

Here, Fishy Fishy: Aquaculture Systems

Aquaculture Background

In 2012, U.S. consumers spent \$82.6 billion on seafood, making the nation one of the top three seafood markets worldwide. Yet the value of aquaculture products produced in the U.S. only approaches \$1.3 billion annually. Why? One major challenge facing aquaculture today, is creating sustainable feeds. Just like when they are in their natural habitat, carnivorous or omnivorous fish being raised in an aquaculture system need to consume nutrients from other fish and seafood. These nutrients have historically come from small wild-caught fish (e.g. anchovies) that are processed into fishmeal or fish oil and used as ingredients in aquaculture feeds.

In the past, the aquaculture feeds industry has been criticized for using several pounds of wild-caught fish to make just one pound of farmed fish. However, due to advancements in technology and an increased focus on sustainability, researchers have been able to create soy-based diets that use only 1/2 - 1 pound of wild fish to make one pound of farmed fish.

Soybean meal can serve as the primary protein source in all-plant protein diets for freshwater omnivores, sparing more expensive fish meals and animal meals for more specialized feeds. The U.S. soybean industry's Global Soy in Aquaculture (GSIA) program and several U.S. universities have focused on developing, testing, and demonstrating the value of U.S. soy products in freshwater aquafeeds for major farmed species around the world.

Soybean meal, soy protein concentrates, soybean oil, and other vegetable proteins and oils, can replace from one-third to one-half of the fishmeal in feeds for many farmed species, reducing the need for wild-caught fish for fishmeal. Soy protein concentrate is a renewable plant protein product that can help reduce pressure on natural fisheries stocks and help provide sustainability to the growing demand for aquatic products.

See the following for additional information:

Have students complete the e-learning course on Aquaculture and Soy Protein:

<https://grownextgen.org/elearning>

Facts about Soybeans as Aquaculture Feed:

<https://ussec.org/wp-content/uploads/2015/10/Facts-Aquaculture-Soybean-Feeds.pdf>

Background Info on Aquaculture: Is Aquaculture Sustainable? Mythbusting Feed, Food and the Future

<https://www.youtube.com/watch?v=rMf7VyfLAnc>

Southern Regional Aquaculture Center

SRAC 0452: Recirculating Aquaculture Tank Production Systems: Management of Recirculating Systems

<https://srac.tamu.edu/>

Info and video link on recirculating tanks

<https://articles.extension.org/pages/58711/recirculating-systems#.U8XHDFbdldu>

Background Info for Tilapia:

<https://srac.tamu.edu/viewCategory/11>

Feed plan for Tilapia: [TilapiaTankCulture.pdf](#) (pg. 5)

Specifications for Tilapia: [TilapiaBiologyHistory.pdf](#)

Background info on Fish Health Management:

<http://www.aces.edu/dept/fisheries/education/ras/publications/Update/Fish%20Health%20Mgt%20in%20Recirc%20sys%20Part%203.pdf> (Fish Health Mgt in Recirc sys Part 3.pdf)

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