

Juneberry Update 2011-17

Juneberry fruit production had been quite successful at CREC. Though Juneberries have plenty of endemic pests and problems, their care still feels minimal for the reward of the fruit.

Our plants have grown in a steady pace. Our 2012 Field Day speaker, Steve Fouch, former MSU Extension horticulturalist, explained new Juneberry production in Michigan and presented images showing that 3-year-old plants there were similar in stature and fullness to the 7-year-old plants here. The plants in Michigan were irrigated and received more natural rainfall, received more fertilizers and had wooly elm aphids controlled on a regular basis. CREC's practices are lower-input and the plants have developed slower, yet are producing well.



In Alberta, Manitoba and Saskatchewan, the 2016 Canadian [Census of Agriculture](#) counted 507 farms growing 2,504 acres of Saskatoons (Juneberries). In a 5-year averaged period (2011-17), the three provinces marketed 608 tons of fruit from 1,514 bearing acres (2,556 acres cultivated). These production numbers seem low at 0.40 tons per acre, but perhaps the term 'marketed production' does not mean total production. At CREC, our bearing area is 0.179 acres with 100 plants. With about 700 pounds of fruit harvested each of the last two years, our production was 1.95 tons per acre.



Wooly elm aphids (left) are an insect pest that spends the spring in elm trees and the summer feeding on Juneberry roots. They are a top problem when establishing Juneberry plants. The next pest in our area is *flower thrips*; these very tiny insects bite and suck at the flower buds and flowers as they open, causing hard scabs on the fruit and making it inedible. Then come fungi: both *Entomosporium leaf and berry spot* and *juniper-apple rust* infect leaves and fruit, causing foliage to drop and the crop to be damaged.

CREC controls all of these pests and diseases with applications of both organic insecticides and conventional fungicides. All applications are after pruning and before the fruit ripens, which is a less busy time of the year.

Spotted Winged Drosophila (SWD) can be a problem in Juneberry fruit. In 2015, harvest began July 9th but was slowed, first by Field Day and then by continuing rain showers. The fruit of the later cultivars was affected by SWD, especially 'Honeywood' since it is juicier than 'Smoky.' The three earlier cultivars, 'Thiessen', 'Martin' and 'JB30,' were affected when part of their harvest was in the later period. To date, we have not tried to control SWD in Juneberries due to the netting over the plants. It is better to harvest as soon as possible. Lighter purple fruit will not be as flavorful but it contains more pectin and actually makes slightly better preserves.

Here are updates from the last seven years:

2011: Fruit production increased again though some disease was observed this year. Now, only 7% of plants are considered to have low vigor due to past problems with woolly elm aphids and plant replacement. Hail and excess rains affected our crop and plants this year. *Entomosporium* affected the leaves late in the season.

- 'Thiessen', 'Martin' and 'JB30' berries were affected by splitting after rain ended the dry conditions during ripening. They were closest to full ripeness.
- 'Smoky' had thrip damage to the flowers and then the fruits this year.



2012: Production continues to increase at a pleasing rate. 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 and bland fresh 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 a neem product (azadirachtin) 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.

2013: *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.

2014: The plants were treated with propiconazole in early May to prevent *Entomosporium* leaf and berry spot. The plants looked great and then in mid-June, there was suddenly an outbreak of the same disease after a rainy period. A second treatment was applied. Azadirachtin controlled flower thrip feeding and there was little fruit damage this year.

We pruned for the first time this spring with the help of three master gardeners and their extension agent who came for some experience. Older branches were removed from most plants and some tall branches were tipped; some literature indicates that tipping does not encourage new fruiting buds. Harvest was decreased by 56% this year but we don't know if it was strictly related to pruning or whether the colder winter conditions influenced bud viability.

We irrigated the first two rows of Juneberry August 7 and 8. In 2015, we will be able to start irrigating as soon as it is needed.

2015: 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. Both 2014 and this year were moist in June, a prime time for rust to be moving; this year there was rainfall recorded on 15/38 days from June 1-July 8.



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 had limited harvests 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 (SWD) laid eggs in some of the fruit and maggots were observed. Fruit was sent to NDSU for confirmation.



2016: Juneberry plants were last pruned in 2014. They became quite tall in 2015 and required pruning again in spring 2016. Large branches were cut back for renewal and other tall shoots were headed back. Weak shoots affected by wooly elm aphids were also removed. Despite the sizable amount of wood and flower buds removed, production was the largest to date, with 762 pounds of fruit harvested.

Hail struck the orchard July 9th, mid-way through Juneberry harvest. Some fruit was lost, but much was untouched due to the protective effect of the netting. The spotted wing drosophila (SWD) fruit fly became a slight problem in the second half of harvest but we did not spray the fruit due to the netting. We hand-sorted the fruit to remove most of the damaged berries.

2017: In 2016 and 2017 the Juneberry plants were aggressively pruned. Two to three older, larger branches were cut out of each plant both years and all tall branches were headed back to encourage new growth. Production was large both of these years: 762 pounds of fruit in 2016 and 697 pounds this year. The first berries were picked July 5th and the harvest was completed July 14th with no SWD detected. A good number of unripe berries were left on the shrubs with the early start to harvest and these berries became really large and sweet in the next week. Local fruit project friends were encouraged to clean up the remaining crop to prevent more SWD.

In the first two years of fruiting we picked the group 2-3 times until complete. Now, we wait a few more days and then pick each shrub clean. In 2016 and 2017 however, the ripening was more uneven and we had to leave some unripe fruit behind. In those cases, we had 'clean-up' pickers gather the remainders.

Northern Hardy Fruit Project - Yearly Production Records																				
		No. of plants	2009		2010		2011		2012		2013		2014		2015		2016		2017	
			Date	pounds	Date	pounds	Date	pounds	Date	pounds	Date	pounds	Date	pounds	Date	pounds	Date	pounds	Date	pounds
Juneberry	Honeywood	20	17-Jul	20.5	7-Jul	37.3	15-Jul	43.7	2-Jul	67.1	17-Jul	86.8	16-Jul	53.3	7/16-20	19.5	7/9-12	144.6	7/10-11	166.2
Variety Trial	JB30	20	to	3.6	to	37.5	to	51.7	to	72.4	to	73.1	to	28.3	7/9-10	25.4	7/6-7	174.3	7/5-7	133.4
	Martin	20	24-Jul	1.6	16-Jul	13.8	25-Jul	28.1	10-Jul	55.5	25-Jul	55.6	17-Jul	36.6	7/9-10	32.5	7/5-7	131.4	7/5-6	101.0
	Smoky	20		9.4		43.2		29.1		73.9		102.7		19.8	7/16-19	71.8	7/8-12	147.3	7/13-14	154.1
	Thiessen	20		9.7		29.3		48.1		70.9		66.3		32.5	7/9-13	35.4	7/5-8	164.9	7/5-6	142.2
				24.4		161.2		200.7		339.8		384.5		170.4		184.6		762.5		696.5
													Pruned spring 2014		Freeze, hail, wind		SWD after 7/8 Pruned 1/4th		No SWD Pruned 1/4th	