RESEARCHING TO BUILD *a better partnership*

Both domestically and globally, increasing aquaculture requires a dedicated effort to better understand the needs of aquaculture species to maximize soybean use. Research efforts are necessary to better understand not the only the species but the genetic makeup of farm-raised aquaculture that can best utilize soybeans, and also the right inclusion rate and production method for soy-based feeds. The following are a selection of SAA investments in cutting-edge research focused on finding the best way to feed, breed and grow this unique partnership.

✓ Soybean efficiency ✓ Increased soybean use ✓ Aquaculture industry growth

✓✓ **Soymeal as a replacement for fishmeal***
Focus: Processing requirements to replace fishmeal at the same nutritional level and at higher inclusion rates (2017)

✓✓✓ **Taurine inclusion to increase plant-based diets***
Focus: Increasing soybean meal as a replacement for fishmeal with the inclusion of newly AAFCO-approved crystal taurine amino acid, increasing soybean meal efficiency (2017)

✓✓ **Genetic selection for effective soymeal diet inclusion***
Focus: Genetic evaluation / selection to maximize soybean meal feed efficiency (2017)

✓✓ **Break 20% soy-inclusion barrier***
Focus: Assess genomic, physiological and microbial factors for genetic selection for higher soybean meal feed efficacy (2015)

✓✓ **Selective breeding technology for increased plant-based diets***
Focus: Assess broodstock and genetically select plant-tolerant fish (2015)

✓✓✓ **Commercial in-pond raceway pilot***
Focus: Increase production capacity with increased soy-based feed use (2015)

* Study on file at SAA.

Soy Aquaculture Alliance

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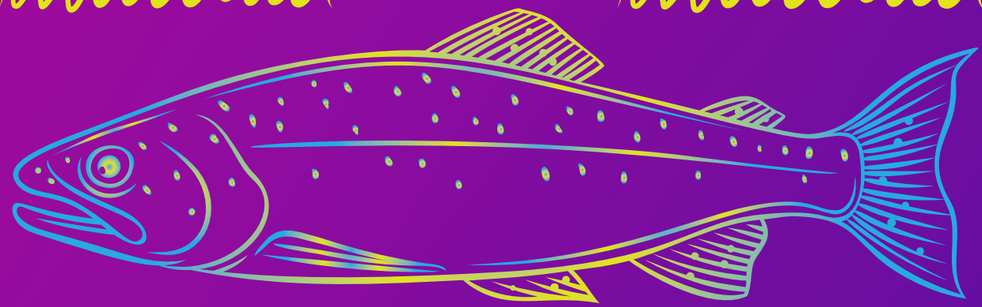
FARM-RAISED,

ON LAND & IN WATER



Soy Aquaculture Alliance

GROWING 2 markets, together

Soybeans and fish seem unlikely partners, but bringing the land and sea together offers major opportunities for both. After years as a feed source for other farm-raised proteins, soybeans are entering a whole new space: *the waters of aquaculture.* As new regulations, over-fishing and an increased demand for sustainable and plentiful protein crosses the globe, farmed aquaculture is finding a foothold. Soybeans bring a nutritional feed source that meets the sustainability, quality and consistency needs to keep the market growing. In the process, U.S. soybean farmers benefit from opening a new and growing market.

Soy-fed aquaculture opens unprecedented opportunities to:

- Feed a growing population with the most feed-efficient farm-raised protein
- Build a lucrative domestic market for fish growers and soybean farmers alike

Formulating aquaculture diets based on nutritional requirements while leveraging a cost-effective feed source – soybeans – sets in motion a mutually beneficial ROI for the entire value-chain. To accomplish these goals, the Soy Aquaculture Alliance is investing in research and education through partnerships with leading research institutions, nutritionists and breeders.

Increased demand for fish protein
By 2030, we need approximately a 44% increase in production to meet demand

Increased population, highly dependent on fish protein
40% of global population relies on fish as main protein

Overfished wild-species globally
2/3 of the world's fish are overfished and depleted

Aquaculture Industry

Fledgling domestic aquaculture industry
U.S. ranks 16th in current seafood / aquaculture production

Effective feed conversion ratio
To gain a pound of body mass, farm-fed fish are 7x more efficient than beef

Replacing fish meal in the diet
Fish meal is becoming increasingly difficult to access due to environmental factors such as El Nino; As supply and demand ebb and flow, price continues to rise

Using more soybeans
Between catfish, shrimp, salmon and trout, over 4 million metric tons of soybeans are currently being used in farmed diets (2015). Equalling nearly 81 million soybean bushels

Soybean & Aquaculture Industries

Increased awareness of food's origin
Nearly 90% of U.S. seafood is imported leading to a $16.1B trade deficit

Making soy work in diets
Catfish and shrimp can include up to 26% soy in their diets; Salmon and trout can include up to 13% soy in their diets

Soybean Industry

Steady U.S. soy production
Increased number of acres and yields present an abundance of U.S. soybeans

U.S. consistency and quality
The U.S. soybean market offers unrivaled soybean quality and consistency

Finding new markets
Consistently searching for new markets helps solidify best price opportunities