

All About Shrimp

How the market impacts production.

The demand for farmed shrimp is growing. Unfortunately, while some would have you think otherwise, not in a predictable manner. There are NGO's that would have you think that there is no limit. This is not the case. China is driving a large amount of demand largely as a result of their long term neglect of the essential role of clean environments in sustainable production. Their middle class is burgeoning further driving demand. A short fall of more than a million MTs a year is providing a boon for Ecuadorean shrimp farmers who are able to sell increasing quantities of shrimp to China.

While this is a good thing in the short term, in the long run it is not. China has committed large resources to ensuring a consistent food supply for its almost 1.5 billion inhabitants. They are moving away from non-sustainable models to high density, highly controlled systems and the goal is to reduce their dependence on imports. It is critical that the industry continue to develop more efficient and less costly methods of production to ensure expansion of demand. Relying heavily on any one market, as we have seen repeatedly historically, is not wise.

FRAUD IN INDIA

A former distributor for Aquaintech Inc., VB Aquaculture (fired for dishonesty) along with another company, Amrita, are selling a product claiming that it is ours. Our trademark, PRO4000X, trademarked in the US by virtue of being in use for 15 years, was stolen. *We do not sell our products to either of these companies.* It has been my experience that individuals that are willing to do this cannot be trusted and frankly, anyone who buys from them is being foolish. Thieves cannot be trusted. Contact us on how you can contact our distributor in India or [click here](#).

Aquaintech is short for:

Aquaculture/Information/Technology

We are entering our 24th year and we wanted to reach out to our many clients with a big "Thank You".

Each edition of this newsletter will deal with a different topic. We are starting with a once a quarter edition which we hope to increase as resources and interest dictate. Your feedback will decide if we continue. Depending on the topic, there will be a variety of links that are intended to educate. The goal is to help you, the readers, to better appreciate the role of science in your activities.

Sustainable production must use science based production methods.

The upcoming edition of Aquaculture Asia Pacific Magazine featured the following article.

[A parabiotic positively impacts shrimp production in the lab and the field.](#)

This product was originally developed and tested in the early 1990s. Too many distributors sold the product as a solution and not the valuable tool that it really is and we discontinued the product in the early 2000's. A lot has changed in 20 years and we are confident that the industry is ready to enjoy the benefits of this proven material.



SHIV causing acute mortality in Taiwan shrimp farms

Myths that hurt shrimp farmers and consumers

There are a number of myths that continue to be wide spread in shrimp farming. Ultimately they hurt efforts on the part of the shrimp farmers to achieve sustainability and in the short run can pose a serious problem for farmers and the consumers of farmed shrimp.



MYTH ONE A common myth is that on the selective media commonly used for the isolation of vibrios, Thiosulfate Citrate Bile Salts (TCBS), green colonies are bad and yellow colonies are good. This is 100% wrong. **The color of the colonies on the media is related to the ability to degrade sucrose and has nothing to do with the ability to produce disease.**

Selected shrimp pathogenic vibrio species of and their colony color on TCBS.

Species	Colony color on TCBS G-Green or Y-Yellow*
<i>V. alginolyticus</i>	Y
<i>V. anguillarum</i>	Y
<i>V. harveyi</i>	Y (there are G strains)
<i>V. parahaemolyticus</i>	G (there are Y strains)
<i>V. vulnificus</i>	G (there are Y strains)
<i>V. splendidus</i>	Y
<i>V. fluvialis</i>	Y
<i>V. campbelli</i>	G
<i>V. fischeri</i>	Weak Y
<i>V. damsela</i>	G (there are Y strains)
<i>V. pelagicus</i>	Y
<i>V. orientalis</i>	Faint Y
<i>V. ordalii</i>	Y
<i>V. mediterranei</i>	Y
<i>V. logei</i>	Y
<i>V. penaeicida</i>	G
<i>V. nigropulchritudo</i>	G
<i>V. owensii</i>	Y
* based on standardized culture methods and time post plating	

MYTH TWO Another myth is that Specific Pathogen Free (SPF) shrimp are free of all pathogens and that this is because they are resistant to these pathogens. This is 100% wrong. SPF animals, if they are generated and held properly are free of some pathogens (i.e. specific pathogens). This is due to screening of the animals with the end result being the elimination of SPECIFIC pathogens. It has absolutely nothing to do with tolerance or resistance, although these properties may be present in strains that have been selected for them.

MYTH THREE Yet another myth is that shrimp do not pick up toxins from ponds that they are grown in. This is 100% false and shrimp that are produced in ponds with high levels of blue-green alga and many other similar algal species may be carrying a wide range of toxins that make them unsuitable for at the very least raw consumption. These toxins are poisons. Shrimp farmers who persist in failing to control the loads of these toxin producing algae maybe poisoning their customers.



Filamentous blue green alga covering aerators in shrimp pond in Indonesia

Snake Oil in Shrimp Farming; A major impediment to sustainability?

The generally accepted definition of snake oil is “*a quack remedy or panacea*”. The term is widely ascribed as having originated from the use of “medicine” made from the Chinese water snake, a common practice among 19th-century Chinese railroad workers in the US. For many, the phrase conjures up images of unethical profiteers exploiting a gullible public by peddling and selling false cures. Yet many will swear the products work. This is widely known as the placebo effect and unfortunately all too often has the greatest negative impacts on those who do not understand that sustainable aquaculture must be science based.

Most of the farmed shrimp that finds its way into the Chinese, US and EU markets is produced in third world countries by small farmers. There are hundreds of thousands of these, in Vietnam, Indonesia, India, and elsewhere. They are rarely able to borrow money from financial institutions. For these farmers, this is a poverty driven production paradigm. Shrimp farming usually requires some liquidity. These countries typically have systems in place whereby local agents who represent either other agents or distributors finance the crop. They offer credit in some form and provide the farmers with access to PLs, feed, lime, and a wide variety of products. This is usually against the value of the crop at harvest at high cost.

When I first got involved with shrimp farming, in the early 1990s, I struck by how primitive much of it was and that little had changed in the centuries since shrimp were first farmed. I naively thought that this would change quickly. Economic realities would drive consolidation as the demand for farmed shrimp increased. While this has occurred to a limited extent, some 30 years later corporate farms are still relatively rare in SE Asia with the typical paradigm being that of small farmers with a few ponds gambling that they will get rich quick.

Unfortunately, this is often more a matter of luck than a result of farming practices that are the result of a well thought out science-based approach.

I have spent a considerable amount of time in the field and just returned from a ten-day trip to one of the primary producing countries in SE Asia. Typically, I spend some time in the field visiting clients and potential clients. I often also spend time with agents in their shops looking through their product lines. They may sell hundreds of different items. I am struck by how much snake oil is being sold to unsuspecting farmers most of whom have little formal education and little understanding of the power of science and the scientific method. The deck appears to be stacked against them from the onset. Corporations who only appear to care largely about profits regardless of the impact that this may have are a large driving force behind this.

Any effort to educate the manufacturers of these products, the distributors and the agents is useless as in any business of this nature perception is reality. As a scientist, I only sell products that have science to support their usage and for which we have been able to generate data that supports efficacy. This is not easy in shrimp aquaculture simply because of the huge variability among shrimp farming paradigms. Among the variables are water sources, water quality, pond design, the presence of neighbors, the source of the PLs stocked, the feeds used, the education and knowledge of the farmers, the use of aeration, etc. This variability is obvious to anyone who takes the time to look at it and makes it at best challenging and at worst impossible to prove that many, if not most, of certain types of products are tools that work in a cost effective manner.

Testing of products in a laboratory environment is a responsible first step. However, this is also not straightforward with shrimp. Shrimp are invertebrates that grind their feed before they ingest it.

Snake Oil in Shrimp Farming;

A major impediment to sustainability? (continued)

Post-ingestion, the feed is ground further by the gastric mill into very small particles, on the order of microns or less, before it enters the digestive system. The intestinal tract is not the same as that of vertebrates. There are no villi, etc. Note that this is a bit of a simplification, but the salient details are accurate. It is a short tube with the transition time being measured in minutes. Animals are surrounded in a cloud of materials as they grind the feed. In a tank, unless there is a very high rate of water exchange, this has the effect of bathing the animals in these materials. In the real world, a pond, this dust is rapidly diluted and would not be expected to impact animals in this manner. So, if it works in the lab, it does not mean that it will work in the field. Lots of products are never tested in the lab under conditions that are consistent with making claims that the scientific method supports.

How shrimp are fed is highly variable. Typically for the farming paradigm described here it is done three or four times a day by dispersion by hand. This seems to be independent of the densities, although access to capital does limit the options in terms of stocking densities which in turn discourages feeding regimes that make biological sense. Most feeds are compounded feeds produced by feed companies. Feed mills include most if not all of the nutritionally critical feed components that have been determined via science to optimize growth. There are a few items that can not be readily milled into the feed because the manufacturing processes will adversely affect the integrity of these materials.

There are some items that may benefit the animals (if the production systems are optimized for their use) that are best applied by coating the feed with them, i.e. top dressing. Examples might be certain immune stimulants and live bacteria, etc. There are thousands of products from hundreds of companies being marketed by agents that sell them solely for top dressing feed. A high percentage of these contain minerals, amino acids, metals, mixtures of them, etc. Some likely contain (illegal) antibiotics. Many are sold via clever packaging and rebate-based marketing schemes, etc. Through the use of trade shows, local presentations to farmers, etc. the farmer is sold on the products. Claims of efficacy are supported by fiction, hearsay and slick flyers, etc. Since no one actually tests these products in properly designed scientific studies under real world conditions to demonstrate efficacy, what matters is what the farmer perceives. This is the principal that underlies snake oil. Perception is reality.

Huge amounts of money are wasted by farmers who fear that they will fail if they do not use these products and a vast amount of wealth ends up in the hands of agents, distributors and manufacturers at the expense of farmers who, quite frankly, should not be gambling by farming shrimp. This is not consistent with true sustainability and makes it harder for legitimate products with the science to support their efficacy to find niches.