

THE PUMP

A Major Component of a Water System

By **Allen Anderson**
Thein Well Co.

In the previous issue of *Hole Notes*, I discussed wells and some of the symptoms you should watch for to keep them healthy and producing as they are intended. The second major component of a water system is the pump. Although normally not as costly to repair or replace as a well, the well is useless without a pump that delivers the proper quantity of water your course requires for irrigation.

Since all of you use pumps of one description or another to deliver water from your source of supply to the areas that need regular watering, everyone should be concerned about pump operation and maintenance. The following checklist can help you determine if your pump is operating properly. Is your pump operating on its original design curve? Are there cavitation noises, or any other unusual sounds? Has cracking or uneven settlement of the pad or ground around the pump occurred? Do you have low pH water?

In booster pumps, centrifugal pumps, or lineshaft turbine motors and pumps, have you checked the bearings for vibration? A regular check of the bearings can give you an indication of the wear they are experiencing, and you can then plan to have your motors or pumps worked on during your off season.

Is there excessive heating of the motor? Has there been any change in the pattern of oil consumption of the motor? How about your pre-lube system? Is it operating as it should to lubricate your bearings before start-up of your pump? Has the corrosive action of the minerals in your water, or the dissimilar metals of your pump caused holes to develop near the couplings on your pump column? With submersible pumps, have you had the current, voltage and resistance checked recently to determine if your pump and motor are operating within safe limits? Are your check valves holding? Is the insulation on the submersible wire worn thin where it might be rubbing on the drop pipe or well casing? Are you providing balanced power for your submersible motors in order to get maximum life expectancy from them? How long has it been since your drop pipe was inspected? The action of air and water on metal encourages rust and a deterioration that can result in holes in the drop pipe. When sufficient deterioration occurs, your pump can twist off and drop down the well. These are just some of the questions you should routinely be asking yourself about the operation of your pumps and motors.

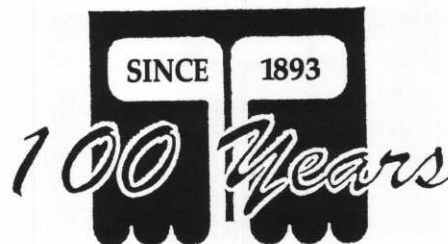
The purpose of all of these checks is to catch a problem while it is still small. The cost, for example, to replace a piece of drop pipe is insignificant when compared to the cost of fishing a pump out of the well after the drop pipe has rusted off. If the drop pipe twists off and the pump drops to the bottom of the well, it is possible that the well screen will be ruined. If the well screen is sufficiently damaged, it will either be very costly to repair, or it will require that

a replacement well be constructed. Pulling a lineshaft turbine pump to replace a few worn bearings will be simple and relatively inexpensive when scheduling during the off season as compared to waiting for a pump to quit delivering the water expected during those dry days in August. After all, a golf course pump in Minnesota never quits working in February.

While discussing proper maintenance and upkeep of wells and pumps, I would be remiss if I didn't touch on at least one add-on that can reduce the cost of pumping water in addition to extending the life of your system. A properly designed and installed variable frequency drive can give you great flexibility in the operation of your irrigation system. A drive will maintain constant pressures at varying volumes that will allow you to deliver the water just where and when you need it. A drive will also balance the input current levels and provide phase protection to your motors. An additional feature of the variable frequency drive is the soft start-soft stop capability which will greatly reduce or

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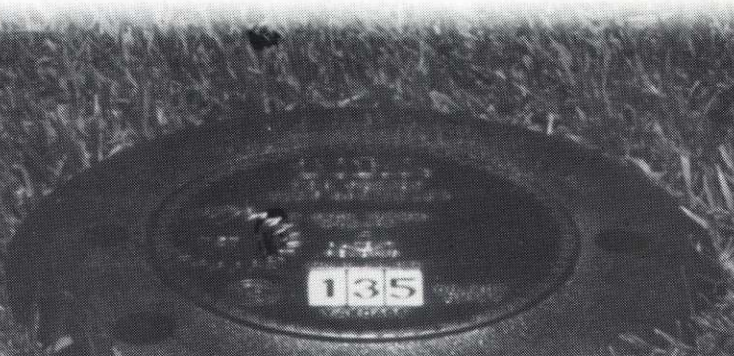
The Pump— (Continued from Page 11)

eliminate "water hammer," one of the major culprits causing breaks in your irrigation lines.

In some areas, the necessary or unnecessary replacement of a well could be the most expensive maintenance item with which a golf course may have to deal. The good news is that if you regularly check the specific capacity of your well and perform the necessary maintenance checks on your pumps, the costs to rehabilitate your well and repair your pump will be significantly lower, and your odds for a successful repair will be greatly increased.

Establish your own regular preventive maintenance schedule for your wells and pumps. If you don't have the proper equipment or feel you don't have the skills necessary to perform the checks, then contact a competent well contractor to set up a schedule for inspection. The cost for an annual check of your system will be insignificant when compared to some of the serious problems that can develop if they are left unattended.

I feel that some of the prettiest places in the country for a walk happen to be on golf courses. As a golfer, I appreciate a lush, well manicured course. But, if the grass isn't green and growing on your course because it is thirsty, and if the shrubs and flowers are suffering because of a lack of water, I will be looking for another course to play. Wells and pumps are an integral part of your golf course operation and can give many years of quality service, but like anything else mechanical, they need regular checkups. Don't starve your course of the water it needs to remain healthy and attractive when timely, inexpensive preventive maintenance on your system can help to keep your golf course in peak condition.



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MGCSA Scholarship Committee Institutes Legacy Scholarship for Its Members

By Charlie Pooch

Les Bolstad University of Minnesota Golf Course

The MGCSA Scholarship Committee has developed a program for instituting Legacy Scholarships available to grandchildren and children of MGCSA members.

One Joseph S. Garske Legacy Scholarship in the amount of \$1,250 and three Legacy scholarships in the amount of \$1,000 will be granted to children/grandchildren that meet the eligibility requirements for the scholarship.

We also will be issuing two \$1,000 scholarships to students in turf-related classes as we have done in the past. The only change in requirements for that scholarship become, instead of completion of the first year of a two-year turfgrass technical program or completion of the second of a four-year program with major emphasis in turf management, a student may now apply if they are beginning or have completed their first year in a two-year turfgrass technical program or completion of the second or third year of a four year program with major emphasis in turf management.

Candidates also must be residents of Minnesota or be employed by a MGCSA member superintendent. Students will be eligible to apply for both the turf scholarships and the legacy scholarships, but will only be able to receive one.

Legacy scholarships will be awarded to high school seniors or graduates who plan to enroll or students who are already enrolled in a full-time undergraduate course of study at an accredited two- or four-year college, university or vocational-technical school. They must be children / grandchildren of Class AA, A, B, C, D, Associate, and Affiliate members who have been in the MGCSA at least five years.

These awards will not be renewable. However, students may reapply to the program each year they meet eligibility requirements. Scholarship recipients are selected on the basis of academic record, potential to succeed, leadership and participation in school and community activities, honors, work experience, a statement of education and career goals, and an outside appraisal.

Selection of recipients are made by the Citizens' Scholarship Foundation of America. In no instance will any member of the MGCSA play a part in the selection. Three scholarships will go to Class AA, A, B and C members having qualified applicants, with one award going to a Class D, associate or affiliate members having a qualified applicant. Qualified students may apply for

either the turf scholarships or the legacy scholarships by calling or writing the MGCSA office and requesting the proper application. Applicants for legacy awards will have until June 1 to return application forms to Scholarship Management Services. Applicants for turf scholarships will have until July 1 to return applications to the MGCSA business office.

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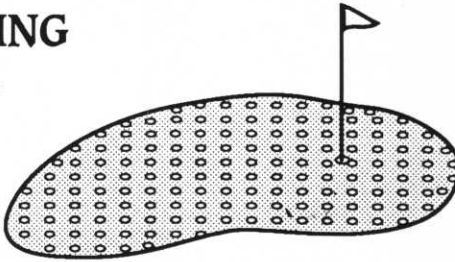
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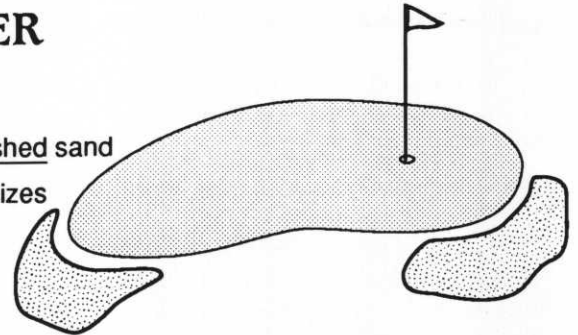
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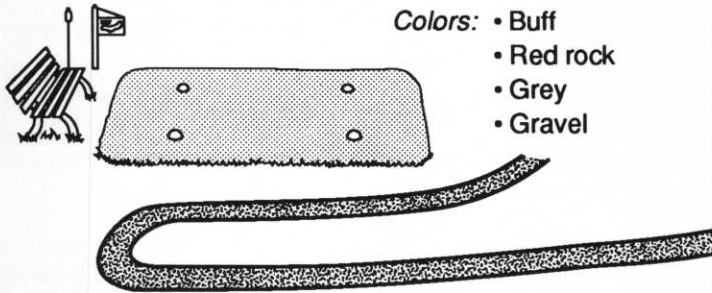


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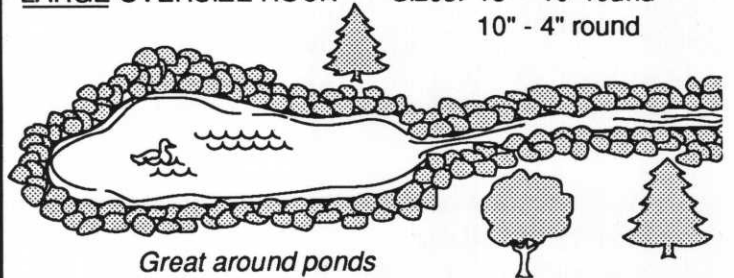
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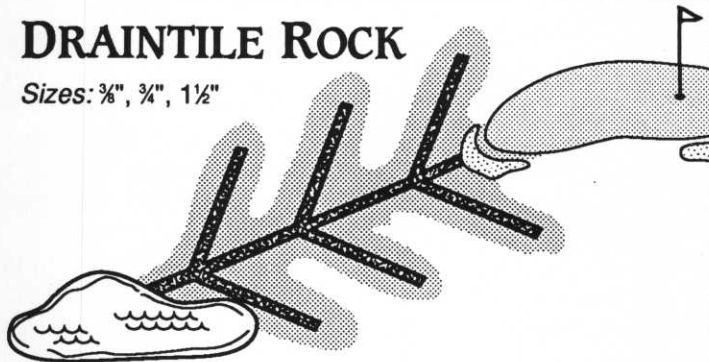
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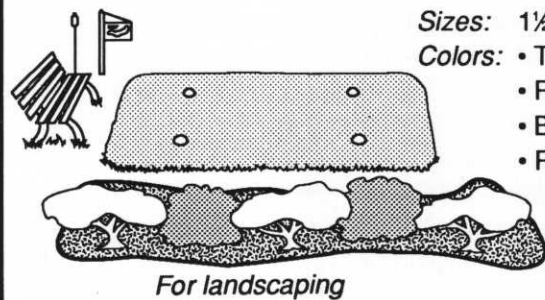
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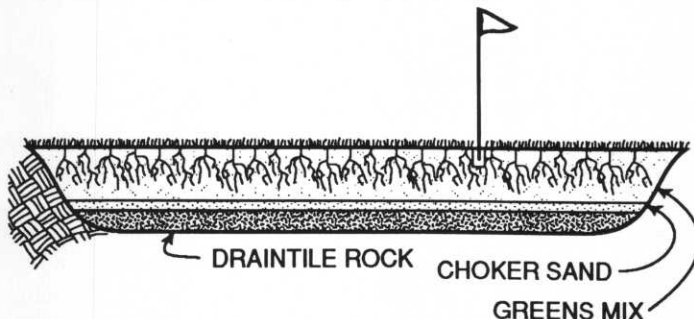


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Adding Flower Color to a Golf Course

By Susie Fobes

*Horticultural Consultant
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One of the most frequently heard comments I hear from golf course superintendents is:

“I would love to add more flower color to my course but I don’t have lots of money for plants and even less time and money for maintenance.”

When I inquire about the current program, invariably the gardening is a concentration of annual bedding plants and the favorite plant choice is. **Red Geranium.** Sometimes, the color choice has been changed to pink or salmon to disguise the repetitive design choice, but usually, geraniums are the main ingredient. Ironically enough, geraniums are one of the most expensive annuals on the market and require a high level of maintenance to ensure quality. If geraniums are not watered, fertilized and dead-headed on a regular basis, they create a mass of light green foliage edged with brown leaves, and flower intermittently. The plant choice is wrong if your budget and maintenance staff are limited.

“But I can’t change the flower scheme, members would complain. It would start an upheaval at my course just shy of a revolution.”

Changing the flower planting scheme at a golf course can create change...**Positive Change.** If the proper steps have been taken, **the change will be positive.** Analyze the location, size, composition, quantity and maintenance ramifications of every pot, basket and flower bed currently located on the grounds. Use the following seven questions as a guideline for evaluating the worthiness of each site.

1. Are the flowers located in a high traffic area for maximum visibility and appreciation? First, concentrate your time and money near the clubhouse and patio areas. First impressions often make lasting impressions. Then consider other locations where golfers might find themselves loitering (Tee boxes) and intersecting areas of the facility that golfers and visitors can appreciate the same flower area.

2. Are the flowers irrigated or easily watered? Dragging a 200-foot hose to a site, three times a week, is expensive maintenance. Irrigate, relocate or convert to perennial species entirely. Once established, perennials require much less watering.

3. Does the flower require edging because the riding mower cannot get close enough? The outside

lines or curves of a bed should be designed with an understanding of the turning radiuses of the riding mowers. Rethink a design if extra labor is necessary to trim the turf around the site.

4. Is the bed size small and easily overlooked? If the flower bed is big, bold and can’t help but be noticed, even from afar, it will be appreciated. Sometimes large beds that are designed and positioned to be seen from a distance have a huge advantage. All of the weed understory is not topic of conversation. . . no one even notices.

5. Is the flower bed comparable in size to an average homeowner’s garden? Repeating the average homeowners’ style of gardening is a sign that you too have “average” expertise. At the golf course, the bed should be large, grandiose and eye-catching. (Think of Disney World. . . do you remember any of the flower beds? They are big, spectacular and memorable.) One large, well-executed flower bed will always command more attention and compliments than ten scattered “homeowner” models. Every site has different factors influencing design, but 150 square feet is a good **minimal** size to consider.

6. Are the pottery, containers or baskets larger in size than the typical residential landscape? The bigger, the better, applies to them for three reasons.

1. Lightweight items are too great of a temptation for some paws.. Thievery is a problem.

2. Small containers have such a small water reservoir that on hot days, plant material wilts.

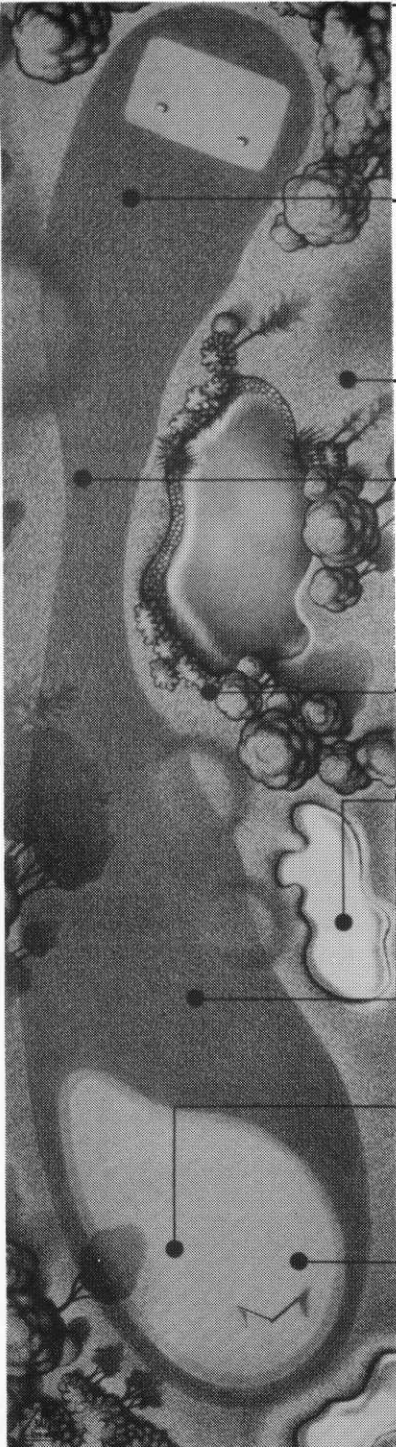
3. Again, the **bigger the better** approach will always command more attention from the customer. The quality of a planter is also a reflection of style or “lack of” style. Whiskey barrels are great color accent around a maintenance building, but they are “tacky” when used around a clubhouse or within a golf course. Absolutely beautiful pots and containers are available. . . invest. Select a style that never requires moving.

7. What is the distance between various flower beds, pots and baskets? Do you find your crews spending more time driving or walking between flower sites than maintaining them? When the flowers are located in scattered sites throughout the grounds, time, labor and dollars are inadvertently consumed by moving from site to site, not by the true maintenance of the flowers. A time management study of the repeated loading, unloading and reorganizing of the utility cart would convert any non-believer. Consolidating the flowers into fewer, larger and more spectacular beds is more economical and more rewarding.

I can feel the frustration, agony and financial drain caused by the flower program. Even on courses that are

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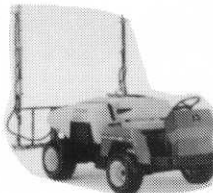


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Flowers—

(Continued from Page 16)

fortunate enough to have on-site gardeners.

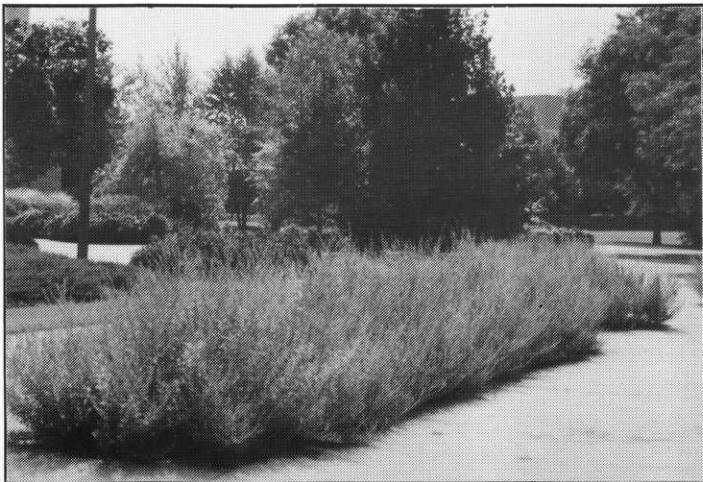
How did an earnest, virtuous, attempt to “add more color” evolve into a dreaded blackhole? Simply put. . . poor design coupled with poor plant selection.

Begin the process by transforming the smaller, more insignificant beds to herbaceous perennial plants. Fill in the entire bed with one, possibly two, different plants. If you decide to get fancy and add a large variety of plants the gardener must have a higher skill level. Spring arrives and it is difficult to figure out which of the plants are “good” and which are weeds. I have seen perennial beds that have nurtured weeds to the flowering stage, only then to recognize them as the “weed.” **Minimize the complexity of the bed.**

The cost of smaller-sized, herbaceous perennials can be equal to that favorite flat of Geraniums that you buy year after year. The difference between the two is that the Geraniums will continue to get more expensive and the perennial will become more valuable. After the first year of “babysitting” a new planting of perennials, the maintenance cost is easily estimated at less than half. Geraniums require babysitting every year. . . forever. What are some good plant choices?

The plant choices are endless, but three different plants are worthy of discussion. Russian Sage, Daylily and Peony

Russian Sage, *Perovskia atriplicifolia*, is a plant that is relatively unknown. Why? It is a plant that did not receive just recognition until the last five years. It was selected by the Perennial Plant Association as the “1995



Russian Sage

Plant of the Year.” This recognition is equivalent to a movie receiving an Oscar nomination and the sales and usage have catapulted. Russian Sage has silver stems and small, grayish foliage. It reaches heights of nearly 4 feet with its sprawling habit. The light blue to lavender flowers are in spikes 12” long beginning in late July and continuing through August. It is hardy in zones 3-8. Used either as a specimen or in a mass planting, it requires a sunny, dry location. Russian Sage is intolerant of shade and poor drainage. One particular variety, ‘longin,’ has stiff upright stems and a more formal appearance than the species. If you ever get the chance to visit the college campus of Gustavus Adolphus in St. Peter, Minnesota in August, you will be a forever fan of this plant. Massive beds have been used to light up the central corridor of the campus. It is beautiful beyond description! My only criticism of the plant choice at the site is that it has peak flower performance when very few students are on campus. It is equivalent to a golf course concentrating its landscaping efforts for winter color. . . nice that the staff can enjoy it!

Daylilies, *Hemerocallis* varieties, have always been a stable, positive contribution to the landscape. Today more than ever, fabulous improved varieties of this plant are available at very reasonable prices. Ten years ago, I remember the thrill of getting my hands on twenty pots of the most coveted new release, ‘Stella de Oro,’ a tetraploid flower. I paid nearly \$10.00 per small pot, with a few leaves, and knew I had a bargain. Today, due to expanded production and availability, these plants would sell for approximately \$1.50 per small pot. (Forget what I previously mentioned about “investment” in this article.) Frequently when visiting golf courses I see the use of Daylilies, but they are the old orange, unimproved, “ditch species.” Purge yourself of this old inventory. Bring out the herbicide, rototil and replant with new releases.

Peonies, *Paeonia* varieties, have also been a positive contribution to the landscape, but I rarely, if ever, see them used on golf courses. Why? I am not sure, because they are the lowest of maintenance plants. Have you ever driven by an old, abandoned house when the Peonies are flowering? Mother Nature brings the property back to life. Peonies create a small, rounded shrub about three feet tall. In late spring and early summer they have a ten day display of very beautiful, large white, pink or red flowers. The timing of the flower display is exactly when the golfers/consumers in Minnesota are starved for warm weather, golf, and summer. The color is refreshing and invigorating. Single specimens provide color but a very large, mass planting can be well worth the effort.

Some gardeners dislike Peonies because just when the flowers are reaching their peak display they become too heavy and lodge to the ground. Remember the farmhouse, no one had fertilized in twenty years. If high levels of fertility are supplied to peonies, the stems become too fleshy. Additionally, the correct cultivar choice makes a tremendous difference. Select the single flowering, Japanese

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LOW INPUT SUSTAINABLE TURF

By Tom Parent
River Oaks Golf Course

(Editor's Note: This is the first in a series of articles that will explore strategies to reduce chemical inputs required on highly managed golf course turf.)

Part One and Overview

With increased environmental awareness golf courses have unfortunately been singled out as toxic polluters and reckless users of fertilizer and pesticides. Lately a protest movement has started that has centered around the destruction of natural habitat for the creation of new courses. We are being attacked from all sides.

Through the New York State Audubon Society's Cooperative Sanctuary Program and the "Par for the Course" series, we are slowly gaining recognition as stewards of the land. Unfortunately, this is grossly overshadowed by media events such as Paul Harvey's commentary, Wall Street Journal articles and the famous "Greenkeeper in a Drum" article. Because there is some truth in these articles, distorted and one sided as it may be. No amount of positive press can overcome this type of news hysteria unless there is a fundamental change in the way we manage our golf courses.

It seems clear, that we as a profession, must change our management practices, and more importantly, golfer expectations in order to improve our image. One way we can do this is to adapt the techniques of low input, sustainable agriculture. Unfortunately, in the no-till cultivation system that we have in turf, many of these strategies must be modified. Our goal should be to minimize the amount of product we use while building a strong ecosystem in our turfgrass culture. To do this we will have to further open our minds to alternative strategies of turf grass maintenance.

We must also stop this insane trend of trying to maintain our courses at tournament conditions year round. This will be our greatest challenge. We need to start saying no! We must make it clear the huge price the reputation of golf pays due to the extra input of chemical and cultural practices required to maintain these conditions. We must educate the golfers of the environmental impact of their demands.

Soil Ecology

Healthy plants rarely die from disease. Then why do we have such disease problems? Why do we spray so much fungicide? We don't have healthy plants! The main reason for this is the demands we place on the turf, due to the demands put on us by a small vocal minority of golfers that

determine the conditions at most clubs. Again we need to start saying no! There is a limit to what our turf can tolerate. Dr. Nus, the research director at the GCSAA, appropriately called them "biological limits" in his January 1996 GCMM article "Taming the Dragon."

How can we give our turf an edge under nearly impossible conditions? Fortunately, turf managers are starting to think more and more about soil ecology than soil chemistry. Justice Von Liebig, the man who first advocated N-P-K fertilizers in the early 1840s, wrote several years later that he had sinned against God. The effect of the switch, from what would now be considered organic farming, to a chemical fertilizer system was evident in a very few years. Unfortunately, his early work has prospered and his later ideas have been ignored until recently.

The soil is a complex dynamic living system. Without a thriving soil ecology the plants living in the soil have a distinct disadvantage. Microorganisms provide recycled nutrients and a host of organic compounds which build soil structure and promote plant health. They also assist in water retention, and elevate levels of cation exchange sites through the production of humic substances and organic matter.

What microorganisms lack most is a digestible carbon source. On many turf areas the removal of clippings robs the soil of its food source. This disrupts the entire carbon cycle and removes nutrients which must be replaced through the additions of fertilizer.

There is a complex food chain in the soil, just as there is in terrestrial ecosystems. The byproducts of one microorganism are used by another which is food for another, etc., etc. The thatch digesters may need a metabolite of another microorganism to function efficiently.

Instead of looking at soil microbes as enemies ready to invade our plants, we must value them as highly as we value our turf grass. If we are forced to disrupt the native population, it requires more input of water, fertilizer and chemicals.

What promotes a vigorous soil ecology? Fortunately for us, beneficial microorganisms prosper under the same conditions as turf grass: A well-aerated soil with ample reserves of nutrients, water and organic matter. Thankfully for us, beneficial soil microbes thrive under the conditions when they are most needed. They like heat! If you're a creationist, you have to marvel at God's genius. If you're an evolutionist, can you picture a better example of co-evolution.

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Sustainable Turf—

(Continued from Page 19)

Plant roots are beneficial soil microbes' lunch ticket, they have evolved to take care of their host. Due to excessively low cutting heights our turf is almost always under stress. When turf is further stressed by environmental condition the supply of food to the microbial community in the rhizosphere is restricted. This in turn could allow for the unchecked growth of pathogens.

Strategies for a Healthy Soil Ecology

Start thinking of the soil as a living organism not as something static that holds fertilizer, water and roots.

Feed the soil: This can be done simply through the recycling of clippings. If this is not an option at your course, the addition of a digestible carbon source through the use of a non-decomposed organic fertilizer, high carbohydrate soil amendments and humates should promote a thriving soil ecology. Next month: "Rolling Back the Clock."

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