



Establishing an Alaskan Birch Syrup Industry: Birch Syrup—It's the *Un-maple!*TM

Marlene Cameron¹

Abstract.—Ten years ago a small group of Alaskans began commercial production of birch syrup from the sap of the paper birch, *Betula papyrifera*, and established an industry that is expanding in response to demand and has the potential to make a significant contribution to Alaska's economy. There are still many problems to be solved; research and development have taken a backseat to production in efforts to keep up with the overwhelming response to birch syrup and related products. However, as the industry matures and as the Alaska Birch Syrupmakers Association becomes more effective, solutions to these problems will follow.

BEGINNINGS OF THE ALASKAN BIRCH SYRUP INDUSTRY

In the spring of 1989, nearly 20 years after hearing an Alaskan sourdough tale about making syrup from birch trees the same way maple syrup is made, I finally tried tapping six birch trees. It took all day to boil down a pan of sap to syrup in the oven of an old propane kitchen stove in the backyard. The result looked—and tasted—like Alaska crude oil. But it was syrup! It seemed to me that this had real business possibilities. Having, however, absolutely no business sense, my mantra for success was this: "If the tourists will buy moose nugget earrings, they'll buy anything!" Thus began a business under the worst possible conditions.

The next year we "went commercial." That is, we managed to sell our birch syrup to an Anchorage gift shop, known for helping new Alaskan artisans and crafters. The syrup was bottled in plastic, pre-printed maple syrup containers with paper labels glued over the maple text. Since we knew our first year's syrup was too dark and nasty-tasting, we didn't

cook this year's as long. Consequently, the syrup was thin, and one bottle fermented on the store shelf. Selling that syrup to the first gift shop I approached, though, was a heady experience, and I was sure I was on my way to fame and fortune.

Through the Small Business Development Center, I learned about the Alaska Science & Technology Foundation (ASTF) and submitted a hastily written pre-proposal for a grant. It was a surprise to learn the pre-proposal was accepted, and I was invited to submit a full proposal. Knowing nothing about grant proposals—or making birch syrup, for that matter—I started work on a proposal for a 3-year grant impressively titled "Research and Development of a Birch Sap Products Industry in Alaska." As an English teacher, I figured at least I could write a good story.

To "legitimize" my proposal, I began database searches through the University of Alaska and surprised myself by turning up a significant amount of scholarly research and publications about birch sap and syrup. Most of the studies had been done in the Ukraine, where both juice and alcoholic beverages were made with the sap, and in Finland, where the University of Turku funded studies of birch syrup as an alternative sugar source. More searching discovered historical and traditional stories about birch sap and syrup, and one book, published in London at the end of the 17th

¹ *President of Cameron Birch Syrup & Confections, Inc., Wasilla, Alaska, USA; Toll-free phone number: 1-800-YO-BIRCH (962-4724); founder and charter member of the Alaska Birch Syrupmakers Association; Web site: <http://www.birchsyrup.com>.*

century, even had a recipe for birch wine, “now so frequently made...and that so highly, vinous and spirituous, that it hath past for a sort of foreign Wine (Westmacot 1695).” Isolated studies of birch syrup were made in Canada at the end of World War II and again some years later, and one study was done in Fairbanks, Alaska, and published in 1982. Canada and the U.S., however, were not interested at the time in pursuing birch syrup as a commercial enterprise.

At the end of 1990, the final proposal was submitted to ASTF, complete with all the required bells and whistles and estimates and projections and justifications; I called it my work of science fiction. I admit to a rather cavalier attitude about the whole project—there was no chance my insignificant little proposal would be awarded a grant alongside really important issues related to Alaskan fisheries and human bone growth and innovative computer software. So when I was advised at the end of February 1991 that we had been awarded the 3-year grant as proposed (minus the trip to Japan I had thrown in), I was more shocked than anything else. It certainly was a wakeup call; things got serious.

As I look back now on the development of the birch syrup industry, I marvel that the Board of Directors of ASTF truly had more vision than I had. The support, guidance, and encouragement I received throughout the grant period, and still receive, has been vital to the continued growth of the industry. We set out to determine if processing birch syrup could become a viable Alaska industry. If it isn't a million-dollar industry yet, it certainly is viable and it certainly has potential as a leader in Alaska's non-timber forest products sector.

PRODUCING BIRCH SYRUP

The *Un-maple*TM—Similarities and Differences

The basic process to make birch syrup is the same as maple—evaporate most of the water from tree sap to concentrate the sugar to syrup density of about 67° on the Brix scale. There end the similarities.

The differences are considerable. The main sugars in birch sap are the simple sugars fructose and glucose, whereas the main sugar

in maple sap is the complex sugar sucrose. Moreover, the average sugar content of birch sap is 1° Brix and that of maple ranges from 2 to 4° Brix. Acids present in birch sap are malic, phosphoric, succinic, and citric. Inorganics present include significant amounts of potassium, calcium, manganese, and thiamin. Because of the differences in chemical components between birch and maple, the resulting color and flavor of birch syrup also differ from maple. Fructose caramelizes (and burns) faster than sucrose; that, coupled with the fact that the low sugar content requires more processing, results in a syrup generally darker than maple. The flavor, too, is different; it's a complex flavor, reminiscent of many other things, but it ultimately is distinctive and unique.

Other major differences affect collection rather than processing. Tappable birch trees are smaller in diameter than maple, so generally only one tap per tree is made. In addition, the lifespan of the birch is shorter than the maple, and the birch is susceptible to heart rot early in life. Lack of strong root and trunk pressure, along with the vagaries of Alaskan weather and geography, makes pipeline or tubing (as used in large maple operations) an inefficient means of collecting sap.

Problems

Some of the problems involved in collecting and processing birch sap in Alaska are inherent. The low sugar content already mentioned means that it takes at least 100 gallons of sap to make 1 gallon of syrup. In addition, the sap season is much shorter for birch than for maple. In south-central Alaska, the sap run lasts an average of 19-20 days. In the interior (Fairbanks), the season has been as short as 10 days. By the time the roots thaw enough for the sap to begin flowing, the temperature both day and night is well above freezing, unlike the gradual freeze and thaw experienced by maple trees. If the temperature climbs into the 50's and 60's before the sap run is over, the sap can spoil before it ever reaches the sugarhouse.

Another problem Alaskan birch syrup producers faced in the beginning was a lack of experience; none of the producers had been involved in the maple industry. In addition, there were no instructions or guidelines to follow, other than scholarly research from other countries



and “down home” suggestions from maple producers (who had never tried making birch syrup). It seemed logical, then, to begin with maple technology. That system worked—we made syrup—but it became apparent very soon that adaptations needed to be made if we wanted a high quality product. For example, we discovered that metal spouts, buckets, and tanks used in the maple industry were inappropriate for the acidic birch sap—an expensive discovery after large initial purchases.

Other problems—the toughest hurdles of all—have been financial. We did not simply create a business, we created an industry. To do so requires costly marketing, advertising, and product sampling to educate both retail and wholesale customers. In addition, it wasn't clear just what niche market would be appropriate for birch syrup, so a lot of time and money were spent discovering what did not work. The cost of producing 1 gallon of birch syrup can be four to five times higher than the cost of producing 1 gallon of maple syrup; thus marketing is not simply a matter of introducing a new pancake syrup. Not only is the cost of producing birch syrup higher than maple, but the costs for equipment, supplies, transportation, packaging, and shipping are higher as well. Alaska is 2,000 miles from the rest of the United States; manufacturing is and has always been a difficult and expensive undertaking because almost everything required (except the natural resources) must be brought into the state. The most pervasive financial problem and the most difficult to overcome, however, is the fact that every birch syrup producer has started business undercapitalized. Perhaps as more used equipment becomes available in the state, more appropriate and efficient processing methods are discovered, and traditional financial institutions recognize the industry as a worthwhile investment, startup costs will come down and the new-business breakeven point will come sooner.

ALASKA BIRCH SYRUPMAKERS ASSOCIATION

In 1992, the Alaska Birch Sugarmakers Association (ABSA) was formed in an effort to create a certain amount of cohesiveness and validity for the industry. Initially members met once a year during the Alaska State Fair to share ideas and talk about problems. The only official agenda for several years was an association

booth at the fair and election of officers. Finally, with some grant money from the ASTF, I sent a sample of birch syrup to a food lab in Oregon for nutritional testing, which allowed syrup producers to take a more professional approach to advertising and sales of birch syrup.

For several years, we moved our portable sugarhouse to the fair for the association's use. Originally we had the 2x6 evaporator still set up in it, and during the fair we boiled water with a little syrup in it for demonstrations. Logistics proved difficult and expensive—setting up fuel and water tanks, paying fuel costs for 2 weeks, and tending the evaporator while trying to talk with customers became more problematic each year. Also, as more syrup producers came on line, there wasn't enough space to have the evaporator and sell product too, so the evaporator had to go. Finally, in 1998, ABSA built its own building at the fair. Now the association is looking to enlarge the building to accommodate the increased number of syrup producers and products and perhaps add a miniature demonstration evaporator.

This year marks a turning point for ABSA. Member birch syrup producers are finally moving to accomplish significant advances for the industry. We all agreed that we needed to get away from maple terminology and rename our association; we can't make sugar with birch. So it is now the Alaska Birch Syrupmakers Association. The association is now working on determining set quality standards of processing for ABSA certification. An ABSA certification will indicate to buyers that the product is made in accordance with strict processing standards. Much more detailed (and controversial among syrup producers) will be a Best Practices manual that is produced by ABSA, covering all aspects of the birch syrup operations—harvesting, transporting, processing, packaging, and forest stewardship. A committee has been appointed to develop a survey for ABSA members and a basic outline for the manual. Most important from an industry standpoint, however, is a proposal to the U.S. Food and Drug Administration for inclusion in the FDA Code of Federal Regulations, which will define birch syrup for all U.S. producers. Once birch syrup is included in the Code, the industry will be officially recognized by the government and have “authority” behind it when needed.

GROWTH OF THE BIRCH SYRUP INDUSTRY

Commercial Syrup Producers

In 1990, three birch syrup producers began business in Alaska, unknown to one another and in three widely separated locations—Wasilla, Trapper Creek, and Fairbanks. Three years later another operation started in south-east Alaska, and since then one new producer has come on line almost every 2 years. There are now seven commercial birch syrup producers in the state—an impressive accomplishment for an industry only 10 years old and one in which startup costs are high and profits low.

Sap Collectors

Quite by accident an unanticipated secondary industry evolved and has now become firmly established within the birch syrup industry. A year after we began commercial production, a few local people wanted to know if they could tap trees and give us the sap to boil. From those eight people in 1992, who brought in a total of 3,000 gallons of sap, to the hundreds of collectors this past season who brought in 40,000 gallons of sap, we've come a long way in a short time. As a matter of fact, our business now depends entirely on purchasing sap from collectors throughout the Matanuska-Susitna Valley. Collectors come in all shapes and sizes—families, retired folks, individuals, children, school classes, church groups, social service agencies, people who work, and people who don't work. Tapping trees gets people out of the house after the long Alaskan winter, it's easy and it's fun to watch the sap collect, the season doesn't last long enough to get boring, and the money can add up considerably. Our largest sap collector last season is a retired woman who made over \$2,000 in 20 days.

Marketing

Birch syrup producers have a variety of marketing strategies. In general, birch syrup is targeted toward the high-end users: local tourist-oriented gift shops, tour companies (i.e., Princess Lines), gourmet shops, and fine restaurants. Other marketing outlets include Internet sales, mail order, gift shops outside Alaska, bulk sales to Asia and Europe, natural food stores, espresso shops, and a local ice cream manufacturer. In addition, our business

has a retail outlet store attached to the kitchen and shop. The two newest syrup producers aren't even concerned with retail or wholesale marketing; they sell their syrup in bulk to the other producers who need more to fill the ever-increasing demand.

Value-Added Products

While it's possible to make a profit with birch syrup, you'd better have another income handy if you want to eat and live in a house! To work toward a full-time, self-supporting business, several of the birch syrup producers developed value-added products. Our business was the first to create new product lines with birch syrup as a base. We now have several birch candies, marinade, salad dressing, popcorn, reindeer jerky, coated nuts, and flavored birch syrups. Two other birch syrup producers are now making candy, one has a birch syrup/honey blend, and the other has a birch caramel ice cream topping. Rather than birch syrup-based products, two of the other producers are using their evaporating equipment year-round to make Alaskan berry syrups—fireweed, rosehip, blueberry, and raspberry. This extends the use of their equipment, making it more cost effective.

FUTURE OF THE ALASKAN BIRCH SYRUP INDUSTRY

Most of the Alaskan birch syrup producers are experiencing a growing demand for birch syrup and for the value-added birch products. Even though the price of birch syrup can be 4-5 times higher than maple, it has a different niche, and as it becomes better known it is more in demand. While some Alaskan producers would like birch syrup to remain a unique, Alaskan-only product, there is enough growing interest in it to warrant operations in other areas with large stands of birch.

It's obvious that more syrup is needed. But establishing larger operations is not the answer as it is in the maple industry; making birch syrup is expensive, labor intensive for a short period, and has a low return of syrup from sap. As I see it now, there is a point of marked diminishing return beyond which the cost of equipment and tapping a vast number of trees by the producer simply cannot justify the product. The solution is to establish more



small producers who sell to larger producers
who can more effectively market the syrup.

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