

Fruit with Potential for Wisconsin Farms

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Carandale Farm has been growing fruit for over thirty years. During this time, customers' values have shifted from an emphasis on low prices to a desire for convenient, locally grown, healthy food. Increased interest in community supported agriculture (CSA), food co-ops and community gardens has demonstrated that consumers will support a local food system and try non-traditional fruit that may not be available through mainstream markets.

These observations motivated the establishment of an extensive on-farm trial to determine what non-traditional fruit crops can be sustainably grown and marketed locally. With support from the Agricultural Development and Diversification grant program through the Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP), we established 421 plants representing 99 cultivars of 34 fruit crop species in a two-acre test plot during the 2003-2004 growing seasons. We are evaluating fruit varieties for horticultural suitability and marketing potential. Information gained from this research could benefit anyone interested in growing and selling food locally and encouraging open space land use through sustainable farming. While the project is ongoing, several fruit crops are emerging as having high potential for economic and environmental sustainability.

The emphasis of this trial is on fruit types that are known to have or are suspected of having high levels of antioxidants and other compounds that protect against cancer and other diseases—also known as nutraceutical value. Much of this fruit has been used for its health enhancing properties for centuries. Scientists are isolating numerous organic compounds responsible for these properties, and continued research should increase the marketability of these crops.

The top five promising plants

The economic potential for **European Black Currants** (*Ribes nigrum*) is virtually untapped in North America. 800,000 metric tons of black currants are grown and marketed across Europe every year. Research commissioned by Cornell Cooperative Extension predicted that currants could become a \$20 million business in New York State and a \$1 billion business nationwide.¹

Black currants may have the highest overall quantities of minerals, vitamins and phytochemicals of any known fruit crop. Some varieties have twice as much potassium as bananas and four times the vitamin C of oranges. Currants are used in juice, jams, candy, ice cream, yogurt and cereal.

While there are several American species of black currant, their harsh flavor makes them unacceptable. Even the cleaner, sweeter flavor of European types can be an acquired taste. There are four cultivars of European Black Currant in the test plot: Ben Lomand, Ben Sarek, Titania and Swedish Black.

Although European Black Currants are subject to a number of diseases including mildew, leaf spot and rust, continued research and plant selection will result in more cultivars with all-around

resistance. These diseases can also be effectively controlled with an IPM program.

Aronia (*Aronia melanocarpa*), also known by its less appealing name “chokeberry,” is native to North America. It has been used as an edible landscape plant but virtually ignored as a potential fruit crop in this country. Sweden and Eastern Europe have plant selection and breeding programs to improve this fruit.

Aronia fruit is blueberry sized and blue-black in color. It has a dark blue juice that can be used as a



European Black Currants are one of the most promising fruits being evaluated at Carandale Farm

*Quince
(Cydonia
oblonga)*

high quality, natural food coloring. It is known to be very high in Vitamin C and anthocyanins, and blends well with other fruit juices. In Eastern Europe, selected cultivars are prized for delicious juices, soft drinks, jams, wines and pies. They also have potential for use in pastry products. Aronia is a treat eaten fresh when fully ripe, but the astringency may not make it suitable for every palate.

The plants are said to be winter hardy to minus 40 degrees F. The two varieties grown at the test site—Nero and Viking—produced a substantial crop in the year of planting and a good return crop in 2004. Plant growth has been somewhat slow, but that is probably due to heavy fruiting. It is said to have a mature height of about 6 feet. The fruit adheres tightly to the bush, which may make machine harvesting difficult. It is very firm and has a long hang time after maturity, which allows for a long harvest season.

Aronia has shown a high level of disease and insect resistance in the test plot. While some leaf spotting and defoliation has shown up after harvest, it appears that it could be grown reliably without pesticide use. We think this fruit has great potential for production across Wisconsin as it is hardy, adaptable, fruitful and can be sustainably grown.

Fruiting Rose (*Rosa rugosa*) is an overlooked fruit with excellent health value. Rose hips have long been recognized as a good source of vitamin C. *Rugosa* produces large, edible hips on vigorous, winter hardy and virtually pest free plants.

In the test plot is Jubilee, a Russian cultivar with an exceptionally high vitamin C content. It is supposed to be bigger and better tasting than more common *Rugosa* cultivars. This variety is supposed to reach a mature height of 4 to 6 feet. and be hardy to at least minus 40 degrees F.

Plants in the test site are vigorous and appear to be pest-free. They produced red-purple, single flowers followed by bright red fruit that was one to one and a half inches in diameter. There was too little mature fruit to evaluate in 2004.

Rose hips can be dried for tea or used in jam, jelly, syrup, sauces, wine, vinegar, rose honey/sugar and rose water. It can also be used in oil for aromatic and cosmetic uses. It appears that fruiting rose is adaptable and can be grown sustainably.

Gumi (also spelled Goumi) (*Elaeagnus multiflora*) was introduced into North America from Asia over a hundred years ago. While it is related to the invasive Autumn Olive, Gumi is not considered an invasive threat.



Visitors to Carandale Farm examine Red Currant shrubs in the test plots.

Gumi is a rounded shrub that grows 6 to 8 feet high and wide. It probably could be machine harvested with some pruning. The half-inch to one-inch red fruit is juicy and ripe by mid-July. The test plants had some winter dieback. Disease and insect resistance appeared to be very good.

The cultivar that we are testing—Sweet Scarlet—is a Ukrainian variety selected for sweetness and fruit production by the Kiev Botanic Garden. It has a pleasant, somewhat tart flavor that is a bit astringent based

on our personal observations. Still, we think it could have appeal as a fresh fruit. Gumi is used for sauces, pies, jellies, and juice and perhaps could be used for wine.

Saskatoon (*Amelanchier alnifolia*) is a North American plant native to prairies from the Southern Yukon to Colorado. Known also as June berry and serviceberry, it is grown commercially in Canada. These 6- to 12-foot shrubs bear sweet, mild-tasting fruit that resembles blueberries. The berries, which meet all requirements for having a high nutraceutical value, are eaten fresh and are used in pies, jelly, juice and wine. They take about 4 years to bear fruit.

Saskatoon is reportedly easy to grow. We have noticed that the plants start off slowly the first year. They are winter hardy to at least minus 40 degrees F. They are a pome fruit (like apples) and will probably suffer some of the same disease and insect pressures. They ripen in June, so the fruit has a much shorter exposure than apples.

There are four cultivars in the test plot. Smokey and Pembine were planted in 2003, and Parkhill and Honeywood were planted in 2004. They are just getting established and have not fruited.

Based on range of adaptability, cold hardiness, and its commercial acceptance elsewhere, we think this unusual fruit could be grown and marketed successfully in Wisconsin. Some pesticide use will probably be required.

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Grower Dale Secher discusses his work with unusual fruit.

¹ An independent agricultural consulting firm, the Hale Group, conducted the study.