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PROGRESS AND PRINCIPLE ACCOMPLISHMENTS

1999 NE-183 Apple Cultivar Trial

Bloom and Fruit Set

Bloom was generally adequate with all but CQR 12T50 and Jubilee Fuji having bloom intensity that had a near full crop potential (Table 1). Heaviest blooming cultivars, based on bloom rating, were COOP 39, NJ 109, NY 79507-72, Pinova, Silken, and Zestar; all of which had a near snowball bloom. Chinook, Golden Delicious, Hampshire, Runkel and Silken had the heaviest fruit set. Lateral bloom was especially on Silken, and a substantial number of these flowers set fruit. NJ 109 was among heaviest blooming cultivars, but similar to last year, it was one of the lowest setting cultivars. Chinook had the highest fruit set, primarily because it had the highest percent of both spur and lateral flowers that set. There was a week between the earliest blooming cultivar, Silken, and the latest blooming cultivar BC 8S-26-50.

Yield and Fruit Size

Yield in general was quite heavy in 2003 with over half of the cultivars averaged 10 kg of fruit or more per tree (Table 2). The heaviest yielding cultivars were: CQR 10T17, Golden Delicious, Hampshire, and Runkel. Autumn Gold, BC 8S-26-50, CQR 10T17, CQR 12T50, Hampshire, and Runkel had average fruit size of all harvested fruit that exceeded 200 g. In general, pre-harvest drop was light in 2003, but Delblush, Pinova and NJ 90 did have near 10% or more fruit drop prior to harvest. Cultivars with the highest yield efficiency included: Autumn Gold, COOP 39, CQR 10T17, Golden Delicious, Hampshire, Pinova, Runkel, and Silken.

Fruit Quality Assessment

Ambrosia, Chinook, COOP 29, COOP 39, CQR 10T17, CQR 12T50, Delblush and NY 79507-72 had flesh firmness that exceeded 20 pounds. In general, fruit soluble solids were lower than in previous years. COOP 29 and Delblush were the only cultivars that had soluble solids above 14. Autumn Gold, Delblush and NJ 109 had the largest L/D ratio. NJ 90 had the most red color with over 90% of the surface judged to be red. Other cultivars with between 80 and 90% of the surface red were: BC 8S-26-50, Chinook, COOP 39, Hampshire and Jubilee Fuji. Some watercore was detected in most cultivars, but those that had 40% or more of the fruit afflicted were: Autumn Gold, CQR 10T17, CQR 12T50, Hampshire, NJ 90, and Runkel.

Growth

Lack of moisture for the 2 previous years resulted in slow growth of all trees. Ample rain occurred in 2003 but generally heavy, but appropriate, crop loads slowed trunk circumference increase in 2003. Hampshire had the largest trunk circumference at the end of the growing season (Table 4). The most vigorous growing cultivars were COOP 29, CQR 10T17, and Hampshire with 2 cm or more trunk circumference increase in 2003.

Organoleptic and Visual Evaluation

Ambrosia, NJ 90 and Silken were judged to be the most attractive, crispest and juiciest cultivars (Table 5). The sweetest cultivars were Ambrosia and BC 8S-26-50 while COOP 29 and Delblush were judged to have the highest acidity. The best flavored cultivars and those that generally were judged to be the most desirable with a rating of 4.0 or greater were: Ambrosia, BC 8S-26-50, Hampshire, NJ 90, Silken and Zestar.

Disease Evaluation

As part of a study that evaluated the disease susceptibility of new cultivars, five replicates of twenty-one apple cultivars were evaluated during mid-July 2003 for disease symptoms on leaves. Six terminals on each tree were examined for the presence or absence of symptoms of four diseases: scab, cedar apple rust, frog-eye leaf spot, and powdery mildew. For scab, rust, and frog-eye, the number of leaves containing lesions were determined. The percentage of leaves infected in each terminal was then calculated. Mildew was counted as either present or absent for the entire terminal.

Leaf scab symptoms were more numerous than usual in 2003 and differences among cultivars were significant (Table 6). Twenty-six percent of the 'R. Macintosh' leaves and 19 percent of the 'BC 8525-33' and 'Ambrosia' leaves were infected. The next most susceptible groups consisted of 'NJ 90', 'Hampshire', and 'Golden Delicious' (12.3 to 8.7 % infected) followed by 'Runkle' and 'Jubilee Fuji' (7.0 to 5.6 % infected). There was an intermediate group with 'Zestar', 'Delblush', and 'NY 75907-49' that had 5.4 to 4.2 percent infected leaves. At the other end of the scale, were both CQR cultivars, 'Coop 29', 'Coop 25', and 'NY 79507-72' with no scab lesions. There were no significant effects of replicate.

Rust and mildew symptoms were extremely rare, with averages closer to 0 % than to 1 %. The data is ready to analyze if there is an interest. There was more frog-eye leaf-spot in 2003 as compared to 2002. Differences among cultivars and among replicates were significant. The replicate at the north end of the block, adjacent to woods, had roughly twice the leafspot (10.6 %) of the other reps (5.1-6.3 %). Mean separation tests have not been done yet. 'CQR12T50' (41.2 %) and 'Zestar' (19.1 %) had much more leaf-spot than the other cultivars, followed by 'Coop 29' and 'R. Macintosh'.

Twenty-five fruit (harvested over three weeks on four dates, 4-Sep, 11-Sep, 18-Sep, and 25-Sep) from each cultivar were evaluated for disease incidence (scab, rust, flyspeck, sooty blotch, and rots) per protocol(s) described by the disease sub-committee in the separate NE-183 disease planting. Preliminary results are presented in Tables 7-18. Of most interest is fruit susceptibility or resistance to scab (Table 8). The following cultivars had a low incidence (<8%) of fruit scab: NY 79507-72, NY 75907-49, CQR 12T50, Co-op 25, NY 65707-19, CQR 10-T-17, Co-op 39, and Co-op 29, which all have known resistance to scab; and Pinova, NJ 109, BC 8S-26-50, and Golden Delicious, which appear to have considerable resistance. Jubilee Fuji, Zestar, Runkel, Delblush, and NJ 90 had moderate levels of fruit scab (14-42%). Among the highly susceptible cultivars (>56% fruit scab) were Silken, Hampshire, McIntosh, and Ambrosia.

Tables 11-18 present results of flyspeck and sooty blotch incidence on the four harvest dates compared to the 'standard' Golden Delicious. On 4-Sep, there were no differences among the cultivars, but over the next three harvest dates, incidence of flyspeck and sooty blotch increased and there were significant differences between cultivars. As differences in cultivar susceptibility to these summer diseases has not been well documented, further research in this area is warranted.

Usefulness of Findings

This was the third year of fruit and disease evaluation in these plantings. Differences in bloom, fruit set, fruit quality, and disease susceptibility (or resistance) exist, but these are young trees. Part of this can be attributed to differences in precocity and fruit set. A more accurate picture of tree performance and disease susceptibility/resistance will develop when trees fruit for several seasons and biennial cycles manifest themselves. However, even now we are getting a sense of which will be the most precocious, high yielding, best tasting, and disease-resistant cultivars. Even at this point it is possible to identify cultivars that are quite promising and preliminary recommendations can be made for planting of these cultivars in New England.

Work Planned for Next Year

We are starting to collect the most meaningful data from the second planting, now that fruit quality and yield data are being taken. This activity, along with disease evaluation(s), will continue. We are taking detailed flowering data which we hope will reveal more about not only the intensity of flowering and the type of flowers produced, but also their tendency to set fruit. We will focus on scab and summer disease susceptibility so appropriate IPM recommendations can be made to growers choosing to plant some of these new cultivars.

Publications

Greene, D. W and S. A. Weis. 2003. Apple varieties with a future. *Compact Fruit Tree* 36(2):55-56.

Table 1. Bloom and fruit set of apple cultivars in the 1999 NE-183 Horticulture planting. University of Massachusetts, Belchertown, MA.

Cultivar	No.	Bloom date Julian	Bloom rating ^z	Bloom			Fruit Set		
				BC/cm ² Spur	LCSA Lat	Total	Fruit/cm ² Spur	LCSA Lat	Total
Ambrosia	101	132	3.5	17.2	6.3	23.5	11.6	1.7	13.3
Autumn Gold	102	131	2.0	12.8	6.2	19.0	10.1	2.6	12.7
BC 8S-26-50	103	136	2.0	10.9	2.1	13.1	7.7	1.3	9.0
Chinook	104	132	2.6	12.1	5.2	17.3	19.2	5.0	24.2
COOP 29	105	133	2.0	6.7	0.7	7.3	7.0	0.4	7.4
COOP 39	106	133	4.6	20.4	10.9	31.2	9.4	2.6	12.1
CQR 10T17	107	130	3.6	15.3	7.5	22.8	7.5	1.7	9.2
CQR 12T50	108	132	1.0	3.1	0.3	3.4	4.0	0.9	4.9
Delblush	109	131	3.0	12.8	2.1	14.9	11.9	0.5	12.4
Golden Delicious	110	131	3.4	17.1	4.9	22.0	14.8	3.1	17.9
Hampshire	111	132	2.8	11.0	7.4	18.4	12.3	3.9	16.2
Jubilee Fuji	112	133	1.5	12.1	3.1	15.2	8.7	2.3	11.0
NJ 109	114	130	4.5	13.5	10.6	24.1	4.7	1.9	6.7
NJ 90	115	134	3.0	11.7	5.3	17.0	8.2	1.8	10.0
NY 79507-72	118	131	4.6	13.5	3.1	16.6	5.5	1.0	6.5
Pinova	120	130	4.8	12.2	9.8	22.0	8.1	2.9	11.0
Runkel	121	135	3.4	17.7	7.3	25.0	11.1	3.7	14.8
Silken	123	129	4.5	21.4	21.8	43.2	10.6	7.1	17.6
Zestar	124	130	4.2	20.0	9.6	29.7	5.9	3.2	9.2

^z0 = no bloom, 3 = full crop potential, 5 = snowball bloom.

Table 2. Mean yield and fruit size of apple cultivars in the 1999 NE-183 Horticultural planting, University of Massachusetts, Belchertown, MA.

Cultivar	No.	Harvest		Hand-pick (Kg)	Hand-pick weight (g)	Drop fruit No.	Total adjusted yield (Kg)	Yield efficiency Kg/TCSA
		date Julian	Hand- pick No.					
Ambrosia	101	268	65.8	10.9	161	1.8	11.153	1.09
Autumn Gold	102	296	72.0	3.3	200	6.3	14.432	1.43
BC 8S-26-50	103	280	42.0	9.0	217	3.6	9.734	1.03
Chinook	104	296	83.4	0.1	120	6.2	10.857	1.08
COOP 29	105	296	38.2	7.4	196	2.2	7.818	0.71
COOP 39	106	259	78.6	2.6	159	1.4	12.850	1.19
CQR 10T17	107	268	76.4	18.4	247	6.0	19.881	1.66
CQR 12T50	108	259	10.3	2.0	201	1.0	4.402	0.59
Delblush	109	282	63.7	8.9	141	13.0	7.552	0.69
Golden Delicious	110	282	117.2	21.2	187	5.6	22.285	1.92
Hampshire	111	280	83.8	16.5	213	6.0	17.685	1.48
Jubilee Fuji	112	259	46.3	6.4	133	0.0	6.356	0.66
NJ 109	114	254	41.0	7.4	183	0.5	7.535	0.76
NJ 90	115	280	54.6	0.0	184	9.8	11.813	1.11
NY 79507-72	118	254	29.2	5.0	170	0.8	5.137	0.58
Pinova	120	269	57.0	10.7	187	11.3	12.785	1.19
Runkel	121	280	98.4	20.3	211	3.2	20.983	1.92
Silken	123	254	75.0	11.9	161	0.0	11.910	1.24
Zestar	124	240	37.8	7.5	192	1.2	7.773	0.80

Table 3. Fruit quality assessment (average of 10 fruit) of apple cultivars in the 1999 NE-183 Horticultural planting, University of Massachusetts, Belchertown, MA.

Cultivar	No.	Fruit weight (g)	Flesh firmness (lb)	Soluble solids (%)	L/D ratio	Red color (%)	Water core (%)	Starch rating (1-8)
Ambrosia	101	175	20.6	11.9	0.90	78	0	4.2
Autumn Gold	102	234	16.4	13.1	0.97	15	61	7.1
BC 8S-26-50	103	229	17.3	13.8	0.92	83	30	4.3
Chinook	104	141	21.4	13.0	0.90	83	10	4.7
COOP 29	105	225	21.1	14.8	0.87	29	2	5.8
COOP 39	106	172	24.4	11.4	0.88	80	..0	5.0
CQR 10T17	107	258	24.6	11.0	0.90	65	66	4.3
CQR 12T50	108	204	21.3	12.1	0.86	8	40	7.8
Delblush	109	155	20.9	14.4	0.99	20	17	5.2
Golden Delicious	110	208	16.3	12.5	0.91	8	0	6.6
Hampshire	111	231	18.4	12.5	0.82	82	48	4.1
Jubilee Fuji	112	158	18.3	10.6	0.84	81	0	6.6
NJ 109	114	195	17.0	11.9	0.97	10	3	4.5
NJ 90	115	204	16.4	12.4	0.80	93	66	4.6
NY 79507-72	118	183	22.3	10.9	0.76	79	4	4.5
Pinova	120	194	17.6	13.1	0.91	76	30	5.6
Runkel	121	228	17.3	11.5	0.81	66	72	4.5
Silken	123	188	18.1	12.4	0.93	0	5	5.3
Zestar	124	198	16.2	12.3	0.84	49	34	3.3

Table 4. Growth of apple cultivars in the 1999 NE-183 Horticultural planting, University of Massachusetts, Belchertown, MA.

Cultivar	No.	2003 Trunk circ. (cm)	2003 Trunk circ. increase (cm)
Ambrosia	101	9.4	1.0
Autumn Gold	102	10.6	1.6
BC 8S-26-50	103	9.4	1.6
Chinook	104	10.0	1.7
COOP 29	105	10.6	2.1
COOP 39	106	10.3	1.3
CQR 10T17	107	11.9	2.0
CQR 12T50	108	7.5	0.9
Delblush	109	10.1	1.5
Golden Delicious	110	11.2	1.6
Hampshire	111	12.5	2.6
Jubilee Fuji	112	10.6	1.8
NJ 109	114	9.8	1.3
NJ 90	115	10.6	1.8
NY 79507-72	118	8.5	1.2
Pinova	120	10.8	1.4
Runkel	121	10.8	1.4
Silken	123	9.2	0.9
Zestar	124	8.8	1.1

Table 5. Organoleptic and visual evaluation of cultivars in the 1999 NE-183 Horticulture planting.

Cultivar	No.	Attractive	Crispness	Juiciness	Sweetness	Acidity	Flavor	Desirability	Color	Fruit shape	Skin	Flesh firmness	Astring	Flesh color	Core spot	Bitter pit	Water core	Greasi- ness
Ambrosia Autumn Gold	101	4.4	4.4	4.3	3.1	2.5	4.2	4.3	4.3	1.8	2.4	4.2	2.9	4.4	1.0	1	1.0	1
BC 8S-26- 50	102	3.8	3.7	3.9	2.9	2.8	3.8	3.6	0.0	1.8	2.3	3.6	2.7	5.0	1.0	1	1.0	1
Chinook	103	3.3	4.3	4.6	3.4	3.0	4.4	4.2	3.3	2.2	1.7	3.8	3.6	4.4	1.0	1	1.2	1
COOP 29	104	4.1	4.2	4.1	2.6	3.2	3.8	3.9	4.0	2.0	2.1	4.1	3.3	4.3	1.0	1	1.0	1
COOP 39	105	1.9	4.5	4.3	1.3	4.0	3.0	2.9	0.0	2.0	2.6	4.5	3.4	4.5	1.0	1	1.0	1
CQR 10T17	106	3.7	4.2	4.3	1.7	3.8	2.9	2.9	3.6	1.6	2.4	4.6	3.2	4.7	1.0	1	1.0	1
CQR 12T50	107	2.9	3.0	3.9	1.9	3.8	2.0	2.2	2.7	2.2	3.5	4.4	3.5	2.3	1.0	1	3.0	1
Delblush Golden	108	4.3	4.0	4.5	1.5	3.8	3.0	3.0	0.0	2.0	2.5	4.0	3.0	4.5	1.0	1	1.0	1
Delicious Hampshire	109	3.6	4.1	4.0	2.1	4.0	3.1	3.0	0.0	1.5	2.9	4.3	3.5	5.0	1.0	1	1.0	1
Jubilee	110	2.7	3.8	4.0	2.4	3.5	3.5	3.6	0.0	1.9	2.4	3.8	3.5	4.6	1.0	1	1.0	1
Fuji	111	4.3	3.9	4.1	2.6	3.2	4.0	4.0	4.2	2.2	2.4	4.0	3.3	2.0	1.2	1	2.5	1
NJ 109	112	3.5	3.0	4.0	2.3	3.3	3.4	3.5	3.5	2.0	2.5	4.0	3.0	3.0	1.0	1	1.0	1
NJ 90	114	3.9	3.5	4.0	1.5	3.9	3.3	3.1	0.0	2.1	2.0	3.6	3.4	3.0	1.0	1	1.0	1
NY 79507-72	115	4.5	4.5	4.6	2.7	3.2	4.3	4.2	4.8	2.4	4.1	4.1	3.5	2.5	1.0	1	1.0	1
Pinova	118	4.0	3.1	2.9	2.2	3.4	3.5	3.4	4.0	1.5	3.5	4.1	3.2	1.3	1.0	1	1.0	1
Runkel	120	4.1	3.6	4.3	2.4	3.3	3.8	3.8	4.1	1.5	2.8	4.0	3.4	4.6	1.0	1	1.0	1
Silken	121	4.1	3.3	3.9	2.7	2.2	3.1	3.2	4.0	2.3	3.1	4.0	2.9	3.5	1.0	1	2.0	1
Zestar	123	4.5	4.6	4.6	2.8	2.9	4.4	4.5	0.0	2.0	1.6	4.1	3.0	3.6	1.0	1	1.0	1
	124	2.6	3.7	4.2	2.5	3.6	4.2	4.1	2.5	1.5	1.7	4.0	3.2	2.0	1.0	1	1.4	1

Table 6. Incidence of apple scab and leafspot in the 1999 NE-183 disease planting, UMass Cold Spring Orchard, Belchertown, MA

Cultivar	Mean % terminals infected by scab*	Mean % terminals infected by leafspot
'R. Macintosh'	26.1 a	8.8
'Silken'	19.1 b	1.5
'Ambrosia'	18.9 b	3.6
'NJ 90'	12.3 c	6.9
'Hampshire'	9.5 cd	2.1
'Golden Delicious'	8.7 cde	1.9
'Runkle'	7.0 de	2.3
'Jubilee Fuji'	5.6 de	5.7
'Zestar'	5.4 e	19.1
'Delblush'	5.1 e	3.9
'NY 75907-49'	4.2 ef	5.6
'Pinova'	1.8 f	2.3
'NJ 109'	1.7 f	0
'BC8526-50'	1.5 f	3.4
'NY 65707-19'	0.3 f	6.2
'Coop 39'	0.2 f	1.3
'Coop 25'	0 f	1.0
'CQR12T50'	0 f	41.2
'NY 79507-72'	0 f	1.4
'Coop 29'	0 f	10.7
'CQR 10T17'	0 f	3.1

*Means in each column followed by the same letter are not significantly different at the 5% probability level (Fisher's LSD test). ANOVA for scab: $F(\text{Treatment}) = 24.7$, $p = 0.000$; $F(\text{Rep}) = 1.4$, $p = 0.226$. ANOVA for leafspot: $F(\text{Treatment}) = 18.9$, $p = 0.000$; $F(\text{Rep}) = 3.5$, $p = 0.008$.

Table 7. % Clean Fruit

Cultivar	% clean fruit*
Ambrosia	0 a
Golden Delicious	1 ab
Hampshire	2 ab
Delblush	2 ab
McIntosh	4 abc
CQR 12-T-50	6 abc
Pinova	7 abc
Co-op 29	8 abc
BC 8S-26-50	10 abc
Runkel	12 abc
CQR 10-T-17	14 abcd
Silken	15 abcd
NY 65707-19	15 abcd
NJ 109	16 bcd
Co-op 25	17 bcde
Jubilee Fuji	20 cde
NJ 90	28 de
Zestar	34 ef
Co-op 39	47 fg
NY 75907-49	48 fg
NY 79507-72	55 g

*numbers within column followed by same letter are NOT significantly different (P<0.05)

Table 8. % Fruit w/ Scab

Cultivar	% fruit with scab*
NY 79507-72	0 a
NY 75907-49	0 a
CQR 12-T-50	0 a
Pinova	0 a
Co-op 25	0 ab
NY 65707-19	0 ab
CQR 10-T-17	0 ab
NJ 109	1 ab
Co-op 39	1 ab
Co-op 29	4 ab
BC 8S-26-50	5 ab
Golden Delicious	7 ab
Jubilee Fuji	14 ab
Zestar	21 bc
Runkel	33 cd
Delblush	36 cd
NJ 90	42 de
Silken	57 ef
Hampshire	63 fg
McIntosh	77 gh
Ambrosia	84 h

*numbers followed by same letter are NOT significantly different (P<0.05)

Table 9. % Fruit w/ Flyspeck

Cultivar	% fruit with flyspeck*	
Ambrosia	0	a
Golden Delicious	1	ab
Hampshire	2	ab
Delblush	2	ab
McIntosh	4	abc
CQR 12-T-50	6	abc
Pinova	7	abc
Co-op 29	8	abc
BC 8S-26-50	10	abc
Runkel	12	abc
CQR 10-T-17	14	abcd
Silken	15	abcd
NY 65707-19	15	abcd
NJ 109	16	bcd
Co-op 25	17	bcde
Jubilee Fuji	20	cde
NJ 90	28	de
Zestar	34	ef
Co-op 39	47	fg
NY 75907-49	48	fg
NY 79507-72	55	g

*numbers within column followed by same letter are NOT significantly different ($P < 0.05$)

Table 10. % Fruit with Sooty Blotch

Cultivar	% fruit with sooty blotch*	
Co-op 39	5	a
NY 75907-49	1	ab
McIntosh	2	ab
Zestar	2	ab
NJ 90	4	abc
NY 79507-72	6	abc
Silken	7	abc
Jubilee Fuji	8	abc
NJ 109	10	abc
Runkel	12	abc
Co-op 25	14	abcd
CQR 10-T-17	15	abcd
CQR 12-T-50	15	abcd
NY 65707-19	16	bcd
BC 8S-26-50	17	bcde
Co-op 29	20	cde
Hampshire	28	de
Pinova	34	ef
Golden Delicious	47	fg
Ambrosia	48	fg
Delblush	55	g

*numbers within column followed by same letter are NOT significantly different ($P < 0.05$)

Table 11: % Flyspeck
04-Sep Harvest Date

Cultivar	% Fruit with flyspeck ^{NS}
Golden Delicious	36
Zestar	56
Silken	71
NJ 109	70

Table 12: % Sooty Blotch
04-Sep Harvest Date

Cultivar	% Fruit with sooty blotch ^{NS}
Zestar	9
Golden Delicious	17
Silken	13
NJ 109	20

Table 13: % Flyspeck
11-Sep Harvest Date

Cultivar	% Fruit with flyspeck*
NY 79507-72	38 a
NY 75907-49	50 ab
Co-op 39	51 abc
Golden Delicious	52 abc
McIntosh	74 bcd
Jubilee Fuji	78 cd
CQR 12-T-50	94 d

Table 14: % Sooty Blotch
11-Sep Harvest Date

Cultivar	% Fruit with sooty blotch*
Co-op 39	5 a
NY 75907-49	5 a
McIntosh	7 a
NY 79507-72	13 ab
Jubilee Fuji	14 ab
Golden Delicious	29 bc
CQR 12-T-50	45 c

Table 15: % Flyspeck
18-Sep Harvest Date

Cultivar	% Fruit with flyspeck*
NJ 90	42 a
Runkel	67 b
Golden Delicious	71 bc
BC 8S-26-50	76 bc
NY 65707-19	76 bc
Co-op 25	77 bc
CQR 10-T-17	83 bc
Hampshire	86 c

Table 16: % Sooty Blotch
18-Sep Harvest Date

Cultivar	% Fruit with sooty blotch*
NJ 90	9 a
Runkel	28 b
Co-op 25	37 bc
CQR 10-T-17	41 bc
NY 65707-19	46 bcd
Golden Delicious	51 cd
BC 8S-26-50	55 cd
Hampshire	61 d

Table 17: % Flyspeck
25-Sep Harvest Date

Cultivar	% Fruit with flyspeck*
Pinova	72 a
Delblush	85 ab
Co-op 29	85 ab
Golden Delicious	90 b
Ambrosia	98 b

Table 18: % Sooty Blotch
25-Sep Harvest Date

Cultivar	% Fruit with sooty blotch*
Co-op 29	57 a
Pinova	79 b
Golden Delicious	84 b
Ambrosia	86 b
Delblush	87 b

^{NS}Not Significantly different; *numbers within tables and columns followed by same letter are NOT significantly different ($P < 0.05$)