

2015 Northern-Hardy Fruit Evaluation Project Update

Kathy Wiederholt

The Northern Hardy Fruit Evaluation Project (Fruit Project) at Carrington Research Extension Center provided advice, tours and fruit-growing information to 2,333 people in 2014. This year, 72% of our contacts were made by speaking engagements with the remainder consisting of tours, emails and phone calls. Approximately 200 phone calls were answered, including 20 calls from NDSU and NDSU Extension coworkers. There were four field tours. Since its inception in 2006, the Fruit Project has reached about 7,300 people. Contacts this year were primarily North Dakotans, but were also residents of Minnesota, Montana, South Dakota, Washington, Wisconsin, Maryland, Missouri, Illinois, Wyoming, Pennsylvania, Iowa, and Calgary, AB.

Cooperators: Fruit production was poor across many states this spring. We only harvested 185 pounds of Juneberries and 140 pounds of aronia and haskaps combined. We worked with only two cooperators, Berry Dakota, Jamestown, ND and Tongue River Vineyard, Miles City, MT. Perhaps 100 pounds of apples were harvested; most were 'Hazen'.

Weather: 2015 was a tough year to grow fruit. Winter 2014-15 had low snow cover with 27.6 inches of snow recorded. Temperatures of -25°F occurred the last week of November, probably before plants were fully hardy, and again on February 22, when dormancy was waning. We did not see fruit plant damage although there is some ongoing cane death that began in 2012 in one variety of black currant.

Daytime temperatures from April 1-May 8 averaged 60°F with several freezing nights. Then, the next 10 days averaged 52°F with several freezing nights and one day of snow. We received 3.7 inches of rain during this interval, which made for a cool, wet, period during the height of bloom. Few bees flew with the first bumblebees noted on May 4th. Our honeybee hives could not be delivered until the third week of May because of poor weather in Texas as well as the lack of food sources blooming in North Dakota. There was no cherry or currant production; apple and Juneberry were diminished.

The remainder of the summer and fall seemed dry with 8.4 inches of rain May 19-August 31. Rainfall from September 1-October 31 was recorded as 1.8 inches of moisture. There was a 27°F freeze October 9th, yet warm temperatures, which were sometimes in the 50s and 60s, persisted until November 16th.

One special note from this past year was the high number of wind storms. We did not lose any netting to it this year but noted 12 day-long winds of at least 30 mph after July 27th. CREC also saw hail July 4th which bruised most developing grape berries and all the apples.

Field Day: The CREC and fruit project field tour was July 14th with attendance of 70 people. Our featured speaker was Steven McKay, retired horticulture specialist from Cornell Extension and the U.S. foremost expert in currants. Unfortunately, Mr. McKay had to cancel the day before the event. We publicized this and perhaps this limited our attendance. In his place, I led the currant and orchard tour.

New Currant Trial: These plants grew well but will have some shoot recovery to expect in 2015. The plants in the west row and some in the other three rows lost or had distortion in young, tender branches due to all of the windstorms. We expect a fruit crop in 2016.

New Pear Demonstration: Twelve trees were purchased from St. Lawrence Nursery, Potsdam, NY, in their retirement year. Two each of six varieties were planted on April 20th using 15x20 ft spacing. The varieties selected were: Schroeder Hardy ND, Ayers, Stacey, Patten, Nova and Ely. Due to the amount of room trees require, we did not include varieties known to grow with some certainty in North Dakota such as: Golden Spice, Ure and Summercrisp.

Irrigation project: Irrigation is accomplished with a 1200 gallon tank and gravity-fed, hi-flow drip tape. We are not trying to achieve maximum water application but are trying to prevent stress on the plants. The woodchip layer is very good at keeping the soil moist beneath it. The west half of the original currant trial and south half of Juneberry were watered in mid-August and the first week of October. Each row received 600 gallons of water per application. This is the second year of water being applied and it should be possible to see production differences in 2016.

Apples: Apple blossoms were few and had damaged, brown petals when they were photographed opening on May 18th. There were 2 inches of rain the 17th and 2 inches of snow the 18th. Low temperatures recorded by NDAWN on May 17-19 were 30, 29 and 27°F. Production was extremely low and on July 4th, hail bruised all of the developing fruit. Fruit that later cracked or spoiled was removed from trees and all fruit was disfigured. Approximately 100 pounds of 'Hazen' were harvested September 7-8. 'Honeycrisp' was harvested October 9th and produced about 70 apples on six trees. There were about 25 pounds of 'Haralred' and a handful of 'Sweet 16'.



Aronia: Aronia blossoms opened May 20th, one day after the freeze. Blossoms looked fine, but perhaps had internal damage since, on some clusters, 50-75% of the flowers failed to develop. Harvest from each group of four plants was 17-25 pounds, for a total of 85.5 pounds of fruit. This was a 27% reduction from 2014 and a 64% reduction from 2013 production. This is the lowest production since harvest began in 2009. There were almost no pear slug sawfly larvae this year but we did spray for high numbers of lacebugs.

Canadian Dwarf Sour Cherry: Plants began blossoming May 1st and were done blossoming at the freeze; the blossom period was really extended. There was no fruit production.

Evans/Bali Cherry: The 'Bali' trees had some fruit but it was both eaten and infected with SWD larvae.

Black, Red and White Currants: 'Hilltop Baldwin' still had some winter-damaged branches in 2015. Overall, the bloom period was April 27-May 18th; however, the cool, wet period of May 6-19 killed the blossoms and prevented any native bee activity.

Gooseberries: No crop.

Grapes: After seemingly good recovery in 2014, cold weather damaged the grapes again in winter 2014/15 with the most damaging event postulated as the -25°F temperatures the last week of November, 2014. The plants with the most damage and least fruit production were: St Pepin, LaCrescent, Somerset Seedless, Louise Swenson, Brianna, Petite Amie, ES 8-2-43 and Prairie Star. This is the same set of plants as those that were damaged last year, with the addition of LaCrescent; LaCrescent had bud damage and little fruit this year but did seem to recover its vigor by season's end.

Ripeness measures were much improved this year over 2014 numbers. For our eight wine grapes, 'Frontenac', 'Frontenac Gris', 'Prairie Star', 'Sabrevois', 'St. Croix', 'LaCrescent', 'Marquette', and 'St. Pepin', average results were: pH 2.98, °Brix 22.5 and TA 1.34 vs 2014: pH 2.82, °Brix 21.4 and TA 1.88. Samples were taken September 24th, refrigerated overnight and analyzed the next day. In three further days, almost all grapes were eaten by wildlife and insects.

Haskaps and Honeyberries: Production was extremely diminished by the cool, wet weather and freeze from May 6-19. Local bee populations seemed extremely low and managed honeybees were not delivered until the last week of May. Russian honeyberries were almost done blossoming when the cool period began and, therefore, had the most fruit. The last half of bloom for Canadian plants occurred here and Japanese haskaps began flowering in this cool, wet 2-week period. Both had poor production. Japanese haskaps also seemed to have a low number of flowers.

In the Haskap Planting Depth Trial, there are eight plants of each 'Borealis' and 'Tundra'. Four plants were planted 1-inch deeper than in the original pot and four were planted 3-inches deeper than in the original pot. For each set of four plants, two had all branches pruned to several buds the spring following planting and two were not pruned at all.

Standard pruning was also applied to these plants in spring 2014. I debated whether to prune at all but decided that I would normally prune a plant sooner than wait for mistakes to accumulate. Therefore, as for any other plant, low and crossing branches were removed.

The production vs. treatment results for 'Borealis' and 'Tundra' were as follows in 2015:

- 'Borealis' had less fruit if it was pruned and less fruit when planted 1-inch deep.
- 'Tundra' had less fruit if it was not pruned and less fruit when planted 3-inches deep.

The overall results are the same as were observed in 2014.

Haskap Planting Trial established 2011					Amount of Fruit	
2015			No. Plants	ave gram	Pruning	Depth
	Borealis - 1" deeper	Pruned	2	59.8	less	less
	Borealis - 1" deeper	not	2	38.6		
	Borealis - 3" deeper	Pruned	2	62.3	+43.2g	+90.8g
	Borealis - 3" deeper	not	2	126.8		
	Tundra - 1" deeper	Pruned	2	234.5	+129.3g	+18.5g
	Tundra - 1" deeper	not	2	189.5		
	Tundra - 3" deeper	Pruned	2	244.9	less	less
	Tundra - 3" deeper	not	2	160.6		

Juneberries: Plants were treated to prevent the fungal disease entomosporium leaf and berry spot as well as for flower thrips. Juniper-apple rust was much worse this year than we have seen it in the past, with many berries and berry stems affected with rust pustules. Though amounts were small, there was rainfall recorded on 15/38 days from June 1-July 8, which probably contributed to the rust.

Juneberries were not pruned in 2015. Production was low though fruit set had looked pretty good after flowering. However, fruit and plants were damaged in the May 19th freeze and fruit was lost under netting to the July 4th hail. The plants are getting quite tall (perhaps 7-8 feet) and netting supports were spliced to raise the nets. We will prune in spring 2016.

Juneberry harvest began July 9th. We were interrupted by Field Day preparations and then could not harvest again until July 16-19 due to rain. The big-fruited varieties were harvested July 9, 10 and 13. 'Honeywood' and 'Smoky' ripen a bit later and with rain delays, were harvested July 16-19. Spotted Winged Drosophila laid eggs in some of the fruit and maggots were observed. Fruit was sent to NDSU for confirmation.



Plums: Plum blossoms opened right around May 1. Flowering was near completion May 6th yet with the cool weather beginning May 9th, blossoms and petals held together until May 12th. Fruit set was good on some varieties, such as 'Pembina' and 'Waneta,' and plum curculio damage was at first thought to be absent. However, once the temperatures warmed back up, curculio damage was as high as ever and most fruit was ruined. There was almost no 'Toka' fruit for a third year despite good blossoming.

Plums that ripened again showed signs of SWD damage but no insects could be grown from them.

Elderberries: For a second year, a few clusters of fruit (perhaps 30%) ripened due to a very long period of warm fall weather. The birds enjoy them. I am regretting this since elderberry seedlings appeared as weeds in 2015.