



Questions From The Floor

By Dr. Wayne R. Kussow
Department of Soil Science
University of Wisconsin-Madison

Q. I recently looked over a soils map of Wisconsin and could not help notice that we have significant acreage of organic soils. Why is it we seem to have to go out of state for a peat to use as a top dressing component for our greens and tees? TREMPEALEAU COUNTY

A. Wisconsin does have significant acreage of organic soils — about 1.7 million acres. Despite that, you are going out of state for peat. There are several reasons for this.

1. Quality: A very high percentage of our organic soils are mucks rather than peats. Muck soil contains little or no plant fiber and have unacceptably high ash, silt and clay contents, low moisture holding capacities and relatively high bulk densities.

2. Variability in Composition: Peat bogs in Wisconsin are noted for having highly variable composition, both laterally and vertically. It is not at all uncommon to encounter layers or lenses of material that are totally unsuitable for golf course use.

3. Bog Size: Many of our bogs with good quality peat are too small to be considered for commercial exploitation. Unlike in places like Michigan, our bogs formed in pot holes resulting from glacial activity rather than along the margins of large ancient lakes.

4. Government Restrictions: Unless a bog is on privately owned land and is hydrologically isolated from nearby lakes or streams, chances of obtaining a permit for commercial exploitation of the bog are virtually zero.

Q. Not long ago I read about some changes in the way the Wisconsin State Soils Lab will report results of soil samples tested there. How will this change the way I interpret my fairway samples I just sent? WAUPACA COUNTY

A. The changes you read about pertain only to agronomic crops. Soil test interpretations and reporting procedures for turfgrass are not being changed at this time. My personal

view is that evaluation of the turfgrass soil testing program is overdue. Clients often have a difficult time understanding the recommendations and we need to look at the recommendations themselves and ask how good they really are.

Q. Within the past six months I have listened to some very convincing information about products containing seaweed extracts and animal manure extract. Do you feel these and similar products have merit or are they merely golf course "snake oils"? WASHINGTON COUNTY

A. Compared to agriculture, the influx of products such as those mentioned into the turfgrass industry has just begun. Researchers from 12 north-central universities annually meet to share information and experiences on what they call "non-conventional soil additives". Their 1986 listing of such additives names 340 products being sold in the region and nearly 10 percent of these contain extracts of fish or animal waste, marine algae, kelp or seaweed.

The universities do not begin to have the resources to test all the nonconventional soil additives being marketed. Approximately 20% have been tested in field experiments. To date, none have been found to consistently live up to their claims.

When you are confronted with new and somewhat unusual products, I suggest you seek the answers to several questions.

1. What are the ingredients? Beware of any products whose composition has to be kept shrouded in secrecy or non-sensical terms in order to "protect the interests of the manufacturer". Several years ago the sales representative of such a product showed up in the department requesting inclusion of the product in field trials. When pressured to reveal the composition of the product, the answer was "Only God knows and He ain't talking." That was the end of the conversation.

2. Are the claims reasonable? If they sound too good to be true, then

most likely they are not. Beware of products such as one claiming to be a "Biocatalytic agent" that "digests and/or emulsifies the molecular shrouds which encapsulate elements locked in an otherwise dormant soil." As a general rule, I am very leery of any product whose mode of action is stimulation or modification of the microbial population of soils. Supplying an energy source will always stimulate microbial activity, but the effect is always short-lived and non-lasting.

For years soil microbiologists have sought without much success to introduce and maintain populations of new and beneficial microbes in soil. Failure to do so relates to a very fundamental ecological principle. The organisms in soil are there because of natural selection processes. Foreign organisms rarely have the competitive ability to survive among the native population of microbes already present.

A significant number of non-conventional products claim to contain algae that fix nitrogen from the atmosphere, excrete substances that improve soil structure, etc. Always keep in mind that algae are photosynthetic plants. They can only thrive in the presence of sunlight at the soil surface and in a continuously moist environment. As we all know, maintaining good quality turf in soil with excess moisture is a losing battle. Hence, the bottom line here is that algae and turfgrass are not ecologically compatible.

3. Are the claims backed by research data from replicated, long-term experiments conducted by an independent research group? Beware of testimonials or research conducted at a single location for a single growing season. Testimonials are generally given in good faith, but are normally based on site-specific, non-quantitative observations made without comparison to a suitable control area. To illustrate the problem with these types of testimonials and with short-term research or non-replicated observations let me cite

two personal experiences for you.

It recently came to my attention that a certain product, on the basis of research conducted at one site for a single season, was claiming some 40% reduction in thatch thickness in 90 days. That same year, I recorded a 42% reduction in thatch thickness in one of my research trials without applying any thatch-reducing product or cultural practice. The next season, again without intentionally doing so, I recorded a 98% increase in thatch thickness!

A lot of products claim to alter turfgrass root growth. This is a very difficult plant parameter to measure because it is so variable over short distances. In root samples we collected from 7 ft. x 10 ft. research plots last Fall, root weights varied as much as three-fold across the four replicates of single treatments. If I had looked at the data from the individual plots, I could have done all of the following:

- a. claimed that a particular treatment **reduced** root growth by 38%;
- b. claimed that this same treatment had **no effect** on root growth;
- c. claimed that this same treatment **increased** root growth by 97%.

When the data was analyzed statistically, it turned out that only the second claim was legitimate.

4. **Can you obtain a small sample at little or no cost to use on a trial basis?** This is a very telling question. A negative answer, whatever the reasons given, strongly suggests that the manufacturer's intent is to reap profits as quickly as possible. It is very unfortunate for the manufacturers of legitimate products, but some outfits have developed a reputation for doing one or both of the following:

- a. continually shifting marketing efforts to new locations;
- b. frequently changing the name of the product.

We have seen both tactics used by manufacturers of nonconventional soil additives. One product has been sold under nine different labels in about the same number of years.

Q. When golf course superintendents talk about using "feed-grade" urea, what are they talking about?
CRAWFORD COUNTY

A. They are talking about urea prills that are smaller in size than those in fertilizer-grade urea and a product that contains 42% rather than

45% N. The difference in percent N reflects the added amount of clay needed to coat the smaller particles to prevent lumping during storage. The only advantage to using "feed-grade" urea is less chance for speckling on closely mown turf.

Q. Dr. Kussow, have you ever seen calcium or magnesium deficiency symptoms on any Wisconsin turfgrasses? Is phosphorus deficiency a common problem on rootzone mixes for greens or tees?
LAFAYETTE COUNTY.

A. No, I have not seen nor heard of calcium or magnesium deficiencies in turfgrass. Furthermore, I do not anticipate any except, perhaps, on very acid (pH less than 5.5) sandy soils or on equally acid sand-based golf greens heavily fertilized with potassium. Research in Wisconsin with agronomic crops that have much higher calcium and magnesium requirements than does turfgrass has shown that even in soils containing as little as 500 lb/A of calcium and 250 lb/A of magnesium, neither nutrient is deficient.

As for phosphorus deficiency in rootzone mixes, this is a very common problem. I recently had a rootzone mix tested for phosphorus and potassium. Both were very low. To correct the problem in this instance, a 50-lb. bag of an 0-30-15 fertilizer blended with every 35 to 40 cubic yards of the mix would have corrected the problem. I keep hoping that some day people will begin to pay attention to the chemical properties of rootzone mixes and not just focus on the physical properties.

Q. It seems all distributors of fertilizer products are encouraging me to buy materials with an added "micronutrient package". Should I be?
GRANT COUNTY.

A. A bona fide micronutrient deficiency has yet to be identified on turfgrass in Wisconsin. No one anywhere in the U.S. has seen Cu, B, Mo, or Cl deficiency on turfgrass. The only deficiency that is fairly common is that of Fe, but it is confined almost entirely to alkaline soils in the semi-arid and arid regions of the country. Reports of Mn and Zn deficiencies have largely been confined to the sandy, low organic soils of Florida.

So why are you being sold a micronutrient package? The reason I hear most often is "cheap insurance". The same reasoning applies to taking a multiple vitamin pill every day even though medical ex-

perts repeatedly tell us it is not necessary. At least in the case of vitamins, excesses are generally excreted in urine. Not so for micronutrients. Repetitive application has the potential for buildup of harmful levels in soil.

The next time you are pressured to purchase a micronutrient package, why don't you do the following? Request documented evidence of micronutrient deficiencies in the state and a description of the conditions under which the deficiencies have occurred.

Q. Our fairways are growing in some of the most miserable clay soils in the state. I would aerify more often — they certainly need it — but we cannot do a decent job of pulverizing the cores. Any suggestions?
MILWAUKEE COUNTY.

A. Yes. Give the cores time to dry until they are hard and hit them with a flail-type mower. If they are hard at the time, they will shatter beautifully. All you have to do then is blow the remaining fluff off the fairway.

TWO ACES!



The Aces of Quit Qui Oc

Quit Qui Oc Golf Club in Elkhart Lake is a favorite of many WGCSA members. The fourth hole, a tricky 125-yard beauty over water, holds a special spot in the hearts of two members. Both Woody Voight and Rod Johnson have carded "Holes-in-One" on the hole. Woody's ace was scored on Sunday afternoon, August 27th, of this year. Rod's was five years ago, and he's still bragging about it. It was the first "Hole-in-One" for both with their respective wives hoping it is their last.