SOY AQUACULTURE
ALLIANCE

FISH N' MORE:
FISH+ 'S GREENER SCORE
SUSTAINABLE AQUACULTURE
SUSTAINABILITY, SECURITY AND ROI

PICTURE BUILDING A SUSTAINABLE, MULTI-RESOURCE AQUACULTURE PRODUCTION SYSTEM

- Holds down production waste and carbon footprint
- Feeds expanding and healthful market demands
- Strengthens critical domestic food security
- Consistently provides economic return on investment through multiple product channels

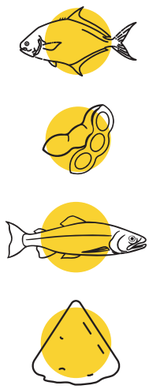
WE CAN CONSTRUCT THIS FOOD FUTURE NOW

GLOBAL DEMAND FOR ALL SEAFOOD PROJECTED TO DOUBLE BY 2050

INTEGRATING, RECIRCULATING, AND PRODUCING

WHAT IS IT?

- A **Recirculating Aquaculture System (RAS)** is a closed-loop system of constant and controlled climate for fish that filters and reuses water for maximum sustainability.
- **FISH+** centers the highly efficient RAS at its core of seafood production — but also extrapolates to apply elements of the RAS design to the farming of crops, vegetables, hay, and biomass. **It is truly Fish + More, with a sustainabilty success story.**
- **FISH+** allows not only more efficient aquaculture production, but the value added benefit of additional marketable products, including:



- Fish byproducts for high-value medical & cosmetics
- Fish oil
- Fish meal for off-site aquaculture feed
- Fresh greenhouse vegetables
- Liquid organic fertilizer from fish-processing waste
- Bermudagrass, Triticale, & other livestock feed
- Biomass crops for bioenergy

THE U.S. IMPORTS 80-90% OF ITS SEAFOOD - AND DEMAND CONTINUES TO GROW

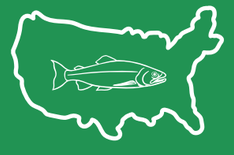
IRASPP GOAL: PRODUCE 2 POUNDS OF FISH PER 1 GALLON OF WATER USED EACH YEAR

EXTREME H2O RECYCLING

SUSTAINABILITY

FISH+ uses and reuses this resource throughout the entire campus!
Well water passes into and through the fish systems, where 3 to 3.5% of the water carrying unused nutrients is discharged to holding reservoirs to be recycled in the production of filtering fish species. More importantly, it is recycled to irrigate a suite of food, feed, and biomass plants, all of which are highly marketable. The water and nutrient mix is used in field crop production, as well as in greenhouse food production.

KEEPING IT LOCAL



SECURITY

Increasing domestic production of protein, including seafood, helps safeguard U.S. food supply and security against the market, geopolitical, and climate forces that can interrupt import of these goods from overseas. Production of diverse fish species can replace the 80-90% of seafood imported to satisfy growing U.S. consumer demand.

OFFAL IS KIND OF GREAT

ROI

In addition to whole dressed and skinless filets seafood markets, processing plant byproducts such as skin, scales, viscera, heads, fins, and skeletons are further processed. Rather than considered waste, they add significant revenue as high-value medical and cosmetic products, fish meal through ABVRS* rendering, and liquid organic fertilizer.*

*Agricultural Byproduct Value Recovery System - rendering developed at Auburn University to process fish offal into dry fish oil and meal while producing no noxious smell, dust, or wastewater.

RE-HEATING

SUSTAINABILITY

To reduce fossil-fuel energy, the FISH+ boiler plant is optimized to burn biomass “miscanthus and sorghum”, as well as waste wood (bark, chips, sawdust, and more). This thermal process treats the well water (instead of pulling from municipal supply) and heats it to climate-control the fish tanks in colder months. Residual heated effluent passes through greenhouse pipes to warm the atmosphere for vegetable growth.

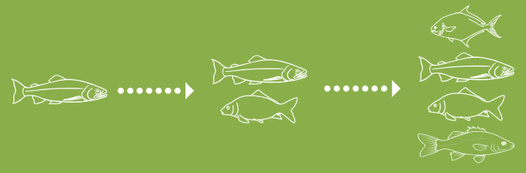
MILLING ABOUT

SUSTAINABILITY

A dedicated, full-scale feed mill turns soy and feed grains, with additional ingredients, into the correct mix to enable top-quality diets for fish at different life stages. These diets can be tweaked to immediately accommodate fish health or intake. Because the mill is located on-site, cost for the movement of feed to use points is reduced by more than 95%.

FISHING FOR SUCCESS

ROI



Initially designed for tilapia, this system is highly adaptable to multiple fish species:

- Hatchery and nursery to produce up to 2.5 million fingerlings per month
- Approximately 28-30 million pounds of fish will be harvested annually
- Approximately 500,000 pounds per week moved from tanks to on-site processing

FROM THE FIELD

SUSTAINABILITY & ROI

Despite what you might expect, the majority of FISH+ acreage is dedicated to recycling water and unfixed nutrients while saving on wastewater treatment costs in favor of production of bioenergy crops, hay and livestock feeds, and fruits and vegetables for consumer markets.

- Bioenergy crops → on-site boiler plant power
- Hay → sold for livestock use
- Greenhouse veggies & fruits → sold for customer use

FISH+ wastes almost nothing — recycling water, nutrients, even thermal energy through two or more systems for maximum production at the most economical cost. And, the FISH+ approach provides careful stewardship of critical environmental ecosystems... while also embracing opportunities, technologies, and rising food trends.

Standalone aquaculture facility: **INVESTMENT - $208 MILLION**; Total Costs - **$275 MILLION IRASPP: INVESTMENT- $205 MILLION**; Total Costs- **$77 MILLION**

A WIN-WIN-WIN:

SECURE FOOD SYSTEMS
SUSTAINABLE FOOD SYSTEMS
ROI-DRIVEN FOOD SYSTEMS

READY TO INVESTIGATE MORE?

LET'S SCHEDULE A DEEPER DIVE

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