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Performance of a New Dwarf Apple Rootstock Trial (2010 NC-140)

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Abstract
To evaluate the adaptability and performance of new and promising apple rootstocks in the dwarfing size-control category, a NC-140 regional rootstock trial was established in 2010 at 12 sites in the United States (CO, IA, IL, IN, MA, MI, MN, NJ, NY, OH, UT, WI), two sites in Canada (BC, NS), and one site in Mexico (CHIH) with Honeycrisp serving as the test cultivar. A similar trial was established at seven sites (ID, KY, NC, NY, PA, UT, CHIH) with Aztec Fuji serving as the test cultivar.

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Introduction

To evaluate the adaptability and performance of new and promising apple rootstocks in the dwarfing size-control category, a NC-140 regional rootstock trial was established in 2010 at 12 sites in the United States (CO, IA, IL, IN, MA, MI, MN, NJ, NY, OH, UT, WI), two sites in Canada (BC, NS), and one site in Mexico (CHIH) with Honeycrisp serving as the test cultivar. A similar trial was established at seven sites (ID, KY, NC, NY, PA, UT, CHIH) with Aztec Fuji serving as the test cultivar. The Iowa planting, located at the ISU Horticulture Research Station, includes 31 rootstocks with new selections from the Cornell-Geneva breeding program (G, CG.), Russia (Bud), Germany (PiAu), and Japan (Supp), with M.26, M.9 Pajam 2, and M.9 T337 serving as industry standards. Tissue cultured propagated (TC) rootstocks of G.41, G.202, and G.935 were included for comparison to normal (N) propagated rootstocks. This report summarizes the tree-growth characteristics of the Iowa planting during the 2010 growing season.

Materials and Methods

The trees were planted at a 4 ft × 14 ft spacing with 1 to 3 trees per plot in a randomized complete block design replicated four times. Gala/B.9 trees were planted between each block and at the ends of the rows as pollinators. Trees are being trained to a tall spindle using a 3/4-inch metal conduit for support.

Results and Discussion

One tree on G.202TC arrived broken at the graft union. The trial was planted late (May 18) due to wet soil conditions. As a result, tree growth was poor based on changes in the trunk cross sectional area and terminal shoot growth (Table 1). Before the trellis support system was constructed, high winds on June 10, June 18, and July 18 estimated to be approaching 40, 40-50, and 70 mph, respectively, broke off several trees at the graft union (Figures 1, 2). All trees on CG.5202 were broken off during the first two high wind events.

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Table 1. Growth characteristics of Honeycrisp apple trees on 31 rootstocks in the Iowa planting of the 2010 NC-140 apple rootstock trial for 2010.

Rootstock	No. of trees planted	Initial trunk cir (in.)	Branches per tree	Number of trees broken off by high winds on Jun 10	Jun 18	Jul 18	No. of suckers /tree	Final trunk cir (in.)	Terminal shoot length (in.)
Bud 9	12	1.45	5.2				0.0	1.64	5.4
Bud 10 (B.62-396)	9	1.59	2.2				0.0	1.78	6.4
Bud 64-194	7	1.93	0.0				0.0	2.30	5.2
Bud 67-5-32	10	1.85	0.2				0.0	2.07	4.5
Bud 70-6-8	12	1.68	1.3				0.0	2.02	7.7
Bud 70-20-20	12	2.24	0.1				0.2	2.49	4.6
Bud 70-20-21	12	1.90	0.3	2			0.0	2.18	5.4
Bud 71-7-22	6	1.07	8.2				0.0	1.24	6.1
Bud 7-3-150	10	1.73	1.9				0.1	2.05	9.3
CG.2034	5	1.40	1.8				0.0	1.64	4.6
CG.3001	2	1.86	1.0				0.0	2.39	5.4
CG.4003	4	1.42	4.5			1	0.3	1.61	5.0
CG.4004	4	1.70	0.0				0.0	2.08	3.6
CG.4013	4	1.72	0.8			1	0.0	1.95	3.7
CG.4214	8	1.59	0.4				0.0	1.86	3.0
CG.4814	8	1.82	1.0	1	1	2	0.0	1.96	3.7
CG.5087	3	1.61	0.0				0.0	1.74	2.5
CG.5202	7	1.94	0.1	4	3		.	.	.
G.11	10	1.61	5.0				0.0	1.94	8.0
G.41 N	11	1.65	2.6			3	0.0	1.78	5.9
G.41 TC	4	1.45	3.3			1	0.0	1.72	4.5
G.935 N	10	1.70	2.3				0.0	1.98	6.5
G935 TC	3	1.59	2.0				0.0	1.86	4.9
G.202 N	6	2.07	0.0			3	0.0	2.42	3.6
G.202 TC	5	1.81	0.0			1	0.0	2.12	2.6
PiAu 51-11	11	1.93	0.2				0.0	2.15	5.8
PiAu 9-90	6	2.21	0.0				0.5	2.49	4.5
Supp 3	6	1.40	7.8				0.0	1.66	5.3
M.9 T337	12	1.56	4.5				0.1	1.82	5.6
M.9 Pajam2	12	1.77	1.5				0.1	2.01	6.0
M.26 EMLA	8	1.65	5.4	2	1	1	0.3	2.00	6.7
LSD .05		.17	3.3				.4	.22	2.3

Figure 1. Honeycrisp/CG.5202 trees broken off by the high winds on June 10, 2010.

Figure 2. Graft union of a Honeycrisp/CG.5202 tree broken off by high winds on June 10, 2010.