

Pond Filtration

Elements Of Good Pond Filtration

Maintaining a clear healthy garden fishpond usually requires a properly designed filter system. Fish ponds accumulate excess nutrients which cause algae – green water, alternately deficient or excessive oxygen levels, high pH and, on occasion, toxic water. To avoid these conditions invest in a pond filtration system that combines the following basic components.

Mechanical Filtration

Mechanical filtration physically removes fish waste and algae from the water. The removal of fish waste goes directly to the source of the nutrients that feed pea-soup algae. Fish waste converts to nitrate fertilizer and ultimately leads to algae bloom and pea-soup green water. Filter foam is an excellent mechanical filter.

Biological Or Bacterial Filtration

Nitrifying bacteria inhabit all bodies of water and convert toxic fish waste ammonia to harmless nitrate. Biological filtration speeds up this natural process by passing the pond water over bio balls, foam or gravel surfaces that harbor these bacteria. The amount of surface area involved and the flow rate of water are directly related to the amount of biological activity that takes place.

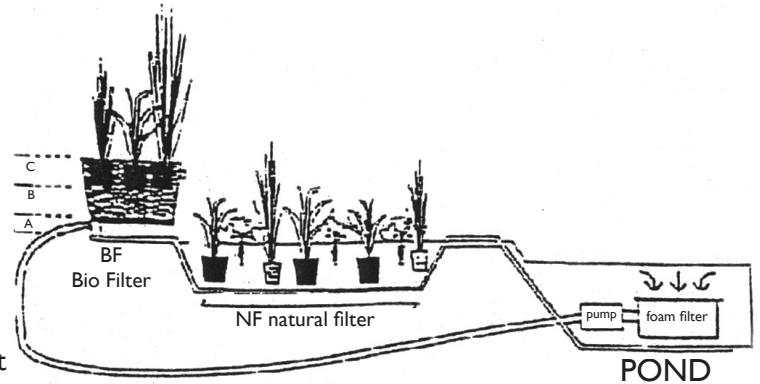
Plants Or Natural Filtration

Plant filtration is the final phase of the overall process. The nitrate build-up, which eventually results from the biological process described above, can best be eliminated through the proper deployment of plants in a pond, natural filter and or biological filter (bio-filter). Passing nutrient enriched water over, around and through the roots of plants causes a rapid uptake of nitrates and ultimately starves the single-cell algae out of existence. These algae will recur in the early spring and fall when plants are just getting started or finishing their period of rapid growth. The alternative to plant filtration for nitrate removal is partial water changes. Experiments at the nursery indicate that a few plant in the top of a bio-filter have a tremendous effect on absorbing nitrates and eliminating pea-soup algae. Natural filters can be used in lieu of bio-filters as the plant roots in the natural filter perform the biological function also.

Additional Considerations for Good Pond Filtration

Aeration

Aeration of pond water by use of a fountain and/or a waterfall is very important to the filtration process and overall fish health. It increases the amount of dissolved oxygen in the water, which is necessary to support nitrifying bacteria and fish.



The diagram illustrates the elements integrated into a complete filtration system. Bio-filter sections are:

- A - Settlement chamber - solids removal
- B - bio balls - ammonia removal
- C - plants - nitrate removal

Surface Area of BF = surface Area of NF = 10% of POND surface Area. Depth of NF = 10" to 18"

Information from Richard J. Schuck

Filtering Media

Bio balls and gravel are good filtering media for bio-filters. Bio balls is preferred because it has more surface area to volume than gravel and is much lighter. Foam is an excellent biological and mechanical filtration medium but needs to be cleaned regularly. This cleaning is important to maintaining pond hygiene and eliminating organic fish waste, which is the source of algae blooms.

Nitrifying Bacteria

These bacteria help keep water clean and healthy as they convert toxic ammonia and nitrates to harmless nitrates. Adding the bacteria to your pond and filter will activate the biological process much sooner than would occur naturally. They are active above 52° F.

pH

Proper pH is important to healthy fish and plants and is vital to the biological activity mentioned above. pH should be maintained between 6.5 and 7.8. Baking soda (sodium bicarbonate) or ground limestone (calcium carbonate) can be used to raise the pH of the water. Vinegar will lower pH.