

# Optimize the Cycle of Life in Your Pond

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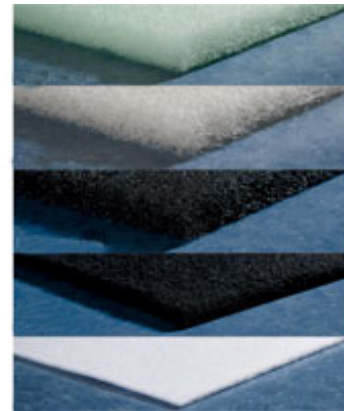


Fish eat bugs, algae, and other plants that might be present in the pond, and then create waste. The fish waste combines with decaying leaves to create ammonia, which is toxic to the fish. To counter the ammonia, a bacteria called *Nitrosomonas* converts it to nitrite. Because nitrite is also toxic, another bacteria called *Nitrobacter* converts it to nitrate, basically fertilizer, which is no longer toxic to fish in small quantities. Plants in the water, including algae, take nourishment from the nitrate, reducing the amount in the water, and rendering the water fish-safe. The fish eat the plants, and the cycle starts all over again.

A properly designed pond will follow this cycle and be nearly self-maintaining. But because many man-made ponds contain a much higher fish-to-water ratio than found in nature, they often need human intervention to keep them healthy.

When beneficial bacteria, *Nitrosomonas* and *Nitrobacter*, are not present in sufficient levels, the pond water will [test](#) high in deadly ammonia and/or nitrite. Often, the best remedy is the use of biological conditioners to supplement the natural filtration taking place. To get the pond back in balance so the normal cycle can take place, you may also need to boost the level of good bacteria on a regular basis.

A [mechanical filter](#) traps solids from the water, keeping water clear - not to be confused with clean. The mechanical filter must be temporarily removed at intervals so that trapped debris can be rinsed out. A [biological filter](#) is designed to house the bacteria that helps keep your pond clean - which is not to be confused with clear. The biological filter assists nature to establish an ecosystem that recycles fish waste.



[Bacterial additives](#) can help clarify water and eliminate odors. They can also help break down any organic material that settles on the bottom, thus reducing maintenance. Bacterial additives are well-complemented by the use of carbon filter media which can be easily inserted into most filters. Carbon removes additional chemical pollutants, colors, and odors from the water.

**Whichever filter and bacterial additive you choose, we recommend these steps to optimize their performance:**

## 1. Bacterial additives: Add and repeat as necessary

The good bacteria strains are present in most ponds, but sometimes are not at the levels necessary to take care of the amount of waste



produced. Because not all of the bacteria you introduce will find a safe home and survive, one-shot applications will not work. You need to make repeat applications at recommended intervals to refresh and maintain the higher levels necessary. Follow the manufacturers' recommendations carefully.



## 2. Aerate to boost metabolism

Maintaining high levels of dissolved oxygen throughout your pond is critical. The metabolism of your bacterial additive and, therefore, its overall effectiveness, is approximately 10 times greater if high levels of oxygen are present. Installing a good [aerator](#) in your pond expels toxic gasses and increases oxygen content. CO<sub>2</sub> and other gas molecules are attracted to the bubble stream of the aerator, attach themselves, and are discharged on the water's surface. This action will free up room in the water for additional oxygen molecules, which are absorbed on the bubbling surface.



Pond aeration can yield many additional benefits:

- **Prevents stagnation** - Without aeration, ponds can become stagnant, developing low oxygen and may even encourage the buildup of harmful chemicals like hydrogen sulfide and undesirable odor. This situation promotes the growth of algae and odors. Aeration recirculates the water throughout the pond to reduce or eliminate stratification.
- **Redistributes nutrients** - In addition to the redistribution of oxygen, aeration distributes nutrients throughout the pond, necessary for phytoplankton growth.
- **Reduces ice formation** - In mild winters, aeration can prevent total freeze-over, keeping the surface open for gas exchange.