

Aquaculture

Does “Old McDonald’s Farm” Need a Revamp to add...FISH?



What Is “Aquaculture”?

Aquaculture, also known as “aquafarming” yet more familiarly called “fishfarming”, is defined as “the cultivation of aquatic animals and plants, especially fish, shellfish, and seaweed, in a natural or controlled marine or freshwater environments”. In short, “agriculture underwater”. These terms are often used interchangeably.

Yes, fishfarming is accomplished in a controlled environment, and it can be for public, recreational or commercial purposes. The host environment can also be sustained in various aquatic bodies (fresh or saltwater) including oceans, rivers, lakes, ponds and even a land-based closed system (man-made).

It’s Multifaceted:

In the United States, aquaculture plays a vital role and:

- Supports U.S. seafood production
- Provides jobs throughout the year
- Nurtures endangered species and their habitats
- Enhances food security and improves nutrition

Although aquaculture principally involves the farming of fish, shellfish, plants and various other organisms, it

“Human societies face the enormous challenge of having to provide food and livelihoods to a population well in excess of 9 billion people by the middle of the 21st century, while addressing the disproportionate impacts of climate change and environmental degradation on the resource base.”

- José Graziano da Silva, FAO Director-General

differs from commercial fishing which focuses on wild fish. Today various kinds of marine and freshwater fish and shellfish species are being farmed by utilizing aquaculture technology. Production of marine farmfishing typically includes algae, clams, mussels, salmon and shrimp while freshwater species for this technology can farm the fish tilapia, catfish and trout. In fact, freshwater farming of trout and catfish in the U.S. dominates at 70% with a limited number of U.S. farms focusing on marine fish (i.e. salmon) in the northwest and northeast.

Now with global recognition, aquafarming has become a fast growing form of food production. Wild fishery harvesting is peaking as well around the globe and discovered to be efficient in meeting the population's increasing seafood demands.

On the global scale, close to 50% of seafood for human consumption is the product of aquaculture, and the U.S. is a leading consumer. Yet although a major consumer, the U.S. is a minor producer with over 80% of U.S. seafood being imported. In contrast, only 5% of U.S. marine and freshwater aquaculture is produced within the U.S.

With such numbers, it becomes apparent there's a need for the U.S. to build and expand its aquaculture industry both to meet increasing seafood demand and lower the current import deficit (a \$9 billion expense annually).

It Evolves

From its nascent beginnings of little more than wooden cages (of the 60's), fishfarming has evolved and advanced from a rudimentary mechanical emphasis to a technological one. Those cages are now made of polyethylene or steel, and the systems accommodate increasing demands for more nutrition within the aquaculture diet, for example various additives to enhance quality. Projections are that 2018 will bring even more change and leaps in the industry.

It Trends - 2018's Biggest

Most countries have embraced aquaculture at varying degrees. Globally the industry has grown on average at 5.8 percent annually, and this is projected to continue over the next decade. There is more reliance on the production of aquaculture in other businesses -- the food industry in particular. Over 50% of seafood throughout the world is produced by aquaculture.

Certain trends and changes are anticipated in 2018, and these include: the evolution of aquaculture systems and equipment, more focus on sustainability, less antibiotics and continued growth in the industry.

It Has Challenges

There are three recurring concerns with regard to aquaculture on sustainability: Environmental degradation, Feed and the Influence of Wild Gene Pools.

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1) Environmental degradation - Certain farms are known to adversely impact natural habitats, i.e. shrimp farms.

2) Feed - In aquaculture, with fishmeal serving as the primary source of feed, a substantial number of fish are targeted for its creation. An unfortunate consequence of this is overfishing which decreases usual reproduction.

3) Wild Gene Pools - Whenever farmed species escape, they impact native gene pools once in the wild, hence native populations also begin to diminish as the farmed species ultimately compete for food.

It Grows

As the aquaculture industry continues to broaden its reach throughout the world, forecasters project that by 2020 the industry will have grown another 4%.

Countries combating food production issues anticipate expanding their market share (esp. Africa). Along with the U.S. other countries interested in expanding their current

market share in aquafarming include Nigeria, China, India, Norway, Russia and others.

It Networks

In March of 2018 AQUABANQ, a global aquaculture business, headquartered in Europe, announced a new U.S. salmon farming-on-land plant to be based in Sheridan Wyoming. Their mission: "Challenging established farming methods with sustainable alternative"

The announcement stated they are accelerating their plans for the production facility by at least a year which suggests urgency and excitement for completion.

"Current plans include the construction of an industrial-scale RAS-based plant capable of producing 10m pounds (5,000 metric tons) of head-on/gutted Atlantic salmon by 2022. Five additional RAS units will be added to double the production capabilities to 20m pounds (10,000 metric tons) of fish per year by 2025."



“We can easily compete with [open-pen] cage farming operators as our production costs are on a par at this point” says AJ Shapiro of Aquabanq, but he continues, “the fish in closed-containment systems are not exposed to parasites and pollutants like sea lice and plastic, and unlike our competitors, we can guarantee a year-round production.”

For more information about AQUABANQ Inc. (a subsidiary of U.K.-based Aquaculture Management and Holding Co. Ltd) and their plans, see the official website at <http://www.aquabanq.com/>

Regional Aquaculture Centers

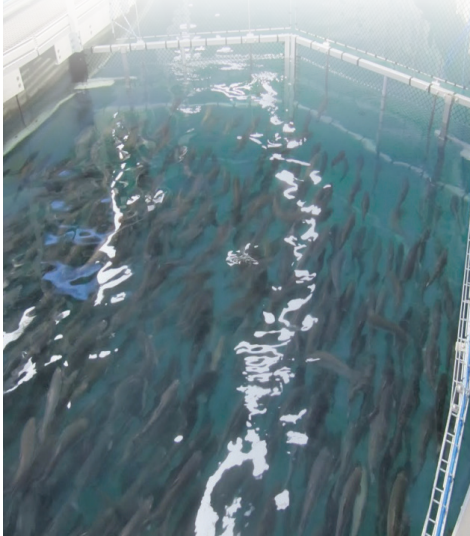
The feasibility and value of aquaculture to industry is also demonstrated in the establishment of several Regional Aquaculture Centers (aka RACs). It was the congressional 1980 Agriculture and Food Act and the 1985 Food Security Act that moved the needle substantially in aquaculture research and development in the U.S. Subsequently, the USDA implemented the National Aquaculture Development Plan (Subtitle L). With \$3 million in funding, five RACs were established (in Massachusetts, Michigan, Mississippi, Washington and Hawaii) representing multiple states in a region. These centers have relationships with their respective state-level departments of agriculture, nonprofit private research, federal facilities and colleges and universities. The RACs oversee and fund R&D projects that handle industry concerns related to their particular region.

The five regional centers are: Center for Tropical and Subtropical Aquaculture (CTSA) at The Oceanic Institute of Hawaii Pacific; North Central Regional Aquaculture Center (NCRAC) at Michigan State University; Northeastern Regional Aquaculture Center (NRAC) at the

University of Maryland; Southern Regional Aquaculture Center (SRAC) at Mississippi State University and Western Regional Aquaculture Center (WRAC) at the University of Washington.

A Current Global Look

In Rome (July 2018), The State of World Fisheries and Aquaculture



submitted aquaculture statistics that look promising. The report cites that fish production would continue to expand globally over the next 10 years despite the fact that the number of fish being captured has leveled off and growth has begun to slow (FAO new report).

- By 2030 production and aquaculture together will grow to 201 million tons (The State of World Fisheries & Aquaculture - SOFIA)
- An 18% increase over current production of 171 million tons

FAO does caution that growth in the future might depend on strengthening management of fisheries, minimizing loss and waste and addressing real issues of illegal fishing, environmental pollution and climate change.

Overall, there is no stopping the advancement of the aquaculture industry worldwide as it supplies a continuing demand and, by its very nature, is forward thinking.

Ah, not so implausible is it that one day every farm will have FISH.

E-I-E-I-O.



- J.A. Bell

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