

Department of Agriculture, Trade and Consumer Protection
Division of Marketing
Agricultural Development & Diversification Program (ADD)

1997 Grant Project Final Report

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Final Project Report - October 1997 through September 1998

ADD Contract #12002 Commercial Lingonberry Production.

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Project activities for the period October 1997 through September 1998 include out-reach activities, normal maintenance activities associated with the growing season, test plot variety evaluations, planting and preparation work on new lingonberry beds, propagation activities, design, and preliminary evaluation of the shade cloth structure, and preparation of lingonberry beds for winter.

We have provided approximately twenty Lingonberry tours for interested people - several of these tours were to Wisconsin residents with some interest in growing lingonberries on a small commercial scale. We also had over a dozen mail or email inquiries about the project and spent many hours responding to these requests. We deal regularly with questions about the "Lingonberry Project" from our blueberry and raspberry customers. Many of our regular customers are quite interested in the progress of the project and are looking forward to samples of the berries in the coming years. We had a large influx of Russian ethnic customers this year - many of whom were fascinated with the lingonberry project. Additionally, we have been involved in several requests from media outlets interested in doing stories about the lingonberry project. These range from radio and television to newspapers and tourist oriented publications. Approximately 28 media stories have been generated since the lingonberry project started. This has resulted in both good "advertising" for Rush River Produce and some very good press for the ADD program. Copies of several of the printed articles are included at the end of this report.

Normal maintenance of the test plot and commercial production beds has been very labor intensive. These maintenance activities include weeding, irrigating, mulching and related activities. Weeding lingonberries is very important and this activity, for the existing acre of test plot and commercial production beds, requires from eight to sixteen man hours per week. Irrigation must be performed during dry periods and can take an additional one to two hours per week. Irrigation activities have been reduced as a result of lessons learned during the last grant cycle. Mulching of the lingonberry plants is important to maintain soil moisture and cool soil temperatures, to promote good soil health, and allow lingonberry rhizomes a friable soil to spread through. Occasionally there are other activities involved in lingonberry bed maintenance. These include bed repair due to erosion from heavy rain, perimeter spraying for weed control, and fertilization.

Test plot variety evaluations have been conducted on a monthly basis through this period of the study. The study started with 38 varieties of both named and numbered selectidns from a variety of sources, mostly from Dr. Eldon Stang, of the University of Wisconsin, Madison, with others acquired from commercial sources. The total number of varieties increased to 40 in June of 1997 with acquisitions from commercial sources. After the occurrence of flingal root rot in July 1997 the number of varieties declined to 33. Seven varieties having succumbed to the root rot. These varieties were generally of lower vigor and performed poorly in the monthly evaluations on most or all scales for the previous year and a half This means either that they were less vigorous varieties or that they were simply more susceptible to root rot and may have been suffering from low levels of infection all along.

Current census of the test plot includes 650 lingonberry plants of 31 different varieties. Most of these varieties are spreading at rates that will allow rapid propagation of the better test plot varieties. Two new lingonberry varieties, recently introduced in Sweden, should be available in the spring of 1999 and will be added to the test plot for evaluation at that time. A dozen varieties in the test plot have excellent overall vegetative and fruiting characteristics and show good commercial potential under the existing growing conditions at this site. Named varieties performing well include Erntekrone, Koralle, Regal, Erntesege, Sanna, Mosovia, Scarlet, and Ammeland. Unnamed varieties doing well include C-3 1-2, C-i 8-2, and C-26-2. Some of these varieties were not on the list last year, while some varieties that were on the previous list have been removed. All surviving varieties show greatly improved growth and vigor. This is a result of the use of appropriate fungicides to control root rot and reduced irrigation activities which reduce root rot pressure on the lingonberries. The informal rating scale used during monthly lingonberry evaluations has had to be expanded from a 0 - 5 scale to a 0-7 scale to express the great improvement in plant growth and vigor.

A total of nearly seven pounds of lingonberries were picked during the 1998 season. Five pounds were picked in early July and nearly 2 pounds in early October. The useable summer crop was reduced by high temperatures during ripening. The lingonberries ripen close to the soil. Bright sun and resultant high soil temperatures during ripening cause the berries to cook and spoil on the bush resulting in lower production of useable berries. The highest producing varieties of lingonberries were Masovia, Sanna, Splendor, Koralle, Animeland, Erntekrone, Sussi, C-6-10, and C-31-2.

Research directions for the next grant cycle, October 1998 through December 1999, include the study of the use of shade cloth to reduce soil temperatures during the summer berry harvest resulting in an increase in the percentage of useable berries. We will also investigate the use of shade cloth to alter the production cycle of the lingonberry to shift production of berries to the fall harvest when soil temperatures will be naturally lower, resulting in higher production of useable berries, and coinciding with the natural marketing season for lingonberries - the Thanksgiving/Christmas holiday season.

A new commercial plot, 50 x 300 ft., was prepared in 1997 and planted in the spring of 1998. 1400 plants of seven varieties, Koralle, Red Pearl, Erntekrone, Erutedank, Masovia, Sussi, and Sanna were planted in May, 1998. Post planting mortality in this plot was very low, less than five percent. Overall plant mortality in the test plot and commercial plots was very low, with very little disease symptoms apparent. Lingonberry plants in both commercial plots are establishing rapidly and beginning the rhizome development and spreading characteristic of a healthy lingonberry planting. With the reduction in root rot pressure the plants are developing much more rapidly and spreading more rapidly than in past growing seasons.

Propagation activities included digging and planting rhizomes from the better performing plants in the test plot, and preparation and maintenance of a seedling plot. Approximately 150 rhizome cuttings/plugs were taken from the test plot in the spring of 1998 and transplanted into empty areas in the test plot and into the commercial beds. With the increased plant vigor resulting from better growing practices the supply of rhizome cuttings has increased many fold and should be able to supply much of the plant material needed for expansion of the lingonberry planting in the future. Success of the transplanting effort has been about 80%, a very acceptable success rate. The attempt at starting new plants as seedlings on the other hand was a total failure. A 30 foot section of row was dedicated to seedling production. The row was tilled, seeded with lingonberry fruit, and kept weed free. No seedlings were observed during the 1998 growing season. The seedling test row will be maintained for the 1999 growing season, just in case the seeds remained dormant during the first year, but this attempt at propagation will be discontinued after that time if there are no results.

A shade cloth structure was designed and installed in early August of 1997 to cover part of the commercial planting. The variety covered was Koralle. The shade cloth, 30% shade, was installed on a frame of 1 1/2 inch PVC pipe held up by light weight electrical fence posts. The shade cloth was left in place for about seven weeks before removal at the end of September to facilitate replanting the field and spraying with fungicide. While the seven week test is not conclusive there is strong evidence to indicate that the plants shaded for this period were larger and survived and/or recovered from the root rot better than plants of the same variety not covered by shade cloth. The shade cloth structure was not replaced during the 1998 season due to the press of work in other areas of the farm.

The shade cloth experiment will be resumed and expanded to four test areas in the 1999 season. Plot 1. Shade cloth (black) installed in May and removed in mid July after harvest, Plot 2. Shade cloth (black) installed in mid June prior to harvest for removal in late September. Plot 3. Mylar (reflective) shade cloth May through July. Plot 4. Mylar (reflective) shade cloth late June through late September. The different treatments are designed to test the impact of the different types of shade cloth on soil temperature and berry quality, and to determine the impact of the shade cloth treatments on flower initiation and seasonal bearing patterns.

Problems with fungal root rot infection were not apparent during the 1998 growing season. Preventative applications of Ridomil in the spring, and Aliette after the July harvest, combined with reduced irrigation inputs, were successful in virtually eliminating all root rot problems. The Lingonberry plants show greatly increased vigor as individual plants, in their rhizome production, and in the development of fruit and flower buds. We have applied for an IR-4 Minor Use Pesticide exemption to allow the use of these chemicals on lingonberries produced for sale. The application is in process and we expect a ruling at some point in 1999.

The lingonberry beds will be prepared for winter by covering the plants with floating row cover to protect them from cold and desiccation by the winter winds. Snow fence will be installed around the plantings to further insulate the lingonberry plants from winter winds and low temperatures. On the whole we are very satisfied with this form of winter protection and plan on continuing the use of this system.

We feel that the experience gained in the last year indicates that healthy vigorous lingonberry plants can be grown at this site. Fruit bud initiation visible at the end of the 1998 season indicate a very significant increase in fruit production during the 1999 season.