

Climbing Pond pH

What can be done about high pH in ponds?

By Stephen M. Meyer

Q. I have just established a backyard pond and it is now one month old. When my pond was newly filled, the water's pH reading was normal. Now, however, my readings are very high, about 8.4 to 8.6. I have this idea that it has something to do with the high levels of pollen. What can I do? Can my goldfish tolerate this condition? They seem to be doing okay for now.

A. First, let me congratulate you on good pondkeeping skills. The fact that you measured the pH upon setting up the backyard pond and have monitored it since then puts you in the top 1 percent of pondkeepers in my book. You are quite right to question the unusual change in pH and to wonder about its effect on your goldfish.

Your suspicion that the pH change is at least partially related to plants is correct, though not pollen. In your part of the country, water tends to come out of the tap at a pH between 6.8 and 7.2. This is what I presume you meant by "normal." (There is really no such thing as a normal pH, so you should always provide the actual numeric reading.)

Fresh from the tap, the water has a fairly high content of carbon dioxide (under pressure) that, when dissolved in the water, forms a weak acid. Thus, the pH is artificially low. When the water is allowed to sit in the open air, a considerable amount of the dissolved carbon dioxide dissipates. Correspondingly, the water's pH rises.

The second cause of pH rise in new backyard ponds is algae. I will bet you noticed that your pond water began to turn green after a week or two. That green coloring is planktonic algae. Algae, like all green plants, converts sunlight to food via photosynthesis. As part of that process, the algae remove carbon dioxide from the water and produce oxygen. Again, removing carbon dioxide from the water produces a rise in pH.

If you measured the pH during the day when the algae was busily sucking up carbon dioxide from the water, it is not surprising that the pH was so high. Had you measured the pH about 4 a.m. before the sun rose, you would notice the pH was around 7.5. This change in pH occurs because at night the algae switch to respiration and dump carbon dioxide back in the water, acidifying it. So your backyard pond pH oscillates over the course of a day between 7.5 and 8.5.

Your goldfish are pretty adaptable, and these daily swings in pH occur gradually. However, it would be wise to have a small circulating pump in the backyard pond to aerate the water. Even better would be a waterfall or fountain to really aerate the water. Keep it running 24 hours a day.

This will reduce somewhat the shifts in carbon dioxide dissolved in the water, thereby reducing the size of the pH swings. It will also stabilize the oxygen levels.

As the algae die off, the pH will come down. Whatever you do, do not try to reduce the pH using pH-reducing chemicals, acids and the like. In backyard ponds this often causes a pH "crash" that will kill the fish.