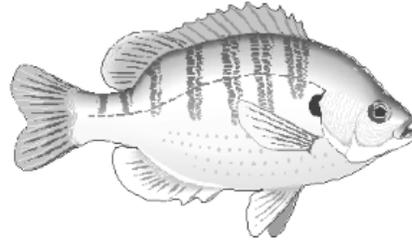


Ohio Pond News



The Ohio State University



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Duckweed & Watermeal Control Re-visited

The phone calls are arriving almost daily concerning watermeal and duckweed, as these two species are experiencing explosive growth in Ohio's ponds. Looks like a banner year for these two aquatic plant species. Many pond owners have been advised by various pond pundits to use chemical A, B, or C and control has not occurred. So it seems appropriate that review of control options is warranted. If the reader wants additional information on water meal and duckweed, an OSU factsheet is available. See the pond factsheet update section on page 3 for information.

An abundance of duckweed and/or watermeal indicates two things. First, the pond water has high levels of nutrients, particularly phosphorus. These plants obtain their nutrients from the water itself rather than the pond bottom. High nutrient levels = high levels of plant growth. Second, the pond is protected, receiving very little substantial wind action. Duckweed & watermeal prefer quiet waters with minimal water movement. Our first control option is to limit outside inputs of nutrients if they are occurring. Common sources of unwanted nutrients are Canada geese, lawn fertilizer, runoff from domesticated animal paddocks, septic system leach beds, and on occasion, farm field runoff. Significantly reducing the influx of nutrients from these sources can often reduce or eliminate the duckweed & watermeal population.

Bottom aeration can be another helpful tool when controlling these problematic plants, particularly in newer ponds. Duckweed & watermeal thrive in ponds with a lot of black

muck which accumulates over the years due to pond stratification. Bottom bubble aerators prevent ponds from stratifying, allowing more complete decomposition of dying organic materials. It also allows for oxygen along the bottom which helps bind up the phosphorus into unavailable forms. Bubble aeration can reduce abundance of these two aquatic plants species if done correctly. For troublesome populations, a larger aeration system than normally recommended for most ponds is justified.

Chemical control of watermeal & duckweed is limited even though pond owners try nearly all chemicals available. Only two active ingredients work on duckweed, diquat dibromide & fluridone, and of these, only fluridone works well on watermeal. Because watermeal and duckweed typically occur together, fluridone is the only active ingredient that works well. The only readily available product is Sonar. Read the label to determine your application rate. The efficacy of using Sonar can be significantly improved by using a non-ionic surfactant, such as Cide-Kick. Surfactants enhance penetration of the active ingredient into the plant tissues and provide for better control.

Other aquatic herbicides are typically tried in an attempt to save money or because poor advice was given. It should be noted that copper products are algacides and will not control these small plants at legal application rates. Endothol, glyphosate, and 2,4-D products are also not recommended for controlling watermeal & duckweed. So, don't be talked into using such products.

Did You Know?

- Snapping turtles can show up in ponds located far away from a nearby water source. Snapping turtles make long cross-county treks in search of new habitats and breeding areas. Of course, these treks can be made easier by township and county ditches, which can function as snapping turtle highways. It's amazing where these large turtles show up. Downtown Marysville is the strangest place I've seen one..

Why is My Pond Red?

Every summer, many pond owners notice their pond takes on a reddish-hue to it when hot, calm days occur in succession. They typically describe it as a red slick that gets easily blown to one side with a gentle breeze. Then about the time they get worried about it, the reddish slick suddenly disappears. So what the heck is going on?

Virtually all the reddish ponds I've visited contain dense populations of *Euglena*. *Euglena* are microscopic protozoan that have both animal characteristics as well as plant characteristics. The plant characteristic most apparent are chloroplasts, which contain chlorophyll. This allows the *Euglena* to produce its own food internally—a rarity in the animal world. *Euglena* also have a large eyespot which becomes very red in color when exposed to excessive ultraviolet radiation. The red pigment is produced to protect the eyespot from the radiation.

The reddish slick in a pond occurs for two reasons and both must be present to create the reddish color. First, there must be lots of *Euglena* in the pond. They flourish in a nutrient rich environment, so a nutrient poor pond will have fewer *Euglena*, and will not typically experience a reddish *Euglena* bloom.

Second, pond and weather conditions must be such that ultraviolet radiation entering the water is high. Weather-wise, this means an extended sunny period with little or no wind and very warm water temperatures. A flat pond surface allows light to enter more readily. Also, the water needs to be on the clear side to facilitate the penetration of light and radiation that makes the *Euglena* unhappy and produce more red pigment. In conclusion, red *Euglena* blooms are more likely during periods with high water temperatures, lots of sun, and little wind and in ponds with clearer water.

So what to do? There is very little a pond owner can do to eliminate the reddish bloom. Our typical recommendation is to wait out the bloom, as an abrupt change in weather and/or water clarity can allow the *Euglena* to reduce the amount of red pigment in their eyespot. *Euglena* do not pose a threat to aquatic life or people swimming in the pond. One activity a pond owner can do is to reduce outside inputs of nutrients to limit the population of *Euglena*. This activity also helps to reduce abundances of nuisance algae and aquatic plants, which most pond owners prefer not to have an abundance of.

The Turnover Fish Kill - A Summer Event

Mid to late summer is the time of year when a specific type of fish kill occurs and now causes more total fish kills than poorly planned vegetation control. I speak of the summer turnover or flip of the pond, which means the total water volume suddenly mixes. If this occurs and conditions within the pond are such that oxygen levels plummet, the fish die. Those pond owners wanting a better understanding of this phenomena should read the OSU Extension factsheets on pond stratification and fish kills (see page 3)

What are the conditions that favor a fish kill if the pond suddenly mixes? Ponds and lakes stratify, with an upper warm layer that is well-oxygenated sitting on top of cold layer that loses its oxygen due to decomposition processes. Whether a fish kill will occur if these two layers mix is dependent on the ratio between the volumes of the two upper layers. If the oxygen-less lower volume is equal to or larger than the oxygenated upper layer and the pond mixes, trouble ensues. Obviously, the larger the lower volume, the higher the danger level. As an example, a pond with 80% of its water in the oxygen-less lower layer is a fish kill waiting to happen. Conversely, a pond with 80% of its water in the upper layer will not experience this type of fish kill unless oxygen levels in the upper layer are very low.

These layers typically do not mix throughout the summer unless something forces it to happen. So what causes these layers to mix at times the pond owners wish they wouldn't? The number one cause (about 95% of all turnover events) is a sudden rainstorm dumping several inches of cold rain water in a short time period. Cold water is more dense than the warm water present in the upper layer, so it quickly sinks to the bottom causing widespread circulation within the pond. If the amount of cold water is sufficient to mix the entire water column, then a fish kill may occur. The second cause leading to a turnover is the installation and initial operation of a bottom aeration system after the pond is already strongly stratified. What happens is the pond owner, with the best intentions, causes the pond to circulate and flip. This is why bottom aeration systems should be installed and turned on in May.

Bottom aeration, when installed in spring, is the method of choice to prevent pond stratification and eliminate the chances of a summer turnover fish kill. If the system is sized correctly, stratification cannot occur because deep water is constantly pumped to the surface ahead of the bubbles and new oxygenated water from shallow area replaces the displaced deep water. Bottom aeration systems can either be electric or windmill powered as both do a good job mixing the pond.

Using Non-Federally Approved Herbicides in Ponds

Believe it or not, many pond owners are using herbicides not approved by the U.S. EPA in their ponds to control problematic aquatic plants. It is illegal to do so! Pond owners are only allowed to use aquatic herbicides listed as allowed under the Federal Insecticide, Fungicide, and Rodenticide Act. The product label will tell the pond owner if it can be used in or near aquatic systems.

Perhaps the most common transgression by pond owners is using terrestrial glyphosate products, such as Round-up, around ponds. Legally, this is a no-no. The pond owner must use an approved aquatic glyphosate product, such as Rodeo, Shore-Klear, or Eagre.

Another mis-use is the active ingredient simazine, in products such as Princep. Simazine was the active ingredient in Aquazine, a commonly used aquatic herbicide back in the 70's and 80's. It has since been de-registered and simazine

can no longer be used in aquatic systems. Human health problems were the reason for de-registering.

Karmex, whose active ingredient is diuron, is another chemical commonly used to control algae and aquatic plants in ponds. While it killed the plants, it is no longer allowed in aquatic systems due to both its health effects on humans and basically sanitizing the pond ecosystem for aquatic animals.

Bottom line is this. The pond owner should only use Federally approved aquatic herbicides to not only avoid liability if something goes wrong, but also to protect the family's and pond's health. There are compelling reasons why the U.S. EPA did not approve or de-registered certain active ingredients for use in aquatic systems. We should respect those studies. Read the product label and if aquatic uses are not listed, do not use the product in your pond.

Pond Factsheet Update

Available

Placing Artificial Fish Attractors in Ponds and Reservoirs: OSUE Factsheet A-1.

Pond Measurements: OSUE Factsheet A-2.

Controlling Filamentous Algae in Ponds: OSUE Factsheet A-3.

Chemical Control of Aquatic Weeds: OSUE Factsheet A-4.

Muddy Water in Ponds: Causes, Prevention, and Remedies: OSUE Factsheet A-6.

Understanding Pond Stratification: OSUE Factsheet A-7.

Winter and Summer Fish Kills in Ponds: OSUE Factsheet A-8.

Planktonic Algae in Ponds: OSUE Factsheet A-9.

Fish Species Selection for Pond Stocking: OSUE Factsheet A-10.

Cattail Management: OSUE Factsheet A-11.

Algae Control with Barley Straw: OSUE Factsheet A-12.

Ponds and Legal Liability in Ohio: OSUE Factsheet ALS-1006.

Ice Safety: OSUE Factsheet AEX-392.

Farm Pond Safety: OSU Factsheet AEX-390.

Notifying the Ohio EPA Prior to Applying Aquatic Herbicides: OSUE Factsheet A-13.

Duckweed and Watermeal: Prevention & Control: OSUE Factsheet A-14.

When to Apply Aquatic Herbicides: OSUE Factsheet A-15.

Pond Dyes and Aquatic Plant Management: OSUE Factsheet A-16.

Benefits & Problems of Aquatic Plants in Ponds: OSUE Factsheet A-17.

Note: these factsheets are available at ohioline.osu.edu.

2008 Pond Clinic Schedule

These are currently the pond clinics scheduled for 2008. If you want a pond clinic scheduled in your county during 2008, contact your county OSU Extension or SWCD office and let them know of your desire. They are always appreciative of folks who offer their pond as a clinic site.

Sept. 16, Tuesday - Farm Science Review—numerous pond presentations.

Sept. 17, Wednesday - Farm Science Review—numerous pond presentations.

Sept. 18, Thursday - Farm Science Review—numerous pond presentations.

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