

Arkansas Pond Bulletin

February 2023

Quick Hit: Why do we lime ponds?

Limestone is principally made of calcium carbonate. When dissolved in water, calcium contributes to water hardness (which helps water clear faster after rain and windy days that stir up mud, and helps support healthy beneficial planktonic algae blooms and fish development) and carbonate contributes to water alkalinity (which helps raise and buffer water pH and in some cases increases natural fertility in acidic soils). Ponds with low alkalinity and hardness (less than 20 mg/L) can often be made more productive (healthier plankton blooms and better fish production/growth) by increasing those parameters by liming. There also appears to be a correlation between higher rates saprolegnia fungal infections and mortality during winter, especially in catfish, in low hardness ponds. Increasing hardness by liming seems to reduce the frequency/severity of this disease. Liming is generally done in the fall/winter because it is a mild flocculant that could during summer clear water slightly and worsen or promote problematic aquatic weed/filamentous algae growth. The most effective/easiest lime application time is right after soil compaction is complete during construction, spread evenly across the entire basin. Once the pond is filled, application becomes more complicated and best achieved with a deck or pontoon boat loaded with lime while it is sprayed off with a high pressure water hose as the boat moves across the pond in a grid pattern. Placing or spreading lime from shore is only somewhat effective because the soil in the middle of the pond will not be treated. Application rates are not an exact science due to the number of variables at play. Soil samples can determine more precise application rates but you must ask the Marianna lab to provide you with the rate necessary to achieve pH 6.5 or the rate necessary for growing alfalfa. In the soil reports I have seen when agents have submitted samples for "Fish Pond," no liming rate is calculated unless they are given an end-point to go on. My general application rates based on water quality results are 4 tons ag lime / surface acre for alkalinity/hardness 0-10 mg/L, 3 tons / acre for 10-15 mg/L, 2 tons / acre for 15-20 mg/L, no lime for higher than 20 mg/L. Check water chemistry again about 2-3 months after application to see if more is needed. Only agricultural lime should be applied to ponds containing fish. Hydrated or other varieties with higher neutralizing values can be used during pond construction or when fish are not present. The fast-acting limes increase water pH too quickly and can kill fish. In fact, aquaculture facilities often use hydrated lime between crops to sterilize their pond soil and prepare it for the next crop. While most ponds in central and southern Arkansas can be made more productive from liming, it is not a requirement. If a client is not seeking higher fish production, less suspended sediment, or more stable water chemistry, liming is not necessary. More detail can be found in the attached SRAC 4100 Liming Ponds for Aquaculture.

What to Watch Out for in February:

Fish kills from saprolegnia infection and cold are possible now. Old and weak fish are susceptible, as are otherwise healthy fish living in ponds with poor water chemistry to begin with. A few mortalities is usually not cause for alarm, but dozens of dead fish warrant water chemistry investigation and documentation of the species and number of fish lost. There is nothing practical that can be done to save sick fish, so it is more about determining the cause and preparing for treatments and restocking in the spring than anything. More details in attached SRAC 4700 Saprolegniasis (Winter Fungus). Clients with threadfin shad may see significant mortalities from cold this month as they are sensitive to water temperatures below about 45 degrees. Small numbers of threadfin may overwinter and repopulate the pond this summer, but restocking is often needed to maintain their presence in most ponds. Ponds with tilapia should have already experienced their annual round of mortality, but they will this month if not already (tilapia are sensitive to water temperatures below about 50-55 degrees). Tilapia will not survive most winters in Arkansas ponds unless a warm water refuge, perhaps from groundwater springs or another artificial heat source, is present.

Pond Management Tasks for February:

Inspect dams, levees, and drain structures for leaks and make arrangements for repairs as soon as possible. It is still a good time for liming. No fertilization. No feeding (except for light hand feeding on abnormally warm days). Dyes can be applied and maintained now for submerged/filamentous algae suppression if needed. No herbicide applications at this time.

That's all for now. I'll adjust the delivery of this information based on your input. Let me know if it's too much info, too little, or about right. Make suggestions on what you'd like to see regularly. Also, send me questions you've had about ponds, plants or fish. I'll add them to my quick hit question bank for future communications. I'll be sharing demo ideas in the future.

Take care,

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