

Planted Aquarium FAQs

A beginners guide to the planted tank by George Farmer

The UK planted aquarium hobby is becoming more popular than ever. With this in mind here are some answers to a few of the more frequently asked questions.

What defines a planted aquarium?

A planted tank or aquarium is one that contains predominately plants. We're not talking about a fish tank with a few stem plants or a solitary Amazon sword, but an aquarium with around at least half of its substrate (gravel) covered with plants. In fact 'under planting' is probably the biggest cause of most beginners' algae issues, as put very simply, the plants cannot out-compete the algae for nutrients.

How do I start a planted aquarium?

Firstly you need to determine what type of aquarium you would like, what budget you have and how much time you are willing to put in. Bigger tanks are more expensive and take longer to maintain but have greater environmental stability and greater variety in stocking options. Smaller tanks are cheaper, easier to maintain but lack the stability and stocking options of larger tanks. Most aquarium kits that come with lighting will be sufficient to grow the easiest of low light tolerant plants with no need for specialised substrates, CO2 injection or regular liquid fertilisation. This is also the lowest maintenance and lowest cost set up. At the other end of the spectrum is the "hi-tech" set up that has more light, CO2 injection, nutrient-rich substrate and regular liquid fertilisation. This is typically the most expensive and time-consuming type of planted tank. Whatever the set up, you need to plant heavily from the outset. This helps fight off algae and often makes the aquarium appear more attractive. Do your research and only buy plants that are suitable for your set up. If it's low light then stick with easy plants such as Java fern, Java moss, Crypts, Amazon swords and easy stem plants such as Hygrophila.

What is low light and high light?

Light measurement is a complex subject but there are guides that can simplify things. The most common form of lighting is still the T8 (1") fluorescent tube. One tube spanning the length of the tank will be low light. Two tubes – low to medium light, three tubes medium to high and four tubes plus would be high light. Always fit reflectors. There are other popular forms of lighting i.e. Power Compact (PC) and High Output (HO) T5 that are more efficient so less tubes are required to obtain the equivalent lighting levels. Typically 1 watt of light per 2 litres of aquarium water (or 2 watts per gallon) would be enough to grow most plants in a regular sized aquarium. In smaller tanks i.e. less than 40 litres, 1 watt per litre is recommended, as smaller volumes require more light. This is known as the minimum light threshold.

What is CO2 injection and do I need it?

Carbon dioxide (CO2) injection is the most effective way to administer the plants' most important nutrient – carbon. Almost half of a plant is made from carbon so supplementing CO2 levels in the water will boost growth considerably. It is required for some demanding species and will improve growth in all plants, even in low light. Whether or not you need CO2 injection largely depends on your lighting levels. If you have high lighting then CO2 is essential to feed the plants, as their growth rate will be proportionate to the lighting. Without CO2 injection and high lighting levels the plants will quickly starve and algae will take hold. With lower lighting levels there is no requirement for CO2 injection as the low levels already present in the water are sufficient. Growth will simply be slower.

How do I inject CO2?

CO2 can be injected via two main methods. A yeast-based system i.e. Nutrafin Natural Plant System, relies on the fermentation of yeast, sugar and water to provide CO2 as a by-product. The CO2 gas is piped into the aquarium via tubing and a diffuser that allows the CO2 bubbles to diffuse into the water. Pros – cheaper, ideal for smaller tanks. Cons – little control, unstable CO2 levels can lead to algae. A pressurized system consists of a pressurized cylinder, an adjustable regulator, non-return valve, bubble counter, CO2 tubing and diffuser or reactor. The regulator provides bubble rate adjustment, normally via a needle valve, that determines the amount of CO2 supplied to the aquarium via the diffuser or reactor. Pros – easily controllable and low maintenance. Cons – relatively expensive.

Do I need a special gravel or sand (substrate)?

No. But it helps. Most plants prefer to take nutrients through their roots if they have them. If you already have an established substrate it is possible to add fertilising balls, capsules or tablets to target specific plants. It is also possible to administer additives such as laterite to an established substrate. If you are setting up a planted tank from scratch then it is worthwhile investing in a complete nutrient-rich substrate such as Caribsea EcoComplete, Seachem Flourite or ADA Aqua Soil. Another option that is less expensive is to use a base layer additive such as Tropica Plant Substrate or TetraPlant Complete Substrate topped with plain gravel or sand. All this said it is possible to supply the plants with all necessary nutrients via regular fertilisation of the water column, so using plain sand or gravel is possible. Fertilisation techniques such as the Estimote Index (EI) are useful for this technique.

What liquid fertilisers do I need?

If you are running a low light set up with undemanding plants then it may not be necessary to use fertilisers at all. Fish food/waste and tap water may supply enough nutrients alone. However, if you are running more light, especially with CO2 and demanding plants, you will need to feed the plants with regular fertilisation. There are many off-the-shelf products that are effective i.e. Tropica AquaCare Plant Nutrition and Nutrition+ and Seachem Flourish. Following the instructions on the bottle will be effective for low to medium light set ups with low CO2, but for those with higher lighting and CO2 levels it may be necessary to add more fertilisers more frequently.

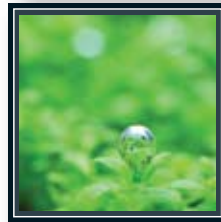
What is the Estimote Index (EI)?

EI is a safe, simple, effective and good value way to supply all plants with sufficient nutrients. The principle is that the aquarium is overdosed with nutrients so that there are no deficiencies. Then a weekly 50% water change ensures that the nutrient levels are reset and kept within safe limits. It is quite a controversial technique as the addition of nitrates and phosphates are undertaken. We normally hear these are algae triggers but in a well-planted tank, nitrates and phosphates encourage more plant growth, which in turn prevents algae.

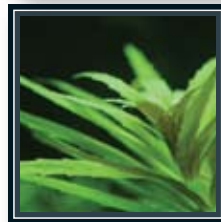
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