

## **2013 Northern-Hardy Fruit Evaluation Project Update**

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In 2013, the Northern Hardy Fruit Evaluation Project (Fruit Project) at Carrington Research Extension Center provided advice, tours and fruit-growing information to a record 1,150 people. Overall, 62% of our contacts were made by speaking engagements with the remainder consisting of tours, emails and phone calls. Approximately 171 phone calls were fielded, including 41 calls from NDSU and NDSU Extension coworkers. Since its inception in 2006, the Fruit Project has reached over 3,350 people. Contacts are primarily North Dakotans, but are also residents of South Dakota, Minnesota, Montana, Iowa, Nebraska and Illinois. Four fruit orchards are known have been initiated in North Dakota in the last three years using Fruit Project information. In 2013, 14 orchard inquiries were received.

This year, six businesses utilized 1,405 pounds of fruit from the project for products that include wine, jelly and kuchens. The six cooperators were: Vintner's Cellar, Bismarck; Dakota Sun Gardens Winery, Grace City; Berry Dakota, Jamestown; Karen's Kuchens, Cavalier; Maple River Winery, Casselton and Tongue River Vineyard, Miles City, MT.

Approximately 500 pounds of 'Hazen' and 'Honeycrisp' apples were distributed locally this fall.

In 2013, the notable conditions of the weather were: extended winter conditions and the rainfall deficiency that followed. Snowfall was 80.1 inches with the lowest temperature recorded as -23°F. Melt was gradual and water was able to soak into the soil which was dry from the summer of 2012. Pruning could not begin until May 3 due to the amount of snow in the orchard and in general, plant stages were about 3 weeks later than expected. We transitioned from winter (7 degrees April 23) to spring weather quickly, with the last freezing night occurring May 13 and 4.02 inches of rain in the month. However, from June 1 to Sept 1 only 2.8 inches of rain were recorded. Again, mulch was critical to preserving soil moisture. Adding to the slowness of the plants this season was the 25-day period from July 20 to August 14 when high temperatures averaged 8.4 degrees below the five-year average.

Approximately 90 people attended the 2013 CREC Field Day Tour on July 16<sup>th</sup>. Our featured speaker was Dr. Tom Kalb, NDSU Extension horticulture specialist, whose topic was "Growing Apples in North Dakota." He discussed how to select varieties as well as how to prune, mulch and fertilize trees. He is a well-received speaker with real-world expertise as he was raised on a family farm in Minnesota that has grown and sold apples for 40 years. In the afternoon session, Dr. Jared LeBoldus, NDSU assistant professor and Extension plant pathologist, covered diseases of apple trees and methods home gardeners can use to help their trees overcome these problems.

Spotted Winged Drosophila was confirmed as present in North Dakota from a sample collected by CREC. This is a terrible new pest to our area; it has caused millions of dollars in damage and pest-control measures in other states. It will survive cold winters and we will have to apply insecticides to commercial and home-grown fruits like raspberries and cherries. Unlike typical fruit flies which lay their eggs in overripe fruit, this fly lays its eggs in just-ripening fruit which may result in collapsed fruit and fruit maggots in the consumer's home.

In late 2012, we conducted a survey of fruit project participants. The results from 69 respondents shows that five years ago, 32% did NOT grow fruit while today, only 3% don't grow fruit. Five years ago, respondents grew an estimated 2,200-3,100 fruit plants while today the number is estimated to be 8,000-10,000 fruit plants. (In the category 'more than 100' or 'more than 200 fruit plants', exact numbers were used when provided; if an exact number was not provided, the number 100 or 200 was used in the calculations.) This is calculated as an average 241% increase in the number of fruit plants grown by respondents, and we believe these numbers are reflective of most Fruit Project participants. 82% of respondents indicate that they will be planting more fruits in the future.

**Apples:** The trees have been planted for 8 years and they are starting to come into good size and bearing condition. Tom Kalb helped us prune to reduce the height of the trees this year. After blossom, trees with crops were hand-thinned to one apple per cluster by summer students and then re-thinned one week later. Due to the drought, the trees with large crops were watered in mid-August when the fruit was approximately half-sized. Varieties with good crops on at least 2 trees included: 'Hazen', 'Honeycrisp' and 'Haralred'. 'Zestar' bears more each year and 'Sweet Sixteen' still has very little fruit.

**Haralred:** Two of four trees had large crops this year. With a long fall, fruit ripened adequately but is still a tough-fleshed, bland variety.

**Hazen:** Three of four trees had good crops with large apples. It was picked September 9, but would probably have been better if picked five days earlier. There was some watercore, but the apples were sweet and 'apple-y'-flavored. The apples from the tree nearest the east gate are somehow not as good as the other three trees.

**Honeycrisp:** Three of five trees produced well and all had fruit. They were not ready to be picked until October 1 and yielded about 400 pounds. The fruit is excellent.

**Sweet Sixteen:** I believe that 3 of 4 trees had apples, but the most fruit on one tree was about 15 apples. They are very tasty, but are later. I held off picking until October 19, just before a hard freeze was forecast. The fruit was tart.

**Zestar:** What wonderful apples! They are smooth-textured, white-fleshed and sprightly. They have a beautiful blush. Two of four trees had fruit, with the northeast tree producing the most – about 15 to 20 apples.

**Aronia:** The aronia did not bloom until June 7-14 and yet they were ready to be picked the last week of August which is about three weeks earlier than normal. In three of the past five years, aronia has not ripened until approximately September 15<sup>th</sup>. This year, insects were average and one application of spinosad was used to control pear slug sawflies and lace bugs. Because of the drought, 100 gallons of water was applied to each row of aronia on August 16<sup>th</sup> while fruit was dark purple but only 50-75% of full size; a few berries were fully swelled. Three days later, almost all of the fruit seemed full-sized but not sweet. We picked August 27-29 due to forecasted hot weather but otherwise would have waited a few days more to see if sugar content increased further. Brix readings seemed stalled at 17°.

**Canadian Dwarf Sour Cherry:** ‘Carmine Jewel’ production was extremely high this year at about 30 pounds of cherries per plant. ‘Crimson Passion’ had almost no fruit though it bloomed at virtually the same time as ‘Carmine Jewel’. The tan patches with very small holes that we saw on the cherry skin last year were confirmed as spotted winged drosophila damage this year. Approximately 50% of the fruit was affected. Fruit and a living male fruit fly were sent to the NDSU Plant Diagnostic Lab for confirmation as the first such insect identified in the state. The lab received affected cherry and raspberry samples from the public this year. The pest will be present from now on and will have to be controlled with insecticides.

**Evans/Bali Cherry Tree:** The north tree affected by gummosis was cut down in the spring, leaving two. Once again, we decided to wait to pick the fruit a few days since it was just a bit tart yet, and birds ate almost the whole crop over the weekend. Or, fruit was ruined by SWD and not fit to eat. These are really good cherries, but we will need to throw a net over the trees in 2014.

**Black Currants:** The variety ‘Hilltop Baldwin’ was still recovering from the 2012 freeze and had very low production. ‘Swedish Black’ harvest was 31 pounds but could have been higher for the group since some plants were still recovering from the freeze and some twisted, gnarly plants had been dug up and restarted from cuttings of straighter-growing plants. ‘Titania’ had its most successful year yet, with production of 132 pounds of fruit; it has been the most reliable variety for production and is very delicious. The fruit can easily move toward overripe though, and then it is not very good. ‘Ben Lomand’ has the best overall flavor but has very low production at CREC. The demonstration variety, ‘Minaj Smyriou’, is very productive and is probably a good jelly variety; it seems to have a thick interior consistency and may be less suited for juice. It has been one of our most reliable producers over the past four years. None of the black currants had any powdery mildew problems for the third year in a row.

**Red and White Currants:** These varieties have been highly productive since their fifth year in 2011. ‘Red Lake’, ‘Red Start’, ‘Rosetta’ and ‘Rovada’ have averaged 8 pounds of fruit per plant the past three years though ‘Jhonkeer Van Tets’ has been more variable. The two white currant varieties averaged 6.5, 12.5 and 7.4 pounds per plant in 2011-13. Two wineries used these currants in 2012 and both products were fabulous. Five years ago, there was very little complimentary information on the internet about using red currants for wine. Now there are more articles and you can find several wineries selling it.

**Gooseberries:** The plants produced fruit this year but it was not picked as birds enjoyed them. There was not too much leaf disease with the very dry weather.

**Grapes:** The plants recovered well from the spring freeze of 2012 and all had fruit in 2013. Though the season was so slow to start and had a 25 day period of cool weather in July-August, the grapes somehow managed to achieve good ripeness. Fall was long, Brix levels were high, and acid content dropped somewhat. Acidity and pH were still above recommended levels, though. ‘Somerset Seedless’ has been a success here and has not had winter injury. ES 8-2-43 (‘Osceola Muscat’) ripens nicely and is a very tasty grape. It is being grown more in Minnesota to make a sweet muscado-style wine. The birds were

very aggressive this fall due to the dry weather; 'Valiant' ripens early and was eaten by September 3<sup>rd</sup> though the sugar levels were only 16% at the time.

Because the grapes are so labor intensive, I reduced five varieties to demonstration levels of four plants each instead of 16. These included:

- **Frontenac and Frontenac Gris:** Vigor is excessive despite reduction efforts. The fruit is very high in acids and does not ripen.
- **Sabrevois:** Vigor is excessive and it is very susceptible to light frost in fall. It was also hurt by the 2012 spring freeze.
- **ES 6-16-30:** Vigorous and completely killed to the ground by the 2012 freeze.
- **King of the North:** Acid levels are so high as to make the fruit unpalatable.

**Haskaps and Honeyberries:** In almost every selection, production was reduced this year. Perhaps the open winter of 2011-12, the April freeze, and the droughty summer were more stressful than it appeared. Flower production appeared to be down for all types.

In 2011, we planted 'Tundra' and 'Borealis' at different depths and then selectively pruned half of the plants. They produced a little fruit this year but we did not get the nets on in time to prevent a serious alteration of harvest weights – so we did not net or pick at all. I don't think that a commercial operation would have picked at the production level we saw, but I was interested to see if earlier pruning affected this first year's crop.

**Juneberries:** Entomosporium leaf and berry spot continues to be seen in the Juneberries. Two fungicide applications were made in 2013, though three would have been ideal. Leaves affected early were lost and healthy leaves replaced them by mid-summer. An insecticide program was continued for flower thrips. Production increased by 13% to 384 pounds though 'Smoky' berries did not finish developing and were not all picked.

**Plums:** Flowering and pollination seemed very good this year and resulted in a pretty good crop of plums. Plum curculio levels were very high though and they bit almost every plum, ruining them. Very few made it to maturity.

**Elderberries:** The two original plants had some ripe fruit this fall! It was shocking. We acquired 2 rooted cuttings of plants said to ripen in southeastern North Dakota from David Podall, an area plant breeder. They were not planted to the field until October.

Overall, it was a very busy year in the Fruit Project. The season was compressed and in August, we picked fruit 17 of 22 days. Several volunteers helped pick in exchange for fruit, and their efforts are very appreciated!