

## Aquarium Airstones and Plants

**Airstones are not likely to hurt a slow-growing planted fish tank.**

*By Scott Hieber*

A well-planted aquarium will have plenty of oxygen at night for the fish and flora.  
Angelfish (*Pterophyllum scalare*) by Tony Terceira.

Q. I always use airstones to make sure my fish get enough oxygen to breathe. The pet store told me I should not use airstones if I add plants to my aquarium. A friend of mine said I should use airstones but only at night. Who is right?  
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A. Let me start with two myths and a rule of thumb. Myth: Airstones are needed to add oxygen to an aquarium. Myth: Airstones should not be used on a planted aquarium because they remove CO<sub>2</sub>.

Airstones are unlikely to hurt a slow-growing garden with no added carbon dioxide, but they are not an especially useful way to add oxygen, anyway. Airstones drive off any CO<sub>2</sub> in the water above the level that the water would have from normal exposure to air. So, if you add CO<sub>2</sub> and use an airstone, you can drive off all the added CO<sub>2</sub>.

When I was a kid (around the time steel was invented), and folks had figured out how to take asphalt, putty, glass and steel, and make an aquarium that only sometimes rusted or gave you a jolt of electricity when you touched it, stores always sold you airstones so the fish could breathe.

We have come a long way since then. However, a new version of the airstone myth has arisen: that aquatic gardens should have airstones bubbling away at night, so the fish can breathe. A corollary to this is that nighttime airstones are needed so that the aquatic plants can breathe.

Airstones are a relatively cheap, but rather inefficient, way to oxygenate the water. A small, half-decent water pump will serve the purpose better. That's notwithstanding the fact that a well-planted aquarium will be saturated with oxygen when the lights go out, leaving plenty of O<sub>2</sub> to last fish and aquatic plants through the night.

Opposing the "airstoners" are those who argue that airstones remove CO<sub>2</sub>, so you shouldn't use them. Actually, an airstone (or water pump, for that matter) will tend to make the water have the maximum amount of CO<sub>2</sub> it can absorb from the air, which is about 4 or 5 parts per million (ppm). If your aquarium has less CO<sub>2</sub> than that, an airstone will add CO<sub>2</sub>. If it has more, it will tend to remove CO<sub>2</sub> down to 4 to 5 ppm. Actually, the concentration can be slightly higher, due to CO<sub>2</sub> coming from fish respiration.

If there is soil under the substrate, anaerobic bacterial activity can generate carbon dioxide (among other things) and raise its level slightly above 4 to 5 ppm. However, the difference between 3 and 5 or 7 ppm is small in absolute terms because we are talking about very small amounts of CO<sub>2</sub>. So, as far as CO<sub>2</sub> is concerned (in an aquarium without added CO<sub>2</sub>), an airstone is probably not going to cause any harm and might even help — but only a tiny bit.