

# Bloch steps down, calls for golf to continue environmental progress

By Dr. MIKE KENNA

SCOTTSDALE, Ariz. — Armed with more than 70 years of experience maintaining golf courses and the scientific results from turfgrass and environmental research, the United States Golf Association (USGA) and allied associations continue the debate golf's future relationship with the environment.

"The player, club and ball have always been essential elements to the integrity of the golf equation," said outgoing president Stuart Bloch at the USGA's recent annual meeting here. "Our challenge today is to tackle the fourth element of that equation: the environment. Properly mastering the environmental element may be the USGA's most important contribution to preserving the future of golf."

"Golf's popularity has placed us on the world's stage," said Bloch. "From that view we can now see the challenges facing us such as blending golf course needs with the demands of wildlife, water and modified pesticide use. Many of the problems may have been created, in part, by the very practices which we have recommended. Now, we have learned that we must alter some cultural practices, for the health of people, preservation of our courses and the environment."

According to Jim Snow, national director of the USGA Green Section: "Our challenge now is not just to improve the quality of the game — we are also intent on improving the quality of the game's impact on our environment. There are many people outside the game of golf who believe golf courses are hurting the environment. These beliefs, whether they are accurate or not, can have real effects."

Snow said he felt the cost of building and maintaining golf courses has risen dramatically and that several new courses can not get beyond the planning stages because of environmental concerns.

"There are four areas of concern and the USGA is sponsoring impartial, scientific research and programs in each," said Snow. "These concerns may be about contamination of water supplies, irrigation water use, destruction of natural areas, or the effects of golf courses on people and wildlife."

A general overview of USGA sponsored research concerning water, pesticides and fertilizer fate, and new turfgrasses was given by Dr. Kimberly Erusha, director of education, USGA Green Section. "The USGA has funded studies at 10 leading universities investigation of how pesticides and fertilizers move

through the turf and soil system," said Erusha. "The most important fact we've learned is that turf acts as an excellent filter for pesticide and fertilizer movement through the soil. In other words, turf protects our valuable ground water from chemicals applied at the surface."

"Many of the models or mathematical estimates currently used by EPA are based on agricultural conditions," Erusha continued. "We now understand



Stuart Bloch

that leaching in agricultural and golf course situations are fundamentally different. Turfgrasses provide a complete ground cover and have a very extensive root system which contrasts what we have with row

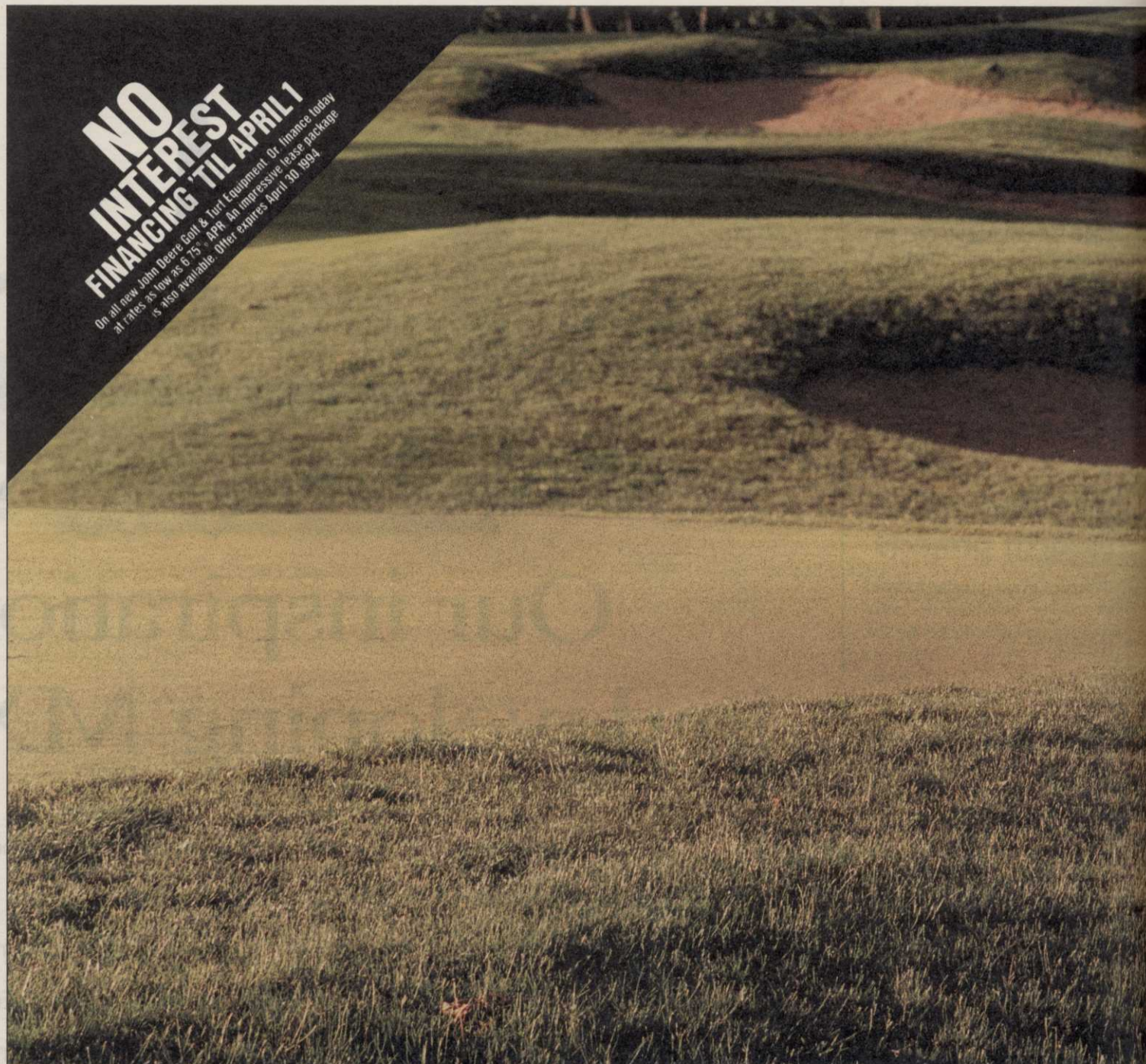
crops. The models used by regulators are based on agricultural situations and over-predict the amount of chemicals that leach through turfgrasses."

All the news was not good. "Pure sand greens tend to leach more fertilizer," said Erusha. "Research at Washington State University strongly supports why the USGA has recommended organic matter, like peat moss, in putting greens since 1960. The addition of peat moss greatly reduces fertilizer

leaching to within EPA maximum concentration limits."

"Probably the most significant finding is that well-established and maintained turf allows only one percent of the nitrogen applied to leach through the soil," reported Erusha. "This is a critical point, when many sensationalized media reports erroneously claim that up to 50 percent of the applied chemicals leach through the soil. There is a big disparity between

Continued on next page



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## Thatch proven important to pesticide fate

By DR. MIKE KENNA

Often overlooked by scientists responsible for predicting the fate of pesticides is the markedly positive effect of thatch in retaining and breaking down organic chemicals.

Four pesticides applied on a Kentucky bluegrass turf during a

joint research study conducted by University of Nebraska at Lincoln (UNL) and Iowa State University (ISU) appeared to break down faster than what is typical when these materials are applied to other agricultural crops.

As part of the United States Golf Association (USGA) Environmental Research Program, the overall goal of this sponsored research project was to determine the effects of golf course cultural practices on the persistence and mobility of selected pesticides in the turfgrass environment. The research sites, with established stands of Kentucky bluegrass, were located at the John



Seaton Anderson Research Facility in Mead, Neb., and at the ISU Horticulture Research Station in Ames, Iowa.

In 1991 and 1992, recommended rates of pendimethalin herbicide, isazophos and chlorpyrifos insecticides, and the fungicide metalaxyl were applied at both study sites. Before and after the pesticides were applied, leaves,

shoots, thatch and soil were evaluated for pesticide residues.

The turfgrass leaves, shoots and thatch intercepted most of the pesticide during application. Over time, the amount of pesticide recovered in leaves and shoots decreased due to irrigation, rainfall and clipping removal.

The thatch layer, which retains pesticide residues and is somewhat unique to turfgrass systems, generally contained the greatest amount of pesticide residue throughout the 16 weeks of monitoring.

Relatively little chlorpyrifos, and very low amounts of pendimethalin

moved through the thatch layer into the underlying soil. Slightly more isazophos was found in the soil, but did not increase beyond the amounts found one day after application, which indicates rapid breakdown and limited mobility of this product in the soil.

With the exception of metalaxyl, soil concentrations of the pesticide were generally highest at soil profile depths of 0 to 2 inches and 2 to 4 inches throughout the study. Metalaxyl moved through the entire 24-inch soil column tested and the concentration increased up to 28 days after treatment applications. However, the reported metalaxyl concentration found below 20 inches within the soil was less than 150 parts per billion (150 micrograms per kilogram).

Overall, the results reported by Drs. Garald Horst and Pat Shea from UNL and Dr. Nick Christians at ISU indicate that all four pesticides appeared to break down or degrade more rapidly in the turfgrass environment than what is typically reported for other agricultural uses of the same products.

The completed research emphasizes the need for an evaluation of current mathematical models used to predict pesticide movement in turfgrass and agricultural systems. Unfortunately for golf, the current prediction models do not adequately estimate the role of turf leaves, shoots, and especially the role of thatch.

## USGA research

Continued from previous page media fiction and USGA facts."

Ron Dodson, president of the Audubon Society of New York State, discussed the success of the Audubon Cooperative Sanctuary Program which receives financial support from the USGA. "We felt it was time to stop telling people what they were doing wrong, and start helping them to do what we thought was right," said Dodson. "Golf and much of America have a perception-equals-reality problem. Most non-golfers, through negative media coverage, feel golf is bad or golfers are bad. The Cooperative Sanctuary program has provided golf an opportunity to tell the rest of the world what is good about golf with regard to environmental issues."

"We have a responsibility to educate the general public, regulatory agencies, and environmentalists," said Snow. "We need to learn—and then teach them—about the environmental benefits of golf courses and what is being done within the game to protect the environmental."

"In April, the results of several environmental studies will be presented to the USGA Turfgrass and Environmental Research Committee," said Snow. "We'll develop a variety of ways to get this information out, where it can be used to improve course management and the game. But the final success of our effort will depend on the willingness of golfers to learn and share the good environmental news about golf."



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