

Anaerobic (denitrifying) bacteria survive without oxygen. These break down pond sludge. Both types work best at a pH between 7.0 and 8.5 and temperatures between 70 and 90° F.

When adding these bacteria to your biological filter, the best results are achieved by putting half the dose into the filter and the other half spread over the pond area. Microbe-Lift from Ecological Laboratories is a great product to use to add both types of beneficial bacteria to your pond.

BARLEY STRAW

Barley Straw has been found to be effective in preventing the development of string algae. It starts working as it breaks down, and should be placed in the pond soon after the ice has melted, allowing it to become active before algae appears in the spring. As the straw decomposes, it is converted to hydrogen peroxide, which in constant low levels inhibits algae growth. Any algae that is present before the straw becomes active should be removed by hand. Barley Straw is generally sold in a mesh bag with an attached string. The bag needs to be anchored in such a way as to allow it to float at the pond surface, in or near moving water, which is where it works best. Each bale will remain active for about 6 months, but best results are achieved if a replacement bale is installed after 4 months so it has time to be activated before the old one stops working. It is also available in pellet and liquid form, which go to work much quicker when added to the pond.

ULTRA-VIOLET STERILIZERS

Pond water is circulated through a tube and exposed to ultra-violet (UV) light, which kills the algae. You will know that the UV bulb needs replacing when you find that algae are beginning to re-grow. The strength of the UV emitter lessens over time, meaning the bulb will need to be replaced even though it appears to be lit.

SHADING

Shading is a non-toxic blue or black dye that darkens the water. This reduces the algae by blocking the sunlight. It works well, but makes it difficult to see fish in the pond. Only natural dyes should be used when fish are present. Do not use copper sulfate dyes in a pond with fish.

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Water Gardens Algae Control & Pond Balance

Many things can be done to help control algae growth. Each pond has different water quality, sunlight amounts, quantities of fish, fish food and other conditions contributing to algae growth. Algae can never be totally eliminated...only controlled. Following are a number of ways to limit algae growth. You may need to experiment with a combination of these to achieve good control in your pond.

There are two basic types of algae. Moss-like algae that grows on the sides of the pond is desirable and only grows in ponds that are in good balance. If it becomes long and stringy, some of it should be removed by hand. If excess is not removed, it dies off and releases nutrients into the water, which can feed the unwanted single-celled algae that creates cloudy, 'pea-soup' water. The following methods are ways to both control the green water and to keep the mossy algae from becoming stringy.

PLANT AND FISH BALANCE

The most important elements in balancing the pond are using the proper amount and types of plants along with the right amount of fish for the size of your pond.

Each plant type performs a special function in the pond. Water Lily leaves help cover the water surface, reducing available sunlight for algae growth. Marginal and floating plants remove the most nutrients from the water when they are placed in the flow of water, such as the filter at the top of a waterfall or stream. For information on the recommended planting rates for each type of plant see *Water Gardens #3: Plant Selections* care sheet.

Fish and scavengers are an important part of creating biological balance in a pond. Scavengers (snails, tadpoles, etc.) eat decomposing plant material, excess fish food and some multi-celled algae. Fish eat mosquito and other insect larvae and some algae. Too many fish in the pond will deplete oxygen, and add ammonia and excess waste products to the water. You should have no more than 1 to 2 inches of fish for every 5 to 7 gallons of water in a pond. Figures should be based on the size of the fish at maturity. Over feeding fish will lead to algae growth. Excess fish food decomposes and creates food for the algae. Feed fish only what they will consume in a few minutes.

FILTERS

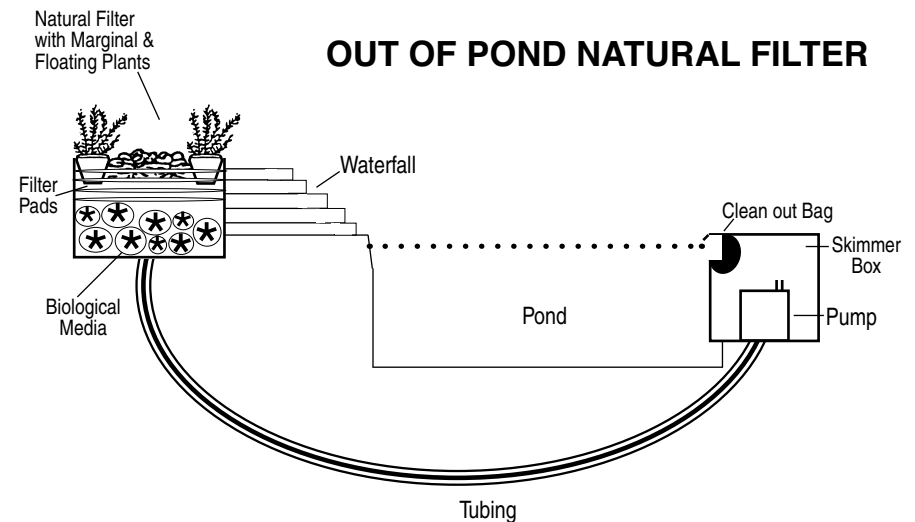
There are two general types of filters: mechanical and biological. It is recommended you circulate the total volume of water through the filter system every 2 hours. See *Water Gardens #2: Streams & Waterfalls- Determining the Proper Flow* care sheet for help in sizing your pump.

A mechanical filter is a simple mesh or screen device used to trap floating debris. It is attached to the pump inlet to keep debris, fish, snails and tadpoles from getting into the pump. Many biomechanical filters also include a sponge or mesh pre-filter. These need to be cleaned thoroughly when the water flow becomes restricted. For the best results, replace filter pads once a year, clean with pond water only – do not use tap water.

A biological filter uses bio-balls, plastic mesh, beads or lava rock to both filter suspended solids and support beneficial bacteria that absorb excess nutrients and chemicals. These should not be cleaned during the season, as they are the home for beneficial bacteria, which you should not remove. The foam or mesh screen in a biological filter does need to be cleaned thoroughly when the water flow slows down. Clean with pond water only – do not use tap water.

SKIMMERS

A skimmer is also a valuable addition to a pond. It is generally installed at the far end of the pond from the waterfall, stream or bog garden. The pump is placed inside the skimmer so that the water flow pulls any leaves or other floating debris into the skimmer. That way the debris does not fall to the bottom of the pond, decompose and add nutrients to the water. The skimmer should be checked, cleaned and emptied frequently for best results.



BACTERIA

There are two types of bacteria used in most of the brands sold for pond treatment. One type is aerobic or nitrifying bacteria that need oxygen to work and is very important in biological filters. It converts nitrates, unusable by plants, to nitrate, that is food for plants.