



Environmental Complacency

As an industry, we cannot rest on our laurels. We must be vigilant in our efforts to inform golfers about the price of what they are demanding. Why do the golfers appear no more involved than they were a decade ago? Why isn't every course in the Audubon Program?

FRANK S. ROSSI, Ph.D.

Cornell University

When Rachel Carson penned the now-famous *Silent Spring*, she addressed an aspect of American life wrought with ignorance regarding pesticide use and environmental quality. The outrage stirred by *Silent Spring* provoked the anger created by the "cranberry scare" of 1959.

Cranberry growers applied a pesticide during the growing season in defiance of Food and Drug Administration (FDA) restrictions. The pesticide found at low levels in the cranberry supply was suspected of causing cancer. These events had a profound and enduring effect on the public consciousness. In many parts of the country, this concern persists today.

The golf industry experienced a similar *Silent Spring* event with publications from the United States Government General Accounting Office in 1988 asking the question, "Are the Hazards of Lawn Care Pesticides Underestimated?"

Then in 1989 the Attorney General of New York published "Toxic Fairways; The Risk of Groundwater Contamination from Golf Courses." Jay Feldman and his organization, National Coalition Against the Misuse of Pesticides (NCAMP) and other activists seized the moment to confront

the golf industry.

The initial response from the industry was defensive. The 1992 GCSAA conference held a packed session for thousands for golf course superintendents to hear from Mr. Feldman and officials from the EPA. The following year the GCSAA invited Michael Fumento, author of *Science Under Siege* who reported the results of topical searches he conducted on "golf courses" and "cancer."

"Golf courses fight cancer, as professional tournaments raise funds" Fumento proclaimed with the results of his search. The crowd erupted and you could sense that the golf course superintendents wanted this crisis over. Still, information was lacking regarding the fate of pesticides and nutrients applied to turf.

The United States Golf Association embarked on an important research initiative to more thoroughly understand the influence of golf turf management on environmental quality. The environment under investigation was air and water quality.

Concurrently, Ron Dodson was introducing a program to the golf industry that assisted the golf course superintendent with environmental management. Ron was also the driving force behind the Wildlife Links Research Program that investigated the

influence of golf turf management on wildlife. The research information was on its way, and now there would be a mechanism for implementation.

Environmental Evolution

The USGA held a symposium at a 1998 meeting of the American Chemical Society to discuss the decade of USGA-funded environmental research. As a member of the Research Committee at the time, it was a unique experience to hear from the leading researchers in our field and then to have their work in a Symposium Book published in 2000.

The opening chapter authored by Mike Kenna and Jim Snow provides an excellent overview of the research. In the concluding section they state, "university research shows that most pesticides used on golf courses have a negligible effect on the environment." This has been the cry of golf course superintendents since the research has been completed.

Audubon International programs for new and existing golf courses has grown over the last decade, but still represents about 10 percent of all courses in the US. In fact the number of fully certified courses is well below 5 percent of all courses. Most courses are either not involved or if they have paid the entry fee (\$100), have not actively pursued full certification. Yet, in many states, the Audubon Programs are actively embraced by government agencies as a means of insuring environmental quality when a new facility is proposed.

Many golf courses throughout the country continue to face public opposition to pesticide and fertilizer use. Several communities in California have banned the use of most pesticides and this trend is actively underway in New York. The turfgrass industry has responded by mounting significant lobbying efforts to combat the legislative agenda of advocacy organizations. At the same time, the industry faces new pest problems such as bentgrass deadspot and gray leafspot that require substantial pesticide inputs to maintain expected quality.

Another Level

Millions of dollars have been invested to research the environmental fate of applied chemicals. These studies attempt to



Audubon, GCSAA Environmental Accomplishments

Florida's Newest Audubon Cooperative Sanctuary Golf Courses

The Bear's Club, Jupiter
Copperleaf GC, Bonita Springs
El Conquistador CC, Bradenton
Hideaway Beach GC, Marco Island
Raven GC - Sandestin Resort, Destin
Santa Rosa G&BC, Santa Rosa Beach
U. of Florida GC, Gainesville
Weston Hills C.C., Weston

New Fully Certified Audubon Cooperative Sanctuaries

Chi Chi Rodriguez Golf Club,
Clearwater
Hammock Dunes Club, Palm Coast
IGM - Savannahs at Sykes Creek,
Merritt Island

IGM - Spessard Holland Golf Course,
Melbourne Beach
Naples Lakes C.C., Naples

Recertified ACSP Courses

Foxfire G&CC, Naples certified since 1998
Old Marsh GC, Palm Beach Gardens
certified since 1998

GCSAA Environmental Management Program

Stephen W. Wood, CGCS, El Conquistador C.C. in Bradenton has earned an environmental management specialist certificate from GCSAA for completing a specialization program in Integrated Pest Management.

trations that might cause human health concerns. But what if the levels we have been using were harmful to other species vital to aquatic ecosystems.

Environmental researchers from Canada published an assessment of nitrogen pollution influence on amphibians in a 1999 issue of *Environmental Health Perspectives*. The paper is a review of available water quality information for the Great Lakes region of the US and Canada. Of the over 8,000 water-quality samples collected in areas surrounding the Great Lakes, 20 percent of them were found to have concentrations that cause sublethal effects in amphibians. Nitrate levels as low as 2.5 par per million have been shown to affect amphibians.

The nitrate in the water appears to disturb the digestive process in tadpoles in a way similar to the mechanism in humans. The nitrate is converted by the bacteria in the infant's gut and then severely restricts the blood's ability to become oxygenated. There is a significant lack of information

determine the role that specific management practices may play in minimizing off-site movement and often use EPA con-

centrations to evaluate success. In general, these levels are established from toxicological research that determines concen-

TIFSPORT'S
Dark Green Color,
Improved Cold Tolerance,
And Impressive Leaf Texture
Make It Perfect For Fairways,
Tees and Roughs

To Order Your Certified TifSport
Bermudagrass Sod or Sprigs,
Contact This Licensed TifSport Grower

South Florida Grassing, Inc.
Hobe Sound FL
561 546-4191

Laserturf.
Setting the Standard

Laser Controlled Leveling
and Topdressing For:

Golf Tees
Sports Fields
Tennis & Croquet
Courts

- **Dale Witting**
Main Office
- **Ron Butler**
Central Florida
- **Gary Clemmer**
Southeast Coast
- **Tom Mackanos**
Northeast Coast
- **Paul Housewright**
West Coast

561-692-3771

Post Office Box 2179
Palm City, FL 34991-7179

available on the toxicity levels relative to the different amphibian species, including influence on the predators and prey.

The review did not point the finger at the turfgrass industry, but rather pointed to the need to understand the influence of wastewater treatment, livestock, precipitation, and fertilizers on nitrate pollution. Clearly, as major users of fertilizers for turfgrass areas such as golf courses, we must be aware of best management practices to minimize off-site movement. In addition, turf is an important vegetative buffer and biofiltration system to protect sensitive aquatic habitats. Now is the time to think about this bigger picture before another crisis occurs.

What's Next?

Kenna and Snow end the chapter in the ACS Symposium Book saying, "The USGA, and the game of golf, need to keep asking questions and looking for new ways to maintain golf course grasses. More important, efforts should be increased to educate

the golfer about environmental issues."

The importance of these points cannot be overstated, yet I am regularly amazed at how many in our industry feel that the environmental crisis is over. I sense a complacency among organizations and industry leadership that image, labor issues, and expected turf quality are greater challenges, since they know the results of the USGA studies.

There is nothing more important to the wellbeing of the game of golf and our industry than environmental quality. Yes, the data is encouraging that as far as we can measure, there appears to be little negative influence, yet as we continue to ask questions we find new answers. At the same time, we need to look at course management. Should we plant ryegrasses where gray leaf spot is going to be a problem? Can we justify intense pesticide use for new pest problems? Are we creating these problems from the conditions we create? Why do the golfers appear no more involved than they were a decade ago? Why isn't every course

in the Audubon Program?

As the human population grows, the concern for environmental quality will be even greater. As an industry, we cannot rest on our laurels. We must be vigilant in our efforts to inform golfers about the price of what they are demanding. In some cases, we may not know exactly, but shouldn't we err on the side of caution? The amphibian study is only one aspect of what we are a part of, as Carson states in *Silent Spring*, "the fabric of life, on one hand delicate and destructible, on the other miraculously tough and resilient, and capable of striking back in unexpected ways."

Frank S. Rossi, Ph.D. is assistant professor of horticulture at Cornell University. He can be reached at 607-255-1629, fax 607-255-9998, email fsr3@cornell.edu. Submitted by Shelly Foy, USGA Green Section Florida Region and reprinted from Dr. Rossi's 2001 USGA Regional Seminar presentation with permission.

THE HAVERLAND COMPANIES

HAVERLAND BLACKROCK CORPORATION

The innovators in Golf Course Construction We can rebuild & recontour your greens and have them back in play immediately

INSTALLATION:



TEES, GREENS, FAIRWAYS & ATHLETIC FACILITIES

CONSTRUCTION SERVICES:

USGA GREENS CONSTRUCTION
LASER GRADING, EARTHWORK,
BERMUDA SOD INSTALLATION,
SHAPING, DRAINAGE, CLAY WORK,
BUNKERWORK, ETC.

HAVERLAND TURF FARMS INC

TIFDWARF, TIFWAY, & "BABY"
BERMUDA

SSCA CERTIFIED BERMUDA GRASS GROWERS

Come visit our Farm in Indiantown
Florida

THE HOME OF

BIG ROLL
Slab Sod & Sprigs **SOD**

9819 STATE ROAD 7 * BOYNTON BEACH FL * 33437

(561) 369-7994 FAX (561) 364-1118

KEYWORD @ BLACKROCKCORP.COM

E-MAIL: BLACKROCKCORP@AOL.COM