



THAILAND'S SHRIMP AQUACULTURE REVOLUTION

Many people claim to know what is happening in Thai shrimp aquaculture today, without ever visiting a farm. The reality is, aquaculture has been practiced in Thailand for hundreds, if not thousands of years. But as global demand for shrimp began to skyrocket in the 1980s and 90s, the country developed “intensive” farming methods which stocked shrimp at high densities and boosted yield.

Without knowing it, this made farms susceptible to the spread of disease, which began to decimate Thai shrimp crops beginning in 2011. Billions of shrimp were killed by a mysterious disease which reduced survival rates in juvenile shrimp and was dubbed early mortality syndrome (EMS). Thousands of farmers lost their entire crop within days, and the price of shrimp surged. EMS cost Thailand over 1.5 billion dollars in 2013 alone.

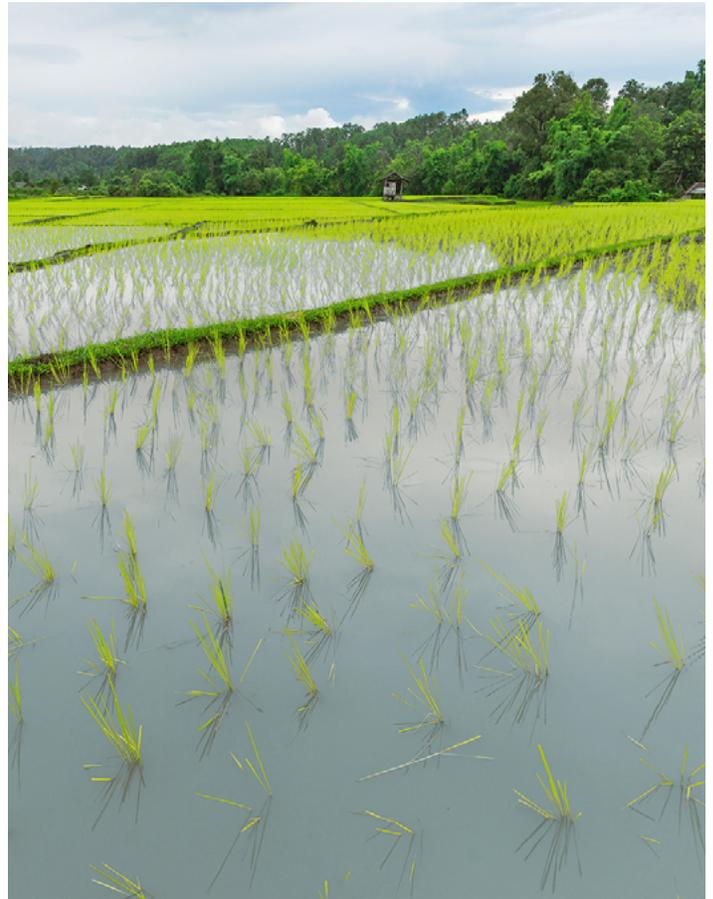
In the wake of this disease, however, the industry has come back even stronger, with higher quality shrimp and truly sustainable practices. Today, Thai shrimp farming is undergoing a revolution known as “Intensive 2.0”.

HISTORY

To better understand this current aquaculture revolution, we have to look at how the industry has evolved since inception. One of the first instances of aquaculture occurred inadvertently in Southeast Asia, when rice farmers flooded their crops, only to find juvenile fish and shrimp growing in the rice paddy.

Some farmers then dedicated their land for the sole development of aquaculture. This is known as extensive farming—growing shrimp in ponds with limited technology and at low stocking densities. In other words, growing a small amount of shrimp in a large space. This type of farm continues to this day, requiring less work but more land.

In the 1980's and 90's, a new kind of farm developed throughout Southeast Asia in response to increasing global demand. Intensive farms were stacked next to each other for miles and miles.



Modern-Day Flooded Rice Paddies



An Extensive Farm in Chanthaburi, Thailand

The goal of intensive farming was to produce as much shrimp, in as small of an area, as quickly as possible. The farms shared water resources and were stocked too densely to be properly managed. Illnesses were able to transfer rapidly through huge farming communities. Shared water resources, poor post-larvae (juvenile shrimp) quality, and poor farm conditions ultimately allowed EMS to spread worldwide.



Traditional Intensive Farms in Ca Mau, Southern Vietnam

Today, a paradigm shift in farming methods is underway in Thailand. We are seeing a trend towards a new style of farming known as Intensive 2.0. This farming method is a high-volume food production system designed with sustainability in mind. The goal of Intensive 2.0 is to improve water quality and animal health to mitigate the risks of EMS and other illnesses.

HOW INTENSIVE 2.0 FARMING COUNTERACTS EMS:

1. ADVANCED WATER SYSTEMS

One of the most important changes in Intensive 2.0 farming is the use of reservoir ponds. These reservoirs provide a consistent and clean source of oxygenated and filtered water to a pond of shrimp.

Additionally, Intensive 2.0 uses advanced filtration systems. One example is the use of a central drain. This clears sediment and detritus material from the bottom of the pond. Farm workers operate the central drain multiple times per day to remove this waste, helping to create a clean environment. Central drains also allow farms to recirculate water.

2. INCREASED DISSOLVED OXYGEN

One feature of Intensive 2.0 aquaculture is to increase dissolved oxygen rates in ponds. Intensive 2.0 improves dissolved oxygen levels with wheel aerators and microbubblers. This helps shrimp breathe better, grow faster, and prevents diseases common in high density ponds with stagnant water. Ponds with high levels of dissolved oxygen reduces instances of stress in shrimp.



3. USE OF PROBIOTICS

Intensive 2.0 aquaculture uses probiotics to improve the health of shrimp. Bioflocs, groups of probiotic bacteria and microorganisms, naturally break down waste (ammonia, nitrite) into harmless dissolved nitrogen. This helps farmers raise healthy shrimp. Bioflocs also act as a natural food source for shrimp, supplementing their diet. Additionally, Probiotic bacteria often out-competes malicious bacteria. This reduces the chance of illnesses in ponds.

4. ADVANCED NURSERIES AND BREEDING TECHNIQUES

Intensive 2.0 is different from its predecessor by utilizing external nurseries. EMS typically hits within 40 days. Before Intensive 2.0, farmers would put all the juvenile shrimp into the pond directly. But by keeping them in an external nursery, farmers are better able to watch for signs of illness. Farms with external nurseries are far more successful and exponentially reduce their risk.

Intensive 2.0 shrimp aquaculture promotes advanced breeding strategies. The best way to prevent disease from the start is to use selectively bred, genetically superior post-larvae. Post-larvae with good genetics have high growth rates, feed-conversion rates, and improved yields.



SHRIMP AQUACULTURE FARMING METHODS

	EXTENSIVE	INTENSIVE	INTENSIVE 2.0
STOCKING DENSITY	LOW	HIGH	HIGH
YIELD	LOW	HIGH	HIGH
MODERN TECHNOLOGY	NONE	SOME	HIGH
RISK OF DISEASE	LOW	HIGH	LOW



CONCLUSION

The catalyst for Thailand's sustainable aquaculture revolution has been better risk management. Farmers have learned that the key to producing high-quality shrimp and reducing the chance of crop failure is the [development of best practices](#). Although EMS has proved to be extremely trying, the upside has been the development of a more sustainable farming approach known as Intensive 2.0.

**LEARN HOW WE CAN IMPROVE
YOUR SHRIMP SUPPLY CHAIN**