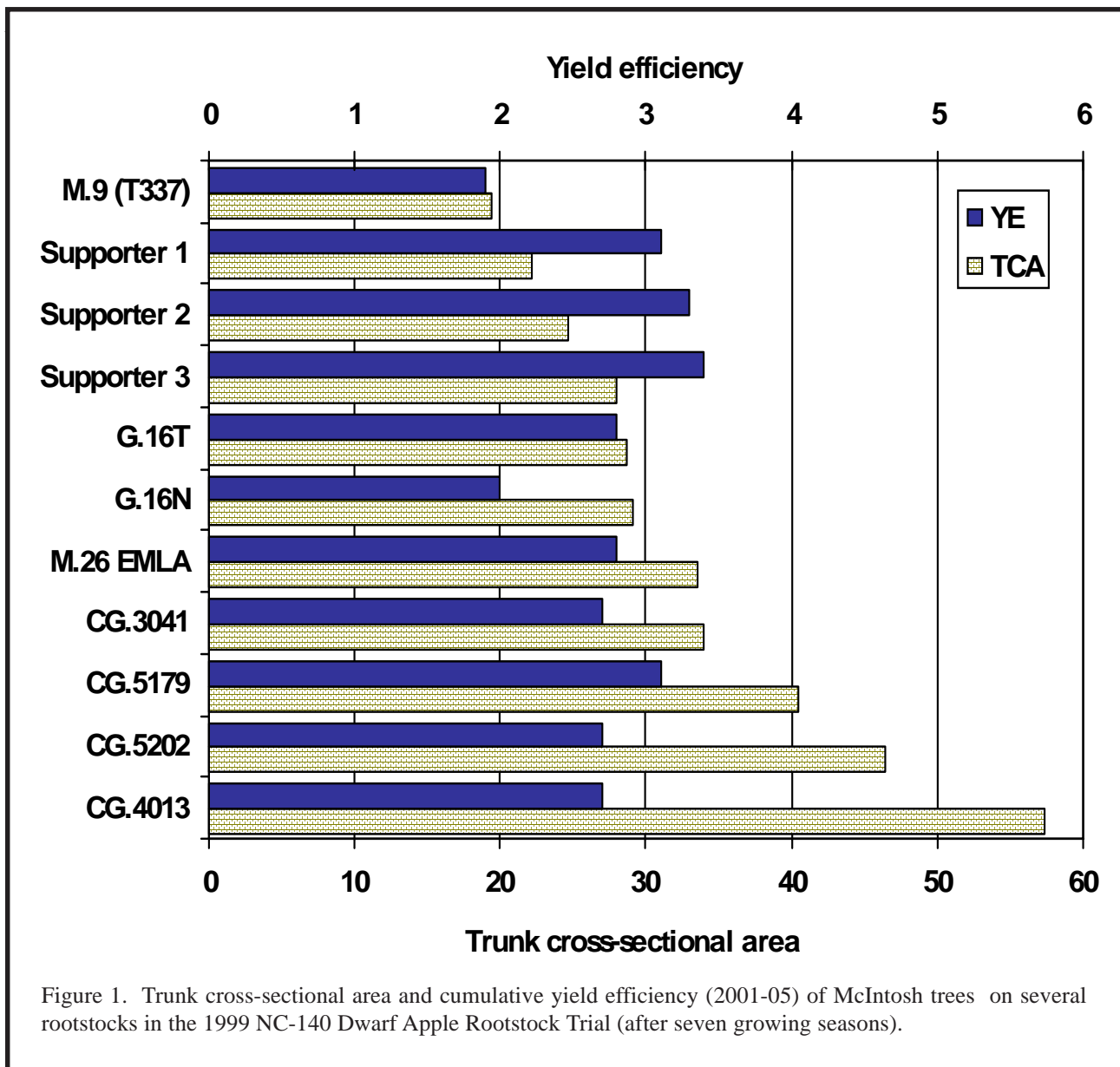
beds) of G.16 from the Cornell-Geneva Apple Rootstock Breeding Program (a cooperative effort between Cornell University and the United States Department of Agriculture). The four CG rootstocks are as yet unnamed rootstocks from the same program. The Supporter rootstocks were released from the Institut für Obstforschung Dresden-Pillnitz

At the end of the 2005 season, largest trees were on CG.4013 and CG.5202, and the smallest were on M.9 NAKBT337, Supporter 1, and Supporter 2 (Table 1, Figure 1). Trees on G.16 and Supporter 3 were slightly, but not significantly smaller than those on M.26 EMLA, and trees on CG.3041 were similar in

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 Dwarf 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.3041	33.9 bcd	1.6 b	44.7 abc	91 bc	1.33 a	2.70 abc	156 a	160 ab
CG.4013	57.4 a	6.2 a	60.6 a	151 a	1.06 a	2.69 abc	149 a	157 ab
CG.5179	40.5 bc	4.0 ab	53.7 ab	124 ab	1.33 a	3.06 ab	142 a	156 ab
CG.5202	46.4 ab	1.3 b	50.2 abc	120 ab	1.11 a	2.65 abc	145 a	157 ab
G.16N	29.1 cd	0.0 b	28.0 c	63 c	0.89 a	2.04 bc	151 a	159 ab
G.16T	28.7 cd	0.8 b	36.3 bc	78 bc	1.26 a	2.80 abc	161 a	157 ab
M.26 EMLA	33.6 bcd	0.0 b	31.9 c	64 c	0.94 a	1.88 c	147 a	157 ab
M.9 NAKBT337	19.4 d	1.4 b	24.5 c	50 c	1.32 a	2.73 abc	153 a	167 a
Supporter 1	22.2 d	0.0 b	28.1 c	72 c	1.19 a	3.12 ab	145 a	151 ab
Supporter 2	24.6 d	1.0 b	30.8 c	81 bc	1.26 a	3.30 a	136 a	141 b
Supporter 3	28.0 cd	0.3 b	37.7 bc	95 bc	1.35 a	3.43 a	143 a	150 ab

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



size to those on M.26 EMLA. Trees on CG.5179 were slightly, but not significantly, larger than those on M.26 EMLA.

Cumulative suckering (1999-2005) was greatest from CG.4013, significantly more so than all other rootstocks, except CG.5179 (Table 1).

CG.4013, CG.5179, and CG.5202 resulted in the greatest yield per tree in 2005 and cumulatively (2001-05), and M.9 NAKBT337, Supporter 1, Supporter 2, M.26 EMLA, and G.16N resulted in the least (Table 1). Yields from trees on CG.3041, G.16T, and Supporter 3 were intermediate.

In 2005, rootstock did not affect yield efficiency, but cumulatively (2001-05), the most yield efficient

trees were on Supporter 2 and Supporter 3, and the least efficient were on M.26 EMLA (Table 1, Figure 1). Other rootstocks resulted in intermediate yield efficiency.

Rootstock did not affect fruit size in 2005, but on average (2001-05), largest fruit were from trees on M.9 NAKBT337, and smallest were from trees on Supporter 2, with all other rootstocks resulting in intermediate average fruit size (Table 1).

As a new introduction, G.16 is performing reasonably well, producing a tree intermediate to those on M.9 NAKBT337 and M.26, but at this point in the trial not significantly more yield efficient. CG.3041 (soon to be named G.41) performed very similarly to G.16

over the seven years of this trial, but trees are more similar in size to those on M.26. CG.4013, CG.5179, and CG.5202 produced trees too large at this point to be considered full dwarfs, but they were reasonably yield efficient and had good fruit size. The Supporter

series produced trees between M.9 NAKBT337 and M.26 in size and that were very yield efficient. Fruit size was good in 2005, but has been small overall. All of these rootstocks need further testing before definitive recommendations can be made.



G.16 versus M.9 and B.9 in the 2002 Massachusetts-New Jersey Cameo Rootstock Trial

Jon M. Clements and Wesley R. Autio

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

In 2002, a trial was established in Belchertown, MA and Pittstown, NJ including Cameo on B.9, G.16, and M.9 NAKBT337.

In the first four years of this trial, trees have grown well, with somewhat low yields in 2005 (less than 0.5 bushel per tree on average) and good fruit size in 2005 (205 g on average).

The experiment was a randomized-complete-block design with ten replications at each site. Massachusetts data from 2005 (4th growing season) are presented in Table 1.

At the end of 2005, trees on G.16 were larger than those on either B.9 or M.9 NAKBT337 (Table 1). Trees

on B.9 and M.9 NAKBT337 were similar in size.

Root suckering from 2002 through 2005 was low and not affected by rootstock (Table 1).

Greatest yields in 2005 and cumulatively (2003-05) were harvested from trees on G.16, and the lowest yields were from trees on M.9 NAKBT337 (Table 1). Trees on B.9 produced intermediate yields.

Yield efficiency in 2005 and cumulatively (2003-05) were greatest for trees on B.9 and least for trees on M.9 NAKBT337 (Table 1). Trees on G.16 were intermediate.

Fruit size in 2005 or on average (2003-05) was not affected by rootstock (Table 1).

Table 1. Trunk cross-sectional area, root suckering, yield, yield efficiency, and fruit weight in 2005 of Cameo trees on three rootstocks planted in 2002 as part of the MA/NJ Cameo Rootstock Trial.^z

Rootstock	Trunk cross-sectional area (cm ²)	Root suckers (no./tree, 2002-05)	Yield per tree (kg)		Yield efficiency (kg/cm ² TCA)		Fruit weight (g)	
			2005	Cumulative (2003-05)	2005	Cumulative (2003-05)	2005	Average (2003-05)
B.9	7.9 b	0.4 a	9.3 ab	16.1 ab	1.13 a	1.96 a	197 a	191 a
G.16	13.6 a	0.3 a	11.0 a	19.9 a	0.83 ab	1.49 ab	198 a	188 a
M.9 NAKBT337	9.3 b	2.1 a	4.9 b	11.6 b	0.54 b	1.31 b	219 a	204 a

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

