
Farm Pond Maintenance Routines

A farm pond, no matter how well built, requires sufficient maintenance in order to meet the farm operator's objectives. Even if a pond's main purpose is to enhance the appearance of rural property, it should be monitored for various problems. Ponds constructed for fishing, swimming, irrigation, wildlife, or fire suppression all require regular inspection for emerging trouble. Like other farm structures, farm ponds serve an important function for some farm operations and require a higher level of maintenance.

Pond maintenance means inspecting different areas of a pond on a regular basis for signs of erosion, water quality decline, wildlife damage, and aquatic weed control. This fact sheet offers a list of important structural considerations for pond owners and suggestions for resolving problems.

Spillways

The most significant feature of a well-constructed pond is a proper spillway - the point at which excess water exits a pond. All ponds require some type of spillway, yet dozens of New York ponds fail each year because of insufficient spillways. The spillway guides water to an area where flow can occur without compromising the pond structure. In many farm ponds, the spillway is a grassy dip in one corner of the pond. Newer ponds use pipes to collect water and discharge it at the base of the dike. Spillways and emergency spillways should always be kept clean and free of woody vegetation.

Pond bank erosion

Erosion of soil in or near a pond can create a very serious hazard for pond owners and neighbors downhill. An unexpectedly heavy rain or spring thaw can intensify a small erosion problem without warning. Steep shores without vegetation can erode to cause cloudy water conditions and pond silting. Pond owners should check the dike and sides of ponds carefully several times a year. Check especially for unusually soggy ground near the base of the dike, muddy water seeping through the dike, rills (long channels in the soil), soil slumping down the dike, and washouts.

Grass helps prevent erosion on the exposed areas near a pond. Fill eroded areas and re-seed or place sod over bare soil. The roots will retain and stabilize the soil. If it is not clear where the eroded soil is coming from, contact your local Soil and Water Conservation District office. The interior of dikes can erode if loose material or wood has been used as fill to create the dike. Also, water can seep along the outside of a spillway pipe, carrying away soil and creating a hazard. Complex problems, such as a leaking pond, may require the assistance of a licensed engineer.

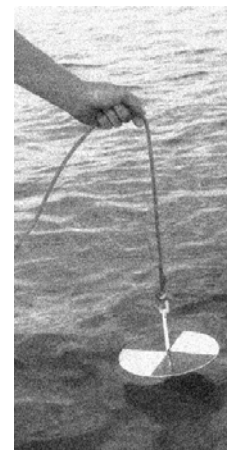
Water clarity

Many pond owners strive for relatively clear water no matter how the pond is used. Pond water clarity can be measured with a black-and-white disk called a Secchi disk, which is lowered under the surface until it disappears from view. The depth of disappearance is a measure of water clarity. Suspended particles are present in healthy ponds, so it is reasonable to expect several feet of underwater visibility. Depending on the location, pond water will have a natural green, olive, or brown color.

If you are concerned about cloudy water, it is important to determine the cause. Possible causes include shore erosion, pond construction or

modification, silty runoff entering the pond, algae, or plankton. Fill a tall jar with your cloudy pond water and inspect it closely under bright light. Algae or plankton will appear as green flecks or tiny moving organisms. If the cloudy conditions settle in the jar after a few days, the pond likely has a siltation problem.

Several substances can be used to hasten the settling of silt particles, including agricultural lime (1000 pounds per surface acre), hydrated lime (1000 pounds per surface acre), aluminum sulfate (250 pounds per surface acre), or agricultural gypsum (300 - 500



pounds per surface acre). DO NOT use quicklime (calcium oxide). Pond supply dealers often sell bottled pond clarifiers, but these are typically too expensive for use in a large pond. Gypsum and aluminum sulfate may increase the acidity of the pond water, rendering the pond less suitable for fish. To reduce the risk of harming aquatic organisms, apply only one-fourth of the recommended amounts at a time. Wait two weeks to assess whether the desired effect can be achieved at a lower rate. You can make the most of an application by mixing the substance with clear water to form a slurry, which can then be sprayed and mixed evenly across the surface of the pond.

Discoloration in pond water can result from decomposition of vegetation, tannin (a compound that leaches from forest trees), or algal blooms caused by nutrient runoff. Many times, discoloration is caused by nutrients like nitrogen and phosphorus, which enter from fertilizer, septic beds, and manure. Make sure the runoff areas feeding the pond are free from these chemicals. If runoff is inevitable, build a smaller settling pond upstream from the main pond to catch and retain nutrients. This settling pond will generally appear as a shallow, swale-like feature, with lush vegetation like cattails or reed grass -- about 10 percent of the surface of the main pond. It should be positioned to capture as much nutrient-laden runoff as possible.



Wildlife damage

Muskrats can burrow holes in pond dikes, creating erosion and stability problems. Muskrat holes in non-dike areas are seldom a problem. If muskrats are damaging a dike, cover the area above and below the shoreline with tight fitting rocks or non-rusting fencing. Nuisance muskrats can be trapped out-of-season with a permit from the NY Department of Environmental Conservation (DEC).

Beavers sometimes block pond spillways and pipes with limbs and mud. These blockages can cause serious problems if the pond level rises above its intended level. A DEC permit is required to remove a beaver lodge. Beavers creating a nuisance can be trapped with a wildlife nuisance permit, also obtained from the DEC.

Aquatic weeds

Pond plants provide many benefits, including prime fish habitat, shading, erosion control, oxygenation, and scenic beauty. Pond owners should become familiar with the plants in their ponds and determine if or when a plant is overabundant. If plants are interfering with common uses of a pond (fishing, swimming, irrigation), then they should be identified and treated accordingly.

Many methods of aquatic weed control are now available. Before resorting to a treatment, determine if excess nutrients are entering the pond from a septic area, agricultural operation, or treated lawn. Substances like nitrogen and phosphorus create algae blooms and excessive plant growth. Nutrient sources should be controlled before implementing aquatic weed treatment.

Floating weeds like duckweed and algae masses can be skimmed off the surface with a skimmer or rake. Bottom barriers, hand-pulling of root systems, and grass carp can be used to reduce submerged plant growth. Additionally, most ponds can be drained partially in the winter to kill aquatic weeds near the shoreline without disrupting fish and wildlife.

Some pond owners seek quick remedies for pond plant problems. Aquatic herbicides are available for this purpose; however, pond owners should consider herbicides a last resort. The disadvantages of chemical treatments include high cost, risk of deoxygenation, the need to obtain permits, impacts to fish and swimmers, and limitations based on pond characteristics. Aquatic "shades" labeled as algaecides also require a permit for their purchase and use in New York State.

If you are concerned about pond weeds or would like to have your weeds identified, contact Cornell Cooperative Extension or your County Soil and Water Conservation District. Refer to Extension aquatic weed management publications for more details on pond weeds.

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If you are interested in additional information about commercial farm pond management, please refer to the other fact sheets in this series:

Farm Pond Safety and Responsibility
Calculating Water Volume in Ponds
Farm Ponds and Fire Suppression
Meeting Small Farm Needs with a Pond

You can access these and other pond management topics on-line at <http://pond.dnr.cornell.edu>