

Dwarf Sour Cherries for the Prairies

By Bob Bors and Rick Sawatzky

I never fully understood the story of how George Washington couldn't tell a lie about cutting down a cherry tree. I had always thought the story was about being honest even if you did something obviously wrong. When I moved to a farm in West Virginia and saw buckets of mouth watering wild cherries well out of reach I gained a new appreciation for the story. The first season I resisted the temptation and had meager harvests from lower branches. By the 3rd season, my wife was calling me George.

When I first saw the dwarf sour cherries that Rick Sawatzky was breeding at the University of Saskatchewan I was amazed. I told him "this is the best kept secret on the prairies". Breeders had been trying for decades to develop dwarf rootstocks for cherries but I hadn't heard of anyone developing a dwarf cherry on its own roots. Unlike apples which usually form good graft unions on dwarfing rootstocks, grafted cherries can be incompatible which may cause the top part to die or a weak graft union results in trunks splitting when they get larger. Another reason for my excitement was that sour cherries aren't supposed to be hardy in Zone 2. Usually, Zone 3 is as cold as the most cold tolerant varieties can take, and even then it is questionable. They go as far south as Zone 9.

Two species of cherries

Prunus cerasus or "Sour Cherry"

True **sour cherries** are native to Europe and have the scientific name of *Prunus cerasus*. In an effort to make them sound more appealing, growers in the States have been calling them **tart cherries**. These cherries are often 5-8 m. (15 - 25 ft) tall and usually cannot survive in Saskatchewan. A noticeable exception is the **Evan's Cherry** which may be among the more cold tolerant of its species and shorter than other sour cherries.

Prunus fruticosa or "Mongolian Cherry"

The cold hardy *Prunus fruticosa* (**Mongolian Cherry**) is native to Siberia. It grows only 30-60cms. (1 to 2 ft), has fruit about the size of a pin cherry and leaves like a

willow. This species was the genetic source for dwarf and cold hardiness genes in the hybrid cherries.

Two types of hybrid sour cherries

Prunus eminens or “Mongolian cherry”

In the late 40's, Dr. Les Kerr at Ag Canada's Morden Research Centre, began intercrossing ***P. cerasus*** and ***P. fruiticosa***. He continued this research when he moved to Saskatoon to become Director of the PFRA Tree Nursery, Sutherland (now Forestry Farm Park). What resulted was a cold hardy, bush sour cherry that grows 0.6 to 1.0m. (2 to 3 ft.) tall. Les began promoting these cherries to nurseryman and they began to be widely planted. These hybrid cherries were not given a new name when they were developed so most nurseries erroneously call them Mongolian cherries. It is likely that all “Mongolian” cherries being sold by nurseries on the prairies are actually these hybrids. Pure *P. fruiticosa* sucker twice as heavy, are half as tall and have half the fruit size of what nurseries are selling.

In the 1970s, Dr. Nelson and Rick Sawatzky at the University of Saskatchewan imported and began evaluating hybrids of ***P. cerasus*** and ***P. fruiticosa*** from Siberia. In the 1980's the U of Sk's cherry breeding program received a boost when Les Kerr donated his germplasm to the University. From 1996 to 1999 the U of Sk. was distributing thousands of improved seedlings under the name of ***Prunus eminens*** to farmers and gardeners. (This name was used because *P. fruiticosa* x *P. cerasus* hybrids resemble *P. eminens*, which is believed to be a naturally occurring hybrid of these two species.) Growers receiving these trees are helping to identify superior seedlings which will be used in future breeding.

P. x kerrasis or “Dwarf Sour Cherries”

These hybrid cherries are 75% *P. cerasus* and 25% *P. fruiticosa* and will probably be named ***P. x kerrasis*** (after Les Kerr). These hybrids grow to 0.8 to 1.2m. (5 to 7 ft.) tall and many of them had good fruit quality while maintaining cold hardiness.

Neither *P. eminens* nor *P. cerasus* are optimum heights for picking. With the first, pickers must bend over and the second requires either a ladder or tree shaker. So, in

1985, Dr. Cecil Stushnoff and Rick Sawatsky at the U. of. S. began crossing *P. eminens* with a high quality, cold tolerant cultivar (Zone 4a) “North Star” from Minnesota. From these crosses the new variety **SK Carmine Jewel** originated. This variety has an optimum tree size for picking and much improved fruit quality.

Two prairie cultivars

There are two cultivars of sour cherries available for prairie gardeners: **Sk Carmine Jewel** and **Evans Cherry**. Both varieties are showy in the spring with beautiful white blossoms and in summer with dark green glossy leaves. Both are on their own rootstocks which means no grafting problems. As these are relatively new releases, it is difficult to comment on how far north they can be grown. Sk Carmine Jewel is probably more cold hardy than Evans, given its shorter stature and having Mongolian Cherry in its lineage. I'd guess (and I am only guessing) that Sk Carmine Jewel is zone 2a and Evans is zone 3a. When grown North of those zones you may have some years with fruit and others without, depending on winter kill of flower buds. Perhaps with global warming, it will be more years with fruit. I would appreciate receiving feedback from anyone growing sour cherries on the prairies, particularly regarding winter hardiness.

Results of 1999 comparison's of SK Carmine Jewel and Evans Cherries.

	SK Carmine Jewel	Evans
Species	<i>P. x kerrasis</i>	<i>P. cerasus</i>
Height	2 to 2.6m. (6 to 8 ft.)	4 to 4.6m (12 to14 ft.)
Fruit colour	dark red	bright red
Juice colour	bright red	pink tint/clear
Average fruit weight	4.0 grams	4.4 grams
Season	mid July to Mid Aug.	August
Soluble solids (sweetness)	14.0 Brix	12.4 Brix
Water retention after freezing	66%	41%

Pit shape

round

elongated

Planting

Choose a site that gets full sunlight but is reasonably protected from winter winds. In the city, most locations will be fine but in the country southeast of a windbreak would be ideal. Cherries prefer well drained sandy loam. Regular watering is recommended the first 2 or 3 seasons to get them well established. Watering thoroughly once or twice a week will promote deep root growth. Don't water frequently for short periods, this would encourage shallow roots and make them susceptible to drought and winter damage.

Encouraging growth

Fertilizing can be done early in the season, and it is best if based on a soil test. Do not fertilize in late summer or early fall, this encourages late season growth which may reduce winter hardiness. Too much nitrogen can encourage vegetative buds at the expense of flower buds, which reduces yield.

Grasses are very keen competitors with the roots of trees. If you desire your tree to grow faster, kill the grass under the tree. Cherries can be very sensitive to herbicides so either be very careful and don't spray on a windy days or use physical means such as mulch or a shovel. Keeping a cleared area a meter or so out from the trunk will allow you tree to reach full size in perhaps five years. If you allow grass to grow up to the trunk it could take a decade or more.

Rules for pruning and training

1. Do pruning in April before trees break dormancy to encourage growth.
2. Pruning for size reduction should be done shortly after full leaf stage begins. It may be possible to decrease the size of the Evan's Cherry with this method.
3. Never do pruning in summer or fall, it would encourage late growth and increase chances of winter damage.
4. Remove branches that rub against each other and diseased or damaged wood.
5. Don't remove more than 25% of the wood in any one year. To remove more wood may encourage vegetative buds and reduce fruit yield the following year. Keep the branches thinned so that at harvest time you will have enough room to reach your fruit.

6. Allow your tree to have weeping branches. The branches weep because they were weighed down with fruit and are more likely to produce fruit in the future.
7. SK Carmen Jewel should be trained as a tall bush, similar to the way Saskatoons are grown. Although more research is needed on this, probably an open centered, vase like bush would be ideal.
8. Evan's Cherry should be trained with a single trunk. Training to an open centre would make fruit more accessible at harvest.
9. *Prunus eminens* (or Mongolian cherry per catalogues) can be grown and clipped just like a hedge but this method will not produce much fruit. Thinning is needed to ensure enough light for fruit development. If you can still see some light coming through your bushes when in full leaf, then you have pruned enough.

Pollination

Both Carmine Jewel and Evans are self-fruitful and do not require other varieties for pollination. However, most *P.eminens* require cross pollination, so be sure to plant several of these. Although self-fruitful, bees are still needed to transfer pollen from anthers to styles. If you don't notice any bees when flowering time comes, a feather duster can be lightly brushed over the blossoms to ensure good fruit set.

Pests and diseases

Sour cherries in Saskatchewan have been remarkably free of insects and diseases. At the University's research plots we had some cherry fruit fly (*Rhagoletis cingulata*) and leaf rollers which inspired us to spray twice in 1999. It wasn't a very bad infestation either. I was amazed that we could get a great crop with so few sprays. In Ontario, they spray their fruit trees every week or two or else they would get no crop at all! Also, We have not seen any bacterial leaf spot on our cherries, which in Michigan is the #1 serious disease with cherries. I think Saskatchewan climate is just too tough for many fruit pests, or that there aren't enough fruit growers around to build up many pests. The only serious pest for us has been deer and rabbits eating branches in the winter, especially of younger trees. We haven't had any luck with remedies like human hair, blood meal, or paint. I think the answer lies with a fence, dogs, or close proximity to the house.

Harvesting: slow for the eager, fast for the procrastinator

An individual cultivar can be harvested for three to four weeks depending on the

season. If you plant early and late cultivars, it might be possible to have a season 6 or 8 weeks long. SK Carmine Jewel is a very early cultivar while Evans is mid season. At the University of Saskatchewan, we have some late season cherries but they need further evaluation before being released. A hot season ripens fruit faster but a cooler summer (like 1999) spreads out the harvest. When the fruit first begin to ripen, the eager gardener can hand pick the cherries. Toward the end of the season (3rd or 4th week) branches can be given a good shake over a tarp. My technique is to grab 4 or five branches and shake them as a group. It takes only about five shakes to remove all the fruit, and our dwarf trees can be harvested in just a few minutes. If fruit are staying on, its too early; try again in a few days.

Fresh eating

Surprisingly, sour cherries can have as much or more sugar than sweet cherries. Very late in the season, some varieties of sour cherries lose most of their acidity and astringency and can be eaten fresh. The tartness doesn't completely go away, but taste tests indicate that most people enjoy the fresh taste of Evans and SK Carmine Jewel late in the season. Children, in particular enjoy them, perhaps preconditioned by the variety of sour candies on the market. Also, sour cherries are much more juicy and smaller than sweet cherries. Sour cherries taste best when they can be shaken off the trees.

Processing uses

Cherries are generally used according to their colour. The bright red varieties, such as the Evan's Cherry, are preferred for pies, preserves and toppings because of their bright red colour. However these types usually have yellow or slightly pink juice. For this reason, most commercially produced cherry pie fillings are dyed red! The dark cherries, such as SK Carmine Jewel, have intensely coloured juice (but nothing beats the fluorescent red of some dyes) which is preferred for making juice, wine, jelly and adding to dairy products and baked goods. When used in a pie, the fruit looks a darker than what you'd buy in the store. It just so happens that the two varieties currently available for prairie gardeners are on opposite ends of the colour spectrum. The *P.eminens* cherries come in many shades of red. Dried sour cherries are also a special treat. One note on making jelly, you probably will need to add 25 to 50% more pectin or make apple-cherry jelly. Incidentally, cherry juice does not stain kitchen counter tops, unlike the dyes.

Future research

As a new professor in the Department of Plants Science, I am quite excited to be working with Rick on breeding and developing cultural practices for these cherries. Since no one in the world has cherries like these, research is being done on planting density, fertilization, irrigation, pruning and harvesting methods. We are cooperating with engineers to develop over the row harvesters, and hope to test equipment harvesters originally designed for raspberries and saskatoons. Two years ago, hybrids between *P.eminens* and large-fruited high-quality Hungarian cultivars began bearing for the first time. We are very excited about some of these hybrids and will be testing these in several locations.

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Bob Bors is an assistant professor and Rick Sawatzky is a technician. Both are fruit breeders in the Department of Plant Sciences at the University of Saskatchewan.