

## CALIFORNIA 2004 ANNUAL REPORT OF NC-140 COOPERATIVE REGIONAL PROJECT

### PROJECT: NC-140, California

#### COOPERATING AGENCIES AND PRINCIPAL LEADERS:

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#### Objective 1. ROOTSTOCK – ENVIRONMENT INTERACTIONS

#### PROGRESS OF THE WORK AND PRINCIPAL -ACCOMPLISHMENTS

##### **1999 Fuji Apple Rootstock Planting**

Yield was greatly affected in this trial when an inexperienced pruning crew removed most of the spur growth on some trees. Therefore, yield measurements were not taken in 2004. A few trees died in 2004, presumably from fireblight infections. The fireblight pressure is fairly high in this block. A total of 14 trees (including border trees) have died since planting, but they have mostly been on the standard rootstocks M9 (9) and M26 (4). The only experimental rootstock that has lost any trees is Supporter 1 – one tree died several years ago.

##### **2003 Golden Delicious Apple Rootstock Planting**

After a poor start in 2003, this trial did fairly well in 2004. At planting, 11 trees died right off and another 31 were weak or slow to start (Table 1). Some of these weak trees eventually died but many recovered in 2004. There are now a total of 31 (out of 215) trees dead in the block and many different rootstocks are affected (Table 1). Twenty six of these were apparently weak or dead right from the beginning. Of the remaining 5, one tree on CG.3041 died in 2004 and wasn't noted as weak in 2003. The other 4 were all Granny Smith pollenizers on M26 which were girdled by flatheaded borers.

There was considerable variation in the vigor of the different rootstocks of this trial. B.9 and J-TE-G were very weak and likely won't survive the stressful conditions of California. Others, such as JM.2, were very vigorous and will be difficult to maintain as dwarf trees. Still others, including JM.7, JM.8, JM.10 and PiAu51-4, showed substantial tree-to-tree variability that could be related to the problem we had at planting. Many of these trees were very vigorous, but others were noted as weak or slow to start growing in 2003 and remained noticeably smaller in 2004.

Table 1. 2003 NC-140 Golden Delicious apple rootstock planting at the Kearney Ag Center – 2004 tree status.

Rootstock	# Planted	2003			2004
		No Growth or Weak	Dead	Total Dead or Weak	Dead
B.9	8			0	0
Bud.62-396	8			0	0
CG.3041	8	2		2	3
CG.4210	7	1		1	1
CG.5179	8		1	1	1
CG.5935	8			0	0
G.16	8	2	0	2	2
JM.1	7		1	1	1
JM.2	7			0	0
JM.4	8	3		3	1
JM.5	5		3	3	3
JM.7	7	4		4	2
JM.8	7	3		3	2
JM.10	4	2	1	3	1
J-TE-G	7	2		2	0
J-TE-H	8			0	0
M.26	8			0	0
M.9Pajam2	8	1	3	4	3
M.9T337	8	1		1	1
PiAu 36-2	3	1	1	2	1
PiAu 51-11	8			0	0
PiAu 51-4	7	2		2	0
PiAu 56-83	8			0	0
G Smith/M26 (Pollenizer)	20	4		4	7
G16 (Phys)	10	2	1	3	2
M26 (Phys)	10	0	0	0	0
M9T337 (Phys)	10	1	0	1	0
Total	215	31	11	42	31

### 2001 Red Top Peach Rootstock Planting

Yields were considerably greater in 2004 than 2003, especially on the more dwarfing rootstocks (Table 2). Overall, fruit size was very good. It was particularly encouraging to see large fruit sizes on some of the more dwarfing rootstocks including Jaspí, Julior and VVA-1. Pumiselect, K146-44 and K146-43 had the smallest fruit sizes in the trial. No additional trees died in 2004.

Table 2. 2001 NC-140 Red Top peach rootstock planting at the Kearney Ag Center – 2004 data.

Rootstock	Trunk Circ. (mm)	Yield (kg/tree)		Fruit Weight (g/fruit)		Tree Survival (%)
	10/03	7/03	6/04	7/03	6/04	11/04
BH-4	291 a <sup>z</sup>	31.1 a	52.3 a	183.4 a	181.0 abc	100
Cadaman	272 ab	20.1 bcd	49.1 ab	174.4 ab	178.8 abc	100
SLAP	253 ab	23.3 b	46.5 ab	173.7 ab	179.8 abcd	75
Lovell	247 b	21.8 bc	44.2 b	170.3 ab	168.2 cdef	100
SC-17	247 b	21.4 bc	48.8 ab	172.4 ab	164.8 defg	100
Nemaguard	242 b	21.1 bc	42.0 bc	163.8 a-c	177.8 abcd	88
Hiawatha	200 c	14.6 de	34.4 cd	176.8 ab	191.5 ab	100
P30-135	191 c	11.3 ef	31.4 d	167.9 ab	169.3 cdef	100
Bailey	191 c	16.8 cde	41.5 bc	174.7 ab	177.6 abcd	100
Pumiselect	181 c	6.5 fg	27.5 de	137.8 de	149.6 g	100
K146-44	128 d	5.7 fg	15.9 f	144.1 cd	157.7 efg	100
K146-43	124 d	7.4 fg	18.6 ef	118.1 e	152.2 fg	100
Jaspi	120 d	6.9 fg	19.1 ef	160.6 bcd	173.4 cde	100
Julior	119 d	2.7 g	17.6 f	161.2 abcd	193.0 a	100
VVA-1	96 d	2.5 g	13.9 f	180.2 ab	175.2 bcd	75

<sup>z</sup> Mean separation within columns by Duncan's multiple range test, P=0.05.

### 2002 Redhaven Peach Rootstock Planting

This trial had its first commercial yield in 2004. Cadaman and Lovell were the most vigorous rootstocks in the block and had the highest yields (Table 3). VSV-1 and VVA-1 were considerably smaller trees and produced about one third of the yield. All of the trees had equivalent fruit size. There were no new tree deaths in 2004. However, VSV-1 trees were not very thrifty looking. Also, in the early fall, two of the MRS 2/5 trees showed signs of incompatibility with the Redhaven scion.

Table 3. 2002 NC-140 Redhaven peach rootstock planting at the Kearney Ag Center – 2004 data.

Rootstock	Harvest Dates 6/04					
	# Fruit/ tree	Yield (kg/tree)	Yield efficiency (kg/tcsa)	Fruit Wgt. (g/frt)	Tree Survival 11-04 (%)	Trunk Circ. 12-04 (cm)
Cadaman	114 a	18.2 a	.44	159	100	35.8 a
Lovell	121 a	17.4 a	.45	144	100	34.3 a
Pumiselect	103 a	15.4 c	.52	154	88	27.7 b
Penta	51 bc	8.4 bc	.47	165	100	23.0 cd
Adesoto 101	55 bc	9.3 b	.56	166	100	21.0 dc
MRS 2/5	68 b	10.7 b	.51	160	100	24.7 bc
VVA-1	37 c	6.0 c	.56	157	100	17.6 ef
VSV-1	37 c	5.4 c	.52	146	100	15.6 f

<sup>z</sup> Mean separation within columns by Duncan's multiple range test, P=0.05.

#### Related Rootstock Work

We continue to evaluate many different rootstocks including K146-43 and P30-135, as well as new selections coming out of the breeding program. There are some rootstocks that look very promising.

WORK PLANNED FOR NEXT YEAR: Data collection and rootstock evaluation will continue in 2004 following guidelines established by the NC-140 Technical Committee.