

# **FNE02-405 Reclaiming a Sandpit: Fruits of the Labor of the Community School**

## **2002-2006**

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### **Introduction**

Our cranberry bog project started when our land abutter in South Tamworth, New Hampshire, an exhausted sand\gravel pit, was required to reclaim the pit area by the state. Sewage sludge was proposed as one additive that could turn the old pit into green open space. Currently, some 750 sandpits in New Hampshire lie atop glacial outwash plains, aquifers which contain drinking water. The Community School's property is located over part of this aquifer. In our area, we successfully opposed the use of sludge on the pit floors because we were concerned the heavy metals in the sludge would go directly into the ground water. So the Community School, a small, progressive school for 7<sup>th</sup>-12<sup>th</sup> graders, which also operates a four-acre certified organic vegetable farm, joined forces with the sandpit owner to look for another sustainable solution. What could sandy soils produce that would require few or no additives? How could sandy soils be farmed intensively over long periods of time without polluting the ground water? We began looking at native cranberries and other wild plants already growing in the abandoned pit and worked with the owner to develop the cranberry project.

### **Our goal for this project**

We made it our goal to research the feasibility of commercial organic farming of two native crops on exhausted gravel pits. The first crop was native wild cranberries, to harvest and propagate for the holiday market. The second was wetland flowers, sold as plants, plugs, or vegetative mats, for the gravel pit reclamation market. The purpose of the project was to see if such crops could be grown, harvested and marketed competitively with other pit reclamation approaches, specifically non-organic methods which may contaminate ground water reserves.

### **How we proceeded**

#### ***Year 2002***

The first job was to stake out a plot in the abandoned pit. Students mapped out this plot using the school's GIS computer system, locating it on top of the USGS clip of the aquifer and UNH maps of the political landmarks. In July 2001 a nine by nine foot plot was created and this was divided into nine sections. There were three types of cranberry plantings: unrooted clippings, six inch mats with roots intact, and clippings put in four inch pots with the hopes of digging them up to sell as wetland potted plants. The three controls of each of the plantings were 1. just pit sand (no additives), 2. pit sand amended with compost, and 3. pit sand amended with peat moss (see the table below. ) The clippings and mats were collected from a 3 acre established bog adjacent to the abandoned sand pit. The test plot was watered daily with a battery-powered submersible pump from a water hole dug next to the plot. The water hole was easily done with an excavator since we were at water table level. It was a very dry summer, though, and we found it challenging to keep these delicate plants sufficiently watered. Establishing the cranberry test plot took more time than estimated so the research with the wetland plants was postponed until 2003.

cranberry clippings	cranberry clippings	cranberry clippings
sand	compost	peat moss
6" mat	6" mat	6" mat
sand	compost	peat moss
4" pots with plant clipping	4" pots with plant clippings	4" pots with plant clipping
sand	compost	peat moss

After the first light frost in the fall of 2002 students from the Community School harvested fruit from a 3-acre natural cranberry bog located in the working sandpit, adjacent to the abandoned pit. They hand picked and used hand-made cranberry rakes to bring in the harvest. The fruit was then cleaned using a blueberry winnower we borrowed from neighbor farmer, then sold at the school's Christmas Fair and used to cook with in the school kitchen. There is a window between a light frost, which crisps up the berries, and a hard killing frost, which will damage the fruit, where the berries will keep for quite a few months if maintained at cool temperatures. These berries are a better value because of the shelf life. No accurate record was kept of the amount harvested, but a good estimate is around 100 lbs. The price charged was \$4.00 per pound.

### *Year 2003*

In the spring of 2003 we found there was very low survival rate of the test plot. With this discovery it was decided to abandon the test plot for the cranberries. As for researching the viability of wetland plant production this was never followed through. The school did continue harvesting the cranberries in the established three-acre bog. This was a prosperous route to pursue. The three-acre established bog, which we harvested from in 2002, we found to take virtually no maintenance. We simply mowed it every other year in the early spring before the plants broke dormancy. This keeps the trees from coming in and also trims the runners and encourages new uprights, which are where most of the berries grow. Dr. Bill Lord, fruit specialist from UNH Cooperative Extension, came and assessed the bog and told us the "key varieties in use today are simply wild selections from 100 or more years ago." In 2003 the school's farm crew was brought in to help with the harvest and the marketing of the berries. At the Sandwich Fair we entered in the commercial farm display category and promoted our new product. A local natural food store sold as many as we could bring to them. A local jam maker bought a large quantity to make a cranberry jam. It was an early harvest so we had them to sell at the school farm stand, Harvest Festival, and Christmas Fair. The 2003 yields were approximately 200 lbs. Again we charged was \$4 per pound.

### *Year 2004*

The word started to get out about the cranberries. In 2004 we extended our current organic certification to cover the cranberry bog. We were the first farm to have a certified organic cranberry bog in New Hampshire. With this new label we were able to charge a premium for the product. We spruced up our packaging and labels to brag about our new status. We found that organic cranberries offered through different co-ops were packaged in 8 oz. quantities or smaller,

so we changed from 1lb. to 8 oz. packages. We charged \$5 per pound and \$3 per half pound. We used the same outlets to market the cranberries, plus we had enough in the freezer in the spring of 2005 give to our CSA members. This was a welcome surprise to the members, since the spring CSA bags are usually so full of greens. In year 2004, the harvest quantity was about 300 lbs. In 2004 the school partnered with a local creamery to make cranberry ice cream. The school made the cranberry conserves which the creamery used to make the ice cream. The cranberry ice cream was introduced at Watershed Weekend, an event that offered lectures and environmental programs on water quality put on by the Green Mountain Conservation Group.

### *Year 2005*

This was the best year ever despite the heavy rains in the fall. This natural bog does not have irrigation control so we are at the mercy of Mother Nature. Fall 2005 saw heavy rains and the water table was up. The cranberries were underwater and long handled rakes were used to free the berries from the plants which then floated to the surface. The pickers were out scooping them up in waders. We continued to market at the same outlets and added a restaurant that used the cranberries on their house salad. Amount harvested: 500 lbs. This year we increased our price to \$4 for an 8 oz bag and if people bought more than 5 lbs. we asked \$6 per pound. In addition to raw cranberries and ice cream, a cranberry rhubarb jam was made and sold at school functions.

### *Year 2006*

This past fall we ran into some time issues. We had relied in the past on student labor for hand harvesting. The students were not as available this year as in years past. We harvested only 250 lbs. of cranberries, not enough to keep up with local expectations. We kept the same price as the year before and only sold at the farm stand, to CSA members and the Christmas Fair. The next product we want to develop is dried cranberries, one of the most lucrative value-added products.

### **What we learned**

#### *From the growing prospective*

From the initial test plots in 2002 we found that transplants need to be planted in very early spring before the plants break dormancy. During that time of year Mother Nature helps more in the watering department and the temperatures are more favorable. We learned that by preparing the bed by digging down closer to the water table and filling it with a mixture of sand and peat moss a more suitable site for propagation is created. Cranberries do grow well in sandy soils, but usually an organic layer helps keep it evenly moist

In the future, taking care of the existing natural bog will involve adding a half-inch of sand every two to three year to the beds to reinvigorate them, also reducing the weed germination. Mowing will continue every other year. No fertilizer, pesticide, or herbicide, organic or other, has been applied to this bog. We have observed very little if any pest pressure; few or no disease problems, and the plants seem to be more drought resistant. From our observations we might conclude that because this is a natural bog all of the ecosystems are in a natural balance.

## *From the harvesting and marketing prospective*

Cranberries are a labor intensive crop to harvest. We do not have irrigation control so we dry pick or wet pick, depending on the weather and the water table. As much as the school encourages the participation of the students with the whole process, the harvesting needs to be more efficient and reliable since the time between the light frost and killing frost is unpredictable--kind of like the saying you've got to "make hay when the sun's shining."

We feel it would be a worthwhile investment to purchase a small, mechanized harvester, which we estimate would pay for itself in two years. We have built our own winnower screen by making a ramp, the top part of which is 1\2" hardware cloth and the bottom 1\4". A canvas underneath catches the chaff and any good berries that might go through. We run this again through the 1\4" screening to get the smaller berries. Again, the purchase of a mechanized winnower would only make it more efficient and get the cranberries to the public sooner. The mechanized harvester would be priority over the winnower.

There is a great demand for cranberries and the market for them is now year round. There are many value-added products that can make the labor-intensive cranberry crop more cost-effective, such as dried cranberries, ice cream, cranberry sauce or relish, jelly or jam, and juice.

Wetland plants such as the cranberry have recently attracted interest as a potential nursery product. Propagating the plant and selling the rooted plant to commercial and home gardeners, landscapers, and even sandpit owners looking for an alternative to reclaim their exhausted sand pits, is a potential market. Home owners now buy them for wetland or pond gardens. A larger market might be developers to reclaim a site and for landowners who must repair damaged wetlands. The plants can be sold as a one year plants, but because the plant will not produce fruit until the third year, one would probably get a better price if the plant grew in the pot for three years, then sold to be planted and harvested that year.

## **Conclusion**

We have written about the cranberry project in several newsletters and newspaper press releases. A Canadian making a film about sludge and disposal interviewed the director of the school. At the 2004 Harvest Festival we brought people on a tour of the bog, and they helped harvest and clean the berries too. We provided handouts about the bog and all the unique ways to use the cranberries. We will continue to educate the public about the cranberry. The income from the harvest helps the farm economically, the students are involved with the whole process, and the community benefits in a quiet way because their ground water stays clean.

With this information, we encourage farmers to reach out to their local sand pit to investigate the possibility of harvesting and or expanding an established cranberry bog or finding an exhausted bog that needs to be reclaimed. Creating a bog takes a lot of time and money: excavating the site, installing irrigation, making layers of organic matter and sand, buying the plants, and paying permit fees; and time, because it takes three to five years to establish the bog and get it ready to harvest. Using an established bog is a quicker return on your input, although creating a new bog increases the number of bogs available in the state to harvest from.

Cranberries are one of three fruits native to North America, the other two being blueberries and Concord grapes. Because cranberries are now thought of year round, not just as Thanksgiving or Christmas fare, this is the time to get in on the wave and promote the uses and all the products that derive from cranberries. Many resources support the farmer in pursuing the creation of a bog or utilizing an existing one. Two particularly helpful websites are [www.umaine.edu/umext/cranberries](http://www.umaine.edu/umext/cranberries) and [www.umass.edu/cranberry/cranberry/seasons](http://www.umass.edu/cranberry/cranberry/seasons). Look on the internet to find many other cranberry growing stories.