

# **TREE FRUIT RESEARCH 1994**

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**APPLE RESEARCH 1994**  
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The 1994 weather pattern produced many cool damp days at bloom time, followed by very warm and dry weather in late spring and summer. Sufficient bee activity was present for effective pollination of most cultivars (varieties), and fruit set in general was good. From May through September it remained warm and unusually dry, and irrigation as well as fertigation where possible were provided as needed. Early varieties ripened as much as 2 weeks earlier than normal. Weather at harvest was excellent, and though some late varieties remained on the tree until November they continued to ripen well.

Two McIntosh-type introductions that first fruited in 1992, **Redmax** and **Acey Mac**, are both showing good productivity; **Redcort**, an earlier introduction, has consistently produced good quality, well colored fruit. **Ginger Gold**, an early Golden Delicious type, did better this year than in 1993, but needs to prove itself on a long-term basis. The same can be said of **Golden Supreme**, which had very good, sweet flavor and attractive appearance but may not adapt well in cooler seasons. Red sports of **Elstar**, **Daliter** and **Daliest**, continued to perform well, though productivity was somewhat lower this year. A golden russet type first known in the early 1800s, **Reinette Grise du Canada (Canada Gris)**, was again very late ripening despite the unusually good conditions. Its high acidity is best suited to culinary uses. Though they were young trees with only a few fruit each, several new BC selections that resulted from the cross of **Gala X Splendor** looked very good, and we hope to see more fruit from them in 1995.

Addition of fertigation to some areas of the orchard produced encouraging results in terms of improved size and in some instances better quality. An example was **Empire**, which produced some of the best fruit we have seen from that variety. Some varieties with **Cox** parentage, **Alkmene** and **Karmijn de Sonnaville**, experienced more than usual sunburn and watercore, which reduced storage life especially in the latter variety. **Fiesta**, however, was exceptionally good; trees were uniformly productive and the fruit large, well colored, and high in flavor. **Fuji** performed very well for us this year, with sweet flavorful fruit and good keeping quality.

Notes on the performance of specific varieties appear below, listed in harvest order within each category (1994 harvest dates in parentheses):

**Established Cultivars:**

**Williams' Pride** (July 28-August 10) Moderate-heavyset, size variable, most medium, excellent wine red color, very good flavor, subacid to sweet; firm flesh holds up well for early apple but flavor declines rapidly after 4 weeks. Scab immune.

**Sunrise** (August 10) Heavy set in all trees, very productive, size medium, color good, flavor subacid to sweet; storability not the best but flavor holds up well, store not over 4-6 weeks.

**Earligold** (August 10) Heavy set, size medium to large, good finish, attractive, little scab, flavor acceptable but not its best, storage limit 6 weeks post-harvest.

**Redfree** (August 10) Heavy set, size medium to large, very good color and finish but off flavor, tart and sour; maximum storage 1 month.

**Empress (NY 651)** (August 12) Heavy set on M9, size below medium, excellent color and finish, best flavor fresh off tree, in storage flesh softens after 6-8 weeks.

**Mott Pink** (August 12) Heavy set, size below medium, uniform, yellow color with pale pink underblush when ripe, pink-tinted flesh, lively tart flavor; some sunburn and rot, holds up well for 6-8

weeks post-harvest.

- Red Gravenstein** (August 17) Poor set in test block; trees on M27 in landscape garden very productive for their size; medium-large fruit, good color and excellent flavor; keeps for 2 months.
- Novamac** (August 26) Moderate set, size small, uniform, color acceptable, flavor rather tart; keeps well in storage but should not be held longer than 2 months. Disease resistant.
- Alkmene** (August 26) Very heavy set, size medium, fairly uniform, excellent color, some sunburn; flavor sprightly, subacid; no scab or mildew.
- Redcort** (August 26) Red sport of Cortland, moderate set, size above medium to large, good color and finish, holds well on tree, flavor good, subacid to sweet; storage 3-4 months.
- Compact Mac** (August 29) Wijcik strain, growth strongly upright with small side branches; moderate set, size medium, uniform, attractive color, very good flavor, tart, crisp; tree well suited to small garden spaces.
- Tsugaru, Homei** (August 30) Moderate set, size medium to large, excellent red color, firm and crisp, juicy, flavor sweet, seems better adapted than standard and Natsuka strains.
- Aroma** (August 30) Heavy set, size medium to large, not highly colored but attractive pink blush, little scab or russet; flavor mild, refreshing, tends not to hold up in long storage.
- Dayton** (September 1) Moderate set, size large to very large, color variable, red orange stripe 40-90% over yellow, lumpy skin; firm flesh, very sweet and flavorful just off tree but not for long storage. Scab immune.
- Prima** (September 1) Heavy set, size medium to large, excellent bright red color; flavor subacid to tart at harvest, not for long storage, acceptable but far from best of the scab immune varieties.
- Chehalis** (September 1) Moderate set, size variable, most above medium, good finish, attractive; crisp juicy flesh, somewhat melting, pleasant subacid flavor. Scab resistant, some mildew.
- Honeycrisp** (September 1) Moderate set, size medium to large, good color, some water core; flesh crisp and juicy, scald on nearly all fruit after 8 weeks' storage.
- Cox's Orange Pippin** (September 9) Moderate set on low, non-vigorous tree, stressed for water, fruit size below medium, uniform, very good color, firm dense flesh with rich subacid flavor. Storage up to 3 1/2 months if not affected by bitter pit.
- Arlet** (September 9) Moderate-heavy set, size medium, very good color and finish, unlike 93 when most fruit russeted; flavor good, lively, subacid to sweet; storage 3-4 months.
- Freyberg** (September 9) Heavy set, size medium or slightly below, good color, some light russet, excellent flavor, juicy and sweet; storage about 3 months.
- Fiesta** (September 13) Moderate-heavy set, productive, size above medium to large, color excellent, very good flavor, crisp and subacid; storage 3-5 months, retains flavor very well.
- Cherry Cox** (September 13) Moderate-heavy set, tree more vigorous than standard Cox, fruit size medium or slightly below, shape and texture like Cox, slightly redder color, very good flavor.

- Sunset** (September 13) Heavy set on all tress, small, uniform fruit, flattish shape; unusual color rather attractive, predominant yellow-orange striped red, flavor good, subacid to tart.
- Himekami** (September 13) Heavy set, size medium or slightly below, color variable, not outstanding, very firm and crisp, sweet, slight flowery aftertaste.
- Elstar** (September 15-20) Set variable on different rootstocks (very heavy on M9; moderate on M26), most fruits medium size, color excellent, flavor subacid to tart at harvest, mellows somewhat in storage.
- Bramley's Seedling** (September 20) Heavy set, size medium to large; color excellent, very firm, juicy, flavor tart for fresh eating, excellent culinary. Much sunburn, codling moth damage serious.
- Egremont Russet** (September 20) Moderate set, size medium, very unattractive, dull yellow skin netted with russet, dark rough lenticels, very firm dense flesh, flavor subacid to sweet. Storage 2-3 months.
- Ashmead's Kernel** (September 20) Heavy set on large mature tree, size medium or slightly below, fairly uniform, color good, allover light russet with occasional orange blush, very firm flesh, excellent subacid flavor, stores well till January.
- Shay (MacShay)** (September 20) Moderate set, size medium or slightly below, color variable, selective pick by color, flavor mild, pleasant, subacid to sweet; tends to pre-harvest drop, scab immune.
- Karmijn de Sonnaville** (September 22) Moderate set, size medium size or slightly larger, color acceptable but a lot of water core, and bad sunburn on all trees. Flavor less acid than usual, storage 3 months. After comparing with 92 performance, it is clear that this variety does not like high heat levels especially in early harvest season.
- Gala, Scarlet** (September 15-29) Very heavy set, size medium and below, selective pick for color and size on September 15, color good, flavor excellent, juicy, and sweet.
- Gala, Royal** (September 29) Heavy set, variable size, most medium; color excellent in all fruit, excellent flavor, sweet; little scab, stores well till January.
- Suntan** (September 29) Moderate-heavy set, fruit size medium to small, color acceptable but not outstanding, firm, juicy, flavor subacid to tart, keeping quality unknown.
- Winterstein** (September 29) Heavy set, size medium to large; color and appearance similar to Gravenstein, not highly colored, flavor subacid to tart, mostly culinary uses.
- Florina** (September 29) Heavy set, size medium, better than usual color, nice blush red, excellent finish, very attractive; flavor sweet if somewhat bland, good keeper; scab immune.
- Liberty** (September 29) Moderate set, size below medium, color good, flavor excellent, juicy and sweet, stores till January; scab immune.
- Jonagored** (September 29) Heavy set, size above medium to large, color excellent, nearly 100% red; flavor very good, subacid to sweet, full rich flavor after 2 months' storage, keeps well to January.
- Boskoop, Red** (September 29) Schmitz Hubsch strain, moderate set, size large to very large, good red color and less russet than in 93; tart to acid flavor at harvest, excellent culinary, good keeper.

**Jonafree** (September 29) Heavy set, size medium or slightly below, color excellent, nearly 90% red, flesh firm and crisp, flavor subacid to tart, lively, ripened well this year.

**SunCrisp (NJ 55)** (October 5-13) Heavy set, size medium to large, color and finish good, attractive orange blush, very firm and crisp, flavor subacid to tart; performed very well in 94 but may be too late ripening most years.

**Melrose** (October 6-13) Heavy set in all trees, size above medium to large, excellent color and very little russet, attractive; flavor subacid to sweet, lively, very good both for fresh eating and culinary, stores well until February.

**Braeburn** (October 13) Very poor set in all trees, vegetative growth excessive, few fruits medium to large in size; did not color or ripen well, bitter pit on several; not the typical performance of this variety. Probably too late in most areas, but M9 rootstock and trellis training would improve its chances.

**Fuji, Standard** (October 13-20) Moderate-heavy set, size medium or slightly above, color good, flesh crisp, sweet, performed unusually well this year but not really suited to conditions here.

**Not fully evaluated:**

**NJ 107** (August 5) Moderate set, size medium to large, attractive color, flavor somewhat acid, maximum storage 6-8 weeks, may develop off flavor if stored too long.

**NY 652** (August 10) Moderate set, size medium to small, some pre-harvest drop, good red color, very good flavor, somewhat tart and very refreshing; storage limit 6 weeks. Check with New York as to its future status.

**Biringer #101** (August 12) Light set on all young trees, first year fruiting, size medium, excellent color, allover bright red, attractive, very firm, crisp, good sprightly flavor, check storage life in 95.

**Sansa** (August 26) Light set on young tree, fruit size medium, attractive color, clear yellow striped 50-80% red, refreshing flavor. Check again in 95.

**Charles Ross** (August 26) Moderate set on small, runty trees, fruit large to very large, much sunburn, color red striped over yellow, flavor fair, subacid, mildly refreshing. Too big for eating out of hand.

**Redmax** (August 26) Moderate-light set on young trees, size medium to small, excellent wine red color, flavor tart but pleasant, keeps good flavor in storage, good for 2 1/2 months.

**Ginger Gold** (August 26) Heavy set on young trees, size variable, most large, distinct conic shape, yellow with occasional 20% stripe around cavity, some sunburn; very good flavor, subacid, crisp; maximum storage life 6 weeks.

**Virginia Gold** (August 28) Possibly not true name; heavy set on small young trees, fruit size above medium, excellent bright red color, but decidedly off flavor; check again in 95.

**NJ 99** (August 30) Heavy set on vigorous tree, size above medium, very uniform, attractive, good smooth finish, flavor subacid to tart, storage life 6 weeks.

**AA 18** (September 1) Moderate-heavy set on young tree, first fruiting, size medium, good yellow color with occasional pinkish orange blush, excellent finish, firm, juicy, mild subacid flavor.

- AA 62 <sup>named 'Stella'</sup> (September 1) Heavy set on young tree, first fruiting, size below medium, very uniform, definite conic shape, yellow, good finish, rather tart flavor.
- Acey Mac (September 9) Moderate set on all trees, size medium or slightly below, color and finish good, flavor very good, tart, lively, flesh firm and crisp, keeps well for at least 3 months.
- Red Cox (September 9) Moderate set on small young tree, fruit size below medium, very uniform, typical Cox shape, very good red color, flavor good, sprightly subacid.
- Daliter (September 13) Red sport of Elstar, moderate to light set on young trees, size medium, fairly uniform, excellent color, good lively subacid flavor, some russet but not excessive.
- Daliest (September 13) Red sport of Elstar, moderate set on young trees, size medium, fairly uniform, excellent allover wine red color; very good lively sweet-tart flavor, greasy skin.
- Hatsuaki (September 13) Heavy set, size large, color rather poor on most, flavor sweet, bland; consider for discard.
- Golden Supreme (September 20) Variable set, light to moderate on young trees, size highly variable, medium to large, attractive yellow color with slight coppery blush on some, excellent flavor, very sweet and refreshing, storage life untested as yet.
- Senshu (September 20) Moderate-heavy set, size variable, most medium, good red color on most, only slight russet but some sunburn and cracking; flavor mild, subacid to sweet.
- Early Dawn (September 20) Few fruits on small young tree, size medium-large, poor color, pale orange stripes on yellow, firm very juicy flesh, flavor rather tart; evaluate again in 95.
- Golden Mack (September 22) Moderate set, slow to begin fruiting (planted 1987), size medium, color not outstanding, juicy and crisp but flavor on the bland side.
- NY 315 (September 29) Moderate set on vigorous tree, size large, nice yellow color with good finish, attractive copper blush on some; firm, juicy, subacid to tart flavor; possible culinary or processing.
- NY 428 (September 29) Moderate-heavy set on mature tree, size medium, good color, dark wine red blush 80-100%, very firm flesh, subacid, refreshing, excellent long storage, holds flavor and firmness up to 5-6 months.
- NY 632 (September 29) Heavy set on mature tree, size large, excellent red color, flavor subacid to sweet, good; check again in 95 to see what its status is at Geneva.
- Gala, Fulford (September 29) Heavy set on young trees, size medium or slightly below, excellent color, 90-100% blush red, little sunburn or russet, dense flesh and sweet rich flavor typical of Gala.
- Tydemans Late Orange (September 29) Moderate-light set on young tree, size below medium, shape similar to Cox, color darker and more even, dense firm flesh with strong subacid flavor.
- Jimmi (Tuell sdlg) (September 29) Heavy set especially on trellis row, size medium, excellent red color, attractive, smooth finish; mild pleasant flavor, subacid to sweet, but not outstanding.
- NY 617 (September 29) Moderate set, size large to very large, bright color, red-orange stripe over yellow, flesh crisp and very firm, good sweet-tart flavor; too large for eating out of hand, NY recommends for processing.

**Empire** (September 29) Moderate-heavy set, size medium, excellent color and very good flavor, much better than 93, possibly due to improved nutrition/fertigation.

**NJ 90** (September 29) Heavy set, size medium, good wine red color especially where exposed in sun, crisp, very juicy, flavor acceptable but not top rank.

**Gnabasik Sdlg.** (September 29) Moderate set, size medium or slightly above, not highly colored, dull orange red stripe over yellow; flavor subacid, acceptable but not outstanding; check again in 95.

**NJ 100** (September 29) Heavy set, size medium to large, attractive yellow color with pink blush on many, good finish; crisp and juicy, good flavor.

**Delbard Jubilee** (September 29) Heavy set, size above medium, color not outstanding, very crisp and juicy, sweet-tart flavor, refreshing; some sunburn, russetting.

**Macfree** (October 13) Heavy set, size somewhat variable, most below medium, color rather pale, very juicy, crisp, good flavor, subacid to tart.

**NY 688** (October 13) Few fruits on young tree, first fruiting, medium size, allover bright red color, attractive, oblate shape, too few fruit for evaluation, check in 95.

**BC 8S-27-2** (October 13) Few fruits on young tree, first fruiting, medium size, very attractive, 100% bright red color, good finish, conic shape, firm, sweet to subacid, too few fruit for full evaluation but looks very nice, check in 95.

**Enterprise** (October 20) Moderate-heavy set, size above medium, excellent overall wine red color 90-100%; firm, crisp and juicy, very good sweet flavor with lively sparkle; may be too late in some years but has done well so far, promising. Scab immune.

**Reinette Grise du Canada (Canada Grise)** (October 20) Light set on young trees, size highly variable, small to large, flattish in shape, attractive allover russet over light golden-brown skin, hard rather dry flesh, tart but mellows out in storage, good till February.

**GoldRush** (October 27) Moderate-heavy set, size highly variable, better finish than in 93 but still unattractive compared to other yellow apples (e.g. SunCrisp), flavor subacid, probably too late ripening in a normal season. Scab immune.

**AA 49** not yet fruiting

**Provisional (final year - probable discard):**

**Red June** (July 21) Heavy set, medium size, ripens over extended period, highly colored fruits are soft and mushy, proposed discard.

**NJ 116** (July 26) Moderate-heavy set, size medium, good finish, flavor tart, does not keep more than 4-6 weeks.

**Discovery** (July 26) Heavy set on non-vigorous tree, size small, excellent color and lively flavor; bird damage, dry cracking about 20%, stores less than 4 weeks.

**AA 44** (August 5) Heavy set on small young tree, size large, attractive orange-red stripe 70-100% over yellow, on the tart side fresh from tree; storage poor, scald and internal breakdown.

**Cascade** (August 12-22) Moderate set on small trees, size medium, ripening over extended period,

fruits tend to drop before fully colored; attractive red stripe over yellow, juicy, rather melting flesh, mild refreshing flavor, proposed discard.

- Malbon Sdlg.** (September 9) Heavy set on mature tree, size above medium, oblong shape, short stem; very good red color, nice finish, juicy and sweet. Fully evaluated, consider if it is worth further propagation.
- Dexter** (September 9) Moderate set, size very large (biggest apples on station), green, lumpy, unattractive, bland sweet flavor, novelty value only due to large size.
- Elan** (September 9) Heavy set, size large, very attractive though color is not bright, juicy crisp texture, flavor only acceptable.
- Michinoku** (September 13) Moderate set, size medium and below, very good dark red color, much better than 93, some pre-harvest drop, flavor mild and sweet off tree, quickly becoming bland in storage, not the best in its season.
- Queen Cox** (September 13) Moderate set, size medium or below, tree not highly vigorous, leaves somewhat sparse, very good color in 94; firm dense flesh, good flavor, but not worth keeping compared to Fiesta.
- NY 674** (September 16) Heavy set, size large, excellent color, bright red and orange stripe, very attractive, flavor good, sprightly subacid; check with New York to determine its future status.
- Sweet Sixteen** (September 15-20) Moderate set, size highly variable, most large, excellent color with some sunburn, very firm flesh, sweet, distinct anise flavor; no commercial potential, flavor not to the general taste.
- Hubbardston Nonesuch** (September 20) Very light set on spreading, non-vigorous tree, fruit size medium, somewhat variable; color dull, unattractive, firm crisp flesh, flavor subacid to tart; old variety, fully evaluated, no commercial potential.
- Cornish Gilliflower** (September 20) Moderate set, fruit size large, sprawling leggy tree, much sunburn, color unattractive, dull purplish red, flavor subacid, disagreeable "off" flavor noticeable in many, failed to develop good quality this year.
- Shamrock** (September 24) Moderate-heavy set, size medium, uniform, green rather than yellow skin, subacid to tart even when fully ripe, no sunburn, better appearance than 93.
- Opalescent** (September 29) Moderate-light set on mature, non-vigorous tree, size medium to large, good red color, skin somewhat greasy, flavor subacid; old variety, fully evaluated, no commercial potential.
- Sayaka** (September 29) Moderate set, size variable, mostly large, very good color, flavor sweet-tart, very juicy and crisp. Too large for commercial dessert uses.
- Shizuka** (September 29) Heavy set, size variable, mostly large, good yellow color, occasional copper blush, crisp and juicy, flavor mild subacid, stores in good condition up to 5 months, develops sugary-sweet flavor; fully evaluated.
- Lysgolden** (September 29) Moderate set, size medium to occasionally large, Golden Delicious type, color and finish good, flavor acceptable but not the best among Golden Delicious types tested here, same scab problems.



- Dulcet** (September 29) Heavy set, size medium or slightly above, good color, dark wine red with conspicuous pale dots; flavor mediocre to poor, excessively sweet.
- Orin** (September 29) Moderate set, size below medium to small, color and finish good, juicy, flavor mildly subacid, performs better in warmer areas.
- Swaar** (September 29) Misnamed as "Stearns", light set on vigorous trees, size medium to large, some scarf skin, russeted finish, very firm flesh, mild subacid flavor.
- Golden Noble** (September 29) Moderate set, size medium to large, rather irregular shape, russetting, very crisp, flavor very tart at harvest, possible culinary.
- Nova EasyGro** (September 29) Heavy set, size medium or slightly above, much sunburn, color unattractive, dull brick red; flavor acceptable but far from best, disease resistance its only strong point.
- Keepsake** (September 29) Heavy set, size medium, fairly uniform, not highly colored but better than 93, very hard and crisp, sweet flavor, fruity aftertaste disagreeable to some; good keeper.
- Apple Babe** (September 29) Heavy set all trees, genetic dwarf size tops out about 10 feet, fruit size small, conic shape, variable red color 50-90%, juicy, sweet, rather bland; better suited to California climate where it was developed.
- Merton Russet** (October 1) Heavy set, fruit size medium, uniform, color better than 93, solid red with netted russet, strong subacid flavor; for connoisseur tastes or makers of hard cider.
- Stirling** (October 13) Moderate set on rather sprawling trees, tip bearing, fruit size quite variable, most medium, red color not outstanding, rather dull, some russetting, very firm flesh, mild subacid but rather lacking flavor, keeps well.
- Russet King** did not fruit

**Discard:**

- BC 8SE-9-70** (August 17) Heavy set, good size, excellent bright red stripe color, good flavor fresh off tree, dense spongy texture, declines rapidly in storage, keeps less than 1 month. No potential, unlikely to be introduced by Summerland.
- Nebuta** (August 26) Very heavy set, most fruit small, not thinned, color attractive dark red, flavor bland, mediocre, scab severe.

## DISEASE RESISTANT APPLE RESEARCH 1994

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This planting of disease resistant apples was begun in 1990 with cultivars and selections representing the work of apple breeders in the United States and elsewhere. This is the most comprehensive single-site planting of disease resistant apples in the state, and provides an opportunity to observe the performance of these varieties in the disease-prone environment of western Washington. We have been fortunate in receiving the support of the Western Cascade Fruit Society and the Western Washington Tree Fruit Research Foundation to maintain this planting, collect relevant data on the different varieties and selections, and make the results available to interested persons.

In our current trial the most promising varieties are Williams' Pride, an early ripening dark red apple with very good flavor and firmness, though not suited for long keeping, and Enterprise (Coop 30), late ripening, also dark red, very firm and of excellent quality especially after about a month in storage. Selections from the Geneva, NY breeding program that also look promising are NY 74828-12, NY 65707-19, and NY 75414-1 (see descriptions below). We are in contact with the research station there to see if any or all of these may be a future introduction. Liberty is consistently flavorful, reliable, and productive.

The 1994 harvest produced sufficient fruit from most of the trees two years and older to conduct evaluations of fruit quality and harvest maturity. Weather at bloom time was cool and damp, but pollination was effective and set good on most trees. A very warm and dry weather pattern lasting from late spring through summer caused varieties to ripen from two to three weeks early, and required irrigation to promote good fruit size and quality. Weather at harvest was clear and sunny, providing good conditions for late ripening varieties.

Varieties and selections are listed in harvest order within each category (1994 harvest dates noted in parentheses):

### Established Cultivars:

**Williams' Pride** (July 28-August 10) Moderate-heavyset, size variable, most medium, excellent wine red color, very good flavor, subacid to sweet; firm flesh holds up well for early apple but flavor declines rapidly after 4 weeks. Best of the early season.

**Redfree** (August 10) Heavy set, size medium to large, very good color and finish but off flavor, tart and sour; maximum storage 1 month.

**Novamac** (August 26) Moderate set, size small, uniform, color acceptable, flavor rather tart; keeps well in storage but should not be held longer than 2 months.

**Prima** (September 1) Heavy set, size medium to large, excellent bright red color; flavor subacid to tart at harvest, not for long storage, acceptable but far from best of the immune varieties.

**Dayton** (September 1) Moderate set, size large to very large, color variable, red orange stripe 40-90% over yellow, lumpy skin; firm flesh, very sweet and flavorful just off tree but not for long storage.

**Chehalis** (September 1) Moderate set, size variable, most above medium, good finish, attractive; crisp juicy flesh, somewhat melting, pleasant subacid flavor. Scab resistant, some mildew.

**Shay (MacShay)** (September 20) Moderate set, size medium or slightly below, color variable, selective pick by color, flavor mild, pleasant, subacid to sweet; tends to pre-harvest drop, keeps flavor fairly

well int storage, though flesh tends to become soft after 2-3 months.

- Liberty** (September 29) Moderate set, size below medium, color good, flavor excellent, juicy and sweet, stores till January.
- Florina** (September 29) Heavy set, size medium, better than usual color, nice blush red, excellent finish, very attractive; flavor sweet if somewhat bland, good keeper.
- Jonafree** (September 29) Heavy set, size medium or slightly below, color excellent, nearly 90% red, flesh firm and crisp, flavor subacid to tart, lively, ripened well this year.
- Macfree** (October 13) Heavy set, size somewhat variable, most below medium, color acceptable, flesh juicy, very crisp, good flavor, subacid to tart. Very good for long storage - five or six months.
- Enterprise** (October 20) Moderate-heavy set, size above medium, excellent overall wine red color 90-100%; firm, crisp and juicy, very good sweet flavor with lively sparkle, may be too late in some years but has done well so far. Excellent for long storage.

**Promising:**

- NY 74828-12** (September 13) Very heavy set, size variable, medium to small, good color, Mac type; firm, juicy, very good flavor keeps well for early apple, though flesh begins to soften after 3 months.
- NY 75414-1** (September 22) Heavy set, size medium, very uniform in size and shape, excellent color, dark purple-red with heavy bloom, pale dots, polishes to shiny deep red; firm, very juicy, crisp, lively subacid flavor keeps very well though beginning to soften after 4 months storage.
- NY 65707-19** (September 29) Moderate set, size medium and above, fairly uniform, very good finish, excellent bright red color; firm, juicy, flavor very good, lively subacid, storage good for 3 months.

**Needs Further Evaluation:**

- NY 66305-289** (September 1) Heavy set, size medium, excellent red color, firm, juicy, flavor subacid to tart, improves in storage, fruits store well until after Christmas.
- HWR-19T-18** (September 1) Moderate set on young tree, first fruit, size medium and above, excellent red color, good flavor, subacid to sweet, check again in 95.
- PSWR-11T-48** (September 1) Heavy set on young trees, first fruit, size medium to large, color variable, best colored fruits 80-100% carmine red, flavor sweet to subacid, some preharvest drop.
- PSER-11T-27** (September 1) Heavy set, size variable, most medium to large, color yellow with frequent pinkish blush, poor finish, very russeted, unattractive; good flavor at harvest but declines in storage, maximum storage 2 months.
- Coop 28** (September 13) Heavy set, size medium and below, very good color, similar to Gala, flavor subacid to tart, flesh remains very firm and crisp, probably best not kept over 3 months.
- NY 75441-67** (September 22) Very heavy set, size medium, good wine red color, good flavor subacid to slightly tart, loses flavor in storage.
- Coop 25** (September 22) Heavy set, size above medium to large, some sunburn and russetting, nice

orange red color, very firm and juicy with excellent texture and flavor after 3 months storage. Worth further evaluation in 95.

- HCR-14T-125** (September 29) Heavy set, size medium-large, patchy russet over yellow, some red-orange blush, very hard and crisp, excellent sweet-tart flavor, very good long storage, 6 months and more. Unattractive but excellent eating, worth continued trial.
- NY 74840-1** (September 29) Moderate set, size medium large, attractive color, dark wine red stripe, calyx cracking in several, flavor subacid to sweet, internal breakdown noted by January.
- NY 75413-30** (September 29) Heavy set, rather leggy trees, size large to very large, excellent overall dark red color, flesh very firm, crisp, flavor good, mild subacid, stores well, still acceptable quality at 3 months.
- NY 66325-139** (September 29) Few fruits, small tree. Evaluate in 1995.
- NY 73334-35** (September 29) Moderate set, size large, some bitter pit, color not outstanding, flavor acceptable at harvest but becomes winey, storage 3 months.
- NY 73334-57** (September 29) Very heavy set, size medium, uniform, color good, overall dark red, flavor very good, lively subacid, storage 3-4 months.
- Coop 29** (September 30) Heavy set, size medium, attractive yellow color, occ. pink blush, noticeable russet around cavity, flesh firm, very good flavor, subacid to sweet. Specimens in 1993 were mislabeled, but the trees are true to description.
- TNR-10T-11** (September 30) First fruiting, 5 fruits only, red, medium size.
- P15R-3T-86** (September 30) First fruiting, good size, dark red blush over yellow-green, very firm and crisp, subacid to tart; excellent long storage, up to 6 months, retains good acid tang.
- PAR-12T-101** (September 30) First fruiting, one tree only, moderate set, medium size and above, red color.
- CLR-13T-45** (September 30) Light set, few fruit on young tree, size variable, most medium, color ok, yellow with pinkish orange blush, some cracking, good firm texture both at harvest and after storage, juicy, retains flavor well.
- HER-3T-139** (October 13) First fruiting, light set, size above medium, good finish, pink blush over yellow, subacid flavor.
- NY 61343-1** (October 13) Moderate-heavy set, size variable, most above medium, pink-orange blush/stripe 90% over yellow, more color than in 93, flavor good, subacid to sweet, breaking down at 3 months, check again in 95.
- NY 61345-2** (October 13) Moderate-heavy set, size medium, attractive overall dark red color, similar to Liberty but generally larger, flavor refreshing, subacid, crisp flesh tends to soften in storage.
- PAR-4T-215** (October 20) Moderate-heavy set, size medium or above, some russet, color very dark red, dappled appearance, unattractive; very hard dense flesh, crisp, flavor subacid to tart.
- HER-4T-20** (October 20) Very heavy set, most fruit small, good finish, color attractive, copper blush over yellow, flavor good at harvest, subacid, juicy, refreshing with faint anise flavor; excellent long storage, 5-6 months.

**CRABAPPLE RESEARCH 1994**  
Washington State University  
Mount Vernon WA 98273

*J. King, G.A. Moulton, and B. Gundersen*

This year saw the beginning of Phase II of the National Crabapple Evaluation Program at Mount Vernon. Additional trees that we received from NCEP in 1993 that had been planted in temporary sites were consolidated into the crabapple block, the last discards of Phase I were completed, and trees that had to be moved were transplanted, with the valuable help of a local volunteer cooperator. Most of the trees were large, dating from the first planting in 1984, and it may take a season or two for them to recover from the move. Overall, however, the planting is in good condition and the new young trees bloomed profusely, giving some indication of their future performance (see below).

We were very pleased to receive further grant support for this project, \$3,000 from the WA State Department of Agriculture to cover the expenses of plot maintenance, data recording, and public information. In addition, CWNII provided a specific research grant of \$1,900 to conduct a pollination trial for suitable crabapples to use in commercial orchards. We also added to the Phase II planting some cultivars not part of the NCEP trial, including local seedlings that we considered worthy of propagation and trial. We hope in future to add several disease resistant crabapples from the PRI breeding program. Final discards were made from the current crabapple plot, and a complete list of discards is included with this report.

Trees planted in 1993 had sufficient bloom to form a first impression, and the 1990-91 plantings continue to show promise. A brief description and evaluation appears below, along with comments on the established taxa. Lists are in alphabetic order, with bloom period noted in parentheses.

**New Plantings:**

Pink Cloud (seedling)	Source Ed Lewis, Bellevue, WA; purple leaves, pink flowers, possible scab resistant
NATCO 31	Source Bob Denney, North American Tree Co., Oregon; white flowers, green leaves, possible scab resistant
WSU-MJ	Source Marvin Jarmin, Mount Vernon, WA; originated from breeding by Dr.C.D.Schwartz, WSU Puyallup. Very upright, vigorous tree, white semi-double flowers, green leaves

**Recent Additions 1993:**

Adirondack - (Late) Bright pink buds open to white flowers, light fragrance, moderately profuse bloom on young trees. Foliage bright green, tree habit upright. Fruit profuse, about 1/2" diameter, bright pinkish red, attractive.

Camelot - (Mid-late) Magenta buds, pink flowers fade to white, very profuse densely clustered bloom, strong fragrance. Foliage copper red turning greenish purple, dark green in late summer. Fruit moderately abundant, small, wine red, red flesh. Compact dwarf habit, looks very promising.

Lancelot - (Mid) Pink buds, white flowers, profuse bloom, lightly fragrant. Foliage bright green, tree has very compact dwarf habit, interesting and attractive; possible patio or container tree. Fruit profuse, small, round, yellow shaded to orange.

Morning Sun - (Mid) Pink buds, large, profuse white flowers, light fragrance. Foliage bright green, tree upright spreading. Fruit profuse, small, bright yellow, attractive, liked by birds.

Prairie Maid - (Mid-late) Magenta buds, pink flowers tend to fade to pale pink but color mix is attractive. Moderately profuse bloom, non-fragrant; new shoots tinged with copper but less color than Purple

**PAR-14T-238** (October 20) Moderate set, size medium, color not outstanding, flavor acceptable at harvest, juicy, subacid, not yet evaluated for storage.

**GoldRush** (October 27) (tested as Coop 38, HER-4T-16) Moderate-heavy set, size highly variable, better finish than in 93 but still unattractive compared to other yellow apples (e.g. SunCrisp), flavor subacid, very good after 1-2 months in storage and keeps well for 5 months; probably too late ripening in a normal season.

**NY 66305-139** did not fruit

**CMR-4T-18** did not fruit

**Questionable Value (Problems and Drawbacks):**

**CLR-20T-14** (September 1) Heavy set, size below medium, uniform, poor finish, color dull orange; flesh crisp and very firm, flavor subacid to tart, holds up well in storage.

**CMR-2T-13** (September 1) Heavy set, size variable, most above medium, color good, much better than in 93; excellent flavor, juicy and sweet. Check again in 95.

**CLR-12T-161** (September 22) Light set, size small, yellow skin easily blemished, flavor acceptable at harvest but not outstanding; poor storage, noticeable mildew on shoot tips.

**HFR-22T-173** (September 22) Heavy set, size and shape variable, most size medium, unattractive appearance, yellow with pale pink blush over green, faint whitish bloom; very juicy, flavor subacid to tart, becomes soft in storage and more noticeably acid.

**Nova EasyGro** (September 29) Heavy set, size medium or slightly above, much sunburn, color unattractive, dull brick red; flavor acceptable but far from best, disease resistance its only strong point.

**CQR-10T-17** (September 29) Moderate-heavy set, size medium and above, ripens unevenly, color better than 93, red stripe over yellow, very firm flesh, mediocre flavor, becoming unpleasant after long storage, although fruit condition remains good up to 5-6 months. Severe mildew.

**HER-10T-108** (September 29) Moderate to heavy set, size medium and below, unusual color dappled and splotched pinkish red, unappealing, mild subacid flavor, becomes mealy in storage.

**HER-3T-175** (September 30) Heavy set, size medium and below, color ok, yellow with coppery blush, firm, crisp flesh retains texture in storage but flavor mediocre; bitter pit.

**PWR-37T-131** (September 30) Very heavy set, size medium, good color, dark red with broken dark stripe, some russeting, very firm texture even after long storage but flavor deteriorates, sometimes producing bitter aftertaste. Inferior to Enterprise, probable discard.

**HER-4T-20** (October 13) Heavy set, variable size, most medium to small, color and finish much better than 93, smooth, nice copper blush on yellow; flavor subacid, very hard, dense flesh retains texture well; check again in 95.

**CLR-13T-49** (October 13) Heavy set, size medium, uniform, poor finish, considerable russeting, unattractive, yellow, very hard flesh, mediocre at harvest, off flavor develops in storage, probable discard.

Prince. Mature leaves dark green, tree upright spreading. Fruit sparse, small, dark red.

Purple Prince - (Early-mid) Magenta buds, medium-pink flowers, moderately profuse, light fragrance. New shoots coppery pink, dark green when mature; tree upright. Fruit moderately profuse, small, round, dark purple, beginning to soften by November.

Silverdrift - (Early-mid) Pink buds, white flowers, bloom very profuse and fragrant. Foliage bright green, tree upright spreading. Fruit moderately abundant, small, round, red.

**Established Trees:**

*M. baccata v. jackii* - (Very Early) Fresh-looking white bloom on large, vigorous upright-rounded tree, very dense foliage. Retains all leaves until late, red fruit moderately abundant and persistent. Fine show of early bloom.

Bob White - (Early-Mid) Nice round shape, compact, full of white bloom, mildly fragrant. Retains all leaves until late though foliage color is rather dark; abundant small yellow fruit. Two trees moved, did not recover.

Candymint - (Late) Colorful coppery-purple new shoots, maroon buds inconspicuous until flowers open. Mildly fragrant blooms are pink with darker edge, moderately profuse on low, spreading tree. Very attractive. Retains leaves well in fall but color is dull and dark, fruit profuse but inconspicuous, dark red color blends in with dark leaves.

Christmas Holly - (Mid-Late) Small, low-spreading tree, packed with intensely fragrant white bloom, long bloom period keeps tree looking attractive, perfect for limited spaces. Retains all leaves until late, small bright red fruit, abundant, attractive, birds like them. Excellent all-season tree.

David - (Mid-Late) Mix of red buds and white bloom is attractive from early stage, good fragrance, keeps on blooming over long period, moderately vigorous tree. Retains most leaves until late, attractive dark red fruits moderately abundant.

Donald Wyman - (Mid) Very dense white bloom, fragrant, tree upright-roundish, highly attractive. Leaves drop off early in fall, leaving abundant bright red fruit, very persistent; old dried-up fruits are retained among next spring blossoms.

Doubloons - (Late) Dense, compact bloom; large red buds open to creamy white full double flowers accented by pink outer petals, fragrant and very abundant; tree rounded, compact and shrubby. Retains some leaves, fruit moderately abundant but not very colorful, dull yellow, noticeable scab on most.

Evereste - (Mid) Red buds open to very dense, white, long-lasting bloom, fragrant and very attractive; tree rounded and compact. Retains all leaves until late, spectacular show of large bright red fruit. One of the best all-season cultivars.

Glen Mills - (Mid) Pink buds open to very large, showy white flowers, fragrant and profuse; tree is attractive with strongly upright habit. Retains all leaves until late, abundant dark red fruit, persistent.

Golden Raindrops - (Late) Early buds pink, small and rather inconspicuous, opening to attractive starry white flowers, abundant and mildly fragrant; tree upright spreading, with very distinctive cut-leaf foliage. Retains all leaves until late, small bright yellow fruits are conspicuous, attractive. Very promising.

Indian Magic - (Mid) Deep maroon buds open to carmine-pink, retain excellent color, mildly fragrant, trees' spreading habit and overall color very attractive. Most leaves drop early, but very abundant, brilliant red-orange fruit persists into the winter, making bare trees very colorful.

Jewelberry - (Mid-Late) Red buds open to very profuse, long-lasting pink and white flowers, non-fragrant; very small tree, low spreading habit suited for limited-area planting. Retains all leaves until late, small red fruits are moderately profuse, add color.

Louisa - (Mid) Carmine-red buds open to pink, mildly fragrant flowers; bloom is moderately abundant and tree has a pronounced weeping habit; overall color and shape are very nice. Retains some leaves in fall, but fruit rather sparse and not colorful, dull yellow shaded red.

Mary Potter - (Mid-Late) Red buds open to very fragrant, dense white flowers, mass of bloom is profuse and long-lasting, low spreading trees remain modest size. Most leaves drop by September but bright red fruit are attractive.

Molten Lava - (Mid) Pink buds open to highly fragrant white flowers, weeping habit produces cascades of very profuse bloom. Retains all leaves until late, leaves may turn orange or copper before dropping; fruit small and bright red but don't show much until leaves fall. Very attractive, vigorous tree suitable to larger landscape sites.

Ormiston Roy - (Early) Pink buds open to lightly fragrant white flowers, bloom abundant, tree spreading, more vigorous than Mary Potter. Retains most leaves, small fruit is moderately abundant, persistent, but rather dull yellow color until very late fall.

Pink Satin - (Mid) Abundant maroon buds add color to green-leaved tree even before opening, mildly fragrant carmine-pink flowers tend to fade after opening; tree upright with long whippy branches. Most leaves drop early, fruit is rather inconspicuous, red, scabby.

Prairifire - (Late) Maroon buds, coppery foliage make tree a landscape asset even before blooms open, very profuse, spectacular bloom is strong, deep pink, very little fading, lightly fragrant. Retains most leaves well into fall, though leaf color is dark; fruit moderately abundant, dark red. Best late-blooming pink.

Professor Sprenger - (Mid) Pink buds open to white, fragrant blossoms that fill the vigorous, upright-spreading tree, suited for larger landscape sites. Most leaves drop by September but very abundant bright orange fruit is very colorful and attractive. Both trees moved, did not leaf out well.

Sentinel - (Early) Red buds open to pink-and-white bloom, strongly fragrant, that adds an attractive pink tinge to entire tree, good contrast with pure-white types like *M. sargentii*. Retains leaves until late, bright red fruit only moderately abundant, very persistent; some dried-up fruits remain until spring.

Silver Moon - (Late) Pale pink buds open to very large, showy white flowers in open clusters, mildly fragrant, fairly abundant on newer wood; tree is large, vigorous, and strongly upright. Retains all leaves until late, small dark red fruits are scattered throughout tree.

Sinai Fire - (Mid) Pink buds open to fragrant white flowers, abundant bloom; tree low spreading. Retains leaves until late, attractive red fruit. Susceptible to mildew.

Snowdrift - (Mid) Pink buds open to pure white bloom, mildly fragrant, very profuse, tree vigorous, upright-spreading. Retains some leaves, full of very attractive bright red fruit.

Sugar Tyme - (Early) Pink buds open to dense white bloom, highly fragrant, on vigorous but compact upright trees, overall effect is a spectacular splash of white. Retains all leaves until late, very abundant colorful red fruit lasts all winter, sometimes dried-up fruits remain among the flowers. Excellent all-season tree.

Tea (*M. hupehensis*) - (Early-Mid) Pink buds open to attractive, strongly fragrant pink-and-white flowers, covering entire tree with delicate blush; moderately vigorous spreading tree. Retains all leaves until



late, abundant yellow fruit does not fully color until November.

*M. Tschonoskii* - (Mid-Late) Pale pink-and-white buds open to inconspicuous white bloom, in clusters distributed rather sparsely throughout tree; tree very vigorous, upright columnar habit, silvery leaves; tree shape is more ornamental than its bloom. Retains all leaves, may have showy copper to orange fall leaf color, fruit usually inconspicuous. Both trees moved, were late in leafing out.

White Angel - (Early-Mid) Pink buds open to pure white, mildly fragrant bloom, upright-spreading tree of rather open structure, emphasized by long branches abundantly covered with flowers. Retains most leaves until late, very abundant, colorful red fruit displays well on long open branches.

*M. yunnanensis* v. *veichii* - (Very Late) Pale yellowish pink buds open to flat, star-shaped flowers with strong woody aroma, may be unappealing to some, blooms in clusters from single spurs; tree upright columnar but not as tall as *Tschonoskii*. Retains all leaves until late, fruits are few, inconspicuous. Both trees moved, were late in leafing out.

*M. zumi* v. *calocarpa* - (Mid) Red buds open to very fragrant white flowers, forming a gorgeous mass of pink and white against dark angular limbs, spreading habit. Retains most leaves until late, abundant bright red-orange fruit very attractive.

#### CRABAPPLE DISCARDS - MOUNT VERNON

##### Cultivar

##### Reason for discard

##### DISCARDS 1991-92

(From NCEP plot)

Candied Apple, Weeping

Profusion

Red Splendor

Robinson

*M. sargentii*

Snowdrift (2 trees of 3)

Velvet Pillar

ditch repairs, defoliates

ditch repairs, mediocre appearance

ditch repairs, defoliates

ditch repairs, defoliates

ditch repairs (probable replant)

ditch repairs (replant)

ditch repairs, scab, poor appearance

(Other)

Chestnut

Dorothea

Eleyi

German

Martha Dolgo

Pink Perfection

Red Flesh

Royal Ruby

Scheideckeri

Sundog

evaluation completed

lawn renovation

lawn renovation

lawn renovation

lawn renovation

lawn renovation

lawn renovation

lawn renovation

lawn renovation

lawn renovation

##### DISCARDS 1992-93

Beverly

Centurion

Dolgo

halliana *Parkmanii*

Harvest Gold

defoliates, attractive only for fruit

defoliates totally, few fruit

messy fruit if not harvested, defoliates

not true to name, no fruit, defoliates

defoliates, dull color fruit, tall whippy tree

Hopa	no leaves or fruit, scruffy looking tree
Liset	no fruit, few leaves, tree habit unattractive
Radiant	defoliates totally, no fruit
Ralph Shay (2 trees of 3)	messy fruit if not harvested, defoliates
Red Barron	defoliates, severe scab, dull red fruit
Red Jade	no fruit, low weeping tree hard to manage
Royalty	fully defoliated, few dark fruits
Ruby Luster	big messy fruit, defoliates
Selkirk	messy fruit, defoliates
Winter Gold	dull yellow fruit, defoliates badly

**DISCARDS 1993-94**

Adams	defoliates badly in fall, inferior to Indian Magic
<i>M. floribunda</i>	defoliates, very unattractive in non-fruiting year
Indian Summer	defoliates, red fruit less abundant than Indian Magic (see descriptions)
Ralph Shay (1)	see above
Strawberry Parfait	defoliates, dull fruit, pink bloom fades

**ASIAN PEAR RESEARCH 1994**  
Washington State University  
Mount Vernon WA 98273  
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The 1994 weather pattern produced many cool damp days at bloom time, then followed by very warm and dry weather in late spring and summer. Most cultivars bloomed well within the usual period and set at least a moderate crop of fruit. Compared to 1993, there was only about half the rainfall in May, June, and July (3.22" vs. 6.27"). August and September were also dry and sunny, and supplemental irrigation was provided as needed. Most varieties ripened from 2 weeks to 10 days earlier than normal, and in general the fruit quality and size were good.

**Hamese #1** was very early this year, and produced a heavy crop of fruit. **Ichiban Nashi** was well thinned, so fruits sized well and were of high quality. **Shinseiki** and **Chojuro** both produced good quantities of well sized, flavorful fruit to set the standards for overall performance. **Yoinashi** produced a good quantity of attractive tawny-skinned fruit with excellent flavor. After final evaluation and discard of a number of varieties that performed poorly in recent years, or that proved too susceptible to disease, the number of varieties in the Asian pear planting has been reduced approximately by half. We will be looking for any promising new varieties to add in 1995.

A summary of the different varieties and their performance follows (1994 harvest dates in parentheses):

**Established Cultivars:**

- |                      |   |
|----------------------|---|
| <b>Shinsui</b>       | (August 22) Moderate set, fruit size variable, small on tree in E1A, medium in D. Light brown skin, attractive, flesh very juicy, flavor good to very good.   |
| <b>Ichiban Nashi</b> | (August 26) Moderate set, fruit size medium, flavor good, sweet, attractive golden-brown skin, nice finish; vigorous healthy trees.   |
| <b>Shinseiki</b>     | (August 26/September 6) Moderate set, good thinning in most trees, size variable; some limb rubs and blemishes but overall acceptable finish, flavor very good, sweet. Best adapted of the yellow skinned varieties currently tested. |
| <b>Yoinashi</b>      | (September 6) Moderate-heavy set, size medium, light brown skin, attractive, good sweet flavor and crisp texture; vigorous healthy trees.   |
| <b>Chojuro</b>       | (September 9) Moderate set, size medium, standard brown-skinned variety, very well adapted to Puget Sound conditions; firm flesh with spicy flavor, may turn winery after long storage.   |
| <b>Yongi</b>         | (September 23) Moderate set, size medium to large, light brown skin, crisp flesh with pronounced spicy flavor especially with the skin on, some find the flavor too strong.   |
| <b>Kosui</b>         | (did not fruit) Problems with disease in both trees.  |

**Not Fully Evaluated:**

- |                  |  |
|------------------|--|
| <b>Hamese #1</b> | (August 10-17) Heavy set on small tree, fruit size medium, occasionally larger; attractive fine-skinned yellow fruit, very sweet, crisp, good quality. Not available in nurseries.       |
| <b>Mishirasu</b> | (September 20) Moderate-heavy set, tree leggy, sprawling, fruits highly variable, medium to very large, rough brown skin, very crisp crunchy flesh, good flavor. Tree habit undesirable, |

may be alternate bearing. Large rough fruit unattractive, probably no commercial potential. Not available in nurseries.

**UC 17-63** (September 23) Moderate-heavy set, size above medium to large, yellow skin with heavy russet netting, unattractive, but pleasing firm texture and good flavor. Probable future discard if not to be named by UC.

**Ya Li** (September 26) Moderate-heavy set, size medium, pyriform shape, solid light-green color, crisp white flesh. Ripened acceptably this year but needs further evaluation.

**Provisional (final year - probable discard):**

**UC 8-46** (September 9) Heavy set, fruit medium to large, attractive, but flavor on the bland side. Discard unless to be named by UC.

**PEAR RESEARCH 1994**  
Washington State University  
Mount Vernon WA 98273  
G.A. Moulton, J.King, and B. Gundersen

The 1994 weather pattern produced many cool damp days at bloom time, followed by very warm and dry weather in late spring and summer. The pear cultivars (varieties) bloomed well within the usual bloom period and set a good crop of fruit. From May through September it remained warm and unusually dry, so that supplemental irrigation was provided as and where needed. Most varieties ripened earlier than normal, some by as much as 2 weeks.

In the very early season, **Harrow Delight** provided a full crop of very good quality fruit. Size was a bit better, but it is now clear that this is a highly productive variety, and needs limb support to keep loaded branches from cracking. **Orcas** and **Rescue** upheld their record both for productivity and good size. All trees of **Bosc** were very productive, and the fruit large, attractive, and fully russeted. **Red Comice** produced a full crop for the first time, though red color was streaky and poor (less than 20% on most fruit.) Among the other red-skinned pears, **Starkrimson** (Kalle strain of red Clapp Favorite) performed well as usual: colorful, uniform, reliable, and productive. **Cascade** cropped well, with medium sized, very well colored fruit, and a good flavor reminiscent of its parent **Comice**.

A new pear block testing the commercial possibilities of **Bosc** pear for commercial production using different rootstocks and training systems was planted, with the help of funding from NARF. Included were pollinizer varieties **Comice**, **Conference**, **Concorde** and **Starkrimson**. Some ornamental pear varieties may be added in 1995 to test as possible pollinizers as well as for landscape purposes.

A summary of the different varieties and their performance follows, listed in harvest order (1994 harvest dates in parenthesis):

**Established Cultivars:**

- Harrow Delight** (August 5) Very heavy set, needs strong thinning, size medium, pyriform shape, similar to Bartlett, light to moderate russeting. Storage 6-8 weeks only, good flavor.
- Rescue** (August 10) Heavy set both trees, fruits large, most have strong red-orange blush, well-shaped, attractive; mild sweet flavor, 2 months' storage only.
- Starkrimson** (August 10) Heavy set, vigorous productive tree, size above medium, very uniform, excellent color, 100% red blush, very attractive; mild sweet flavor, melting flesh, 2 months storage.
- Clapp Favorite (Bennett strain)** (August 10) Moderate set, medium size, uniform attractive shape, most lightly blushed; mild flavor, 2 months' storage.
- Clapp Favorite (standard)** see above
- Orcas** (August 22) Heavy set on large mature tree, fruit large and fairly uniform, most with 10-30% blush, though rather lumpy in appearance; keeps well for an early harvest pear, very good for drying and canning.
- Sirrine** (August 26) Moderate set, fruit size medium to small, spreading tree with long whippy branches; most fruit lightly netted with russet. Very good, sweet flavor, excellent for drying and fresh eating, does not store beyond 3 months.
- Comice** (September 8) Moderate set, fruit size medium, most had good finish, a few limb rubs. Good storage, high dessert quality, very juicy.

**Highland** (September 8) Moderate-heavy set, size variable but most were medium or slightly larger. Good storage, firm, high quality.

**Bosc (Golden Russet)** (September 13) Heavy set, size medium to large, very attractive allover russet, little scab. Very good storage, 6 months or better, firm flesh, good flavor, excellent culinary as well as dessert.

**Conference** (September 20) Light set on non-vigorous trees, size below medium, long pyriform shape, slight netted russet. High quality but unproductive so far. Good storage, good flavor, need more fruit for full evaluation.

**Not fully evaluated:**

**Roosevelt** (August 19) Moderate set, trees vigorous and upright; size medium or slightly above, blocky and rounded, slight blush on some. Fruit harvested at 15-17 pounds pressure did not ripen out well, try for 13-14 in 1995.

**Blancia** (August 22) Young vigorous tree, very few fruit, medium size, pyriform or long pyriform, smooth green skin, no blush. Too few fruit for storage evaluation, check again in 1995.

**Beurre Alexandre Lucas** (August 26) Moderate set, young vigorous tree, size medium or above, blocky in shape with faint blush on some, smooth skin, little russetting. Fruit harvested at 14-15 pounds pressure appears to store well, ripen out fully. Flavor light, sweet, flesh firm. Test again in 1995.

**Red Comice** (September 1) Moderate-heavy set on mature tree that has not been productive in the past. Fruit size medium or slightly below, typical Comice shape, red color not predominant, limited to streaks and stripes mostly on sun-exposed side. Evaluate further in 1995.

**HW 606** (September 1) Heavy set, vigorous productive tree, size medium to small; fruits ripen over extended period, late fruits have sweet, rich flavor ripe from tree. Storage variable, needs selective harvest.

**Spalding** (September 1) Moderate set, vigorous tree, rather leggy; fruit variable size, most medium to small, roundish pyriform, smooth light green skin, flesh very crisp, crunchy, juicy, similar to Asian pear when ripe on tree. Needs more evaluation for storage, may be best left to ripen on tree.

**Red Cascade** (September 8) Moderate-heavy set, fruit medium size or slightly below, appears definitely biennial bearing. Color 100% red, nice finish, shape and flavor similar to Comice, good quality; probable storage 4 months.

**HW 605** (September 8) Very heavy set, bending down branches, fruit small, somewhat similar to Seckel in shape and appearance, fairly uniform. Flavor fair to good, pressure range of 14-15 pounds appears adequate for 3 months storage.

**Mericourt** (September 13) Moderate set, young vigorous tree; fruit size medium, shape highly variable - green smooth skin. Storage not fully evaluated.

**Concorde** (September 20) Young tree, very few fruit, medium-large, smooth green skin, pyriform shape. Insufficient fruit for storage evaluation, but is said to be excellent late keeper.

**Passe Crasanne** (October 20) Very vigorous trees, moderately productive, fruit size medium, blocky, oblong; very late ripening, may not fully mature. Storage not yet evaluated.

**Passe Crasanne Rouge** (October 20) Same as above; red color not predominant.

**Crimson Gem Comice** (did not fruit)

**T.O. Warren** Planted 1994, not yet fruiting

**Bella de Guigno** Planted 1994, not yet fruiting

**Ubileen** Planted 1994, not yet fruiting

**Bronze Beauty Bosc** Planted 1994, not yet fruiting

**Provisional (final year - probable discard):**

**Sensation Red Bartlett** (August 17) Moderate set, mature tree, somewhat leggy; fruit size medium, color good, flavor like Bartlett, aromatic, storage about two months.

**Discard:**

**Colette** (August 15) Small tree, runted out in shade of large apple. Moderate set, small fruit, but very well flavored, with storage life till late December. Discard, or make new trees on OH x F rootstock.

**Red D'Anjou** (September 20) Moderate-heavy set on mature, vigorous tree, size variable, most above medium to large; color 100% allover dark red. Very severe scab on 80-90% of fruit. Storage not yet evaluated, if similar to standard D'Anjou, would need 40 days plus of refrigerated storage to ripen out properly. Not well suited to area or to home orchard culture.

**PLUM RESEARCH 1994**  
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In 1994 the weather pattern during the plum bloom period (March 14-April 9) was fairly typical of the Puget Sound region. In the early period, intermittent rains kept the daytime high temperatures in the low to mid 50s, but this was sufficient for bee activity. Late March temperatures were higher, into the mid 60s, but the rains and cool temperatures returned for the first week of April. Most varieties set a good crop despite the variable weather. In the pre-harvest and harvest period weather conditions were characterized by high heat and zero precipitation through July and most of August. In general fruit quality was good, though some of the trees transplanted in spring of 1994 did not set a crop.

Of the Japanese types, **Shiro** and **Beauty** again proved their reliable production and fruit quality. **Seneca** is the best all-purpose plum of the European type, good for fresh eating, drying, and canning. **Valor**, another Italian type in the late season, produced a heavy crop of large, sweet fruits. **Redheart**, which had not produced well in 1992 or 1993, set a heavy crop of fruit, sweet and very juicy. However, conditions for the pluots **Flavor Queen** and **Flavor Supreme** were unfavorable and they did not set any fruit this year.

A summary of the different varieties and their performance follows, listed in harvest order (1994 harvest dates in parentheses):

**Established Cultivars:**

- |                  |  |
|------------------|--|
| <b>Beauty</b>    | (July 18) Heavy set, size medium to large, maroon skin, yellow flesh; somewhat variable ripening, very productive; cling stone, very juicy, good flavor. Replaces Santa Rosa for Puget Sound climate conditions.   |
| <b>Methley</b>   | (July 18-22) Moderate set, size small, uniform, maroon skin, red flesh, cling stone, very juicy and sweet; trees highly productive, may need support to prevent limb cracking. Good for culinary use also.   |
| <b>Shiro</b>     | (July 21) Moderate to heavy set, large size, skin and flesh yellow, cling stone, some gum pockets. Standard early yellow plum, best Japanese type for local climate, large, productive, sweet and very juicy.  |
| <b>Mirabelle</b> | (July 29 - August 5) "NY 858" clone, heavy set, small cherry size fruit, very uniform, skin yellow speckled purple-red, free stone. Excellent sweet flavor, firm yellow flesh, very good also for culinary, e.g. compote, jam, tarts. Tree vigorous, very productive and reliable, primarily suited for home orchards. |
| <b>Seneca</b>    | (August 22-30) Moderate to heavy set, size large, maroon skin, yellow flesh, completely free stone; best quality European plum, some variable ripening but all fruits very sweet, firm, juicy; good for canning and drying as well.  |
| <b>Stanley</b>   | (September 2-10) Heavy set, some pre-harvest drop, medium-large size, purple skin, firm dense yellow-green flesh, semi-free stone; late Italian type, uniform in size, color, ripening, very productive but not as sweet as <b>Seneca</b> or <b>Valor</b> .  |
| <b>Valor</b>     | (September 2-10) Heavy set, large fruit, smaller on trees that had been transplanted in spring 1994. Uniform, attractive purple skin with blue bloom, firm yellow flesh, very sweet, almost completely free stone. Italian type, very productive, better flavor than <b>Stanley</b> .                                  |



Not fully evaluated:

- CB - 68** (July 22) Heavy set, size medium to small, maroon-purple skin, pinkish red flesh; cling stone, very juicy and sweet. Variable maturity.
- CB - 71** (July 26) Moderate set on young vigorous tree, good quality sweet fruit, firm; check again in 1995.
- Candee** (August 10) Light set, size medium, maroon-red skin, greenish yellow flesh, very firm, flavor good, sweet, nice firm texture. Check productivity in 1995.
- AR - 13** (August 10) Transplanted in spring 1994, few fruits only. Very good flavor, juicy and sweet check productivity in 1995.
- CB - 28** (August 16) Light set on young trees, size small, heart-shaped, red skin, firm flesh shading from pink to red, semi-free stone. Attractive fruit with pale grey bloom, sweet flavor but astringent skin.
- Redheart** (August 13) Moderate-heavy set, fruit roundish, medium size, attractive dark maroon with conspicuous pale dots, red flesh, juicy, good flavor, semi-free stone.
- Schultz** (August 30) Transplanted in spring 1994. Moderate set, medium size, yellow skin blushed 50% pink, firm dense yellow flesh, semi-free stone, some gum pockets. Fruit quality very poor after transplanting, check again in 1995.
- CB-15** (September 1) First year fruiting, light set, fruit medium size, tends to ripen unevenly. Purple skin, reddish orange juicy flesh, sweet. Check in 1995.
- Songold** Transplanted in spring 1993. Very few fruits, some failed to mature, evaluate again in 1995.
- Flavor Queen** Pluot (did not fruit)
- Flavor Supreme** Pluot (did not fruit)

Provisional (final year - probable discard):

- Methley B-20** (July 26) Moderate set, size small, reddish-purple skin, yellow flesh. (Note: standard Methley has red flesh.) Some gum pockets, blossom ends may crack and rot, flavor inferior to standard Methley.
- AU - Crimson** (July 28 - August 5) Light set, size medium, attractive red skin color, yellow flesh, extremely variable ripening, gum pockets. Strong bitter aftertaste from skin is very disagreeable.
- 4285 Plum** (August 12) Transplanted spring 1994. Moderate set, small fruit very similar to "French Petite", purple skin, yellow flesh, free stone. Flavor sweet, rather bland in most; check again in 1995.

Discard:

- Italian Prune** Fully evaluated; tree discarded when plot was removed. Standard Italian type, productive, good flavor, sweet.
- Verity** Fully evaluated; tree discarded when plot was removed. Italian prune type, good sweet flavor, moderately productive.

**CHERRY RESEARCH 1994**  
Washington State University  
Mount Vernon WA 98273  
G.A. Moulton, J. King, and B. Gundersen

In 1994 the weather pattern at bloom time was dominated by cool rainy days in the earlier period (April 6 - 16). Conditions improved for later blooming varieties; from April 16 to April 29 the temperatures were warmer (highs mid-60s, lows mid 40s) and rain was insignificant except for a 0.5 shower on April 21. Set on the very early bloomers, such as Early Burlat and Moreau, was not as good as in previous years, but others, like Emperor Francis, produced as well as ever. Overall, the fruit set was good on most trees, and the exceptions were those varieties that have a record of shy bearing.

Conditions at harvest (June 22-July 12) were better than in 1993. The weather was warm and rainfall infrequent, so fruit damage from cracking and rot were relatively low overall. Again the major destruction was by birds, with harvestable fruit remaining only on those varieties that were netted. Netting of individual trees, though the only option open at present, is both labor-intensive and impractical, especially for large mature trees.

In terms of both productivity and quality, Angela is the most reliable of our current varieties. Fruit size tends to be small, but the consistent high yield and low cracking rates make it one of the best for home gardens. Viscount performed well this year, very sweet and firm; it is less productive in some years but still acceptable. Kristin was very good in flavor and sweetness, quite productive, though some rot developed where fruits were closely clustered together. The young trees of Tulare produced large, sweet fruit of good quality, and very firm, but in a rainier summer might be more likely to crack on that account.

A summary of the different varieties and their performance follows, listed in harvest order (1994 harvest dates in parenthesis):

**Established Cultivars:**

<b>Early Burlat</b> ✓	(June 20-22) Moderate set and size, low cracking, some rot. Birds got most of the fruit.
<b>Moreau</b>	(June 20-22) Light set, size above medium, low cracking, some rot. Birds got most of the fruit.
<b>Stella</b>	(July 6) Moderate- heavy set, medium size, low cracking, little rot; good flavor. Note: trees are self fertile.
<b>Hardy Giant</b> ✓	(July 6) Moderate set, medium size, some cracking, little rot. Attractive dark fruit, very good flavor, firm texture.
<b>Angela</b> ✓	(July 6-9) Heavy set, size medium, rot and cracking low. Productive, very good flavor.
<b>Viscount</b>	(July 6-9) Moderate-heavy set, size medium. Dark, attractive, flavorful fruit, little cracking or rot (about 10%). Not as productive as the best but acceptable.
<b>Kristin</b>	(July 8-10) Heavy set, size variable, most below medium, some cracking (20-30%), rot especially in tight fruit clusters. Fruit flavor and color excellent.
<b>Sweet Anne</b>	(July 8-10) Moderate set, small size, some cracking, considerable rot (20%-30%). Fruit yellow with excellent bright red color, looked very nice this year, sweet flavor, productive. Upright habit means most fruit must be picked from ladders.

**Bada** (July 8-10) Moderate set, large fruit, low cracking (less than 5%), some rot (20%) in tight fruit clusters. Fruit yellow with bright red blush to 70%, good sweet flavor. Strongly upright growth habit leaves too much of the fruit high up in the tree.

**Emperor Francis** (July 10-12) Heavy set, size small to medium, some rot, little cracking (less than 20%). Fruit yellow with bright red blush to 90%; fruits lack sweetness. Major recommendation is its heavy, reliable production.

**Lapins** ✓ (July 12-15) Heavy set, size medium to small, very little cracking (less than 5%), low rot. Dark fruits are attractive and good eating. Note: trees are self-fruitful.

**Montmorency** (July 12-15) Heavy set, medium size and very uniform, no cracking, very little rot. Late ripening, very soft fruit. Standard tart cherry for culinary use; productive, reliable, performs well in western WA conditions.

**Not Fully Evaluated:**

**Craig's Crimson** (July 4-6) Moderate to heavy set on young trees, size variable, mostly small. Some cracking (10%) and considerable rot (30%). Very firm, good flavor, attractive blackish red. Review in 1995.

**Tulare** (July 8-10) Moderate set, size medium to small, some cracking (about 20%), little rot. Very attractive dark fruit, good sweet flavor, very firm texture; needs further evaluation but still looks promising.

**Cavalier** (July 8-10) Light set, large fruit, some cracking and rot, about 20%. Good fruit flavor and texture, nice and firm. Too-vigorous tree on Mahaleb discarded, new trees planted on Mazzard. Evaluate for productivity.

**Bergie** New trees to replace the ones removed in old cherry block, not yet fruiting.

**Sunburst** New trees to replace the ones removed in old cherry block, not yet fruiting.

**Hudson** New tree to replace one removed in old cherry block, not yet fruiting.

**King** New tree not yet fruiting.

**Provisional (probable discard):**

**Merla** (June 26-28) Light set, medium large size, cream yellow flesh; low cracking, some rot. Fruit has fair flavor but too soft in texture. Very attractive to birds, almost all destroyed although tree was netted. Proposed discard.

**Columbia** (July 4-6) Light set, size large to very large, some cracking (about 10%), low rot. Fruits very large, attractive, and sweet like Rainier but tree unproductive. Vigorous upright trees.

**NY 11375** No fruit in 1994. Pie cherry, red, oblong in shape; sour and very late ripening. Tree is bushy and spreading, does not appear highly vigorous or productive.

**Royalton** No fruit in 1994. Tested as NY 11390. Tree established 1988, produced little or no fruit. May lack suitable pollinizer.

**Merpet** No fruit, destroyed by birds. Low cracking and rot, but fruit too soft, unappealing.

## PEACH AND NECTARINE RESEARCH 1994

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G.A. Moulton, J. King, and B. Gundersen

In 1994 the weather pattern at bloom time for peach and nectarine was reasonably favorable. Throughout the full bloom period March 22-April 4, daytime high temperatures were in the mid 50s to mid 60s, and although there were a few wet days at the beginning of April, pollination did not appear to be a problem. Weather in May, June, and July was drier and hotter than in 1993, and unusually hot July temperatures caused most of the early peach and nectarine varieties to ripen 12-15 days ahead of normal. Warm weather continued into the later harvest season, and most varieties produced a good crop of fruit.

**Harrow Diamond**, the earliest ripening peach, was transplanted to a new block in spring of 1994, and both fruit size and productivity were poor as a result. A new variety, **Sentry**, produced large, very flavorful fruit, with productivity to be evaluated in 1995. In the mid season, **Harken** and **Redhaven** were consistent in their performance, reliable and productive. **Newhaven** did well also, with a good set of high quality fruit. **Double Jewel** was a disappointment in its second year, with only a couple of small fruit despite its ornamental bloom. Among the leaf curl resistant clones, "Tuma" and "Strahl" were quite productive, and fruit quality reasonably good. Young trees of "Proud" peach were damaged by marauding goats, but the few fruit sampled were of very good flavor and quality. We look forward to seeing the 1995 crop.

**Juneglo** and **Nectired**, early-season nectarines, were transplanted to a new block in 1994 and as a result did not produce a crop. In the mid season, **Summer Beaut** looked good again, though fruit production was modest. **Mericrest** had good flavor but color was on the dark side, with some skin cracking.

A summary of the different varieties and their performance follows, listed in harvest order (1994 harvest dates in parentheses):

### PEACHES

#### Established Cultivars:

<b>Harrow Diamond</b>	(July 14) Light set, size very small as result of transplant, color ok, flavor very good. Should improve in 95 as tree recovers.
<b>Stark Earliglo</b>	(July 22) Heavy set, size medium to large, low split pits but a lot of rot and cracking. very good flavor, excellent color.
<b>Stark E. Loring</b>	(July 31-August 3) Moderate set, size medium; very good red color in sun but variable throughout tree, shaded fruits are inferior quality, flavor good but not top rank.
<b>Redhaven</b>	(August 1-6) Heavy set on large spreading tree, size large, attractive uniform color, good texture and sweetness this year. Standard variety, reliable, productive.
<b>Frost</b>	(August 2-5) Moderate set, size medium, low split pits, color variable, tends to uneven ripening. "Standard" for leaf curl resistance in western WA, flavor acceptable but less than best.
<b>Harken</b>	(August 12) Moderate-heavy set, size medium and above, excellent color and flavor. Reliable, fully evaluated.
<b>Vanity</b>	(August 18) Light set, small size fruit after spring 94 transplant, some dried up. Should recover in 1995.

**Not Fully Evaluated:**

- Sentry** (July 20) Moderate set, large size, low split pit; color attractive, good flavor and texture, pleasant eating. Nice early peach, looks promising.
- Double Jewel** (August 5) Very few fruit, small to medium size, some not filled out, flavor ok on few good specimens. Check again in 95; bloom is pink, showy, full double, ornamental.
- Strahl LCR** (August 5) Moderate-heavy set, size medium and above, excellent color, nearly solid garnet red; firm texture and good flavor.
- Newhaven** (August 5) Moderate set on vigorous productive young trees, fruits medium size and above, attractive even color, good flavor, firm, sweet, nearly free stone. Still looks promising.
- Mid-Pride** (August 5) Moderate set on vigorous young trees, fruit size medium to occasionally large, good color and very good flavor. Less productive than Newhaven.
- Tuma LCR** (August 13) Heavy set, size medium and very uniform, attractive, good color, flavor good but not best.
- Har Beauty** (August 13) Moderate set, fruit size medium to large, excellent color, flavor very good this year, good overall quality.
- Delp Hale** (August 18) Very light set, small fruit after transplant to new block in spring 94, some dried up, did not properly mature. Should recover in 95.
- Harcrest** (August 25) Very light set, small fruit after transplant to new block in spring 94, some dried up, did not properly mature. Should recover in 95.
- Japan Sdlg.** (August 25) Light set, size below medium, white fleshed with skin blushed 10-30% pink over greenish yellow. Sweet good flavor, very juicy, semi cling; strongly aromatic, very fuzzy skin is disagreeable.
- Roaf** (September 6) Light set, size small. Fruit failed to color, did not fully ripen, possibly due to lack of sufficient moisture. Check in 95 for productivity, consistent quality.
- Etter** (September 10) Light set, size small. Fruit failed to color, did not fully ripen, possibly due to lack of sufficient moisture. Check again in 95.
- Early Charlotte** Did not fruit.
- Vera** Did not fruit.

**Provisional (final year - probable discard):**

- Harbelle** (July 23) Heavy set, size medium, relatively low cracking, flavor fair to good, juicy, attractive color. Needs a warm site for consistent quality.
- Nerland LCR** (August 9) Moderate set, size medium and above, slightly larger than Tuma, split pits less than 20%; very soft melting flesh, slightly off flavor in some, most are acceptable quality but not the best.

**Discard:**

- Early Glory** Fully evaluated, removed when old stone fruit plot discontinued. Good quality, productive peach in the very early season.
- Zachary Taylor** Fully evaluated; moderately productive, acceptable quality but not the best.
- Leiser** Fully evaluated, removed when old stone fruit plot discontinued. Color variable and rather poor, flavor acceptable but less than best.
- Bellaire** Fully evaluated, removed when old stone fruit plot discontinued. Color variable, quality mediocre.
- Sweet Haven** Fully evaluated, removed when old stone fruit plot discontinued. Mediocre quality, soft, cracks.
- Brighton** Fully evaluated, removed when old stone fruit plot discontinued. Mediocre quality.

**NECTARINES**

**Established Cultivars:**

- Juneglo** (no fruit matured) Transplanted in spring 1994, fruit set moderate but fruits small, failed to develop, cracked and dried. Should recover in 1995.

**Not Yet Evaluated:**

- Nectired** (August 3) Light set, small fruit after transplant in spring 1994. High cracking, rot, some fruits failed to mature. Should recover in 1995.
- Summer Beaut** (August 13) Light set, size medium though somewhat variable, few split pits, some cracking. Very good color and flavor; check for productivity as tree matures.
- Mericrest** (August 18) Light set, size medium, color attractive dark red, some cracking and rot. Flavor good, sweet, firm. Check again in 1995.

**Discard:**

- Harko** Fully evaluated, removed when old fruit plot discontinued. Reliably productive, not very attractive, quality less than best.

**APRICOT RESEARCH 1994**  
Washington State University  
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Apricots bloom earliest of all the stone fruit and thus are particularly sensitive to weather factors that affect pollination. In 1994 the bloom period (March 14-28) was cold and wet, and pollination was poor as a result. **Puget Gold** and **Harglow** were the only varieties to set fruit in any significant quantity.

Conditions in the period just before harvest were unusually good, and the weather clear and hot, reaching a high of 94° on July 20, with the range of daytime temperatures from the mid-70s to mid and high 80s in the three weeks preceding harvest. No precipitation was recorded during this period, so that even in those instances where fruit cracking was noted, no damage from rot developed. Unfortunately, due to the poor set of fruit on most varieties, the good conditions at harvest came too late insofar as fruit production was concerned.

The aprum variety **Flavor Delight**, which produced a fair crop in 1993, had no fruit at all this year. Among the apricots, **Harglow** and **Puget Gold** were clearly the best. Trees of **Harglow** were transplanted to a new plot in the spring of 1994, so even though they bloomed and set some fruit, the productivity was not as high as last year.

In 1990 a test plot of **Puget Gold** was planted, consisting of 18 trees on 3 rootstocks: Lovell, Mariana 4001, and St. Julien A. These trees are now in mature production, and noticeable differences in productivity, tree vigor, and tree survival were observed. A preliminary evaluation in 1993 found that of the 6 trees on Lovell, 5 were healthy and fruiting; on Mariana 4001, 4 trees were healthy, 1 died and 1 was taken over by rootstock after the top became diseased. St. Julien A had the poorest record; only 2 trees were healthy, 2 died, and 2 more are diseased and unlikely to survive.

This year we were able to take yield records as well as a rating of tree vigor and survival. Both Lovell and Mariana 4001 were virtually identical in productivity, tree vigor, and survival. St. Julien A was much poorer both in the areas of tree survival and in overall productivity. Based on these results, St. Julien A is not considered a good rootstock for **Puget Gold** apricot (see attached summary). Citation rootstock, another popular stock for stone fruits, was not included in this trial but we would like to do a similar comparison with it sometime in the future.

A summary of the different varieties and their performance follows, listed in harvest order (as near as could be determined in a year when set of most varieties was poor):

**Established Cultivars:**

<b>Harglow</b>	(July 25) Light set, trees transplanted in spring from old plot, fruit smaller than usual, flavor acceptable but rather dry and tough. Trees should recover and perform well next year.
<b>Puget Gold</b>	(July 30) Variable set, most productive, size medium or occasionally larger, attractive with light blush (10-20%) of red over yellow. Fruit quality and flavor were very good this year, and yields in general were high.

**Not Fully Evaluated:**

<b>Flavor Delight</b>	Aprum (July 22) Very few fruit, cracking.
<b>Royal Rosa</b>	Did not fruit.

**Schilgen Sdlg.** Did not fruit. Moderately vigorous tree may be slow to begin bearing. Hold one more year.

**Katy** Young tree not yet fruiting.

**PA 7005-2** Transplanted spring 94, did not fruit.

**Goldenglow** Genetic dwarf, not yet fruiting, in landscape garden.

**Rouge D'Or** Transplanted spring 94, did not fruit.

**Peach X apricot** Did not fruit.

**Provisional (final year - probable discard):**

**Sunglo** (July 26-30) Poor set, size medium, excellent color, very firm and sweet. Trees are diseased, some limbs breaking out. Possible discard, fully evaluated.

**Alfred** (July 26) Light set on vigorous trees. Fruit is small, yellow, flavor excellent, sweet, rather soft. Not productive, possible discard.

**Discard:**

**Rival** Fully evaluated, tree discarded when plot was removed.

**Gold Strike** Tested as PA 7221-1. Fully evaluated, tree discarded when plot was removed.

**Harcot** Fully evaluated; good flavor and size but unproductive.



APPLES  
BLOOM DATES 1994

Cv.

Full Bloom

Gravenstein, Red	04/16/94
AA 44	04/17/94
Alkmene	04/17/94
C Vagnon Flocher	04/17/94
Compact Mac (Wijcik)	04/18/94
Discovery	04/18/94
Empire	04/18/94
Golden Mack	04/18/94
Mott Pink	04/18/94
NJ 107	04/18/94
Orin	04/18/94
Winterstein	04/18/94
NJ 99	04/19/94
Acey Mac	04/20/94
Ashmead's Kernel	04/20/94
Bramley's Seedling	04/20/94
C Bellflower	04/20/94
C Pomme Gris	04/20/94
Cascade	04/20/94
Dexter	04/20/94
Earligold	04/20/94
Egremont Russet	04/20/94
Freyberg	04/20/94
Liberty	04/20/94
Macfree	04/20/94
Merton Russet	04/20/94
NY 428	04/20/94
NY 61345-2	04/20/94
Red June	04/20/94
Redcort	04/20/94
Redmax	04/20/94
Shamrock	04/20/94
Shay	04/20/94
Sunset	04/20/94
Swaar	04/20/94
Tydemans Late Orange	04/20/94
Virginia Gold	04/20/94
Winterstein	04/20/94
AA 18	04/24/94
Arlet	04/24/94
C Brown's Apple	04/24/94
C Geeveston Fanny	04/24/94
Charles Ross sdlg.	04/24/94
Daliter	04/24/94
Delbard Jubilee	04/24/94
Early Dawn	04/24/94
Jonafree	04/24/94
July Tart	04/24/94
Lysgolden	04/24/94
Melrose, standard	04/24/94
Moore x Apple	04/24/94
Nova EasyGro	04/24/94
Novamac	04/24/94
NY 651	04/24/94
NY 652	04/24/94
Prima	04/24/94
Redfree	04/24/94
Sunrise	04/24/94
Test Apple #440 (Hilltop)	04/24/94
Boskoop, Red	04/25/94
Braeburn	04/26/94
C Anere de Berthcourt	04/26/94
C Bulmer's Norman	04/26/94
C Marachel	04/26/94

C Muscat de Berney	04/26/94
C Muscat de Lense	04/26/94
C Reine des Pommes	04/26/94
C Sweet Coppin	04/26/94
C Tremlett's Bitter	04/26/94
Cox, Cherry	04/26/94
Cox, Red	04/26/94
Cox's Orange Pippin	04/26/94
Florina	04/26/94
Gnabasik Sdlg.	04/26/94
Golden Noble	04/26/94
Honeycrisp	04/26/94
Hubbardston	04/26/94
Jimmi (Tuell sdlg)	04/26/94
Jonagold, Nicobel	04/26/94
Malbon sdlg.	04/26/94
NJ 100	04/26/94
NY 315	04/26/94
NY 617	04/26/94
NY 632	04/26/94
NY 674	04/26/94
Opalescent	04/26/94
Russet King	04/26/94
Suntan	04/26/94
Sweet Sixteen	04/26/94
Elstar	04/27/94
Gala, Fulford	04/27/94
Tsugaru, Natsuka	04/27/94
Aroma	04/28/94
Fuji, Yataka	04/28/94
Ginger Gold	04/28/94
Hatsuaki	04/28/94
Himekami	04/28/94
Jomured	04/28/94
Jonagold, King	04/28/94
Jonagold, New	04/28/94
Jonagored	04/28/94
Jonagored 9613	04/28/94
Jonagored 9631	04/28/94
Karmijn de Sonnaville	04/28/94
Melrose (Melrouge)	04/28/94
Nebuta	04/28/94
NJ 112	04/28/94
NJ 116	04/28/94
NJ 90	04/28/94
Princesse	04/28/94
Sayaka	04/28/94
Senshu	04/28/94
Shizuka	04/28/94
Fuji, Akifu #1	04/29/94
Jonagored 9614	04/29/94
Apple Babe	04/30/94
C Michelin	04/30/94
C Peau de Vache	04/30/94
Cox, Queen's	04/30/94
Daliest	04/30/94
Elan	04/30/94
Fiesta	04/30/94
Fuji, Standard	04/30/94
Golden Supreme	04/30/94
Jonagold, DeCoster	04/30/94
NJ 55	04/30/94
C Bedan	05/01/94
C Chisel Jersey	05/01/94
C Cow Jersey	05/01/94
C Dabinett	05/01/94
C Feuillard	05/01/94
C Harry Masters' Jersey	05/01/94
C Kingston Black	05/01/94
Michinoku	05/01/94

Rubinstar  
Tsugaru, Homei  
Gala, Scarlet  
Stirling  
Canadian Grise

05/01/94  
05/01/94  
05/03/94  
05/04/94  
05/05/94

ORGANIC APPLE PLOT  
BLOOM DATES 1994

Cv.

Full Bloom

Williams' Pride (Coop 23)	04/20/94
Dayton	04/22/94
HFR-22T-173	04/22/94
NY 74840-1	04/22/94
NY 75441-67	04/22/94
PWR-37T-131	04/22/94
CQR-10T-17	04/23/94
Liberty	04/23/94
NY 61345-2	04/23/94
NY 66305-139	04/23/94
NY 75414-1	04/23/94
CLR-12T-161	04/27/94
Coop 28	04/27/94
HCR-14125	04/27/94
HER-10T-108	04/27/94
HER-4T-20	04/27/94
NY 61343-1	04/27/94
NY 65707-19	04/27/94
NY 66305-289	04/27/94
NY 66325-139	04/27/94
NY 73334-35	04/27/94
NY 73334-57	04/27/94
NY 75413-30	04/27/94
Prima	04/27/94
PSER-11T-27	04/27/94
Chehalis	04/30/94
CLR-13T-45	04/30/94
CMR-2T-13	04/30/94
Coop 25	04/30/94
Coop 29	04/30/94
Enterprise (Coop 30)	04/30/94
Gold Rush (HER-4T-16)	04/30/94
HWR-19T-18	04/30/94
NY 74828-12	04/30/94
PAR-12T-101	04/30/94
PAR-14T-238	04/30/94
PAR-4T-215	04/30/94
PSWR-11T-48	04/30/94
Redfree	04/30/94
TNR-10T-11	04/30/94
CLR-13T-49	05/02/94
CLR-20T-14	05/02/94
HER-3T-139	05/02/94
HER-3T-175	05/02/94
Jonafree	05/02/94
Novamac	05/02/94
Shay (Macshay)	05/02/94

ORGANIC APPLE PLOT  
BLOOM DATES 1994

Cv.

Full Bloom

Williams' Pride (Coop 23)	04/20/94
Dayton	04/22/94
HFR-22T-173	04/22/94
NY 74840-1	04/22/94
NY 75441-67	04/22/94
PWR-37T-131	04/22/94
CQR-10T-17	04/23/94
Liberty	04/23/94
NY 61345-2	04/23/94

NY 66305-139	04/23/94
NY 75414-1	04/23/94
CLR-12T-161	04/27/94
Coop 28	04/27/94
HCR-14125	04/27/94
HER-10T-108	04/27/94
HER-4T-20	04/27/94
NY 61343-1	04/27/94
NY 65707-19	04/27/94
NY 66305-289	04/27/94
NY 66325-139	04/27/94
NY 73334-35	04/27/94
NY 73334-57	04/27/94
NY 75413-30	04/27/94
Prima	04/27/94
PSER-11T-27	04/27/94
Chehalis	04/30/94
CLR-13T-45	04/30/94
CMR-2T-13	04/30/94
Coop 25	04/30/94
Coop 29	04/30/94
Enterprise (Coop 30)	04/30/94
Gold Rush (HER-4T-16)	04/30/94
HWR-19T-18	04/30/94
NY 74828-12	04/30/94
PAR-12T-101	04/30/94
PAR-14T-238	04/30/94
PAR-4T-215	04/30/94
PSWR-11T-48	04/30/94
Redfree	04/30/94
TNR-10T-11	04/30/94
CLR-13T-49	05/02/94
CLR-20T-14	05/02/94
HER-3T-139	05/02/94
HER-3T-175	05/02/94
Jonafree	05/02/94
Novamac	05/02/94
Shay (Macshay)	05/02/94

PEACHES/NECTARINES  
BLOOM DATES 1994

Cv.	Full Bloom
S Harrow Diamond	03/22/94
S Mid-Pride	03/22/94
NS Sentry	03/22/94
S Stk. Sensation dwf.	03/25/94
NS Cole LCR	03/25/94
NS Newhaven	03/25/94
NS Harken	03/25/94
NS Frost	03/25/94
S Pix Zee dwf	03/25/94
NS Harbelle	03/26/94
S Juneglo	03/26/94
NS Stk. Earliglo	03/26/94
S Necta Zee dwf	03/28/94
S Harcrest	03/28/94
S Mericrest	03/28/94
S Stk. Early Loring	03/28/94
NS Redhaven	03/28/94
S Strohl LCR	03/28/94
S Vanity	03/28/94
S Nectired	03/28/94
S Tuma	03/30/94
S Nerland LCR	03/30/94
NS Etter	03/30/94
NS Vera	03/30/94
NS Newhaven	03/30/94
NS Summer Beaut	03/30/94
NS Proud LCR	03/30/94
S China Sdlg.	04/04/94
NS Roaf	04/04/94
S-D Double Jewel	04/06/94

PLUMS  
BLOOM DATES 1994

Cv.	Full Bloom
Methley, Standard	03/14/94
Methley, B-20	03/14/94
AR-13	03/14/94
Beauty	03/14/94
Flavor Queen Pluot	03/16/94
CB-68	03/22/94
Shiro	03/21/94
AU-Crimson	03/21/94
Sungold	03/23/94
AU-1	03/23/94
Redheart	03/25/94
Flavor Supreme Pluot	03/28/94
AU-Roadside	03/28/94
CB-28	03/28/94
CB-15	03/28/94
CB-71	03/28/94
Valor	03/31/94
Stanley	04/05/94
Mirabelle	04/08/94
Plum 4285	04/08/94
Schultz	04/08/94
Candee	04/09/94
Pluot (F 1-22,23, 2-22)	04/09/94

PEARS  
BLOOM DATES 1994

Cv.	Full Bloom
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Spalding	04/01/94
Blancia	04/05/94
Harrow Diamond	04/08/94
Highland	04/11/94
Sensation Red Bartlett	04/11/94
Rescue	04/11/94
Starkrimson	04/11/94
Beurre Alexandre Lucas	04/11/94
Passe Crasanne	04/14/94
Passe Crasanne Rouge	04/14/94
HW 605	04/14/94
HW 606	04/14/94
Sirrine	04/14/94
Colette	04/14/94
Orcas	04/14/94
Roosevelt	04/14/94
Clapp Favorite (Bennett)	04/14/94
Mericourt	04/14/94
Conference	04/16/94
Comice	04/16/94
Crimson Gem Comice	04/18/94
Cascade	04/18/94
Bosc	04/18/94

ASIAN PEARS (NASHI)  
BLOOM DATES 1994

Cv.	Full Bloom
Ya Li	03/29/94
Yoinashi	04/05/94
Chojuro	04/05/94
UC 17-63	04/05/94
Hamese #1	04/05/94
Shinseiki	04/08/94
UC 8-46	04/08/94
Mishirasu	04/08/94
Shinsui	04/08/94
Kosui	04/11/94
Yongi	04/11/94
Ichiban Nashi	04/11/94

CHERRIES  
BLOOM DATA 1994

Cv.	Full Bloom
Early Burlat	04/06/94
Moreau	04/06/94
Emperor Francis	04/11/94
Viscount	04/11/94
Royalton (NY 11390)	04/11/94
Hardy Giant	04/11/94
Merpet	04/11/94
Angela	04/13/94
Kristin	04/14/94
King	04/14/94
Tulare	04/14/94
Sweet Anne	04/14/94
Bing	04/14/94
Lapins	04/16/94
Compact Stella (LFG)	04/16/94
Cavalier	04/21/94
Merla	04/21/94
Compact Lambert (LFG)	04/21/94
Craig's Crimson	04/24/94
Bada	04/24/94

Montmorency  
Columbia  
NY 11375

04/24/94  
04/24/94  
04/29/94



APRICOTS  
BLOOM DATES 1994

Cv.

Full Bloom

Rouge D'Or (Norton)	03/14/94	
Royal Rosa	03/14/94	
Alfred	03/18/94	
PA 7005-2	03/18/94	
Puget Gold	03/20/94	
Harglow	03/20/94	
Katy	03/22/94	
Flavor Delight Aprium	03/22/94	sparse
Schilgen sdig.	03/22/94	sparse
Sunglo	03/28/94	

**FIELD TRIALS OF "PROVIDE" - 1994**  
on Jonagold Apple

*Gary A. Moulton, Scientific Assistant, WSU Mount Vernon*  
*Jacqueline King, Technical Farm Laborer, WSU Mount Vernon*  
*Babette Gundersen, Technical Farm Laborer, WSU Mount Vernon*

Fruit finish is an important factor in the successful production and marketing of Jonagold apples. This is particularly true in western Washington climate conditions where russetting is more common. Of the many possible factors contributing to fruit russet, a number are characteristic of the soil and climate conditions in local orchards. They include, but are not limited to, the following: rain during early fruit development, high humidity, high soil nitrogen, high nighttime temperatures after bloom, slow drying of rain, dew, or sprays, and infection by powdery mildew. Such factors as rainfall and temperature cannot be controlled, but their effects on fruit finish can sometimes be mitigated by the use of growth regulators such as "Provide" (GA 4 + 7).

In 1994 an experimental trial of the effectiveness of "Provide" spray was conducted on Jonagold orchards in two locations: a section of Alan Merritt's orchard at his waterfront site, and an inland section called "Liza" adjacent to Worline Road. The results of this trial are discussed below.

**METHODS:** The orchards consisted of mature Jonagold trees in full production, trained to a trellis with the top wire at approximately 8 feet above ground. Rows were laid out north-south in both orchards. At the Merritt main orchard, Jonagold trees were marked and separated into 5 treatments, replicated 3 times, with at least one tree as spacer between treatments. Each replication was composed of 6 trees of approximately uniform size and bloom quality. At the "Liza" orchard, there were only 2 treatments, also consisting of 3 replications of 6 trees each.

**Spray Applications**

Two methods of application were used; an airblast sprayer and an electrostatic sprayer<sup>1</sup>. The electrostatic sprayer applied concentrated material at a rate of 7 gallons of water per acre; the air blast sprayer rate was about 85 gallons/acre. Treatments were as follows:

Merritt main orchard

**Treatment**

1. Provide @ 10 oz./A, applied 4 times with airblast

<sup>1</sup>Use of this equipment courtesy of Brian Sakuma/Sakuma Bros. Farms.

2. Provide @ 10 oz./A, applied 4 times with electrostatic sprayer
3. Provide @ 13 oz./A, applied 2 times with airblast
4. Provide @ 13 oz./A, applied 2 times with electrostatic sprayer
5. Control, no spray

Liza orchard

**Treatment**

1. Provide @ 13 oz./A, applied 3 times with airblast
2. Control, no spray

Treatments were applied starting at petal fall, and continued for the succeeding 3 weeks as designated below. Applications were made on the same schedule, first at the Merritt main orchard (9:00 to 10:30 A.M. approximately), and then at the Lisa site (11:00 to 11:45).

Date	Tmts.	Comments <sup>2</sup>
May 3	M 1-4	Warm, sun with high cloud, some breeze from west
	L 1	Temp. 53-60°F, wind 3.0-4.2 mph. May 4-9: minimum temp. 44-50°F, precipitation 0.03
May 10	M 1-4	Warm, hazy sun, very light breeze from west
	L 1	Temp. 60-69°F, wind 1.4-1.9 mph. May 11-17: minimum temp. 41-49°F, precipitation 0.2
May 18	M 1,2	Warm, partial sun, v. little wind, some breeze abt. 10
	L 1	Temp. 54-62°F, wind 4.4-3.2 mph. May 19-23: minimum temp. 45-54°F, precipitation 0.0
May 24	M 1,2	Warm, hazy sun, variable light wind, increasing after 11 Temp. 59-63°F, wind 4.3-5.7 mph. May 25-30: minimum temp. 44-51°F, precipitation 0.03

<sup>2</sup>Data for hourly temperature, minimum night temperature, wind speeds, and precipitation were recorded at the Mount Vernon research station, not at the specific sites.

### Sample collection and Grading

At harvest time for the specific orchard, sample fruits were collected from all the treatments. At random, from each treatment and replication, 15 fruits were taken from the east side of the trees and 15 fruits from the west, and put in separate labeled bags. The fruit samples were then graded individually and the scores marked on the test sheet, according to the following method:

#### Russet:

1 = no russet, 2 = russet mainly in cavity, 3 = severe general russetting

#### Lenticels:

1 = no ruptured lenticels, no russetting, 2 = some lenticel rupture, little russetting, 3 = severe; most lenticels ruptured, russeted

#### Ground color:

1 = clear yellow to pale yellow, 2 = some greenish dapple color, 3 = greenish dapple around most lenticels

The data were then tested using standard analysis of variance procedures.

### RESULTS:

The effect of Provide treatment on **russetting** had significant results in two areas. At Merritt's main orchard, treatments 1 and 3, using airblast, had less russet than the control, whereas the treatments using electrostatic sprayer had no significant difference from the control (Table 1). Also, it was clear that the fruit harvested from the east side of the rows had significantly less russet than those from the west side (Table 2).

Table 1. Russetting

T Grouping	Mean	Treatment
A	1.4417	5
B A	1.3733	2
B A	1.3583	4
B	1.3267	3
B	1.3167	1

Table 2. Russeting (by Location)

T Grouping	Mean	Locale
A	1.3993	2 (west)
B	1.3273	1 (east)

Significant differences between treatments were also seen in reducing the amount of rupture in the lenticels. Treatments 1 and 2, in which four applications were made, had less rupturing than the control, and less than treatments 3 and 4 which were applied only twice (Table 3).

Table 3. Lenticel Rupture

T Grouping	Mean	Treatment
A	1.2217	5
B A	1.1650	3
B A C	1.1517	4
B C	1.1067	2
C	1.0750	1

Background color was not blotchy at the Merritt orchard, whereas there was a high level of variability in fruit samples from the Liza orchard. Fruit from the latter were often blotchy, indicating a possible nutritional imbalance which could have contributed to the higher overall level of russet as well as to the greater inconsistency in finish. Excess nitrogen could be the problem. Treatments did not appear to affect the background color of fruit samples.

Analysis of the data collected on specimen fruit from the Liza orchard did not yield significant differences in russeting or in amount of lenticel rupturing. The general appearance of the fruit was noticeably inferior to that from the main Merritt orchard. Trends seen at the Liza orchard were similar to those at the main orchard but at levels not statistically significant. Consistent with results at the main orchard was the lower level of russeting on the east side of rows as compared to the west, though the difference was not statistically significant at the Liza orchard.

**DISCUSSION:** The biggest factor determining quality of finish in this experiment appears to be the condition of the orchard. It must be in

nutritional balance for the Provide spray to have a significant effect. If, for example, an orchard has soil high in nitrogen, this can mask the effect of Provide. This situation of nutritional imbalance appears to be the case at the Liza orchard.

However, when there is nutritional balance and both the main elements such as P, K, and Mg and the micronutrients are adequate, disease factors such as mildew are controlled, and sprays are applied for minimal russeting effect, even the control fruit has an attractive appearance.

Applying Provide in the latter instance further enhanced the finish. The results of this experiment showed that this growth regulator needs to be carried with a sufficient volume of water for the treatment to be effective in controlling russet. The results also showed that only 2 sprays are needed for russet control and more sprays don't significantly improve that element.

If, however, lenticel rupturing is to be reduced, 4 applications give the best results. The frequency in this case is even more important than application volume; however, the higher volume still showed a trend for more improvement. Therefore, to maximize the effect of Provide on fruit finish, it must be mixed with an adequate volume of water, and should be applied 4 times at intervals of 7 - 10 days.

One other interesting aspect of the trial is that fruit on the east side of the trees consistently had lower russet than fruit on the west side. This is probably due to the fact that the east side, getting the early sun, dries out first. This might suggest that the best time to spray would be in late morning, whenever possible, so that drying would be quick on both sides of the trees.

**SPRAY TREATMENT OF "ACCEL" - 1994**  
**in Thinning/Sizing of Gala Apples**

*Gary A. Moulton, Scientific Assistant, WSU Mount Vernon*  
*Jacqueline King, Technical Farm Laborer, WSU Mount Vernon*  
*Babette Gundersen, Technical Farm Laborer, WSU Mount Vernon*

A serious problem for growers of Gala apple and its sports such as Royal or Scarlet Gala is the tendency of trees to overset with many fruitlets that do not respond well to the usual spray thinning methods. Too often the result is small fruit which is difficult to market and of lower quality. A trial of the spray material "Accel" was performed in 1994 to test its effectiveness in thinning of Gala and improving fruit size.

**METHODS:**

A cluster count was taken on Gala trees at 2 sites, Merritt orchard and Cedardale. Counts were made on May 3, at which time the main spurs were at petal fall stage, and one-year shoots were in late stage of full bloom. Branches or sections of branches were counted to include 80-89 clusters, marked, and divided into 4 replications per treatment.

Treatments were as follows:  
treatment

1. Accel @ 1 qt/A in 100 gal. = 29 ml./3 gal.
2. Carbaryl + Amid-thin @ 16 oz./100 gal. XLR Plus + 4 oz./100 gal. Amid-thin = 14 ml./3 gal. XLR Plus + 3.5g/3 gal. Amid-thin
3. Control, no spray

The treatments were applied May 6, 1994 using a backpack sprayer. Return count of the number of fruits retained was taken June 9, when final set of fruit could be observed.

**RESULTS:**

Data collected from this trial is in the process of being analyzed for statistical significance. The following interim observations are relevant. At Cedardale the appearance of fruit on June 9 indicated that some thinning of treatments 1 and 2 did take place, but it was insufficient for good fruit size. A thorough followup hand thinning would be needed for best results. At

Merritt's orchard all treatments had been hand thinned before the fruit count was made, so the data collected were invalid. The general impression, from the amount of freshly thinned fruit on the ground, stems remaining on spurs that had been thinned, etc. was that no large difference between treatments was present even before hand thinning.



**Project No.:** 13K-3455-4663

**Title:** Jonagold Test Block and Culture Studies

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

**Reporting Period:** 1994

**Accomplishments:**

A test planting of 480 trees was laid out, for the purpose of performing cultural studies and comparing the results on four different strains of Jonagold. The trial period will cover establishment and training of the young trees, and harvest data collected from trees in production. The trees were planted in March/April 1994. The plot design allows for 10 treatments replicated 4 times, each replication consisting of three trees. The four strains planted were standard Jonagold, Jonagored, DeCoster Jonagold and King Jonagold.

A system of drip irrigation was installed, and the posts, wires, and tighteners for trellis training have been put in. Some pruning has been done to initiate the basis for future experiments. Weed control and fertigation have been managed according to standard practices.

In off-station trials, an experiment testing the effectiveness of "Provide" (GA 4+7) spray in improving fruit finish of Jonagold, and an experiment in thinning and sizing of Gala were conducted.

**Results:**

No results have yet been recorded from the new planting. For results of the off-station experiments, see the attached pages.

**Publications:**

None as yet on the new planting. Report of the "Provide" trial is in process of publication.

**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 MV  
Babette Gunderson, Technical Farm Laborer, WSU MV

**Reporting Period:** 1994

**Accomplishments:**

A test planting of Bosc pear was laid out, in which the purpose is to compare the productivity of a few promising rootstocks and training systems, test potential pollinizer varieties, and in general to gather the information needed for potential growers to establish commercially viable plantings of Bosc pear. The trial period of 7 years will cover establishment and training of the young trees and 3-4 years of harvest data from trees in production. When the trees have begun fruiting, data will be collected to compare the systems as to overall productivity, fruit quality and marketability, and cost of orchard establishment and maintenance.

Trees of Bosc were planted in March/April 1994, in the plot designed to contain 3 different rootstocks and 2 training systems, each replicated 4 times. Each replication consists of 6 trees, except for one treatment with 12 trees per replication, spaced at half the distance of the other treatments (4 ft. between trees in the row, rather than 8 ft.)

Two of the three rootstock combinations were planted: Bosc on an interstem of Old Home on Provence Quince, and Bosc on Old Home X Farmingdale 217. Trees of Bosc on Quince C were unavailable at planting time, so they will be grafted and moved to the test plot this winter (1994-95). Pollinizer trees of the varieties Comice, Concord, Conference, and Starkrimson were also planted.

A system of drip irrigation was installed, and the posts, wires, and tighteners for the standard trellis and V-trellis training have been put in. Weed control and fertigation have been managed according to standard practices.

**Results:**

No results have yet been recorded from this new planting.

**Publications:**

None.

## CRABAPPLE POLLINATOR TRIAL - 1994

G.A. Moulton and J. King

The purpose of this trial is to test the suitability of certain crabapple varieties of proven disease resistance for use in commercial apple orchards as pollinizer trees. As a preliminary to more thorough future testing, in 1994 we conducted a test of several potential crab pollinizers in which the crab bloom period corresponded with the bloom stage of certain commercial apple varieties.

Pollen was collected from the crabapple blossoms at balloon stage, before any possible entry of pollen from outside sources. The anthers were dried in petri dishes for 24 hours to allow them to dehisce. Individual flowers of the chosen cultivar to be pollinated were emasculated, and the prepared crabapple pollen applied with the fingertip, sterilizing with alcohol between each variety. This was done during the bloom period (April 15-28, 1994). After the June drop when fruit set could be determined, a count was taken of the percentage of pollinated blooms that had set fruit. Results appear in Table 1, below.

**Table 1: Effectiveness of Certain Crabapples as Orchard Pollinators**

Cv.	Pollinator	Date	# Flowers	Fruit Set	%
Alkmene	Sugar Tyme	04/15	20	0	0
	M. baccata v. jackii	04/15	20	0	0
	M. zumi calocarpa	04/15	20	0	0
	Bob White	04/15	20	0	0
Jonagold, Standard	Evereste	04/19	20	4	20
	Snowdrift	04/19	20	5	25
	White Angel	04/19	20	7	35
	Donald Wyman	04/19	20	8	40
Scarlet Gala	Christmas Holly	04/25	20	2	10
	Evereste	04/25	20	2	10
	Glen Mills	04/25	20	2	10
	David	04/25	20	0	0
Fuji, Standard	Christmas Holly	04/25	20	3	15

	Evereste	04/25	20	2	10
	Glen Mills	04/25	20	2	10
	David	04/25	20	1?	5?
Fiesta	Christmas Holly	04/25	20	13	65
	Evereste	04/25	20	9	45
	Glen Mills	04/25	20	4	20
Braeburn	Christmas Holly	04/28	6	0	0
	Evereste	04/28	6	0	0
	Glen Mills	04/28	6	0	0

#### Discussion:

It was clear that in some instances (Alkmene, Braeburn) no pollination took place. In the case of Braeburn, there was an overall lack of available flowers so the result could be termed inconclusive. Possible explanation for the case of Alkmene is that pollen collected from the early blooming crabapples selected as pollinators was incorrectly handled for the two days between pollen collection and pollination, and lost its viability. In the other cases, pollen collected was used within 24 hours, only allowing the anthers to dehisce at room temperature overnight. Poor response of David as a pollinator might be due to the opposite cause, with only a few anthers releasing pollen overnight, so that not enough ripe pollen was available to distribute.

Comparison of the success rate of the other pollinators does not give a clear picture of any one consistently superior. Also unclear is the relationship between the percent of pollination in the trial compared with what would occur in field conditions. What is evident is that in most instances the newer crabapple varieties included in this trial produced results comparable to that of a standard pollinator like Snowdrift.

It is our intention to repeat the experiment in spring 1995, and standardize the pollination technique to maximize the fruit set. This will help us to determine if certain cultivars are indeed better pollinizers, and set more fruit and seeds.