

Developing Sabatoba: An Innovative Way to Preserve Mackerel at Room Temperature

— Yuru Dry® Vacuum Food Drying Technology Brings New Culinary Life to Aomori's Hachinohe City!

MARUKANE, LLC (Hachinohe City, Aomori Prefecture)



The new “golden sabatoba.” Soft and tender, and it can be kept at room temperature!

Workers carefully and precisely process the mackerel one by one. In 2015, Aomori Prefecture certified the Shimesaba Production Department as A-HACCP, making it the first in Hachinohe to gain this distinction.

Saba, or mackerel, is a very widely-consumed fish worldwide, along with tuna and horse mackerel. Mackerel is a versatile fish that can be eaten grilled, dried, or pickled. In terms of nutrition, it is well-known for containing generous amounts of highly unsaturated fatty acids such as docosahexaenoic acid (DHA) and eicosapentaenoic acid (EHA), which can help prevent health problems like arteriosclerosis and thrombosis. Despite its health benefits, mackerel does not appeal to everyone due to perceived drawbacks such as its odor or short shelf life.

The water temperature at Aomori's Hachinohe Port, located at the northernmost tip of Honshu, is so low that the hachinohe maekisaba fish caught from autumn to winter are rated as having the highest fat content of all mackerel in Japan. This fat is quite healthy but also quick to oxidize, which until now has limited the available options for processing these mackerel.

Located a stone's throw from Hachinohe Port, MARUKANE LLC (hereinafter, Marukane) specializes in processed seafood products. It develops, produces, and sells a number of easy-to-eat products that have managed to overcome the shortcomings of mackerel. For example, Marukane has recently developed sabatoba, which can be stored at room temperature. For these efforts, the company was awarded the innovation special prize of the 2017 Aomori Industry, Academia, and Government Gold Collaboration Innovation Awards. LIVING & ULVAC took the opportunity to interview Mr. Kaneo Akiyama, a Marukane representative.



Marukane representative Mr. Kaneo Akiyama (left) and factory director Mr. Toshihiro Ohama

Company Profile

Company Name: MARUKANE LLC
 Home Office: 5-5-4 Minatotakadai, Hachinohe City, Aomori Prefecture
 Tel: +81-178-32-0196
 Locations: Shinminato Daiichi Food Factory, Shinminato Daini Food Factory, Shinminato Sales Office
 Representative: Kaneo Akiyama
 Established: July 6, 2011
 Business Areas: Production and sale of processed seafood products

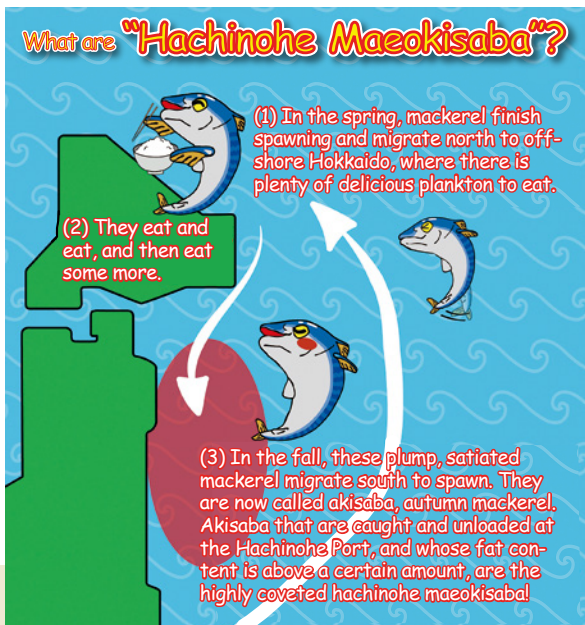


Marukane started from zero after the Great East Japan Earthquake. It now sells the best hachinohe maeokisaba mackerel in the country at one of Japan's largest markets, Tatehana Ganpeki Morning Market

Marukane was established only four months after the Great East Japan Earthquake, which occurred on March 11, 2011. The local fish processing company where Mr. Kaneo Akiyama worked at the

time suffered severe damage, causing Mr. Akiyama to lose his job. However, customer demand for Hachinohe mackerel was high. This inspired Mr. Akiyama to partner with Mr. Toshihiro Ohama (now Marukane's factory director) to launch a company. With little more than knives and cutting boards and a corner of a factory to call their own, the two began producing and selling processed seafood products immediately after the earthquake. They started sales by opening a stall at the largest Sunday morning market in Japan, Tatehana Ganpeki. Early every Sunday morning, over 10,000 visitors flock to this market held along the harbor wall of the town Shinminato in Hachinohe. The line of more than 300 stalls stretches 800 meters. This morning market played a major role in revitalizing the disaster-stricken region, and Mr. Akiyama launched his business as a way of contributing to the community. In addition to Marukane's Sunday morning market stall, the company has set up a direct sales office, Asaichiya, at the JR Hachinohe Station, as well as a home office, Marukane Kitchen. These three locations provide the company with valued opportunities to hear customers' voices. Conversations with customers at these shops have led to ideas for new products. Some products are also available for purchase online.

Marukane products use torosaba and hachinohe maeokisaba. Torosaba is a general term that refers to mackerel with a high fat content. Hachinohe maeokisaba refers to mackerel that is caught north of offshore Sanriku in Japanese waters, and is unloaded at Hachinohe Port during an official period of time certified by the Brand Promotion Council. This brand of mackerel is larger than average, with some weighing in at over 600 grams, and has been rated as having the highest fat content of all mackerel in Japan. The Hachinohe Port is the northernmost fishing ground in Honshu, and the water temperature there drops sharply in September. This accounts for the fish's high fat content. The Marukane factory is located directly facing Hachinohe Port. Mackerel unloaded at the port are immediately processed to be delivered to our dinner tables.



The stall at Japan's largest morning market, the Tatehana Ganpeki Morning Market, which receives over 10,000 visitors every Sunday



Hachinohe maeokisaba, the brand with the highest fat content of all mackerel in Japan



Marukane Kitchen (home office)



The direct sales office, Asaichiya, located in front of the Ekimae Yokocho Youtree (the Hachinohe Regional Industrial Promotion Center)



Marukane's online shop
<https://www.saba-marukane.com/>

**The human innovation behind the flavor:
 An original formula based on the Kamiwaza® technique and Just In Time principle**

The water content in mackerel is high, which can cause the meat to fall apart or the skin to peel when the fish is grilled and cut with a knife. Marukane addressed this issue by devising the Kamiwaza® technique: each cut mackerel is first coated with the company's proprietary blended powder seasoning, then wrapped in a paper towel and left overnight. This process removes excess moisture, enhances the refreshing texture of the fish, and concentrates its flavor as if the fish had been dried overnight using a traditional method.

At the factory, Marukane aims to recreate the process that cooks use when preparing and serving food right in front of the customer. To this end, the company carefully processes each piece by hand. Although this method may seem inefficient at first glance, it allows each delicate piece of fish to be processed quickly in small lots. Few fish are damaged, which lowers the defect rate and thus actually increases efficiency. The Just In Time principle of "only producing the right product at the right time" has allowed the company to deliver fresh and safe products to satisfied customers.

Marukane has developed one innovative and original product after another, such as its saba garlic miso (developed jointly with Hachinohe Technical High School), which uses garlic grown locally in Aomori Prefecture; its saba apricot miso, which uses locally grown apricots; and its fatty pickled saba, which has a slightly acidic and sashimi-like flavor. By listening and responding to customer suggestions, and by insisting on using only ingredients that are produced locally in Aomori Prefecture, Marukane has created these and many more original products.

**Sabatoba: Room temperature preservation
 Keeping fish moist and tender with Yuru Dry® vacuum food drying technology
 Industry, Academia, and Government Gold Collaboration Innovation**

As part of an effort to revitalize regional industry, Iwate University, ULVAC Tohoku, Inc. and ULVAC, Inc. partnered with Marukane to develop a new product called "golden sabatoba." Golden sabatoba is processed mackerel prepared using ULVAC's Yuru Dry® vacuum food drying technology to lock in the soft, tender texture of the fish and concentrate its flavor to an extent unachievable through previous methods (such as sun drying, cold-air and hot-air drying,

freeze drying, etc.), while preparing the product for long-term storage at room temperature. While the well-known saketoba (salmon toba) can be processed using conventional methods, mackerel is not quite so lucky. The rich fat content of the fish leads to oxidation, the effects of which prevent easy processing. With Marukane's method, each mackerel is deftly cut into three pieces, deboned, seasoned with the least possible amount of salt, and placed in a vacuum unit to dry. The vacuum state allows the fish to dry at a low temperature and locks in its flavor by preventing the fat from oxidizing. This vacuum state is controlled in order to produce a delicious finished product that is easy to enjoy. Refrigeration or freezing used to be essential for transporting mackerel, resulting in a fish that looked fresh but had actually gone bad due to a rapid, inevitable decline in freshness. This new method, on the other hand, allows mackerel to be transported safely at room temperature and maintains its health benefits as well as its fresh texture and flavor.

For these efforts, Marukane was awarded the special prize of the 2017 Aomori Industry, Academia, and Government Gold Collaboration Innovation Awards. The company is driven by its strong desire to revitalize local industry and help the Tohoku region recover from the disaster. This drive will lead Marukane to explore new possibilities in a wide range of applications in order to expand its distribution area and offer specialty products from regions throughout Japan. Mr. Akiyama said, "Given how far we've come with mackerel, which is notoriously difficult to process, we should be able to apply this technique to a wide range of other marine products. We would also like to apply it to fruit and to other Aomori agricultural products. We want to deliver more flavor to more people." And thus Marukane will continue on its path of innovation.



ULVAC's Yuru Dry® vacuum food drying technology being used to process golden sabatoba

* Trademark registered in 2015. Patent pending