

BC Fish Farms Look Into Viability of Also Producing Kelp with \$1 million Pilot Project

SEAFOODNEWS.COM [Postmedia] by Randy Shore February 5, 2016

<http://www.seafoodnews.com/Story/1008097/BC-Fish-Farms-Look-Into-Viability-of-Also-Producing-Kelp-with-1-million-Pilot-Project>

The local BC aquaculture industry is hoping to turn waste nutrients from net-pen fish farms into a lucrative chunk of the \$10-billion kelp industry.

Researchers from North Island College are installing lines seeded with baby kelp at 30 B. C. fish farms as part of a five-year, \$1-million pilot project to test the viability of seaweed aquaculture on our coast.

Preliminary trials conducted by project manager Naomi Tabata and Stephen Cross, NIC's Industrial Research Chair for Sustainable Aquaculture, showed strong potential for a commercial seaweed industry.

"This year, the study is much more extensive, with test lines going in near Tahsis, Baynes Sound, Tofino, Port Hardy and Kyuquot," said Tabata.

Lengths of rope in the test sites will be wound with twine seeded with tiny kelp plants, a local variety called *Saccharina latissima*, or sugar kelp. It is used in Asian cuisine to make broth, eaten as a vegetable and processed for use as an industrial thickening agent for ice cream and toothpaste, according to Cross. Sugars from *Saccharina latissima* can also be used to make ethanol biofuel.

Other varieties of kelp are processed for vitamins, cosmetics and pharmaceuticals.

Using spores from mature kelp plants, the researchers immerse lengths of pipe wound with twine into tanks and allow the kelp to establish itself in the fibres. The twine is then attached to lengths of ¼-inch rope, which are being placed this week near aquaculture net-pens secured with weights and suspended by floats.

"It's kind of slick in that it's a very inexpensive process," said Cross.

The test lines are being positioned near ocean-based aquaculture facilities to take advantage of dissolved nitrogen waste released from fish urine and feces.

"There isn't much - it's hard to measure with instruments - but the kelp can benefit from it," said Cross. Large-scale kelp farming could help mitigate the environmental impact of excess nutrients released into local waters by human activities, such as such as aquaculture, but also farming and sewage disposal.

"If we create a viable seaweed culture on the West Coast, it would suck up excess nutrients no matter what the source," he said.

Last year, Cross installed 30 lines at a single salmon farm to determine how far kelp can be placed from the salmon and still benefit from waste nutrients. Kelp within 50 metres of the net-pens grew at an accelerated rate.

This year - by conducting trials at 30 different locations under a variety of local conditions - the researchers hope to discover how water clarity, salinity and local marine conditions affect kelp growth to determine the technical and economic feasibility of kelp as a crop.

"We need to learn how kelp performs in a variety of oceanographic conditions," said Cross. "We will be watching growth rates and quality, then we can begin to pick an optimal site to test infrastructure that will work at a commercial scale."

Large-scale growing, harvesting and processing methods will be tested next year.

"We already know that kelp is very inexpensive to grow," said Cross. "It doesn't have the infrastructure requirements of salmon aquaculture."

Funded by the Natural Sciences and Engineering Research Council of Canada, the project is being run in partnership with the aquaculture industry.

Salmon farmers and their First Nations partners are keen to see the results of the research, in particular whether kelp is viable as a second cash crop on aquaculture tenures, said Jeremy Dunn, executive director of the B. C. Salmon Farmers Association.

"(The salmon aquaculture) industry is uniquely positioned to assist with research that is of ecological, social and economic importance to B. C.'s coastal environment," he said.

Because net pens only occupy a fraction of the space licensed for each farm - the rest is used for cables and anchors to hold the equipment in place - there is usually plenty of room to grow kelp, said Cross.

"That unused space offers an opportunity to grow a second product," he said. "All you need are ropes and floats - it's not rocket science."

Cross has been experimenting in Kyuquot Sound with multi-species aquaculture for more than 10 years, combining sablefish with scallops, oysters, mussels, sea cucumber and urchins to extract nutrients from solid fish waste and growing kelp just downstream to pick up dissolved nutrients.

"It's about creating value from waste," he said.

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Story Posted: 2/5/2016 11:12:17 AM

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Creation Date: 2/7/2016 11:23:00 PM
Change Number: 1
Last Saved On: 2/7/2016 11:25:00 PM
Last Saved By: Julie Decker
Total Editing Time: 2 Minutes
Last Printed On: 2/7/2016 11:31:00 PM
As of Last Complete Printing
Number of Pages: 3
Number of Words: 776 (approx.)
Number of Characters: 4,428 (approx.)