



# Great Lakes Fruit, Vegetable & Farm Market EXPO Michigan Greenhouse Growers EXPO

December 5-7, 2017

DeVos Place Convention Center, Grand Rapids, MI



## Tart Cherry

**Where:** Gallery Overlook (upper level) Room E & F

**MI Recertification credits:** 2 (1C, COMM CORE, PRIV CORE)

**CCA Credits:** PM(1.5) CM(0.5)

**Moderator:** Kurt Dowd, MSHS Board, Hartford, MI

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|----------|---|
| 9:00 am  | SWD Efficacy: What Programs Are Working to Control This Pest? <ul style="list-style-type: none"><li>• Larry Gut, Entomology Dept., MSU</li></ul>                                    |
| 9:25 am  | Managing Cherry Leaf Spot Under Rainy Conditions <ul style="list-style-type: none"><li>• George Sundin, Plant, Soil and Microbial Sciences Dept., MSU</li></ul>                     |
| 9:50 am  | Updates on the Saskatchewan Dwarf Sour Cherry Breeding Program <ul style="list-style-type: none"><li>• Bob Bors, Plant Sciences Dept., Univ. of Saskatchewan</li></ul>              |
| 10:35 am | Tart Cherry Horticultural Research Update: PGRs, Early Fruit Development and Cold Hardiness <ul style="list-style-type: none"><li>• Todd Einhorn, Horticulture Dept., MSU</li></ul> |
| 11:00 am | Session Ends  |

## Update on the Saskatchewan Dwarf Sour Cherry Breeding Program

Dr. Bob Bors, Dept. of Plant Sciences, University of Saskatchewan  
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The University of Saskatchewan has been breeding dwarf sour cherries since the mid-1980s. But the program was a continuation of Les Kerr's program which was started in the 1940s. Les Kerr intercrossed Mongolian cherries with sour cherries in order to make the latter more hardy. Mongolian cherries from Siberia have short bushes, small fruit (the size of a dime), and are very sour. Over the decades of improvement the main emphasis was having larger fruit of good quality on plants that could survive -40°C. An unintended side effect of the breeding occurred but sour cherries were now on large bushes instead of large trees. At the University of Saskatchewan location they are commonly 6 to 8 feet tall but in other areas they can be 10 feet tall. However, they are fairly easily trained to be six or 7 feet tall which is ideal for most over the row harvesters of bush fruits.

The University of Saskatchewan released its first dwarf sour cherry in 1999, the variety Carmine Jewel. Then in 2005 five selections were released that later became known as the romance series: Crimson Passion, Romeo, Juliet, Valentine, and Cupid. Soon to be released in Europe are the musketeer series: Athos, Porthos and D'Artagnan. All of these varieties were bred and selected at a time when Saskatoon was considered to be hardiness zone two. However, Saskatoon is now considered hardiness zone three.

When conditions were colder in Saskatoon there were less issues with insects and diseases. Cherry fruit flies are now a problem and brown rot is very common in orchards. However, cherry leaf spot is practically unknown in Saskatchewan and bacterial canker although present does not seem to be much of a problem. Saskatchewan does not have SWD yet and so I cannot report whether some varieties are more susceptible than others.

Now that our first varieties have been available for more than a decade and have been observed at the University of Saskatchewan for 15 years, it is worthwhile to note observations about each of the varieties as well as to comment on some general characteristics that would be important to growers.

**Carmine Jewel:** This variety has been consistently productive, and always has smaller fruit than other varieties. It has the smallest pit of any of our cherries often about half the size. Its fruit is not as sweet as other varieties often around 12 to 14 Brix, which does not seem to matter too much when processing. It is usually the first variety to ripen, and Saskatoon this occurs last week in July which is about two weeks after peak strawberry harvest for us. I've heard of it ripening late May to early June in Ontario. It is Hardy on the Canadian prairies. Its big disadvantage in our location is that it is the most susceptible of our varieties to Brown rot. I do wonder if this susceptibility is a genetic thing or if it is due to the time that Carmine Jewel ripens. Late July tends to have our hottest temperatures while early August temperatures are starting to get cooler.

**Romeo:** In our trial, Romeo came into production a full year before other varieties. However the first year Romeo production coincided with a -50°C winter that caused severe dieback to Romeo and Crimson Passion. After that winter we were reluctant to recommend growing it in Saskatchewan. While it took a few years to recover we have not seen dieback in Romeo for eight years. It may have been that its heavy production caused it to be more susceptible to winter injury that first year. Connoisseurs that visit our orchards always list Romeo as the best tasting variety. It may be the best, but it isn't that different from Juliet. Productivity seems to be similar to Juliet but needs to be measured more exactly. In 2017 it was

observed to have peak bloom about five days later than most of the other varieties. This is not something we had observed before.

**Crimson Passion:** This variety is substantially more dwarf than all the other varieties, with bushes perhaps 25% the size of others. It is known to be very slow rooting for propagators. In my opinion its bush is too small to be very productive. It also had severe winter injury the winter we had -50°C. However, that winter Crimson Passion was not in production so no excuses can be made for it. Crimson Passion has extremely firm flesh and taste great and may be worthwhile for home gardeners who might like a smaller bush fruit. Perhaps it could be worthwhile for you pick.

**Juliet:** this variety is been one of my favourites it's very hardy, taste great, and is productive. It tends to bloom a couple days before the other varieties but it also tends to go dormant faster than others.

**Cupid:** this variety is known for blooming about a week after all the other varieties. Initially we thought this characteristic made it worthwhile to try since it would be less prone to late frost damage. However, this variety shouldn't be grown commercially. It tends to come into production a year later than the other varieties and when it is in production its yields are much lower. But worse of all, many of its cherries are too large to fit in a standard cherry pitting machine. Some years 10% of the cherries won't fit but other years 50% of the cherries won't fit. I don't know if there's a much of a market for our sour cherries that can't be pitted easily. It does have a unique flavour that might be good for wine. Perhaps it could be pressed whole?

**Valentine:** This is our only red coloured dwarf cherry. It's a little darker than Montmorency and has red flesh but is considerably lighter than any of our other varieties. The dried cherries look red. Possibly it could be substituted for Montmorency and pies but red dye wouldn't be necessary. It is been fairly Hardy its tree is a bit larger than our other varieties so seems more productive. It has good flavour.

### **Some general characteristics**

**Colour:** The University of Saskatchewan cherries are dark in colour. Carmine jewel and Cupid are practically black when fully ripe. Consequently they have much darker juice with more dyeing power. Romeo, Juliet, and Crimson Passion are deep burgundy in colour. Only Valentine can be considered red. Familiarity with Montmorency in the marketplace has led some growers to pick these varieties days or weeks before optimally ripe. This has led us to create colour charts for each of our varieties which can be downloaded from our website. The colour charts can be loaded onto a cell phone and compared to fruit on the bushes. Although you may have to take all the fruit into a shady location to compare them properly.

**Harvest window:** In developing the colour charts mentioned above, we also measured cherry weight, Brix, and tasted the fruit. It seems that cherries harvested a week before or week after optimum still had very good flavour and quality. But going two weeks too early resulted in a much inferior flavour and two weeks late had shriveled fruit. There is potentially a two week harvest window if conditions are not conducive for brown rot. Many of our growers of Carmine Jewel had been caught off guard waiting an extra week which then allowed Brown rot to take hold. Most years in Saskatchewan it's been fairly dry around harvest time so brown rot has not been a problem.

**Bush characteristics:** Our first varieties were selected for harvesting with upright harvesters. They do sucker but not as much as other plants in our breeding program. It is however a mistake to try to train these bushes as miniature trees with single trunks. It's better to let them lightly sucker and create new trunks to replace older ones. An individual trunk might have a lifespan of 7 to 10 years or so before it becomes unproductive. When a trunk gets more than an inch thick it isn't very flexible in machinery

and tends to get damaged and more susceptible to winterkill. If multiple trunks are allowed per bush then each year the oldest trunks here and there can be removed and there shouldn't be any reduction in yield and minimal winter damage.

**Cherry leaf spot:** There is every reason to believe that the Saskatchewan cherries are just as susceptible as other varieties to cherry leaf spot. I've seen our varieties with cherry leaf spot on them at the Montréal Botanical Gardens and in various farms in southern Ontario. We are fortunate in Saskatchewan that our climate does not seem very conducive to this disease.

**Brown rot:** We've seen a little bit of Brown rot on the romance series and a lot on Carmine jewel at the University farm. All the varieties are in close proximity to each other and of the same age. We can't grow Montmorency in our location so I have no idea how to compare our varieties to Montmorency.

**Musketeer series cherries:** These cherries are being released in Europe in cooperation with a major nursery that is familiar with quality of European cherries. They are not yet available in North America and are about to be released in Europe next year. Quality is not very different from the Romance series. But varieties D'Artagnan and Athos have smaller bushes a foot or two shorter and are more suckering than the Romance cherries. This results in shorter wider bushes with more trunks that are better suited for sideways harvesters, which are commonly used in Europe to harvest black currants. These two varieties do not need to be pruned as often as the Romance series. This whole series has undergone virus free certification in Europe. I do not know the regulations of bringing certified material from Europe whether they would have to be retested in the US or Canada. So it is uncertain when these might be available here.

**Breeding continues:** We are continuing breeding on a small scale with our cherries. Selections were made from another generation of crosses but it will be several years till these come into production.