

Aquatic Plant Maintenance, Fish Stocking and Pond Constructi...

📅 Thu, 8/18 9:03AM 🕒 16:00

SUMMARY KEYWORDS

pond, aquatic plants, plants, algae, fish, water, chemicals, control, oxygen, spring, kill, problem, nutrients, submerged aquatic, recommend, methods, prevent, extension, area, aquatic organisms

SPEAKERS

Christa Hartsook, Allen Pattillo

- C** Christa Hartsook 00:00
Welcome to the Small Farms Podcast, a production of the Small Farms Program at Iowa State University Extension and Outreach. In this episode, I'm visiting with Allen Pattillo Fisheries and Aquaculture Extension Program Specialist at Iowa State University. Today we are talking about pond maintenance. I'm Christa Hartsook, Small Farms Program Coordinator, and we hope you enjoy the show. Allen welcome. Thanks for being on.
- A** Allen Pattillo 00:23
Thank you, Christa.
- C** Christa Hartsook 00:24
Allen, in the spring, you know, we see an increase in temperatures and then we tend to see an increase in algae in farm ponds in particular, is this normal? Or is this mean there's a problem?
- A** Allen Pattillo 00:34
The question of whether or not it's normal? Yes, it's absolutely normal. Is it a problem? It could be a problem really depends on what do you want your pond to look like.
- C** Christa Hartsook 00:45
If we're managing our pond for maybe some recreational fishing, you know, what types of things do we need to consider and really think about in the spring?

A

Allen Pattillo 00:54

Okay, for recreational fishing, you got a couple of things to keep in mind. You want there to be habitat for the fish, you want there to be food for the fish, you want the fish to stay alive, but you also want to be able to cast the luer out into the water and pull it through. So with that being said, we like to see about 15-20% of the shoreline with some sort of aquatic plants. We like to promote, you know, oxygen production from those plants. They also provide cover for the small fish, they provide food and areas for little, tiny bugs, macroinvertebrates to grow and live, and the frogs, and basically provide a good ecosystem for those... for those fish.

C

Christa Hartsook 01:42

Allen, there are other plants besides algae that maybe require some management in a farm pond?

A

Allen Pattillo 01:48

Right. So algae is probably the number one problem for folks in Iowa. They hear a lot of people call it moss, we call it filamentous algae. And so it starts off growing on the bottom, and as it, as the year progresses, it gets some air bubbles kind of built up inside of it, then it becomes buoyant and floats up to the top where you can see it. There's other types of algae of course, There's planktonic algae, those are the single celled algae, and then there's things like Muskgrass and, and Nitella, and those sorts of things. Those, of course, are healthy in a pond, but you get to high of densities of anything, and it can be a problem. One of the main problems is that during the daytime, they're producing lots of oxygen, but they're also changing the pH of the water, which could potentially be an issue. But at nighttime, they're all breathing the oxygen that they produced during the day and they're bringing the oxygen levels down really steeply. I just had an issue with a fish farmer this week, who had a fish kill. And this because he had too much algae growing in his pond. So that could happen with any of the different aquatic plants that are out there. There are floating plants like Duckweed and Watermeal, there are emergent plants like Cattails, Arrowhead, Irises different... there can be some pretty ones too. But there are also submerged aquatic plants. And there's a big genus called, the general term for those are pond weeds. And so those include quite a few different ones. But there's also Coontail and those sorts of things so... Any of those plants in too high in numbers can be an issue for recreational fisheries.

C

Christa Hartsook 03:35

That's perfect. Allen, how do we know if we've got a problem on our pond?

A

Allen Pattillo 03:40

Well, a few of the problems that you would notice, this is particularly for an oxygen issue, is if you see the fish coming up to the surface in a breathing air or piping, we call it then you know there's an oxygen issue. The first thing that you should do is provide some sort of aeration to

the water, that's you're going to create a lot of splashing out there, you could do that with an outboard motor, or you could take, say a sump pump and spray the water across the top of the pond. The more air to surface contact, erm... surface to water contact, splashing and bubbles you can make out there the better. This will provide a refuge for those fish if there's an oxygen depletion issue.

C

Christa Hartsook 04:24

Okay, so we know what to do if there's maybe an immediate problem. Allen, what about control strategies in a management position for a longer term scenario? What do we need to think about there?

A

Allen Pattillo 04:34

Right, so you need four different things for plants to get out of control. You're going to need sunlight, nutrients, water, and warm temperatures. So whenever you have that, you're going to have lots of plants grow. Anytime you can limit one of those or eliminate it, you'll be able to control aquatic plant growth. Well, the number one thing that we recommend is nutrient management. So this starts in the watershed. That's all of the area that the water, when it rains, that drains down in that one pond area. So a lot of times we we have agricultural runoff, or we have erosion and that sort of stuff, will bring in lots of phosphorus and nitrogen into the pond, and that is what the plants use more than anything to grow. So if we can establish prairie buffers and sedimentation ponds, and keep the soil where it's at on the landscape, then the pond will be much healthier, and you can reduce nutrients. Another thing you could do to reduce nutrients is allow those plants in your pond to grow, but harvest them out and compost those to where they're not going to get the nutrients back in the pond. You can even use that compost on your garden, it's got lots of nutrients, obviously. So that'd be a good option for you. Other things that we can do is, like I said, you can limit light. So we do that, maybe through the use of non toxic dye, we put it in the water and it prevents light penetration into the water and you can limit aquatic plant growth that way. But there's really four main strategies that we look at this for controlling aquatic plants. There's biological, mechanical, cultural, and chemical control methods. So a biological control, an example of that would be using Grass Carp or the White Amur, and we like to use the triploid ones or the sterile Grass Carp but so that they can't reproduce. We usually stock those at about three to four per surface acre of pond. And what they're going to do is they're going to really hammer those submerged aquatic plants they don't do so well and controlling Duckweed or Filamentous Algae or any of the other ones, but submerged aquatic plants, especially Coontail, they do a really good job of controlling those. One thing to keep in mind though, is that whenever they eat those plants, they're also releasing those nutrients back into the water. So they'll be available for other plants to be able to take up and use. And typically we see Planktonic Algae or the little Micro Algaes taking up those nutrients. So, whenever you have issues or whenever that happens, you can very quickly get your pond out of balance and have an oxygen depletion. Other control methods would include mechanical removal of the plants. So you can do... They make these cutters that you can throw out in the water and rakes that you can remove some of the submerged aquatic plants. If you have the budget or have this as a business, they they do make large mechanical harvesters that are kind of like the combines of the water. You could also, for different rooted aquatic plants, there's excavation equipment like a backhoe or something like that you can use to dig out the root system. A lot of times they spread through rhizomes, so it's important to get

that out of their. Cultural control methods would include ways to limit nutrients or prevent the plants from establishing or killing them off once they have established. Aluminum sulfate is one potential control method. It does mess with the water chemistry, but it helps bind phosphorus and keep plants from being able to take it up. You can put weed barriers in the ponds that prevent rooted aquatic plants from being able to establish in certain areas. You could do things like winter drawdowns of the water. So if you lower the water level down and allow it to freeze during the wintertime, that's going to kill off some of the root system of some of those established plants. And we like to use aeration in the ponds to keep the water mixed and also to keep oxygen down to the bottom sediments. So that's going to help keep all of the phosphorous bound up, it's also going to help break down organic matter. Non toxic dyes would be another option. And there's sort of a new control method that I'm hearing about quite a bit. It's called Ultrasonic Algae Control to control Planktonic and Filamentous Algae. And finally, what we recommend sort of as a last option, is chemical control methods. And we recommend that you have your category five aquatic pest control certification if you're going to do something like that. We do have some information on which chemicals works best with each of the different types of plants, but you do want to be careful because not all those chemicals work on all the plants so you had to be able to identify the plants and target your your strategy very directly for those plants.

C Christa Hartsook 09:56

Allen, you kind of went through all four of those types there is there one that's better to start with versus another?

A Allen Pattillo 10:03

Prevention... An ounce of prevention is worth a pound of cure, that's what they always say.

C Christa Hartsook 10:08

It is.

A Allen Pattillo 10:08

So if you're, if you're able to do some of those cultural control methods, that's really going to be the best way to start out, particularly doing watershed management to prevent the nutrients from coming in, prevent erosion from coming in, and also removing some of that stuff, once it is in your pond. But those can be expensive also, but it's ultimately long term is going to help your pond.

C Christa Hartsook 10:36

Sure. So we talked about chemical control methods, you know, maybe being a last resort for people. Are those dangerous to our fish that are inhabiting our pond?

A

Allen Pattillo 10:40

Well, those chemicals can definitely be hazardous to your fish and the other organisms in the ecosystem if they're used improperly, but there are a list of aquatic approved chemicals that you should use. You can't just take the chemicals that you would use on your ag field and apply them directly to your pond because they're not in the right dosage rates are they don't have the right surfactants in them, and they can kill your aquatic organisms. So please use an aquatic approved version of each of those chemicals and follow the instructions on the container. Well, they will give you the dosage rates. And some other things to keep in mind is that, you know, maybe you only want to do a small section of your pond at a time you can target your your chemical application and use lower dosage rates and control the small areas without having the damage that can occur with your entire pond. The other the final thing is that whenever these plants are killed, and they start to break down, the bacteria are using oxygen. And you can have a fish kill because of an oxygen depletion not necessarily because of the chemicals you put in there. So I definitely recommend aerate in your water if you are going to do a chemical application. And do it whenever the water temperatures a little bit cooler, we definitely recommend doing spring before the water temperatures get above 60 degrees or so.

C

Christa Hartsook 12:19

Allen, I want to switch gears a little bit. You know we've talked about managing some of our aquatic plants and things like that in our pond in the spring. Is spring also a good time to be stocking fish in our pond?

A

Allen Pattillo 12:29

Spring is definitely a good time to stock fish. We've got... You'll have new aquatic organisms growing. Some of the Phytoplankton, Zooplankton, that's the Microplanktons that the little fish can eat. So we definitely recommend putting your forage fish if you have a new pond, you start with a forage fish like a Bluegill is a very common one. Do that in the spring. You could also do that in the fall of the year. But you'll do that in the first year and then you will follow up with the stocking of a predator fish to control the population of your forage fish in the following year. I did produce a video for stocking fish in your pond, so you can look for that the extension store. There's also an extension publication about that for more details, or you could contact me directly.

C

Christa Hartsook 13:22

Perfect. Allen, if we have folks that are interested in maybe even new pond construction, do we have some good guidelines to help them out?

A

Allen Pattillo 13:29

Absolutely. We have an extension publication called Building Quality Ponds. There's also a short YouTube video giving some considerations on your particular land, what to look for whenever you're trying to build a pond. And so I definitely recommend checking those out. You want to

make sure you got good clay content in the area that's going to make your pond not leak. Stay away from sand and gravel seams. But you also want to pay attention to where the trees are at and what's going on around the pond in that watershed. If you can prevent sedimentation from going into your pond to be very important. A lot of times we recommend people putting a sedimentation basin or a wetland up hill from their pond to prevent some of that from happening. And also being able to easily remove sediment that gets into the pond through a bottom withdrawal siphon style of of outflow.

C Christa Hartsook 14:35

Okay. Allen, I would imagine maybe if we're just getting started or we are rehabbing a pond, that maybe we really need to get some of that water tested. Where do we go for something like that?

A Allen Pattillo 14:47

Yeah, I do definitely recommend getting your water tested and the state hygienic laboratory will do those tests for you. And I can get the contact information for that, but they have labs around Iowa and they'll be able to test those numbers for you.

C Christa Hartsook 15:03

Okay, great. Allen, is there anything else we need to cover really this spring? Thinking in terms of pond maintenance or new pond construction?

A Allen Pattillo 15:11

Sounds like we've covered most of the basics. So if you have continued or other questions about your pond, I definitely recommend contacting me directly. I'm a free resource for you. You can get to my email is Pattillo that's spelled pattillo@iastate.edu. And then the phone number of 515-294-8616. Alternatively, you can check out my Fisheries Extension website, we'll have a lot of those resources on there. You can check out the extension store as well. If you type in fisheries into the search box, you should be able to pull up all of the publications that I'll recommend to you,

C Christa Hartsook 15:56

Alan, thanks so much. A lot of great information shared today.

A Allen Pattillo 15:59

Thank you.

