



Perennial Berries

A FLAVORFUL SOLUTION TO ECOSYSTEM AND FINANCIAL CHALLENGES

Overview

Perennial fruits planted in buffer strips offer a potential solution to both nitrate losses in the ecosystem and financial losses in farming systems. Berry production can be incorporated into buffer plantings. Additionally, perennial fruits planted elsewhere offer opportunities for reducing fertilizer loss across the landscape. Demand for fruit is still increasing due to its health benefits. In addition, the majority of fruit production occurs in the western U.S., conflicting with an increasing desire for locally produced fruit. Increased local fruit production can potentially be achieved by planting perennial fruits in agricultural watersheds, helping to meet market demand while simultaneously enhancing water quality and soil health.

Berry crops grow in a wide range of habitats, covering the diverse environmental conditions in agricultural watersheds throughout the state. For instance, elderberry (*Sambucus canadensis*) and raspberry plants can grow in diverse habitats, including those found in buffer strips. Many berry crops feature widely spreading, shallow root systems which provide erosion control. These plants provide ecosystem services, such as food and habitat for wildlife and native pollinators, and reducing soil erosion while enhancing water and soil quality. These crops improve biodiversity on farms, diversify farmer profits, and increase availability of locally-produced berries.

Research Status and Goals

Investments made in faculty, post-doctoral researchers, graduate students, technicians, farmers, and sites support plant breeding, production research, and outreach on fresh market berry crops.

The overall goal of the fruit breeding program is to combine winter hardiness for northern zones with high fruit quality. This program has historically worked on a number of different species including strawberry, raspberry, blueberry, and currants. To date, the program has released eight blueberry cultivars, most recently “Pink Popcorn.” The strawberry and raspberry breeding efforts are smaller with three strawberry and two raspberry cultivars released over the last 30 years. Two black currant cultivars were released in collaboration with the Scottish Crop Research Institute in 2013.

Production research has focused on management practices to reduce weed, insect, and disease pressure, in addition to season extension strategies. The project on weed control has been ongoing for more than 15 years with a collaborative project among researchers on the University’s St. Paul campus, West Central Research and Outreach Center, and farmers interested in growing berries. This work is detailed in the ebook “Cold Climate Strawberry Farming,” a project funded in part by the Walmart Foundation. Weed control research has also been funded through USDA-SCRI, the Minnesota Department of Agriculture, and grower organizations. Insect control continues to be a challenge for berry growers. The latest insect to infest berry crops across the U.S. is spotted wing drosophila. Work on understanding the life cycle and control options at the University has been funded through USDA-OREI, USDA-NIFA, and grower organizations.

Pilot Studies

Pilot studies will focus on establishment strategies for perennial berry crops for use in the fresh and processed markets. For fresh market berries, we will identify farms representing diverse soil types around the state for demonstration plantings and to host field events for farmers in the area. We will work with these farmer collaborators to develop commercialization strategies for these fresh berries. For processing berries, we will identify collaborators with newly established buffer strips. We will establish perennial berries on each site, inter-planted with non-competitive, flowering cover crops. Treatments will consist of varying intensities of maintenance related to weed management, irrigation, and fertility. During establishment years, we will collect data on plant vigor, survival, and early production.

As plantings age, we will measure ecosystem services at each site. These results can be compared to buffer strips at similar sites that are planted in native grass or other control standards.

Commercialization Plan

Berry crops are primarily direct-marketed to consumers. With demand for locally produced berries increasing, there has not been an increase in market outlets or production. For example, in 2013 the annual per-person consumption of fresh strawberries in the U.S. was 7.9 pounds; Minnesotans only eat 0.72 pounds of strawberries from local sources on average each year.

With this demand, there is a market for berries in Minnesota. Currently, only 790 acres of farmland are dedicated to berry crops in the state, and an estimated 100,000 acres of farmland will be dedicated to buffer strips with the new Buffer Law signed in April 2016. If even one percent of that acreage is dedicated to berry crops, it would more than double the amount of local fruit available to consumers. We will continue to work with our partners to bolster berry marketing strategies for Minnesota farmers and increase awareness of locally produced berries among consumers.

Recent market studies in the U.S. have shown potential for specialty berries used in juices. However, U.S. production of these berries is low. An estimate of elderberry production in the U.S. is less than 1,000 tons, and in 2013 more than 95 percent of elderberry used in the U.S. was imported from Europe. To develop this type of market in Minnesota, equipment for juicing is needed. Established Minnesota wineries own juicing equipment and have expressed interest in using that equipment for other berry crops.



TIMELINE

2020 THROUGH 2024 AND BEYOND

In addition to ongoing plant breeding, production research, and outreach on fresh market berry crops, we will analyze costs and benefits of processing. Such an analysis will also allow farmers and processors to plan future decisions about value added juices. Significant long-run opportunities exist for processing berry harvests as dried, powdered and frozen ingredients for the functional beverage, alcoholic beverage and natural colorant categories, both domestically and for export.