

Arkansas Pond Bulletin

August 2023

Quick Hit: Aquatic dye

One way to reduce the growth of algae and submerged weeds in ponds is aquatic dye. Dyes block important wavelengths of light from reaching plants that would use it for photosynthesis and growth. While dyes are effective tools for aquatic weed control in specific situations, they are not really herbicides. It would be akin to referring to a tarp as an herbicide because it killed grass shaded beneath it. In fact, most dye brands are careful not to claim their products affect aquatic plants as to not draw attention from the EPA who regulates such things.

The primary ingredient in most aquatic dye is Acid Blue 9. Some dyes contain an additional pigment, Acid Yellow 23. The additional pigment blocks a wider range of wavelengths of light making them more effective aquatic weed controls. Two notable dyes containing Acid Yellow 23 are Aquashade and Admiral. These brands are unique among most aquatic dyes as they have actually sought registration with the EPA. What this affords these brands is the ability to actually claim, without risk of regulatory punishment, that they suppress aquatic weed growth. Anecdotally, from communication with professional pond and lake consultants and clients who have tried them, the EPA registered brands are regarded more positively than non-registered brands. The general sentiment is that the premium brands have higher concentrations of pigment and their effect lasts longer in water than off brands, resulting in better weed control for longer. Whether this perception of better performance is actually true, or just illusion supported by bolder claims on the label and approval from the EPA, is unclear and empirical evidence in scientific literature has not been found.

One matter that may come up is whether a client wanting to apply a dye to their pond/lake is subject to Clean Water Act National Pollutant Discharge Elimination System (NPDES) permits. The goal of this permit is to control potentially harmful pollutants from entering "Waters of the United States," basically public water, of which the definition and scope changes based on the administration in control at the time. While we talk about applying herbicides (chemicals that are absolutely harmful pollutants to aquatic life) all the time, we never speak of NPDES permits. This is because EPA-registered pesticides are exempt from NPDES permit requirements so long as they are applied in accordance with their label instructions. Since Aquashade and Admiral are EPA-registered, they too are exempt. Non-registered dyes are not.

Another consideration is that the non-selective nature of dye suppresses beneficial green algae too. Green algae are the base of aquatic food chains and the source of most dissolved oxygen in ponds and lakes. While dyes do not pose a risk of eliminating all algae as some true herbicides can, clients should be aware that growth and total

biomass production of fish can be somewhat reduced by the consistent application of dye.

Dyes are most effective at prevention of fully submerged weeds like hydrilla, coontail, sago pondweed, chara, filamentous algae and the like. Dye has little to no effect on fully mature weeds that have reached the surface, and emergent weeds like cattails, alligator weed, water primrose, etc. For best effect, apply dyes before the growing season begins (in winter or early spring before waters reach 55°F) and maintain the label-recommended concentration with periodic booster doses throughout the year (weeks to a few months between boosters depending on seepage and rainfall). This will suppress seedlings from surviving when they emerge, preventing the weed problem before it materializes. If an infestation is already fully established, dyes can be used as a follow-up to herbicides to suppress regrowth for longer-term control. Dyes are not able to control weeds growing in less than about 3 feet of water so use on shallow ponds may be entirely ineffective. In summary, dyes are a cost-effective weed management tool especially for small to intermediate sized ponds with average depths over about 4 feet. An integrated approach using physical removal, herbicides, dyes, and biological controls (usually grass carp) tends to provide better results than either one approach on its own.

What to Watch Out for in August:

Not much different from July. Bluegreen algae bloom frequency will be highest August-September through our hottest, lowest water level months. If you get calls on sick or dying livestock, be sure to check their ponds for bluegreen blooms as part of your investigations. Aquatic weeds are now fully mature and more resistant to herbicides. Contact herbicide applications during summer must be carefully carried out as killing too much plant mass at one time will cause oxygen depletion in the water and can kill fish. The general rule of thumb is treat no more than 1/3 of the pond at one time, wait two weeks before treating the next section, and so on until the entire pond is treated. In severe infestations, 1/4 sections at a time may be needed. The MP556, SRAC0360, and MP44 contain information on selecting herbicides. The easiest plant ID tool available now is Texas A&M's Aquaplant "Identify a Plant" directory <https://aquaplant.tamu.edu/>. The MP556 and MP360 contain photos of many of the common problematic weeds in Arkansas. You can also text or email me photos of the plant you're dealing with and I can advise. If you encounter an aquatic weed or fish you suspect to be non-native, please report it to me or the Arkansas Game and Fish Commission Aquatic Nuisance Species Program Coordinator, Matt Horton Matthew.Horton@agfc.ar.gov 877-470-3309 ext. 1206. We will work together to develop a plan to contain and hopefully eliminate that invasive from their property without disrupting normal operation.

Fish kills will start increasing in frequency July-August. Environmental conditions to watch out for are 2-3 days of high heat, no wind, and heavy cloud cover. By the 3rd and 4th straight day, ponds with dense algae blooms and weed infestations will start losing fish from oxygen depletion. The largest fish of each species will be the first to go, often grass carp followed by the largest bluegills, crappie, largemouth bass, and then catfish. Once a low-dissolved oxygen kill has begun, the only thing that can provide relief is aeration or flushing the pond with fresh oxygenated well water. Unless the pond owner already has sufficiently-sized emergency aeration or pumping equipment in place for this possibility, they will likely take too long to acquire it after the fact to make much difference. Encourage clients who have invested greatly in their fisheries (trophy bass and crappie ponds, for example) to consider installing aeration systems to prevent this from occurring in the first place. All we can do in most cases is assess the extent of the kill and recommend a restocking plan.

Pond Management Tasks for August:

Pond renovations and construction should be reaching completion. Fertilization and feeding programs should be underway. Aquatic dye for weed/algae control will last longer now due to lower flushing rates from lack of rainfall. Continue herbicide applications for troublesome weeds. Fish stocking is not recommended from July to about September; mortalities increase significantly at high temperatures. Encourage clients to harvest largemouth bass (10-15 lbs/acre/yr for normal ponds, 25-35 lbs/acre/yr for bass-crowded or highly productive ponds). Harvest bluegill less than about 7 inches in length up to about 25 lbs/acre/yr. Aggressive harvest of all crappie caught, especially from ponds smaller than about 25 acres is encouraged. Continue mowing grass on dams and levees to keep brush and saplings from developing. Periodically inspect drains and spillways to clear debris and clogs. Continue daily operation of aerators. For diffused aeration systems that have not yet been activated, follow the startup schedule of: Day 1, run 30 minutes then turn it off the rest of the day. Day 2, run 1 hour. Day 3, run 2 hours. Day 4, run 4 hours. Continue doubling the run time each day until you are running 24 hrs/day and keep it on for the rest of the summer.

Message me with any questions or workshop planning ideas. Most folks will start shifting their interest to the deer woods soon so we can start looking at dates for spring '24 for pond programs.

Take care,

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