

What we don't know may hurt us

by Christopher Sann

In conversations that I had with Dr. Richard Hull, while planning and discussing his excellent article on nitrogen fate in turfgrass, I have once again been struck by the lack of precise information about basic turfgrass biology and the workings of the turf-soil ecosystem currently available to our industry. Indeed, there are a multitude of potential problems facing turfgrass managers in the very near future as a direct result of this knowledge gap.



Minimum turfgrass nitrogen requirements have yet to be established

Dr. Hull told me that his research is directed toward finally establishing the minimum annual amount of nitrogen that is required to maintain healthy turf. I was shocked when he told me this, as I have always thought that such basic information was readily available. According to Dr. Hull, however, the minimum amount of supplemental nitrogen needed to be applied to maintain healthy turf, while taking in to account the seasonal fluctuations in soil nitrate levels, has yet to be established.

Dr. Hull's work has the potential of offering turfgrass managers a set of protocols that could be used to precisely apply just the exact amount of fertilizer needed, and to make those applications at times when the turfgrass can best use the applied nitrogen. By following these protocols, once developed, it may be possible to reduce the total annual fertilizer inputs at turf sites by as much as 25% to 50%, depending on the desired level of fertility.

All very promising, but ...

This work has enormous potential, but it is still a work in progress and the industry may need this specific infor-

mation without delay to combat the developing pressures to restrict fertilizer use sooner than generally expected.

Recently two bills have been introduced in Congress to do just that. The first bill restricts fertilizer applications to no more than that recommended by a soil test, and the second bill would heavily tax the nutrient content of fertilizers to pay for the cleanup of nutrient-polluted waterways and ground water. Both of these bills offer politically popular solutions to questions that have yet to be fully understood and represent yet another attempt by Congress to create scientific "conclusions" by legislative process.

Dr. Hull's work bears directly on both of these pieces of legislation. The bill to restrict fertilizer applications to soil test recommendations assumes that the precise nitrogen requirements for turfgrasses are known, but they are not. Until Dr. Hull's research, as well as the work of other scientists, is completed, there will be no scientific basis for a nitrogen level standard. The second bill, which creates a fertilizer tax to pay for the problem of nutrient pollution, assumes that only applied fertilizers add to the environmental nitrate load. Dr. Hull's research already indicates that mineralization of naturally occurring organic matter is a major contributor to nutrient pollution and in many cases is the primary or sole contributor.

Unfortunately, both of these pieces of legislation, in one form or another, may well become law with substantial negative effects on the turfgrass management industry before the scientific questions that surround them are answered. In fact, the February warning by Mr. Victor Kimm, deputy director of the Environmental Protection Agency, about adverse legislation being promulgated without sound scientific foundation, has alarmingly come true.

As an industry, we are eager to participate with the EPA or anyone in authority in any changes that can help reduce the unintended environmental consequences of our actions. But the minimum requirement, for our wholehearted cooperation, ought to be that the new legislation or regulation be grounded in scientific fact, not political expediency. ■

Transgenic plants field tested

In a major international research move, the Bt Management Working Group (BtMWG), a group of 15 international companies involved in *Bacillus thuringiensis* (Bt) research and development, has funded several research projects to test transgenic

corn and cotton in the field. Two universities were awarded funds for studying Bt transgenic corn and a third was funded for studying Bt transgenic cotton. This marks the first movement of these genetically engineered plant species from the laboratory into the field.