QUESTIONS FROM THE FLOOR

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

We're building a new USGA spec green and wonder if we can use local calcareous sand instead of very expensive silica sand. Will each perform equally well in putting green construction? What will the long term differences be? *(Kewaunee County)*

As you're probably aware, the USGA specs do not advise against the use of calcareous sand. There are two reasons for this. One is the fact that the issue has not be thoroughly researched. I think you'll find this problem receiving the attention of researchers very soon. Secondly, because there is no hard evidence that calcareous sands are a potential problem and many people do not have access to non-calcareous sands, the USGA Green Section has properly chosen not to advise against the use of calcareous sands.

My personal experience, which is very limited, and discussions with superintendents have led me to believe that there can be some hazards associated with the use of calcareous sands in putting green construction. Deficiencies of phosphorus and micronutrients can arise due to high pH. This is not of great concern because these are readily correctable problems. Of far greater concern is the potential for chemical breakdown of carbonates near the green surface, downward migration of the disintegration products, and precipitation at greater depth, most likely at the top of the perched water table. The result can be carbonate cementation of the sand particles to form a slowly permeable layer, water accumulation above the layer and eventual development of blacklayer.

My gut reaction advice is to have the sand tested by a laboratory for the liming value or calcium carbonate equivalence of the sand. If this value is 5 percent or less, I believe the sand is safe to use. I would not use a sand whose calcium carbonate equivalence is above 15 percent. What about the 5 to 15 percent range? That's where you make the call! Research is badly needed to define the calcium carbonate equivalence level where the cementation problem becomes a hazard.

Our golf course is going to rebuild some tees and our plans are to use an 80/20 rootzone mix. What organic amendment do you recommend for the 20%? *(Oneida County)*

I'll have a much better answer to this question in a couple of years. The O. J. Noer Foundation is funding a major research effort on our part to establish performance standards for organic amendments. In the meantime, the recommendation is to use a material that contains at least 85% organic matter and 20 to 50 % fiber. It may take a couple of telephone calls to locate a lab that can perform these analyses for you, but there are several that can do so.

Some fertilizer companies, in response to complaints about particle pickup during putting green mowing, are offering fine grade products. Since reactivity is related to particle size, won't this alter the release characteristics from those of larger sized particles? I've especially noticed this with the organic products. *(Vernon County)*

Theoretically, the smaller the fertilizer particle size, the greater the amount of surface area per unit weight and the faster the nutrient release rate. This is a valid assumption providing the fertilizer particle remains intact and that breakdown is strictly a surface reaction. However, the rate of release of nutrients from fertilizer particles is often dependent on other factors as well. Moisture is key to nutrient release from virtually any type of fertilizer. Temperature is also significant when nutrient release is microbiologically dependent.

My personal experience has been that particle size effects on nutrient release from fertilizer are secondary to temperature and/or moisture influences. Some time ago I compared turfgrass responses to fine and regular grades of Milorganite at three different locations for three years. When turfgrass color ratings and tissue N contents were averaged over locations and/or years, there were no significant differences between responses to the fine and regular grades of Milorganite.

Differences did occasionally show up in specific instances. Periods of two or more weeks of unseasonably cool weather sometimes favored turfgrass response to fine Milorganite over the regular grade. In the long run, particle size effects seemed to be too small to suggest a need to adjust fertilizer use practices to compensate for theoretically faster nutri-

ent release rates from finer grade materials.

A friend of mine is a golf course superintendent in a neighboring state. He had an employee interested in a career in golf turf management and rather than recommend the land grant college in that state or even his alma mater, he suggested the young man enroll in the Turf and Grounds Management program at the UW-Madison. Frankly, I was impressed. Can you give a brief update and sketch of your program? Apparently I haven't been paying enough attention to what's been going on there. *(Vilas County)*

Perhaps the easiest way to gauge the quality of our program is to compare our curriculum with the GCSAA lists of required and recommended courses for a four-year B.S. degree in golf course management. Of the 30 courses on the required list, our students must take 24 of them. We do not require courses in genetics, plant physiology, plant ecology, small engines, golf, or psychology. This does not mean that our students do not take these courses. Many do so as part of their elective credits. We do require three of the courses among the 18 suggested as electives by the GCSAA. These are meteorology, accounting, and communications (oral and written). Overall, I feel that from a course standpoint, our program is second to none.

We do have some areas that need strengthening. For the first time this fall I will be offering a one credit course on turf fertilization. We expect to have comparable mini-courses in turf disease identification and control and in turf insects being taught within the next year or so. Another area of weakness that we hope to correct soon is experience in equipment maintenance and repair. To do this, we'll have to utilize the O.J. Noer Turfgrass Research and Education Facility maintenance shop evenings or Saturdays during the winter months. In this way we overcome the difficulty of attempting to teach "vocational skills" within the university per se.

Once our turf group in the College is fully staffed, we'll also be examining the need and viability of one or more additional turf management courses. The difficulty in developing such courses is in providing assurance that student enrollment will justify use of professorial time for that purpose. We also need to work with some of our colleagues in terms of helping them integrate more turf related subject matter into their courses.

Finally, there's the vital matter of work experience. This is another area in which I feel our program excels. In some programs many graduates can claim but a single season on a golf course. It is rare and the result of late entry into our program that our graduates have but a single season of work experience. Many graduates have 3,4 or even 5 seasons behind them when they enter the job market. Thanks to the incredible cooperation of Madison area superintendents, we are also capable of doing something that often is not done elsewhere. By working part-time during the school year our students are able to experience the operations involved in the spring start-up and fall shut-down of a golf course. These are experiences that cannot be acquired through summer work.

As you can see, I'm very proud of our program. We are continually seeking ways to strengthen what already is one of the finest in the country.

How is the Noer Facility working out for you? Is it functioning as expected? *(Jackson County)*

Permit me, if you will, to answer this question in full view of the recent history of the Facility. Let's start back in August of 1991. This was when final grading was completed and the field research area was seeded to a blend of Kentucky bluegrasses. No irrigation other than sprinklers and rain trains were available and rainfall was scarce.

Understandably, we did not achieve a good stand of turfgrass in all areas. Then, this past spring when the normal practice would have been to supply ample N to promote rapid grow-in, we had cool, dry weather and the irrigation system did not get installed and become fully operational until mid-June. It is against this backdrop of unavoidable circumstances that I say that the Noer Facility is meeting my field research needs as well as can be expected. We couldn't initiate some research as early as we may have liked and its been necessary to do some patch work in the plot areas. Thanks to the excellent co-operation from Tom Salaiz, we've been able to get some studies underway.

Is the Noer Facility fully functional? No, but we didn't expect this to be the case. Tom and Marsh Finner, Ag Experiment Station Director, have seen to it that our field research needs are being met. As expected, we need another $100,000 or so in lab and classroom furniture, basic lab equipment, plant and soil driers and grinders, etc. before the Noer Facility can fulfill all of the functions for which it was designed. It will take time, but we all have faith that this will happen.

Any thoughts or opinions of the new water-absorbing polymers that have been getting a lot of ink in industry publications of late? *(Juneau County)*

For a thorough description of the various types of polymers available and their potential uses, I suggest you read the article by Jeff Nus that starts on page 26 of the June 1992 issue of *Golf Course Management* magazine. As Jeff points out in the article, the polymers have the potential for reducing irrigation requirements of sandy soils, soil compaction, and soil aeration while increasing water infiltration rates and turf resiliency. As I see it, the polymers have two limitations. One is lack of permanency. Depending on the type of polymer used, life expectancy ranges from as little as one year to five years or so. The second and major limitation is cost. Take for example, the function of reducing irrigation frequency. Depending on the rate of polymer used and soil texture, you may be able to double the time between irrigations. Does the savings that results when computed over a 5-year period more than offset the cost of the polymer? If not, then use of the polymer is not cost effective. On the other hand, if you're in a situation where a reduction in water use is mandatory, then there may be no choice but to experiment with a polymer and ignore the cost factor. I have great difficulty in believing that use of the polymers for purposes other than increased moisture retention is an economically viable management practice.

Twenty-five years ago, when I was first working in golf course management, lots of superintendents were using calcined clay as a soil amendment as well as a backfill material for aerified greens when cores were removed. I haven't seen or heard of its use for probably almost twenty years. What caused its fall from favor? Or is it still a viable material to use as a rootzone amendment? *(St. Croix County)*

Once again I refer you to an article in the June 1992 issue of *Golf Course Management* magazine. The article

on page 42 deals with calcined clay product use in turf. The article only briefly alludes to what lead to the downfall of calcined clays as a rootzone amendment. The products that were available 25 years ago varied widely in clay composition, the temperature achieved in the calcining process and had fairly large particle sizes. All of these factors influence the physical stability of the calcined clays. Some were reasonably stable while others disintegrated rather quickly into small clay aggregates and even individual clay particles that worked beautifully at clogging up rootzone pores. All it took was a few horror stories about waterlogged, quagmire putting greens to effectively stifle interest in calcined clays as rootzone amendments.

Depending on the outcome of research now being conducted at the University of Illinois, calcined clay may come back into the picture as a rootzone amendment. The particle size range wherein calcined clays have good physical stability has already been determined. What remains is to determine the best or acceptable types of clays that can be used to produce stable calcined clay and appropriate sand-calcined clay ratios for rootzone mixes.

I see the College of Ag and Life Sciences has a new dean—a man from Rutgers. Will he have any impact on the service we receive from the College in research, instruction or extension? Best guess, please. *(Calumet County)*

I don't foresee any major changes in services being provided to the turfgrass industry. I would not say this if it were not for the fact that replacements for Bob Newman and Gayle Worf have already been hired. I suspect that open faculty positions will be subjected to intense scrutiny with an eye to changing program directions with new hires. Within colleges and universities this is one of the commonly used tools to effect change and changes will undoubtedly be forthcoming. Last year all of the colleges of ag and natural resources in the state underwent a mandated "self-study". We carefully documented our resources and instruction, research and extension programs and identified what we see as our strengths and weaknesses and needs. An outside team of consultants evaluated this mass of information and submitted their assessment of each college and department and made numerous recommendations for change. These recommendations are currently under review and will eventually be shared with the Board of Regents. Our new dean will have to address these recommendations after they have filtered back down from the UW Central Administration and the Board of Regents.

In these economically stressed times change is inevitable. For reasons already cited, the turfgrass industry, as a clientele group, need not fear reductions in the services it receives from the college. In fact, with our turf group getting back up to full strength there will undoubtedly be a surge in turfgrass research and quite possibly in extension and instruction as well. However, in the long run it behooves the members of the industry to seek out and respond to every opportunity to let the college administration know about its scope, economic importance in the state and what is needed to ensure its growth and well-being. The old adage about the squeaky wheel getting the grease should never be forgotten!

Have you met Dr. Frank Rossi yet? How do you feel he's going to work out in the turfgrass program in Wisconsin? *(Langlade County)*

Yes, I've met Dr. Rossi as well as Dr. Julie Meyer, Gayle Worf's replacement. I participated in the interview process for both of them. Both are topnotch individuals that will bring a great deal to our turfgrass program. They have excellent training and experience for their respective positions. Unlike Dr. Rossi, Dr. Meyer does not have a turfgrass background, but already we've been communicating on some potential research areas.

I expect Dr. Rossi to come bouncing into my office any day now. He's in the relocation process and officially reports for duty on August 10, I said bouncing into my office because everyone is going to find Dr. Rossi a man with endless enthusiasm and energy. My only concern is that old timers like myself and Chuck Koval will have a hard time keeping up with Frank.

Other than the unusually dry season we've had, most golf courses have been in pretty good shape this year. What has been the most frequent problem for courses? What are you questioned about most frequently? *(Dane County)*

The most common problem—winter kill of *Poa annua*—has solved itself. Because the season started out very cool as well as dry, germination of *Poa* was delayed. Winter killed areas were much slower than usual to fill back in and this caused a lot of concern. Return of warmer weather in late May and early June halted the telephone calls about winter kill.

Since then, calls have primarily related to putting green construction. If I send you some sand and or peat, can you tell me if they're any good? Can I replace the peat with a synthetic polymer? Normally I don't get these types of questions until much later in the season. It seems the season is progressing very well and people have the time to start or at least think about construction projects earlier than usual.