

Western Washington Fruit Research Foundation Report

20 years of Research and Outreach August 2012

By Sam Benowitz

As WWFRF reaches its 20th year, it is a good time to reflect on its previous work and look ahead to what is being done now and could be done in the future. Twenty years ago, WWFRF formed to continue the fruit research and outreach that had already been going for 20 or more years before at the WSU Mount Vernon station. To view much of the published research, see:

<http://extension.wsu.edu/maritimefruit/>

While this report is a review of fruit research (primarily tree fruit) at the WSU Mount Vernon station, WWFRF is doing an outstanding job of continuing to make fruit varieties and growing techniques available to the people of our region. The fruit display garden has 571 fruiting trees and bushes. Included are 21 different types of fruits from many cultivars of the more usual fruits like Apples, Pears, Plums and Blueberries to many unusual fruits that most people have never heard of or seen. The public can see the many fruits that are now thriving, grown organically here at Mount Vernon. The public can now learn about fruits they can successfully grow while enjoying a wonderful day of fruit exploring at the WWFRF demonstration garden. More information is available at the WWFRF website at <http://nwfruit.org/> about the ongoing work in the demonstration garden.

Dr. Robert Norton headed this work at the Washington State University Research and Extension Unit at Mount Vernon Washington from 1962 to 1992. Dr. Norton was the director of the station and his work on tree fruit was only a small part of his duties, but the work was highly valued by small scale commercial and home growers and landscapers and garden centers throughout the region. When Dr. Norton retired 20 years ago, his position with the tree fruit was not replaced; however, the work was continued by his technician Gary Moulton (1980-2009) and his assistant Jacky King. They ably carried on the work until two years ago when the tree fruit research program was canceled by WSU because of lack of funding.

Fortunately WWFRF with its fruit demonstration garden has continued providing information to area enthusiasts. Also Dr. Carol Miles at WSU Mount Vernon has continued an emphasis on organic research continued some of the fruit research, and is continually looking to obtain grants which can lead to further research to help the agricultural industries and home gardeners in Western Washington.

Fruit Tastings, Scionwood Exchanges and other education events

Dr. Norton pioneered ways of getting fruit growing enthusiasts in Western Washington involved. He held fruit tastings, scionwood exchanges, grafting lessons and other activities not only at the station but throughout the region. Over time WWFRF took over the staffing of the events. This allowed the research staff to do research. This was even more important after Doc Norton retired and King and Moulton were the only WSU staff. WWFRF stepped in to take over logistics. Now WWFRF does all the logistics and WSU personnel are only used as presenters.

The popularity of these types of events has mushroomed so that today there are many fruit related groups holding events throughout the region. Among these are the Western Cascade Fruit Society and its chapters and the City Fruit group in Seattle. However many colleges, communities and local nurseries now hold similar events.

Many People at WSU Have Been Instrumental in Developing these programs:

Robert Norton started the program and was ably assisted over the years by Gary Moulton and Jacky King. King and Moulton carried on the program for many years after Norton's retirement. Though officially retired, Dr. Norton continues to provide lots of support for the program. Other WSU personnel who have helped with tree fruit research include Les Price, Babette Gunderson, Hollis Spitler and Bob Peterson. Former station director Andy Anderson supported the program and helped start the fruit demonstration garden. He also directed vegetable trials in conjunction with the garden. WSU Puyallup plant pathologist Dean Glawe, a former director at WSU Mount Vernon, provided support during his tenure. Current WSU Mount Vernon station director Steve Jones has also been very supportive, as has Carol Miles in Vegetable Horticulture.

Many people in the agriculture industry have been very supportive in contributing money and also being cooperators on their farms. These include Tom Thornton, Joe Biringer, Drew Zimmerman, Alan Merritt, Sam Benowitz and many others. Many fruit groups have been involved in supporting the work especially the Western Cascade Fruit Society and its chapters. The many WWFRF volunteers have worked countless hours on the demonstration fruit garden and many of the other WWFRF projects – without them none of this would have been possible. The future of the demonstration garden and all these projects will depend on the energy and foresight of future volunteers. Moulton, though no longer paid by WSU to do tree fruit or grape research, still is often hired privately by many groups to give talks and provide expert advice. The excellent literature published by Norton, Moulton and King and now by Miles is used widely by home and commercial fruit growers through Western Washington and the nation.

Continuing Research Projects

Though funding was cut for tree fruit research two years ago, there is still important tree fruit research continuing with the support of WWFRF and other organization. Also WWFRF continues many outreach projects in its 7 acre fruit demonstration garden.

Each of the current and past research projects has a lot of useful information published about it by the WSU Mount Vernon staff. This report only provides some of the highlights. To study the reports please see below.

Cider Apples: Currently Apple Cider research continues and WSU is hoping for a new grant to continue the current research and maybe expand it. (See the cider apple and pear sections below for more details.)

Cherries: Dr. Miles is looking into a renewal of the Cherry variety trial in contact with WSU Cherry breeder in Prosser Dr. Oraguzie to test newer selections. Tom Thornton has an ongoing project to test growing cherries in high tunnels in Whatcom county and he is cooperating and sharing information with WSU.

Perry Pears: WSU Mount Vernon is also maintaining the perry pear collections. Champagne Perry may soon compete with champagne made from grapes and may propel the perry trials forward. Current efforts to fund perry research have been unsuccessful.

Crab Apples: Two small grants from J. Frank Schmidt Family Charitable Trust and from the Washington State Nursery and Landscape Association (WSNLA) are converting an existing ornamental tree fruit trial plot into an Arboretum. This will include a shelter building, picnic tables and an informative kiosk sign. WSU is hoping to have a grand opening at next spring's Tulip Festival. In addition the funding allows them to put a few additional crab apples and also a few new flowering

cherries into the block. One of the edible crab apples in the block was bred at Mount Vernon. It is a cross of Alkmene and Prima, to be named Puget Spice because of its flavor and red orange color. It is prized for use in making spiced apples and jelly, as well as for blending in hard cider. It will be trademarked and a royalty collected for its sale.

Grapes: Unfortunately because of lack of funding plants from the Organic Grape trials have been removed and there is currently no funded grape research at the Mt. Vernon Station.

Hops and Barley: There is preliminary work into identify hop and barley cultivars and techniques to support a locally grown beer industry that may be of interest for the future.

Tree Fruits: Although the tree fruit research outlined below is no longer funded, small scale research projects are ongoing and new ones will be started in the WWFRF 7 acre fruit demonstration garden.

Some Highlights of Previous Fruit Research supported by WWFRF at WSU Mount Vernon Station.

Although most of the research is no longer funded, the information gathered from this research is still widely used and will be far into the future. It is available to the public on the website "Tree Fruits and Alternative Fruits for Western Washington" <http://extension.wsu.edu/maritimefruit/Pages/default.aspx>. WWFRF hopes that more funding from public and private sources is available in the future so that more of this important work can continue. In the meantime WWFRF continues supporting research and demonstration as much as it can.

The following is an outline of former research by the type of fruit.

ROOTSTOCKS:

Working in conjunction with the NC 140 trials, WSU Mt. Vernon tested many rootstocks. This work showed success for EMLA 26, EMLA 7, EMLA 27, EMLA 9, Bud 9 and some other apple understocks. Varieties were also tested on Mark rootstocks. They were found to runt out without adequate water in Eastern Washington and at Mount Vernon they exhibited some poor graft unions with long term graft compatibility. This is an example of where research not only indicated what's new and better but also what's new and doesn't work as well as its expectations. Work was done using EMLA 9 or Bud 9 and EMLA 27 as an interstem with M111 which made a tree that is very well rooted but still very dwarfed.

Many of the Old Home X Farmingdale pear rootstocks were tested because of their superior compatibility with all pear cultivars. Bosc pear was tested on a variety of pear understocks and techniques from freestanding to V trellis were tried. See the published results.

The common cherry rootstocks were not working well in Western Washington. Mahaleb did disastrously in all but sandy soils and Mazzard made such a big tree that the birds got all the fruit. Dr. Norton tried Compact Stella but it showed a genetic problem and it was discarded. They he tested Gisela and found the highly touted 172 series and 172-9 were susceptible to virus and not suitable. However, the Gisela 148 series including Gisela 12, 5, 6 and others were dwarfed, hardy and grew well in western Washington.

Plums were tried on a variety of rootstocks. Results showed among much other information, the highly touted dwarfing Citation was extremely variable depending on what was put on it and not dwarfed on some Asian Plums. However, Citation dwarfed peaches a lot.

Lots of work is still to be done on new rootstocks. Dr. Norton's home research is showing that Krymsk

5 cherry is not proving especially dwarfing, and there are still many questions of compatibility on some plum and peach rootstocks. In the demo garden they are considering putting the same variety of apples and maybe plums on a variety of different rootstocks to show size and other differences.

APPLES:

Much work was done with testing apple varieties. Many strains and mutations of Jonagold were tested for what was a good market apple for western Washington when Red Delicious was in its heyday. It was shown that Jonagold had excellent flavor in our climate.

Norton, Moulton and King tested 500 or more apple varieties from around the world and established many that do exceptionally well in our region. Among the old time varieties rated best were Ashmeads Kernal, Hudson's Golden Gem, Bramley, Gravenstein and many others.

Among the newer varieties tested were many clones of the variety Fuji. The original standard Fuji won't ripen regularly at the station, but several clones were found to ripen 2-3 weeks earlier, including September Wonder and Beni Shogun. Because of Dr. Norton, more than 20 apples from Japan were included in a major variety trial at Mount Vernon, Prosser and Wenatchee. Dr. Norton visited Japan and brought many cultivars back. Among the best were Sansa, a relative of the older Akane, and Sayaka,, Hatsuaki and Tsugaru Homei. Mutsu showed its problems despite its excellent flavor and size, since it often didn't ripen well here and was scab susceptible.

An extensive Disease Resistant Apple trial was conducted from 1990 to 2005, including a total of 36 advanced numbered selections and 27 cultivars. Many numbered selections were grown at the station from breeding programs at New York, Cornell and PRI (Purdue, Rutgers and Indiana). These included Prima, Williams Pride, Pristine, Dayton, and Goldrush which came from PRI and, Enterprise, Liberty and NY 75414 which came from Cornell. We tested many numbered selections that were not named by New York but locals liked, including Wynooche Early and NY 75414.

Cox's Orange crosses were tested from around the world, and among the best were Elstar, Alkmene, Karmijn and RubINETTE. More recently several good varieties from Eastern Europe have done well.

Gary Moulton worked with Les Price and collected about 25 strains of Gravenstein for trial. Results showed that the pioneers actually had many different strains and that there was no single "old time" Gravenstein in the Northwest. Many of the strains were similar in flavor but varied widely in color. About 15 of the best moved into the demo garden.

We hope new variety testing can happen in the future. Unfortunately, so many of the new good varieties are patented "club varieties" and no individuals are allowed to grow them, so there is no use us testing those.

CIDER APPLES and PERRY PEARS:

Gary Moulton has worked with Drew Zimmerman and other local growers to develop a hard cider industry in our region. They enlisted the help of Peter Mitchell, an internationally known cider expert from England, to teach world renowned week-long classes for hard cider production. Many cider apples including Kingston Black have proven to do well in our area, and Moulton's work has shown ways of combining in the proper proportions many types of apples to make the best ciders. Classes continue to be offered at Mount Vernon with the cooperation of the Northwest Agriculture Business Center (NABC). The work has expanded to include pears. Pear cider is called Perry. Many varieties of pear and apple cider cultivars are currently under test. This test is the last of the remaining tree fruit testing currently at the station and includes many varieties of early American cider varieties. See above for ongoing projects.

CRAB APPLES:

Our volunteers worked with the Angers Station in France to obtain the rights to grow Evereste Crab, which is scab resistant, a good pollinizer and loaded with fruit each year. Many disease resistant crab apples were tested along with flowering ornamental cherries and plums. Hollywood plum proved a great producer among the red leaf plums. The trees are now being preserved at the station as an Arboretum that can be appreciated by the public. See above for ongoing projects.

EUROPEAN PEARS:

Our program participated in a test of pears developed in West Virginia and it showed that among others Blake's Pride, does well in our area. Earlier Knox Nomura had contributed Rescue and Joe Long the Orcas which continue to be among the best. Gary Moulton worked closely with the Harrow Station in Canada and many of their selections thrived, especially Harrow Delight. UBILEEN and other early ripening European Pears have enabled the harvest of ripe pears a month or more earlier than standard commercial pears in our area.

ASIAN PEARS:

Mount Vernon evaluated 27 varieties and 10 did reasonably well. Our region can thank Knox Nomura for his work. He brought varieties from California and elsewhere and they were tested at his place in Sumner and at the station. Tests showed that Shinseiki out performed the Nijiseiki and that Chojuro did well among the russeted selections. Moulton's testing later showed that some varieties like Hosui seemed especially susceptible to Pseudomonas infection. He promoted the practice of summer pruning on Asian Pears and to limit winter cuts that provide openings for infections.

CHERRIES:

Dr. Norton tested Compact Stella but found it had virus infection. However, in a later trial of dwarfing rootstocks, Gisela 5 had a strong dwarfing effect, producing trees small enough to grow under netting cages, preventing bird damage to the fruit. A netted cherry area was set up and it yielded and continues to yield many cherries each year for our members. Among the varieties proven useful were the early ripening Early Burlat and the late Hudson. Surefire was proven to be a great sour cherry. Bing and Rainier cracked too much when inopportune rains hit which they usually did as the fruit ripened but many cultivars were shown to be crack resistant. Self fertile cultivars were most reliable including Lapins, Sweetheart and new cultivars Black Gold and White Gold from New York, and Tehranivee and Vandalay from Canada. Recently Tom Thornton has led an effort to grow cherries in high tunnels which protects them from the rain and the birds.

APRICOTS:

It was shown that apricots don't generally live a long time because of disease problems in our climate, but that Harglow and Puget Gold are the best for our area. Moulton gave many WWFRF members seedling apricots many years ago to try in their yards but not many people reported back. Persons wanting to try private research may try to grow apricots under a hoop house because rain and early flowering cause lack of pollination and wet weather diseases compound problems.

PLUMS:

Many Plums have proven very successful in testing. There are many kinds of plums. Asian Plums and their crosses proved very reliable in our area. Among these were Beauty, Methley, Shiro and Obilnaja. Santa Rosa did not do well. Dr. Norton tested many strains of Italian Prune and found they varied in cracking. He liked the Sehome strain among the best. Many prune plums were found to be superior

including Stanley and lately Mount Royal. Seneca from Cornell is among the best European plums tested. Mirabelle plums did well, and gage plums are very sweet but have problems with brown rot. There were also several specialty plums from eastern Europe that did well. A plum from Russia called Kuban Comet has been a reliable winner at the station.

GRAPES:

Many years ago Dr. Norton tested many grapes, both for wine and fresh eating, to see which ripened best here. Because of our cool summers most grape varieties known throughout the nation don't ripen regularly in our region. Seedless dessert grapes Interlaken, Himrod, Reliance, Venus, Vanessa, Einset and Canadice performed well, later to be joined by several from the U. of Arkansas including Mars, Saturn and Neptune. Recently wine grapes have been tested to see which varieties and techniques would do best for western Washington sites, including organic growers. Among the outstanding red wine varieties are Regent, Agria and Siegerrebe. Whites include Ortega, Madeleine Angevine and others. Early ripening clones of Pinot Noir have shown well in our region including Pinot Precoce and Clone 777. Grafting onto rootstocks 101-14 and 3309 have helped these varieties to ripen even earlier. Cultural research looked at ways to limit vigor and promote earlier ripening.

TECHNIQUES:

A lot of cultural research was done at Mt. Vernon. Many fruit growing techniques have been tried at the station and the information passed on to the regions growers. These include the best grape pruning techniques and the best type of netting and how to apply it. Also tested were ways of pruning apples and growing them on wires to increase productivity, save labor and decrease disease.

A test was done on ways to control Peach Leaf Curl which showed that proper timing was critical and that lime sulfur worked well. Tests were done on Apple Scab to show that re-infection occurred at temperatures over 45 degrees many times during a season and that spraying for control was difficult and resistant cultivars were needed.

More recently, controls for the Spotted Wing Drosophila fruit fly are being developed. Apple Anthracnose which is more of a problem in our region than in others and thus doesn't have good solutions has been worked on and WWFRF has a video out showing best methods of control. A preliminary test years ago by Ralph Byther didn't show any varieties specifically more resistant to anthracnose. This is one of many subjects needing further study.

SMALL FRUITS & UNUSUAL FRUITS:

Much has been done at the station with small fruits that WWFRF has helped with. Trials were done establishing the best cultivars of raspberries, strawberries, blackberries, gooseberries and currants. Also tested successfully were Hardy and Fuzzy Kiwi, Fig, Aronia, Quince, Persimmon, Paw Paw and Mulberry. Good cultivars were found of each. It was found that it was difficult to ripen paw paws and that earlier ripening varieties are needed. This was also found with Fuzzy Kiwi but the Hardy Kiwis thrived and were extremely productive.

To learn more about these projects, see the many publications from WSU and the website "Tree Fruits and Alternative Fruits for Western Washington"

<http://extension.wsu.edu/maritimefruit/Pages/default.aspx>

Bulletin EB 0937

[Fruit Handbook for Western Washington: Varieties and Culture](#) (10/2006 – PDF) or order by calling 1-800-723-1763 or [order online](#).

Bulletin EB 2002

[New Alternative Fruit Crops for Western Washington](#) (3/2006 – PDF) or [order a printed version](#).

Bulletin EB 2001 – [Growing Wine Grapes in Maritime Western Washington](#) (11/2005 – PDF) or [order online](#).

Bulletin EB 1809 – [Crabapples for Western Washington Landscapes](#) (2/1996) or [order a print copy](#).

Bulletin EB 1804 – [Growing Jonagold in Western Washington](#) (9/1995) or [order a print copy](#).

Bulletin EB 1640 – [Growing Small Fruits for the Home Garden](#) (7/1992) or [order a print copy](#).

Bulletin EB 1436 – Apple Cultivars for Puget Sound (6/1987) [order a print copy](#).

Bulletin PNW 0400 – [Training and Pruning Your Home Orchard](#) (4/1992) or [order a print copy](#).

[More fruit publications](#)

Resource Information

[Web Resources: Tree fruit and alternative fruits for western Washington](#)

[Fruit Handbook for Western Washington: Pruning](#) (March 2010)

[Organic Vineyard Establishment: Trellis and Planting Stock Considerations](#) (March 2010)