

The first goal of this project, Sorghum Syrup Production in Vermont, was to grow sweet sorghum and process it into sorghum syrup by utilizing our maple sugaring equipment. The second goal was to develop a market for sorghum syrup in Southern Vermont.

Our farm is located in N. Bennington, Vermont and consists of about 100 acres. We produce maple syrup, honey, and milk, as well as sorghum syrup this year. Our land is used to grow the crops needed for these products; corn, hay, sorghum, oats, and a maple sugar bush.

The cooperators for this project were John and Betsey Williamson, G. H. Grimm, Co. (maple sugaring equipment manufacturer), and Whitmans Feed Store. John and Betsey were responsible for the crop seed purchase, planting, cultivating, harvesting, boiling, canning, and marketing. G. H. Grimm, Co. manufactured a sorghum evaporating pan to fit our maple sugaring arch. Whitmans Feed Store did the soil sampling, advised on conditioning the soil, and provided the feed value analysis of the sorghum plant.

We purchased six varieties of sweet sorghum seed from Tennessee producers. A three acre plot was plowed and prepared for seeding in the second week of May. Eight, nine hundred foot long rows of each variety were planted. When

the plants emerged we cultivated weekly using an ATV (four wheeler) pulling a homemade cultivator. We used no herbicides and continued to cultivate until the plants were three feet tall. In June we went to Tennessee to talk with sorghum producers and purchase a cane press. We spent the rest of the summer getting the cane press and equipment ready for harvest.

The first variety of sorghum was ready for harvest Sept. 4, 1995. Lots of interested people showed up to help cut and press the cane for the first run of syrup. Sorghum looks much like corn, and we cut the twelve foot stalks with a corn knife. We placed the stalks across a wagon in one direction and let the seed heads hang over the edge one and a half feet. When the stalks were two feet deep on the wagon we used a chainsaw to cut the seed heads off, as they can't be run through the press. The loaded wagon was hauled to the press that was located near the sugar house. The sorghum stalks were fed into the press which works like a heavy duty clothes wringer. Steel rollers squeezed the juice from the stalks, and the juice flowed down a pipe and through a screen, into another pipe, through a maple sap filter, and into a storage tank. After settling all night the juice was gravity fed into the four by fourteen continuous flow wood fired evaporating pan. The juice entered the front pan over the fire box and the syrup was drawn

near the chimney. Constant skimming takes place while boiling to remove the green scum that accumulates. When the syrup reaches 230 degrees it is drawn off and filtered through three layers of honey filter into the canning tank. A fan blows cold air on the bottom of the canning tank to reduce the temperature of the syrup to 160 degrees in order to prevent the syrup from darkening. At this point the syrup is canned in plastic retail sorghum containers. After the canning is completed the evaporator pans are allowed to cool over night, and the following day everything is cleaned for the next boil. The sorghum pans have to be cleaned with an acid to remove residues, and everything else is washed with water.

We boiled five times and averaged 25-30 gallons of syrup per boil. The sugar content of the raw juice averaged between 13 and 16 percent sugar when measured with a refractometer. Seven or eight gallons of juice were required to produce one gallon of syrup.

Our biggest accomplishment was that we proved sweet sorghum syrup could be successfully produced in Vermont. We learned many things throughout our first try at it. When we began our inquiry of sorghum production it became increasingly clear that there were more than a few ways of doing things. We soon concluded that there were as many

correct ways as there were producers, advisors, and story tellers. Sorghum is a traditional crop in the southern states and we obtained most of our information from this region. We found that sorghum is relatively easy to grow and doesn't require much land to produce a significant amount of syrup. Obtaining the necessary equipment was a challenge, as there is none available in our area. Sorghum presses are scarce, and we were lucky to locate a small one in Tennessee that was in good shape. My original plan was to boil sorghum syrup with maple syrup pans, but they aren't interchangeable and sorghum will burn if it is boiled in maple pans.

G. H. Grimm, Co. offered to build a sorghum pan as an experiment. They have a great interest in this project. If a sorghum industry develops it could have a great impact on their business. There is a possibility that an evaporator pan could be developed to boil both maple and sorghum syrup.

We had two things happen that were unexpected. When the sorghum seed heads blossomed twenty colonies of bees worked the crop heavily. I am not sure of the amount of honey they secured from it, but sorghum flowers produce a major source of pollen for them to gather.

The second thing we discovered was that cows love sorghum. Our sugar house is located in our pasture. While pressing sorghum the cows would gather around and eat the pressed

stalks. They liked them so well they became a nuisance. We piled the stalks in the corner of the pasture and they ate all that we pressed. Sorghum samples were analyzed for feed value and it is equal to or greater than corn. This by product could be utilized for cattle feed, and I would like to experiment with it more.

At the start of this project we were told by the seed producers that our growing season may not be long enough. Four of the six varieties we planted fully matured before the first frost. We had a very dry growing season, and the sorghum spent most of the summer trying to survive the drought. If there had been adequate rain fall I think all the varieties may have matured in time. There are many varieties of sorghum and it will take experimentation to find the best for our area. Good quality sorghum syrup is a desirable product to most people. Marketing this syrup could be a challenge because many people in the northeast do not know what it is. I feel that sorghum syrup could be sold anywhere maple syrup is sold.

The economic aspects of this project look promising. With all the inefficiency of our first harvest we were able to produce enough syrup to return sufficient profits to cover equipment costs for the first year. Harvesting sorghum by hand is labor intensive, and it took about one hour of

labor to produce one gallon of syrup selling at \$25.00 a gallon. With more experience and machine harvesting a better return could be achieved.

The results from our project have generated many ideas about sorghum syrup production in Vermont. I would like to see this develop into a cash crop that farmers could take advantage of. The next step is to get an infrastructure established to support it. We need to start an association to distribute information, and get seed and equipment dealers in our area, establish quality standards, marketing, and advertising to make people aware of this product.

We will pursue the production of sorghum syrup on our farm. I hope to expand a little more provided I can mechanize the harvesting and expand my market.

We are sharing all we have learned about sweet sorghum production with other sugar makers, farmers, and interested people. We tell them we think it has the potential to be another source of income.

My outreach program will continue through the next year. Our Conservation District Manager mailed a notice of our project to area agriculture producers. I contacted New England Farmer and Country Folks to do an article on the project. I will forward any articles that are published to you. We are preparing a presentation with help from our

county forester for the Vermont Sugar Makers meeting in January. I have been approached about having a promotion booth at Barre Farm show. The New York Maple Tour may stop at our farm next summer, and we plan to hold an open house next fall at harvest time.

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