Water Plants and the Nitrogen Cycle

Why do my fish get sick and die?
Your koi pond (or any recirculating water environment) is a closed system; water stays there. Fish constantly feed and emit waste products in the form of ammonia nitrogen, or NH4. This makes the water progressively unfit for fish health.

The Nitrogen Cycle
In an established pond, the natural biological process that cleans up the waste is called The Nitrogen Cycle. Beneficial bacteria in your pond constantly convert NH4 (ammonia, toxic) to NO2 (nitrite, toxic) and then to NO3 (nitrate, harmless), which is almost the same thing as plant fertilizer.

Why do I get algae?
Because your pond is basically a fertilizer factory, plants grow very well in it. If you have few or no plants already, algae (singular, alga) will grow. Alga spores enter your pond by fish, plant, nets, and even air. There are estimated to be over 20,000 described species of green algae.

Planktonic algae

Planktonic algae

Planktonic algae makes your water green colored. They may be either Cyanobacteria (the blue-green algae; e.g. Nostoc, Anabaena, Microcystis) or one of several species in different divisions of the green algae (e.g. Euglena, some dinoflagellates, Scenedesmus, Chlamydomonas). Planktonic algae does not clump together. It is beneficial in larger ponds and lakes for shading the bottom and providing the start of a natural food chain. Heavy planktonic algae (18" or less visibility) usually precludes filamentous algae.

Filamentous algae

Lyngba

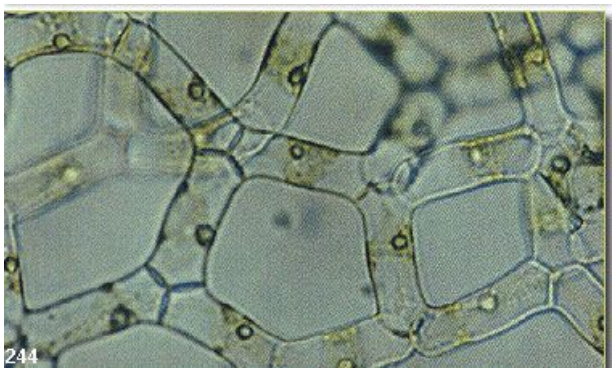
Lyngbya is a blue-green filamentous alga usually found in alkaline lakes and ponds. Lyngbya mats appear black in color but as the season progresses the mats may become mottled with browns, greens, or whites. It has a musty odor and can impart a foul taste to the water.

Spirogyra

Spirogyra (microscopic)

Spirogyra or water silk is a common green alga found in shallow warm water where it can form extensive floating mats. One can detect the "silky" quality of the filaments by trying to lift the alga from the water.

Hydrodictyon



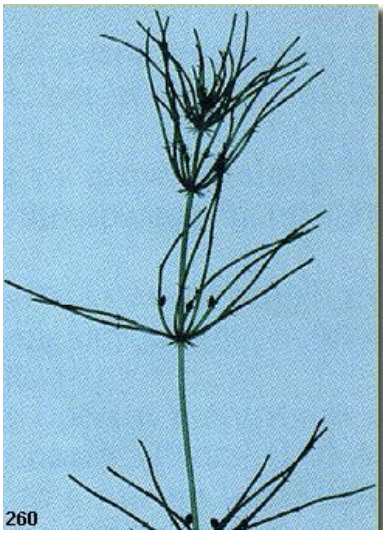
Hydrodictyon (microscopic)

Hydrodictyon or water net is a filamentous alga which forms net-like shaped colonies.

Oedogonium mats

Oedogonium

Oedogonium grows attached to substrates such as submerged logs or branches. It also can grow attached to drainage canals where excessive growth can impede water flow. Scooped up from the water, it adheres to one's hands rather than slipping through one's fingers like Spirogyra.



Chara

Chara is a green alga which is plantlike in appearance. It is commonly found in lakes and ponds where calcium is abundant as carbonate or bicarbonates. Deposits of calcium on the surface of the plants makes them feel rough to the touch. They are readily recognized by their musky or garlicky odor.

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Algae will not kill your fish, but suck out valuable nutrients, compete with beneficial plants, interfere with harvest/aesthetics. Most pond owners desire to get rid of it.

How can I prevent algae?
If you have many plants in your pond, (50% coverage or more) they will eat up the nitrate as it is produced. Algae have little chance to get started. Once algae gain a foothold, it is almost impossible to remove permanently.

What plants are good for algae prevention?
The Water Hyacinth is the best plant for non-chemical algae control. Each floating plant has hundreds of feathery roots that efficiently soak up the nitrate. They also provide surface area for your beneficial bacteria to thrive on. Not only beneficial, their spectacular lavender blooms will become a focal point in your garden. Water Hyacinth will double in number every week in good conditions, which are full sunlight, food (nitrate), and 75º-90ºF. You may need to thin them out to see your fish! Once your pond has a good balance of Water Hyacinth and fish, you can add water lilies and bog plants to your heart's desire. Other top candidates for algae control are Azolla, Parrot's Feather, Water Primrose, Water Lilies and Duckweed. All plants, though, will remove nitrates from your pond. Larger (>8") koi love to eat hyacinth roots, so devise a way to protect your plants! Options are 1. Place plants in the concrete gravel filter (you can even permanently remove all the gravel!) and waterfall area; 2. Section off an area of your pond that the fish cannot swim into; and 3. Construct or purchase a floating basket that protects the roots.

Caution!
While useful in secure residential gardens, water hyacinth and other aquatic plants can be invasive and costly to remove from waterways. Never stock or dump near a body of water. Please destroy unused plants and their seeds.

Why J&J Water Hyacinth?
Our plants have been dipped in an antiseptic, anti-parasitical solution that is completely non-toxic to your fish. We have some of the earliest varieties of Water Hyacinth available for shipping. Therefore, you can order well in advance of warmer temperatures to protect your pond as it enters the critical spring season change. New or newly cleaned ponds are the best candidates for algae prevention, but you will notice a difference even in a mature pond.

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Thank you for searching for pond management information on JandJAquafarms.com. We have a team of pond, plant, and fish experts that will work hard to maximize the health and beauty of your aquatic environment!