Checklist

Before purchase make sure that:

1. You have the appropriate equipment and position for the aquarium.
2. You have researched all the species you are interested in and your final choices are all compatible.
3. You are familiar with how to transport and release your animals.
4. You are aware of the daily, weekly and monthly maintenance your aquarium will require.
5. You are prepared to look after your animals properly for the duration of their life.

Equipment

1. Glass or plastic aquarium
2. Gravel cleaner
3. Water testing kit
4. Tap water conditioner
5. Gravel or sand
6. Filter
7. Food
8. Heater & thermometer (depending on the fish)

Optional equipment:

1. Underground heating cable
2. Carbon dioxide fertilisation
3. Liquid fertiliser for aquarium use

Always make sure the water quality is suitable for the fish being kept.

Never release your aquarium animals or plants into the wild

Never release an animal or plant bought for a home aquarium into the wild. It is illegal and for most fish species this will lead to an untimely and possibly lingering death because they are not native to this country. Any animals or plants that do survive might be harmful to the environment.

Important things to remember

Always buy...
test kits and regularly check the water for ammonia, nitrite, nitrate and pH. This will allow you to make sure the water in your aquarium is not causing welfare problems for your fish.

Establish a routine...
for testing the water in your aquarium. Record your results to enable you to highlight fluctuations quickly. Also check the temperature of the water.

Maintain...
the water in the aquarium within the accepted parameters highlighted in this leaflet. You may need to do regular water changes to achieve this.

Always wash your hands...
making sure to rinse off all soap residues, before putting them into your aquarium. Wash your hands again afterwards and certainly before eating, drinking or smoking.

Never siphon by mouth...
A fish tank can harbour bacteria which can be harmful if swallowed. Buy a specially designed aquarium gravel cleaner which can be started without the need to place the siphon in your mouth.

Scan this code to download an electronic copy

If in doubt contact your OATA retail member for further information

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How to care for...

Freshwater plants

52 Tropical freshwater plants

Introduction

The addition of real plants not only adds colour and vibrancy to your aquarium, but healthy plant growth can help to oxygenate the water and remove some of the waste products that fish produce. In doing so, you can convert your aquarium to a complete underwater ecosystem.

There are hundreds of types of aquarium plant available. Some can be quite difficult to grow while others are surprisingly easy.

Water requirements

The sheer diversity of plants available for aquaria does result in very wide-ranging water quality parameters. Some plants are tolerant to a wide range of parameters, while some have very specific needs. However, the needs of the plants should never be favoured over the needs of the fish being kept.

Of particular importance to plants are carbon dioxide levels, water hardness, pH and trace elements. Although not related to water quality, the other limiting factor to their growth is lighting levels.

Biology

All plants are characterised by their ability to capture sunlight as an energy source to combine carbon dioxide (CO_2) and water to produce sugars in a process known as *photosynthesis*. To achieve this, all photosynthetic cells in a plant contain a green substance known as *chlorophyll*, giving the vast majority of plant their green colour. In addition to the sugars produced in this process, oxygen is released into the water.

While plants are well-known for producing oxygen during the day, it must also be remembered plants are also respiring both day and night. This means that during the night, plants will consume oxygen and produce CO_2. During the day, the net effect is that more oxygen is produced, but during the night, plants produce CO_2 only. This increased level of CO_2 can result in changes in pH.

The plants commonly used in aquaria can be approximately divided into three groups: mosses, ferns and flowering plants. The mosses and ferns are medium to slow growing and generally undemanding. Most of the ferns and mosses are quite easily recognisable, sharing similar physical characteristics to their terrestrial counterparts. The flowering plants are highly diverse from the grass-like plants such as *Lilaeopsis*, the ribbon-like plants such as *Vallisneria*, to stemmed forms such as *Hygrophila* and *Rotala*.

Aquarium requirements

Aquarium plants can be grown in any size of aquarium. Therefore, the size of aquarium should be adequate for the fish species being kept. While some plants do require warm water, filtration is only required if keeping fish.

Lighting is essential for all plants. Some species of plant are not demanding when it comes to lighting levels, for example Java fern, *Anubias* and *Cryptocoryne*. Plants with red-coloured leaves are often an indication of requiring strong lighting. Plants can often become 'leggy' if they do not get enough light.

While water appears clear to our eyes, it actually absorbs light, especially in the red part of the spectrum. In deep aquaria with species that grow close to the substrate and do not grow very tall, powerful lighting is necessary to ensure sufficient light reaches the bottom.

Aquatic plants absorb nutrients both through their leaves and roots. Under gravel heating cables can be used to create small convection currents which will help bring nutrient carrying water into the substrate to the roots.

A major nutrient for plants is CO_2. This can often be limiting in aquarium water. Specialised CO_2 fertilisation systems can be used, however, the addition of CO_2 can cause the pH to fall. If using these kits, always monitor your pH level.

Maintenance

As with the water requirements, aquarium maintenance should meet the needs of the fish being kept. Therefore, it is strongly advised a partial water change of approximately 25 to 30% is carried out once every two weeks. Additionally, the water should be tested regularly to ensure pollutants such as ammonia and nitrite do not build up. Replacement water should be left to stand or aerated to remove any chlorine present. Ideally, replacement water can be treated with tap water conditioners.

Filters should be checked for clogging and blockages. If the filter needs cleaning, then do not run it under the tap as any chlorine present may kill the beneficial bacterial population that has established in the media. Instead, it can be rinsed in the tank water which is removed during a partial water change as this reduces the amount of bacteria which are lost.

Feeding

Plants require a host of nutrients. These include nitrate, phosphate, potassium, calcium, magnesium, sulphur and iron to name a few. In many aquaria, these chemicals are normally present. In heavily planted aquaria, the growth of plants can lead to deficiencies in these nutrients. Water testing can reveal if some of these nutrients are missing while abnormal or non-optimal growth can also indicate nutrient deficiencies.

Nutrient deficiencies can normally be remedied using proprietary aquarium fertilisers. Never use fertilisers for house plants because these often contain the wrong blend of nutrients can be harmful to fish or encourage algae growth.

Potential problems

Poor or abnormal plant growth is normally the result of a lack of nutrients or inappropriate lighting. Telltale signs include yellow spotting, deformed leaves, pale coloration and leggy growth. Leaves falling off plants can also be a sign of water quality issues. Leaves should always be promptly removed to prevent fouling of the water or clogging of the filter.

Compatibility

Surprisingly, not all plants get along with each other. Some plants produce *allelochemicals* which can harm other plants. Well-known examples of this are *Vallisneria* and *Sagittaria*.

Many fish are herbivorous and enjoy eating plant matter. Always make sure any fish you introduce to your planted aquarium are plant-friendly. Some fish, like goldfish, benefit from consuming plant matter, so consider adding plants to your goldfish aquarium occasionally.

Propagation

Different groups of plants have different reproductive strategies. The flowering plants produce flowers that breach the surface of the water. Propagation of these types of plants using this method in an aquarium is unlikely. Instead, most flowering plants can be propagated using cuttings.

Propagation of plants using cuttings only works on some plants. Those where the growing tip or *meristem* remains at ground level require a different method. Plants like *Vallisneria*, *Sagittaria*, and Amazon sword produce runners with plantlets which will root themselves into the substrate.