

Irradiation: The pathway for Pa'ina Hawaii to open markets for Hawaiian Produce

By Ronald F. Eustice



Only vibrant, fully ripe papayas are picked off the trees.

Michael Kohn established Michael Kohn dba Hawaii Fruit Company in 1987 and began to export papayas to Germany and Switzerland. Phytosanitary treatment was not a requirement for access to the European market and business grew rapidly. To justify shipping costs from Hawaii to Europe, it was necessary to offer a value-added product, which turned out to be tree-ripened fruits.

At about the same time Kohn wanted to ship papaya and other fruit to the US Mainland, however, because of fruit flies and other pests of concern to U.S. mainland agriculture, most fresh fruits and vegetables grown in Hawaii require post-harvest quarantine treatment prior to export to the Mainland. Kohn says, "At that time, the only approved treatment to mitigate the pests were vapor or dry heat, but fully-ripened fruit would not tolerate the heat or vapor treatment."

Kohn abandoned the idea of shipping to Hawaii's largest traditional market, the US Mainland, until he learned about irradiation from Lyle Wong, who was then Administrator of the Plant Industry Division of the Hawaii Department of Agriculture. Wong began to discuss irradiation with Kohn in 1995. At first, Kohn was quite skeptical of the idea to use irradiation treatment, but gradually became a firm believer.

Wong showed Kohn that irradiation offered much greater opportunity to Hawaii's farmers and shippers than any other treatment. Treating fully tree-ripened papayas was the first opportunity.

The second opportunity was the fact that produce would be treated after it had been packed out in the final export box. It allowed for continuous control of product quality by farmers and shippers, which is not the case of papaya delivered by growers to contract heat treatment facilities where the fruit is heat treated prior to sorting and packing.

For those farmers and shippers that were already exporting (to places that did not require treatment like Canada) few changes were necessary in order to ship to the US Mainland. The only difference was that product would need to be treated by irradiation before loading on planes or ships to the Mainland.

The third opportunity for Hawaii agriculture is the fact that irradiation as a phytosanitary treatment can treat almost all of Hawaii grown crops.

While thermal or chemical treatment is crop specific, irradiation is pest specific. Many crops such as basil, do not require any form of treatment. They just have to be free of pests. In reality many shippers have experienced rejections of consignments as a result of hitch hiking pests, especially in California. The rejections are costly and leave customers with no product to sell. Irradiation quarantine treatment is an efficient and effective handling step to neutralize pests of concern to US agriculture.

At first Kohn shipped untreated fruit to Chicago and New Jersey under USDA, APHIS, PPQ Limited Permit for irradiation treatment in commercial irradiators. That venture, which lasted five years, was expensive but very effective. Transportation costs were high but so was the quality, in fact there were no negative aspects to quality at all. Consumer acceptance was very good.

It became obvious that in order to reduce costs, a reliable irradiation facility open and accessible to all farmers and shippers was needed in Hawaii. In 2005, Michael became a co-owner and president of Pa'ina Hawaii.

Pa'ina Hawaii installed a Gray*Star Genesis II irradiator in 2012 and began offering commercial irradiation phytosanitary services on January 31, 2013. The facility is currently treating papaya, Okinawan purple sweet potato, sweet and Thai basil, Moringa leaves and pods (i.e., drum sticks), ginger, melons, taro leaves, curry leaves, longan, litchi, mangosteen, and rambutan using low-dose irradiation. A higher dose is used to sterilize finely ground macadamia nut shell used as an ingredient in cosmetics.

Thus far Pa'ina has been irradiating mostly Hawaii grown products but some imports from the US Mainland to Hawaii market are anticipated because irradiation is an alternative to methyl bromide fumigation. Potential also exists for high-risk pest commodities such as cut flowers and foliage from Pacific Island areas for pest disinfection. The Pa'ina Hawaii facility also has the potential to be used to irradiate Asian-grown produce destined for the US Mainland.



Firm, fully ripe papayas ready to be treated and send to the US Mainland.

The company is located 21 minutes from Honolulu International Airport and about 30 minutes from Honolulu harbor. The Honolulu airport as well as the harbor are the logistical focal points in the state of Hawaii. Almost all outbound or inbound cargo transits through Honolulu. For shippers, especially on outer-islands additional services are provided by Pa'ina. These include trucking, refrigeration, container loading and TSA screening. According to Michael "it is not enough to provide a piece of paper that allows you to ship to the Mainland, we need also ensure that product quality will not change before reaching the Mainland. Over 25 years of hands on experience with papayas have taught me that handling and refrigeration are of utmost importance".

While growth was slow in the beginning, Kohn says business has been picking up and Pa'ina Hawaii has become a credible business that Hawaiian farmers and shippers can rely on. Besides their own produce, Pa'ina Hawaii is irradiating products for over thirty shippers and farmers that do their own marketing and shipping. Kohn says that the customers come in all sizes.

Kohn did not disclose volume but information from several sources indicates that two Hawaiian irradiation companies irradiate about 16 million pounds of product annually. Kohn keeps customer names confidential but indicates that if someone in the trade asks about a specific commodity, information is passed on to the shipper/farmer for follow-up contact to bring producers, shippers and buyers together.

Kohn says that customers have been very positive about irradiation. He says, "irradiation does not diminish the quality of produce, and at best it can be used to achieve extraordinary results. He adds, "It's the only treatment that can be used to treat fully tree-ripened fruits and we all know the difference between a forced to ripen fruit and one picked ripe off a tree. We have a very good customer in Los Angeles that sells to high-end restaurants. High-end restaurants require readily useable fruit. You cannot tell a customer to come back to your restaurant in three days when the fruit becomes ready to eat. High-end restaurants want to distinguish themselves by using high quality products. In the case of tree-ripened papayas (or any other fruits) irradiation allows for a distinctly better taste and texture."



Staff is applying trace-back labels to each produce box before entering the irradiator.

Today, thanks to irradiation more than ten countries are using the technology for market access to the United States. Through USDA/APHIS efforts US growers now have access to markets in those same countries. Irradiation in many cases is mandatory and the only available treatment to mitigate the threat from harmful pests.

Kohn says the market for irradiated produce is growing not only in the US but also other markets important to Hawaii like New Zealand and Australia. "China has a very active food irradiation program and we hope to ship to the huge Chinese market soon," he adds.

There is an endless list of products that can be irradiated and must be irradiated to gain market access. Hawaii has unique microclimates. Almost anything can be grown in Hawaii. Kohn says that he had never heard of many of the exotic fruits that they regularly treat. He says, "We plan to become certified for imports from foreign countries in the near future. That could significantly add to the variety of produce irradiated from tropical places in Asia."



Fresh oysters are irradiated to reduce dangerous vibrio to non-detectable levels.

Kohn is impressed with the growing list of US food processors looking into food irradiation these days, especially in regard to food safety, which is the reason why Omaha Steaks and Schwan's irradiate all of their hamburger meat. He adds, "It gets trickier when it comes to produce. The FDA has set an upper limit of absorbed dose, which is sufficient to eliminate insect pests but too low to effectively remove *Salmonella*, *Listeria*, *E-coli*, and other dangerous food borne pathogens."

Pa'ina Hawaii has had a very positive experience with USDA programs. Irradiation as a phytosanitary treatment is relatively new and USDA programs are being built around it. Kohn adds, "Science told us irradiation is very effective but you also need proof. As more and more irradiators have come on line and we watch over time how effective USDA irradiation programs are, the greater the confidence everyone has.



Omaha Steaks and Schwan's have irradiated all of their hamburger meat since 2000.

Some Types of Produce Irradiated at Pa'ina Hawaii



Marol Lee operating the Genesis II irradiator.

So far there has never been an infestation caused on the US Mainland by product that was irradiated and shipped from either Hawaii or foreign countries. That is impressive while the treatment by itself causes no negative impacts on humans or the environment. Sometimes you can have your papaya and eat it too.”

When asked what it would take to gain more interest in using some form of irradiation to treat finished products, Kohn said, “Irradiation needs to be better explained. The positive aspects are plenty while the negative are very few.” Pa’ina Hawaii regularly receives inquiries about irradiation, how it works, what the cost is, what other services are provided and also about potential drawbacks. Kohn says, “That’s how customers and the public are educated.”

Kohn says, “Phytosanitary treatment by irradiation allows Hawaiian agriculture to access the most important market – the US Mainland. This is only true if the irradiation facility does not monopolize markets but rather ensures fair and open access to everyone in Hawaii. We have committed to that long before we became operational. Hawaii agriculture faces many problems. Market access should not be one of them, but it has been.”



Rambutan



Lycchees



Longan



Taro Leaves



Thai basil



Mangosteen



Moringa pods



Melons



Okinawan purple sweet potato



The Radura symbol is prominently displayed on all packaging.



Irradiation quarantine treatment is an efficient and effective handling step to neutralize pests of concern to US agriculture.



“Over 25 years of hands on experience with papayas have taught me that handling and refrigeration are of utmost importance”.
Michael Kohn, President, Pa’ina Hawaii LLC



Macadamia nut shells are among the many food items irradiated at Pa’ina Hawaii. Finely ground macadamia nut shell is used as an ingredient in cosmetics.



Ginger is irradiated at Pa’ina Hawaii.

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