

Problems with... Lava Rock

Oregon Koi and Watergarden Society
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Why do so many ponders use lava rock as filter media?

Why do some of us come down on it so hard? There are reasons for both side of this discussion, I personally think lava rock has enough problems, some may be questionable, it really has no true advantages, it does not do a very good job of removing fine particulate from the pond water. It is much better on our fish if we use some other filter media. Before you wade through the following be aware that “common” goldfish and “domestic” koi seem to be able to endure poorer water quality than Japanese line bred koi or “fancy” goldfish. Also with a lower fish load the normal surface area inside the pond and plenty of plant growth seems to offset the inefficiency of whatever type of filter you use. In practice many water garden type ponds over a couple of years old get along just fine with no “filter” in the system, the mature pond is the filter. Why be so picky about water quality if your fish are surviving? Skip down to the discussion on water testing for an answer to that.

This has nothing to do with money; I use brown river rock, solid and somewhat round. Price per volume is about that of lava rock. It will give you more usable bio surface area per volume than lava rock, which means it is actually cheaper than lava rock for the same bio filter. It is also easier to clean, a gentle washing will remove the excess bacteria from it, makes it very easy to care for, less work, more enjoyment of your pond. Notice I said usable surface area, if you look at lava rock you will see that it tends to be faceted, that is it has flat sides.

Two things happen when it settles in your filter barrel. One, the flat sides will tend to seek each other out and match up, no water flow between those two surfaces, therefore they are taken out of the usable surface area. Second, if they don't match up they will do the opposite, set at sharp angles to each other creating large interstitial spacing allowing water to pass through without contacting the bacteria that cling to those faces. If there is minimal contact with the bacteria it cannot do it's job of reducing the pollutants in that water.

Lava rock is somewhat porous; this pore space initially provides surface area to grow beneficial bacteria, great! Not really, bacteria will in time stop up the internal pore spaces, very little fresh water is able to flow to the interior, the oxy-

gen becomes depleted because of poor circulation there, then you have anaerobic activity. Bad stuff, get to that later.

Next you try to clean lava rock. Again, because the bacteria growth has stopped up the pore space the flushing water will not reach in there to clean it out, so you flush off only the outer surfaces that are spaced apart so that not only do you not clean the interior of the rock, you cannot even, with normal washings, clean the exterior surfaces.

Now when we clean our bio filters what we are flushing out is a little bit of debris from the pond and a whole lot of excess good bacteria, why flush out all that good bacteria?? Because once it gets started it grows so fast that it stops up our filters and they don't work so well when they are stopped up, now stopped up doesn't mean water is not passing through, but that the filter media is channeling, that is, the water takes the path of least resistance, its velocity increases so that there is a reduced dwell time in the filter, if the water does not have enough time in contact with the bacteria, the bacteria cannot do its job and remove the nitrogen products the fish dump in there.

Now to the anaerobic issue. The pathogens that cause most koi and goldfish diseases belong to the Pseudomonas and Aeromonas bacteria species and are a fairly common group of bacteria called gram-negative rods (GNR's). They do not have a cell wall like all gram-positive bacteria such as Strep or Staph bacteria that live on everyone's skin. GNR's need moist environment to survive. Just like Strep & Staph needs an entry into the tissue plus some other factors to cause a boil or serious infection, Pseudomonas and aeromonas need a parasite or a wound or an exposed area like the gills to enter a fish and cause a serious infection. Even very healthily ponds with super water quality will have some level of GNR's. If you have dirty filters or a media with anaerobic areas and or lots of anaerobic mulm deposits in your pond the amount of GNR's goes way up.

To use lava rock or not? It has no particular advantages but does have several disadvantages and problems. There are other filter media to chose from that do not have these problems the questions really is why use lava rock.