

## Bubble tech

New research facility with an eye on onland farming



## Lofty ambitions

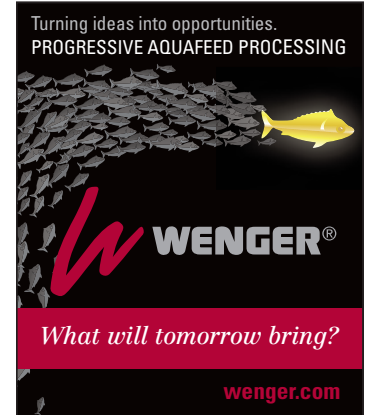
A mountain trout farm with plans for the SA market

## New kid on the block

The new Skretting CEO talks strategy

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# AQUAPONICS

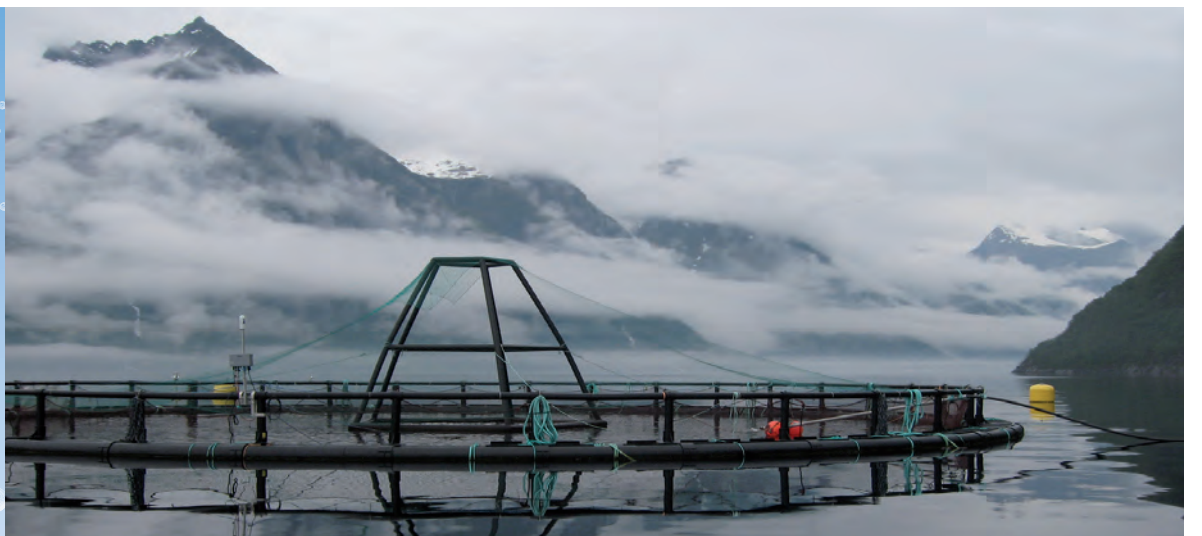
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# AQUAPONICS

## MORE THAN JUST AN IDEAL

Industry experts explain  
why this increasingly  
popular form of  
aquaculture can not only  
survive, but thrive

Avani Nadkarni

**i**nterest in aquaponics has been rising steadily in the past several years as projects have risen everywhere from urban locales in the United States to poverty-stricken villages in Nigeria.

Earlier this year, the University of Wisconsin-StevensPoint and aquaponics technology company Nelson and Pade even teamed up to begin offering a full-semester course in the study of the aquaculture and hydroponics hybrid.

But the question remains: Is aquaponics really commercially viable? And how can it be taken from a backyard operation to a fully-fledged, profit-making commercial undertaking?

That's where Nick Savidov comes in.

The senior research scientist of the Bio-Industrial Opportunities Branch of Alberta Agricultural and Rural Development in Canada has been working

in the aquaponics field for a dozen years and his very job is "not just to develop it, but to commercialize it."

Australia is the definitive global leader in aquaponics, Savidov explains, with the United States following closely behind. Aquaponics farms are cropping up all over the world -- but there are challenges that are hindering commercial viability.

"The problem with aquaponics is that it requires knowledge of both fish species and plants and that's what restricts commercial application of this technology," he says. "Having said that, there are people that can make it work and make it commercially profitable."

The aquaponics facilities are not large -- Savidov estimates one of the largest, in Abu Dhabi, is about one acre. There are others that come close, but most are considerably smaller and "called backyard aquaponics." One to two-thousand square foot operations are not uncommon. Still,



## AQUAPONICS GOING MAINSTREAM?

The burgeoning field has been popping up in the news lately – and it seems there are aquaponics ventures in urban areas and rural spaces alike.

For instance, an operation called Inner City Aquaponics in Rossville, Georgia, is undergoing an \$80,000 (€61,500) expansion at its location on the grounds behind the local high school.

The money is planned to go toward a 5,000-square-foot tank that will serve as a catfish hatchery, which will create 10 new jobs – and a nearby research opportunity for the school's students.

Pro-green blog [Sustainablog.org](http://Sustainablog.org) touts the DIY (do it yourself) aquaponics system, citing people who have created apartment balcony aquaponics systems, old bathtub systems and even “the seriously low-budget aquaponics system” which features plants and crawfish.

Lastly, Tuscon AquaPonics Project organizer Casey Townsend is offering free monthly introduction to aquaponics classes at the University of Arizona, where aquaculture expert and aquaponics enthusiast Kevin Fitzsimmons is a professor. Tucson lies in the middle of the desert, where temperatures can easily skyrocket to more than 100 degrees Fahrenheit (37 degrees Celsius), but Townsend insists the method can be useful for the residents.

Savidov says, the facilities “are not large, but they are coming.”

Fellow Canadian Thierry Chopin is helping Cooke Aquaculture with one such venture.

The University of New Brunswick Professor, who is also the scientific director

at the Canadian Integrated Multi-Trophic Aquaculture Network (CIMTAN), has been working with Cooke to develop a viable aquaponics undertaking.

Instead of thinking of it as an entirely separate world, Chopin prefers to think of it as just taking the next step in Integrated Multi-Trophic Aquaculture (IMTA). Since IMTA consists of farming different species in a way which allows one species' waste to be recycled into input for another species, Chopin says it's simpler to think of aquaponics as the same idea, but on freshwater farms. Farmers need to start thinking of it as doing IMTA from the “egg to the plate,” he explains.

“It's not there yet, but it makes sense and it's the way to go in the future,” Chopin says. “We have to develop it. I think it can become economically viable.”

The major obstacle, he says, is that as of yet, there is no monetary value placed on the benefits of aquaponics. Since the

system combines aquaculture and hydroponics to raise both fish and plants in a symbiotic environment – and simultaneously cleansing the water in a natural, sustainable way – Chopin believes the farmer should get credit for that.

“If we combine not only the intrinsic value [of the fish], but also the service to the ecosystem, then the economic demonstration would be much easier,” he says. “When you do something for the environment, you should also get credit.”

In other words, farmed fish raised with the aquaponics method should be valued more highly – and cost more – bringing more profit to the farmer.

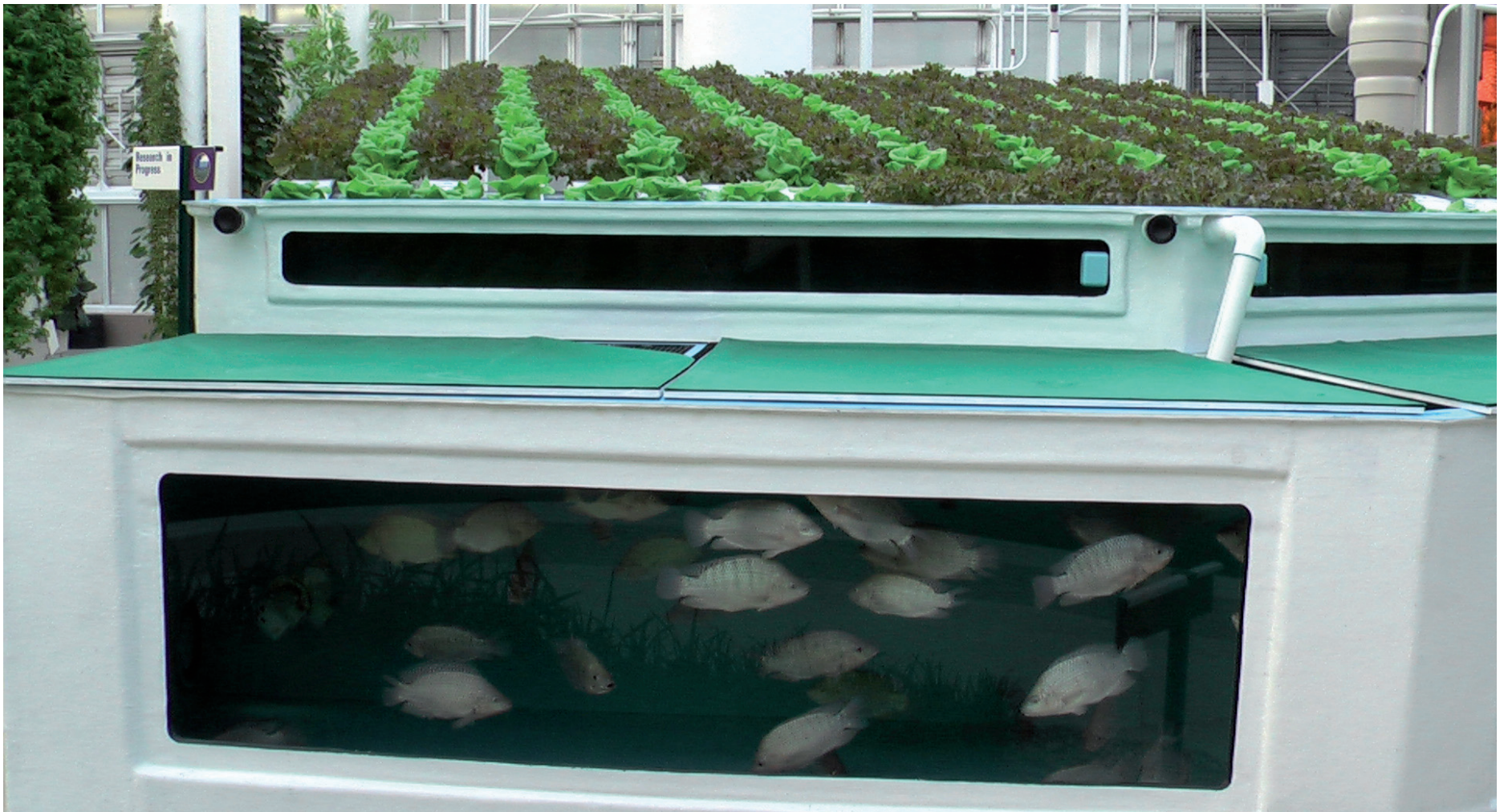
It's also up to the fish farmers, Chopin believes, to change their mindsets about the processes. Many farmers consider the

nine to 18 months that salmon are grown in closed-containment freshwater tanks as “just a phase until it's time to move them to sea,” he says.

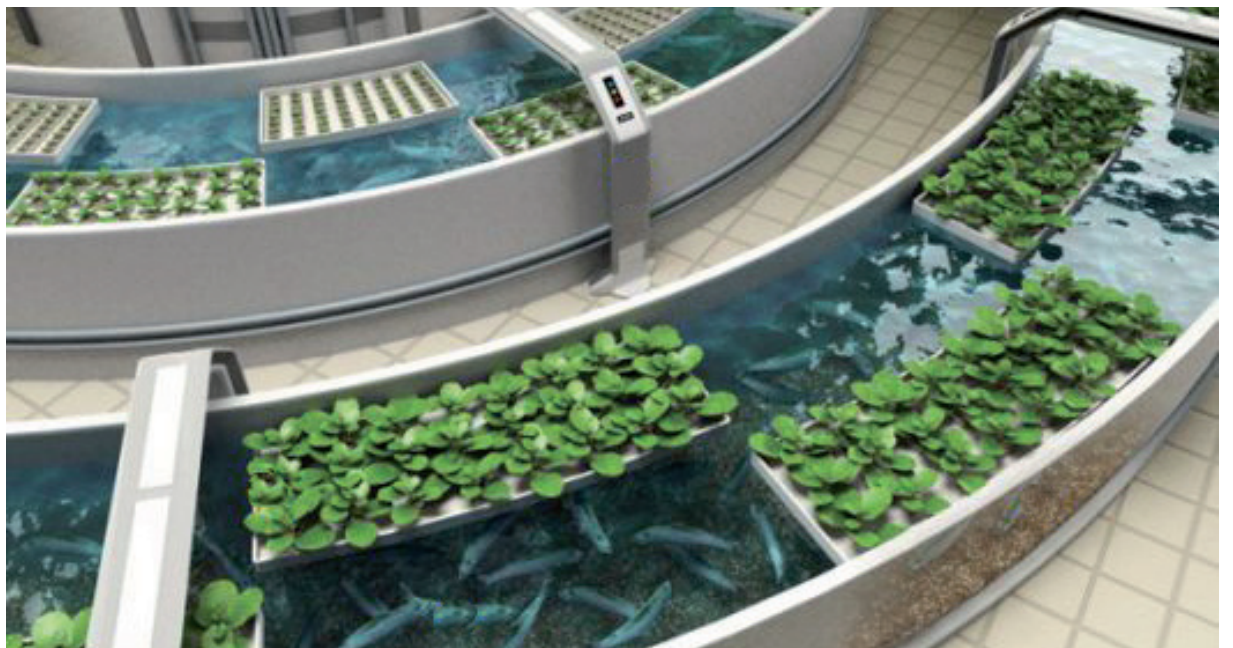
“But while they are cultivating them for [that time], why not take advantage of the nutrients released?” he asks. “Because it's all about that, aquaponics. I have my fish, but instead of just seeing it as an intermediary phase, think of it as they produce nutrients, why not do something with it?”

“It's not there yet, but it makes sense and it's the way to go in the future”

**Thierry Chopin**  
– University of New Brunswick



**SPREADING THE WORD:** Aquaponics operations of all shapes and sizes are cropping up all over the world



## IMTA AND AQUAPONICS: WHAT'S THE DIFFERENCE?

Integrated multi-trophic aquaculture (IMTA) refers to the farming of different aquaculture species together so one species' waste can be another's feed. A British Columbia laboratory is investigating the potential of combining sablefish, scallops, oysters, cockles, sea cucumbers and kelps – thought to be ideal for IMTA. It bears in mind the same concept as aquaponics – farming separate organisms together to increase value and decrease environmental harm.

However, according to UK-based Bristol Fish Project, although aquaponics sits under the IMTA umbrella, its viability is scrutinized much more than IMTA itself.

"The viability of aquaponics ... attempts a more whole-system approach, with as much attention on the hydroponic aspects as the aquaculture aspects," the Bristol Fish Project website reads.

Many businesses that claim to be aquaponics businesses are relatively young – Bristol Fish says many are less than a decade old – and "to date some are profitable and some are not."

"Many are diversifying to go beyond selling fish and plants as a means to secure their incomes," the group says.

Conceptual diagram of a freshwater IMTA/aquaponic operation

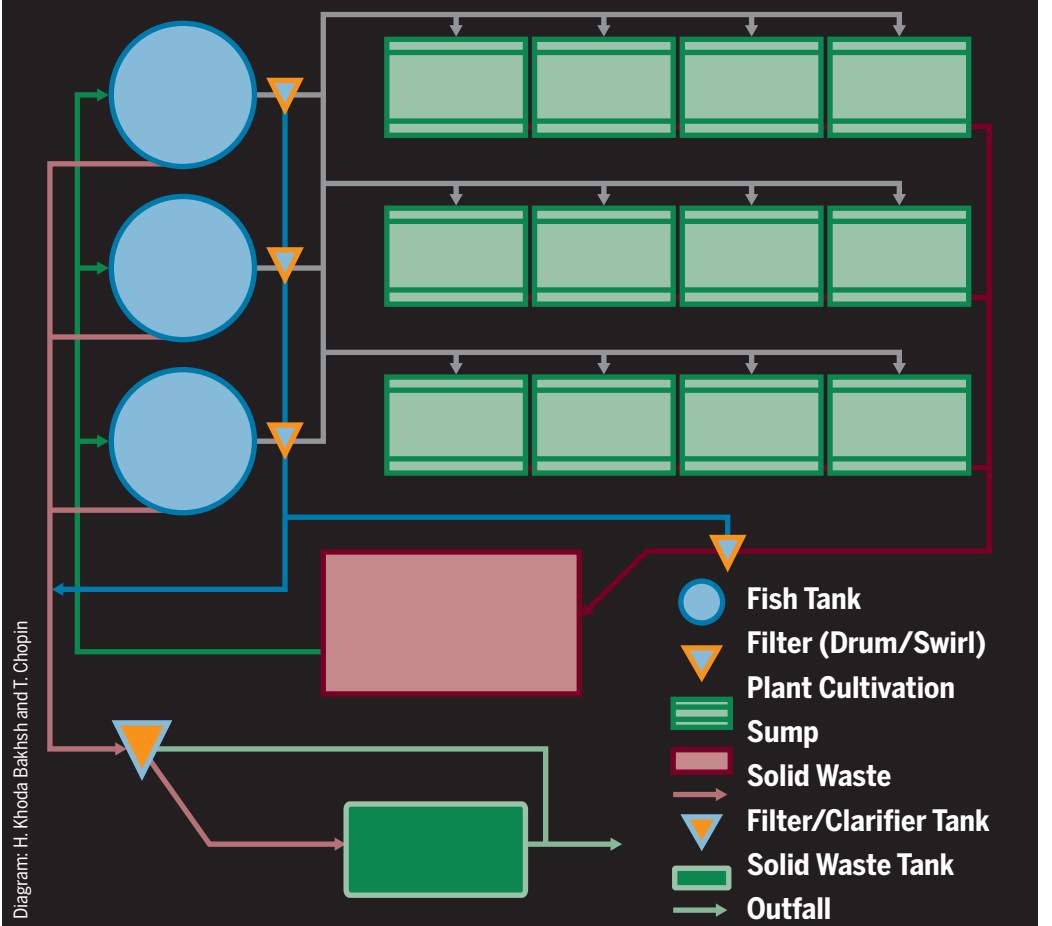


Diagram: H. Khoda Bakhsh and T. Chopin



**TILAPIA:** A species suited to an aquaponics set-up

In addition, Chopin says with aquaponics, farmers can get rid of the problematic phosphorus that is always an issue in freshwater aquaculture. Instead of mixing the element with chemicals or use physical treatments, aquaponics allows the plants to absorb the phosphorus naturally.

“Let’s have plants do the trick, which is absorbing the nutrients,” Chopin says. “We can take advantage of the salmon cycle.”

#### Keeping in line with mainstream production

Savidov adds that to be truly commercial, “we need to keep the same standards which the industry uses in conventional production.” He is currently working with Red Hat Co-operative, one of Canada’s largest producers that grades, packages and markets greenhouse vegetables grown by a cooperative of farmers, to expand their aquaponics facility.

He says the vegetables Red Hat has grown via aquaponics are very competitive to the ones grown in conventional greenhouses – and he says it must continue that way. The fish grown in aquaponics must also be held to the same

standards as other farmed – and wild – fish, too. Savidov says some facilities, like Illinois-based AquaRanch, are working to become certified organic, although stricter organic rules in Canada are making it harder for the facilities in that country.

Another challenge for nations in the northern hemisphere? The blustery

Still, it’s not impossible or improbable, he insists.

“When you are in Canada or the United States, the winter is pretty cold, so you have to ... choose different organisms, different species,” he says. “There is not one solution that fits every region in the world.”

Chopin and Cooke recently received grant money from CIMTAN to develop

different because you’re growing crops, not only fish, so there is a learning curve. But for a company that already has the infrastructure, it should be easier.”

Chopin says he hopes to “differentiate” the product with the use of freshwater IMTA and, once the aquaponics operations are underway, “I will be able to say our whole chain of production is IMTA.” That kind of differentiation is vital for getting premium price.

Both Chopin and Savidov say aquaponics is indeed viable – but it’s not without challenges – and stigma. Chopin thinks “people are starting to realize the potential” of this method. Savidov has been working with University of Arizona Professor Kevin Fitzsimmons to increase awareness of

the potentially lucrative method.

“My personal opinion is if we see more aquaponics operations in the future, there will be more public awareness ... because there is still lots of confusion about what aquaponics is,” Savidov explains. “There will be even better environments for integrated farming in North America.”

“There is not one solution that fits every region in the world”

**Thierry Chopin**  
– University of New Brunswick

“... If we see more aquaponics operations in the future, there will be more public awareness... because there is still lots of confusion about what aquaponics is”

**Nick Savidov**  
– Alberta Agricultural and Rural Development

winters. Although both the Alberta provincial government and the Canadian national government have invested in aquaponics, Chopin acknowledges that the harsh winters of North America aren’t always the easiest in which to use aquaponics. Tropical regions, where the fish and plants can be outdoors year-round, could be ideal.

aquaponics, or freshwater IMTA as he calls it, in the next two to three years. They have applied for other grants, as well, as Chopin admits there are some costs associated with getting the process on the road.

“But when a company already has a hatchery, when the labor force is there [it’s much easier],” he says. “It’s a little