Application of Xcelbio for the Fish Farming Industry

BACKGROUND

Xcelbio has been used for many years in Czech Republic & South Africa within the poultry industry to reduce mortality and increase productivity by direct introduction to the birds through the drinking water. Apart from increased productivity a notable observation is the reduced need for medication of the birds.

Xcelbio has also been applied to feed lot cattle resulting in increased performance and also resulting in the reduced need for medication.

Also successfully applied to augment wastewater treatment systems, particularly those under stress resulting in increased waste breakdown efficiency.

A significant effect is removal of ammonia from the system without going through an oxidation step. Xcelbio is also effective in rehabilitation of pollution impacted watercourses assisting in the re-establishment of aquatic life.

Xcelbio can be applied to both fresh and saltwater situations and are successfully being used at more than double sea water salt concentrations.

Xcelbio consists of natural Crenarchaeota microbes collected from diverse ecosystems and then propagated and concentrated by a proprietary process. They are not genetically engineered and are not parthenogenesis.

Potential

Xcelbio has been demonstrated to be effective with the digestive systems of animals, Fish and poultry, reducing sensitivity to infection while at the same time, or because of, improving productivity. They are also effective in reducing potential pathogenic organisms in wastewater treatment processes and water bodies.

The Biocatalyst enhance the breakdown of organic wastes in treatment processes including lagoons and lakes.

Natural solutions to man-made problems

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Problems within the fish farming industry include diseases and infections some of which may be due to digestive system stress and poor environmental conditions. Xcelbio may be effective in resolving many of these issues without the use of antibiotics.

In reticulating water production systems such as land-cased, fish farms control of water quality is deemed critical for profitable operation. Addition of Xcelbio to these operations will assist in the control of water quality potentially increasing loading capacity, at the same time health benefits to the fish could accrue, as the water will always contain Xcelbio.

Increase health & yield.

Yield is related to gain, i.e. maximum rate of energy coming from food will be used for growth. Usually, 50-60% of food energy is consumed for general metabolism (basic moving, standard caloric loss, detoxification process, stress fighting, active moves…) Meaning that max 40-50% of it can be used for growth. But this ratio can decrease quickly and even be-come negative (loss of weight) under stressing conditions. We have listed some reasons for stress that may affect fish, then may be responsible for low growth rate & low yields.

As Xcelbio systems is introducing various micro-flora of aerobic and facultative anaerobic microorganisms, it would help to biodegrade ammonium creating a heathier condition for the fish.

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Main problems in Fish Farming	Usual solutions to fight problems	Why Xcelbio can help
Bacterial diseases (Furonculose, Kidney disease, Vibriosis...) Cmte.parl.gc.canada	Antibiotics in water, only as therapeutic tool, not as a growing stimulating tool Vitamin C is used as well with success to Reduce some syndromes and increase conversion factor	As probiotics are proven to stimulate digestive immunity, Xcelbio would allow new equilibrium within the digestive micro-flora of fishes and increase the immunity & the resistance to viruses.
Numerous Viruses, responsible for main diseases (pancreas disease, heart & skeletal muscle inflammation…) Salmon alfa virus….	Vaccines for salmon cod & trout A research program on fish antibodies & on vaccine adjuvents. Research about immune systems & factors able to stimulate the defence against viruses.	
Parasites such as salmon lice responsible for the most expensive disease problem in aquaculture. Lice have developed resistance to several types of medication	Combination of methods, including biological control, use of Wrasse as cleaner fish, possibility of anti-lice vaccines (close to cattle tick vaccine) and selected species of breeding salmon to reduce their sensitivity (Aquaculture research) Those 2 tools are mainly used in case of infection. Both those action modes are expensive and are source of chemical stress for fishes - plus pesticides remaining in the environment is toxic for Crustaceans.	Improving the immunity system of fish Xcelbio would improve resistance to those parasites. Would change characteristics of fish mucus and increase resistance to lice infection.
Vertebral compression syndrome in salmon is known to be a major factor in reducing growth rate: contaminates up to 30% of the breeding trout.	Usually treated with addition of antibiotic Flor phenicol, some % remains in the fish meat eaten by humans. European Patent 12.2006: use of bacilli bacteria for the prevention of Vertebral compression syndrome in salmon: using a patented association of bacteria is proven to give comparable resistance to this disease than flor phenicol. Proof of the non-persistence of the effect of ingestion those bacili, like probiotic in the digestive system.	Xcelbio would have an action comparable to probiotics actions.
Water quality: containing high levels of ammonium NH3, appearing with high concentration of fishes. Fish reduce the detoxification process and ammoniac excretion their metabolism goes slowly	Usually ammoniac is oxidized into nitrates, this process is oxygen consuming, which is another factor of stress.	As Xcelbio systems is introducing various Micro-flora of aerobic and facultative anaerobic microorganisms, it would biodegrade ammonium.
Increasing level of stress, due to high density of fish in ponds and nets gives predisposition to diseases		
Salmon eggs are sensitive to fungi infections	Treated with fungicide (Non salty water)	
Increasing waste level in water is a source of stress for fish. Accumulated sludge under fish nets can reduce dissolved oxygen, anaerobic decomposition of it can produce methane, Hydrogen sulphur & ammonium which is involved in proliferation of Algae	Natural degradation of this sludge is done naturally by Phytoplankton: but waste can be to high. As Crenarchaeota are part of this plankton, they would have a positive effect on sludge reduction	Korean institute of science technology 2004: Symbiosis between bacteria and anaerobic Crenarchaeota in intermittent aeration systems will improve nitrogen removal & sludge reduction.

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Listed below are some of the major benefits of inoculating Xcelbio into the reticulated water system of breeding tanks. Xcelbio is produced on-site using a catalyst generating unit, which only requires potable water and a standard single-phase power supply.

- Eliminate scale fungus and gill lice
- Reduces odour
- Reduce mortality
- Increase food to weigh gain ratio's
- Restores water quality
- Environmentally friendly 100% natural
- Removes nitrates and ammonia
- Increase life cycle of activated carbon filters
- Increases production of shrimp & fish
- Reduces COD & TSS

If this technology is of interests to you, we would be happy to set up a site visit by our in country JV partner, on conclusion of an agreement we would install a catalyst generation unit at your site.

The conditioning time to prepare the unit for production is 4 weeks, once the unit is Biologically conditioned, we would start a calibrated flow into your reticulation system depending on tank volumes, You should start to notice a difference within a few weeks.

The fish in the picture have been fed Xcelbio for 3 years.
The picture does not do them Justice, as the scales are glowing and completely fungus free. I call them "High definition Fish"
Interesting to note that the tank carbon filter has never been changed in 3 years.

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