FROM THE PUBLISHER

With a good portion of the country being ravaged by drought, those of us who have irrigation systems can appreciate the advantage they offer. We who have the responsibility of maintaining turf and landscaped areas realize how fickle Mother Nature can be.

It is tough enough to keep our courses and fields in top shape under ideal weather conditions—but when we have the kind of weather we are now experiencing all over the country, it wreaks havoc.

Irrigation has played an important role in caring for the golf courses and playing fields of this country. It helps Mother Nature and puts the water where we want it, when we want it. Without irrigation systems, I wonder how many golf courses in the Midwest would be playable.

The technology available today to maintain all turf and landscaped areas is greater than ever before.

There are hundreds of millions of dollars invested in golf courses, sports complexes, university campus grounds, and large landscaped areas. With good management practices we can continue to keep it that way.

Chemical compounds to help us control diseases, pests, and weeds are already in the marketplace. New power equipment is continually being introduced to help us do our job more quickly and effectively. Irrigation components are in place to keep everything green.

There is no question in my mind that we can reduce our water consumption without disturbing the integrity of the landscape. There are many new sprinkler heads that throw out less water per minute. This is just one way to help us conserve.

We know that chemicals are beneficial to keeping the landscape. We also know that some people abuse the use of chemicals in their work. It is the duty of all of us to get the message out concerning the need to keep these products on the market. We must emphasize, that with proper use everyone wins.

A few years ago, a story was going around that some football players died and the possible cause was sewage sludge that had been used to topdress the fields. The Milwaukee Sewerage Commission got on this one right away. Through a tremendous effort, it was able to disprove those statements. Milorganite is selling well these days, but clearing its name was very costly.

A report came out not long ago that a Navy officer, Lt. George Prior, had died after playing golf. Upon further investigation, some people believed Prior's death was caused by a fungicide sprayed on the golf course the day before the officer played.One can imagine how that affected the sales of the product. Needless to say,a lawsuit was filed by his family.

Recently I received some information from Fermenta Plant Protection Company. Here is what their statement said:

"Listed below are the facts concerning the 1982 death of Navy Lt. George Prior. On May 9, 1988, the Trial Court in the case entered a judgement in favor of the defendants." (The defendants were the chemical company.)

"The court found that Lt. Prior died from Toxic Epidermal Necrolysis (TEN), which was caused by a viral infection. A review of all medical writings regarding TEN confirmed that Daconil 2787 has never been associated with the disease.

"Daconil 2787 has been used on golf-course turf for more than 18 years, with over three billion rounds of golf being played without any reported incidents of TEN. The summary conclusion was that extensive evidence developed for this case, including product-usage information from more than 18 years, clearly demonstrated that Daconil 2787 fungicide did not cause TEN, that resulted in Lt. Prior's death."

The effort to keep this product on the market must have been Herculean. The cost to the company had to be enormous,and in the end there is no proof that Daconil 2787 was the cause.

If you were told that you had to stop watering your greens and fairways for whatever reason, you would fight like hell. If after the turf died it was found that we could have watered a minimum amount to keep it alive, the damage was already done.

The cost of doing business today is skyrocketing because it seems that whatever we do, we had better plan to defend that action later on down the road.

What a sorry state of affairs it has turned out to be.

THE FRONT OFFICE

OPINION PAGE

US CHOSEN FOR WORLD CUP SOCCER 1994

The best fireworks of this Independence Day weren't even in this country — they were in Zurich, Switzerland, where the Federated Internationale de Football Association (FIFA) announced that the United States will host the World Cup Soccer matches in 1994. Instead of lighting rockets and flares, the members of the World Cup USA 1994 delegation popped corks on champagne bottles to celebrate more than two years of hard work trying to convince FIFA that the U.S. was a legitimate home for international soccer.

This month, six years from now, the best soccer players from around the world will get to see the real fireworks as they visit this country for more than 50 playoff matches held at 12 different stadiums from the state of Washington to Washington, DC. They will play on some of the best sports turf in this country, if not the world. Perhaps then, the world will recognize that this country is serious about both types of football and the turf on which they are played. Furthermore, maybe this country will accept soccer as a spectator sport equal to or greater than football, baseball and basketball.

We congratulate the management of the 18 stadiums inspected by FIFA this past April. They cleared away any doubt as to whether the U.S. can meet international tournament standards. Their willingness to invest money in stadium fields to satisfy FIFA specifications, in some cases to cover artificial surfaces with temporary natural ones, sent the right message to the decisionmakers in Switzerland. Even though only 12 stadiums will be used, all 18 were willing and able to commit the necessary resources to meet FIFA requirements.

Soccer didn't just arrive in the states. It's been steadily building up over the past three decades. Almost every child in U.S. elementary schools today is introduced to the sport.

It wasn't that way 30 years ago. Back then, few physical education teachers took soccer seriously. Fortunately, I grew up in St. Louis, one of the early strongholds for youth soccer. Jim McCann, an Irish physical education instructor at my grade school, made every student from second grade on practice soccer skills. His efforts helped launch soccer in our community.

He knew you had to play soccer to appreciate it. He also knew it was a sport of international significance. I'll wager that more kids play soccer today than baseball and football combined. In fact, this has probably been the case for more than ten years. Through increased participation, we have been building our appreciation of soccer on a national scale. In many areas, soccer has the same popularity it has in foreign countries that view it as their national sport.

The selection of the United States for the World Cup Soccer 1994, is the culmination of decades of interest. It's time for American soccer players to join the ranks of international stars such as Pele. World Cup Soccer 1994 could do that.

During the next six years, many aspiring soccer stars will be practicing their skills on your fields. Help them out by making your soccer fields every bit as good as your football and baseball fields. Do your part to build the U.S. soccer spirit.

When I played soccer in college we'd be lucky to have 50 spectators in the stands. And, we all know that professional soccer has had a tough go of it the past ten years. FIFA has given us the chance to prove that soccer can be a major success in this country. We have six years to get ready.

If we all give as much as Jim McCann did 30 years ago, and start this summer, our best players will grow into a team that can take on the likes of Brazil — and the adults who grew up playing soccer will fill the stands. But first, give them the turf they need to make it happen.

Bruce F. Shank

EVENTS

CALENDAR

AUGUST

2 Turfgrass Field Day, Purdue University Agronomy Farm, West Lafayette, IN. Contact: Jo Horn, Dept. of Agronomy, Purdue University, W. Lafayette, IN 47907, (317) 494-4803.

3 University of Georgia Turf Field Day, Georgia Experiment Station, Griffin, GA. Contact: Dr. Gil Landry, 2400 College Station Rd., Athens, GA 30605, (404) 542-5350.

9 Mississippi Turfgrass Association Annual Meeting, Royal D'Iberville Hotel, Biloxi, MS. Contact: Professor Euel Coates, P.O. Drawer PG, Mississippi State, MS 39762, (601) 325-3138.

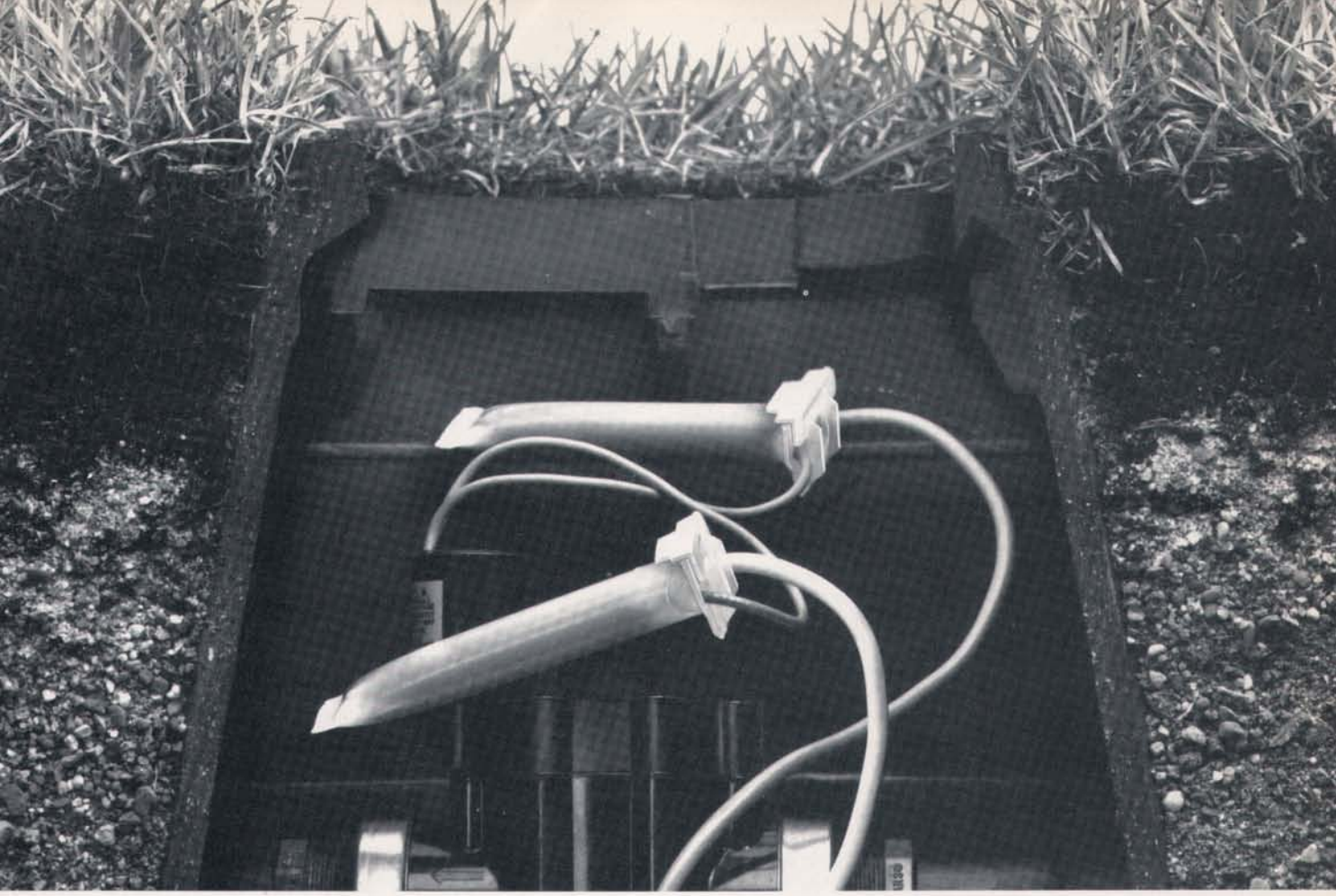
10 Texas Turfgrass Field Day, Texas A&M Extension Center, Dallas, TX. Contact: Dr. James Reinert (214) 231-5362.

10 Penn State Turf Field Days, Joseph Valentine Turf Research Center, Pennsylvania State University, University Park, PA. Contact: Dr. Joseph Duich, Dept. of Agronomy, 405 Ag. Admin. Bldg., University Park, PA 16802, (814) 865-9853.

26 Third Annual Turf Test, University of Rhode Island Turf Research Plots, Kingston, RI. Contact: Richard Skogley, University of Rhode Island, (401) 792-2791.

SEPTEMBER

13-15 Virginia Turf Field Days, Virginia Tech Turf Research Center, Blacksburg, VA. Contact: J. R. Hall, professor of turfgrass management, College of Agriculture, Virginia Polytechnic Institute, (703) 961-5797.



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THE EXTRA POINT

STMA NEWS

FROM THE EXECUTIVE DIRECTOR

In June, I had the privilege of speaking at the First Annual Athletic Field Day of the Sports Turf Association (STA) of Canada. The event was held in Centennial Park near Toronto.

The STA was conceived in 1987 by a group of Canadian sports turf managers and the University of Guelph to minimize and avoid injury to those using athletic facilities in the Province of Ontario. However, enthusiasm has spread throughout Canada and membership has grown to 150. Mike Bladon, coordinator of grounds at the University of Guelph, is president of the now-national organization. Annette Anderson, turf extension specialist for Ontario, helps STA with conferences and the new field day. In many respects, the STA is a mirror image of the STMA and has similar goals and philosophies.

There were more than 140 sports turf managers and commercial affiliates at the field day. STMA member Ken Mrock, grounds supervisor for the Chicago Bears, also addressed the group on "Maintenance Practices and Preparation for Special Events." My topic was "Drainage: Good, Better, and Best Options for Athletic Fields." It seemed inappropriate since the current drought extends into Ontario. The only sports turf that was green in the Toronto area were facilities with irrigation. Some cities had water bans and drinking water was hauled into cities that were out of water.

The entire field day program was well-planned, executed and attended. The STA has arrived and STMA is pleased and very proud to assist this new group with their goals and objectives.

Kent Kurtz, Executive Director

WATER CONSERVATION UNDER DROUGHT CONDITIONS

By David Frey, Cleveland Stadium

Cleveland, like most of the Midwest, is suffering from a severe lack of rain, high heat and dropping water tables. It is a reminder to sports turf managers in most of the country of the importance of water and its impact on our jobs.

These conditions are affecting Cleveland Stadium as well as our two training centers. Several things can be done to conserve water and save the grass.

Maintain good potassium and phosphorus levels to help the turf get the most out of the water you apply. However, fertilization during these periods will cause physiological drought by raising the salt index. High salt will cause turf stress.

Irrigate at night to reduce the loss of applied water to evaporation. Check irrigation rates constantly to eliminate overwatering. Wetting agents can be applied to increase infiltration and prevent dry spots. While aerification can improve infiltration, it will also increase soil dryness during the heat of the day.

Overwatering and irrigating at night can increase fungus problems. A good fungicide program with Pythium control is essential for good turf under these conditions.

Raise the cutting height of mowers and mow less frequently to reduce the stress on the turf. Sharp blades give a cleaner cut and eliminate ragged grass blades which wick water from leaves.

MIDWEST INSTITUTE SUCCESS DESPITE HEAT

Despite temperatures hovering near 100 degrees F., more than 200 sports turf managers attended the recent Third Annual Midwest Sports Turf Institute at the College of DuPage in Glen Ellyn, IL.

Two concurrent sessions provided a full range of quality information on many phases of construction and maintenance. Dr. William Daniel reported on the status of the new natural turf field at Chicago's Soldiers Field. The PAT System installation, which began in April, was completed the day of the Institute. Daniel said the temperature at Soldier Field was over 100 degrees as the sod was laid. The Bears host the Miami Dolphins on the new field August 6.

In addition to six sessions each on basic and advanced sports turf management techniques, afternoon on-site demonstrations were met with enthusiasm. Steve Wightman, turf manager at Denver Mile High Stadium, demonstrated proper techniques in laying out and painting logos and end zone designs. Demonstrations were also given on baseball field maintenance, renovation techniques and reel mower backlapping.

MERRITT IS FIRST FULL-TIME EMPLOYEE

Melissa Merritt has been appointed operations assistant for for STMA, its first full-time employee. She brings eight years of experience in various grounds maintenance positions to the association, including grounds supervisor at Penn Valley Community College in Kansas City, MO, and crewmember in the golf course division for the City of Anaheim, CA.

Merritt gained a broad knowledge of association operations while serving on the STMA Board from 1984-1986.

CATCH THE ACTION

Mark your calendar

January 13-15, 1989 - STMA Annual Meeting.
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STMA's Annual Meeting, Conference, Awards Banquet, Trade Show and On-Site Demonstrations. An exciting experience at one of the premier spring training sites - 27 holes of golf, conference center, guest rooms. A once in a lifetime experience. Plan now! Contact: Melissa Merritt, STMA, (714) 981-9199.

Sports Turf Manager's Association

Aquatic Weed Control: When Every Drop Counts

As water becomes more precious each year, the sports turf manager must consider surface water as more than "aquascapes," lagoons or recreational sites. Every drop must be protected from misuse or waste.

Droughts, as we have seen this summer, can strike anywhere at any time. The news media pays great attention to the impact of droughts on agriculture, but very little attention to their impact on the multi-billion dollar sports turf industry. Farmers can do little to counteract a drought. Sports turf managers, on the other hand, have a short-term solution in lakes and ponds if they plan ahead and keep surface water in condition for irrigation. That entails regular aquatic weed control and lake management.

While the original justification for building lakes and ponds is usually both aesthetic and functional, the combination of the two has never been stronger. Any body of water built for flood control, wildlife, swimming and appearance, must also be treated as a potential bank for water when drought or water restrictions occur.

Today, as in frontier days, water rights are something worth fighting for and protecting at all costs. Instead of rancher fighting against rancher for limited water, the battle today is between water agencies trying to meet the demand of residential and industrial growth . . . and golf courses, parks and other recreational facilities.

When the chips are down, the only water you can really count on is that water held in reserve on your property. Water flowing in rivers through your facility or pumped by wells from subsurface aquifers may not be at your disposal in times of shortage. Only you really appreciate the value of water to your sports turf. Leaving the decision of water availability during shortages up to a public agency places your facility at serious risk. You simply can't count on having water during droughts unless it is in reservoirs under your direct control.

Aquatic management should definitely be part of a water shortage plan. Facilities in drought-prone areas should invest no less in aquatic weed control and lake management than they do in efficient irrigation and pumping systems, drought-tolerant turfgrasses or water-conserving redesign. No

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Floating and emergent weeds clog golf course pond. Photo courtesy: Monsanto.

Same pond following treatment with glyphosate. Photo courtesy: Monsanto.

Aquatic Weed Control
continued from page 15

amount of efficiency is important if your water source is inadequate.

To complicate matters further, liability associated with lake management is a deterrent rather than an endorsement of wise water storage. In many cases, proper aquatic weed management requires treatment with chemicals and lake aeration. Insurance companies are sensitive to the potential for contamination, electrocution, or drowning. They indirectly penalize those parks, golf courses or sports facilities with lakes by charging higher premiums. For this reason many facilities contract out water treatment to transfer part of their liability to the contractor.

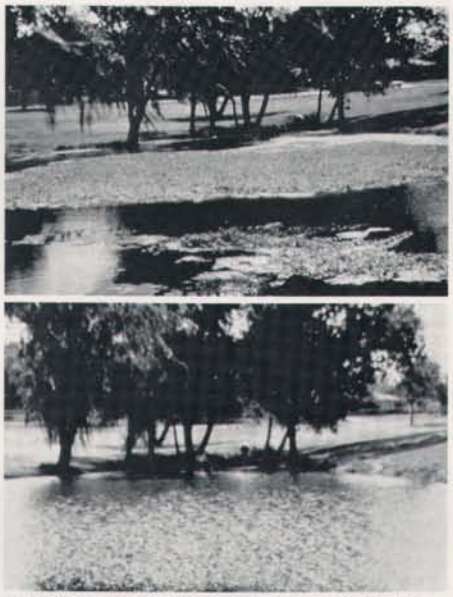
Realistically, it's doubtful if any facility can store enough water in surface reservoirs when an irrigation system requires millions of gallons per week. However, one acre-foot of water represents 325,829 gallons you might not have otherwise. That is enough to irrigate a regulation size football field for nearly six weeks (1½ inch per week) or 18 average size golf greens for three weeks (2 inches per week). But it pales in comparison to the two million plus gallons needed by 50 acres of fairways each week during the growing season. For total independence from outside water sources an 18-hole golf course would need seven acre feet of water per week, or the equivalent of a seven-foot-deep, one-acre lake each week. It makes you extremely grateful for rainfall even though it may cause a golf course to lose rounds or a game to be cancelled.

The value of surface water has never been greater than it is today. Allowing reservoirs to become choked with aquatic weeds or covered with algae blooms not only ruins their aesthetic value, it destroys their functional value as well. Algae can be transported from infested lakes through irrigation lines to turf. Parts of vascular aquatic weeds can enter intakes, go through pumps and end up anywhere irrigation water is distributed if the water is not filtered or screened. Like any weed, once it becomes established within the boundaries of a sports facility, it places "weed pressure" on the remainder of the facility.

A sports turf manager needs to understand that a lake or pond left unattended will go through a natural progression that fills it in over time. Water- and air-borne debris gradually reduces the depth of lakes and isolates them from one another. As lakes become shallower, bottom-rooted aquatic plants flourish by taking advantage of sunlight penetrating the top few feet of water. Waterfowl deposit seeds to establish shoreline vegetation which blocks air circulation at the surface and serves to hide insect larvae from fish and other natural predators.

As the lake becomes overloaded with vegetation, wind is unable to create waves or a current to circulate oxygen from the surface and cool water from the bottom. Without oxygen, plant material can't decompose properly and fish can't live. During anaerobic decomposition, microorganisms release foul-smelling odors. Finally, the cold water at the bottom becomes trapped and the temperature of the surface water rises. This phenomenon, called stratification, can trigger an algae bloom as surface water temperatures reach optimum levels for algal growth.

When a sports turf manager applies six or more pounds of nitrogen per 1,000 square feet per year and two inches of water per week to turf surrounding lakes, part of the nitrogen in the watershed can reach the lake enriching the production of aquatic vegetation. This speeds up natural progression and lake decline unless measures are taken to stop it.



Lake before and after treatment with fluridone. Photo courtesy: Elanco.

To really get control over aquatic plant management you have to start at the bottom. The more shallow area there is in a lake or pond, the more aquatic weed problems you'll have. Aquatic plants may be desirable in certain locations. These sites can be shallow. But the remainder of the lake should be eight or more feet deep to discourage the establishment of bottom-rooted weeds. Lakes with gradually sloping banks will have more weed problems than those with steeper banks. The shoreline should be stabilized with rock, gabion baskets, jute or geotextile to prevent erosion until vegetation is established. Trees or shrubs with extensive root systems should not be planted near the edge of reservoirs. Their roots may eventually break through the water barrier. If chemical control of the lake becomes necessary later, these roots may absorb some of the herbicide intended for the aquatic weeds.

Lake bottoms should be tightly sealed with impervious liners or packed bentonite clay. The clay swells when wet to form a water-tight barrier. Core tests are frequently advised to locate any layers of sand or rock in the area which could lead to rapid loss of water.

The ultimate lake has a drainage outlet and/or weir to control the water level. One method of aquatic weed control is to draw the lake level down to expose weeds to dessication or cold winter temperatures. If drawdown is a possibility, a deep pocket should be provided in the lake bottom as a temporary home for fish. An irrigation intake leading to a filter system should be installed in any sizeable pond or lake.

Today, many sports facilities with lakes are taking an extra step to improve oxygen levels and to prevent stratification. They are installing aerators which either pump water into the air where it can take on oxygen or inject air into the lake. The action of the aerators creates a flow that constantly mixes the water in the lake. By keeping surface water cooler and preventing the buildup of nutrient levels in lakes, aerators can prevent and in some cases correct algae blooms.

Water treatment plants have used aerators for decades to improve bacterial decomposition of organic materials in water. The oxygen added to the water favors aerobic decomposition over anaerobic (with its unpleasant odors) and speeds up processing.

Fountain aerators provide an aesthetic dimension to lake aeration by propelling water into the air in an attractive display. Lights can be added to fountain aerators to extend their appearance benefits into the night. Many aerators can be installed by the sports turf manager with the help of an electrician. Some lakes may require more than one aerator. Check with manufacturers for specifications on pumping capacity, energy consumption and the mixing depth of their various units.

The above measures play a major role in keeping lake water in suitable condition for irrigation. The key is knowing when desirable aquatic vegetation growth starts hurting the functional use of the lake or when undesirable weeds become established. No one wants a sterile, lifeless lake sitting in the middle of their landscape. However, ignoring lake vegetation for months can lead to trouble.

There are four basic types of aquatic weeds — algae, floating plants, submersed weeds and emergent weeds. Sports turf managers for the most part can handle control of algae and emergent weeds. Many choose to hire aquatic weed specialists for control of submersed or floating weeds.

Algae are very simple forms of plants. Serious outbreaks of algae can rob a lake of oxygen causing fishkills, give off a musky odor, plug up irrigation intakes and heads, and ruin the appearance of water features. Warm temperatures and water rich in nutrients can bring on a "bloom" in a matter of days.

Three types of algae are generally recognized. The first is called planktonic. These tiny microscopic plants can accumulate in the top three to four feet of water giving it a green, soupy appearance. Filamentous algae join together in mats, usually form-

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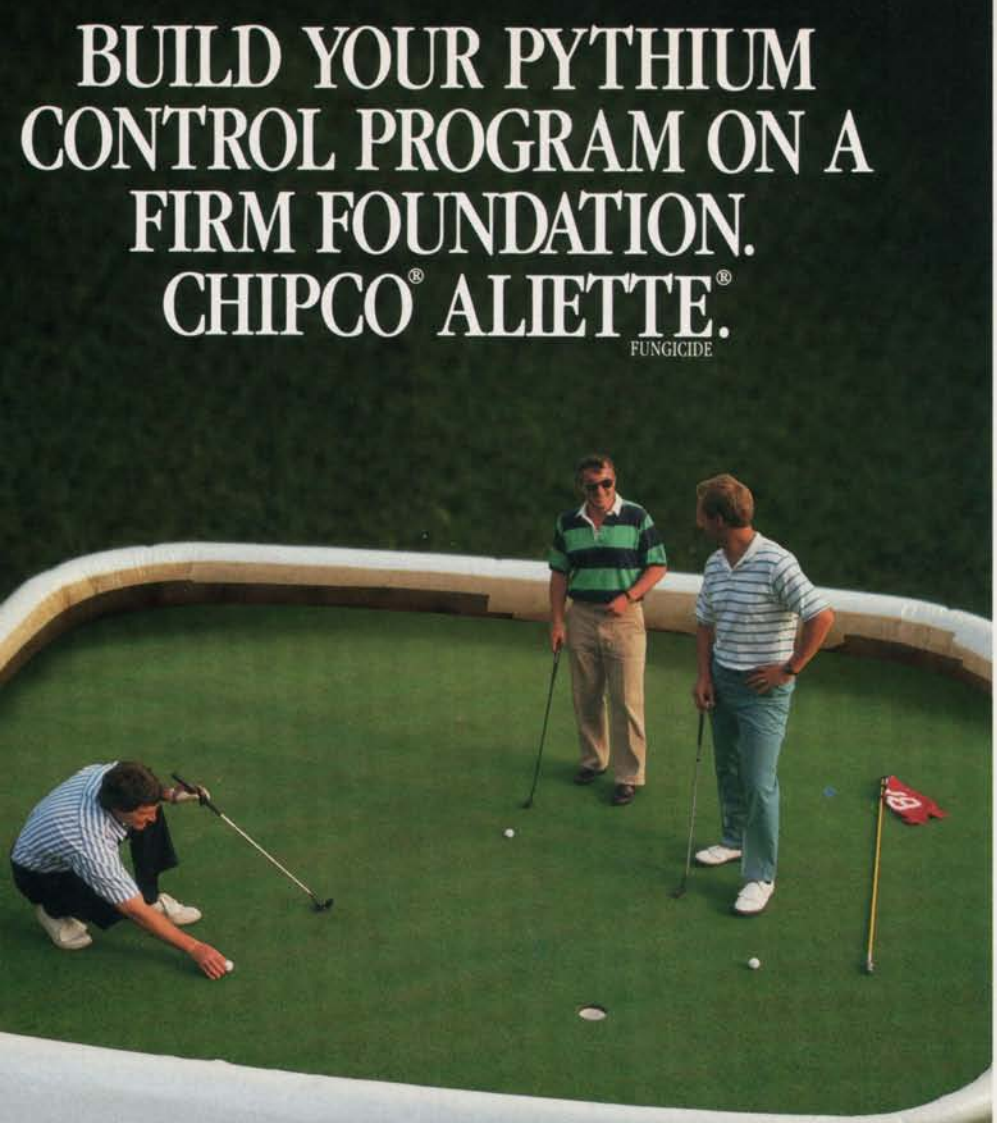

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continued from page 16

ing along the edge or banks of lakes. These mats grow in size and can rise to the surface in time. The third and most advanced type of algae is called attached-erect. They appear like plants growing from the lake bottom, but they are not rooted. Often they are called chara, nitella, muskgrass or stonewort instead of algae.

Fortunately, algae is very sensitive to copper in the water. Control efforts revolve mainly around keeping copper levels up as temperatures rise in the spring and summer. Early treatment utilized copper sulphate. Today, chelated forms of copper are available which release the metal slowly. Applications should be made periodically during the growing season to maintain copper at control levels in the top four feet of water.

Emergent weeds are found along the banks and shallow areas of lakes. They are rigid plants which support themselves out of water. Many are considered desirable and serve as habitat for fish, waterfowl and insects. Cattail, arrowhead, bullrush, water primrose and purple loosestrife are emergent aquatic weeds when they spread beyond control.

Since emergent plants are above water and near the shoreline, they can be controlled effectively with contact herbicides such as 2,4-D, Diquat, and glyphosate (Rodeo). A surfactant or sticker can be mixed with these products to improve contact and control. These chemicals will harm any plant they contact so pay close attention to drift. Glyphosate is deactivated rapidly upon contact with muddy water or soil therefore there is no time restriction on use of lake water following treatment. Diquat is deactivated within 14 days. The water use delay for 2,4-D varies according to the specific formulation used.

Gilbert advises that early treatment avoids a heavy "biomass" and protects some types of desirable plants.

Floating weeds have leaves that float on the surface. They may float freely on the surface or be rooted. Water lilies are floating plants that are sometimes planted in lakes for the appearance of their flowers and round leaves. Other floating weeds include water hyacinth, duckweed, water pennywort, common salvinia, watershield and water lettuce.

The fact that the leaves are on the surface provides a control advantage. Herbicides such as Diquat, glyphosate (Rodeo) and 2,4-D mixed with a surfactant can be applied to the leaves just as they would be for emergent weeds. Application is most effective on young or new foliage. Dichlobenil and a new herbicide fluridone (Sonar) are also effective on floating weeds. Dichobenil's label carries a 90-day restriction on eating fish from a treated lake. Elanco recommends that water treated with fluridone not be used for irrigation for 30 days.

Aquatic weed control becomes most difficult with submerged weeds. They include the notorious hydrilla, watermilfoil, naiad, pondweed and coontail. These plants cannot support their own weight and depend upon the water to hold them up. Small flowers, seedheads and fruit can extend above the water surface. Foliage is close enough to the surface for water fowl to feed on it. Stems, nutlets and seed can be carried by birds to other lakes to spread infestations.

Since the plants are below the surface herbicides must be mixed with lake water or applied as granules to be absorbed by foliage or roots in the soil. Calculations must be made to determine the proper rates for the volume of water in the lake, typically measured in acre feet. Applications must also be made carefully to distribute the herbicides equally throughout the treatment area. For these reasons, sports turf managers should consider hiring an aquatic weed specialist for submerged weed control.

In most areas, treatment of rivers and other flowing water is strictly the responsibility of a government agency. Managers of private recreational lakes without training or certification specifically in aquatic weed control should not attempt treatment.

Diquat, fluridone (Sonar), 2,4-D formulations (i.e. Weedtrine II), endothal (Aquathol, Hydrothal 191) are the primary herbicides used for submersed weeds. Irrigation restrictions range from 7 to 25 days for endothal. Timing of applications is important. Some selectivity may be possible through timing. This is a major marketing point for fluridone.

One concern over controlling dense infestations of aquatic weeds is the amount of dead and decaying material in the water and its drain on oxygen levels. Weeds can be removed mechanically with special harvesters if desired. The advantage to this method is the weeds are removed, but stems and rhizomes below the cutting height may regenerate into new plants. It is a compromise to chemical control or may be used in conjunction with follow-up herbicide treatment.

Grass carp are another option to chemical control. These sterile fish feed on submerged aquatic weeds. Ten to 20 carp can control these weeds in an acre of lake. They will feed on floating and some emergent weeds if there are not enough submersed weeds for them. For this reason, they should not be placed in lakes which contain desirable plants.

Lake dyes can be added to small lakes that are too shallow to prevent establishment of algae and weeds by robbing them of sunlight. These non-toxic colorants also carry no water use restrictions.

Charles Gilbert, president of Allied Biological, an aquatic weed control contractor in Gladstone, NJ, advises sports turf managers to treat weed problems early in the year, beginning in April in his state. This way the sports turf manager avoids a heavy "biomass" after control and has free use of the water for irrigation during the hottest times of the year. Early treatment can also protect some types of desirable plants.

Hydrilla has spread as far north as Delaware and Virginia, says Gilbert. Sports turf managers in those states and south should be on the alert for the fast-spreading weed and begin control measures without delay. Hydrilla pieces on boat props or trailers can become serious infestations in the next lake the boat is placed in.

"People are becoming more interested in selective control of aquatic plants."

He adds that aerators are helpful in algae control and decomposition of dead vascular weeds in the top few feet. Beneath that level, submersed aeration units can be used. Gilbert advises that chelated copper algaecides are more effective than copper sulfate in hard water with a high pH.

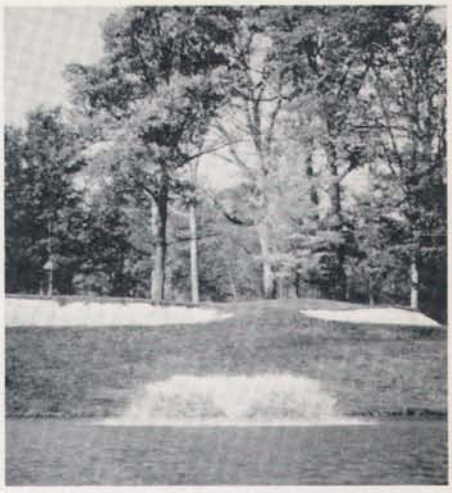
In the South, sports turf managers start treating lakes in January, reveals David Tarver, aquatic weed specialist for Elanco in Tallahassee, FL. One of the advantages of fluridone (Sonar), the new aquatic herbicide Tarver sells, is that it works over a 30 to 90 day period to help the lake manager avoid large amounts of dead vegetation in a lake at any one time. "People are also becoming more interested in selective control of aquatic plants," he adds.

The other new aquatic herbicide that is improving aquatic weed control is glyphosate (Rodeo). It provides control of emergent weeds and shoreline brush without any restrictions on water use.

Few sports turf managers in the South attempt major aquatic weed control anymore, says Tarver. "When lake water is used for irrigation the superintendent can't risk making a mistake. He has to control aquatic weeds, but he'd rather focus his efforts on what he knows best, turf, and let a specialist concentrate on aquatic weeds — as long as weed control doesn't get in the way of turf management."

Controlling aquatic weeds and protecting irrigation reservoirs will be more closely linked in the future. The turf must come first, but every gallon of water must be ready for irrigation when droughts strike. Lakes must be maintained in the event of such unpredictable shortages. Each acre foot of water in storage can provide weeks of green, playable turf when all other water sources are shut down. That's something worth serious consideration. □

Water Aeration: A Fresh Approach To Lake Management



Ten years ago, the concept of a floating aerator for golf course ponds was in its infancy. At that time, Holman Griffith, a former agronomist for the United States Golf Association (USGA) Green Section, stated the merits of such aerators in *Golf Business* magazine after four years of testing. Today Griffin feels as strongly as ever about aerators as evidenced by this recent interview. He is president of GCM Inc., a golf course consulting firm in Plano, TX.

Have you seen many changes in floating, fountain-type aerators in the last ten years?

The original principle of efficient aeration with these units has not changed, but there are many new models and options available that were only a dream then. In my early days with the USGA Green Section I learned basic principles for sports turf construction and management from some real authorities. The benefits of aeration in soil or water never change nor have any of the other basics these men taught. Basics are simply expanded upon to obtain greater efficiency and production of a more desirable product.

The benefits of aeration for cleaning up water have been recognized in one way or another for decades. Though perhaps few understood what was happening, the early settlers found moving water or babbling brooks fresher than any pond water. The world's first sewage treatment plants used aeration and I doubt whether one has ever been constructed that did not employ aeration as part of the cleaning process.

Why then wasn't an aerator for water marketed a long time ago?

They were, but no company came up with a practical design for energy efficiency and effective performance until Otterbine introduced a low-profile, fountain unit. I have seen gasoline units which were cumbersome, paddlewheels that were ineffective and other types of aerators, but they never succeeded because they were inefficient.

Is there any scientific measurement for water quality?

An oxygen meter can measure the dissolved oxygen content in water before and after running an aerator. Biochemical oxygen demand (BOD) is a standard measure of the oxygen required to neutralize or digest decomposable matter present in water by aerobic biochemical action.

There are also numerous other complex tests for measuring the purity of public drinking water, however the BOD test is used as a parameter for the design, loading and measure of efficiency of most sanitary sewage disposal facilities. Dissolved oxygen has a beneficial effect on the quality, purity and usefulness of all water no matter how polluted it is or what the source of pollution may be.

Have you seen evidence of pollution reduction and quality improvement by the use of aeration?

On many occasions I have seen dramatic improvements, some of which have been supported by independent laboratory tests paid for by Otterbine customers. In one case the sludge from a processing plant was introduced into holding ponds with BODs of between 800 mg/l and 1,000 mg/l. A one horsepower floating aerator was put into the center of approximately three quarters of an acre of what appeared to be black jello. After 30 days of continuous operation and frequent monitoring by the lab, the BOD had been reduced to a low of between 8 mg/l and 20 mg/l. The water was clear enough to see turtles swimming below the surface. The pond bottom was visible to a depth of about five feet.

Although many observations were not documented by scientific testing, anyone can tell the visual difference, the reduction in odor, the proliferation and increased vigor of aquatic life, and the elimination of algal blooms present prior to aeration and circulation of the water.

What might aeration do for water that is already of good quality?

For one thing, it helps maintain that water quality over the year through adverse periods. There are only two kinds of ponds, those that have problems and those that are going to have problems when oxygen and circulation are deficient.

How have costs changed over the last ten years for aerators and their operation?

In some areas the cost of a kilowatt of power may have doubled since 1979, but the units themselves have become more efficient. The cost of power is predictable within a few cents per month of running time based upon the horsepower of the unit. Controls have been added to boost their efficiency with only small increases in price.

Several companies are now entering the water aeration market. How can the sports turf manager compare these products?

First and foremost, he must make sure the product is safe. In my opinion it should include electrical safety protection provided by special underwater cable, safety switches, magnetic starters, fuses and surge arrestors. The entire system, as well as all components should be ETL or UL approved.

Second, he should check the pumping rate and oxygen transfer rate. In order for an aerator to effectively improve water quality it should pump a minimum of 500 gallons per minute per horsepower and transfer in excess of three pounds of oxygen per hour per horsepower.

He should make sure the local dealer is experienced and knowledgeable about aerators and can provide technical assistance and parts within 24 hours. Finally, he should insist upon a complete package so that he doesn't have to shop for controls, cable, etc.

What do you see in the future for this type of aeration unit?

I can only tell you what I would like to see because I have an interest in natural resources and preservation of a quality environment. An innovative approach as different as the first Otterbine more than ten years ago is needed to clean up large bodies of water. Aeration units could be lighter with housings constructed of materials impervious to any enviroment in which they are placed. Efficient, solar-powered units would be helpful for remote areas. I'd also like to see aerators with increased oxygen blending reaching greater depths.

One of the undisputable benefits of fountain aerators is the sculptured spray display and the soothing sound of water falling back on itself. This aspect alone persuades more than half of Otterbine's customers to buy. New designs for these spray patterns and improved lighting systems to display these patterns at night are being developed.

I can say, after nearly 14 years of testing, that these units play an important role in water management on golf courses and sports complexes. But we can't just sit back and say we have good units which solve problems and look good when there is so much else that can be done. While the basic principle of aeration remains the same, new models and options are providing increased efficiency and production. I expect to see even greater improvements during the next ten years.

TECSYN EXPANDS TURF LINE WITH PURCHASE OF ALL-PRO

TecSyn International Inc., the parent company of Sportec, makers of Omniturf sand-filled artificial surface, acquired All-Pro Athletic Surfaces of Dallas, TX, in June to strengthen its position in the athletic surfacing market. All-Pro surfaces do not utilize a sand topdressing/filler.

In April, TecSyn purchased Instant Turf Industries and Playfield Industries, two manufacturers of artificial surfaces in Dalton, GA. A.L. Weiler, president, said, "We are now in a stronger position to provide customers with high-tech, high-quality surfaces that meet any specification or design."

The TecSyn acquisitions and the purchase of AstroTurf Industries by Balsam Sportsattenbau this spring, mark a consolidation and restructuring of the artificial turf market worldwide. Both companies now have artificial turf and sand-filled artificial turf surfaces in their product mix.

There are 90 fields now in use in the U.S. that are either Omniturf or All-Pro. The Sportec subsidiary, based in Kenmore, NY, has installed 30 Omniturf fields in the U.S. since 1984. TecSyn's Polyloom division will supply All-Pro with fibers for its carpet.

The Ontario-based TecSyn, formerly known as Niagara Structural Steel, has sold all of its steel operations over the past five years and diversified into the manufacturing of synthetic, fabricated products for industrial and recreational use.

SCOTTS CREATES GROUP TO SERVE FIELD MARKET

The Professional Divison of O.M. Scott & Sons has announced it is forming a Schools/Sports Fields group to improve sales and service to the sports field market. Gary Dorsch will manage the new group which will consist of field technical representatives, products and services designed to meet the needs of the sports turf manager.

The first four sports field technical representatives started calling on schools, parks and sports complexes this month in Chicago, Boston, Georgia and northern Ohio. Sports facilities in these areas may have been serviced previously by tech reps from either the golf or lawn care groups.

"We are making a solid commitment to the sports field market," said Dorsch. "We are starting out on a limited basis and will step up our efforts as we learn the marketplace and the specific needs of the sports turf manager. As we grow, we hope to become national in scope."

Dorsch was formerly a golf tech rep in Chicago. He then moved to Scotts' headquarters in Marysville, OH, to direct tech rep training. "A tech rep is most effective when he understands the specific needs of his customers," said Dorsch. "That is difficult when he calls mainly on golf courses and lawn care companies. We want to change that."

SAFETY SYMPOSIUM PLANNED FOR FALL

The safety of natural and artificial sports fields will be the subject of a symposium sponsored by the American Society of Testing Materials (ASTM) this coming December in Phoenix, AZ. ASTM's Committee on Sports Equipment and Facilities is now gathering pertinent information on methods of evaluating and improving field safety to be presented at the symposium.

The committee hopes to compile this data to help establish guidelines for judging field safety and for selecting the best type of surface for particular sites. ASTM is particularly interested in field studies documenting injuries, construction techniques, and maintenance practices.

Dorothy Savina is organizing the meeting scheduled for December 6, 1988 in Phoenix. She can be reached at ASTM, 1916 Race St., Philadelphia, PA 19102, (215) 299-5413.