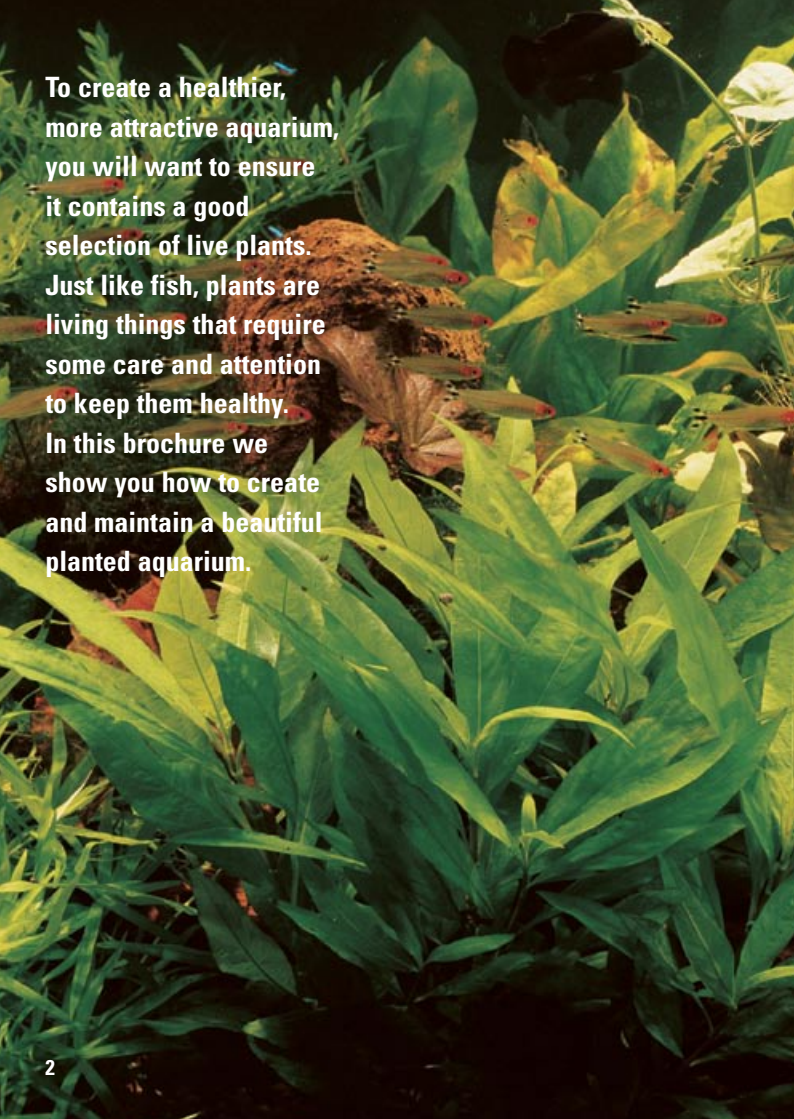

Tetra
Planting your Aquarium
Approved by
SPARSHOLT
COLLEGE HAMPSHIRE



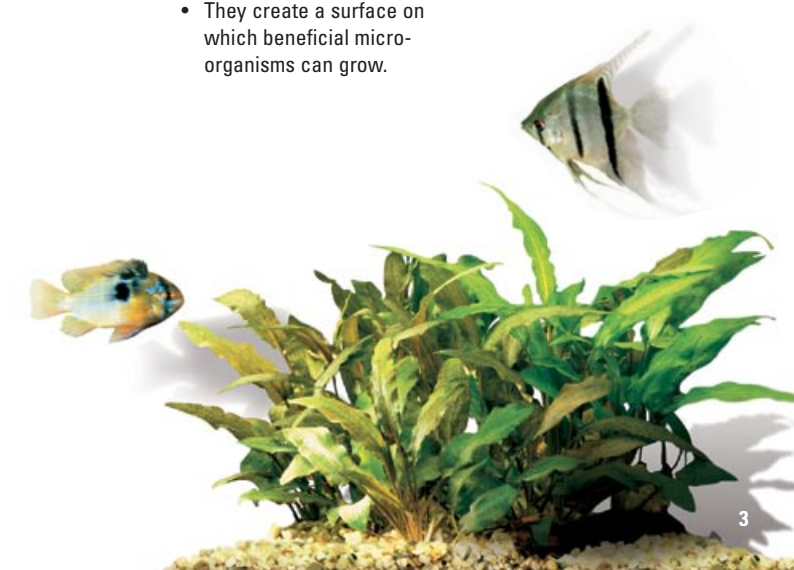
To create a healthier, more attractive aquarium, you will want to ensure it contains a good selection of live plants. Just like fish, plants are living things that require some care and attention to keep them healthy. In this brochure we show you how to create and maintain a beautiful planted aquarium.

Benefits of live plants

As well as creating a natural looking environment, plants do a number of other useful things:

- They provide shelter and hiding places for the fish.
- They produce valuable oxygen and use up carbon dioxide.
- They help to remove pollutants from the water.
- They can help provide some natural algae control.
- They create a surface on which beneficial micro-organisms can grow.
- Some species produce substances that help to deter harmful bacteria.
- Their root systems release small amounts of oxygen, helping to keep the substrate healthy.

Aquariums with a good selection of plants often remain healthier, and look better, compared to those without.



Preparing the aquarium for plants

There are one or two things you can do to make sure your aquarium is suitable for encouraging healthy plant growth.

Substrate

The substrate should be slightly deeper than in a non-planted aquarium. An ideal depth would be 5 – 7 cm (2 – 3 inches) of well-washed aquarium gravel. Avoid using very fine gravel or sand, as it tends to compact and create stagnant areas, reducing water circulation around plant roots.

The quality of the substrate for plants can be improved by laying a 2cm (0.75 inch) layer of **TetraPlant Complete Substrate** beneath the gravel.

CompleteSubstrate consists of a high quality mix of sand and black peat, which is rich in iron, trace elements, and natural humic substances.
It provides an ideal environment for plants, encouraging rapid root growth and long-term fertilisation.

Light

All plants require light as a source of energy. Plants require light from the blue and red areas of the light spectrum, and so it is important to select a bulb that is specifically designed for encouraging plant growth. Usually they are marked as being suitable for this purpose. Light tubes should be replaced approximately every 6 months, as over time their efficiency drops.

Fish

In order for your live plants to become established, and remain healthy, there are certain fish you should avoid. For example, whilst some species of Plecostomus are good for eating algae off the glass, they can do a lot of damage to live plants. In planted aquariums, stick to smaller algae-eating species, such as *Otocinclus* catfish. Your aquatics outlet can offer more advice on which fish to choose.

Tetra AquaArt aquariums come complete with light tubes that are ideal for encouraging good plant growth.

What plants need for health

In order to thrive, plants require a number of different things to be available to them.

Oxygen

Just like fish, plants require oxygen for life. Most aquariums with a sensible number of fish should have sufficient oxygen for good plant growth. If more is needed, a **TetraTec APS** air pump can be added, and switched on during the night when plants stop producing oxygen.

Vigorous aeration is not a good thing in planted aquariums as it drives off carbon dioxide, which plants also need. Therefore, well planted aquariums should not be over-stocked with fish, as this increases the need for constant aeration.

Carbon Dioxide

Plants need carbon dioxide for photosynthesis. This is the process by which they trap sunlight using the chlorophyll in their leaves, and use it to convert carbon dioxide and water to simple sugars. In most aquariums, there will be sufficient carbon dioxide for limited plant growth, but for a really good display it is necessary to provide additional amounts. It is easy to add additional carbon dioxide to the aquarium with a **TetraPlant CO_2 Optimat.**

Ideally, the CO_2 level in the aquarium should be maintained between 5 and 15mg/l.The amount of carbon dioxide in the water is influenced by temperature, pH and carbonate hardness. The **Tetratest Laborett test kit** contains the necessary test kits and charts for determining carbon dioxide levels in your aquarium. These levels should be measured during the day when the plants are using up carbon dioxide, as at night they stop photosynthesising and therefore do not require it.

Nitrates and Phosphates

Plants require a variety of other essential nutrients in order to thrive and grow well. Ammonium and nitrate are natural products of fish excretion and biological filtration, and are both utilised by plants. Ammonium tends to be scarce in most aquariums, as it is rapidly broken down into nitrate. Nitrate is the end product of biological filtration and is therefore present in quite high quantities in aquariums.

Phosphate is also very important for plant growth and photosynthesis. It is present in fish waste, and like nitrate will usually accumulate in healthy aquariums.

Because both nitrate and phosphate are present in sufficient quantities for plant growth in most aquariums, it is important to use a good quality plant fertiliser, such as **TetraPlant PlantaMin,** that does not contain additional nitrate or phosphate, otherwise excess algae may grow. For plants that take nutrients from the substrate, **TetraPlant CompleteSubstrate** creates the right conditions for healthy growth without adding extra nitrate or phosphate.

Micronutrients

There are a number of other elements that are important for plants, without which they will display poor growth and appearance.

For example, iron is important for the synthesis of chlorophyll, the pigment that plants use to trap the energy in light. A deficiency of iron and other trace elements leads to a condition called chlorosis, causing leaves to turn yellow and brittle.

It is therefore essential to use a plant fertiliser that will supply the plants with everything that they need, without encouraging the growth of algae.

TetraPlant PlantaMin contains all of the elements essential for healthy plant growth and it will not encourage the growth of algae. It is quickly and efficiently absorbed encouraging the production of rich and colourful leaves. It should be added after every partial water change or, alternatively, at monthly intervals.

For 'marsh' plants, such as the popular Amazon Sword or Cryptocoryne species, it is important to add nutrients to the substrate from time to time. This is because they do not absorb nutrients across their leaves. **TetraPlant Crypto** tablets are ideal for doing this - you simply push them into the gravel around the base of the plants to keep them healthy.

Planting

Once you have obtained all of the necessary equipment and prepared the aquarium, you can then buy your plants. It is important that you select plants that will not out-grow your aquarium, and that will be happy in your water conditions. Often, they will be labelled with their potential size and temperature requirements.

Traditionally, tall plants are used to create a backdrop to the tank whilst smaller ones are positioned in the foreground. You may wish to stick to this format or, alternatively, come up with your own planting arrangement.

New plants are usually transported in plastic carrier bags, which is fine provided that they do not dry out. If you have bought plants that are already in small baskets then these should be removed and the rock wool around the roots washed off. If necessary, you should cut the basket away in order to avoid damaging the roots. They are best washed in a bowl of water taken from your aquarium, and at the same time they need to be checked for snail eggs. These look like small masses of jelly and need to be removed, as snails will eat some species of plant and add an extra biological load to the aquarium.

Any broken or damaged parts of the plant should be cut off, as should any brown and limp roots or dying leaves. Healthy roots should also be cut back by about a half, in order to stimulate new growth. A hole should be made in the gravel and the plant inserted, then this should be back-filled to cover it and hold it in place. The plant should be gently pulled up until its growing tip, or 'crown', is just visible. To give new plants a healthy start, it is beneficial to push a **TetraPlant Crypto** tablet into the gravel, near the roots. This will ensure they receive a good supply of nutrients.

Keeping plants healthy

Occasionally you will have to tidy up your plants and give them a feed. The frequency of this will depend on the type and number of plants that you have.

Stem plants

Stem plants, so-called because they have very obvious stems that can be seen between the leaves, can sometimes grow to the surface of the tank and prevent light from reaching plants that are lower down. If this happens, they need to be cut back. Species that branch heavily will re-grow to their former glory after being cut back, but those that only exhibit sparse branching will not. The latter should be removed completely, and replaced with 20cm (8in) cuttings taken from the top of the plant. When re-planting these cuttings, remove the lower few leaves so as they do not become buried.

Rosette plants

Rosette plants do not have obvious stems and tend to exhibit quite dense growth. They should have any dying leaves removed and be thinned out from time to time. This can be done by cutting away the largest outer leaves, and if necessary cutting the roots back to around 15cm (6in).This will halt growth for a period of time but eventually new roots will develop.

Feeding plants

In addition to tidying up the plants, a fertiliser such as **TetraPlant PlantaMin** or **TetraPlant Crypto** tablets should be added on a regular basis. **PlantaMin** introduces essential nutrients that plants can take up over their leaves. Unlike some fertilisers, the nutrients are in a stable format for consistent, long-term fertilisation over days and weeks. **Crypto** tablets are pushed into the substrate, to provide nutrients to plants that cannot take them up over their leaves.

Quick guide for a healthy, planted aquarium

With **TetraPlant** products it is easy to have a healthy, well planted aquarium. Here is a reminder of what you need:

1. When setting up the aquarium place a 2cm (0.75 inch) layer of **TetraPlant Complete Substrate** at the base. Cover this with 5–7cm (2–3 inches) of pea gravel.
2. Use a proper light tube that has been designed for encouraging plant growth.
3. Install a **TetraPlant CO_2 Optimat** to provide the carbon dioxide that plants need for photosynthesis.
4. Keep a check on the CO_2 level using a **TetraTest Laborett kit.** It needs to be between 5–15mg/l.
5. Do not overstock the aquarium and avoid plant-eating fish (ask before purchasing them).
6. In well-stocked aquariums, provide gentle aeration at night with a **TetraTec APS air pump.**
7. Keep your plants healthy with regular fertilisation. Use **TetraPlant PlantaMin** for your finer aquatic plants (e.g. *Myriophyllum, Cabomba, Hygrophila, Vallisneria*), and **TetraPlant Crypto** tablets for 'feature' plants such as Amazon swords and Cryptocorynes. A combination of these two is ideal.

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