Third-leaf Results from the 2010 NC-140 Apple Rootstock Trial in Massachusetts and New Jersey

Wesley R. Autio, James S. Krupa, and Jon M. Clements
Stockbridge School of Agriculture, University of Massachusetts

Winfred P. Cowgill, Jr., Rebecca Magron, and Suzanne Sollner-Figler
New Jersey Agricultural Experiment Station, Rutgers University

As part of the 2010 NC-140 Apple Rootstock Trial, replicated plantings were established in New Jersey (Rutgers Snyder Research & Extension Farm, Pittstown) and Massachusetts (UMass Cold Spring Orchard Research & Education Center, Belchertown). Descriptions of the trials were included in Horticultural News (Summer, 2010, Volume 90, Number 3) and Fruit Notes (Summer, 2010, Volume 75, Number 3).

Both trials include 31 rootstocks with Honeycrisp as the scion variety and are trained as tall spindles. Thirteen Cornell-Geneva rootstocks are in the trial, including four that have been named (G.11, G.41, G.202, and G.935). The trial has nine Budagovsky rootstocks, two of which are named (B.9 and B.10). Three Malling rootstocks (M.9 NAKBT337, M.9 Pajam 2, and M.26 EMLA) are included as controls.

Both plantings have done quite well, and the data presented here are those collected through the third growing season (2012) (Table 1). The third season was the first yield season. Please note that the trees in Massachusetts yielded fruit but data were not collected, because the trees were inadvertently harvested prior to yield measurement.

The effects of rootstock on tree size were similar in Massachusetts and New Jersey, but trees in New Jersey have grown more in their first three seasons. It is clear that a few rootstocks produce trees

Table 1. Trunk cross-sectional area, cumulative root sucker number, yield, and fruit size in 2012 of Honeycrisp apple trees on various rootstocks in the 2010 NC-140 Honeycrisp Apple Rootstock Trial in Massachusetts and New Jersey.[z]

	UMass Cold Spring Orchard, Belchertown, MA		Rutgers Snyder Farm, Pittstown, NJ			
Rootstock	Trunk cross-sectional area (2012, cm^2)	Cumulative root suckers (2010-12, no.)	Trunk cross-sectional area (2012, cm^2)	Cumulative root suckers (2010-12, no.)	Yield per tree (2012, kg)	Average fruit size (2012, g)
B.9	3.2 f	2.2 ab	4.0 hi	1.0 bc	5.1 cde	266 ab
B.10	5.8 cdef	0.0 b	6.6 gh	0.3 bc	8.8 abcd	285 a
B.7-3-150	6.8 bcde	0.4 ab	12.2 cde	0.6 bc	9.4 abc	289 a
B.7-20-21	8.7 bc	0.5 ab	15.4 b	0.1 bc	9.0 abcd	266 ab
B.64-194	8.8 bc	0.0 b	13.5 bcd	0.1 bc	7.6 abcde	284 a
B.67-5-32	8.4 bcd	0.1 ab	11.9 de	0.6 bc	5.4 cde	277 ab
B.70-6-8	8.7 bc	0.4 ab	11.1 defg	0.0 c	9.7 abc	273 ab
B.70-20-20	15.7 a	1.4 ab	26.3 a	0.9 bc	4.4 de	273 ab
B.71-7-22	1.2 f	1.0 ab	1.5 i	0.3 bc	0.8 e	164 b
G.11	4.7 ef	2.7 ab	7.2 gh	0.7 bc	9.8 abc	290 a
G.41N	4.6 ef	0.2 ab	7.3 gh	0.1 bc	6.5 abcde	290 a
G.41TC	4.3 ef	2.5 ab	7.1 gh	0.3 bc	5.0 cde	302 a
G.202N	10.1 b	8.2 a	15.1 b	1.9 bc	5.1 cde	284 a
G.202TC	7.3 bcde	3.7 ab	8.6 fg	1.6 bc	8.4 abcd	282 a
G.935N	7.5 bcde	2.1 ab	9.7 efg	1.3 bc	6.8 abcde	271 ab
G.935TC	5.5 cdef	6.4 ab	10.6 defg	2.8 ab	6.5 abcde	277 ab
CG.2034	3.8 ef	0.5 ab	5.7 hi	0.0 c	7.2 abcde	298 a
CG.3001	11.3 ab	0.0 b	11.4 defg	0.3 bc	9.1 abcd	316 a
CG.4003	4.0 ef	0.7 ab	6.7 gh	0.0 c	8.7 abcd	298 a
CG.4004	8.0 bcde	5.5 ab	13.3 bcde	0.8 bc	6.5 abcde	292 a
CG.4013	6.3 bcdef	0.2 ab	10.3 defg	0.3 bc	5.2 cde	285 a
CG.4214	6.3 bcdef	2.9 ab	9.8 efg	0.4 bc	5.5 bcde	307 a
CG.4814	7.0 bcde	5.9 ab	12.8 bcde	3.0 ab	6.8 abcde	273 ab
CG.5087	6.1 bcdef	2.9 ab	12.8 bcde	0.7 bc	4.2 de	323 a
CG.5222	8.6 bcd	5.7 ab	11.7 defg	1.8 bc	7.6 abcde	259 ab
Supp.3	4.5 ef	0.5 ab	7.7 fg	0.1 bc	5.5 bcde	232 ab
PiAu 9-90	9.5 b	0.0 b	16.3 b	0.1 bc	6.6 abcde	250 ab
PiAu 51-11	9.0 bc	0.6 ab	14.6 bc	0.4 bc	5.2 cde	311 a
M.9 NAKBT337	5.5 cdef	3.8 ab	8.0 fg	2.8 ab	11.0 a	307 a
M.9 Pajam 2	5.1 def	6.3 ab	8.3 fg	5.3 a	10.3 ab	299 a
M.26 EMLA	5.2 cdef	2.3 ab	8.7 fg	1.0 bc	5.8 bcde	328 a

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

that are much too large for the tall spindle system: B.70-20-20, PiAu 9-90, B.7-20-21, G.202, PiAu 51-11, and possibly others (Table 1).

Yield in New Jersey varied only by a few kg per tree. Notably, M.9 resulted in the highest yields per tree, but not signifcantly higher than trees on about two thirds of the other rootstocks. Likewise, average fruit size did not vary much from tree to tree. One rootstock, however, appeared to reduce fruit size. B.71-7-22 resulted in the smallest fruit. Interestingly, it also resulted in the smallest tree with the lowest yields.

Obviously, these are very early results from this trial, but they point out those rootstocks at the extremes. We will periodically publish results from this trial over its projected 10 years.

The 2010 NC-140 Apple Rootstock Trial at Rutgers Snyder Farm in New Jersey.

NEW

MUNCKHOF Pluk-O-Trak Machine

Increase picker's efficiency by 80-100%
Increase fruit quality by 15-20%
Eliminate ladders and picking buckets

Picking or Pruning ... this is a very versatile machine

2 Models Available
Pluk-O-Trak Senior (for row spacing up to 15 feet)
Pluk-O-Trak Junior (for row spacing of 12 feet & under)

OESCO INC.™
8 Ashfield Road on Route 116
Conway, MA 01341
800-634-5557 • 413-369-4335 • info@oescoinc.com

Visit our NEW website
www.oescoinc.com

Use for:
- Harvesting
- Dormant & Summer Pruning
- Hand Thinning
- Tying Tree Leaders
- Trellis Work
- Net Installation

Features include:
- Automatic hydraulic steering
- Leveling system: 2 or 4-way
- Two or four wheel drive
- Compressor for air pruning tools
- Pre-sort bin

Hydraulic platforms are adjustable in height and move in and out to allow pickers convenient access to all fruit.