

Scientists say feeding fish soy, not fish, more sustainable

November 22 2015, by Dirk Lammers

Research supported by the soybean industry is looking to convert some farm-raised fish into vegetarians.

A South Dakota State University fisheries scientist is developing a soy protein feed that's tasty and easily digestible to eventually reduce the industry's need for using wild-caught [fish](#) as food for farm-raised fish.

Much of the tilapia, Atlantic salmon and catfish that Americans toss into their shopping carts are raised in fish farms, where companies traditionally feed them pellets containing anchovy, menhaden and herring. The harvest of those small species has pretty much flat-lined, SDSU professor Mike Brown said, and humans' increased demand for fish has driven up the cost of creating the pellet feed.

"We've fully exploited that resource," he said, noting that the goal is to create a more sustainable—and cheaper—food source. Traditional fish feed is currently costing between \$1,450 and \$2,000 per ton, while soybean meal runs about \$425 per ton, Brown said.

But some environmentalists worry that feeding fish species an uncommon food source could produce excess waste that muddies up inland tanks or offshore waters where fish are raised.

Toying with soy also has the potential to open new markets to soybean farmers dealing with stockpiles that have driven down prices, said Jeremy Freking, executive director of the South Dakota Soybean

Association. The South Dakota Soybean Research & Promotion Council has invested \$1.7 million into the ongoing work at South Dakota State, which is being commercialized at the site by Prairie AquaTech.

Researchers at the Brookings facility have been working with species including coho salmon, rainbow trout, barramundi, white leg shrimp, yellow perch and hybrid striped bass to see how much of the feed can be added to the species' diets without affecting physiology or reducing growth.

The goal in agriculture and aquaculture is to have 100 percent of an ingredient digested, absorbed, metabolized and incorporated into muscle tissue, Brown said. Through pre-treatments and microbial fermentation, his research team has been able to increase fish's ability to digest more than 95 percent of the protein and energy, he said.

"It's pretty darn efficient," said Brown, who's been setting up small commercial validation trials as researchers work toward putting their product into the marketplace.

But if soy protein-based food results in excess waste, aquaculture could become even more damaging to the environment, said Patty Lovera, assistant director of the Washington-based sustainability group Food & Water Watch.

"If it's not the food they're built to eat, how do they tolerate it?" she asked.

It's also important to look at the entire environmental footprint—and industrial fish farms already have a pretty large one, Lovera said. Plus, she added, the equation would have to include all the factors going into crop production.

"Nothing's free in terms of environmental impact," she said, "so you have to count the soy production system in whatever you're calculating there."

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