

Noni Processing and Quality Control: Protecting the Image of Hawaiian Products

Jay Ram
AGRINOM, LLC, Hakalua, Hawai'i

Today I would like to discuss the challenges associated with processing noni in Hawai'i, the marketing of noni products, and the importance of producing high quality products, thus enabling successful competition in the international market.

There are many other island nations that produce noni, with many different types of products. There are liquid, and dried bulk products and a variety of finished products as well. Thus, the competition is quite fierce, presenting challenges to Hawai'i manufacturers.

The main theme of my presentation regards product quality and purity, and this is really what it all comes down to: can we produce a noni product at a competitive price that is both high in quality and purity? The answer to that question may decide Hawaii's fate in the world noni market.

Of course there are other issues and problems associated with producing agricultural products in Hawai'i. I won't dwell on them, as you have undoubtedly heard of them many times before. For example, there is the added cost of shipping to the mainland, combined with the other expenses related to the high cost in Hawai'i for goods and services. So, we already have high costs of production to overcome and remain competitive. In addition, there are a number of problems specific to noni, as we will later see, which make production even more challenging.

Everyone who produces a noni product comes to the point of deciding whether to produce a finished, niche-market product or whether to be a bulk ingredient supplier. Niche market products command high prices for quality products, but the market is rather limited. Bulk ingredients producers supply manufacturers of noni products with powder or raw juice, which represents a larger market but reduced margins.

In Hawai'i, we have the problem of competing in bulk ingredient production with some of the other economies around the Pacific Rim, which creates a challenging situation, since Hawai'i will always be the most ex-

pensive place to do business.

One important thing to keep in mind is that in the beginning, new products (especially new products from Hawaii) may be novel and in relatively high demand, and one may be able to capitalize on this aspect. But, eventually international producers come in to play and the novel item now becomes a common commodity with resulting commodity pricing, which can exclude Hawai'i producers.

It is crucial that we in Hawai'i are able to compete at acceptable commodity prices. This is actually possible, using the proper cost effective agronomic and processing methods. Noni can be grown very productively per acre and the cost of producing noni can be extremely low, as little as \$.10/lb in total. That cost is realistic, even if the entire project is implemented with hired labor, as long as the crop is planted at the proper density per acre, and adequately maintained. If there exists an efficient processing facility, and one is able to market the product effectively, one can actually compete at the commodity price levels seen with the other island nations of the Pacific, especially with a high quality, pure product.

When noni processing started in Hawai'i, there was not a great deal of post-harvest processing capacity available in the state. This is really a very unfortunate aspect of Hawai'i agriculture, and greatly limits us in what we can grow and in what quantity. Thus, in the beginning, when there was little post-harvest processing capability, a lot of noni was shipped to the mainland frozen. At that point, the only option for removing the water from the product was through freeze-drying. There is no other way to cost effectively dry a frozen, watery product of that type.

At AGRINOM, we specialize in dry Noni ingredients, producing whole noni fruit powder in a manner that makes a competitive product in the world market.

Freeze-dried noni powder was in vogue for some time, and is still on the market to some extent. Freeze-

drying is a rather expensive way to deal with noni fruits, as the heavy fruits must be shipped to the mainland, and in addition, freeze-drying itself is a comparatively expensive process.

Back in the days when we were seeing only freeze-dried noni on the market, there was a lot of talk about the enzymes in noni and their health benefits. It was said that a dehydration process that involves warm or hot air should not be used, as the enzymes would be destroyed. The fact is that this argument is quite a myth. The reason is, as you recall, that enzymes are proteins. Proteins are broken down in the digestive tract before they are absorbed into the blood stream. Enzymes do not pass through the intestinal barrier. The only time an enzyme may be of value would be in a situation where a digestive enzyme is ingested and becomes active in the breakdown of food (such as papain) between the mouth and the stomach. Other than that, the enzymes are not going to be able to get where they need to go, presumably, inside the blood stream to have a physiological effect.

Regarding the noni powders, there are, of course, different ways to produce them. There are some small-scale operations in Hawai'i, and there are larger-scale operations such as the process at AGRINOM.

Most of the drying and powdering operations are involved with whole fruit (slicing, drying, and grinding of whole fruits into powder, including seeds). There is a smaller amount of dried noni material on the market that does not include seeds, where the seeds are being separated out before the product is dried.

One process that is taking place to some degree in Hawai'i and in the other South Pacific areas, is very disturbing. The left over by-products of juice production are being represented and sold as a pure noni fruit product. When juice is produced and fully extracted from the fruit, what remains is a material that is only comprised of seeds and fiber. This castoff material is usually just discarded or used as compost. However, there are some companies who are taking this discarded seed/pulp/fiber material and are drying it and grinding it into a what is called "100% noni fruit powder". This practice is, of course, very deceptive. Obviously, we do not yet know very much about what is in noni and why noni works and sufficient medical research is still not available. However, we do know that the active ingredients in noni are primarily in the juice and flesh, and not in the seeds and fibers.

Therefore, when you sell a product that is just seeds and fiber, the biologically active ingredients of noni are absent and the consumer will not be able to feel the ef-

fects of the product. The complex polysaccharides discussed here today, as well as the anthraquinones and some other compounds, are known to be in the juice and the flesh, not in the fibers and the seeds. This is a very disturbing practice, and a real problem in the industry. The practice will lead to ineffective products and products that will not persist in the market, while at the same time giving Hawai'i noni a poor reputation.

Hawai'i Noni juice is sold both as a finished product and as a bulk ingredient shipped to manufacturers. Some juice is aged in Hawai'i, although local producers tend to sell it fresh since it is difficult to keep an inventory of juice for one or two months. Many producers do not have the financial resources enabling them to warehouse a product for an extended period of time without receiving income. As a result, fresh juice has become a very popular commodity here in Hawai'i.

As far as fresh vs. aged juice is concerned, there is a lot of controversy over which is better. The fresh juice, of course, contains the sugars that are inherent in the fruit fresh from the plant. Thus, fresh juice tends to be sweeter and a bit easier to drink. Aging involves a fermentation process which is not well elucidated or understood at this time, however, it is apparent that it is a bacterial fermentation, and there does not seem to be a yeast organism involved. There is not a significant amount of alcohol produced by fermentation of noni juice.

Through fermentation, the sugars in noni juice are transformed to organic acids causing the pH to be reduced and acidity to increase. The noni becomes less sweet and more acidic and sour. Noni juice, when aged well, will actually be reminiscent of a good wine. It will be strong, but will have a very mellow, nicely aged taste.

There is no data available as to whether fresh or aged noni juice has an advantage over the other, although my own personal preference for medicinal use is the aged noni juice. Some of the organic acids produced are themselves chemically very interesting and exotic. These organic acids may have some value to be determined by future research.

What is pure noni juice? In reality, pure noni juice means that you are taking the fruit and allowing the juice to seep out, without the addition of any water or other additives. You can produce this type of juice in a jar, and use it as a measuring stick for how pure noni juice should look and taste.

Traditionally, sometimes in Hawai'i one will find people placing noni fruits in a jar and then adding water. It then remains in the sun for some days until it gets nice and putrid. I'm not being facetious; this fermenta-

tion process really is more of a putrefaction process. This is not necessarily negative, many food products are made in essentially the same manner, relying on bacterial processes.

In Hawai‘i, and in other parts of the Pacific, noni juice is commonly commercially produced in this manner; by adding water initially to the fruit container — the fruits are placed into a drum or barrel, and then water is added. Subsequently, the liquid is drained off and the contents of the barrel (water and fruit/juice) are pressed.

The problem with that, technically speaking, is that this type of liquid is not a pure juice, because water has been added. In other words, you wouldn’t put apples in a drum, fill it up with water, press it, and call it apple juice, would you? Anyone would be able to tell that this is diluted apple juice from the color and taste.

Here is the difficulty: if the FDA realized that this addition of water was taking place, they would prevent producers from calling it “juice” and would require it to be labeled as a “noni drink” and to state on the label the percentage of juice actually in the product (just like is required of all other fruit drinks on the market).

I believe it is important that we in Hawai‘i are very cautious in this regard, as we definitely could encounter some regulatory problems down the road. Quality and image problems will develop, as once a consumer tastes 100% noni juice, they are going to be able to tell when a product has been diluted with water. Similarly, one can tell the difference between a grape juice and a grape drink, it is not a difficult thing to do. This is a very, very important issue for Hawai‘i. It may determine how well we are able to go out there and compete with the rest of the world and if we are going to be eventually successful, or not.

Right now, there is a lot of interest in noni, and the market is booming. But what will happen in 1 year or 5 years? It’s difficult to say. The one way to guarantee that we will still be in the running is to produce a high quality, pure product for which people can feel the effects for themselves.

This problem of substandard products is not confined to noni, nor to Hawai‘i. Most people do not realize that it is a large and very serious problem in the herbal products industry in general, due to lack of regulation and oversight. Many, of course, do not want to hear any talk of regulation or the FDA getting involved, but I can tell you from first-hand experience in this industry that it is very badly needed.

Almost everything that ends up in the health food store in capsule or extract form is actually adulterated

or cut with inert materials at every step of the raw material distribution and manufacturing process in this industry. It starts with the herb suppliers, who commonly adulterate their product with inert substances that resemble the herb in color and texture. The manufacturers may then further adulterate the product. When the product finally appears in capsule form it may very well be ineffective at the recommended dose. Some of these are supposed to be standardized products, yet upon testing it is revealed that the actual quantities of active compounds are highly variable, or lacking completely.

I recall that during the recent kava boom this was seen for products that were supposed to contain 30% kavalactone extract. The test results showed that products on the shelf contained 5-12% kavalactones, and that very few were actually 30% extract products. This is a common problem in the industry. Eventually, it is going to become an acute issue. At some point, you will see this come before Congress and major changes will take place, which unfortunately may make all of our noni lives more difficult. The essential problem is that the herb producers are not taking care of these serious quality issues themselves.

Quality control is a very important issue for any bulk or finished product. Quality control ensures first of all that you are starting with good, pure material. Every step of the manufacturing process has control points, which are crucial places and times in the process where something is done to the product to change it. It is important to have someone monitoring each control point in the process, doing exactly what needs to be done so that the end product comes out in a consistent manner. Of course, what comes out is only as good as what goes in, in terms of purity.

Let me return to kava for a moment. Aside from the nonsense that occurred recently in Germany, we had a kava boom in Hawai‘i. About 1998 kava became very popular. Unfortunately, many of the finished kava products on the market were very poor quality, adulterated or cut to diminish their purity or they were not the appropriate type of kava extracts whereby people could feel the effects for themselves. The kava boom died out very quickly, despite the fact that the marketing and advertising was there, even articles in the *Wall Street Journal*, etc. But, these ineffective capsules were just not making people feel any better.

With noni, this is aspect of palpability even more important. In the case of kava, there had already been sufficient research and clinical trials conducted to back up advertising claims, and kava had been used as a medicine for decades in Germany. With noni, we have al-

most nothing by way of research, data and reliable information, and no completed clinical studies of any kind up to this point in time. In my opinion, people have to feel the effects of noni products if the industry is going to survive.

Thus, purity is a very important issue, because we don't have much else to go on, except what consumers can feel from the product. For repeat customers to come back, the effects of using it have to be palpable. To be palpable, it has to be the real thing, pure and of good quality. This point can't be stressed enough. I've seen other cases in the herb business where entire industries have shot themselves in the leg over this quality issue.

In addition to the problems and challenges mentioned already (shipping costs, cost of doing business, quality and purity, lack of clinical trials, etc.), we in Hawai'i also face another important challenge. We have to compete with a large pool of mythology about noni. There is a lot of misinformation out there regarding noni, as I'm sure a lot of you know. The misinformation comes in many forms and at many levels. Much of it originated with the multi-level marketing companies and a lot of misinformation delivery continues today.

Many companies still talk about the 'xeronine' compound that is supposed to be in noni fruit. These companies go on and on about all the research and all the wonderful effects of xeronine and so on and so forth. But the truth is, that within the realm of scientific reality and peer-reviewed publications, this molecule does not exist. In fact, that is probably why it is called xeronine, because it's a zero. It is a very appropriate name because it does not exist; it is not there. Despite there being a patent for this compound, there is no scientific evidence to back up the claim, and no way to quantify it. And yet, this has formed the marketing basis for companies who are making hundreds of millions of dollars per year. This is what we are up against, and it is not an easy task.

We also find that there is a lot of inappropriate nomenclature being used for noni products. In other words, products are mislabeled and misnamed, even other than the relationship between the words 'juice' and 'drink'. With noni powder, we have the problem of companies labeling as 'noni extract' or 'noni concentrate' at an 8 to 1 or 10 to 1 ratio. What is being discussed about here is the loss of water from the fresh fruit product during drying. That might result in an 8 to 1 or 10 to 1 ratio of

fresh weight to dry weight, but the words 'concentrate' and 'extract' are not appropriate descriptors. Those ratios are reserved for those products that are true concentrates or true extracts in the herb industry. This would be like referring to raisins a "grape extract". It's just not appropriate. Some producers in the Pacific still refer to their noni juice as a concentrate, when in fact it is just a juice or worse yet, a diluted drink.

Another problem is that there are still a lot of false or unsubstantiated claims about noni in the market place. Although there may be anecdotal evidence for the beneficial effects of noni (blood pressure, for example) there is no real scientific evidence yet for these types of claims. We in Hawai'i need to be very careful in our brochures and labels not to make false or unsubstantiated claims, because it will lead to many difficulties. In fact, at the presentation today I saw some brochures that would certainly draw the attention of the FDA as illegal regarding claims. The FDA has taken action toward a number of companies that sell noni for misleading statements, and we must be very careful, for the image of Hawaiian products is at stake.

In conclusion, one must start with materials that are pure and clean, process correctly, and do not add any adulterants, and thereby one produces a high quality, clean product. Combined with competitive pricing, one is thus able to get out in the market and be successful. That is really my main point today.

Questions and answers

Question: Regarding the supply and demand for noni fruit, does AGRINOM expect to be buying? Answer: Supply is sufficient to meet the demand at the present time and AGRINOM has enough noni fruit suppliers to meet its need. When processing noni, AGRINOM can process approximately 1,000 pounds of noni fruit per hour, or about 7,000-8,000 pounds per day.

Question: Regarding fruit enzymes, how do they change during noni fruit ripening? Answer: There are always chemical differences between all types of green and ripe fruits. As far as biologically active compounds are concerned, however, the difference is not significant for noni.

Question: Can you define the term 'aged' for noni juice? Answer: 60 days, minimum.