

LOW INPUT SUSTAINABLE TURF

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(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—

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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."

Minnesota Golf Association and the United States Golf Association Rules of Golf Seminar

The Minnesota Golf Association invites you to a Rules of Golf Seminar to further your understanding of the Rules of Golf. The Seminar will be conducted by John Morrissett; Coordinator, Rules & Competitions and Amateur Status, of the United States Golf Association staff.

The seminar will cover the following topics:

- A. The new Rules Changes for 1996
- B. General Procedures Covering Basic Rules
- C. Interesting Rules Situation from the USGA
- D. Question and Answer Period

Seminar Advance Registration Fee of \$5 per person (\$10 after deadline or in person) includes 1996 USGA Rules of Golf Book, Rules Handouts, and Refreshments.

Thursday, April 25, 1996
Marriott Minneapolis Southwest
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Minnetonka, MN
(612)/935-5500

Registration begins at 6:00 p.m.
Seminar from 6:30 p.m. - 9:30 p.m.

All persons registering will receive an acknowledgement post card. Space may be limited, so please register early. Registration deadline is Monday, April 22, 1996. Sorry, no refunds will be given after the deadline. For more information contact the MGA Office (612)927-4643.

MGA Rules of Golf Seminar Registration Form

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Enclosed is the advance registration fee of \$5 per person (\$10 after deadline or in person). Make checks payable to **Minnesota Golf Association**. For additional registrants, attach a separate sheet with the above information.

Total Amount Enclosed \$ _____

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