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Alaria esculenta (winged kelp) growing on a rope at the IMTA site in the Bay of Fundy, Canada (photo credit: Thierry Chopin).

CANADIAN IMTA KELPS GET ORGANIC CERTIFICATION AND ARE READY TO HIT THE MARKETPLACE

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Two species of brown seaweeds, the kelps *Saccharina latissima* and *Alaria esculenta*, cultivated at an Integrated Multi-Trophic Aquaculture (IMTA) site of Cooke Aquaculture Inc., were recently certified organic to the Canadian Organic Aquaculture Standards, following third-party audits by SAI Global, an internationally accredited certification company.

The Canadian Organic Aquaculture Standards were developed between 2010 and 2012 and were published in the spring of 2012. These standards follow the Canadian General Standards Board of the Government of Canada. They were developed to differentiate some production methods and processes practiced by some members of the Canadian aquaculture sector. The committee that developed these standards compared the existing European standards and those being developed in the USA to establish its own standards, which are generally very close to the European ones.

The committee included several representatives of associations overlooking organic production on land farms, who provided very interesting comments and perspectives for the comparison and establishment of standards for aquatic farms (both in seawater and freshwater). Thierry Chopin was part of the non-voting committee of experts. For him, it was important that

these standards not only address the organic production of fish, but also that of seaweeds and invertebrates and that the IMTA practice could also be considered for organic certification.



After the publication and official recognition of the standards in 2012, personnel at Cooke Aquaculture Inc. and Thierry Chopin worked on obtaining organic certification in 2013-14 and met the requirements, in accordance with ISO Guide 65, in the spring of 2014.

The organic kelps are produced by Cooke Aquaculture Inc. at its Charlie Cove IMTA farm site near Back Bay, New Brunswick, in association with salmon and invertebrates. *Saccharina latissima* (sugar kelp) and *Alaria esculenta* (winged kelp) are being marketed under the True North Salmon brand. These seaweeds, with superior sweetness and flavour, are rich in proteins, trace minerals, phytochemicals and vitamins, and low in fats. They are rich in alginates, which we already use in our everyday life (as extracts to keep pulp in suspension in an orange juice in the morning, to giving the paste texture in the toothpaste we brush our teeth with in the evening), but can also be viewed as dietary fibers. Because of their composition and attributes, some nutritionists believe that, in fact, kelps should be recognized as being on par with other well-known superfoods.

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Saccharina latissima (sugar kelp) growing on a rope at the IMTA site in the Bay of Fundy, Canada (photo credit: Thierry Chopin).



One of the delicious dishes created by Chef Chris Aerni, owner of the Rossmount Inn in St. Andrews, New Brunswick: crispy skin IMTA Atlantic salmon fillet, organic IMTA kelp (*Saccharina latissima*) wrap, nori (*Porphyra purpurea*) dust, ginger-carrot purée, sweet soy drizzle, potato blini, Atlantic salmon caviar and goose tongue greens (photo credit: Thierry Chopin).

Kelps can be eaten fresh or cooked and have been highly popular in Asian cuisine, as kombu and wakame, for centuries. In North America and Europe, we are just discovering how delicious and healthy they are and how easily they can be prepared. True North Salmon Company Ltd., the processing and sales arm of Cooke Aquaculture Inc., has been identifying a wide range of potential customers, such as chefs, restaurants and non-food sectors like the cosmetic and feed industries.

At the University of New Brunswick, Thierry Chopin and his team take care of the early stages of the kelp cultivation process in the summer and fall. By late fall, the kelps are transferred to the IMTA site, where the Cooke Aquaculture Inc. crew cares for the kelps as part of the farm's operation. The kelps are ready for harvest in late spring/early summer. The finished products can be delivered to customers either wet or dry.

Being part of an IMTA system, the kelps receive the nutrients that are essential to their growth, such as nitrogen and phosphorus, by recycling the by-products of the natural metabolic processes of salmon and invertebrates, such as mussels. No growth enhancers are required. Once harvested, the kelps are rinsed with seawater and dried with no additional manufacturing aids. Any cleaning/disinfection of harvest vessels and equipment destined for the organic production site is done with products that are listed and approved by the Canadian Organic Aquaculture Standards.

Organic certification is one more confirmation of the high level of traceability for these healthy and versatile products, which lend themselves very well to the Integrated Sequential BioRefinery (ISBR) approach. With careful planning at the time of harvesting and sequential processing, more than one product can be manufactured

from seaweeds. Over the last decade, ISBR diversification has been the strategy adopted by the Canadian IMTA Network (CIMTAN) and its industrial partner, Cooke Aquaculture Inc. IMTA kelps not only recapture some of the inorganic dissolved nutrients from fish farms, but we are also developing markets for kelp use in human consumption, for cosmetics, as a partial substitution in fish feed and for biochar production, along with eco-labelling and organic certification.



IMTA R&D in Atlantic Canada started in 2001, and the association with Cooke Aquaculture Inc. in 2006. We have been progressing consistently along the R&D&C continuum (C for commercialization) and only now are we harvesting the fruits of our dedication and perseverance.

The European Aquaculture Society has been key in the progression of the IMTA concept. Eleven years after its Aquaculture Europe 2003 Conference in Trondheim, Norway, whose theme was "Beyond Monoculture" (the IMTA acronym was created in 2004), its 2014 conference in San Sebastian, Spain, is revisiting the topic with a full day session. After a morning dedicated to presentations by the European project IDREEM (Increasing Industrial Resource Efficiency in European Mariculture), the afternoon will highlight IMTA projects in Canada, Norway, Denmark, The Netherlands, Portugal, Spain and Brazil. It is interesting to realize how IMTA has gradually gained legitimacy at international conferences, which now regularly schedule full-fledged IMTA sessions with between 15-20 speakers from as many as 14 countries at a time.

Adoption and scaling up of IMTA will not happen overnight in the western world, but getting organic certification is certainly a very rewarding sign of progress in the right direction.