



Control of Blue Green Algae in bodies of water

Blue green algae are not actually algae. They are photosynthetic bacteria, widely known as cyanophytes. Typically, they thrive at the expense of other algal species and are often present in stagnant water systems with high dissolved nutrient loads. A nitrogen to phosphorous ratios of 20:1 will stimulate their growth. Their presence is almost always an indication of the presence of excess organic matter (where the nitrogen typically originates). There are more than 1500 species found in almost every aquatic habitat, freshwater, brackish and marine, as plankton (free floating), mats and periphyton (attached to surfaces), hot springs, etc. They have an essential role in the cycling of nitrogen primarily through fixation. Many produce toxins that can negatively impact the flavor of aquatic animals growing in their presence. Some of these toxins can be harmful and even deadly to animals including human beings.

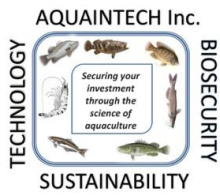
Controlling them can be done via the use of chemical algaecides which poison them or biological products that will rob them of critical nutrients, primarily nitrogen and phosphorous, that they need to thrive. The use of products such as AquaPro B and PRO4000X is not new and for many decades it has been known that the use of these types of microbial products can reduce the overall loads of blue green algae seen in a variety of bodies of water. There are however some caveats. The first is that this is an extremely diverse group of bacteria that is ancient and quite successful. They have a very wide range of metabolic capabilities some of which allow them to use the nitrogen present in the air as a nutrient source. These strains typically are not responsive to the use of products that act via microbial nutrient competition and limitation.

As with most things biological there is not one established way that will always work on any given species. In ponds with very heavy loads like the one depicted below, using the bacteria will run the risk of precipitating an algal crash. When algae loads exceed the carrying capacity of a given environment during the day time they produce high levels of oxygen often creating an environment that is supersaturated with oxygen. In the early hours of the morning this excess of cyanophytes can drop oxygen levels to zero causing all of the organisms in the body of water that need oxygen to die-a crash. In environments where this is possible, it is important to ensure high levels of aeration or not stocking with aquatic animals.

So there is not one right dosage approach to take to using the bacteria. The usual observations that are that after addition there can be a change in the color of the water. Typically, it becomes browner and if this persists is indicative that there has been a shift from high levels of cyanophytes to other algal species. The best way to use these products is for prevention. The biggest challenge you face when using this on existing blooms is that the cyanophyte already have a good head start. If there are very heavy blooms as much of the filamentous material should be removed as is practical. This will help in a few ways. First is that the bacteria in our product will have less to compete against initially. Second is that with high levels of algae there is the risk of an anoxic event from the decaying algae. The amount of organic matter exceeds the immediate environments carrying capacity.

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I am not sure what you are looking for when you want examples. I do not have rigorous scientific data. The manner in which the bacteria in this product impact their environments is responsible for their ability to inhibit other bacteria.



Filamentous algae on aerators in a shrimp farm pond. This level needs to be physically reduced in order to ensure effective bioremediation.



Shrimp pond in New Caledonia. No PRO4000X treatment.



Adjacent shrimp pond. With PRO4000X treatment.

This client uses the product annually in all of his ponds and realizes an increased profit because their first partial harvest animals are much cleaner than they have been in the past and thus command a higher price.

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