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President's Message

by Dave Meyer

January was probably the mildest we have had in a long time. February and March were quite gloomy; then April arrived with few showers that are needed to bring May flowers. The first two-thirds of the month only produced ½ inch of rain which may make April one of the dryest in history. May has been no different than April.

I do not recall sprinkler systems running this early and reservoirs so low. We better start water conservation practices early if this is any indication of what the rest of the year will hold.

The Superintendent/Manager/Professional gathering that I mentioned in my last message was a tremendous success with 160 people in attendance. The three speakers and topics were excellent. Joe Black, President of Western Golf Properties, spoke on communication as the most important tool we have. He commented that with more leisure time, higher salaries of two income families, there are more dollars available for entertainment, consequently, the club industry has become more lucrative and more demanding. Mr. Black said golf has "exploded" all over the world. He concluded by stating that he is a very strong proponent of professional management, whether manager, pro, or superintendent. We all must communicate and manage the game.

Jim Latham, USGA, spoke on behalf of the Golf Superintendent. He stated that "golf has been the primary catalist and the start of a strong agronomy program which has brought the Superintendent to the forefront." He too said, there has to be strong cooperation between the Superintendent, Professional, and Manager. Because of the tremendous demands and expectations of the Superintendent from the golf community, there is great necessity for continuing education and one-to-one meetings to keep the communication lines open.

Donald Wegryzn, "Acting Manager" and Golf Pro, began by saying "we all share a common ground", and need to communicate. In the past, no one professional wanted to give up his share of the "pie". Growth is the key word and we must measure ourselves. Consequently we must continue to expand through educational programs. He concluded by stating, there is a need to plan and share time and resources.

I am sure that all who attended benefited from the sharing that was done. Another such function is being planned for the fall.

The CDGA seminar at Butterfield was well attended as always.

I hope everyone filled out the survey forms for the goose round-up so action will be taken to allow us to round-up our own problems and deliver them to a central drop off!

I hope to see you May 15th at Eagle Ridge for the ITF joint meeting.

Director's Column

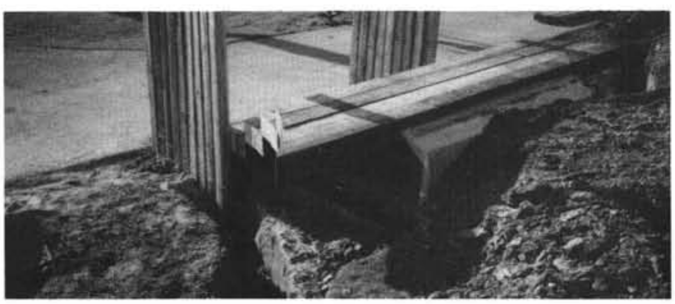
by Joel Purpur, River Forest C.C.

With the 1989 season upon us, on come the yearly tasks of aerating, weed killing, and the list goes on. Most of them are necessary evils we must do to maintain quality turf. Hopefully we also get chances now and then to use our creative skills on other projects as well.

With plans to rebuild the planter boxes and install a second stairway to our first tee, we decided to use vertical timbers inspired by the flowing curves seen on the Flex Timber system at the national trade show. In an attempt to solve the problem of concentrated foot traffic with stairways, we flaired the top steps making them wider at the tee surface.

6'' x 6'' treated timbers were used for the steps and rounded 4'' x 6'' timbers, also treated, were used for the verticals. An 18'' trench was dug to the wall outline and postholes an additional 18'' deep every two feet provide good stability. Each board was nailed to the next with 5/16'' spikes. (we used over 300 lbs. of spikes). Masking tape was used to outline the final cut on the standing vertical (4'' x 6'' timbers) which gives visualization and is easily changed. Rubber matting will be used on the steps to avoid wear from spikes.

There are many construction methods and endless designs to choose from to give each their individual character. Jesse Felix, with ''The Growing Place'', is designing the planting for the finishing touch. Landscape projects can be the fun part of our job and break up routine maintenance as well.



Controlling nuisance aquatic growths in golf course ponds

by Heather Larratt
H.M. Larratt Aquatic Consultants Assn.

Introduction

Water and little boys have one thing in common — it's very hard to make them sit still and do nothing. When water is detained in a pond, the wise course superintendent prepares for trouble. It matters not whether your pond is essentially a large wading pool or a small lake, no size of pond is exempt from nuisance aquatic growths.

Certainly some ponds are more prone to problems than others. The ideal pond is spring-fed, cold and deep with steep shorelines and a short detention time. If your pond is a shallow, flooded swamp which is essentially stagnant, the author sincerely hopes that you enjoy a challenge.

Algae is the most common nuisance aquatic growth, with rooted aquatic weeds running a close second. Algae range from slimy or hairy growths or submerged substrates (epiphyton) to minute, suspended forms (plankton) which are distributed from the surface to the depth where light penetrates. An abundance of plankton is termed an algae "bloom" in which the algae form a scum and/or color the water brown or green, depending on the species involved.

Aquatic weeds can be found from the shoreline down to 5 metres, but the preferred depth is 1 to 3 metres. These plants have vascular supporting tissue, true leaves and they are rooted. Aquatic weeds range from short carpets of grass-like plants to objectionable, dense beds of surfacing pondweeds. And you thought that all your weed problems were in your turf ...

There are two avenues for attacking nuisance aquatic growths: chemical control, and modification of the pond environment. This article should help the ground superintendent develop a pond maintenance program and plan modifications to the pond itself if necessary.

Controlling algae and reducing nutrients

Like all plants, algae require a variety of minerals for optimum growth. By far the most common limiting nutrient is phosphorus, while nitrogen, silica and carbon are considered to be important macro-nutrients. A reduction in the available nutrients, particularly phosphorus, will result in a matching decline in a algae productivity.

An obvious source of nutrients to a golf course pond is the fertilization of the surrounding turf. Every effort should be made to ensure that no fertilizer falls directly on the pond during its application. Similarly, grass clippings, leaves, etc., represent a nutrient contribution and should be disposed of elsewhere. Sloughing banks also donate nutrients to the pond and they should be stabilized with a bulkhead or rip-rap.

In addition to the external sources of nutrients, ponds regenerate nutrients internally. The most significant source of internal loading are the sediments when anaerobic conditions prevail in the overlying water. Ponds that are 3 or more metres deep are prone to this problem. The mechanism is as follows: The sun warms surface water faster than bottom water, resulting in layers of water with different temperatures and hence unequal densities. The warm, upper epilimnion does not mix with the colder, hypolimnion until the return of cool weather, or a severe wind storm which has the required energy to mix the entire water column in what is called "turnover". During the

(cont'd. page 6)

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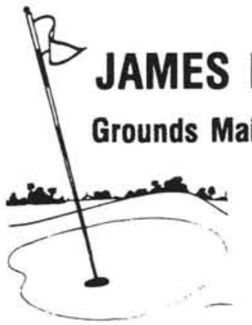

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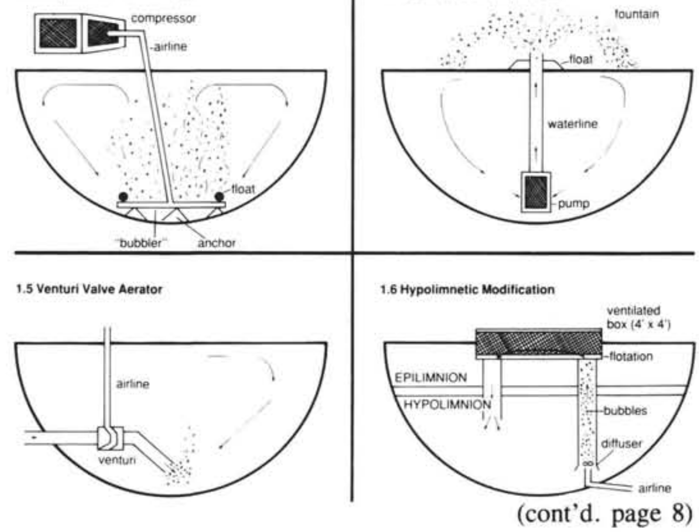
period of stratification, the water chemistry in the water layers becomes progressively different. The upper layer has more algae and an abundance of dissolved oxygen. The lower layer has more decomposers which consume oxygen, plus it is isolated from atmospheric oxygen. Bottom oxygen levels decline — often to the point that an anaerobic zone forms immediately above the sediments which are devoid of oxygen. Organisms which require oxygen are replaced by those that don't. These include the notorious bacteria groups that produce hydrogen sulphide (smells like rotten eggs) and methane (swamp gas). A sniff of the bottom water will tell you if your pond has an anaerobic zone.

The removal of oxygen from the sediment/water interface is somewhat like removing a lid; nutrients are liberated from the sediments, particularly phosphorus. When the pond experiences turnover, these nutrients are mixed into the water column where they can enhance algae growth. In summary, anaerobic zones are bad news.

What is needed is an input of oxygen to the bottom water. This can be accomplished in a number of ways. If water is normally added and withdrawn from the surface, it is sometimes possible to take water from the bottom instead (See Fg. 1.1). This has the effect of drawing surface water down into the bottom area with its fresh supply of oxygen. Alternately, if the inflowing water is well-oxygenated, it can be piped directly to the hypolimnion to supply the needed oxygen (See Fig. 1.2).

The cheapest aerators are the destratification type which break down the stratification (layering) in the pond. A homemade system can be constructed of a one horsepower compressor or blower connected to a 1'' pvc grid fitted with .03'' microjets or simply 1'' plastic tubing with holes smaller than 1/8 inch. The ''bubbler'' section is anchored about 0.5 metres from the bottom (See Fig. 1.3). The rising bubbles lift bottom water to the surface where it is oxygenated before dropping back to the hypolimnion.

Figure 1: Illustration of Pond Aeration Techniques



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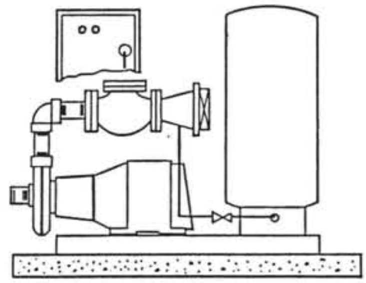

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Adequate aeration can also be accomplished without a noisy compressor. There are commercially available units that utilize a submersible pump to lift bottom water to the surface where it is sprayed from a floating fountain unit, e.g. Otterbine (See Fig. 1.4). Alternately, a venturi valve can be utilized when there is a pressurized water line in the deep section. The valve is installed in the water line and is fitted with an airline to the surface. The air is sucked down the airline and the air/water mixture is discharged near the bottom (Fig. 1.5).

It is essential that destratifying aerators be functioning in the early spring in order to avoid lifting nutrient-laden anaerobic water. Similarly, the aerator's operation cannot be interrupted for more than few days in the summer without incurring the same problem.

It is not unusual for destratification aerators to increase turbidity due to the mixing of the water column. If the aerated pond becomes unacceptably turbid, you may want to consider the hypolimnetic modification in which the rising bubbles are trapped in a column, aerated in a floating, ventilated box, and returned via another tube to the hypolimnion (See Fig. 1.6). The hypolimnetic aerators are more elegant in function than they are in appearance.

Reducing light penetration

Like all plants, algae require light to grow. The amount of light that penetrates the water column is affected by wind play. A mirror-still pond surface admits the maximum amount of light, while a rippled surface admits less. If the strategy of the golf course permits, plantings around the pond which reduce wind should be minimized. A fountain can serve the dual purpose of enhancing appearance while it disturbs the water surface.

More dramatic reductions in algae growths can be obtained using AquaShade, a blue dye that shades out the wavelengths which are essential to algae. The product works well, and imparts a Mediterranean blue look to the pond. If the resultant color looks little too-blue-to-be-true. AquaShade used at half the label rate still reduces algae growth.

Algicides

The most commonly used algicides are the copper compounds (e.g. Cutrine Plus, Algimycin FLL-C). The liquid materials are well suited to treating suspended, microscopic algae. Filamentous algae growng on rocks can be controlled by dragging a burlap sack of granular algicide along the infested area. Generally, no permit is required to treat a pond which is located entirely on the golf course and has no outflow beyond the boundaries of the property, however, confirmation with your provincial Ministry of Environment is advisable.

Copper algicides do not solve algae problems and thus repeated treatments during the summer are usually necessary. Typical treatment frequencies vary from monthly to weekly after the water temperature exceeds 16^0 to 18^0 C.

The frequency should be based upon the amount of algae present. Once the turbidity in the pond starts to increase, the algicide should be applied. There is no point in waiting until there is a full-blown algae bloom in progress. More algicide will be required, and a large volume of decaying organic matter will be sent to the bottom where it will fuel the anaerobic zone.

The turbitiy can be monitored using a secchi disk — a 20 cm diameter disk with alternating black and white quadrants. The disk is lowered until it can no longer be seen from the surface,

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Effects of Posttreatment Irrigation on Control of Japanses Beetle Larvae in Turfgrass

Chris Berry, MS Degree Candidate
Dept. of Entomology, Purdue University

With an understanding and knowledge of the biology of the Japanese Beetle (JB) (Coleoptera: Scarabaridae) grub, we can better understand the relationship between insecticide application and irrigation to improve the efficiency of grub control. One sees hope in the control of this insect that seriously effects the growth of healthy turfgrass. In fact, many golf course superintendents and professional lawncare managers throughout Indiana regard the JB grub as one of the most serious insect pests on turfgrass.

The JB grub is often difficult to control. Control is still a problem not fully understood by researchers and professionals. There have not been any definitive studies reported to determine reasons for the apparent reduced effectiveness of insecticides. Shortened insecticide residual activity, lack of rainfall or proper posttreatment irrigation, thick thatch, poor application accuracy and technique, formulation used, and the microbial breakdown of the insecticide have been suggested as possible causes (Baker, 1986).

In order to approach the problems of reduced activity it is best to understand the biology of this insect and the environment in which it lives. The JB grub normally proceeds through one life cycle per year. The adult emerges in June or July, feeds upon the upper surface of the foliage of mainly nonturf plants, chews out the interveinal tissue, and skeletonizes the foliage (Fleming, 1972). Although the adult JB does cause damage, the grub inflicts the most severe damage to turf because it feeds upon the root system. Root system injuries threaten the life function of the turfgrass, causing weakening and death to the plants.

The cycle proceeds with adult beetles laying eggs in July or August. In August or September, the first instars (commonly found in the thatch layer) emerge. These instars feed on turfgrass roots for two to three weeks mainly in the thatch layer. The most damaging stages are during the second and third instar grubs (Vittum, 1986). These two stages feed on the roots and the thatch in the thatch/soil interface (Niemczyk, 1987). The grubs at these two stages continue feeding throughout the fall and then migrate vertically to maintain a position below the frost line during the winter. As the soil warms in the spring the grubs return to the root zone and feed for four to eight weeks before pupating. The pupal stage lasts seven to ten days, after which the adults emerge to renew the grub's cycle (Vittum, 1986).

When grubs are present in the thatch or thatch/soil interface, irrigation is recommended in order to move the insecticide to the soil surface. Research illustrates that application of the insecticides to a turf area with a definite thatch layer results in little or no leaching of the active ingredient into the first 2.5 cm of soil regardless of the amount of irrigation applied (Villani and Wright, 1988). This evidence present brings forth the question of how the insect acquires a lethal dose of insecticide. Significant amounts of residues leaching through the thatch to enter the thatch/soil interface or even the soil is highly unlikely (Niemczyk and Krueger, 1987). Questions are now being raised on how do these insects actually come in contact with or ingest the insecticide residue. (cont'd. page 14)

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