1999 NC-140 Dwarf Apple Rootstock Trial: New CG rootstocks, G.16, and Supporter 1, 2, and 3 versus M.9 (T337) and M.26 EMLA

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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 2004 (6th growing season) and cumulative means are included in Table 1 and Figure 1.

Largest trees were on CG.4013 and CG.5202; trees on both were significantly larger than comparable trees on M.26 EMLA. The smallest were on M.9 NAKBT337 and Supporter 1. Trees on CG.3041, CG.5179, G.16N, G.16T, Supporter 1, and Supporter 2 were intermediate between those on M.9 NAKBT337 and those on M.26 EMLA.

Cumulative suckering (1999-2004) was greatest from CG.4013 and least from CG.5202, G.16N, M.26 EMLA, and Supporter 1, but no rootstock resulted in large numbers of root suckers, as will be seen in the next article from the semidwarf rootstock trial.

CG.4013, CG.5202, and CG.5179 resulted in the greatest yield per tree in 2003 and cumulatively (2001-

Table 1. Trunk cross-sectional area, suckering, yield, yield efficiency, and fruit weight in 2004 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, 1999-2004)	Yield per tree (kg)		Yield efficiency (kg/cm^2 TCA)		Fruit weight (g)	
			2004	Cumulative (2001-04)	2004	Cumulative (2001-04)	2004	Average (2001-04)
CG.3041	25.2 bcd	1.2 ab	11.1 bcd	46 bcd	0.42 a	1.81 abc	217 ab	165 ab
CG.4013	42.9 a	3.5 a	24.8 a	90 a	0.58 a	2.14 ab	174 b	164 ab
CG.5179	32.1 abc	1.0 ab	21.3 ab	70 ab	0.68 a	2.21 ab	206 ab	170 ab
CG.5202	37.0 ab	0.0 b	20.7 abc	69 ab	0.56 a	1.94 abc	184 ab	167 ab
G.16N	20.5 cde	0.0 b	8.9 cd	35 cd	0.43 a	1.60 bc	196 ab	170 ab
G.16T	21.1 cde	0.5 ab	14.0 abcd	42 bcd	0.69 a	2.06 abc	180 b	153 ab
M.26 EMLA	24.6 cd	0.0 b	11.1 bcd	31 cd	0.46 a	1.27 c	191 ab	170 ab
M.9 NAKBT337	13.6 e	0.3 ab	8.5 d	25 d	0.71 a	1.99 abc	211 ab	181 a
Supporter 1	16.9 de	0.0 b	13.9 bcd	43 bcd	0.80 a	2.50 ab	225 a	157 ab
Supporter 2	20.5 cde	1.3 ab	17.1 abcd	55 bcd	0.83 a	2.68 a	194 ab	146 b
Supporter 3	22.1 cde	0.3 ab	15.9 abcd	57 bc	0.77 a	2.64 a	195 ab	155 ab

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

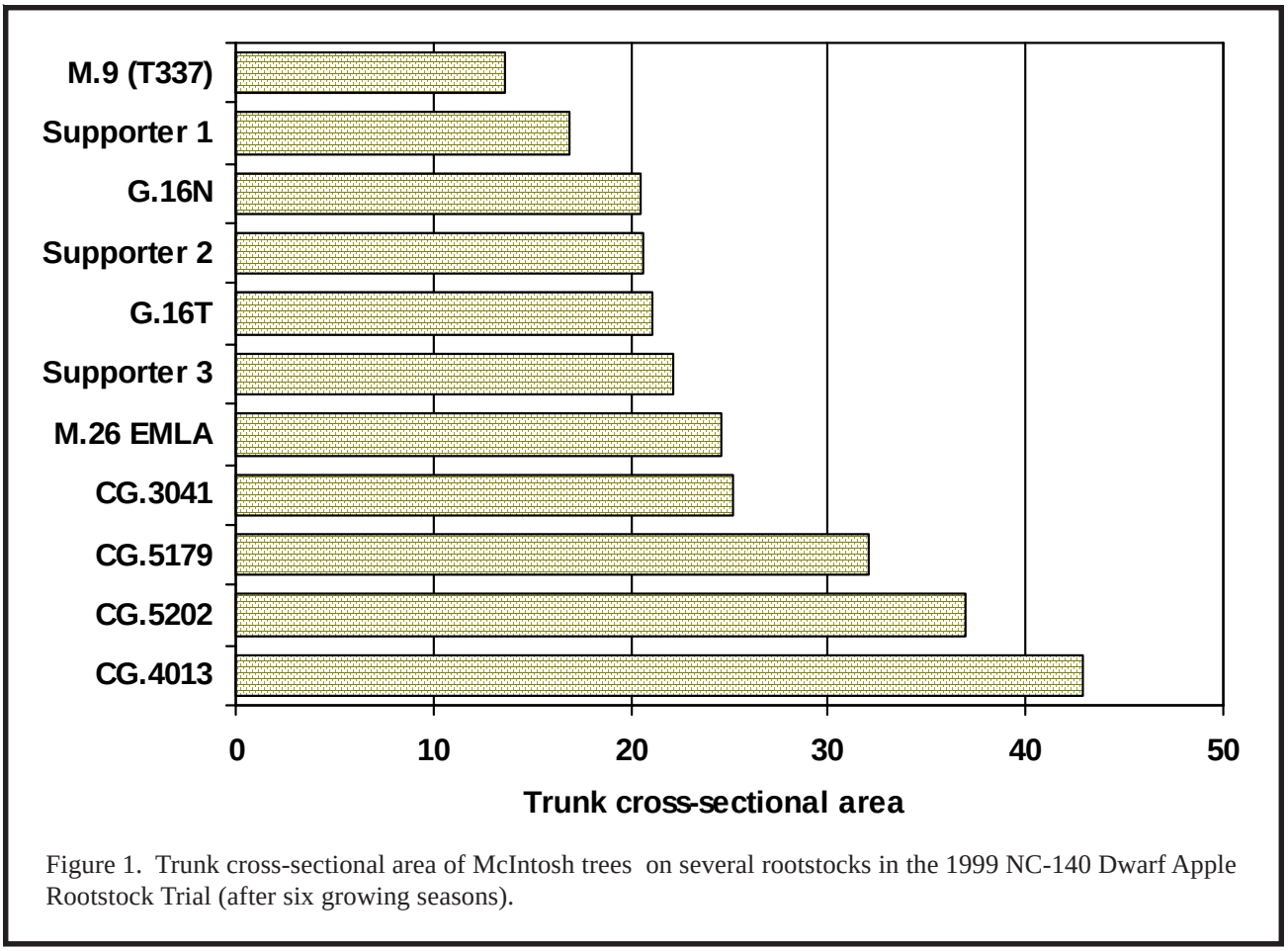

Figure 1. Trunk cross-sectional area of McIntosh trees on several rootstocks in the 1999 NC-140 Dwarf Apple Rootstock Trial (after six growing seasons).

04), and M.9 NAKBT337, M.26 EMLA, G.16N, and CG.3041 resulted in the lowest. Yield efficiency presents yield relative to tree size and gives an index to estimate relative yield at an appropriate planting density. In 2004, rootstock did not affect yield efficiency, but cumulatively (2001-04), the most efficient trees were on Supporter 2 and Supporter 3, and the least efficient were on M.26 EMLA. Most other rootstocks were not significantly different from either the most or least efficient treatments.

Largest fruit in 2004 were harvested from trees on Supporter 1, and the smallests were from trees on CG.4013 and G.16T. All fruit were large in 2004, with CG.4013 (smallest average size) and Supporter 1 (largest average size) resulting in average packed size of 109 and 84, respectively. On average (2001-94), largest fruit were from trees on M.9 NAKBT337, and smallest were from trees on Supporter 2. All other rootstocks resulted in intermediate size.

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 six 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 2004, but has been small overall. All of these rootstocks need further testing before definitive recommendations can be made.

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