



Massachusetts Agricultural Experiment Station

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2009 NC-140 Peach

As part of the 2009 NC-140 Peach Rootstock Trial, a planting of Redhaven on 15 rootstocks was established at the University of Massachusetts Cold Spring Orchard Research & Education Center. Trees grew well in their first four seasons. It is important to note that these trees experienced a heavy snowstorm at the end of October 2011. Leaves were still present, and some scaffold

breakage occurred. Where possible, scaffolds were pulled back and bolted into place. The longevity of some of these trees may be reduced. The planting includes eight replications in a randomized-complete-block design. Means from 2012 (4th growing season) are included in Table 1.

At the end of the 2012 season, largest trees were on Guardian and Lovell, and smallest trees were on *Prunus americana*, Krymsk 1, and Controller 5 (Table 1). Some

Table 1. Trunk size, root suckering, yield, yield efficiency, and fruit size in 2012 of Redhaven peach trees in the 2009 NC-140 Peach Rootstock Trial at the UMass Cold Spring Orchard Research & Education Center, Belchertown, MA. All values are least-squares means, adjusted for missing subclasses and for crop load in the case of Julian date of 10% ripe.^z

Rootstock	Trunk cross-sectional area (cm ²)	Root suckers (no./tree, 2009-12)	Yield per tree (kg)	Yield efficiency (kg/cm ²)	Fruit weight (g)	Fruit ripening (Julian date, 10%)
Atlas	96 abc	0.0 b	17.7 ab	0.19 d	231 a	209 a
Brights Hybrid 5	91 abc	0.0 b	23.6 ab	0.26 bcd	185 abc	207 ab
Controller 5	23 e	0.0 b	9.2 b	0.40 abc	148 c	209 a
Guardian	113 a	0.1 b	24.1 a	0.23 cd	216 a	209 a
HBOK 10	79 bc	0.0 b	21.5 ab	0.31 abcd	196 abc	209 a
HBOK 32	79 bc	0.0 b	16.8 ab	0.21 cd	183 abc	210 a
KV010-123	78 bc	0.0 b	25.5 a	0.34 abcd	201 ab	208 ab
KV010-127	88 bc	0.0 b	18.9 ab	0.21 cd	199 ab	208 ab
Krymsk 1	44 de	0.4 b	18.9 ab	0.46 ab	165 bc	204 b
Krymsk 86	89 bc	0.0 b	20.6 ab	0.25 bcd	186 abc	209 a
Lovell	100 ab	0.0 b	23.7 ab	0.23 cd	205 ab	209 a
Mirobac	76 c	1.1 b	22.5 ab	0.32 abcd	183 abc	208 ab
<i>Prunus americana</i>	52 d	13.3 a	25.7 a	0.51 a	195 abc	205 b
Penta	88 bc	0.5 b	21.3 ab	0.27 bcd	208 ab	207 ab
Viking	87 bc	0.0 b	29.2 a	0.35 abcd	192 abc	207 ab

^z Means were separated within columns by Tukey's HSD ($P = 0.05$).

Table 2. Cumulative yield and yield efficiency and average fruit size in for the fruiting life of Redhaven peach trees in the 2009 NC-140 Peach Rootstock Trial at the UMass Cold Spring Orchard Research & Education Center, Belchertown, MA. All values are least-squares means, adjusted for missing subclasses.^z

Rootstock	Cumulative yield per tree (2011-12, kg)	Cumulative yield efficiency (2011-12, kg/cm ²)	Average fruit weight (2011-12, g)
Atlas	38 a	0.40 c	185 ab
Brights Hybrid 5	41 a	0.46 c	169 ab
Controller 5	13 b	0.57 c	155 b
Guardian	45 a	0.42 c	195 a
HBOK 10	46 a	0.64 c	184 ab
HBOK 32	40 a	0.50 c	172 ab
KV010-123	50 a	0.67 bc	184 ab
KV010-127	43 a	0.49 c	175 ab
Krymsk 1	39 a	0.91 ab	172 ab
Krymsk 86	40 a	0.48 c	171 ab
Lovell	45 a	0.45 c	187 a
Mirobac	43 a	0.60 c	176 ab
<i>Prunus americana</i>	55 a	1.09 a	181 ab
Penta	37 a	0.46 c	186 ab
Viking	53 a	0.63 c	175 ab

^z Means were separated within columns by Tukey's HSD ($P = 0.05$).

suckering has occurred from trees on *P. americana* (Table 3).

Yield was assessed in 2012 (Table 1). Greatest yields in 2012 were harvested from trees on Viking, *P. americana*, KV010-123, and Guardian, and the lowest yields were harvested from those on Controller 5. On a cumulative basis (2011-12), yield was similar among most trees, except that yield from trees on Controller 5 was significantly lower than all others (Table 2). The most yield efficient trees in 2012 were on *P. americana*, and the least efficient were on Atlas. Cumulatively (2011-12), yield efficiency was similar among the trees on most rootstocks, except those on Krymsk 1 and on *P. americana* were significantly more efficient (Table 2). Fruit size in 2012 was largest for trees on Atlas and those on Guardian (Table 1). Smallest fruit were harvested from trees on Controller 5. Averaged over the two fruiting years (2011-12), largest fruit were harvested from trees on Guardian and on Lovell, and the smallest were harvested from trees on Controller 5 (Table 2). There was a modest advancement of ripening in 2012 of trees on *P. americana* (Table 1).

2010 NC-140 Apple

As part of the 2010 NC-140 Apple Rootstock Trial, a planting of Honeycrisp on 31 rootstocks was established at the University of Massachusetts Cold Spring Orchard Research & Education Center. In 2010, trees in this planting grew relatively little, but growth has been good in the last two seasons. The planting includes four replications in a randomized-complete-block design, with up to three trees of a single rootstock per replication. Means from 2012 (3rd growing season) are included in Table 3. Unfortunately, in 2012, these trees were inadvertently harvested by our crew, and no yield or fruit size data were recorded.

At the end of the 2012 growing season, largest trees were on B.70-20-20, CG.3001, and G.202N. Smallest trees were on B.71-7-22 and B.9 (Table 3). The largest number of root suckers were produced (cumulatively, 2010-12) G.202N (Table 3).

Table 3. Trunk cross-sectional area and cumulative root sucker number in 2012 of Honeycrisp apple trees on various rootstocks in the 2010 NC-140 Honeycrisp Apple Rootstock Trial.²

Rootstock	Trunk cross-sectional area (2012, cm ²)	Cumulative root suckers (2010-12, no.)
B.9	3.2 f	2.2 ab
B.10	5.8 cdef	0.0 b
B.7-3-150	6.8 bcde	0.4 ab
B.7-20-21	8.7 bc	0.5 ab
B.64-194	8.8 bc	0.0 b
B.67-5-32	8.4 bcd	0.1 ab
B.70-6-8	8.7 bc	0.4 ab
B.70-20-20	15.7 a	1.4 ab
B.71-7-22	1.2 f	1.0 ab
G.11	4.7 ef	2.7 ab
G.41N	4.6 ef	0.2 ab
G.41TC	4.3 ef	2.5 ab
G.202N	10.1 b	8.2 a
G.202TC	7.3 bcde	3.7 ab
G.935N	7.5 bcde	2.1 ab
G.935TC	5.5 cdef	6.4 ab
CG.2034	3.8 ef	0.5 ab
CG.3001	11.3 ab	0.0 b
CG.4003	4.0 ef	0.7 ab
CG.4004	8.0 bcde	5.5 ab
CG.4013	6.3 bcdef	0.2 ab
CG.4214	6.3 bcdef	2.9 ab
CG.4814	7.0 bcde	5.9 ab
CG.5087	6.1 bcdef	2.9 ab
CG.5222	8.6 bcd	5.7 ab
Supp.3	4.5 ef	0.5 ab
PiAu 9-90	9.5 b	0.0 b
PiAu 51-11	9.0 bc	0.6 ab
M.9 NAKBT337	5.5 cdef	3.8 ab
M.9 Pajam 2	5.1 def	6.3 ab
M.26 EMLA	5.2 cdef	2.3 ab

² Least-squares mean separation within column by Tukey's HSD ($P = 0.05$).

Publications

Autio, W. 2012. NC-140 Trial Coordination. *Compact Fruit Tree* 44(2):9-10.

Autio, W., J. Clements, and J. Krupa. 2012. Results from the first year of fruiting in the 2009 NC-140 Peach Rootstock Trial in Massachusetts. *Fruit Notes* 77(1):9-10; *Horticultural News* 92(1):9-10.

Autio, W., J. Krupa, J. Clements, W. Cowgill, and R. Magron. 2012. Final report of the 2002 NC-140 Apple Rootstock Trial in Massachusetts and New Jersey. *Fruit Notes* 77(2): 7-10; *Horticultural News* 92(2): 7-10.

Clements, J., W. Autio, J. Krupa, W. Cowgill, R. Magron, and S. Sollner-Figler. 2012. 2002 Massachusetts/New Jersey 'Cameo' Dwarf Rootstock Trial. *Fruit Notes* 77(1):4-6; *Horticultural News* 92(1): 4-6.

Hoover, E., R. Marini, E. Tepe, W. Autio, A. Biggs, J. Clements, R. Crassweller, D. Foster, M. Foster, D. Miller, M. Parker, J. Racsko, T. Robinson, and M. Warmund. 2011. Apple rootstocks and cultivars: A case study using eXtension to increase access to research-based information. *Compact Fruit Tree* 44(3): 9-12.

Marini, P., W. Autio, B. Black, J. Cline, W. Cowgill, R. Crassweller, P. Domoto, C. Hampson, R. Moran, R. Parra-Quezada, T. Robinson, M. Stasiak, D. Ward, and D. Wolfe. 2011. Summary of the NC-140 Apple Physiology Trial: The relationship between 'Golden Delicious' fruit weight and crop density at 12 locations as influenced by three dwarfing rootstocks. *J. Amer. Pomol. Soc.* 66:78-90.