ANNUAL REPORT TO NC-140

2002 Massachusetts/New Jersey 'Cameo' Dwarf Rootstock Trial

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'Cameo' fruit

Planting description and protocol

In 2002 semi-formal NC-140 plantings were established at the University of Massachusetts Cold Spring Orchard Research and Education Center in Belchertown, MA and at the Rutgers Snyder Research and Extension Farm in Pittstown, NJ. 'Cameo' apple trees (Willow Drive Nursery) on three dwarfing rootstocks – Geneva (G.) 16, M.9-NAKBT337 (M.9-337), and B.9 – were planted in a randomized complete block design (10 replications) spaced at 1.2 X 3.6 m. (Massachusetts) and 2.4 X ??m. (New Jersey). All trees are trickle irrigated and have been trained to a vertical axis.

Annual measurements of trunk circumference, tree height and spread (2006 only, reported in 2006), suckering, fruit yield (beginning in 2003), and fruit size (NJ only 2004-05) have been made.

It is anticipated similar data collection will continue for another five growing seasons. An article on the preliminary performance (2002-2006) of these three commercial dwarf rootstocks will be published in 'Fruit Notes,' Journal of the American Pomological Society (APS), and a poster is planned for the January 2008 Northeast ASHS meeting at Rutgers.

Results

This report presents data from the 2007 (6th leaf) growing season, and results are presented on page 2. in Tables 1. – 3.

Over both states, G.16 had the largest trunk area, followed by M.9 and B.9. (Table 1.) In Massachusetts, G.16 was larger than both M.9 and B.9. In New Jersey, G.16 and M.9 are both larger than B.9.

In Massachusetts and over both states, M.9 has the most root suckers. (Tables 1. and 2.) There was no difference in suckering between the rootstocks in New Jersey. (Table 2.)

In 2007, B.9 had significantly less yield than both G.1 and M.9 (Table 1.). But all three rootstocks did not differ in yield efficiency. Cumulative yield is greatest for G.16 but B.9 again has the highest cumulative yield efficiency.

By state, there was no difference in yield by rootstocks in Massachusetts, however, B.9 yielded significantly less than the other two rootstocks in New Jersey. Cumulative yield (2003-07) of G.16 exceeded the two other rootstocks in Massachusetts, however, in New Jersey G.16 did not out-yield M.9, which was the same as B.9. (Table 3.)

Yield efficiency in 2007 did not differ by rootstock in both states (Tabel 3.). Cumulative yield efficiency (2003-2007) was highest for G.16 in New Jersey, but in Massachusetts there was no difference betweent he rootstocks.

Across both states and in Massachusetts, there was no difference in fruit size (weight in grams) between the rootstocks (Tables 1. and 3.). But in New Jersey, fruit harvested from G.16 trees had the smallest fruit (Table 3.). Note that fruit were smaller in New Jersey in 2007 too, which can be explained by an early harvest (at least one month earlier than in Massachusetts) because of severe August hail at the Rutgers Snyder Farm.

Table 1. Overall trunk size, suckers, yield, and fruit size in 2007 of 'Cameo' apple trees on three rootstocks in the 2002 MA/NJ NC-140 Cameo Dwarf Rootstock trial.

Rootstock	Trunk cross-sectional area (cm2)	No. root suckers	Yield per tree (kg)	Cum. yield (2003-07) per tree (kg)	Yield efficiency (kg/cm2 TCA)	Cum. yield efficiency (2003-07) (kg/cm2 TCA)	Fruit weight (g)
G.16	32.0 a	0.3 b	21.6 a	62.8 a	0.64	2.69 b	201
M.9-337	26.6 b	1.2 a	21.7 a	53.9 b	0.84	2.70 b	216
B.9	17.6 c	0.2 b	13.6 b	48.8 b	0.74	3.59 a	188

Mean separation within column by Duncan's MRT (P=0.05)

Table 2. Trunk size and suckers by state in 2007 of 'Cameo' apple trees on three rootstocks in the 2002 MA/NJ NC-140 Cameo Dwarf Rootstock trial.

Rootstock	Trunk cross-sectional area (cm2)		No. root suckers	
	Mass.	*New Jersey*	*Mass.*	*New Jersey*
G. 16	21.9 a	42.1 a	0.6 b	0
M.9-337	13.9 b	39.2 a	2.1 a	0.2
B.9	11.9 b	23.4 b	0.2 b	0.3

Mean separation within column by Duncan's MRT (P=0.05)

Table 3. Yield and fruit size by state in 2007 of 'Cameo' apple trees on three rootstocks in the 2002 MA/NJ NC-140 Cameo Dwarf Rootstock trial.

Rootstock	Yield per tree (kg)		Cum. yield (2003-07) per tree (kg)		Yield efficiency (kg/cm2 TCA)		Cum. yield efficiency (2003-07) (kg/cm2 TCA)		Fruit weight (g)	
	Mass.	New Jersey	Mass.	New Jersey	Mass.	New Jersey	Mass.	New Jersey	Mass.	New Jersey
G. 16	10.5	32.7 a	42.9 a	82.6 a	0.49	0.79	3.14	2.24 b	244	158 b
M.9-337	13.1	30.2 a	29.5 b	78.3 ab	0.91	0.76	2.93	2.47 b	236	196 a
B.9	7.3	19.9 b	29.4 b	70.5 b	0.61	0.86	3.6	3.54 a	190	187 a

Mean separation within column by Duncan's MRT (P=0.05)