

## TROPICAL FRESHWATER PLANT AQUARIUM



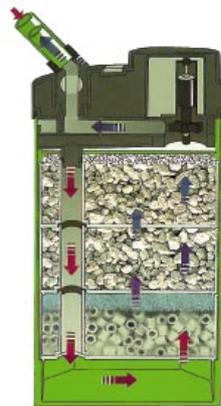
To maintain a freshwater aquarium is not difficult. Technology has made it much easier to keep fish and plants alive and healthy. If certain criteria are met, you could expect to achieve the same results as in nature.

Any standard aquarium is suitable to set up for a natural plant tank, but a wider aquarium allows more surface area to build a natural display. Very deep aquariums need more light to penetrate the depths as compared to wider shallower aquariums. A standard 48" aquarium holds approximately 200 litres, this can be reduced to approximately 170 litres when gravel and rocks are added, as water is displaced. As one litre of water weighs 1kg plus the weight of the gravel and rocks it is important to have sturdy furniture to support all this weight.

### **FILTRATION**

Good biological and mechanical filtration is essential to maintain a healthy environment for your fish and plants. A freshwater aquarium should have at least 3 times water turn over per hour. Mechanical filtration works like

a sieve trapping particulate waste as it passes through. Biological filtration is the purification of the aquarium water by using living organisms, such as nitrifying bacteria. These desirable bacteria will attach themselves to all hard surfaces within the aquarium system and convert toxins to less harmful solutions. Without powerful biological break-down of these toxins, the fish literally poison themselves. To maintain the aquarium there are two types of filtration systems to consider. The first filtration method is canister or internal power filters and the second is trickle filtration.



1. Canister and internal power filters are motorized and extremely practical in removing particulate (solid) waste material from the aquarium water. Layering the correct filtration materials will give you both mechanical and biological filtration. If a canister filter has been switched off for any length of time, the contents of the filter are likely to become toxic (due to a lack of oxygen). In this case, filter material must be thoroughly washed or replaced before starting the filter again.



2. The trickle filter is the best form of filtration because the amount of dissolved oxygen in the water is much higher. The action of the water raining or trickling over the bio medium dissolves more oxygen into the water and also creates larger colonies of bacteria producing impeccable water qualities. The design of the trickle filter allows you to place a heater into the sump area providing a safe and out of site place for this piece of equipment. Thermometers and pH probes can also be placed into the sump of the trickle filter. Another advantage with this form of filtration is if the power has been off for a few hours, unlike canister filters, the dissolved oxygen in this filter keeps the colonies of bacteria alive, thus avoiding the task of having to clean the filter. Trickle filter systems have become popular in recent years and are considered to be "state of the art" in terms of achieving optimum water quality.

### **HEATING**

The most popular heating system is an internal submersible heater, as this is the most cost effective way to heat an aquarium and the temperature is monitored with a thermometer. The most natural heating system is a Substrate heating cable. This system simulates the warmth of the earth in tropical regions, stimulating strong healthy root growth. The cable is placed on the inside base of the aquarium, held in place

with suction cups, then clean gravel is placed on top. Temperature is controlled by a thermostat. Tropical fish are best kept at a temperature of 25°C, with a range of 24°C to 28°C being acceptable.

### **FERTILISERS**

Iron rich laterite mixed into one third of the substrate is recommended with the remaining two thirds of clean gravel placed on top. Plants growth is noticeably enhanced, with the plants often growing thicker and bushier as the plant roots obtain essential nutrient. Tablet fertilizers are recommended to provide trace elements and minerals that are absorbed by the plants, these can be topped up each time a water change is done. An iron rich liquid fertilizer is also recommended and added on a daily basis which the plant leaves will readily absorb. Testing the water for iron using a Fe (iron) test, can determine whether the correct amount of fertilizer is being used and you can adjust if necessary.

### **LIGHTING**

Lighting in the aquarium is extremely important, as many of the plants need light to photosynthesis and therefore survive. At least two fluorescent tubes are needed to provide a light similar to natural sunlight and there are many different types of tubes (PL or conventional fluorescent, colour temperature and kelvin) available. Other types of lighting available for aquariums are mercury vapour and metal halide. Lighting requirements and recommendations are worked out on the size (width and depth) of the aquarium, what appeals to you aesthetically and of course, budget. Whatever type of lighting you choose should

illuminate the aquarium for approximately 10 hours a day.

### **ANALYSIS**

Water quality is monitored with several different test kits. A good pH test is important as too high or too low a pH can be detrimental to fish health. (A pH of neutral is ideal.). An ammonia (NH<sub>4</sub>) and Nitrite (NO<sub>2</sub>) test is important to have on hand as they can be high and a problem for the fish and plants until the bacterial culture in the filter and substrate is established.

### **SUMMARY**

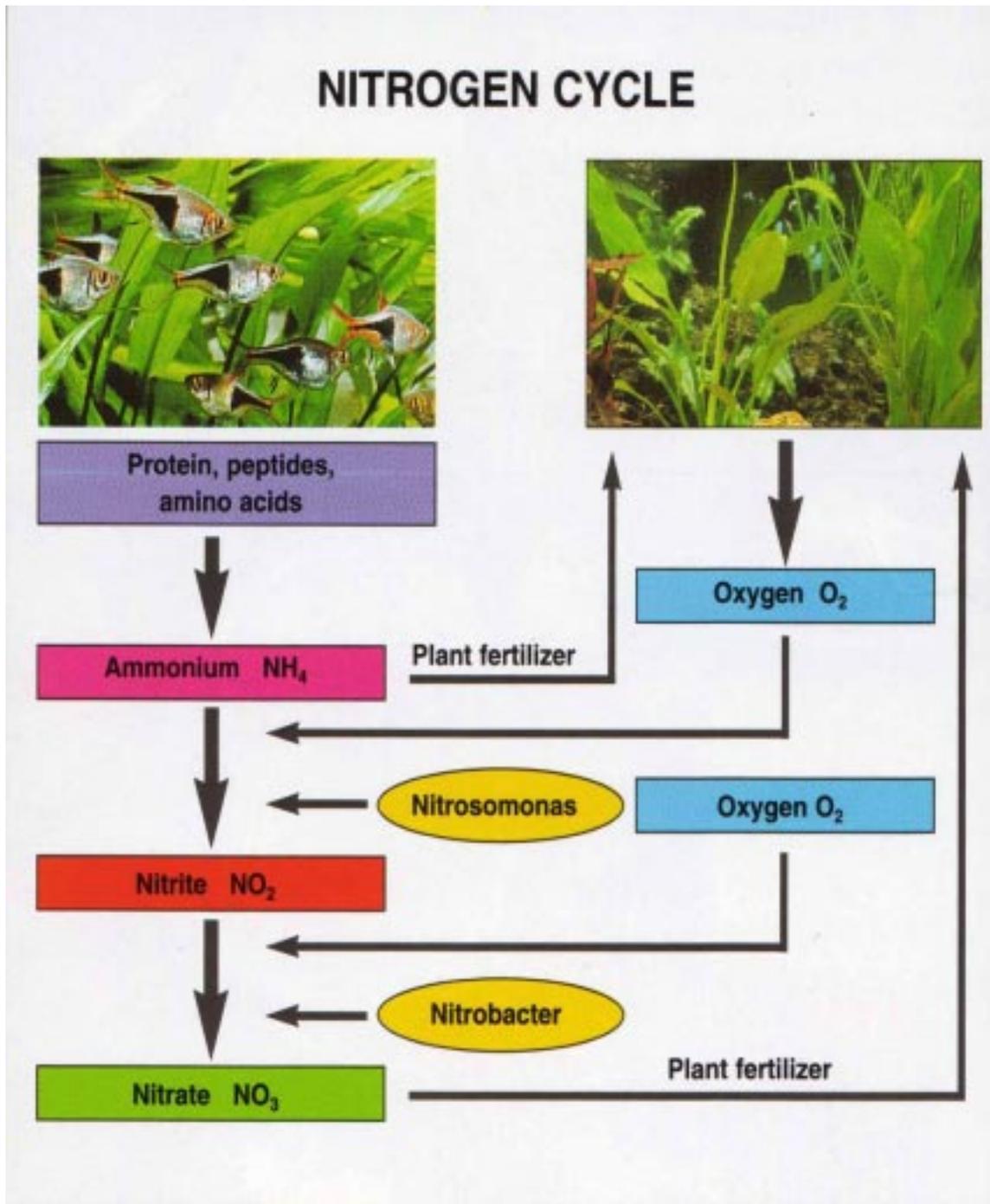
The first 2 months are the most critical when setting up. During this period problems with ammonia and nitrite build up can occur; to help overcome this problem we recommend the use of one of a number of good bacteria enhancing additives, which helps to get the biological cycle started. Add the bacteria enhancing additives for a couple of days before adding any fish to the aquarium. After the first lot of fish have been added the aquarium, water quality must be monitored closely with partial water changes, of up to 25% done fortnightly to monthly to help reduce any ammonia levels. If the aquarium becomes cloudy this is a sure sign inadequate bacteria and possibly the presence of ammonia. Extra water changes will be needed and no more fish added to the aquarium until the water has cleared. Always be patient when stocking the aquarium and only add a few at a time, so that the bacteria living in the filters, has time to multiply and cope with the fish waste.

One important thing to consider when stocking the aquarium is what type of fish you want in

your system. Some larger more aggressive fish can eat or pick on smaller fish, they may also uproot and eat aquatic plants. So care must be taken to ensure that only 'plant friendly' fishes are added to plant aquariums, and aquarium suited to the larger plant eating fish is decorated with rock and/or drift wood.

A display can take a while to establish properly, it takes time to get things looking just right. Once established, you would be required to spend approximately half an hour per week in maintaining your display.





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