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Developing production, processing and marketing of aronia berries on small family farms in southeast Iowa

Abstract

ISU Extension and Outreach specialists worked with several stakeholder groups to educate southeast Iowa farmers about the aronia berry, a crop new to Iowa with potential for market growth.

Keywords

Fruit and vegetables, Market research and feasibility studies

Disciplines

Entrepreneurial and Small Business Operations | Fruit Science | Horticulture | Marketing



Developing production, processing and marketing of aronia berries on small family farms in southeast Iowa

Abstract: ISU Extension and Outreach specialists worked with several stakeholder groups to educate southeast Iowa farmers about the aronia berry, a crop new to Iowa with potential for market growth.

Principal Investigator:

Patrick O'Malley
ISU Extension
Iowa City, IA

Budget:

\$15,544 for year one
\$10,103 for year two

Q Could a potential new and valuable crop, “aronia,” be successfully produced and marketed by a set of newly trained growers?

A The final answer is not in, but looks very promising. Since the conclusion of this project two of the four original growers have added additional plantings of aronia. The first real harvest would have been in fall of 2012, but April 2012 freeze greatly reduced yield. Claude Nicholson marketed aronia products (frozen berries and juice) originally obtained in Omaha (Superberry) at his farm in 2010 and also had berries he sold in 2011.



MARKETING

Background

Aronia was selected for this project because it is native to the United States, has no known serious pests, is well adapted to Iowa and is easy to grow organically. Because of the increased interest in healthy foods, the popularity and demand for aronia is increasing in the United States and worldwide.

The work was needed because there had not been a study of this new commercial crop in southeast Iowa. Partners in the project included ISU Extension and Outreach representatives, growers and marketers for Hometown Harvest of Southeast Iowa, and the Iowa State Horticultural Society and its affiliate organizations.

Objectives for the project were to:

1. Select four small family farmers in southeast Iowa to participate in the project.
2. Implement a training program that will teach farmers to:
 - A. Grow aronia berries for commercial production,
 - B. Process and add value to aronia berries, and
 - C. Market aronia berries and products made from aronia berries to the local community and commercial producers of wine, fruit juices and food products.
3. Develop educational presentations about aronia berry production, processing and marketing.
4. Deliver educational programs at field days, workshops, meetings and conferences.

Approach and methods

A group of small family farmers interested in diversifying their farms by exploring the risks and benefits of aronia berries were chosen to participate in the project. The selection process was based on a list of criteria and an application form developed by the principal investigator and co-principal investigator. Interviews of selected candidates were conducted by the principal investigator.



Aronia berry plants

Several prospective participants were identified prior to starting the project. Others were recruited using news releases, radio advertisements, and educational programs co-sponsored by ISU Extension and the Iowa State Horticultural Society. After an informational meeting the selections were made, and a three-part training program was initiated with these elements:

1. Cooperators learned about the health benefits, economic opportunities, sustainability of aronia berries, their grower-friendly attributes and production practices used in western Iowa and Eastern Europe.
2. Cooperators toured successful aronia berry plantations in western Iowa. This was an opportunity to learn first-hand about the successful production, processing and marketing practices used there.
3. The project assisted farmers with crop establishment, processing possibilities and market establishment for locally-grown aronia berries.

Farmer cooperators were Claude Nicholson, Fairfield, (planting at home address in Jefferson County); Don Smith, Crawfordsville, (planting at home address in Washington County); Gary Twedt, Ottumwa, (planting in northeast Davis County, south-east of Eldon); and Martin Lucas, Des Moines, (planting in Keokuk County, south-east of Sigourney).

Results and discussion

The four project participants initially planted approximately five acres of commercial aronia plantings in fall 2009 and spring 2010 in four southern Iowa counties (Jefferson, Davis, Washington and Keokuk). Numerous other producers in the area established in excess of 10 acres of aronia as a result of the informational meetings and association with project participants.

In 2010 there was a field day hosted by Claude Nicholson and Patrick O'Malley in late June at the Nicholson farm near Fairfield, and an October post-harvest wrap-up meeting, also in Fairfield. The last year of the project (2011) focused on working with cooperating farmers to determine best management practices along with assisting the farmer cooperators with market development.

As expected, the cooperators experienced some crop browsing from deer and rabbits (generally less than 10 percent, except for the grower in Washington County, who experienced some damage on greater than 50 percent of the plants). At the Davis County site, an unexpected cause of damage was from snowmobile traffic.

One of the cooperators, who has a vegetable farm, marketed berries (fresh, frozen and in baked products) and juice (both of which were obtained from a western Iowa source), at southeastern Iowa farmers markets and on farm. According to this grower, acceptance of the various aronia products was very high, and the grower opted to plant two additional acres in fall 2010.

On the processing end, an initial berry analysis was conducted by the Midwest Grape and Wine Industry Institute in the Department of Food Science and Human Nutrition at Iowa State University. Although this analysis was based on only a few samples,



Ripe berries

there was a clear difference between the juice from Iowa-grown aronia berries versus the pure aronia juice processed in Germany, presumably from Eastern European berries.

For U.S. marketing other than for fruit consumption, aronia juice might be sold to a juice blender that custom blends several fruit juices for other users. Aronia juice also is included in mixed juices for its high anthocyanin content that yields a deep purple color. An appropriate measurement to include would be Hunter ColorLab values. One U.S. fruit juice processor said that the Hunter measurements were the most important characteristic monitored on inbound aronia juice because the aronia is used mainly for its color.

ORAC (Oxygen Radical Absorbance Capacity) values are cited by nutraceutical processors as the most important indicator of juice quality because they use aronia for its high antioxidant activity components. ORAC is considered an acceptable laboratory method for estimating antioxidant activity of foods in human tissue. The USDA table of ORAC values lists the value for raw chokeberry (aronia) at 15,280 $\mu\text{mol TE}/100\text{ g}$, nearly three times the value in blueberries and blackberries and one and one-half times the value in black currants and cranberries.

A point of concern when dealing with aronia was the potential for invasiveness when introduced into new environments. This question was posed to experts at Iowa State University. Robert Hartzler, Extension Weed Specialist and Professor of Agronomy, responded that growers should not rule out the threat of aronia spreading from cultivation, but the genetic evidence suggests it should be a relatively low risk.

Conclusions

The highly nutritious aronia berry can be grown in a sustainable manner in southeast Iowa and adapts well to organic production practices. Yields for southeast Iowa have not yet been determined, but the expectation is that yield would range from 15-30 pounds per mature plant (approximately 5-6 years old).

Potential threats are snowmobilers, deer, rabbits and spring freezes, with deer posing the biggest problem. Fencing or deer deterrent products should be used in areas with high deer pressure. Rabbits are less of a problem, however, when plants are young, rabbits can easily chew off stems. The best restraint for rabbits is to have no unmowed areas within 100 feet of any aronia berry planting.

Since aronia is native to the Midwest, it was thought that spring freezes would not be a problem, based on personal observations over the past decade. Perhaps the spring freeze of 2012 that greatly reduced the aronia crop was a one-time event. However, it would be prudent if future growers did not locate their plantings on the lower part of slopes. Another potential threat is the spotted wing drosophila (SWD), a type of fruit fly. At this point researchers are not sure if and/or how it may affect the aronia-growing industry.

Impact of results

The project increased diversification of small family farms in southeast Iowa by demonstrating the feasibility of production, processing and marketing of aronia berries. It helped develop new markets and effective networks for selling this new crop. This aronia project complemented local food system work being done by Hometown Harvest, a collaborative community food system development effort in southeast Iowa. Aronia also can have a positive environmental impact because it is a native perennial plant that is easy to grow organically with erosion-controlling grass planted between the rows.

Goals achieved through this project:

1. Establishment of commercial aronia plantings that can be used for future studies and projects.
2. Improvement of the land and environment by use of sustainable organic farm methods.
3. Creation of a new niche agricultural industry for small family farms.
4. Incorporation of organic aronia berries and related products into the daily diets of consumers.

Education and outreach

A website on aronia information appears on the Agricultural Marketing Resource Center (AgMRC) website at: http://agmrc.org/commodities__products/fruits/aronia_berries.cfm

Results of the project have been and will be disseminated by:

1. Educational presentations at field days, workshops, meetings and conferences;
2. ISU Extension news releases about the sustainability of aronia berry production, marketing and food systems;
3. Local and statewide newspaper articles and radio announcements;
4. Articles in electronic and hard copy format in newsletters; and
5. Field day on cooperators' farms.

Leveraged funds

Additional time, effort and expenses of nearly \$10,000 spent by the growers were not covered in the grant.



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