2012 Northern-Hardy Fruit Evaluation Project Update

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The Northern-Hardy Fruit Evaluation Project (fruit project) continues to be of great interest to people in North Dakota and to a smaller extent, the region. In 2012 we gave five tours, 12 presentations and offered email or phone advice to 694 people. Since the fruit project was initiated in 2006, we have provided information to approximately 2,200 people. Our primary customers are home gardeners followed by fruit enthusiasts and fruit users/processors who have a business. Our primary outreach area is North Dakota but questions have come from South Dakota, Minnesota, Montana, Wisconsin and this year, Tennessee.

People who learn about the hardy fruits in our project are very interested in obtaining these plants. For a third year, a member of the North Dakota Grape Growers Association coordinated a haskap and cherry plant buy from a Canadian propagator. CREC assisted in the distribution of 1,060 plants this year, bringing the three-year total to 6,159 plants brought to the state. The expected harvest could be 75,000 pounds of fruit when the plants mature.

The low moisture conditions of 2012 did not induce noticeable plant stress this year, but may affect fruit production in 2013 if flower bud set was affected. Mulch preserved the extensive moisture from the 2011 season. March was notably warm, with high temperatures 15.7^{o}F above average and low temperatures 11.1^{o}F above average. After 10 days with an average high temperature of 61.1^{o}F, three days of freezing weather developed April 9-11, and lows fell to 24, 16 and 19^{o}F, respectively. The period of May 1 to Sept 15 was, however, near average in temperature. Rainfall events, though sparse, fell in generous 0.5- to 1.2-inch amounts. Carrington was 3.2 inches below normal rainfall amounts during the growing season. Observed effects of these conditions will be noted in the discussion below. In general though, all crops were ripe two to four weeks earlier than previous years.

The highlight of our program is the Field Day tour, held this year on July 17th. Approximately 80 people attended the tour to hear Steve Fouch speak about Juneberries. He is a retired Michigan State University consumer horticulture educator and Juneberry Extension specialist with 32 years' experience working with farms and families to grow and market fruits and vegetables in western Michigan. Fouch is also a co-owner of Jacob's Farm Enterprises, Traverse City, Mich., a centennial farm that features a professional corn maze, farm market, U-pick Juneberries, red raspberries and a variety of fruit trees. In the afternoon program, Fouch made a presentation about Jacob's Farm, a direct-to-consumers market and popular agri-tourism destination. The following day, Fouch volunteered to speak with growers during personal, on-site, consultations as he traveled from Carrington to Fargo, ND.

This year we hosted a yard of bees which arrived April 29th. The bees were able to immediately feed on the blooming willow trees nearby and the already-blooming honeyberries, haskaps, plums and bush cherries. They may have increased production in the cherries, and black, red and white currants.

I attended the Minnesota Fruit and Vegetable Growers Association annual meeting in St. Cloud, MN, January 19-20. In May, I was able to visit the Japanese haskap breeding program created by Dr. Maxine Thompson in Corvallis, Ore. I helped to transplant cuttings started in March, and brought back six selections for CREC. In July, I attended the meetings of the North American Fruit Explorers group,

Haskap Days, and a tour by the Saskatchewan Fruit Growers Association, all held at the University of Saskatchewan-Saskatoon.

Fruit was distributed to six cooperators: Vintner's Cellar, Bismarck; Dakota Sun Gardens Winery, Grace City; Berry Dakota, Jamestown; Amberland Foods, Harvey; Karen's Kuchens, Cavalier; and Tongue River Vineyard, Miles City, MT.

Apples: Flowering was again light. Bird damage was surprisingly low for the dry weather.

Haralred: This cultivar continues to grow more slowly than the other varieties. The parent rootstock seem bumpy and odd. (Two of the original four trees were replaced in their third season due to lack of growth.) Flower and fruit production is high and most apples are removed when small so as to reduce damage to the young, thin branches. CREC's selection of 'Haralred' is not very good. It tastes green through several frosts and develops a tough bite. Other people may have better plants that were grafted from a different selection.

Hazen: Production was low to average this year, but still produced good apples. This variety tends to crack at both blossom and stem end and we often see watercore. Neither of these problems affects the use or taste as 'Hazen' needs to be cold stored and used within one to two months of harvest. It requires prompt refrigeration after picking.

Honeycrisp: Production was quite low, especially since there was a small crop the previous year. The trees look good, however, and the fruit they did produce was large and delicious. Some of these apples also split at stem and blossom ends.

Sweet Sixteen: A breakthrough! One tree had seven apples. They have a rich, sweet flavor with yellow flesh. Due to their upright growth habit, to the point of growing in on itself, 'Sweet Sixteen' can take a very long time to bear. I have heard of nine years without apples. I am experimenting with holding several thinner branches below horizontal in order to encourage blossom set. I also prune to maximize outward growth and to minimize inward/upward growth.

Zestar!: A sprightly, early, white-fleshed apple that is reminiscent of 'MacIntosh', yet more flavorful. The skin is thin and smooth and has a pretty, rosy color as it ripens. The fruit is really delicious but will not last very long in storage. One tree had fruit for a second year and produced about five apples this season. The growth habit of this variety is also very long and upright, but does not curve inward.

Aronia: Two insects bothered aronia leaves in July: Pear slug sawfly larvae skeletonized the upper surfaces of the leaves while lace bugs formed colonies on the underside of the leaves. This is the third year of pear slugs and perhaps the first for lace bugs. Lace bugs molt five times before becoming adults and the shed skins can be found clinging to the undersides of the leaves in patches along with coatings of varnish-like droppings. Their feeding causes the death of tissue in surrounding cells and yellow spots appear on the upper leaves. Pictures can be seen on the CREC website. Both insects were well controlled by one application of spinosad at label rate the fourth week of July.

Production in the four main varieties is recovering from vigorous pruning in 2011 and the pear slug sawfly damage. Maximum production has been variable the past four seasons, and a clear favorite has not emerged. 'Raintree Select' seems to have a brighter flavor and the wine made from it was a favorite. 'McKenzie', a soil conservation variety, is vigorously growing from the crown and the few fruits this year seem acceptable.

Canadian Dwarf Sour Cherry: Production jumped by nearly 200 pounds this year and harvest was 2 ½ to 3 weeks ahead of previous years. University of Saskatchewan-Saskatoon suggests letting fruit turn a black-red color and then waiting up to several weeks before harvesting the fruit. We have found that maximum ripening is about five days after the color change. If the weather is hot, we would recommend picking the fruit as soon as you see the color turn dark black-red as they will continue to ripen very rapidly after this point. In very ripe fruit, we saw tan patches with very small holes in them. It is possible that this is spotted winged drosophila damage.

Production in 'Carmine Jewel' is greater and more regular, while 'Crimson Passion' produced fewer, but larger and sweeter cherries. Crimson Passion also exhibits more "barren" branches, where areas that have mostly reproductive buds (vs. vegetative buds) will never have further buds of either type. This must be removed by pruning. Pictures are on the CREC website.

Evans/Bali Cherry Tree: The three trees had good crops this year. The fruit was only a few days away from full ripeness (some seeds still pulled from the fruit) on Field Day, Tuesday, July 17th. Temperatures in the next several days were 85 to 95 degrees. By Monday, July 23, the fruit was either ruined or eaten by birds, so no crop was picked. The northern-most tree has gummosis. It was probably sun-scalded the winter of 2010-11 as a large area of bark died in 2011 and the branch later broke at this point during a wind storm. More gum was exuded in 2012 and some branches appeared dead by the end of the season. New growth is coming from the base of the tree.

Black Currants: These were the only type of plant to suffer severe damage from the freeze April 9-11. At pruning, March 15-19, all varieties of currant looked in excellent condition, with live buds and wood. In a quick evaluation of growth the day prior to the frost, black currants were growing the most, with leaves pushed ¼ - to 1-inch from the buds. Red currants were in between, with swelled buds or tips of leaves showing while white currant buds remained tightly closed. After the freeze, Black Down, Swedish Black and Hilltop Baldwin were heavily damaged. The others were somewhat damaged though three varieties, 'Titania', 'Ben Lomand' and 'Minaj Smyriou', had good production. All dead or very slow wood was pruned out 5 weeks post-freeze. At this point the wood was still wet and easy to cut; it also freed up space for all of the new shoots to grow in their place.

Red and White Currants: Red currant production was excellent with production ranging from 5 to 12 pounds per plant depending on the variety. 'Red Lake' produces well, yet it is very hard to pick – the berries are on short strigs and are held close to the stems in thick clusters. It is hard to get fingers around them. The fruit project manager has a 'Red Lake' plant at home from another supplier; the taste seems similar and the strigs are much nicer to pick.

White currants had impressive production – 12.3 to 12.8 pounds per plant. Fruit use still seems unclear as these are low-flavored and tart. A winemaker successfully used red currants in 2011 and will try to use the white currants this year.

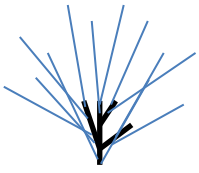
Gooseberries: The eight remaining gooseberry plants have not produced much fruit since they were replanted in fall 2010. The remaining plants continue to have some leaf spots and leaf loss, but it does not appear devastating. This year, 'Lepaa Red' had the healthiest looking leaves.

Grapes: Efforts to exhaust excess root energy have largely been successful. Growth was more moderate this year with the exception of 'Frontenac', 'Frontenac Gris' and 'Sabrevois' (which still had long internodes). The April freeze was very damaging for 'St. Pepin', 'Prairie Star' and especially 'ES 6-16-30' which froze to the ground. Eleven varieties had very little damage and all varieties except 'ES 6-16-30' had fruit. Damage evaluations are in the 2011-12 Grape Update on the CREC website. Véraison was approximately 12 days earlier than the last two years and yet grapes still did not ripen to my satisfaction. The dry weather was likely a primary factor in this, as shriveled, sour grapes were observed.

Haskaps and Honeyberries: These plants, all collectively known as Edible Blue Honeysuckle, had no problem surviving the dry and warm winter of 2011-12. The flowers were also unaffected by the April freeze. Haskaps are recognized as plants with Japanese ancestry, while plants called honeyberries originated in Russia.

Haskaps: The Canadian varieties have grown well and are almost full sized. The Canadian releases, 'Tundra', Borealis', 'Indigo Gem' and 'Indigo Treat' are crosses of a Russian type ('Tomichka' aka 'Blue Belle') with a Kurile Island type ('Kiev#8' aka 'Blue Velvet'). We do not get very much fruit from them however, which is probably due to the pollinizers being in a separate row, about 60 to 75 feet away. In 2012 we finally obtained the long-awaited pollinizer developed by University of Saskatchewan-Saskatoon (USask), named 'Honey Bee', and planted them into the reserved places in this area. Apparently, a second pollinizer, named 'Aurora', is already available from Saskatchewan and is superior to 'Honeybee'. To date, the fruit from these 4 varieties is pretty tart, and in our opinion, does not really live up to the expectations advanced by USask. Of the four, our favorite is 'Indigo Gem' as it has the best flavor and the best production. It was not readily available from propagators until fall 2012.

In 2011, we planted eight plants each of 'Borealis' and 'Tundra' from the Prairie Tech Propagation order– half of each were planted 1-inch deeper or 3-inch deeper than they were growing in their nursery pots. Two 'Blue Belle' plants were planted among them as pollinizers; the row is only 20 feet from older 'Blue Belle' and 'Berry Blue' pollinizers. This spring, every two plants were pruned to 2- to 3- inches tall, a recommendation from Canadian propagators. The pruned plants had numbers of new, straight shoots from the crown of the plants. The unpruned plants had a lower number of branches, but each branch had grown a great number of new, shorter shoots. (See examples to the right.) Overall, the widths of the plants were similar. It was difficult to determine the true number of shoots; I counted the new shoots in the pruned plants and old branch numbers in the un-pruned plants.



Pruned

Un-pruned

The Oregon haskaps, which are pure Japanese stock bred by Dr. Maxine Thompson, in Corvallis, Ore., seem superior to the Canadian and Russian plants. They grow more upright with large oval berries and the best selections have much greater sweetness and flavor. They increased in production from the previous year by 146% while Russian and Canadian varieties increased production by 29% and 64%, respectively. They are not yet commercially available, however. In May, I visited Dr. Thompson and brought home six new selections; these were planted August 30. In October, six additional selections were shipped to CREC and were planted on October 12.

Honeyberries: The three upright Russian cultivars, 'Berry Blue', 'Blue Belle' and 'Kamchatka', were blooming or just starting to bloom when the April freeze occurred. Their production was less than last year. 'Berry Blue' is the largest plant at 55-inches tall and produces the must fruit. However, I feel that berry production is low when the size of the plant is considered. Each berry must be plucked and picking is tedious. 'Blue Belle' is the easiest to pick as the fruit can be shaken from the plants; however, this means it is very susceptible to shattering and the fruit is lost onto the ground. The plants are small. 'Kamchatka' does not produce many blooms or fruit; the fruit becomes off-flavored after its ideal ripening period though it is delicious within this window.

The low, mounded honeyberries of Kurile Island descent, 'Blue Velvet' and 'Blue Moon', bloom and ripen much later than the upright species. They also bloom for a long period. They are very sour and it is difficult to determine ripeness by flavor. The cultivar 'Blue Velvet' was left to ripen and forgotten about in the rushed picking season; the tart fruit was overripe and mushy by the time it was picked.

Juneberries: Production continues to increase at a pleasing rate: 259% increase 2009-10, 24% increase 2010-11, and 69% increase 2011-12. The fruits of 'Martin', 'Thiessen', and 'JB30' are large, juicy and pleasant. 'Honeywood' is not quite as large or juicy as the above three, but is pleasant and has a slightly extended ripening period. 'Smoky' can be considered an 'older style' Juneberry as it has the driest, chewiest, most vegetal fruit. Its peak ripening time is one week later than the other four. If the weather becomes hot during this time, 'Smoky' does not finish ripening – the fruit stays reddish and never turns blue. 'Smoky' is also very susceptible to flower and fruit damage by thrips. A thrip spray program using pyrethrins, spinosad and neem was successful in 2012. Both 'Smoky' and 'Honeywood' had the highest levels of entomosporium leaf spot by the end of summer. Some fruits were affected this year and a spray program will be implemented in 2013.

Plums: 'Toka' and 'Pembina' blossoms were estimated to be 95% open on April 24th and were considered complete on April 30, one day after the arrival of the bee hives. 'Waneta' and 'Pipestone' had 10-30% and 50% active blossoms, respectively, when the bees arrived. In the end, one 'Toka' and two 'Pembina' trees were loaded with plums while the other five trees of these varieties had very small crops. There were almost no 'Waneta' or 'Pipestone' fruits despite honeybee pollination during the active bloom period. There was not much plum curculio damage this year.

Elderberries: We have not yet acquired new, quicker-ripening selections to replace the plants removed. Of the two plants remaining from the original planting, each had a few groups of berries that ripened in 2012 – our first – but many more berries froze while still half ripe.