



Probiotic for feed for shrimp and fish

Bacillus species are normal inhabitants of most environments and are a part of the natural microbial flora in aquatic environments. AquaPro F is a mixture of selected Bacillus strains, enzymes to enhance product digestibility and MOS, a potent prebiotic, that conditions the digestive tract for the growth of favorable bacteria. For animals with short intestinal tracts, such as shrimp, the spores in the product do not typically germinate in the animal during the first pass, although the *B. megaterium* will. The spores are consumed in the feed and deposited in feces where they germinate. Shrimp forage on detritus on the pond bottoms between feedings and these living Bacillus cells are ingested.



AQUAPRO F Content

Bacillus subtilis
B. licheniformis
B. pumilus
B. megaterium
B. polymxya

(Total bacterial content 4 trillion CFU /kg)

Cellulase 2.7 million CU/kg
Amylase 500 thousand BAU/kg
Protease 1.1 million PC/kg
Lipase 30 thousand FIP/kg

Suggested application rates:

Mill one to two kg of AquaPro F per MT of feed. The spores are heat stable and many will survive the milling process. Store as you would normally store feed. Avoid excess moisture.

Each kg of AquaPro F, assuming 100% survival of the spores will add 4 million CFU of spores per gram of feed. Even if the milling process were to reduce this by 99% (this will depend on the feed mill and the process used), there would be at least 40,000 CFU of spores per gram of feed.

Bacillus based probiotics are used in many different agricultural sectors. The exact mechanisms by which they benefit animals are not well understood and likely range from a short term benefit such as altering the microbial flora to a longer term benefit by impacting the environment around the animals. Our Bacillus species have properties that allow them to utilize a wide variety of nutrients and make them well suited for inclusion into the feed. The added enzymatic activity will enhance the digestibility of feed in the animals digestive tract. MOS is a yeast cell wall extract that has been shown to improve animal health and digestion.