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Comparing Gala Apple Trees on Different strains of B.9, M.9, M.26, and Other Rootstocks: An Update on the 2002 NC-140 Apple Rootstock Trial

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As part of the 2002 NC-140 Apple Rootstock Trial, a planting of Gala on 11 rootstocks was established at the University of Massachusetts Cold Spring Orchard Research & Education Center. Trees are growing well in this irrigated block, but fruit set was lighter than expected prior to 2007 (average yields in 2006 of only 0.2 bushels per tree with 157-g average fruit size). In 2007, fruit set was good and the trees performed well (average yields in 2007 of 2 bushels per tree with 186-g average fruit size). In 2008, fruit set was again less than expected (average yields in 2007 of 0.6 bushels per tree with 175-g average fruit size). The planting included seven replications in a randomized-complete-block design. Means from 2008 (7th growing season) are reported here.

After the 2008 growing season, trees with the larg-

Table 1. Trunk cross-sectional area, suckering, yield, yield efficiency, and fruit weight in 2008 of Gala trees on several rootstocks in the Massachusetts planting of the 2002 NC-140 Apple Rootstock Trial.[z]

Rootstock	Trunk cross-sectional area (cm^2)	Root suckers (no./tree, 2002-08)	Yield per tree (kg)		Yield efficiency (kg/cm^2 TCA)		Fruit weight (g)	
			2008	Cumulative (2004-08)	2008	Cumulative (2004-08)	2008	Average (2004-08)
B.9 (Europe)	19.9 f	8.9 b	3.2 c	41 c	0.17 ab	2.0 ab	155 d	156 d
B.9 (Treco)	22.8 ef	5.7 b	6.9 bc	47 bc	0.30 ab	2.1 a	164 bcd	167 cd
M.26 EMLA	45.7 cd	2.0 b	17.4 ab	67 abc	0.38 a	1.5 bc	173 abcd	174 bcd
M.26 NAKB	57.4 bc	2.3 b	24.2 a	82 a	0.44 a	1.5 bc	184 ab	184 ab
M.9 Burgmer 756	45.1 cd	6.6 b	14.3 abc	69 ab	0.33 ab	1.5 bc	184 ab	184 ab
M.9 Nic 29	38.2 de	25.0 a	11.1 bc	60 abc	0.30 ab	1.6 abc	192 a	194 a
M.9 NAKBT337	38.0 de	7.9 b	15.2 ab	61 abc	0.41 a	1.6 abc	184 ab	186 ab
P.14	68.9 b	1.8 b	10.7 bc	66 abc	0.16 ab	0.9 cd	174 abcd	181 abc
PiAu51-11	58.3 bc	6.0 b	13.0 abc	49 bc	0.26 ab	0.9 cd	178 abc	183 abc
PiAu51-4	98.7 a	7.5 b	6.4 bc	62 abc	0.06 b	0.6 d	158 cd	172 bcd
Supporter 4	52.9 bcd	2.0 b	14.6 abc	56 abc	0.28 ab	1.1 cd	184 ab	181 abc

[z] Means within columns not followed by a common letter are significantly different at odds of 19 to 1.

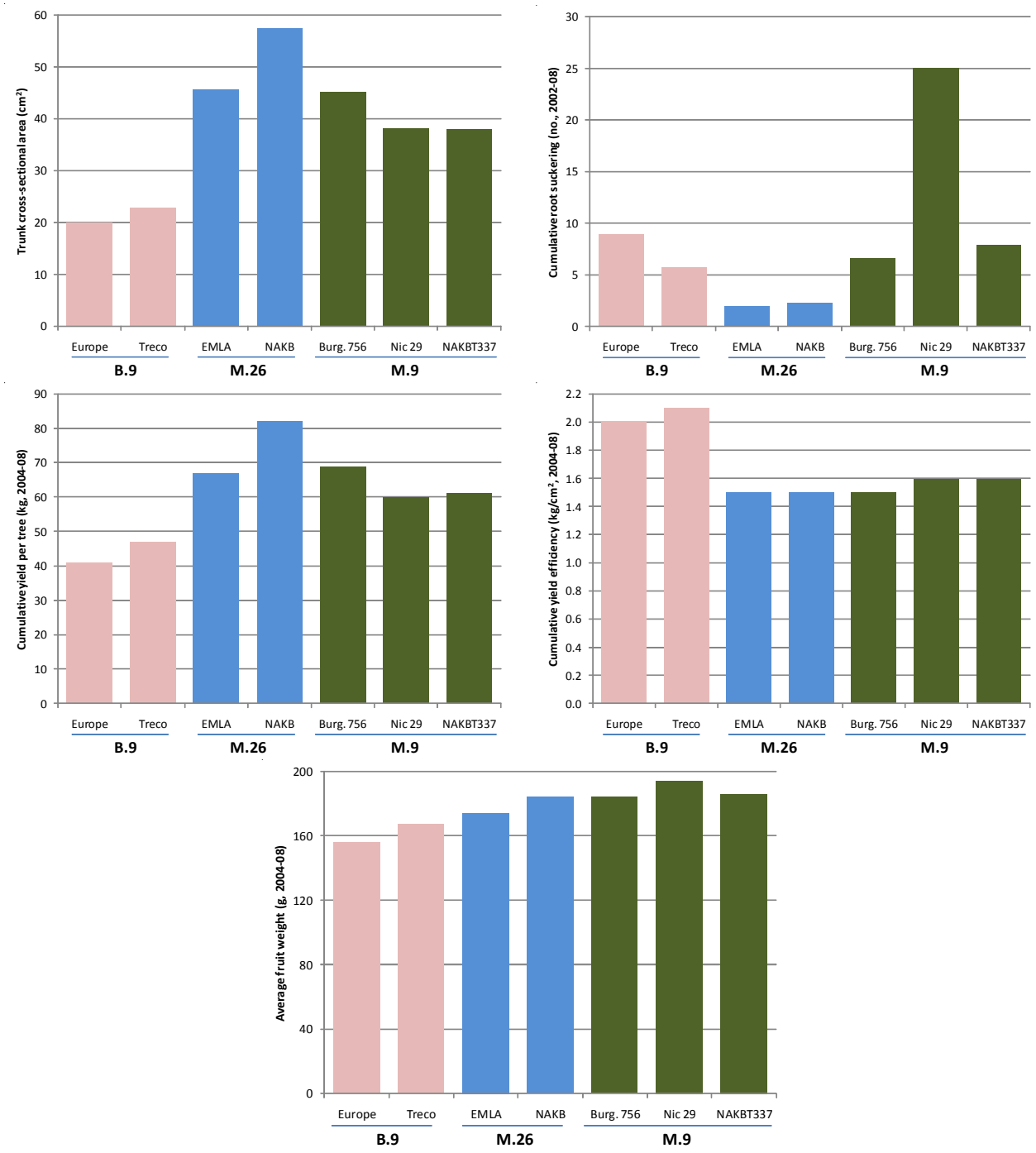

Figure 1. Comparison of the tree size, root suckering, yield, yield efficiency, and average fruit size of trees on the B.9, M.26, and M.9 strains.

est TCA were on PiAu51-4, followed in decreasing size by those on P.14, PiAu51-11, M.26 NAKB, Supporter 4, M.26 EMLA, M.9 Burgmer 756, M.9 Nic 29, M.9 NAKBT337, B.9 (Treco), and B.9 (Europe) (Table 1). Cumulative (2002-08) root suckering was significantly greater from M.9 Nic 29 than from all other rootstocks.

Greatest yields in 2008 and cumulatively (2004-08) were harvested from trees on M.26 NAKB (Table 1). Lowest yields were harvested from trees on B.9 (Europe).

Yield efficiency in 2008 was greatest for trees on the two strains of B.9 and least for trees on PiAu51-4, with other rootstocks generally resulting in intermediate efficiency (Table 1). Cumulatively (2004-08), the two B.9 strains resulted in the greatest yield efficiency, while PiAu51-4 resulted in the lowest.

Fruit size in 2008 was very good for Gala for trees on all rootstocks, averaging from 155 to 192g (Table 1). M.9 Nic 29 resulted in the largest fruit, and B.9 (Europe) and PiAu51-4 resulted in the smallest. Average fruit size over the fruiting life of the planting (2004-08) was largest from trees on M.9 Nic 29 and smallest from trees on the two B.9 strains.

Visual comparisons of the strains of B.9, M.26, and M.9 are provided on Figure 1. Between the B.9 strains, between the M.26 strains, and among the M.9 strains, the differences are not statistically significant, but some trends appear on the figure that are consistent with the NC-140 data from the entire trial (at 10 locations in the US and Canada). Specifically, the European strain of B.9 produces a smaller tree which is more prone to roo sucker. Yield is lower for the European strain, but yield effiiency is similar between the two.

The NAKB strain of M.26 produces a tree that is larger than the one produced by the EMLA strain. It also yields more, but yield effiency, fruit size, and root suckering are similar.

Among the M.9 strains, Burgmer 756 produces a somewhat larger, more productive tree, but they are similarly efficient with similar fruit size. The one very pronounced difference among these three strains is that Nic 29 produces many more root suckers than either Burgmer 756 or NAKBT337.

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