

# Uncommon fruit crops with sustainability potential

Dale Secher, Carandale Farm, and University of Wisconsin-Madison Center for Integrated Agricultural Systems

Carandale Farm has been evaluating 42 unusual fruits since 2003 for environmental, social and economic sustainability. The goal is to find fruits that can be grown easily, without a lot of labor or chemicals. The fruit should be nutrient rich and appealing to consumers. The fruits must provide economic viability for the farm, which can lead to local job opportunities and feed into a cycle of regional development. Carandale owners Dale and Cindy Secher are developing a “short list” of unusual fruits that farmers can grow to develop local markets and local food systems. The Sechers score each fruit on several attributes, shown below starting with the highest ranking fruit. So far, eight fruit crops have rated high in the trials.



<b>Aronia</b> <i>(Aronia melanocarpa)</i>	<b>Economic potential</b>	
	Input requirements	Low
	First harvest	0-1 yr
	Machine harvest potential	High
	<b>Health characteristics</b>	
	Nutraceutical content	☆☆☆
	Vitamin & mineral content	☆☆☆
	<b>Environmental aspects</b>	
	Adaptability	Best
	Pest resistance	Best
	Invasive potential	Native
	<b>Marketing potential</b>	
	Fresh market	No
	Processing versatility	Yes
<b>Cultural information</b>		
Mature height	6'	Sun/shade ☾ ☀
Hardiness zone	3-4	Cultivars tested: Nero, Viking

Aronia is tops for commercial production potential. It is grower friendly with processing versatility and outstanding health benefits. It has good regional adaptability and very good pest resistance. The fruit is firm and has a long hang time after maturity, allowing for a long harvest season.



<b>European Black Currant</b> <i>(Ribes nigrum)</i>	<b>Economic potential</b>	
	Input requirements	Med
	First harvest	1-2 yrs
	Machine harvest potential	High
	<b>Health characteristics</b>	
	Nutraceutical content	☆☆☆
	Vitamin & mineral content	☆☆☆
	<b>Environmental aspects</b>	
	Adaptability	Good
	Pest resistance	Good
	Invasive potential	Low
	<b>Marketing potential</b>	
	Fresh market	No
	Processing versatility	Yes
<b>Cultural information</b>		
Mature height	6'	Sun/shade ☾ ☀
Hardiness zone	4-5	Cultivars tested: Ben Lomond, Ben Sarek, Titania

This fruit may have the highest overall quantities and balance of minerals, vitamins and phytochemicals of any known fruit. An IPM program with minimal pesticides can control diseases. Research and selection will result in pest resistant cultivars.



<b>Sea Buckthorn</b> <i>(Hippophae rhamnoides)</i>	<b>Economic potential</b>	
	Input requirements	Low
	First harvest	2-3 yrs
	Machine harvest potential	?
	<b>Health characteristics</b>	
	Nutraceutical content	☆☆☆
	Vitamin & mineral content	☆☆☆
	<b>Environmental aspects</b>	
	Adaptability	Best
	Pest resistance	Best
	Invasive potential	?
	<b>Marketing potential</b>	
	Fresh market	No
	Processing versatility	Yes
<b>Cultural information</b>		
Mature height	Varies	Sun/shade ☀
Hardiness zone	3	Cultivars tested: Hergo, Leikora, Titan

Sea Buckthorn is grower friendly. Mechanical harvesting could be a challenge, but is not insurmountable. One non-producing male pollinator is required for each 8 high-yielding female plants. This cold-hardy plant tolerates drought, poor soils and even saline conditions. Sea Buckthorn is a nitrogen-fixing shrub with no significant pest issues. Processing potential and health benefits are its keys to marketability.



<b>American Elderberry</b> <i>(Sambucus canadensis)</i>	<b>Economic potential</b>	
	Input requirements	Low
	First harvest	0-1 yr
	Machine harvest potential	Med
	<b>Health characteristics</b>	
	Nutraceutical content	☆☆☆
	Vitamin & mineral content	☆☆☆
	<b>Environmental aspects</b>	
	Adaptability	Best
	Pest resistance	V Good
	Invasive potential	Native
	<b>Marketing potential</b>	
	Fresh market	No
	Processing versatility	Yes
<b>Cultural information</b>		
Mature height	12'	Sun/shade ☾ ☀
Hardiness zone	3	Cultivars tested: Nova, York

American Elderberry is exceptionally grower friendly. It has limited fresh market appeal, but good processing potential. It has excellent health benefits and it is popular as a cold and flu remedy. American Elderberries appear quite pest resistant and could be grown without pesticides with little risk. Bird netting is a must for small plantings. This overlooked fruit has great potential, especially in southern Wisconsin.



<b>Economic potential</b>	Input requirements	Med
	First harvest	3+ yrs
	Machine harvest potential	High
<b>Health characteristics</b>	Nutraceutical content	☆☆☆
	Vitamin & mineral content	☆☆☆
<b>Environmental aspects</b>	Adaptability	Good
	Pest resistance	Good
	Invasive potential	Native
<b>Cultural information</b>	Mature height	Varies
	Hardiness zone	2
	Cultivars tested:	Smokey, Pembine, Parkhill, Honeywood
<b>Marketing potential</b>	Fresh market	Yes
	Processing versatility	Yes

**Saskatoon**  
*(Amelanchier alnifolia)*

Saskatoon is a North American native also known as Juneberry and Serviceberry. Adaptability appears to be cultivar specific, and pest susceptibility is similar to other pome fruits. Nutraceutical content is similar to blueberries. Pest intervention may be required on a commercial scale, although continued breeding and cultivar selection will improve grower friendliness. Saskatoon contains more protein, fat and fiber than most other fruits. Current processing demand is very high.



<b>Economic potential</b>	Input requirements	Med
	First harvest	1-2 yrs
	Machine harvest potential	High
<b>Health characteristics</b>	Nutraceutical content	☆☆☆
	Vitamin & mineral content	☆☆☆
<b>Environmental aspects</b>	Adaptability	V Good
	Pest resistance	Good
	Invasive potential	Low
<b>Cultural information</b>	Mature height	3'-5'
	Hardiness zone	4-5
	Cultivars tested:	8
<b>Marketing potential</b>	Fresh market	Yes
	Processing versatility	Yes

**Red, Pink and White Currants**  
*(Ribes rubrum, R. sativum, R. petraeum)*

While these currants cannot compete with black currants for nutraceutical value, they do rank high compared to other commonly grown fruits. They are the most grower friendly of the Ribes group, and less tart cultivars have fresh market appeal. They are well adapted to this region, are not an invasive threat and pest issues (leaf spot, anthracnose and mildew) can be addressed by using IPM and/or organic practices. Red currants have a clean, crisp taste that adds coloring and tartness.



<b>Economic potential</b>	Input requirements	Med
	First harvest	2-3 yrs
	Machine harvest potential	High
<b>Health characteristics</b>	Nutraceutical content	☆☆☆
	Vitamin & mineral content	☆☆☆
<b>Environmental aspects</b>	Adaptability	Best
	Pest resistance	Good
	Invasive potential	Native
<b>Cultural information</b>	Mature height	3'
	Hardiness zone	4-5
	Cultivars tested:	9
<b>Marketing potential</b>	Fresh market	Yes
	Processing versatility	Yes

**Gooseberries**  
*(Ribes uva-crispa, R. hirtellum)*

Gooseberries are only moderately grower friendly, but are well adapted to Wisconsin. Their unique flavor is good for both fresh eating and processing. While gooseberries have greater disease issues in the test plot than the other Ribes, this can be addressed by proper cultivar selection and continued plant breeding. American gooseberry mildew is the most serious disease and breeding programs have concentrated on developing resistant cultivars. Leaf spot and white pine blister rust are also problems. Gooseberries will require close scouting and occasional disease intervention, either organically or otherwise.



<b>Economic potential</b>	Input requirements	Med
	First harvest	1-2 yrs
	Machine harvest potential	Low
<b>Health characteristics</b>	Nutraceutical content	☆☆☆
	Vitamin & mineral content	☆☆☆
<b>Environmental aspects</b>	Adaptability	Good
	Pest resistance	Good
	Invasive potential	Low
<b>Cultural information</b>	Mature height	22'
	Hardiness zone	4
	Cultivars tested:	Aromatnaya, Kuganskaya
<b>Marketing potential</b>	Fresh market	Yes
	Processing versatility	Yes

**Russian Quince**  
*(Cydonia oblonga)*

Quince is more grower friendly than most other commercially grown tree fruits, but our test varieties are susceptible to fire blight. It is not an invasive threat, seems to have good regional adaptability, blooms late to avoid spring freezes and has demonstrated pest resistance. Quince have fewer carbohydrates and higher nutritional value than apples and are used to add flavor to applesauce. The fruits are dense, firm and aromatic with some fresh market appeal. Fruits are large (nearly one pound each) and bruise resistant. Freezing temperatures may improve texture and long-term cold storage may be possible.