TREE FRUIT RESEARCH 1996

Table of Contents

HARVEST REPORT 1996
TREE FRUIT

Introduction

For the 1996 reports we have changed to a new format, to make it easier to transfer data from field observations to the annual report. Instead of a short paragraph describing each variety, the information will appear as a table, with number ratings to designate important factors such as fruit set, size, flavor, etc. Some ratings such as fruit set are based on the same standard for all fruit kinds. Other ratings, such as fruit size, will be different since they describe the characteristics of different fruit kinds. All the varieties and selections of one kind are listed together, in approximate order of ripening. The key to the numerical rating system appears below. In general, a higher number reflects a preferred rating, but in categories such as skin color of plums, the numbers simply designate a characteristic, with no preferred ranking.

The star rating, found in the farthest left column, reflects our overall assessment of each variety's performance, including cumulative records of past performance. When it refers to selections not yet named and introduced, the star rating reflects possible future potential.

Star Rating - same for all fruit kinds
5 = outstanding, the best, very promising
4 = good established variety, promising
3 = established variety, some faults
2 = serious faults
1 = unsuitable, not recommended, discard
blank = not yet evaluated, new planting

St Fruit Set (in proportion to tree size) - same for all fruit kinds
5 = very heavy, all branches densely fruited
4 = moderately heavy, all branches bearing some fruit
3 = moderate, some areas of tree not bearing
2 = light, most areas of tree not bearing
1 = very light, few fruits only
dnf = did not fruit

Fl Flavor - same for all fruit kinds
5 = sweet-tart
4 = sweet
3 = subacid
2 = bland
1 = tart

The ratings below apply specifically to **APPLES AND PEARS**:

Sz Predominant Fruit Size:
5 = very large, 4" diameter and above
4 = large, 3-4" diameter
3 = medium, 2.5-3" diameter
2 = below medium, 2-2.5" diameter
1 = small, 2" diameter and below

C Color, % Red
Total fruit area covered with red blush or stripe (may be 0 for green or yellow).

F Finish:
5 = no russet or skin blemish
4 = russet only in cavity or basin
3 = some light russet streaks on body of fruit
2 = light allover russet, or heavy streaks/patches on body of fruit
1 = solid allover russet, rough, lumpy, or deformed
For **ASIAN PEARS** color ratings are as follows:
4 = yellow, 3 = tan, 2 = brown, 1 = partial russet
Ratings for set, size, and flavor are the same as for apples.

The ratings below apply specifically to **PEACHES AND NECTARINES**.

Cf Flesh Color:
7 = white
6 = yellow
5 = orange
4 = green
3 = pink
2 = red

Sz Fruit Size:
3 = large, 3.5" diameter or above
2 = medium, 2.5-3.5" diameter
1 = small, 2.5" diameter or below

Ratings for set and flavor are the standard ratings; skin color rating is the same as for apples.

The following ratings apply to **PLUMS**.

Cs Skin Color:
7 = yellow
6 = green
5 = orange
4 = red
3 = blue
2 = purple
1 = black

Sz Fruit Size:
3 = large, 2.5" diameter or above
2 = medium, 1.5-2.5" diameter
1 = small, 1.5" diameter or below

Ratings for set and flavor are the standard ratings, ratings for flesh color same as for peaches.

The following ratings apply to **CHERRIES**.

Sz Size:
3 = large, 1 1/4" diameter and above
2 = medium, about 1" diameter
1 = small, 3/4" diameter or less

Cr Cracking:
4 = none
3 = low, less than 20% fruit cracked
2 = moderate, 20-50% fruit cracked
1 = high, over 50% fruit cracked

R Rot:
4 = none
3 = low, less than 20%
2 = moderate, 20-50%
1 = high, over 50%

Ratings for set are the standard ratings.

For **APRICOTS**, the ratings for set and flavor are the standard ratings, size is the same as for plums, and cracking the same as for cherries.

Cherry

In the spring of 1996 the weather conditions at bloom time adversely affected all the tree fruit kinds except pears and Asian pears. The stone fruits were especially susceptible and many varieties of cherry did not set any fruit this year. **Emperor Francis**, which is usually productive had much less fruit than normal. Varieties that produced good crops despite the adverse conditions were particularly noticeable. These included **Early Burlat**, ripe in the third week of June, and **Angela**, harvested July 13. **Kristin** and **Viscount** production was down, but the cherries were of good quality and flavor. The weather at harvest time was dry and warm, so most of the existing fruit developed little or no cracking, and almost no rot. (For details of specific variety performance, see attached harvest lists.)

Starting in 1995, we proceeded to establish a sweet cherry block on the new dwarfing Gisela rootstocks. Varieties will include several with good past performance records in our area, and a number of new introductions. Some of these will be aimed at exploring the possibility of a late sweet cherry market for commercial growers in western WA. We anticipate that trees will be small enough so that the whole block can be enclosed in a net cage to prevent bird damage. This part of the project is contingent on securing funds to cover installation of the net and framing. As this block is completed, the larger old trees will be phased out.

Proposed Discard:

Moreau - fully evaluated, big tree

Columbia - unproductive

Merla, Merpet - scheduled for discard in 1996, too soft, unproductive

Apricot

In 1996 the spring weather severely damaged bloom in apricots, though several varieties were able to set some fruit successfully, primarily on the one-year wood of upper branches where bloom is delayed. The best apricot for flavor and quality was **Harglow**, with medium-size, sweet fruit having firm, dense flesh. Fruit of **Alfred** was also very sweet and flavorful, and the fruit set was better than in previous years, but is still very light. Trees of **Puget Gold** produced a moderate crop of good sized fruit, but the flavor was not as good as Harglow. None of the apricots planted in 1994 had any fruit this year.

Proposed Discard:

Schilgen sdlg. - unproductive

Peach

Overall yields of peach trees were about one-third to half of normal production, depending on variety. In the new stone fruit block, planted in 1994, there was ample flowering at bloom time, then the cold spell set in and many of the young trees had little or no fruit. Notable exceptions were **Rich May**, **Snowbrite**, and **White Lady**. **Rich May** was the earliest of our current peach selections to ripen, about a week earlier than **Harrow Diamond**, and although set was light, it seemed to have very few split pits, unlike many of the early peaches. **Snowbrite** is white-fleshed and very sweet, with attractive red color over nearly 100% of the skin. **White Lady**, also white-fleshed, ripened later in the season, just after Harken and Redhaven. All three

of these seemed to be very promising in their initial evaluation, so we look forward to seeing them fully producing next year.

Among the established varieties, **Harbelle**, **Harken**, and **Redhaven** all had sufficient crop for harvest, though considerably less than usual. **Proud** leaf curl resistant peach looked promising, with very good flavor, though it is too early to determine overall productivity. **Newhaven** continues to look good, with attractive large fruit, good flavor, and few split pits.

Proposed Discard:

Stark Earliglo - fully evaluated, splits
Stark Early Loring - fully evaluated, not outstanding
China Sdlg - no color, very fuzzy, late; useful only for possible white flesh crosses

Nectarine

Performance of the nectarines was very poor in 1996. They were affected as were peaches by the spring frost, which severely reduced the amount of fruit on the trees. Fruit that developed had a large percentage of cracking, frequently accompanied by rot. None of the new varieties planted in 1994 had fruit for evaluation, and all three trees of **Mayglo** were winter killed.

Plum

In 1996 the plums varied widely in productivity, depending on the degree to which bloom was affected by the hard frost. Most of the very early plums set lightly; **Beauty** and **Methley**, usually quite reliable, produced small crops. In the late season, **Seneca** had less fruit than usual, though size and quality remained good, and **Stanley** Italian prune had no fruit at all for the first time on record.

On the positive side, several of the plum varieties planted in 1994 produced fruit this year; some looked promising. **Cocheco**, a purple-leaf plum with potential for ornamental as well as edible use, has round orange-red fruit with good flavor. **Imperial Epineuse**, a European type, has firm, sweet flesh, and is free stone; it ripens in early midseason. In the later season, **Victory**, another Italian prune type, had excellent sweet fruit. We look forward to seeing how these will do in 1997, and we will be able to evaluate their overall productivity.

Proposed Discard:

CB-68 - cling stone, variable ripening, not likely introduction
CB-71 - unproductive
CB-18 - unproductive
Redheart - unproductive
Candee - unproductive
Schultz - poor flavor, scheduled for 1996 discard
4285 Plum - fully evaluated, not likely introduction

Pears

Both European and Asian pears seemed unaffected by the frost at bloom time. In fact, 1996 was noted for heavy yields in all the pear varieties that were in production. **Harrow Delight**

opened the season with a very heavy crop of good flavored fruit. Among the red-skinned varieties, **Starkrimson, Sensation Red Bartlett** and **Cascade** were all very productive. **Red Comice** was productive enough, but the uneven red stripe color is less attractive than standard **Comice. Crimson Gem Comice** has produced very little fruit in the last 3 years, and is a small, non-vigorous tree.

Both in the pear test plot and the mature trees, **Bosc** produced high yields of good sized fruit. There was no discernible difference in russeting between standard and **Golden Russet Bosc**; both were 100% russet and very attractive. **Conference** and **Concorde** produced good yields of fruit, and it is noteworthy that though both these varieties showed a considerable amount of russeting, the appearance of **Conference** was the more attractive of the two. As far as this year's performance would indicate, a commercial pear orchard with these varieties could do well in this area.

Provisional Discard:

Harrow Diamond - one tree diseased with silver leaf

HW 605 and **HW 606** - nice backyard pears but discard unless Harrow will introduce

Asian Pear

Most of the Asian pears performed well this year. **Hamese #1**, an early yellow-skinned variety, had a moderately light crop with most fruits being of good size and quality. **Mishirasu** produced a heavy load of large fruit; its dark brown, rough skin is not particularly attractive but the crispness and flavor of the fruit are very good. All of the standard varieties produced good crops (see individual descriptions).,

Provisional Discard:

None

Apple

The effects of the frost at bloom time were variable; some varieties showed no reduction in the amount of fruit set, while others had little or no fruit. In a number of varieties a much greater variability in fruit size was seen, with most fruit normal size or slightly larger, and others very small or oddly shaped. This can be attributed partly to more fruit setting on 1-year-old wood, because the bloom on older wood, king bloom particularly, was injured by the frost. Frost scars marked the finish on certain varieties, a characteristic streak of russet skin that most often appeared as a narrow wedge or ray coming out from the area around the stem. In general the trend was to later ripening, by about a week to ten days, the gap tending to close later in the season. Here again, however, there was a lot of variability, and some harvest dates were three weeks later than in 1995, while others differed only by a day or two.

Aside from the late frost, May and June were both cool and wet, so the harvest got off to a slow start. Weather was much better in July, August, and part of September. The harvest season continued to the first week of November. Overall yields were down from those of 1995.

Established Varieties:

Among the established varieties that performed well this year in the early season are **Sunrise, Empress, Homei Tsugaru**, and **Alkmene. Fiesta** was not as productive as usual, but fruit sized well and quality remained high. **Honeycrisp** ripened over a period of three weeks, with

4 color picks to store the fruit at its best. Several red strains of **Gala** are now being evaluated. Some are too young to be in full production, but among those that had full crops in 1996, **Fulford (Regal) Gala** has the most even blush color, and ripens somewhat earlier than the **Scarlet** and **Royal** strains. **Hatsuaki** did very well this year, with large, flavorful fruit and attractive bicolor stripe. **Karmijn** had a fair crop of good quality fruit, despite some problems with sunburn and bitter pit. The best of the **Cox** strains for productivity, flavor, and color were **Queen Cox** and **Cherry Cox**. In the later season, **Empire**, **Melrose**, and **Jonagold** (particularly the highly colored strains **DeCoster**, **Jonagored**, ,and **Rubinstar**), all produced good crops of attractive, tasty fruit. For several seasons now, **Braeburn** has done well despite the lateness of harvest; it may have more potential here than we first thought.

New for 1996:

Several new varieties and selections produced fruit for evaluation in 1996. Two McIntosh types, **Marshall Mac** and **Pioneer Mac**, set plenty of fruit in their first season, with good color and flavor. **Marshall** ripened about a week earlier than **Pioneer**. **Greensleeves**, an English variety, produced attractive light green skinned fruit with a refreshing subacid flavor. **Ultrared Gala** is both productive and attractive. This year was once again not a good one for **Fuji** types in general, but the first year of the **Red Fuji TAC 114** strain showed it to be productive, and it may turn out to be somewhat earlier than standard Fuji.

Among the various selections, a standout in the early season is **Biringer #101**. It is similar to **Sunrise**; the trees are productive, the fruit an attractive allover bright red, and the sweet-tart flavor very good. Several of the BC selections that first fruited in 1995 did well again in 1996. The earliest is **BC 11W-19-18**, a cross of Discovery X Summerred with lively subacid flavor, and is followed in mid-September by another cross from the same parentage, **BC 11W-12-85**, which is rather sweeter in flavor with a uniform conic shape and better finish. Three of the Gala X Splendour crosses produced fruit this year and all are attractive, with bright red color, very firm flesh, and flavor in the sweet to sweet-tart range. In order of ripening they are **BC 8S-27-51** (Sept. 30), **BC 8S-27-43** (Oct. 21), and **BC 8S-29-18** (Oct. 21). We will be checking with Summerland to see if one or more of these selections will be named and introduced soon.

Disease Resistant Apple Varieties and Selections:

Disease resistant varieties that are immune to scab differed in their resistance to mildew. **Williams' Pride** still rates high in terms of flavor for the early season, but it is quite susceptible to mildew. **Dayton**, ripe in early September, produced fruit of good size and flavor, but also showed some mildew. Fruit of **Liberty** was smaller than usual, but of good quality. It also is somewhat susceptible to mildew. In the late season, **Enterprise** had attractive red fruit with very good flavor and firmness. It appears to be quite resistant to mildew as well.

Performance of the disease resistant selections was quite variable. Some were unproductive and several others were seriously attacked by mildew, which not only damaged shoot tips but also contributed to russeting of the fruit. Those that performed well stood out by contrast. **NY 75413-30** set well, with large, attractive fruit, ripe early September. In late September, two very promising selections are **NY 65707-19**, an attractive bicolor with some resemblance to Gala, and **NY 75414-1**, a dark red McIntosh type; both of these have performed consistently well over the last few seasons. Some young trees that did well are worth watching in 1997. They are **Coop**

28, an early red Jonathan type, **PAR-12T-101**, productive with firm fruit and excellent red color, **CLR-20T-22**, flavorful with very good color and firmness, and **P15R-3T-86**, a late apple similar to Melrose.

Provisional Discard:

NJ 107 - fully evaluated, mediocre flavor
Nebuta - fully evaluated, bland flavor, soft
Michinoku - fully evaluated, not top quality, russets
Himekami - fully evaluated, not top quality, tends to bland flavor
Hubbardston Nonesuch - old variety,fully evaluated, mediocre quality and appearance
Nova EasyGro - eliminate extra trees, keep tree in B block
Delbard Jubilee - fully evaluated, mediocre quality, bland
Lysgolden - fully evaluated, OK but not the best Golden type we've tested

HARVEST LIST - APPLES 1996

( ) = star rating, St = set, Sz = size, C = skin color % red, F = finish, Fl = flavor

S	Cultivar	Pick 95	96	St	Sz	C	F	Fl	Comments
	AA 49	July 6	dnf						
2	Discovery	July 28	Aug 9-10	4	2	80	4	3	codling moth
5	Williams' Pride	July 28	Aug 8	4	1-4	90	4	5	crisp, firm
2	NJ 116 52	Aug 3	Aug 18-26	2	4	0	3	5	water core
	Fu Shaui	Aug 3	Aug 21-26	5	3	10	3	4	young tree
2	Monark (AA 44)	Aug 3	Aug 9-12	3	4	90	4	3	small, young trees
1	NJ 107 54	Aug 10	Aug 22-26	1	3	0	5	1	v. poor set
5	Sunrise 44	Aug 10	Sep 4-10	5	4	20	4	3	3 picks
4	Empress	Aug 10	Aug 27	4	3	100	3	5	softens quickly
4	NY 652	Aug 12	Aug 26-30	4	2	100	3	3	tender flesh
2	Redfree	Aug 25	Aug 26	3	3	90	4	3	bad bird damage
4	Redcort	Aug 25	Sep 17	2	3	100	5	3	some mildew
4	Sansa 71	Aug 25	Sep 5	3	4	90	3	5	conic shape, attr
4	Tsugaru, Homei 27	Aug 25	Sep 9-14	5	4	90	4	5	uniform, attr., v. firm
4	Alkmene 21	Aug 25	Sep 9-14	3	3	40	4	3	some sunburn
3	Red Gravenstein 96	Aug 25	Sep 5	3	4	80	3	3	uneven ripening
4	Aroma 43	Aug 30	Sep 5	2	3	30	4	3	poor color, few
2	Novamac	Aug 31	Sep 6	3	3	70	4	5	some early drop
4	Biringer #101	Aug 31	Sep 3	5	2	90	5	5	looks promising
2	Nebuta 6A	Aug 31	Sep 14	4	3	90	4	4	rather bland
3	Ginger Gold	Aug 31	Sep 17	2	3	0	4	2/4	some mildew
2	NY 74828-12	Sep 1	Sep 6	4	4	80	4	3	susceptible scab race 5 (NY)
3	NY 66305-289	Sep 1	Sep 14	4	2	90	3	3	leaves damaged

	Beni No Mai	Sep 5	Aug 23	2	4	100	4	4	bitter pit, few
2	NJ 112	Sep 5	Sep 14	3	2	80	3	3	probable discard
5	Fiesta 42	Sep 6-21	Sep 16-21	2	4	60	4	5	2 picks
4	Redmax	Sep 7	Sep 19	1	4	100	4	3	v. few fruit
3	NJ 99 57	Sep 7	Sep 9	5	4	10	4	3	some scab
3	Dayton	Sep 7	Sep 6	4	4	70	3	5	mildew
2	Prima	Sep 7	Sep 6	4	4	80	4	3	gets soft early
3	Chehalis	Sep 7	Sep 6	2	3	0	3	3	mildew
2	PSWR-11T-48	Sep 7	Sep 14	3	3	80	3	2	very juicy
2	Michinoku 15	Sep 7	Sep 14	4	3	90	4	4	firm dense flesh
2	Himekami 14	Sep 7	Sep 19	4	4	70	4	4	uneven color
4	Honeycrisp	Sep 7	Sep 19/Oct 3/Oct 16	5	3	60	4	5	4 picks, by color
4	BC 11W-19-18	Sep 7	Sep 11	4	4	80	4	5	bright red attr
2	Borggolden	Sep 7	Oct 2	4	4	10	4	2	attr but no flavor
4	BC 11W-12-85	Sep 7	Sep 17	4	4	80	4	5	uniform conic shape, bright
4	Compact Mac	Sep 12	Sep 19	2	3	80	3	3	upright habit
	Arkcharm (AA 18)	Sep 14	Aug 12-19	3	5	80	5	4	attr color, conic tree in L NTTN
4	Stellar (AA 62)	Sep 14	Oct 2	5	4	0	5	3	some sun blush
	HWR-19T-18	Sep 14	Sep 6	1	3	60	3	?	insuff to eval
3	Arlet 22	Sep 14	Sep 19	4	4	90	4	5	ex this year
3	Coop 28	Sep 14	Sep 6-30	5	3	90	3	3	good red color, 3 picks
2	Golden Supreme	Sep 14	Oct 2	1	4	10	3	4	few fruit
3	Hubbardston Nonesuch	Sep 14	Oct 2	1	3	30	4	3	4 fruit only
3	Sweet Sixteen	Sep 14	Sep 23	2	4	50	4	4	poor color, v. aromatic

3	NY 617	Sep 14	Sep 23	4	4/5	70	3	3	processing in NY
3	Tsugaru, Natsuka	Sep 14	Sep 20	4	3/2	60	4	3	less color than T. Homei
	X 3191	Sep 14	Oct 2	3	3	60-90	4	5	attr round orange-red
3	Cox's Orange Pippin	Sep 14	Sep 23	1	2	40	3	5	few fruit
4	Karmijn de Sonnaville 30	Sep 14-19	Sep 30	3	4	60	3	3	bitter pit & sunburn
3	Cox, Red (L)	Sep 20	Sep 23	2	2	70	3	3	good color
4	Daliest 87	Sep 20	Sep 19	2	3	90	4	5	attr dark red
1	Early Dawn	Sep 20	dnf						
3	Russet King	Sep 20	Oct 2	2	3	0	1	3	less deformed than 95
4	Freyberg	Sep 20	Sep 23	1	3	0	5	5	poor set first time since 79
4	Cox, Queen 24	Sep 21	Sep 19-23	3	3	50-80	3	3	some bitter pit, 2 picks
4	Senshu 3	Sep 21	Oct 2	2	3	60-100	3	5	poor color on most
4	Bramley's Seedling	Sep 21	Oct 2	1	4	40	3	3	v few fruit
5	Rubinstar	Sep 21	Oct 1	4	4	90	3	5	nice red color
5	Elstar 13	Sep 21	Sep 20-25	4	3	60	4	5	poor color
4	NY 75413-30	Sep 21	Sep 25-Oct 10	4	2-4	90	4	3	attr and large, wine red
3	Shay	Sep 21	Sep 30	3	3	80	5	3	some mildew
4	Sayaka 19	Sep 21	Oct 9	5	5	80	4	5	huge red fruit
3	Cox, Cherry	Sep 21	Sep 23	4	3	80	3	5	good color
5	Gala, Regal (Fulford)	Sep 21	Sep 18-Sep 26	4	3/4	95	4	4	2 picks; beautiful & tasty

5	Gala, Scarlet	Sep 21-28	Sep 19-Oct 3	5	3	90	4	4	3 picks
4	NY 65707-19	Sep 22	Sep 30	3	3	80	3	5	attr conic shape
4	NY 75414-1	Sep 22	Sep 30	3	3	100	3	5	attr dk wine red
4	Gala, Royal	Sep 28	Sep 24	4	3	80	4	4	3 picks
4	Hatsuaki 16	Sep 28	Oct 2	4	4	80	4	5	attr bicolor
3	Sunset	Sep 28	Sep 19	4	2	30	3	3	mottled leaves
4	Ashmead's Kernel	Sep 28	Oct 2	3	2	10	2	5	smaller than usual
2	Egremont Russet	Sep 28	Oct 2	2	3	0	2	5	very unattractive
4	NY 75441-67	Sep 28	Oct 10	5	3	90	4	3	uniform, dk red
3	NY 66325-139	Sep 28	Oct 10	3	3	70	4	3	color rather dull
3	NY 428	Sep 28	Oct 21	2	4	90	4	3	few fruit
2	NY 632	Sep 28	dnf						
3	Shizuka	Sep 28	Oct 9	3	4	10	4	5	very firm
2	NY 74840-1	Sep 28	Oct 10	3	4	80	4	5	dry cracking
3	Winterstein	Sep 28	Oct 2	4	3	30	4	3	much bitter pit
2	Nova EasyGro	Sep 28	Sep 30	4	4	80	3	3	looks better in B than F
2	NY 674	Sep 30	Sep 19	4	4	70	3	5	sim to Gala color
	Princess	Oct 5	Oct 9	1	4	0	2	5	few fruit, young
4	NY 486	Oct 5	Oct 8	5	3	5	3	5	attr yellow conic
4	Rubinette	Oct 5	Oct 8	4	2	20	2	4	small, round
4	Delbardestivale	Oct 5	Oct 8	2	3	90	4	2	beautiful dk red
3	AA 59	Oct 5	Oct 2	4	3	10	4	3	some pink blush
	Beni Tsugaru	Oct 5	dnf						
4	Jomured	Oct 5	Oct 1	4	4	90	4	5	promising sport
3	BC 8NE-7-72	Oct 5	Oct 21	3	3	90	2	5	lot of russet
4	Acey Mac	Oct 5	Oct 2	3	3	90	4	5	sized well

1	CQR-10T-17	Oct 5	Oct 10	4	3	80	4	3	mildew
4	Daliter 88	Oct 5	Sep 20	2	2	80	4	3	less color than usual
3	Tydeman's Late Orange	Oct 5	Oct 10	1	2	80	2	3	some rot, dull color
4	Jimmi (Tuell Sdlg.)	Oct 5	Sep 23	5	4	100	5	4	uniform, attr red color
3	NJ 90 60	Oct 5	Oct 10	4	4	90	4	3	good color, v. firm
3	Lysgolden	Oct 5	Oct 10	5	4	0	4	4/2	not best Golden type
4	NY 73334-35	Oct 5	Oct 10	4	3	90	4	5	
2	Delbard Jubilee	Oct 5	Oct 8	5	4	80	4	4/2	tends to bland
1	Coop 29	Oct 5	Oct 10	4	2	0	3	1	open cracks, rot
3	TNR-10T-11	Oct 5	Oct 10	2	3	80	3	3	worth keeping on
4	NY 688	Oct 5	Oct 9	3	4	95	4	3	ex red color, firm
3	P15R-3T-86	Oct 5	Oct 31	2	4	80	4	5	sim appearance to Melrose
4	PAR-12T-101	Oct 5	Oct 9	5	3	80	3	3	
5	Melrose	Oct 5	Oct 9	5	4	80	3	5	2 picks, color ex
	CMR-4T-18	Oct 5	~~dnf~~ Aug 28 See						
3	Jonafree	Oct 12	Oct 10	1	3	40-70	3	3	color variable
3	Florina 49	Oct 12	Oct 9	4	4	90	5	4	some water core
4	BC 8S-27-2	Oct 12	Oct 21	5	4	90	5	4	v. firm, colorful
3	NJ 100 58	Oct 12	Oct 21	1	4	0	4	3	few fruit
3	Swaar	Oct 12	Oct 10	2	3	0	2	3/1	greenish skin
5	Jonagold, DeCoster	Oct 12	Oct 1	4	4	80	3	5	ex color & flavor
4	Liberty	Oct 12	Oct 3-10	4	3	90	4	5	light mildew
5	Jonagored 68	Oct 12	Oct 1	4	4	95	3	5	ex color, size

4	Boskoop, Red 65	Oct 12	Oct 10	5	5	80	4	1	ex culinary
3	PAR-4T-215	Oct 12	Oct 31	3	3	80	2	3	mildew
3	SunCrisp (NJ 55) 62	Oct 12	Oct 21	4	4	20	4	3	some pink blush
3	Macfree	Oct 12	Oct 15	1	3	70	3	3	v few fruit
3	NY 61345-2	Oct 12	Oct 15	1	3	90	4	5	v few fruit
3	NY 61343-1	Oct 12	Oct 10	1	3	30	4	?	4 fruit only
4	Coop 27	Oct 19	Oct 31	4	2	90	2	5	ex. red but small, russeted
3	Canada Grise 89	Oct 26	Oct 31	3	4	0	2	1	attr. russet, culinary use
5	Enterprise	Oct 26	Oct 25	3	3	90	4	5	fairly uniform
3	Fuji, Akifu # 1	Nov 2	Oct 31	4	3	80	5	4	better color than standard
3	Fuji, Yataka	Nov 2	Oct 31	3	4	60	5	4	poor color
3	PAR-14T-238	Nov 2	Oct 31	2	2	60	4	3	poor color
3	Orin 10	Nov 9	Oct 30	2	2	0	4	4	fruit oddly shaped
4	Braeburn 35	Nov 9	Oct 16-30	4	3	70	4	3	very firm
4	Fuji, Standard 11	Nov 9	Oct 31-Nov 8	2	2	80	4	4	color pale, water core
3	GoldRush	Nov 12	Oct 31	2	2	10	4	5	good flavor but unattractive
	Baujade	dnf	Oct 31	3	2	0	5	3/1	green skin sim to Granny Smith
	BC 8C-5-62	new	Oct 8	4	4	90	4	4	
	BC 8C-28-27	new	Oct 21	2	4	90	3	4	
	BC 8S-27-43	new	Oct 21	4	3	100	5	5	round, dk red, attr
	BC 8S-27-51	new	Oct 3	2	3	0	4	3	not true to name, check in 97
	BC 8S-29-18	new	Oct 21	3	3	90	4	4	pinkish red

	BC 8S-31-56	new	dnf						
	Empire, Thome	new	Oct 8	3	3	90	4	5	dk wine red
	Fuji, Red, BC #2	new	dnf						
	Fuji, Red, TAC 114	new	Oct 31	3	3	60	5	4	young trees
	Gala, Galaxy	new	dnf						
	Gala, Ultrared	new	Sep 20	4	3	90	5	4	attr red stripe
	Jonagold, Hein	new	Oct 8-23	3	4	80	4	5	early color pick
	Jonica	new	Oct 8	2	5	90	4	5	2 picks
	Marshall Mac	new	Sep 11	3	3	90	4	3	good flavor
	Pioneer Mac	new	Sep 17	3	3	90	5	3	wk after Marshall
	Ultragold	new	Oct 8	4	3	0	4	4	nice finish
	CMR-4T-18 ✓		Aug 28	3	3	90	3	3	pale bloom, ovate
	Ellison's Orange	new	Sep 4	2	4	70	3	3	hangs well on tree
	Rosemary Russet	new	Sept 14	4	3	0	2	3	golden color, attr.
	Deljeni	new	Sep 19	1	2	0	5	3	few fruit
	Beni Osho	new	Sep 19	3	2	100	5	3	few fruit
	Coop 41	new	Sep 20	3	2	80	5	3	pink dapple, ovate
	Greensleeves	new	Oct 2	4	4	0	4	3	round, lt. green
	NY 460	new	Oct 9	3	3	60	4	3	Mac type
	CLR-20T-22	new	Oct 9	3	4	90	4	5	ex color, v firm, oblong
	Delkistar	new	Oct 9	2	3	90	3	3	clear dk red
	Runkle	new	Oct 21	1	5	70	4	2	check earlier 97
	Golden Glory	new	Oct 21	4	5	10	4	4	nice finish
	Mutsu	new	Oct 30	3	4	0	4	5	size well
	NATCO 21	new	Oct 31	3	3	60	4	4	pale pink color

HARVEST LIST - ASIAN PEARS 1996

S = star rating, St = fruit set, Sz = fruit size, C = color, Fl = flavor

S	Cv.	Pick 95	96	St	Sz	C	Fl	Comments
4	Hamese #1	Aug 14-24	Sep 3-9	2	2	4	4	variable size
4	Shinsui	Aug 29	Sep 10-14	3	2	3	4	
5	Ichiban Nashi	Aug 24-Sep 9	Sep 14	4	3	3	4	
4	Shinseiki	Aug 24-Sep 9	Sep 14-20	4	3	4	4	
2	UC 8-46	Sep 9	Oct 2	4	2	4	4	smaller than usual
4	Yoinashi	Sep 9	Oct 8-10	4	3	3	4	
4	Chojuro	Sep 14-21	Oct 8-10	3	3	2	4	some small fruit
3	Mishirasu	Sep 21	Sep 23	5	4	2/1	4	
2	UC 17-63	Sep 28	Oct 16	5	4	4	4	
4	Yongi	Sep 29	Oct 11	4	3	2	4	

HARVEST LIST - PEARS 1996

S = star rating, St = fruit set, Sz = fruit size, C = color, % red, F = finish, PP = press. test

S	Cv.	Pick 95	96	St	Sz	C	F	Comments
4	Harrow Delight	Aug 10	Aug 10	5	3	0-20	5	PP 20-17 2 trees infected w. silver leaf
3	Rescue	Aug 10	Aug 21-26	5	4	20-50	5	PP 13-11
4	Starkrimson	Aug 10	Aug 23-26	5	4	100	4	PP 15-13 v. uniform
3	Clapp Favorite	Aug 10	Aug 21	5	3	0-30	3	PP 13-11
3	B. Alexandre Lucas	Aug 18	Sep 6	3	4	0	3	PP 15-13
4	Orcas	Aug 24	Sep 12-14	5	4	20-50	3	PP 15-13
3	Sens. Red Bartlett	Aug 24	Sep 3	4	3	100	5	PP 18-16
3	Sirrine	Aug 24	Sep 14	4	2	0-10	3	PP 14-12
4	Colette	Aug 24	Sep 9	4	2	0-10	3	PP 13-11
3	HW 605	Aug 25	Sep 23	5	3	20-50	5	PP 16-14
3	HW 606	Aug 31	Sep 14	5	2	20	3	PP 18-16 ripe over long time
	Roosevelt	Aug 31	Sep 9	3	4	0-10	3	PP 14-12
5	Comice	Sep 5	Sep 12	4	4	10-20	3	PP 12-10
2	Comice, Red	Sep 5	Sep 14	4	4	30-50	5	PP 12-10 unattractive red stripe
2	Comice, Cr. Gem	Sep 7	Sep 12	1	2	100	5	only 5 fruit, tree small
3	Spalding	Sep 7	Oct 2	2	3	0	5	PP 18-16 crisp, juicy like Asian pear
4	Cascade	Sep 7	Sep 23 & Oct 4	5	3	90-100	3	PP 16-14 (9/23) PP 12-10 (10/4)
5	Conference	Sep 12	Sep 25	5	4	0-10	2	PP 15-13
4	Highland	Sep 14	Sep 30	5	3	0	3	PP 16-14
5	Bosc, G.R.	Sep 14	Sep 26	5	4	0	2	PP 14-12
4	Concorde	Sep 22	Sep 26	4	4	10-20	3	PP 14-12
2	Passe Crasanne	Oct 26	Nov 9	3	3	0	3	PP 19-17

2	Passe Crasanne Rouge	Oct 26	Nov 9	3	4	30	3	PP 19-17 color dull, spotty, unattractive
	Blancia	dnf	dnf					
	T.O. Warren	dnf	dnf					
	Bella de Guigno	dnf	dnf					
	Ubileen	dnf	dnf					
	Bosc, Bronze Bty.	dnf	Sep 26	2	3	0	2	PP 14-12

HARVEST LIST - PLUMS 1996

S = star rating, St = fruit set, Sz = fruit size, Cs = skin color, Cf = flesh color, Fl = flavor

S	Cv.	Pick 95	96	St	Sz	Cs	Cf	Fl	Comments
	Early Laxton	July 5-12	dnf						
4	Methley	July 5-15	July 20-29	1	2	2	4	4	first time poor set
	Cocheco	July 10-15	July 29	3	2	4/5	5	5	attractive purple leaves
4	Beauty	July 15-20	July 24-30	2	3	4	5	4	uneven ripening
4	Shiro	July 21	Aug 5-10	3	3	6	6	5	v. juicy, cling stone
2	CB 68	July 22	Aug 10-21	2	2	2	2	5	variable ripening, cling
1	CB 71	July 26	dnf						
3	Mirabelle	Aug 5-12	Aug 27	4	1	7	6	4	ex. flavor
5	Seneca	Aug 26-Sep 2	Sep 3-9	2	3	2	7	4	less fruit than usual
1	Redheart	Aug 16	dnf						
1	CB 18	Sep 1-7	dnf						
3	Stanley	Sep 6-12	dnf						
5	Valor	Sep 6-12	Sep 10-14	3	3	3	6	4	
2	Songold	dnf	Sep 30	2	2	4	5	4	v. juicy, cling
1	Candee	dnf	Sep 6-10	1	2	2	7	4	few, v. sweet
	315-42 plum		Sep 18-Oct 3	4	3	5/2	6	4	mummies, rot,uneven ripening
	Dolly		Aug 16-24	2	3	4/5	6	4	v. juicy, good, cling stone
	Earliqueen		Sep 12-16	2	2	1/2	2	4	round, free stone, cracks
	Fortune		dnf						

	Imperial Epineuse		Jul 29-Aug 5	3	2	2	6	4	dense flesh, free stone
	Midnight Sun		Sep 18-30	2	2	1	7	4	remains firm, tasty
	Vanier		Aug 26-30	4	2	4	6	4	
	Victory		Sep 10-12	2	3	3	6	4	Italian type, ex. flavor
	CB-15		Aug 20-Sep 5	2	2	2	2	4	gum pockets
3	4285	Aug 12	Aug 26	2	1	2	6	4	French Petite type
2	Schultz	Aug 30	Sep 5-10	5	3	7	6	3	poor flavor, pulpy

HARVEST LIST - CHERRIES 1996

S = star rating, St = fruit set, Sz = fruit size, CR = cracking, R = rot

S	Cv.	Pick 95	96	St	Sz	CR	R	Comments
3	Early Burlat	June 15-18	June 21	4	3	4	4	ex flavor
3	Moreau	June 18-20	dnf					
4	Hardy Giant	July 3	July 5	1	3	3	3	limb dying
	Craig's Crimson	June 29-July 4	July 5	2	3	2	3	firm, flavor OK not best
3	Cavalier	July 3-7	dnf					
	Columbia	July 4-6	dnf					
4	Angela	July 6-9	July 13	4	2	3	4	reliable, good flavor
4	Viscount	July 6-9	July 13	2	3	3	4	ex flavor
4	Kristin	July 8-10	July 13	3	3	3	4	firm, good
4	Sweet Anne	July 8-10	dnf					
3	Bada	July 8-10	dnf					
	Tulare	July 8-10	July 5	2	3	2	3	firm, good
3	Emperor Francis	July 8-12	July 15	2	2	3	3	poor set, poor flavor
4	Lapins	July 12-16	dnf					
4	Montmorency	July 14-18	July 13-18	3	2	4	4	lighter set than usual
2	Royalton	dnf	dnf					
	Bergie	July 5	July 5	1	3	2	3	flavor OK
	Sunburst	dnf	dnf					
	Hudson	dnf	dnf					
	King	dnf	dnf					
2	Compact Stella		July 5	2	3	2	3	lighter set, flavor ok

HARVEST LIST - PEACHES 1996

S = star rating, St = fruit set, Sz = fruit size, Cs = skin color % red, Cf = flesh color, Fl = flavor

S	Cv.	Pick 95	96	St	Sz	Cs	Cf	Fl	Comments
3	Harrow Diamond	July 14-20	July 20-26	1	2	30	6	4	split pits
3	Stk Earliglo	July 14-20	July 23-29	2	3	60	6	4/2	split pits
4	Sentry	July 14-20	July 26	1	3	80	6	4	attractive, few splits
4	Proud LCR	July 18-22	July 29	1	3	60	6	4	v. firm
3	Harbelle	July 20	July 29-Aug 10	4	2	80	6	4	3 picks
4	Newhaven	July 24-28	Aug 10-12	3	3	80	6	4	attractive, few splits
4	Harken	July 28-Aug 4	Aug 10	3	3	70	6	4	reliable producer
3	Redhaven	July 28-Aug 4	Aug 10	3	3	70	6	4	
3	Stk. E. Loring	July 31-Aug 5	Aug 10	2/3	3	50	6	5	firm, few splits
3	Frost	Aug 2-5	dnf						
2	Double Jewel	Aug 3	dnf						attr double flowers
3	Strahl LCR	Aug 3-10	Aug 10-12	3	3	80	6	4	some cracking
2	Nerland LCR	Aug 3-10	Aug 10-15	4	3	80	6	4	
2	Tuma LCR	Aug 3-10	Aug 10-15	3	2	50	6	4	
3	Har Beauty	Aug 3-10	Aug 22-26	3	3	60	6	4	
3	Mid-Pride	Aug 3-12	dnf						

2	Delp Hale	Aug 12	Aug 28	1	3	50	6	3	mummies & rot
3	Harcrest	Aug 25	Sep 6	4	2	50	6	3	
2	Japan Sdlg.	Aug 24-31	Aug 28-Sep 6	3	2/1	0-5	7	4	no color, fuzzy
3	Vanity	Sep 1-7	Sep 5	2	3	40	6	4	
	Arctic Supreme	dnf	dnf						
	E. White Giant	dnf	dnf						
	July Sun	dnf	dnf						
	June Pride	dnf	dnf						
	Kern Sun	dnf	dnf						
	May Sun	dnf	dnf						
	Rich Lady	dnf	dnf						
	Rich May	dnf	July 10-16	1	2	70	6	4	no splits, promising
	Snow King	dnf	dnf						
	Sugar Lady	dnf	dnf						
	Sugar May	dnf	dnf						
	Summer Sweet	dnf	dnf						
	Snowbrite	dnf	July 29-Aug 2	2	2	95	7	4	v. sweet, ex. color
	White Lady	dnf	Aug 16-21	2	2	80	7	4	v. sweet, no splits
	Zee Lady	dnf	dnf						

HARVEST LIST - NECTARINES 1996

S = star rating, St = fruit set, Sz = fruit size, Cs = skin color % red, Cf = flesh color, Fl = flavor

S	Cv.	Pick 95	96	St	Sz	Cs	Cf	Fl	Comments
4	Juneglo	July 14-20	July 29	2	2/3	90	6	5	severe rot & cracking
4	Nectired	Aug 3	July 29	2	2	80	6	5	severe rot & cracking
2	Summer Beaut	Aug 3-10	Aug 28-Sep 6	1	2	80	6	4	cracking, dark color
3	Mericrest	Aug 10-17	Aug 21-26	3	2	80	6	5	some crack & rot, dark color
	Arctic Glo		dnf						
	Arctic Queen		dnf						
	Arctic Rose		dnf						
	Crimson Snow		dnf						
	Earliglo		dnf						
1	Mayglo		dead						not winter hardy
	May Kist		dnf						
	Royal Glo		dnf						
	Zee Grand		dnf						

HARVEST LIST - APRICOTS 1996

S = star rating, St = fruit set, Sz = fruit size, Cr = cracking, Fl = flavor

S	Cv.	Pick 95	96	St	Sz	Cr	Fl	Comments
4	Harglow	July 18	Aug 5-10	1/2	2	4	4	best flavor
4	Puget Gold	July 20	July 29	2/3	2/3	3	5	
2	Alfred	July 20	Aug 2-7	2	1/2	4	4	best set ever, very sweet
2	Sunglo	July 27	Aug 7-10	1/2	3	3	5	attractive but few fruit
2	Schilgen Sdlg.	dnf	dnf					
	Rouge D'Or	dnf	dnf					
1	Peach x apricot	dnf	dnf					
	Earli Cot		dnf					
	EarliOrange		dnf					
	Earli Sun		dnf					
	Goldbrink		dnf					
	Hungarian Rose		dnf					
	Jordanne		dnf					

BLOOM DATA APRICOT/PLUOT 1996

APRICOT

Cultivar	March 28	April 4
Puget Gold	full	pet fall
Harglow	full	full-p.f.
Alfred	full	full-p.f.
Sunglo	90	full-p.f.
Flavor Delight aprium	full (few blooms)	pet fall
Katy	no bloom	
Royal Rosa	no bloom	

NOTE: Apricot trees planted in 1994 in new stone fruit block had no bloom on most trees, a few scattered bloom on some, not sufficient for fixing bloom date.

PLUOT

Cultivar	February 28	March 28	April 4
Flavor Queen	15	pet fall	all fallen
Flavor Supreme	tight bud	full	pet fall

NOTE: Tree F1 1-16 (labeled "Flavor Queen") appears not to be pluot, blooms later, with plums, dense profuse bloom. Check for fruit at harvest.

BLOOM DATA PEACH 1996

	Cultivar	March 28	April 4
S	Mid-pride	few blooms, frozen	
S	Harrow Diamond	full	full-pf
NS	HW 271	full	full-pf
NS	July Sun	full	full
S	Harcrest	90	full
NS	Har Beauty	90	full
NS	Earliglo	90	full
S	Nerland LCR	90	full
NS	Proud LCR	90	full
NS	Cole LCR	90	full
NS	Harbelle	90	full
NS	Redhaven	90	full
NS	May Sun	90	full
NS	Kern Sun	90	full
NS	Flamin Fury PF1	90 (few blooms)	full (few blooms)
NS	Flamin Fury PF12A	90	full (few blooms)
S	Sugar May	90	full
S	Tuma LCR	80	full
NS	Frost	80	full
NS	Sentry	80	full
S	Strohl LCR	80	full
NS	Harken	80	full
S	Vanity	80	full
NS	HW 264	80	full
S	Sugar Lady	80	full
NS	Arctic Supreme	80	full
S	Snowbrite	80	full
S	Summer Sweet	80 (few blooms)	full (few blooms)
S	Rich May	80	90/full
S	Early Loring	70	full
NS	Newhaven	70	full
NS	E. White Giant	70	full
NS	HW 272	70	full
NS	June Pride	70	full
NS	E. Charlotte	60	full
S	Snow King	60	full
S	White Lady	60	full
S	Rich Lady	50	full
NS	Delp Hale	50	full
NS	Zee Lady	40 (few blooms)	full (few blooms)
S	China sdlg.	40	full (full-pf 4/11)
S-D	Double Jewel	20	80 (full-pf 4/11)

BLOOM DATA NECTARINES 1996

	Cultivar	March 28	April 4
S	Arctic Rose	full	full
S	Zee Grand	full	full
S	Mericrest	90	full
S	Juneglo	90	full
S	Nectired	90	full
NS	HW 108	90	full
S	Arctic Glo	80	full (v. heavy bloom)
S	Arctic Queen	70	full
S	Crimson Snow	60	full
S	Hardired	60	full
S	Tasty Gold	60	full
NS	May Kist	50	full
NS	HW 109	50	full
NS	Summer Beaut	40	full
NS	Royal Glo	few blooms	few blooms
	Earliglo	no bloom	
	May Glo	no bloom, trees look dead	

BLOOM DATA PLUM 1996

Cultivar	March 28	April 4	April 11
Methley	(full 3/15) pf	all fallen	
AU-Rubrum	(full 3/15) pf	all fallen	
Beauty	(full 3/22)full-pf	pet fall	
CB-15	(full 3/22)full-pf	pet fall	
AU-Amber	(full 3/22)full-pf	full-pf	
Midnight Sun	full	full-pf	
Fortune	full	full-pf	
Earliqueen	full	full-pf	
Songold	full	full-pf	
Redheart	full	full-pf	
CB-68	full	full-pf	
CB-28	full	full-pf	
CB-71	full	full	
Hollywood (new)	full	full	pet fall
Cocheco	full	full	pet fall
Shiro	90	full	pet fall
Dolly	30	50	full-pf
315-42	20	full	full-pf
Valor	20	90	full-pf
Vanier	10	full	full-pf
Early Laxton	5	80	full-pf
Victory	5	60	full-pf
Stanley		30	pet fall
Mirabelle		5	full-pf
Seneca		5	full (pet fall 4/19)
Imperial Epineuse		5	full-pf
Schultz			full (full-pf 4/19)
4285.			full (pet fall 4/19)
Candee			full (full-pf 4/19)

BLOOM DATA CHERRY 1996

Cultivar	April 4	April 11	April 19
Moreau	20	full	pet fall
Lapins	20	full	pet fall
Sweet Anne	5	full	full-pf
Tulare	5	full	full-pf
Hardy Giant	5	full	full-pf
Early Burlat	5	80	pet fall
Angela		80	full
Kristin		full	full-pf
Royalton		full	full-pf
Viscount		full	pet fall
Emperor Francis		full	full-pf
Merpet		full	full
Merla		full	full
Craig's Crimson		full	full
Compact Stella		80	full
Cavalier		30	full
Compact Lambert		20	90
Bada		10	full
King			full
Montmorency			30 (full 4/29)
Columbia			20 (80 4/29)
NY 11375			5 (30 4/29)

BLOOM DATA ASIAN PEAR 1996

Cultivar	April 4	April 11	April 19
Ya Li	full	full-pf	all fallen
Yoinashi	30	full	pet fall
UC 17-63	20	full	full-pf
Shinseiki	10	full	full-pf
Shinsui	10	full	pet fall
Yongi	5	full	full-pf
Chojuro	5	full	full-pf
Mishirasu	5	full	full-pf
Hamese #1	5	full	pet fall
UC 8-46	5	full	full-pf
Ichiban Nashi		full	full

BLOOM DATA PEAR 1996

Cultivar	April 4	April 11	April 19
Spalding	full	pet fall	all fallen
Blancia	40	full	all fallen
Harrow Delight	5	full	pet fall
Bartlett, Sensation Red		full	full-pf
Rescue		full	full-pf
Beurre Alexander Lucas		full	full-pf
Starkrimson		full	full-pf
Clapp Favorite		full	full-pf
Mericourt		full	pet fall
Passe Crassanne		full	pet fall
Passe Crassane Rouge		full	pet fall
Roosevelt		full	pet fall
Sirrine		80	full-pf
Clapp Favorite, Bennett strain		80	full
Colette		80	full
Bosc		30	full
Conference		30	full-pf
Highland		20	full-pf
Cascade		20	full-pf
Orcas		20	full-pf
Concorde		20	full
Comice		10	full
Comice, Red		10	full
Comice, Crimson Gem		5	full
HW 606		5	full-pf
HW 605			full

BLOOM DATA CRABAPPLE 1996

Cultivar	April 11	April 19	April 26	May 2
Manchurian	full	full-pf	pet fall	
Rosedale	80	full-pf	pet fall	
M. baccata v. jackii	40	full-pf	pet fall	
Tea	30	full	pet fall	
Silverdrift	20	full	full-pf	pet fall
Jewelberry	20	full	full-pf	pet fall
Pioneer Scarlet	20	full	pet fall	
Centennial	20	full	full-pf	pet fall
Simpson	10	full	full-pf	pet fall
Bob White	10	full	full-pf	pet fall
Louisa	10	90	full	pet fall
Professor Sprenger	5	full	full-pf	pet fall
M. zumi x 'calocarpa'	5	full	full	full-pf
Purple Prince	5	80	full-pf	pet fall
Sentinel	5	80	full-pf	pet fall
Ormiston Roy	5	80	full-pf	pet fall
David	5	70	full	full-pf
Evereste		full	full-pf	pet fall
Sinai Fire		full	full-pf	pet fall
Lancelot		full	full-pf	pet fall
Sugar Tyme		full	full-pf	pet fall
Morning Sun		90	full	full-pf
Pink Satin		90	full	full-pf
Crab sdlg Alkmene x Prima		80	full-pf	pet fall
White Angel		80	full-pf	pet fall
Molten Lava		80	full	full-pf
Donald Wyman		50	full	full-pf
Snowdrift		40	full	pet fall
Winter Gem		40	full	pet fall
Indian Magic		30	80	full
Mary Potter		30	full	full-pf
Prairifire		20	full	full-pf
Pink Cloud (Lewis)		20	full	pet fall
Christmas Holly		20	full	full-pf
WSU-MJ crab		10	full	full-pf
Maypole		5	full	full-pf
Candymint		5	80	full
Prairie Maid			80	full

Adirondack	30	full
	30	80(full 5/9)
Doubloons		
Golden Raindrops	5	80(full 5/9)
Silver Moon	5	80(full 5/9)

BLOOM DATA APPLE 1996

Cultivar	April 19	April 26	May 3	May 9
Williams' Pride	full	pet fall		
Red Gravenstein	full-pf	pet fall		
AA 49	full-pf	pet fall		
Prima	full	pet fall		
TNR-10T-11	full	pet fall		
NY 74840-1	full	pet fall		
NY 75414-1	full	pet fall		
NJ 116	full	pet fall		
BC 11W-19-18	full	pet fall		
BC 11W-12-85	full	pet fall		
Sunrise	full	pet fall		
Delkistar	full	pet fall		
NY 652	full	pet fall		
Empress	full	pet fall		
Empire	full	pet fall		
Nova EasyGro	full	pet fall		
Redcort	full	pet fall		
Cascade	full	pet fall		
Macfree	full	pet fall		
NY 652	full	pet fall		
Biringer #101	full	pet fall		
AA 62	full	pet fall		
NY 66305-289	90	full	pet fall	
CMR-4T-18	90	full	pet fall	
Red Boskoop	90	full	pet fall	
NY 73334-35	90	full	pet fall	
PWR-37T-131	90	full	pet fall	
Dayton	80	full	pet fall	
NY 61345-2	80	full	full-pf	pet fall
Golden Mack	80	full	full-pf	pet fall
Liberty	80	full	full-pf	pet fall
NY 66305-139	80	full	full-pf	pet fall
NY 73334-57	80	full	full-pf	pet fall
PAR-14T- 238	80	full	full-pf	pet fall
NY 75441-67	80	full	full-pf	pet fall
NY 74828-12	80	full	pet fall	
NY 75413-30	80	full	full-pf	pet fall
NY 65707-19	80	full	full-pf	pet fall
Mott Pink	70	full	pet fall	

Jimmi (Tuell)	70	full	full-pf	pet fall
NY 61343-1	70	full	full-pf	pet fall
Enterprise	70	full	full-pf	pet fall
Coop 28	70	full	full-pf	pet fall
Chehalis	70	full	pet fall	
PAR-12T-101	60	full	full-pf	pet fall
PAR-4T-215	60	full	full-pf	pet fall
PSWR-11T-48	60	full	full-pf	pet fall
Delbard Jubilee	50	full	full-pf	pet fall
Shamrock	50	full	pet fall	
HER-3T-175	50	full	full-pf	pet fall
Shay	50	full	full-pf	pet fall
Swaar	50	full	pet fall	
X 3191	50	90	full	full-pf
Arlet	50	90	full	full-pf
Jonafree	50	full	full-pf	pet fall
Discovery	50	full	pet fall	
Ashmead's Kernel	50	90	full	full-pf
Tsugaru, Natsuka	50	90	full	full-pf
Earligold	50	full	full-pf	pet fall
Orin	40	90	full-pf	pet fall
Tsugaru, Homei	20	90	full	full-pf
NJ 107	20	90	full-pf	pet fall
Alkmene	20	90	full-pf	pet fall
AA 44	20	90	full-pf	pet fall
Early Dawn	20	full	full-pf	pet fall
Sunset	20	full	full-pf	pet fall
Egremont Russet	20	90	full	full-pf
Winterstein	20	90	full	full-pf
Baujade	10	80	full	full-pf
Golden Noble	10	80	full	full-pf
Florina	10	90	full-pf	pet fall
Acey Mac	10	80	full-pf	pet fall
Melrose (Melrouge)	10	90	full	full-pf
Compact Mac	10	90	full-pf	pet fall
Lysgolden	5	70	full	full-pf
Russet King	5	80	full	full-pf
Sweet Sixteen	5	80	full	full-pf
NY 617	5	80	full	full-pf
Elstar	5	70	full	full-pf
Jonagored	5	80	full	full-pf
Honeycrisp	5	80	full	full-pf
Cox, Red	5	80	full-pf	pet fall
Cox, Cherry	5	70	full	full-pf
PWR-11T-128	5	70	full	full-pf

AA 59	5	70	full	full-pf
Beni Osho		70	full	full-pf
Redmax		70	full	full-pf
Jomured		70	full	full-pf
Jonagold, New		70	full	full-pf
Karmijn de Sonnaville		70	full	full-pf
Jonagold, King		70	full	full-pf
Jonagored 9613		50	full	full-pf
Jonagored 9614		50	full	full-pf
Jonagored 369		50	full	full-pf
Jonagored 9631		50	full	full-pf
Shizuka		50	full	full-pf
Bramley's Seedling		40	full	full-pf
Princesse		40	full-pf	pet fall
Sunset		40	full	full-pf
Daliter		40	full	full-pf
NJ 90		40	full	full-pf
Himekami		40	full	full-pf
Elan		40	full	full-pf
Gala, Scarlet		30	full	full-pf
Canadian Grise		30	full	full-pf
NJ 99		30	full	full-pf
Hatsuaki		30	full	full-pf
Senshu		20	full	pet fall
Ginger Gold		20	full	full-pf
Ashmead's Kernel		20	full	full-pf
NY 674		20	full	pet fall
Daliest		20	full	full-pf
Golden Supreme		20	full	pet fall
Fuji, Akifu		10	90	full-pf
Cox, Queen		10	80	full-pf
BC 8S-27-2		10	90	full-pf
Braeburn		10	90	full-pf
Golden Glory		10	80	full
Rubinstar		10	80	full
Michinoku		10	90	full-pf
Jonafree		10	90	full-pf
Fuji, Std.		5	80	full
Fiesta		5	90	full
Mutsu		5	80	full
Jonagold, Hein		5	80	full
NJ 55		5	70	full
Jonica		5	80	full
BC 8C-28-27		5	60	full

Ultragold	5	60	full
BC 8S-29-18	5	60	full
NJ 112	5	60	full
NJ 116	5	60	full
Aroma	5	60	full-pf
AA 18		60	full
Fuji, Yataka		60	full
Nebuta		60	full
Jonagold, DeCoster		60	full
Borggolden		50	full
Rubinette		50	full
Sayaka		50	90(full 5/12)
NJ 100		50	full
Gala, Fulford		50	90(full 5/12)

BC SELECTIONS ON TRIAL AT MOUNT VERNON
1987 - 1996

Discards to 1995

BC 8SE-9-70	(Akane x Discovery) Cracks like Discovery, flavor and appearance good but no keeper, no improvement on Discovery
Shamrock (BC 8C-1-15)	(Spur Golden Delicious x Spur McIntosh) Attractive green skin but flavor mediocre, bland to acidic

Proposed Discards - 1996/7
None

Currently on Trial (1996 harvest date)

The star rating, in the lefthand column, refers to our overall assessment of each selection's performance, including cumulative records of past performance, and our subjective rating of possible future potential.

5 = outstanding, the best, very promising
4 = good variety, promising
3 = acceptable, some faults
2 = serious faults
1 = unsuitable, not recommended, discard
blank = not yet evaluated, new planting

Rating	Cv./Selection	Comments
5	Sunrise (BC 8C-27-96)	(Summerland selection [McIntosh x Golden Delicious] x chance seedling) September 4-10: Very heavy set, size above medium, average 20-30% red stripe over yellow, russet only in cavity, lively subacid flavor, 3 picks.
	BC 34-18	Not yet fruiting.
	BC 8C-5-62 (?) true to name should be very tart	(Golden Delicious x Grimes Golden) October 8: Moderately heavy set, size above medium, color 90% red, russet only in cavity, flavor sweet.
	BC 8C-28-27	October 21: Light set, size above medium, color 90% red, some light russet on body of fruit, flavor sweet.
3	BC 8NE-7-72	(Maigold x Splendour) October 21: Moderate set, size medium, color 90% red, a lot of russet streaks on body of fruit, very good sweet-tart flavor.

4	BC 8S-27-2	(Gala x Splendour) October 21: Very heavy set, size above medium, color 90% bright red, no russet, sweet, very firm.
	BC 8S-27-43	(Splendour x Gala) October 21: Moderately heavy set, size medium, 100% allover dark red, no russet, roundish shape, attractive, sweet-tart flavor.
	BC 8S-27-51 (Chinook)	(Gala x Splendour) Possibly not true to name. Check in 1997.
	BC 8S-29-18	(Gala x Splendour) October 21: Moderate set, size medium, color 90% pinkish red, russet only in cavity, flavor sweet.
	BC 8S-31-56	(Gala x Splendour) Not yet fruiting.
4	BC 11W-12-85	(Summerred x Discovery) September 17: Moderately heavy set, size above medium, color 80% bright red, uniform conic shape, russet only in cavity, flavor sweet.
4	BC 11W-19-18	(Summerred x Discovery) September 11: Moderately heavy set, size above medium, color 80% bright red, attractive, russet only in cavity, flavor sweet to sweet-tart.

12/03/96

NJ SELECTIONS ON TRIAL AT MOUNT VERNON
1965-1996

Discards to 1995

Raritan (NJ 25)	Small fruit, drops badly, biennial, good scab resistance
Mollie's Delicious (NJ 28)	Scab and mildew susceptible
Vista Bella (NJ 36)	Early, poor storage, drops, biennial, scab susceptible
Jerseymac (NJ 38)	Very early, drops, scab and mildew susceptible
Stark Summer Treat (NJ 49)	Poor storage, mediocre flavor, scab susceptible
NJ 50	Good storage, good flavor, but severe scab, poor color
NJ 52	Small fruit, mediocre quality, scab susceptible
NJ 56	Attractive red color but too tart for most tastes
NJ 96	Small fruit, mediocre quality, bland, acidic
NJ 103	Attractive color, poor storage, becoming spongy
NJ 104	Good flavor, v. short storage, acceptable early market
NJ 105	Pale yellow color, bland, poor storage
NJ 109	Inferior to NJ 99, too tart, poor storage

Proposed Discards - 1996/7

NJ 107	Fully evaluated, mediocre quality, poor storage, other Golden types are better (i.e. Earligold)
NJ 112	Fully evaluated, small, attractive color but rather tart; potential for home orchards

Currently On Trial (1996 harvest date)

The star rating, in the lefthand column, refers to our overall assessment of each selection's performance, including cumulative records of past performance, and our subjective rating of possible future potential.

5 = outstanding, the best, very promising
4 = good variety, promising
3 = acceptable, some faults
2 = serious faults
1 = unsuitable, not recommended, discard
blank = not yet evaluated, new planting

Rating	Cv./Selection	Comments
2	NJ 116	(August 18-26) Light set, large size, color solid yellow, some with light pink blush, some light russet streaks, good sweet-tart flavor, water core.
3	NJ 99	(September 9) Very heavy set, large size, color yellow with up to 10% coppery blush, russet in cavity only, flavor subacid, some scab, consistently productive.

3	NJ 90	(October 10) Moderately heavy set, large size, color 90% wine red, attractive, russet in cavity only, flavor lively subacid, firm and crisp.
3	NJ 100	(October 21) Very light set, large size, color solid yellow, no blush, russet in cavity only, flavor subacid, very firm. Few fruit in 1996 due to frost, usually sets well.
3	SunCrisp (NJ 55)	(October 21-November 5) Moderately heavy set, large size, uniform, color up to 20% pinkish-orange blush over yellow, attractive, russet in cavity only, flavor subacid, becoming sweet-tart after storage, hangs well on tree. A bit late here in some years.

NY SELECTIONS ON TRIAL AT MOUNT VERNON
1986 - 1996

Discards to 1995

NY 162	Too large & soft, mediocre quality, early, uneven ripening
NY 347	Mediocre quality
NY 415	Too late, doesn't fully mature, unattractive
NY 543	Poor color, tends to bland flavor, softens in storage
NY 614	Mediocre quality
NY 616	Mediocre quality
NY 678	Too late, extensive russet, mediocre flavor
NY 694	Poor, dull color, russets
NY 665	Mediocre quality

Proposed Discards - 1996/7

NY 315	Yellow, too late, unattractive
NY 632	Early Mac type, good fresh from tree, poor storage (NY is discarding)

Currently On Trial (1996 harvest date)

The star rating, in the lefthand column, refers to our overall assessment of each selection's performance, including cumulative records of past performance, and our subjective rating of possible future potential.

5 = outstanding, the best, very promising
4 = good variety, promising
3 = acceptable, some faults
2 = serious faults
1 = unsuitable, not recommended, discard
blank = not yet evaluated, new planting

Rating	Cv./Selection	Comments
4	Empress	(August 27) Moderately heavy set, size medium, color 100% dark wine red, some russet on body of fruit, sparkling sweet-tart flavor, very good but softens quickly in storage.
3	NY 428	(October 21) Light set, size above medium, 90% dark red, subacid flavor variable quality.
	NY 460	(October 9) Moderate set, size medium, 60% dark red color, McIntosh type, russet only in

		cavity, subacid flavor, first fruit in 1996, check in 1997.
4	NY 486	(October 8) Very heavy set, size medium, attractive yellow, about 5% blush, conic shape, some russet on body of fruit, sweet-tart flavor.
3	NY 617	(September 23) Moderate-heavy set, above medium to large, 70% bright red color, some russet on body of fruit, firm, subacid flavor. Too large for eating out of hand, NY recommends for processing.
4	NY 652	(August 26) Moderate-heavy set, med-small fruit, 100% red color, tender flesh, some russet, subacid flavor.
2	NY 674	(September 19) Moderate-heavy set, size above medium, 70% bright red and orange stripe, similar to Gala, lively sweet-tart flavor.
4	NY 688	(October 9) Moderate set, size above medium, excellent color, 95% red, russet only in basin, lively subacid flavor, firm texture, attractive.
Disease Resistant Selections		
3	NY 61343-1	(October 10) Only 3 fruit, size medium, 30% red color, insufficient fruit for full evaluation.
3	NY 61345-2	(October 15) Poor set, size medium, 90% dark red color, russet only in basin, sweet-tart flavor, tender flesh.
4	NY 65707-19	(September 30) Moderate set, size medium, 80% bright red color, some russet on body of fruit, good sweet-tart flavor, attractive conic shape.
	NY 66305-139	Did not fruit
3	NY 66305-289	(September 14) Moderate-heavy set, size below medium, 90% red color, light russet on body of fruit, subacid flavor.
3	NY 66325-139	(October 10) Moderate set, size medium, 70% red color, russet only in cavity, subacid flavor,

		not outstanding.
4	NY 73334-35	(October 10) Moderate-heavy set, size medium, 90% red color, russet only in cavity, sweet-tart flavor.
3	NY 74828-12	(September 6) Moderate-heavy set, size above medium, 80% red color, good finish, subacid flavor, said to be susceptible to scab race 5.
2	NY 74840-1	(October 10) Moderate set, size above medium, 80% red color, russet only in cavity, dry cracking around cavity, sweet-tart flavor.
4	NY 75413-30	(September 25-October 10) Moderate-heavy set, size variable, most large, 90% wine red color, russet only in cavity, subacid flavor, attractive.
4	NY 75414-1	(September 30) Moderate set, size medium, 100% dark wine red, conspicuous lenticels, very attractive especially when polished, some russet on body of fruit, good sweet-tart flavor.
4	NY 75441-67	(October 10) Very heavy set, size medium, uniform, 90% dark red color, russet only in cavity, subacid brisk flavor.

Results of the 1996 Fertigation Study: The Effect of Potassium and Magnesium Applied through Fertigation on *Jonagold* Apple Quality

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Introduction

During dry periods the trees in an orchard become dependent on the wetted area, "onion," underneath the drip emitters, to provide both soil moisture and mineral nutrition. *Jonagold* appears to be a high user of both potassium and magnesium, and the demand for these elements becomes particularly high during the dry time of the year. A 40-bin crop of apples takes out 120 lb/A of K_2O with the crop alone. Evidence shows that drip irrigation leads to a drop in potassium levels measured by leaf analysis.

An off-station experiment was continued in 1996 for a second year to evaluate the effect of potassium and magnesium applied through fertigation on *Jonagold* apple quality. In addition, a fertigation experiment was evaluated at WSU-Mount Vernon on a *Jonagold* apple orchard in its third leaf. The site at the station was also fertigated for a second year.

Methods

The off-station experiment was set up as a randomized block design in which there were three treatments replicated four times. Each block contained 6 trees. The treatments were as follows:

1. Irrigation with H_2O only.

2. Fertigation with K_2O two times a week.

3. Fertigation with K_2O and Magnesium two times a week.

Treatments 2 and 3 were given the same amount of K_2O , 7 lb/A, per week for 10 weeks. 7 lb/A of K_2O was divided in half and applied at 3.5 lb/A twice a week. Treatment 3 also included Magnesium at 20 lb/A per week for 18 weeks. 20 lb/A of Magnesium was divided in half and applied at 10 lb/A twice a week.

Three fruit from each treatment replication were evaluated for starch, soluble solids, and pressure on 9/3, 9/10, 9/17, 9/24 and 10/2. Soil, leaf and fruit analyses were conducted on 7/10, 8/7, 9/10 and 10/9 to determine potassium, magnesium, and nitrogen levels.

Treatment plots were amended with granular soil applications of potassium, magnesium and boron by banding them on the herbicide strip, on 12/4. Treatment 1 plots received 2 lb/A boron (per treated acre), treatment 2 plots received 120 lb/A K_2O and 2 lb/A boron (per treated acre) and treatment 3 plots received 120 lb/A K_2O, 60 lb/A magnesium and 2 lb/A boron (per treated acre).

The station experiment was set up as a randomized block design in which there were three treatments replicated eight times. Each block contained 12 trees. The treatments were as follows:

1. Irrigation with H_2O only.

2. Fertigation with K_2O two times a week.

3. Fertigation with K_2O and Magnesium two times a week.

Treatments 2 and 3 were given the same amount of K_2O , 7 lb/A, per week for 10 weeks. 7 lb/A of K_2O was divided in half and applied at 3.5 lb/A twice a week. Treatment 3 also included Magnesium at 20 lb/A per week for 18 weeks. 20 lb/A of Magnesium was divided in half and applied at 10 lb/A twice a week.

Three fruit from each treatment replication were evaluated for starch, soluble solids, and pressure on 9/11, 9/18, 9/25 and 10/2. Soil, leaf and fruit analyses were conducted on 7/10, 8/7, 9/10 and 10/9 to determine potassium, magnesium, and nitrogen levels.

Treatment plots were amended with granular soil applications of potassium, magnesium and boron by banding them on the herbicide strip, on 12/4. Treatment 1 plots received 2 lb/A boron (per treated acre), treatment 2 plots received 120 lb/A K_2O and 2 lb/A boron (per treated acre) and treatment 3 plots received 120 lb/A K_2O, 60 lb/A magnesium and 2 lb/A boron (per treated acre).

Results and Discussion

The off-station experiment data was analyzed using an analysis of variance for a randomized block design. There were no significant differences between treatments for starch conversion, soluble solids, or pressure of fruit (Table 1). Data for the soil, leaf and fruit nutrient tests were analyzed using an analysis of variance for a randomized block design. Soil analyses showed that potassium levels were significantly higher for treatments 2 and 3 than for treatment 1. Sulfur and Magnesium levels were significantly higher for treatment 3 than treatments 1 and 2. Also, treatment 3 had a significantly lower level of calcium than treatments 1 and 2. Leaf analyses showed that treatment 2 had a significantly higher level of phosphorus than treatments 1 and 3. Treatment 3 had significantly lower levels of zinc than treatments 1 and 2. Fruit analyses showed that there were no significant differences in nutrient levels for any of the treatments (Table 2).

The station experiment data was analyzed using an analysis of variance for a randomized block design. There were no significant differences between treatments for soluble solids or pressure of fruit; however, starch conversion was significantly higher for treatments 2 and 3 than treatment 1 on 10/2 (Table 3). Data for the soil, leaf and fruit nutrient tests were analyzed using an analysis of variance for a randomized block design. Soil analyses showed that treatment 3 had significantly higher levels of magnesium, sulfur and boron than treatments 1 and 2. Calcium levels were significantly lower for treatment 3 than for treatments 1 and 2. Treatments 2 and 3 had significantly higher levels of potassium than treatment 1. Leaf analyses showed that treatment 2 had a significantly higher level of nitrogen than treatments 1 and 3; however, there were no significant differences in other

nutrient levels. Fruit analyses showed that there were no significant differences in nutrient levels for any of the treatments (Table 4).

Discussion

Potassium levels have continued to decline from July of 1995 to the end of the 1996 growing season in the unamended soils at the off-station plot. The 7/10/95 soil analysis showed potassium levels at 400 ppm. By 10/9/96, potassium levels have dropped to 200 ppm (Graph 1). During August-September of 1996, leaf potassium levels were higher than August-September of 1995; however, potassium dropped in October for both years (Graph 2). This may indicate that potash fertigation needs to continue through the end of September to keep potassium levels up into October. Fruit color and maturity were noticeably better for 1996 than 1995. Potassium uptake may have been affected by higher than normal release of nitrogen in August of 1995 which increased the ratio of nitrogen to potassium to 2:1. This was well above Stiles suggested 1.25:1 ratio for maximum potassium uptake. In 1996, the nitrogen to potassium ratio was 1.18:1. Higher boron levels in 1996 may also have affected potassium uptake positively as suggested by Stiles.

The soil nitrogen levels were lower for the off-station plot than the WSU-Mount Vernon plot. This lower off-station level was also reflected in leaf and fruit nitrogen. Nitrogen to potassium ratios ranged 1.17:1 for treatment 1, 1.1:1 for treatment 2 to 1.28.1 for treatment 3 at the off-station plot. At WSU-Mount Vernon, ratios ranged 1.35:1 for treatment 1, 1.33:1 for treatment 2 to 1.27:1 for treatment 3. In the future, managing excess nitrogen may be accomplished by reducing the size of the herbicide strip. It may also be beneficial to fertigate with a low volume of irrigation later in the season. Leaf and fruit zinc levels were higher at the off-station plot than the WSU-Mount Vernon plot; however, zinc levels in the soil at WSU-Mount Vernon were higher than the off-station soil levels. This may have been due to foliar zinc sprays at the off-station plot.

Table 1. Off-station Fruit Maturity Tests: 9/3/96

Treatment	Starch	Soluble Solids	Pressure
H_2O	1.13	12.53	21.15
K_2O	1.11	12.65	22.60
K_2O + Mg	1.18	12.92	20.65
P Value			
*LSD (p=.05)**	*NSD*	*NSD*	*NSD*

9/10/96

Treatment	Starch	Soluble Solids	Pressure
H_2O	1.65	13.60	19.38
K_2O	1.61	13.43	20.25
K_2O + Mg	1.67	12.70	18.73
P Value			
*LSD (p=.05)**	*NSD*	*NSD*	*NSD*

9/17/96

Treatment	Starch	Soluble Solids	Pressure
H_2O	2.42	13.25	18.92
K_2O	2.21	13.28	19.00
K_2O + Mg	2.42	13.42	18.71
P Value			
*LSD (p=.05)**	*NSD*	*NSD*	*NSD*

9/24/96

Treatment	Starch	Soluble Solids	Pressure
H_2O	3.04	13.60	17.52 b
K_2O	3.29	14.03	19.13 a
K_2O + Mg	3.33	13.68	17.13 b
P Value			*.0265*
*LSD (p=.05)**	*NSD*	*NSD*	*1.5089*

10/2/96

Treatment	Starch	Soluble Solids	Pressure
H_2O	4.29	14.62	17.52
K_2O	4.13	15.07	18.88
K_2O + Mg	4.25	14.57	18.29
P Value			
*LSD (p=.05)**	*NSD*	*NSD*	*NSD*

*Values within a column followed by the same letter are not significantly different (P=0.05) according to Fisher's Least Significant Difference test.

Table 2. Off-station soil, leaf and fruit analyses

Soil Analysis

Trt	N ppm	P ppm	K ppm	S ppm	B ppm	Zn ppm	Mn ppm	Cu ppm	Fe ppm	Ca meq/100g	Mg meq/100g
Water .	7.00	11.75	286.50 b	19.00 b	1.25	3.30	1.03	4.03	134.00	10.13 a	1.48 b
K	11.00	12.25	650.00 a	50.50 b	1.33	3.43	1.43	4.10	138.50	9.38 a	1.30 b
Mg + K	8.75	12.75	624.75 a	134.50 a	1.43	3.70	1.25	4.15	139.50	6.83 b	4.50 a
P Value			*.0040*	*.0031*						*.0009*	*.0001*
LSD(P=.05)	*NSD*	*NSD*	*176.26*	*49.26*	*NSD*	*NSD*	*NSD*	*NSD*	*NSD*	*1.1198*	*.359*

Leaf Analysis

Trt	% N	% S	% P	% K	% Ca	% Mg	B ppm	Zn ppm	Mn ppm	Cu ppm	Fe ppm
Water .	1.88	.16	.21 b	1.60	1.38	.25	29.25	61.75 a	64.00	7.00	196.25
K	1.86	.16	.22 a	1.70	1.28	.25	30.25	64.25 a	63.50	6.25	175.75
Mg + K	1.96	.16	.19 b	1.53	1.29	.27	27.50	53.75 b	61.25	6.75	168.25
P Value			*.0144*					*.0264*			
LSD(P=.05)	*NSD*	*NSD*	*.0171*	*NSD*	*NSD*	*NSD*	*NSD*	*7.1339*	*NSD*	*NSD*	*NSD*

Fruit Analysis

Trt	% N	% S	% P	% K	% Ca	% Mg	B ppm	Zn ppm	Mn ppm	Cu ppm	Fe ppm
Water .	.34	.02	.08	.60	.07	.04	22.25	7.50	6.00	4.50	173.75
K	.31	.02	.09	.75	.06	.04	20.50	5.50	4.75	4.00	124.25
Mg + K	.35	.03	.10	.95	.08	.05	20.75	9.00	6.50	5.00	181.00
P Value											
LSD(P=.05)	*NSD*	*NSD*	*NSD*	*NSD*	*NSD*	*NSD*	*NSD*	*NSD*	*NSD*	*NSD*	*NSD*

*Values within a column followed by the same letter are not significantly different (P=0.05) according to Fisher's Least Significant Difference Test.
NSD=No Significant Difference.

Table 3. Station Fruit Maturity Tests: 9/11

Treatment	Starch	Soluble Solids	Pressure
H_2O	2.65 a	12.08	17.30
K_2O	2.05 b	12.07	17.04
K_2O + Mg	2.53 ab	12.26	17.59
P Value	*.0197*		
*LSD (p=.05)**	*.4448*	*NSD*	*NSD*

9/18

Treatment	Starch	Soluble Solids	Pressure
H_2O	3.25	12.40	16.38
K_2O	3.63	12.72	16.95
K_2O + Mg	3.60	12.60	16.43
P Value			
*LSD (p=.05)**	*NSD*	*NSD*	*NSD*

9/25

Treatment	Starch	Soluble Solids	Pressure
H_2O	4.92	12.80	15.43 b
K_2O	4.69	12.93	16.09 a
K_2O + Mg	4.92	12.91	16.10 a
P Value			*.0253*
*LSD (p=.05)**	*NSD*	*NSD*	*.5552*

10/2

Treatment	Starch	Soluble Solids	Pressure
H_2O	4.48 b	12.73	15.98
K_2O	4.74 a	13.30	15.41
K_2O + Mg	4.60 a	13.02	15.76
P Value	*.0073*		
*LSD (p=.05)**	*.1429*	*NSD*	*NSD*

*Values within a column followed by the same letter are not significantly different (P=0.05) according to Fisher's Least Significant Difference test. NSD = no significant difference.

Table 4. Station soil, leaf and fruit analyses

Soil Analysis

Trt	N ppm	P ppm	K ppm	S ppm	B ppm	Zn ppm	Mn ppm	Cu ppm	Fe ppm	Ca meq/100g	Mg meq/100g
Water .	18.00	30.75	240.00 b	8.00 c	1.13 b	8.83	3.40	4.88	71.25	10.48 a	1.70 b
K	16.75	29.00	631.25 a	51.50 b	1.05 b	6.90	4.73	4.70	77.75	9.58 a	1.38 b
Mg + K	6.75	27.25	520.50 a	97.25 a	2.03 a	5.95	3.90	4.90	83.00	7.15 b	4.50 a
P Value			*.0008*	*.0028*	*.0072*					*.0056*	*.0001*
*LSD (P=.05)**	*NSD*	*NSD*	*128.16*	*36.042*	*.5309*	*NSD*	*NSD*	*NSD*	*NSD*	*1.5991*	*.6097*

Leaf Analysis

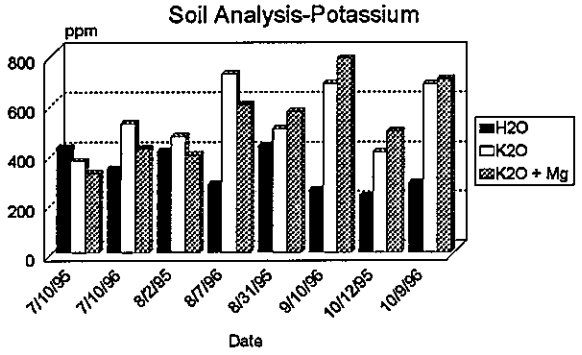
Trt	% N	% S	% P	% K	% Ca	% Mg	B ppm	Zn ppm	Mn ppm	Cu ppm	Fe ppm
Water .	2.06 b	.15	.20	1.53	1.41	.24	27.25	22.25	73.75	7.25	212.50
K	2.16 a	.16	.21	1.63	1.55	.26	24.75	23.50	70.00	7.00	171.50
Mg + K	2.07 b	.15	.22	1.63	1.51	.25	25.50	24.25	81.75	6.25	178.25
P Value	*.0360*										
*LSD (P=.05)**	*.0756*	*NSD*	*NSD*	*NSD*	*NSD*	*NSD*	*NSD*	*NSD*	*NSD*	*NSD*	*NSD*

Fruit Analysis

Trt	% N	% S	% P	% K	% Ca	% Mg	B ppm	Zn ppm	Mn ppm	Cu ppm	Fe ppm
Water .	.39	.03	.09	.85	.09	.04	22.50	6.50	6.25	4.25	122.00
K	.40	.03	.10	.88	.08	.05	17.75	5.25	5.75	4.00	119.00
Mg + K	.40	.03	.09	.90	.09	.05	19.25	5.00	5.75	4.00	111.75
P Value											
*LSD (P=.05)**	*NSD*	*NSD*	*NSD*	*NSD*	*NSD*	*NSD*	*NSD*	*NSD*	*NSD*	*NSD*	*NSD*

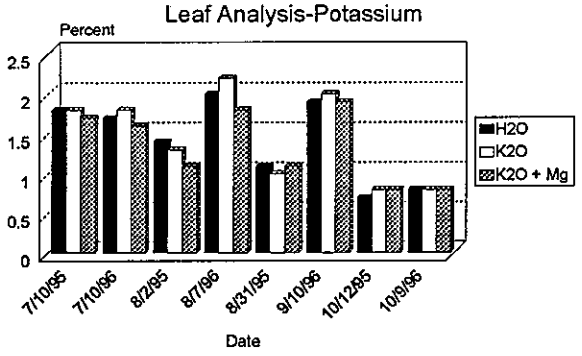
*Values within a column followed by the same letter are not significantly different (P=0.05) according to Fisher's Least Significant Difference Test.
NSD=No Significant Difference

Graph 1
1995 & 1996 Jonagold Fertigation Trial
Soil Analysis-Potassium



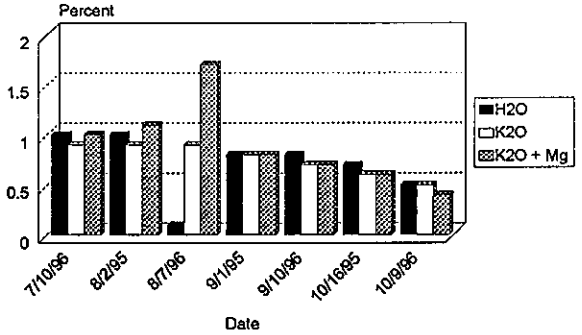
Site: Merritt Orchard

Graph 2
1995 & 1996 Jonagold Fertigation Trial
Leaf Analysis-Potassium

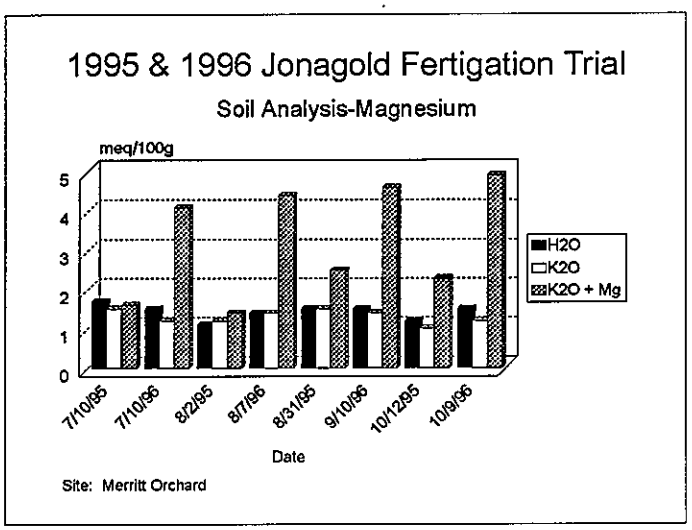


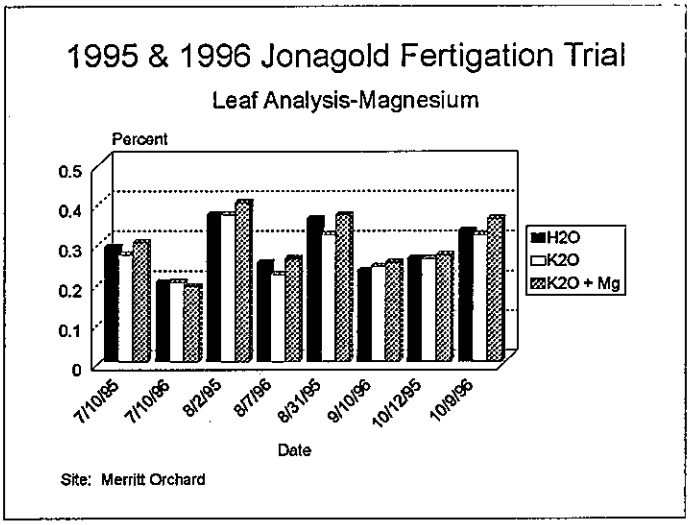
Site: Merritt Orchard

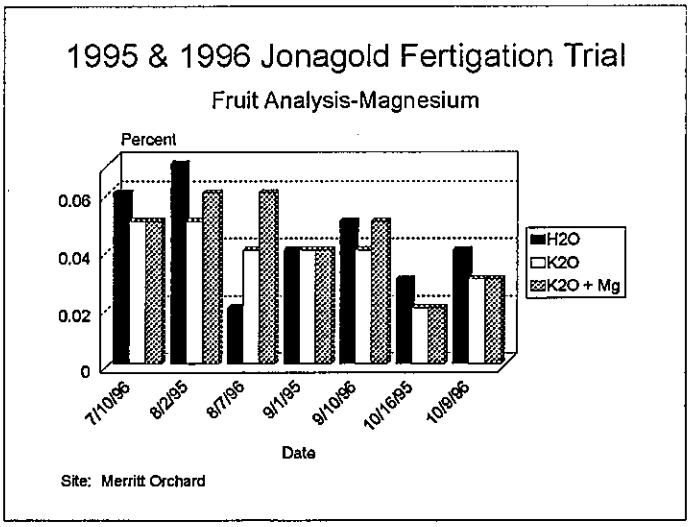
1995 & 1996 Jonagold Fertigation Trial
Fruit Analysis-Potassium

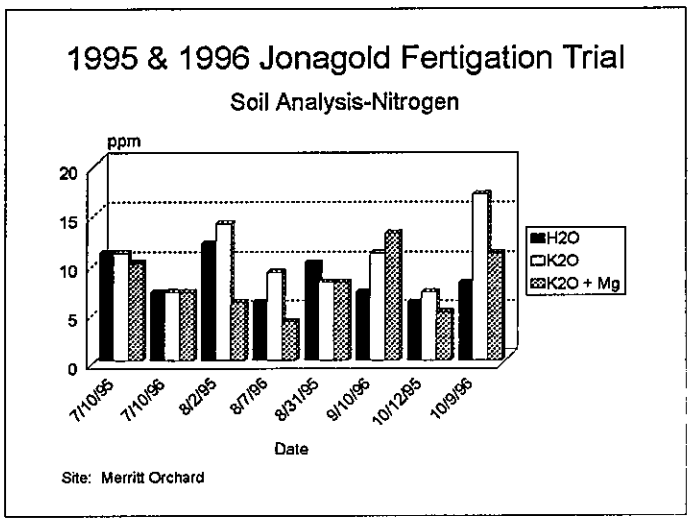


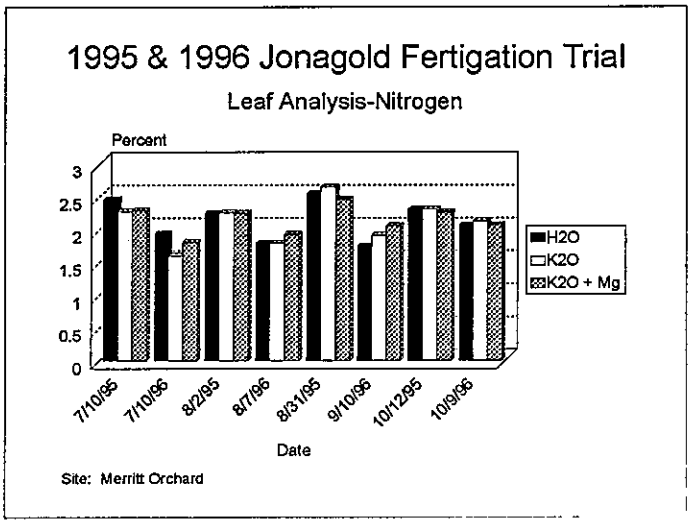
Site: Merritt Orchard

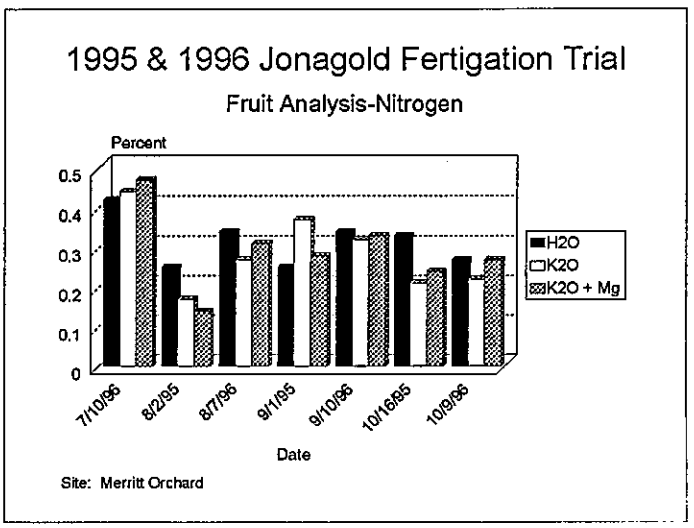

1995 & 1996 Jonagold Fertigation Trial
Soil Analysis-Magnesium
meq/100g
5
4
3
2
1
0
H2O
K2O
K2O + Mg
7/10/95
7/10/96
8/2/95
8/7/96
8/31/95
9/10/96
10/12/95
10/9/96
Date
Site: Merritt Orchard


1995 & 1996 Jonagold Fertigation Trial
Leaf Analysis-Magnesium
Percent
0.5
0.4
0.3
0.2
0.1
0
H2O
K2O
K2O + Mg
7/10/95
7/10/96
8/2/95
8/7/96
8/31/95
9/10/96
10/12/95
10/9/96
Date
Site: Merritt Orchard


1995 & 1996 Jonagold Fertigation Trial
Fruit Analysis-Magnesium
Percent
0.06
0.04
0.02
0
H2O
K2O
K2O + Mg
7/10/96
8/2/95
8/7/96
9/1/95
9/10/96
10/16/95
10/9/96
Date
Site: Merritt Orchard

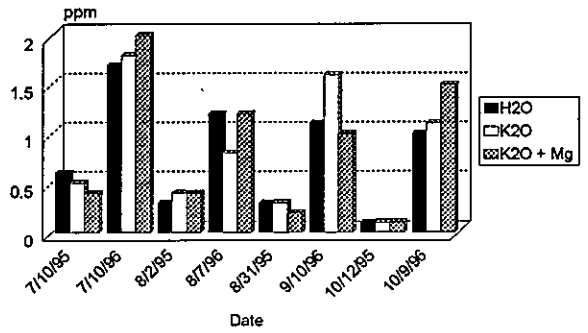

1995 & 1996 Jonagold Fertigation Trial
Soil Analysis-Nitrogen
ppm
20
15
10
5
0
H2O
K2O
K2O + Mg
7/10/95
7/10/96
8/2/95
8/7/96
8/31/95
9/10/96
10/12/95
10/9/96
Date
Site: Merritt Orchard


1995 & 1996 Jonagold Fertigation Trial
Leaf Analysis-Nitrogen
Percent
3
2.5
2
1.5
1
0.5
0
H2O
K2O
K2O + Mg
7/10/95
7/10/96
8/2/95
8/7/96
8/31/95
9/10/96
10/12/95
10/9/96
Date
Site: Merritt Orchard


1995 & 1996 Jonagold Fertigation Trial
Fruit Analysis-Nitrogen
Percent
0.5
0.4
0.3
0.2
0.1
0
H2O
K2O
K2O + Mg
7/10/96
8/2/95
8/7/96
9/1/95
9/10/96
10/16/95
10/9/96
Date
Site: Merritt Orchard

1995 & 1996 Jonagold Fertigation Trial

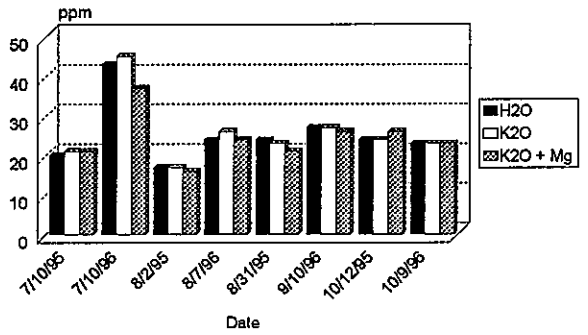
Soil Analysis-Boron



Site: Merritt Orchard

1995 & 1996 Jonagold Fertigation Trial

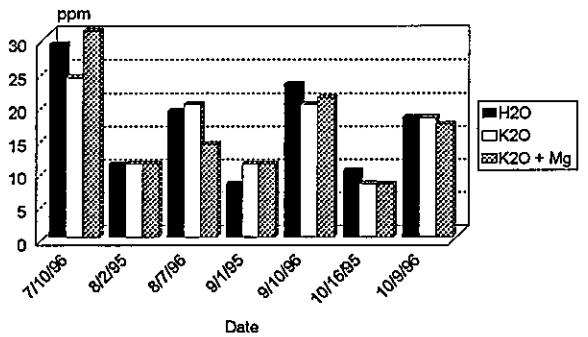
Leaf Analysis-Boron



Site: Merritt Orchard

1995 & 1996 Jonagold Fertigation Trial

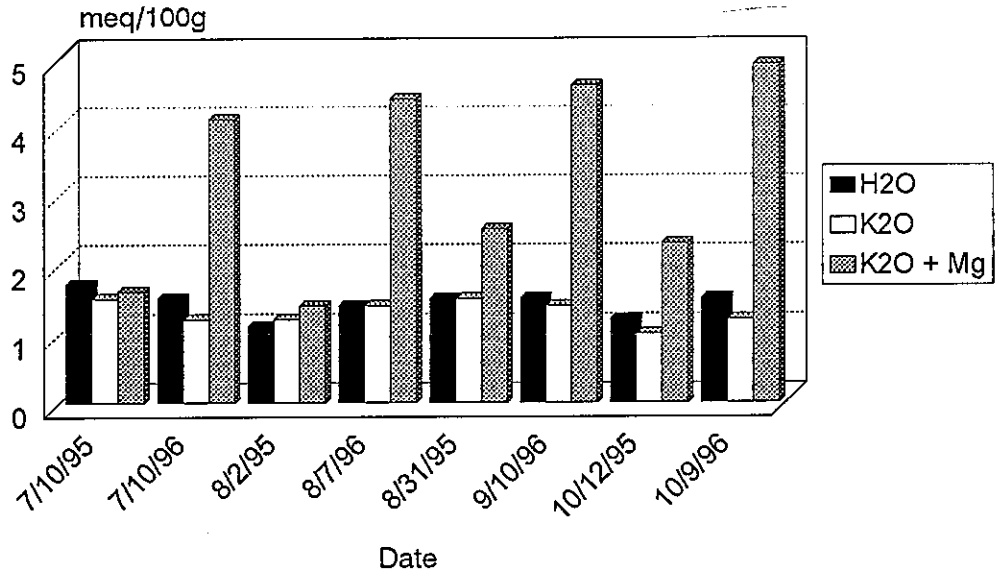
Fruit Analysis-Boron



Site: Merritt Orchard

1995 & 1996 Jonagold Fertigation Trial

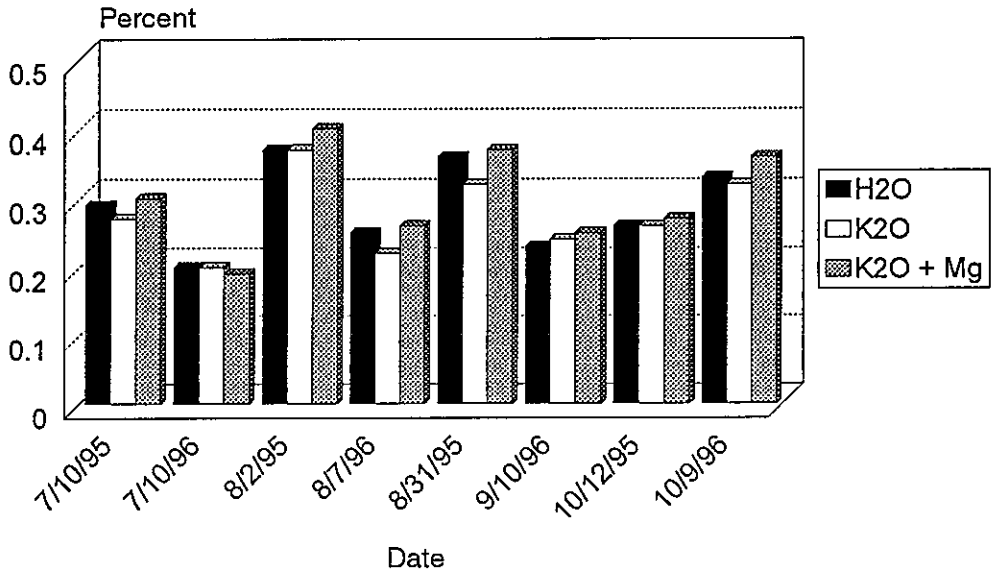
Soil Analysis-Magnesium



Site: Merritt Orchard

1995 & 1996 Jonagold Fertigation Trial

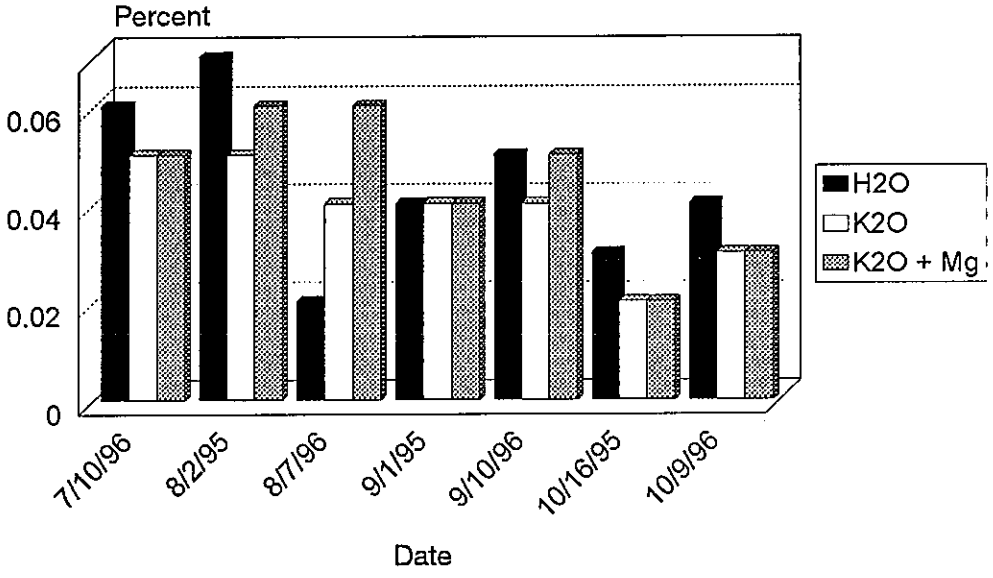
Leaf Analysis-Magnesium



Site: Merritt Orchard

1995 & 1996 Jonagold Fertigation Trial

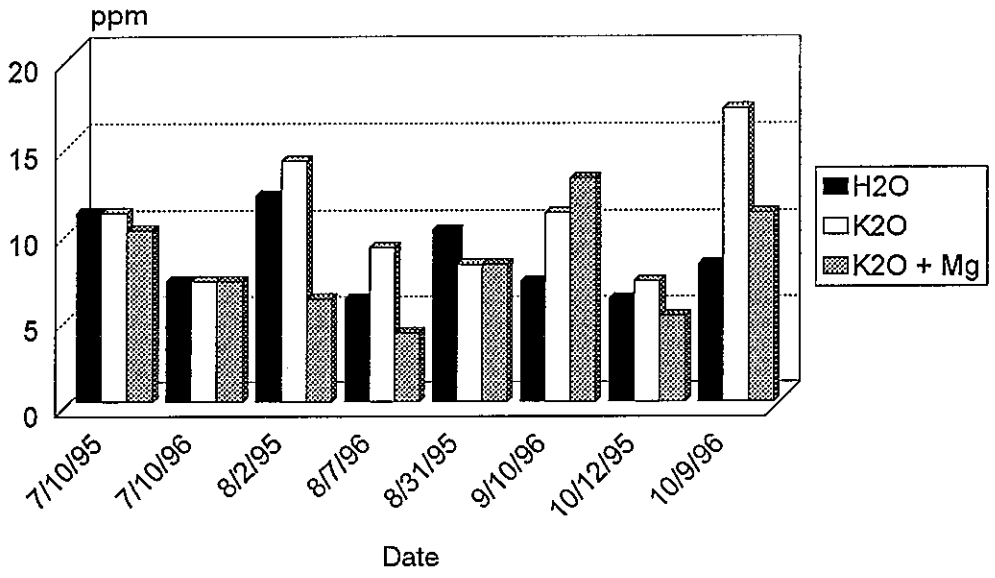
Fruit Analysis-Magnesium



Site: Merritt Orchard

1995 & 1996 Jonagold Fertigation Trial

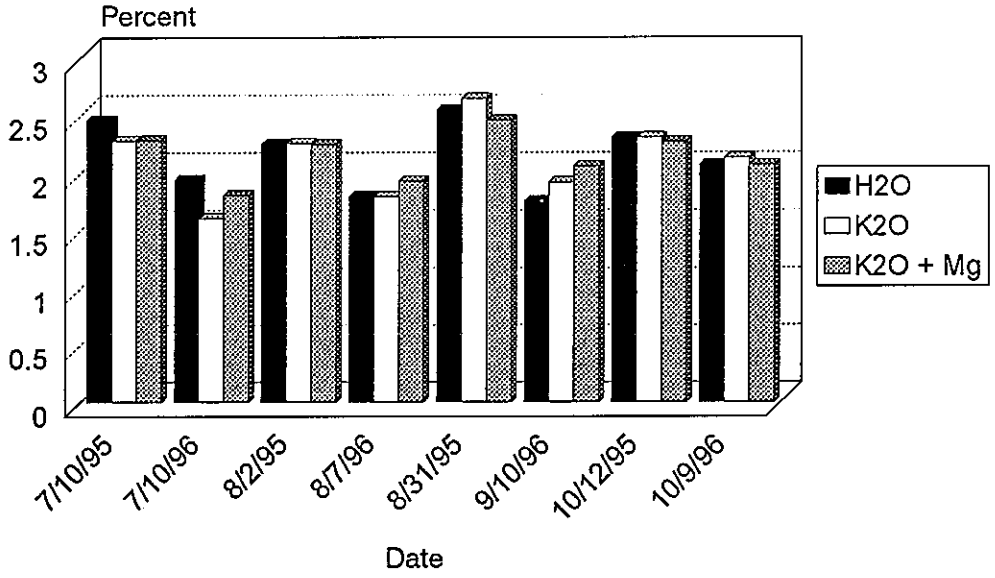
Soil Analysis-Nitrogen



Site: Merritt Orchard

1995 & 1996 Jonagold Fertigation Trial

Leaf Analysis-Nitrogen

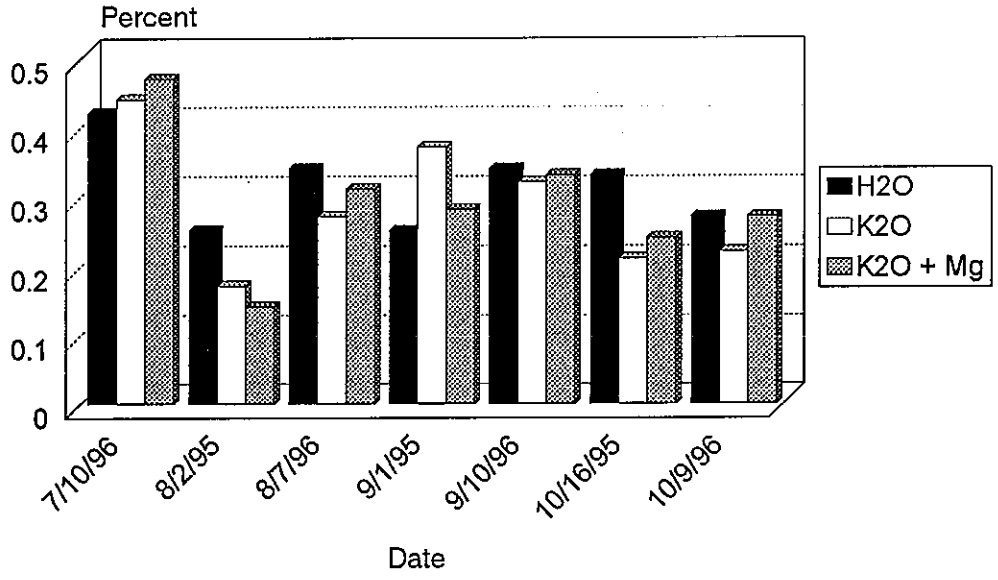


Site: Merritt Orchard

WM 59

1995 & 1996 Jonagold Fertigation Trial

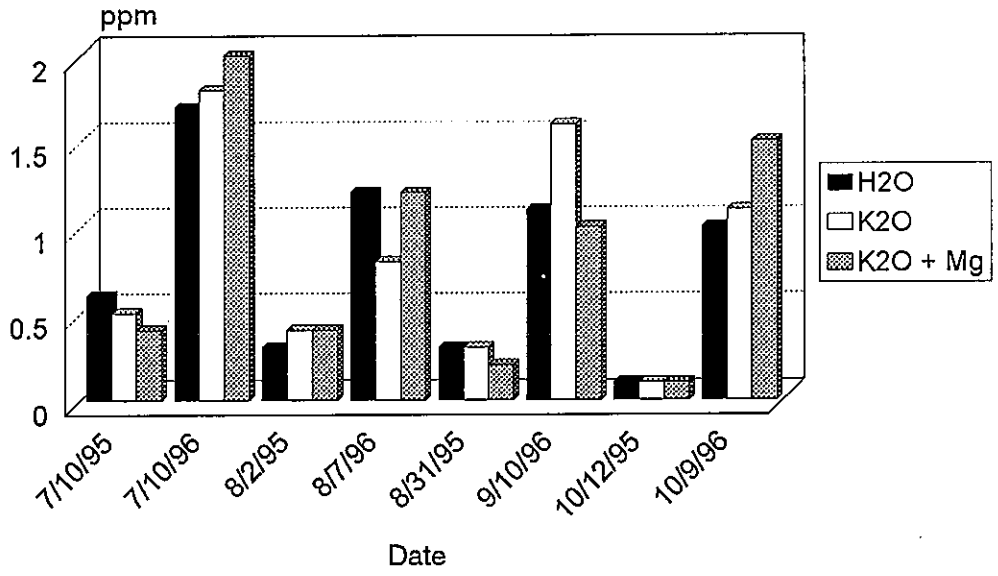
Fruit Analysis-Nitrogen



Site: Merritt Orchard

1995 & 1996 Jonagold Fertigation Trial

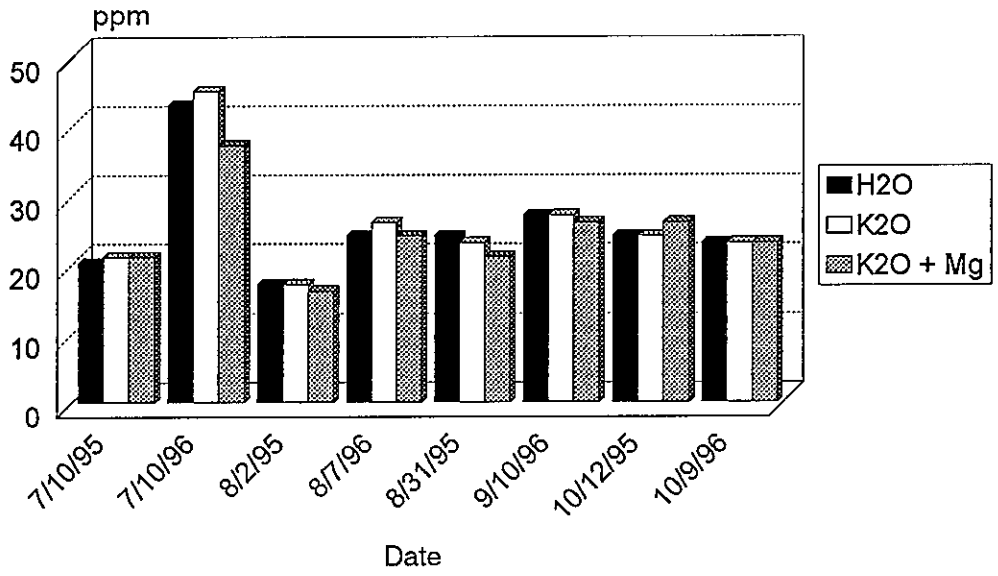
Soil Analysis-Boron



Site: Merritt Orchard

1995 & 1996 Jonagold Fertigation Trial

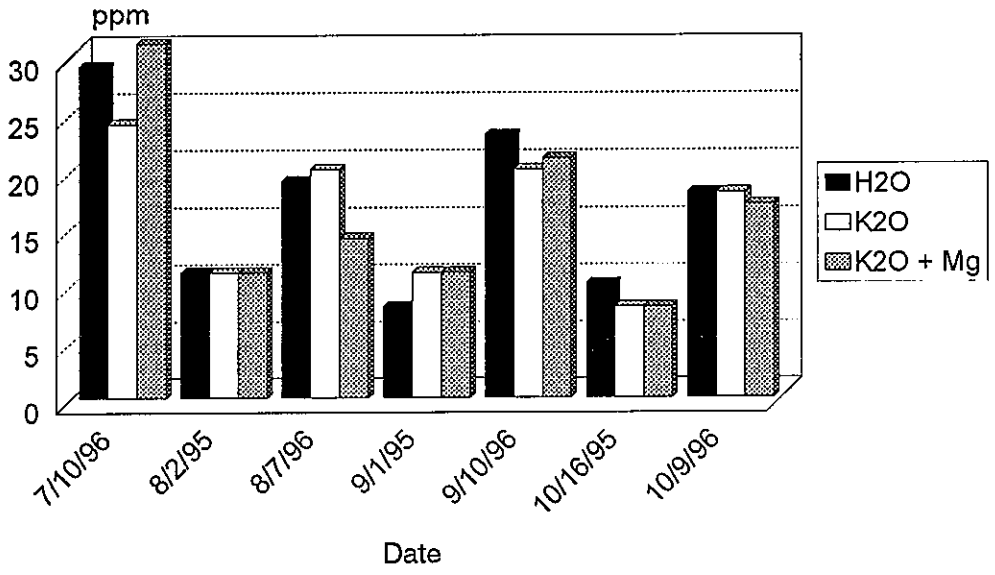
Leaf Analysis-Boron



Site: Merritt Orchard

1995 & 1996 Jonagold Fertigation Trial

Fruit Analysis-Boron



Site: Merritt Orchard

Apple (*Malus domestica* 'Jonagold')
Scab: *Venturia inaequalis*
Powdery Mildew: *Podosphaera leucotricha*

Babette Gundersen, Gary A. Moulton, and Jacqueline King
WSU-Mount Vernon Research and Extension Unit
1468 Memorial Highway
Mount Vernon, WA 98273

APPLE SCAB AND POWDERY MILDEW FUNGICIDE TRIAL, 1996: Two sterol inhibitor fungicides, Procure (imidazole) and Rally (myclobutanil) and two protective fungicides, Dithane (mancozeb) and Thiram (tetramethylthiuram disulfide) were compared for control of apple scab and powdery mildew on the susceptible apple cultivar, *Jonagold* at WSU-Mount Vernon. Plots were arranged in a randomized block design in which there were seven treatments replicated three times. Each plot replicate contained twelve trees. Fungicides were applied with a backpack airblast sprayer at a rate of 80 gal/A. Spray application dates were as follows: 8 April, 24 April, 9 May, 21 May, 7 June, 21 June, 15 July, and 12 August. Each plot was evaluated for scab lesions and powdery mildew strikes on 12 April, 16 May, 31 May, 14 June, 28 June, 22 July, 23 August, and 24 September. Powdery mildew strikes were rated as percent of terminal shoots infected. An analysis of variance was done on the area under the disease progress curve for powdery mildew. At harvest, 7 October, fruit samples were evaluated for russeting, lenticel damage, and ground color. An analysis of variance was done on the ranked ratings for all three categories.

All fungicide treatments provided control of apple scab throughout the season. Even though disease conditions were favorable, as seen on nearby unsprayed trees, no scab lesions were detected on leaves or fruit in the test plots. Since apple scab infection was not detected in the trial plots in mid July, and future disease pressure was unlikely for the season, only the sterol inhibitor fungicides were applied on 15 July and 12 August for powdery mildew control. All fungicide treatments provided control of powdery mildew with no significant differences detected. No significant differences were detected in regard to fruit finish quality between treatments. No phytotoxicity or adverse effects were observed in any of the treatments.

Treatment and rate/A	AUDPC[1] Powdery Mildew	Fruit Finish		
		Russet[2] Rating (1-3)	Lenticel[3] Damage Rating (1-3)	Ground Color[4] Rating (1-3)
Procure 50WS 10 oz + Dithane M-45 3 lb	191.22	1.6	1.4	1.2
Procure 50WS 12 oz + Dithane M-45 3 lb	119.35	1.8	1.3	1.1
Rally 40W 5 oz + Dithane M-45 3 lb	170.71	1.6	1.3	1.1
Procure 50WS 10 oz + Thiram 65WP 3 lb	238.89	1.8	1.2	1.2
Procure 50WS 10 oz + Thiram 65WP 4 lb	159.75	1.6	1.3	1.4
Rally 40W 5 oz + Thiram 65WP 3 lb	94.68	1.8	1.6	1.3
Rally 40W 5 oz + Thiram 65WP 4 lb	88.53	1.8	1.4	1.4
P Value				
LSD (p=.05)[5]	*NSD*	*NSD*	*NSD*	*NSD*

[1]AUDPC=area under the disease progress curve.
[2]Russet Ratings: 1=no russet, 2=russet mainly in cavity, 3=severe general russeting.
[3]Lenticel Ratings: 1=no ruptured lenticels, no russeting, 2=moderate lenticel rupture, little russeting, 3=most lenticels ruptured with russeting.
[4]Ground Color Ratings: 1=clear yellow to pale yellow, 2=moderate greenish dapple color, 3=greenish dapple around most lenticels.
[5]Numbers within a column followed by the same letters do not differ significantly (P=0.05) according to Fisher's least significant difference test.
NSD=no significant difference.

APPLE SCAB AND POWDERY MILDEW
FUNGICIDE TRIAL, 1996

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1468 Memorial Highway, Mount Vernon, WA 98273
Tel. (360) 424-6121
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Product	Manufacturer	Composition
Dithane M-45	Rohm and Haas Company, Independence Mall West, Philadelphia, PA 19105	80% zinc ion and manganese ethylene bisdithiocarbamate
Procure 50WS	Uniroyal Chemical Company, Inc., Benson Road, Middlebury, CT 06749	50% imidazole
Rally 40W	Rohm and Haas Company, Independence Mall West, Philadelphia, PA 19105	40% myclobutanil
Thiram 65WP	UCB Agro-Chemicals, Avenue Louise, 326, B-1050 Brussels, Belgium	65% tetramethylthiuram disulfide

Project No.: 13K-3455-4663

Title: Jonagold Test Block and Culture Studies

Personnel: Gary Moulton, Scientific Assistant, WSU-Mt. Vernon
Jacqueline King, Technical Farm Laborer, WSU-Mt. Vernon
Babette Gundersen, Agriculture Research Technician

Reporting Period: 1996

Accomplishments:

Two experiments were conducted in the Jonagold plot in 1996. A fertigation fertility trial with two treatments, plus control, was continued. The treatments were 1) twice weekly supplement of K alone, 2) twice weekly supplements of K plus Mg, and 3) control - water only. Data for this experiment was taken in 1996 for the first time at the station plot and for the second year at the Merritt orchard. Data collected included fruit, leaf, and soil analysis of the different treatments. Beginning about 6 weeks before anticipated harvest, fruit starch, pressure, and soluble solids were recorded. Fruit samples at harvest were not evaluated for fruit finish, including russeting and lenticel rapture, because of lack of funds.

A more extensive experiment performed at the on-station block was a spray program for control of scab and mildew, including different fungicides at varied rates of application. It included seven treatments replicated three times. Trees were rated for observed scab and mildew and fruit finish. These projects were funded by two chemical companies.

Results:

Initial results showed no difference between the treatments. However, the soil test showed a very significant drop in soil potassium from 450 ppm in the beginning of the experiment (July 1995) to 250 ppm at the end of this year in the drip onion. We anticipate that in the next year or so a deficient threshold may be reached. The fertility trials on station will also be continued for a few more seasons. Results of the apple scab and powdery mildew trial are being tabulated.

Publications:

None as yet on the fertigation trial on station. Reports of the spray trial and of the off-station fertigation trial are in preparation.

Project No.: 13K-3455-5664

Title: Commercial Production Methods for Bosc Pear

Personnel: Gary Moulton, Scientific Assistant, WSU-Mount Vernon
Jacqueline King, Technical Farm Laborer, WSU-Mount Vernon
Babette Gundersen, Technical Farm Laborer, WSU-Mount Vernon

Reporting Period: 1996

Accomplishments:

A test planting of Bosc pear was continued for comparison of productivity of selected rootstocks and training systems, test pollinizer varieties, and gathering information on the commercial potential of Bosc pear. The 7-year trial will cover rootstock comparison of young trees and 3-4 years of harvest data from trees in production and comparing two training systems as to productivity, fruit quality and marketability. Trees of Bosc planted in 1994 on OH X F217 and interstem Provence Quince rootstocks accomplished good growth in 1996, and rootstock comparisons are being made. Ready-made trees of Bosc on Quince A and C continue to be unavailable, and the interstem grafting done on Quince A and C rootstocks was unsatisfactory. Trees planted in the trial were rebudded in August 1995, leaving this part of the planting behind schedule relative to the other rootstocks. These trees are being used to compare a V-trellis verses a standard planting.

Pollinizer trees of the varieties Comice, Concord, Conference, and Starkrimson are growing well. These included imported trees of Conference and Concord grafted on Quince C which produced fruit in 1995 and 1996, the first and second year after planting. This encourages consideration of the Quince C stock as one that promotes early bearing and high productivity. The fruit of Concorde and Conference was well sized, of good appearance and quality, suggesting that they may have sales potential besides their use as pollinators. Conference in particular has an attractive light russet pattern that may appeal to customers and is currently the number one variety in Europe. Though prices of Bosc pear have fluctuated, the high quality of fruit produced in western Washington tests still supports the idea of a niche market here as an alternative crop.

Results:

Initial yields are being tabulated but a commercial crop has not been produced from the Bosc pear in this trial. Twelve-year-old Bosc on OHXF217 at

the station produced a bin of fruit on three trees. Conference produced heavily and yield records are being tabulated.

Publications:

None.

USDA-ARS Agreement # 58-1931-6-036 (1996)
PEAR EVALUATION TRIAL 1996

G.A. Moulton, B. Gundersen, and J. King
WSU-Mount Vernon

Interim Report

In April 1996 a plot consisting of 8 pear selections and 1 cultivar (Potomac), a total of 30 trees, was established at the Mount Vernon, WA research station. The planting consists of 4 trees each of **Potomac, 66125-035. 66170-047, 71655-014,** and **78304-057,** 3 trees each of **66131-021,** 2 trees each of **76115-010,** and 1 tree of **67218-083.** We received 4 trees of the selection **76128-009,** but one tree failed to leaf out and subsequently died.

On July 15, 1996, ratings of the trees were taken for scab and mildew. Scab was rated by the per cent (%) of total leaves visibly affected, and mildew by the number of strikes. At the time this rating was taken, all of the trees were infested with pear slug but little damage had yet been done and an application of insecticide effectively eliminated the problem. Results of the scab and mildew evaluation are shown in Table 1, below.

Table 1. Scab and mildew ratings, 1996
Scab = % affected leaves, mildew = number of strikes

Cultivar/Selection	Scab/Mildew	Tree 1	Tree 2	Tree 3	Tree 4	Average
Potomac	S	0	0	5	0	1.25
	M	0	0	0	1	0.25
66125-035	S	5	5	0	0	2.5
	M	1	0	0	0	0.25
66131-021	S	0	0	0		0
	M	0	1	1		0.66
66170-047	S	5	5	0	5	3.75
	M	0	0	0	0	0
67218-083	S	5				
	M	0				
71655-014	S	0	5	0	0	1.25
	M	0	0	0	0	0
76115-010	S	0	0			0
	M	1	0			0.5

76128-009	S	0	0	dead	0	0
	M	0	0	dead	0	0
78304-057	S	0	0	0	0	0
	M	0	0	0	0	0

On November 1, 1996 the trunk diameters of all the trees in the plot were measured at 30 cm. above ground level, using a standard caliper. The results are shown in Table 2, below.

Table 2. Trunk diameters, November 1, 1996

Cultivar/Selection	Tree 1	Tree 2	Tree 3	Tree 4	Average
Potomac	19	20	18	17	18.5
66125-035	13	12	17	16	14.5
66131-021	16	13	17		15.3
66170-047	17	18	19	15	17.3
67218-083	15				
71655-014	20	14	17	22	18.3
76115-010	19	13			16.0
76128-009	22	21	dead	22	21.7
78304-057	16	15	18	15	16.0

It appears that selection **76128-009** is the most vigorous at this point, despite the fact that one of the trees died after planting. This selection also showed no visible sign of scab or mildew at the time disease ratings were taken. Selection **71655-014** is approximately equal in vigor to the cultivar, **Potomac**, and shows about the same scab rating, though it is free of mildew.

Other selections that indicated good resistance to scab and/or mildew were **78304-057** (no scab or mildew), **66131-021** (no scab), and **66170-047** (no mildew.) In the case of selections with only one or two trees, lack of replication prevented meaningful analysis of the rating data.