A WaterZoo guide to…

 Last revised May 2011

Nuisance algae in freshwater aquariums

Algae covering the decoration, plants and glass in the aquarium are probably one of the most perplexing problems to the aquarist. One aquarium can be almost free of algae; yet another seemingly similar aquarium has unsightly algae growing everywhere.
The reason for these differences in algae growth is not always caused by a single factor, but often by a combination of factors. This can make problems with algae frustrating & difficult to solve. Among the most common causes are Phosphate & to a lesser extent Nitrate in the water, strong lighting with little or no plant growth, too much aeration & a lack of algae eating fish. It is not possible to have an aquarium totally free of algae, but there are many ways to reduce its accumulation. We shall look at some of these methods below.

Algae eating fish
Ensure there are lots of algae eating fish. Flying Fox or Bristlenose are good species for the tropical aquarium, which do not grow too large, as are the increasingly popular freshwater shrimps. These species will constantly clean the glass, plant leaves and decoration; they can reduce algal growth by up to 50%. Amano shrimps are particularly useful if you have a smaller aquarium or it contains many plants, as these will clean the leaves without damaging them. As these are fully grown at around 4cm, you will need many to impact upon the algae growth. For unheated aquariums we recommend the Chinese Plec, (actually a type of loach) or Amano shrimp, provided the temperature is stable and above 18C.

Reduce Nitrate & Phosphate
Nitrate* & especially Phosphate* act as a fertiliser for the algae; unfortunately your filtration system will not be able to break down these compounds. Frequent partial water changes are a way of controlling their accumulation as this dilutes these compounds and improves other aspects of water quality. Water should be removed with a gravel cleaner to remove detritus from the substrate. Water changes alone are rarely sufficient control the accumulation of phosphate and some form of phosphate remover is strongly recommended e.g. Rowaphos or Seachem Phosguard The phosphate level will need testing frequently to ensure effective removal, and to check if the phosphate remover requires replacement. If phosphate can be kept a virtually zero, in many cases this solves the algae problem.
*Please note. It is worthwhile testing these levels in tap water; we have found this is often the cause of an algae problem. If this is the case then the use of reverse osmosis (R.O.) water is recommended, this is virtually pure water, hence contains no phosphate or nitrate.

Good plant growth
If you have sufficient lighting & favourable conditions to grow plants, adding plenty of fast growing species like *Ambulia, Hygrophila* or *Egeria* (*Elodea*) can help absorb nitrate & phosphate that contribute to algae growth. Live plants will have no effect on algae growth unless they are growing vigorously and pruned regularly. To grow plants you will need at least one high output light, ideally with a reflector. Plants also need carbon dioxide to grow, therefore, there should be little if any aeration as this will remove the carbon dioxide and stop the plants growing. Once these two conditions have been met you can use a plant fertiliser to enhance growth. The Dennerle range is highly recommended.
See The WaterZoo guide to growing aquarium plants for more information.

Use a 'siesta'
Algae have evolved over millions of years & do not adapt well to changes in lighting rhythm. To upset the algae's growth you could try a 'siesta'. To set this up you will need a timer on your lighting system. It should be set so the lights are switched on in the morning for about six hours, then switched off for two or three hours in the afternoon, then switched back on for six hours in the late afternoon or evening. This can affect the algae quite adversely while having no negative effect on your fish or plants.

Too much aeration
Aeration is a good way to promote algae growth. It removes any carbon dioxide from your aquarium, which is vital for plant growth, as well as oxidizing iron, & trace elements they require. Your fish do not normally need any additional aeration unless you aquarium is very well stocked. So, switch off, or at least minimise any airstones, venturi's or vigorous water movement, where possible. The outlet from the filter should be at least several centimetres below the water surface.

Lighting
Lighting does have a part to play in algae growth, but is not as significant as many think. You can have strong lighting and little algae, but this is only possible if other conditions are right & a light with a favourable spectrum illuminates the aquarium. Generally fluorescent tubes with a high output in the Blue part of the spectrum are more likely to promote algae. Those with little or no Blue, but lots of Yellow and Orange do not favour algae. The Arcadia Freshwater Lamp is such a fluorescent light. It also important to remember that as tubes age the spectrum changes, so replacing fluorescent lamps every year will ensure that they are not encouraging algae.
If your aquarium has no live plants then it only needs to illuminated for viewing, this cuts down the algae growth considerably. You could also use a strong algicide like Interpet Anti Hair Algae, Hobby Algen Killer or one of the other algicides we stock.

Water hardness
While Nitrate & Phosphate are the main water quality parameters that cause algae, hard water also has a part to play. Unfortunately, the water in Cambridgeshire and the surrounding counties is hard & alkaline. This makes carbon dioxide, Iron & other vital trace elements less available to plants, which in turn contributes to algae. To reduce the hardness of water it is not advisable to use pH buffers, as some contain high levels of phosphate. The most cost effective way to reduce the hardness is to use R.O. water, which does not contain phosphate, nitrate or hardness. If your gravel contains lime this will counteract the addition of soft water. This should be changed for a lime free gravel. The presence of lime can be detected by taking a small sample & adding vinegar, if it fizzes or bubbles it contains hardness causing compounds.

What about algicides?
Most algicides can have a detrimental effect on your plants, and in some cases algae eating fish. It is much better to remove the causes of the algae growth than keep using treatments to control it. If you feel you must use an algicide and have live plants, we would strongly recommend ESHA Protolon 707. This is a plant safe & fish safe algicide.
As many of the factors causing algae growth are interrelated following just one or two of the points outlined will have little effect. You should follow as much of our advice as is possible, and be patient. Algae are one of the oldest living organisms on earth and can be extremely resilient. It may take several months to reduce the algae growth.

The WaterZoo 439 Lincoln Road, Millfield, Peterborough PE1 2PE
Tel. (01733) 312142 www.waterzoo.co.uk

Jason Scott, a regular contributor to Practical Fishkeeping magazine, who has over 25 years experience in the hobby, wrote this WaterZoo guide and others in the series.