

Overview of 2016 Fruit Crop Conditions

Most fruit orchards suffered minimal “top-kill” or wildlife forage damage in winter 2015/16, as average winter temperatures were exceptionally warm. Snow coverage wasn’t significant in most areas, allowing animals to forage from non-fruit sources. Spring and early summer conditions were generally dry, so negative effects of excess moisture from previous years improved. Since upper soil layers became relatively warm and dry in early summer, [iron chlorosis](#) symptoms were less evident in high pH soils, which allowed orchards to regain vigour.



Saskatoon berry orchard displays very little iron chlorosis symptomology, June 23 2016

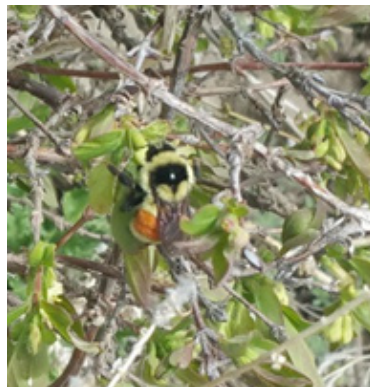
Early-season sunshine and heat translated into overly rapid fruit development in fruit like cherries and apples; under those physiological development conditions, fruit didn’t have time to increase size to its full extent. For earlier-ripening crops like strawberry, haskap and Saskatoon berry, fruit quality was good as persistent sunlight translated into high sugar content and disease pressure was low. In later-ripening crops, high amounts of precipitation in July and August associated with somewhat cool overcast conditions led to lower-than-average sugar content and increased development of disease and insect pressure.

The majority of commercial fruit species did not suffer extensive spring frost damage. Since there were low average amounts of precipitation over the bloom period, infection from diseases like [fire blight](#), [brown rot](#), and [Entomosporium leaf spot](#) were less significant than average years. Early summer temperatures over the bloom period for most crops were warmer, allowing strong bee activity and pollination. In addition, since nutrient status was improved (due to warmer drier conditions in high pH soils), fruit-set and development for most crops was above average.

Haskap had good blossom characteristics as the timing and temperatures were warm enough early in the season for high pollination efficiency. Sufficient pollination resulted in above-average fruit-set, and initial sunny warm conditions discouraged disease development.



Haskap in bloom April 20, 2016



Bumble bee pollinating haskap April 27, 2016



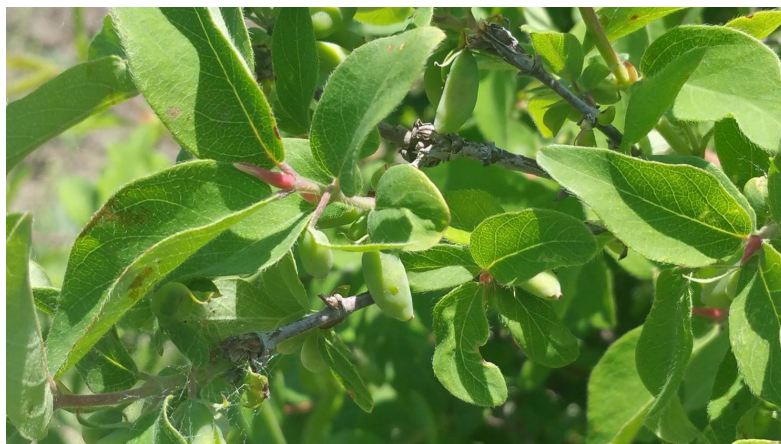
Haskap fruit developing May 10, 2016

Few economically significant diseases were detected on haskap, but [powdery mildew](#) remained present at many sites. Some growers have decided to let fruit stay on the plants until the sugar content is maximized and astringent tannin flavours are minimized. Astringent “off/grassy” flavours result in poorer wine quality; however, leaving fruit on plants late in the harvest season makes them more susceptible to significant loss

from foraging of birds like American robins and Cedar Waxwings, as well as via abscission (e.g., falling to the ground in wind). In Agriculture Demonstration of Practices and Technologies (ADOPT) trials at the Canada-Saskatchewan Irrigation Diversification Centre (CSIDC), the entire crop was lost due to bird foraging in early-June, well before the crop was ready to harvest.

Strawberry producers did not suffer significant plant losses due to planting depth being too shallow, as occurred in 2015. Since overwinter losses were low, most patches displayed strong vigorous growth throughout May, June and July.

Growth conditions in July and August remained strong, but high precipitation and mild to warm conditions resulted in increased insect and disease pressure. Iron chlorosis became problematic in high pH soils later in the season (late August); however, there were dramatic cultivar differences. The most popular June-bearing cultivar (Kent) was highly tolerant, whereas day-neutral varieties like Seascape and Albion were far more susceptible to iron chlorosis.



Haskap fruit enlargement May 18, 2016



Seascape strawberries showing symptoms of iron chlorosis



Kent strawberry showing no iron chlorosis symptoms

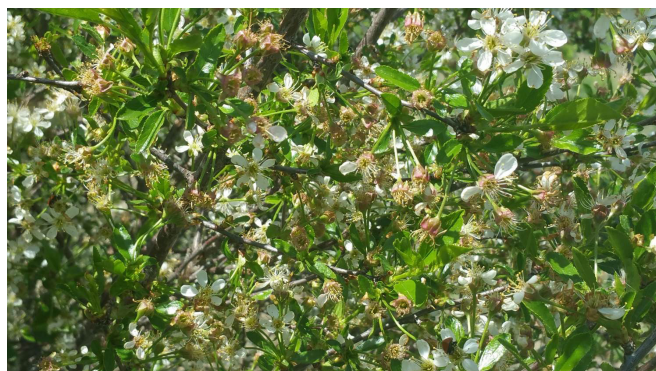
Some strawberry growers continued to struggle with [Anthracnose](#). Anthracnose appeared to be more infectious on fruit than on other plant tissues. Some other foliar diseases like powdery mildew, [leaf spot](#), [angular leaf spot](#) and [leaf scorch](#) were present, but in general these did not cause significant economic loss and their spread continued to be less extensive than in previous years, likely due to the dry, hot early conditions. Some strawberry patches continued to experience strong [tarnished plant bug](#) infestations that required multiple applications of insecticides to bring them under control. Fewer growers reported [cricket](#) infestations. Cricket populations continued to decline, perhaps due to the dry, hot early summer and cool, wet July and August conditions. [Spider mite](#) infestations were limited in severity, and there were few reports of it being a significant economic

problem. There was also some wireworm infestation reported from a grower in the southeast portion of the grain-belt; however, the infestation seems to have been largely derived from adjacent vegetable crops.

Some raspberry patches suffered powdery mildew and [botrytis](#) infestations, but in general production was strong. Distilleries and wineries are increasing use of raspberries, so it is becoming increasingly important to control these diseases, as fermentation can be disrupted from disease interaction with yeasts. Growers continue to need to thin their canes to allow better air movement through the patch and allow better fungicide dispersal. Raspberry patches in the northwest continued to improve management of botrytis and blight infections, and those patches are becoming more productive. Some [anthracnose](#), [spur blight](#), [yellow rust](#) and [fire blight](#) infections were detectable, but did not cause significant economic loss.

A few disease and insect problems were problematic in apples, but yield was average. Management of fire blight at a few sites remained a major challenge. The recommended management protocol remained eOrganic eXtension's [Non-Antibiotic Control of Fire Blight](#). A few growers also had [Black Rot](#) associated with fire blight. The black rot did not appear to significantly infect fruit, but it does appear to have a serious negative impact on overall plant health. [Silver leaf](#) continues to be detected in apples and dwarf sour cherry orchards, and is more prevalent in areas that have struggled under waterlogged soils and in orchards where pruning cuts are not made flush (where stubs are left on the remaining limbs). Spread of this disease was very limited in 2016, likely due to drier conditions and removal of infected plants by growers. [Canker](#) diseases continued to be present in some orchards; pruning and copper pesticides are recommended to control their spread. [Apple scab](#) did not cause significant economic loss in 2016, and [water core](#) was not reported. This was likely because pruning was moderate compared to previous years, plants had matured more and moisture conditions were not excessive during the earlier fruit expansion and development process for typical cultivars grown in Saskatchewan. Apple Maggot was present in some commercial orchards, but economic impact was not significant because the growers controlled the infestation. Unfortunately, apple maggot was not controlled by home gardeners, allowing populations to rise in 2016. It appeared most apple maggots were late to oviposit, as the infected fruit did not begin to present until early September and the larvae were very small. [Tent Caterpillars](#) were also present in large numbers in early to mid-summer, but commercial growers controlled infestations with Dipel or related Bt (*Bacillus thuringiensis*) products.

Cherry production was above average in 2016; however, fruit size and quality were negatively impacted due to hot sunny conditions in early development followed by cool wet conditions during the colouring and ripening stages of development.



Cherries in late stage of blossom May 10, 2016

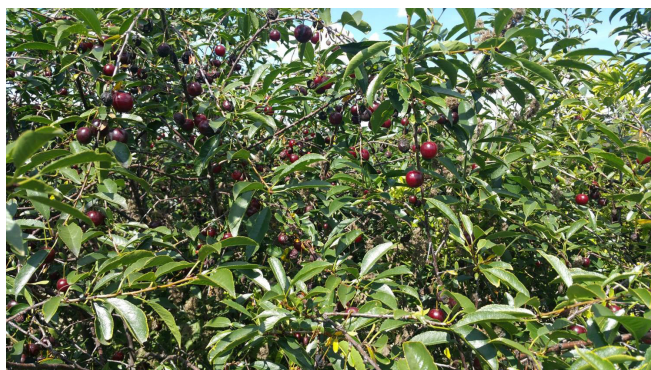


Cherries at early fruit development stage May 25, 2016

Sugar levels were two to three [degrees Brix](#) lower than average, and some splitting occurred in late harvested plots. Spread of the blight phase of [brown rot in dwarf sour cherry orchards](#) (see page four of the link) was limited due to early hot-dry conditions, but inoculum remained present in many orchards. Most growers did not treat to control brown rot in spring, but climate conditions later in the year were more favourable for the spread of this disease and some fruit became infected when close to being fully ripe.



Cherries maturing, but fruit splitting and disease development is evident July 22, 2016



Cherries ready for harvest, August 18. Note the darker fruit colour

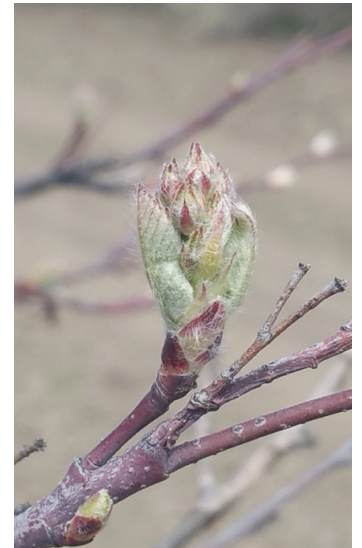
Mummy cherries remain in the orchards, and it is recommended growers spray over the blossom period in 2017 and again toward the harvest period. [Leaf spot](#) was detectable in many locations, but did not cause significant economic loss. [Bacterial canker](#) is widespread, but did not appear to cause significant economic damage in 2016. It is highly recommended that growers attempt to control bacterial canker and leaf spot diseases as best they can with applications of copper and other registered control products in 2017. [Cherry fruit fly](#) continue to infect dwarf sour cherry; it is recommended growers employ various insecticide options to control these pests in 2017.

Some [shot hole](#) and brown rot continued to infect chokecherry. [Black knot](#) continued to infect most wild chokecherry stands, especially along the Qu'Appelle Valley and east central regions of the province. There are a few control products registered to reduce infestation, but, in regard to black knot, growers should continue to employ pruning removal to rid the trees of infection.

Disease pressure in Saskatoon berry was moderate for both *Entomosporium* [leaf spot](#) and fire blight; however, [Saskatoon-juniper rust](#) was prevalent in many orchards located in central areas of the grain-belt. Application of Funginex is recommended in 2017 to control the rust. Few other fruit or foliar diseases were present, but in some cases insect pest pressure was high.



Saskatoon berry fruit in early development stage, May 10, 2016



Saskatoon Flower cluster emerging April 27, 2016

[Hawthorn Lace Bugs](#) were present in central areas of the grain belt, and although no economic thresholds exist, it is recommended growers control these insects, as they severely damage leaves and appear to weaken plants over time.

In general, Saskatoon berry yields were above average and quality was very high with exceptional sugar content.



Saskatoons developing nicely, May 18, 2016



Saskatoon berries ready for harvest, July 22, 2016

Tarnished plant bug populations continued to be fairly strong, and it is recommended those insects be controlled with registered control products in 2017. A few Saskatoon berry orchards have endured leaf gall problems caused by midge (*Cecidomyiidae*). The persistent extent of gall infection (reported by growers) suggests use of control products is warranted. Several insecticides have been recommended based on their purported ability to control generic midge species. Some growers in the northwest quadrant of the grain-belt have reported larval infestations in their Saskatoon berries, but the samples were not submitted for identification.

Spotted Wing Drosophila (SWD) has not been detected in Saskatchewan, but conditions were favourable for their entrance into the province in 2016. It is hoped the berries were not infected by SWD. Samples are being sought from the growers who reported this issue.

Sea Buckthorn orchard infection from *Monilinia*, anthracnose and *Botrytis* were greatly reduced in 2016.

Dry and sunny conditions throughout spring and early summer likely contributed to reduction in disease pathogenesis. It is recommended Sea Buckthorn growers continue to monitor their orchards for these diseases. More extensive scouting and application of fungicides is recommended for 2017.



Sea Buckthorn in bloom April 20, 2016