

Thus, to maintain the original soil test P level of 108 lb/A, one would have to apply 6.6 lb P/A over three years. This translates into 0.11 lb P<sub>2</sub>O<sub>5</sub>/M/season. Similarly, the maintenance fertilizer K level was 0.86 lb K<sub>2</sub>O/M/season.

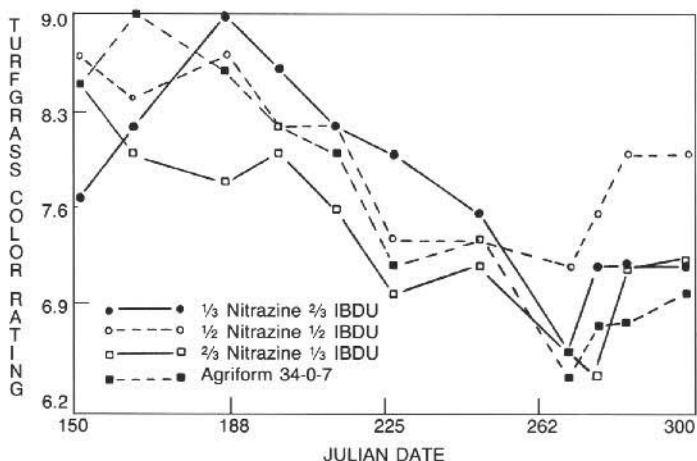


Figure 1. Color Ratings of Creeping Red Fescue Treated with Various Nitrazine-IBDU Combinations at the Rate of 4 lb/M/season.

Over the duration of the study, the amount of N applied was 12.5 lb/M, or an average of 3.75 lb N/M/season. Combining this information with the estimated annual maintenance P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O levels, one comes up with an N:P<sub>2</sub>O<sub>5</sub>:K<sub>2</sub>O combination of 3.75:0.11:0.86. Thus, for this particular situation, the "ideal" fertilizer ratio from a soil P and K maintenance perspective was 34:1:7.8.

# WELL-TEAMED. WELL-NAMED.

It takes years of testing at many locations for any grass seed variety to make the NK Medalist® team. That's why Medalist is the most-trusted name in turf mixtures and blends.

Contact your NK Medalist distributor today. Or call 1-800-545-6093.

**NK**  
MEDALIST TURF

**J.W. TURF, INC.**  
14N 937 Rte. 20 & 47  
Hampshire, IL 60140  
(708) 683-GOLF

LEADERSHIP  
YOU CAN  
COUNT ON!



- Offset cutting units reduces tracking
- Adjustable steering wheel and power steering
- State-of-the-art single hydraulic pump powers all three cutting units
- Powered by 18 HP, Liquid-cooled Kawasaki V-twin, OHV 4 cycle engine
- Greens Tender Conditioner, lightly verticuts ahead of the reels

*All the quality you have come to expect from John Deere, and then some.*



P.O. BOX 14  
MERRILL, WISCONSIN 54452  
**FRED LATZIG, JR.**  
(715) 536-3800  
FAX (715) 536-2611  
TOLL FREE: 800-755-3801

**GROWERS OF**  
Colorado Spruce  
Black Hills Spruce  
Austrian Pine  
White Pine  
Douglas Fir  
Fraser Fir  
Balsam Fir  
Scotch Pine  
Norway Pine  
River Birch  
White Spire Birch

**B&B PRICES  
STARTING AT \***

3' \$19.00  
4' \$29.00  
5' \$39.00  
6' \$49.00  
7' \$59.00  
8'+ \$79.00



Call or Write For Our

## Nursery Stock Price List

USUAL SHIPPING POINTS — MERRILL, WI OR ALLEGAN, MI

\*Prices quoted are delivered prices for Park Grade Quality.

Delivered within 200 miles of shipping point. Add 25% for orders under \$1000.00.



## CHEMICALS: Friends AND Enemies of Healthy Turf

By Dr. Gayle L. Worf  
Extension Plant Pathologist  
University of Wisconsin - Madison

We've all seen copies of the Stop Sale and Recall notice for benomyl-containing products, e.g., Benlate and Tersan 1991. Reason for this is because the products may contain atrazine herbicide.

When suspicions of product adulteration exist, it's critical that they be removed as soon as possible. It was the right thing for DuPont to do so, if there's any hint of possible problem. Damage to people's health is not an issue in this instance, but damage to plant health certainly is!

This situation brings to mind altogether too many experiences over the last few years when contaminated products have caused serious turf troubles. There's the situation three years ago when chloroneb was tainted. Superintendents facing Pythium problems who went to chloroneb for protection or rescue encountered far greater problems than the fungus could have created. Two years ago it was PCNB's turn to be contaminated, this time in lawn care formulations with fertilizer. And a year ago we encountered yet another problem with a fertilizer-herbicide contamination on a sod farm in the state.

In each of these instances there was considerable economic loss involved. Greens had to be replaced, lawns had to be redone, and sod fields could not be harvested. And in many instances, professional reputations were devastated, and customer confidence was lost. I don't know how you measure that kind of loss!

It's not just herbicides that get involved. This winter the diagnostic laboratory encountered a puzzling floriculture problem. After several false starts at diagnosis, it was determined that the fertilizer contained boron. But how could that be a problem? Don't plants require boron, and isn't it added as an element to certain fertilizers, such as for alfalfa? It is, but many crops are sensitive to it.

There are also those occasional

situations where contamination is deliberate. For instance, last year some indescribable persons poured engine oil into a golf green's pop-up sprinkler heads!

While the latter is a case of vandalism, most of the problems of this sort are a result of accident, and the user becomes an innocent victim of circumstance. It is absolutely necessary that our suppliers take every possible measure they can to avoid even the remote possibility of such happenings in the future. I'm not convinced that the extra measure of precaution is being taken, as evidenced by what appears to be an increasing number of such incidents. From what limited background information I've been able to gather, most of these problems occur at the formulating and mixing centers.

Most mixers are used for many formulations and products. The industry ought to be asking themselves some serious questions about certain prac-

tices, such as the use of the same mixers for atrazine and products that are intended to help with plant health! (I pick on atrazine because it has been the repeat culprit in so many instances, but the rule should apply to similar products as well.) To growers of sensitive crops such as ornamentals and vegetables, we have always admonished the use of separate sprayers for phenoxy-containing herbicides and fungicides. It costs more money—but the risk is too great to do otherwise. Conversations with industry members who've encountered the problem say "No more! We'll take the necessary precautions next time!" How about now being the next time?

There's no way we can protect ourselves when faulty products are provided. But we need to be very mindful of all times of the possibility, I believe. One approach may be to keep some of the product batch on hand for future reference if needed, until we are assured by our use experience that it is ok. That, of course, is a hassle, and is only useful if the situation warrants our suspicion. In the case of the white grass following PCNB treatment, that was so, but with bentgrass, Pythium and atrazine, it's more difficult. In other words, diagnosing these kinds of "diseases" is extremely difficult. What chemical do you test for? And how do you do it? But we have to keep it in mind. If you are suspicious, check around. Call your distributor right away, and check with colleagues who may be using the product for their experiences. And by the way, one of the biggest problems with diagnosis is the distribution pattern. If the entire product is contaminated, diagnosis is a lot easier than when the contaminant is randomly distributed within the bag. That's the most common pattern!

There remain several instances over the past few years where I have suspected some type of errant chemical response. Patterns didn't fit disease development, symptoms didn't match up with any known cause, and no pathogens or suspect organisms could be detected. We admonish ourselves to select the right chemical to deal with a problem, and to use it carefully to avoid phytotoxicity or other complications. We need a similar pledge from industry—so that our chemical arsenal remains a friend of healthy turf—and not its enemy!

### To Keep Your Course In Classic Condition, Use These High-Quality Products from NOR-AM

- **NITROFORM® SLOW-RELEASE NITROGEN**  
Releases by slow bacterial action to provide consistent 38% nitrogen
- **TURCAM® W.P. INSECTICIDE**  
Controls a wide range of turf and ornamental pests, especially white grubs
- **TURCAM® 2½G**  
All the benefits of regular TURCAM® in convenient granular formulation
- **BANOL® TURF AND ORNAMENTAL FUNGICIDE**  
Controls pythium and phytophthora
- **PROGRASS® HERBICIDE**  
For the establishment of perennial ryegrass turf, or on established perennial ryegrass turf, Kentucky bluegrass or creeping bentgrass for control of *Poa annua* and broadleaf weeds
- **PROXOL® 80SP INSECTICIDE**  
Controls white grubs, sod webworms, cutworms and armyworms in fine turf

**NOR-AM**  
NOR-AM CHEMICAL COMPANY  
3505 Riverside Road, P.O. Box 409  
Wilmington, DE 19803

THE FAIRWAY CLASSICS to keep your course in top condition

IMPORTANT: Please remember always to read and follow carefully all label directions when applying any chemical. Copyright 1988 NOR-AM Chemical Company. All rights reserved.



# Is a Clean Sweep Program for WGCSA Possible?

By Mark Kienert  
Bull's Eye Country Club

"Portage County Clean Sweep Program Sold Out in One Half an Hour!". That was the information passed along to me by Elaine Andrews, University of Wisconsin Environmental Education Specialist in Madison. She helped coordinate that clean sweep program. A special grant of \$30,000 was used up in that first one half an hour. Portage County Board Supervisors chipped in an additional \$100,000 and those funds were used up before noon!

Was this program a success or was it an extreme failure? It all depends on how you look at it, I guess. From my standpoint, it could be viewed as a failure if a farmer spent half his day loading up his truck with all his unwanted products and made the long drive only to find out that the gates were locked as he drove up to the clean sweep disposal center site.

"Now what?", he asks. I can just imagine some frustrated and angry individual pulling over to some out of the way area and dumping those waste products into some secluded ravine! He figures he won't go through that hassle again.

Would a clean sweep program work for our association? In short, yes, if we could find and hire a contractor to coordinate and compile a list of all the products that we have no use for any longer and arrange for a *licensed waste hauler* to make what is called a "Milk Run"—to come to our courses to pick up those wastes. This person would be responsible for the proper sampling required for identification, labeling, packaging, transportation and finally, the disposal of all unwanted products.

Those products could be either liquid or solid. Our costs would have to be prorated to be fair to the golf courses using this service. Believe me, those services are not inexpensive or fast.

At present, our association would not qualify under any existing grant-in-aid programs offered by the federal or state agencies in charge of hazardous waste disposal to help subsidize our costs. Even as a non-profit organization, to qualify for an exemption would be a long shot at best.

To calculate some of those costs, a general rule of thumb of \$6/pound of product disposed was used. You can

see that two fifty pound bags of old insecticide that you wish to dispose of would cost your club \$600 for proper disposal.

One hundred country clubs in our association disposing of two fifty pound bags of old insecticide each would cost \$60,000 for disposal. Sure, individual clubs would be charged for their fair share of the disposal costs, but as you will see, this effort requires licensed individuals to package and to transport these materials to hazardous waste disposal sites.

A tremendous amount of organization, documentation of materials, coordination of pickups and lots of time would be necessary to pull off a statewide disposal effort. Legal questions abound as any individual who disposes hazardous wastes is responsible for those wastes. . . "ad infinitum." You, or your club, or our association would be responsible for our share of any future clean up costs should the landfill fail some years down the road.

In the case of the Wisconsin Golf Course Superintendents Association, we could simply decide to declare bankruptcy to skirt any lawsuits on future cleanup damage claims. Quick. Easy. Cute. But would that be ethical? Of course not. But that's the way it is in this day and age of litigation.

There is always the ever present potential that existing board members, or previous board members responsible for those initial decisions could be subject to lawsuits to recover the costs associated with the clean up.

As you will see, the disposal of waste, be it hazardous or not, is not an easy proposition. You've already been bombarded with environmental "red flags" and legislation for a half dozen years or so. It always amazes me that the 90's will be known as the environmental decade, when so many of the seeds for change were sown in the 80's. But there is no stopping it; these are the 90's and it's time to clean up.

That will be the hardest part—the decision to just clean up. To rid the "Old Barn" of pesticides and fertilizers that are no longer effective. Your service center, as you've come to realize, (if you've secured all the MSDS required), produces waste in the form of old lead acid batteries, automotive

paints, solvents and used motor oils.

What can you do about this? Individual clubs can contract their cleanup needs with a private company. There are many approved by the State to conduct this service. I was able to obtain a list just by calling my local DNR office. This list produced contacts with other departments which provided me with information that was very helpful in answering many of my questions.

As was mentioned previously, these services will not come cheaply, nor will they be able to deliver on next day service. Most clean up services will take between two to three months in time from your first call to the point your waste is on its way to the disposal site.

Why does it take so long? RED TAPE! Individual wastes must be identified through laboratory analysis and then manifested for legal transportation and proper disposal. While you are waiting for the chemical analysis of products that you wish to dispose of, the paper work for an EPA Identification number that will be assigned to your club must be applied for. Without this number, there will be no waste packaging or disposal.

This adds to the time needed to dispose of any waste material. What a private firm does with your waste from the time they arrive at your club until the time your products are disposed of makes up what is termed the second half of the Waste Stream. The first half is your decision to purchase and to use any products.

Your wastes become hazardous when they fall under the following EPA guidelines. By definition, the EPA defines a hazardous substance as a "Dangerous" substance which may harm human health or the environment. To be included in the EPA's hazardous category, the substance must meet certain standards during accepted scientific tests which would show whether or not a product is Toxic, Ignitable, Corrosive or Reactive.

Most products become hazardous if they are used, stored or disposed of improperly. Serious environmental damage can occur anytime these products are handled in a manner that is negligent.

For proper disposal, you must understand the waste stream disposal

process. Mark Heal, Account Representative for Chemical Waste Management, explained the process his company would use if they were selected to dispose of wastes generated over time on your golf course. Their first step would be to inventory and identify all products you wish to dispose of. All unknown chemicals would be analyzed and coded for their respective degree of hazard (corrosive, reactive, inflammable or toxic).

It is at this time the request for an EPA facility identification number is applied for. Once the paperwork process is complete, a two person team of certified technicians would come into your facility to segregate and package your materials.

These members are licensed by the Department of Transportation to haul hazardous wastes to an approved disposal center. This also is another reason it would be difficult for our association to organize a clean sweep program using 5 or 6 collection points around the State to dispose of our waste products. The simple fact is that we just are not licensed by the D.O.T. to haul these products on public highways. (If we decided to give the products to some other golf course to use, and they could use those products on their course (we could transport those products to their facility legally).

Individual products are packaged in a container called a "Labpak". They are then labeled clearly and sent to a final disposal site if they are solids, or are destroyed at a facility in Illinois where they are burned in an incinerator at 1700° F. and rendered inert. The State of Illinois also requires the registration of any waste that is transported within their state. The remaining ash is then disposed of in a landfill.

It is an understatement, but the more manpower hours required in the testing of unknown chemicals, the higher the disposal costs. You can save money if you are able to identify those products beforehand with labels and MSDS sheets. Leave the unknowns to the experts. Virgin materials do not require the expensive chemical analysis if they were manufactured after 1982 and have clear labels and MSDS sheets.

Once your facility is clean, it will be easier to keep it that way as you begin to manage your wastes better. You could also arrange for a periodic pick up of waste products as they are generated to reduce your risks of having to store hazardous products in large quantities over an extended period of time. Secondary pickup of waste products would be less costly as your facility would have already gone through the registration process for known materials to be disposed of. The resampling process would be avoided.

The principal advantage of having contracted out your disposal concerns is that you are insuring a safe and proper disposal which substantially reduces the risk of exposure to these chemicals by your crews, the general public and the environment.

### Minimizing Future Risks

Major changes in federal and state environmental regulations make it difficult to keep up with all that's required in the disposal of wastes produced by our golf courses. Proper management of hazardous wastes is complex and time consuming. Yet, a single error in management of these wastes can result in severe penalties of up to \$50,000 per day.

Compliance with all the regulations to manage your waste products safely will require a great deal of your time. Legal interpretations and questions still remain. As always, an effective way to manage your hazardous waste disposal costs and liability is to reduce the amount of waste produced.

Some suggestions in reducing potential risks and liabilities include, but obviously are not limited to any of the following. DO NOT DUMP, BURN, or BURY pesticide wastes. DO NOT MIX CHEMICAL wastes. Remember, "dilution is not the solution" to hazardous waste problems. Ten gallons of hazardous waste diluted with 90 gallons of clean water yields 100 gallons of hazardous waste! Your disposal costs and problems have just increased ten-fold.

Purchase only what you can use in one season. "Bulk purchases are not always the best". Money saved through quantity discounts are quickly lost if you have to dispose of unwanted products, especially if fines are involved. Try to "Sell Back" to the distributor or original manufacturer any product that can not be used in an effort to keep the product from becoming old.

Some products can be reformulated for reuse. Apply leftover products at label rates to out of the way areas on the golf course. Areas like roughs and practice ranges are areas where pesticides can be disposed of properly.

Purchase an inexpensive "Jet-spray" device that can be attached to a hose. When used, by piercing the bottom of pesticide containers, a simple 60 second blast is as effective as triple rinsing. This will insure that landfills will continue to accept pesticide containers well into the future.

## LEIBOLD IRRIGATION COMPANY

Professional  
Installation of  
Complete Golf  
Course Irrigation  
Systems.



Excellence in Irrigation®

**John Leibold**  
(815) 747-6817 Bus.  
(319) 582-9351 Home  
620 Sinsinawa  
East Dubuque, IL 61025

*"Satisfaction Guaranteed"*



Nursery Company

GROWERS OF AN EXCEPTIONAL LINE OF HARDY  
NURSERY STOCK ON OVER 1,200 ACRES

Contact: JERRY DRAEGER or TIM FLOOD

Phone  
(414) 478-2121

FAX  
(414) 478-3615

You may wish to give your unwanted product to someone who could use it. Some smaller golf courses could benefit from "Old" fertilizer that requires breaking up due to the fact that it has become "hard as a brick". Look for products that are less toxic but are as effective as those used previously. Dispose of old paint products by using them up. Some landfills cannot or will not accept paint cans half full of unused paint, yet will accept a piece of plywood, once cut up of course, if it has been painted with this same paint!

Some municipal or county courses may qualify for special aid awarded to communities that have organized clean sweep programs. Other courses might wish to organize with neighboring courses into small cells that can be easily serviced by hazardous waste contractors. The costs of transportation can be shared among several courses.

Use companies that will recycle the waste produced in your service centers.

There are companies that sell parts cleaning solvents and wash stations. Those stations are serviced on a routine schedule with the company responsible for the hauling away the spent product. They will distill and reuse the solvents over again. This reduces your liability substantially.

Staying on top of all the regulations is laborious and time consuming. In putting together this article, it became very apparent to me the enormous amounts of information available to superintendents wishing to clear out "that corner of the shop". Read, stay on top of the current laws as there is a battery of deadlines constantly showing up on the horizon as landfills fall prey to stiffer regulations.

Your most important step will be your

first one, that is to just get started. Take note of the products you wish to dispose of and determine if you will require professional help. Budget for disposal costs in next year's budget. If you need help, contact the DNR, UW-Extension or your local emergency government coordinators for information. They will be able to supply you with lists of companies that dispose of hazardous waste and help you with other problems you might have.

The rules may seem complicated. The ink hasn't even dried on a few of them yet. But it is imperative that you develop and implement a strategy to comply with them. "Out of sight, out of mind" is just plain ignorance today. Get those products out of your service centers today.

A recent GRASSROOTS survey told me you could use the extra storage space anyway.

## GCSAA Regional Seminar Gets Good Marks

By Tom Schwab

Just being a certified pesticide applicator was not enough for the 45 or so superintendents and assistants in attendance at the GCSAA/WGCSA Pesticide Basics & Safety seminar. They took the time to learn even more about the safe handling of these materials. The seminar was held on March 21 at the Holiday Inn in Brookfield, and was conducted by Dr. Bert Bohmont, professor and coordinator of pesticide programs for the College of Agriculture Sciences at Colorado State University.

A broad range of material was covered throughout the day, everything from laws to better spraying equipment to dealing with the media. The day started out with a discussion about 15 laws that govern pesticide applicators. Time was spent covering OSHA's "Hazard Communication Standard", Employee right-to-know. For a great description of "HCS" see Larry Lennert's article in the March/April issue of *The Grass Roots*.

Dr. Bohmont's talk revealed manufacturers are responding to the need to apply chemicals more safely. This is being done in several ways, such as reducing drift either mechanically or chemically, controlling rates better by computerized calibration, more pest specific pesticides that can be less toxic, better pest predicting models and methods, and safer packaging.

Other material that was covered in Dr. Bohmont's talk was understanding

pesticide labels, protective clothing and equipment, environmental concerns, decontamination and disposal.

Some of this material was an extension of what superintendents learned when getting certified for pesticide application. A lot more was new information. Whether it was repetition or new,

it was all good information that we could use. In this industry, superintendents have to stay on top of this information since we handle many pesticides and are responsible for a much larger piece of the environment than the average person.

# How To Keep Things From Turning Ugly.



**From nutsedge to nightshade, fire ants to fungi, nobody works harder to protect your turf and ornamentals than Ciba-Geigy.**

For All Your Turf and Ornamentals Needs See...

Don Spier  
Marketing Specialist  
10 Devine Way  
Sycamore, Illinois 60178  
(815) 895-7860



NATURAL ORGANIC

**Milorganite<sup>®</sup>**

FERTILIZER

***America's  
Number One  
Natural  
Organic  
Fertilizer***

- *Many of the finest golf courses in America are fertilized with Milorganite.*
- *Non-burning, cost-effective, turf fertilizer.*
- *90% Water Insoluble Nitrogen (W.I.N.), slow release nitrogen promotes vigorous growth.*
- *Rich in organic iron — 4% minimum guaranteed.*
- *Supplies humus and improves water holding capacity of soils.*

***FREE LITERATURE***

*Mail in the coupon below for further information  
or call 414-225-2222.*

***Please send me further information***

- Milorganite's Specialty Fertilizer Program*
- Milorganite's Iron — Technical Bulletin*

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_

STATE \_\_\_\_\_

ZIP \_\_\_\_\_

PHONE # \_\_\_\_\_

*Mail to: Milorganite • 735 N. Water St. • Milwaukee, WI 53202*



# COURSE COUNT

By Monroe S. Miller

All of the talk about golf's boom times has lead the instructor to plan a quiz that focuses on numbers.

No need to break into a sweat; there isn't any high level math here. No slide rules or calculators needed. All I want are facts.

How many of the following do you know?

1. How many golf courses are there in Wisconsin?
2. What percent (approximately) of Wisconsin's golf courses are private?
3. Nationwide, how does the percentage in Question #2 compare with Wisconsin?
4. What percent of the golf courses in Wisconsin are municipal?
5. What percent of Wisconsin's courses are daily fee?

## EXTRA CREDIT

For those who have botched up a previous QUIZ, here's a chance to get your grade for the semester back where you'd like it.

6. Nationwide, what is the ratio of public to private golf courses?

7. What percent of the 1990 rounds of golf were played at public facilities?
8. What percent of the golf courses opened in America in 1990 were accessible to the public?
9. Overall, what percent of the country's golf courses are 9-holers?

## ANSWERS

1. 13,951 courses.
2. About 40% of the country's total of 9-hole golf courses account for public game.
3. Its proof that golf remains primarily a public, either as daily fee or muni. This ed in 1990 were accessible to the 8. A full 70% of the golf courses open-golf courses.
4. 17%.
5. 63%. This was an obvious in "gimme"; spring puts the instructor in an especially good mood.
6. Overall, public courses outnumber private courses nearly two to one.
7. In 1990, about 80% of all rounds of golf played in the U.S. were at public

1. 417.
2. 20%.
3. It's higher; 37.5% of the golf courses nationally are private.
4. 17%.
5. 63%. This was an obvious in "gimme"; spring puts the instructor in an especially good mood.
6. Overall, public courses outnumber private courses nearly two to one.
7. In 1990, about 80% of all rounds of

## We Make Your Problems Crystal Clear

Each year, more golf course superintendents realize a simple and energy efficient method of treating problem water quality in their streams and ponds. Otterbine Floating Aerators help prevent algae, aquatic weeds and noxious odors by speeding up the breakdown of wastes.

Through Otterbines' Floating Aerators, up to 3.6 pounds of dissolved oxygen is circulated into 37,500 gallons of water per horsepower hour. With dissolved oxygen, bacteria will break down organic wastes naturally, leaving you clearer and cleaner water.

Otterbine Floating Aerators are self-contained units which range in pumping capacity from 16 to 3,100 gallons per minute. Unit sizes are available in 1/6 to 10 horsepower. Minimum pond size can be as small as 8 feet in diameter and 13 inches deep. These aerators can also beautifully illuminate fountains with low voltage light kits and timing systems.

For more information on Otterbine Floating Aerators contact:



**Reinders Irrigation Supply**  
 800 782-3300 Milw. (414) 786-3301  
 13400 Watertown Plank Road, P.O. Box 825  
 Elm Grove, Wisconsin 53122-0825