Questions From The Floor

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Q: For fairly obvious reasons I'm going to begin to incorporate ammonium sulfate into my fertility program this season. I'll admit that I'm a little nervous about it. Do you have any advice or suggestions for me, Dr. Kussow? DANE COUNTY

A: First, let us state the fairly obvious reason for applying ammonium sulfate. If we draw a line on a state map from about Marinette to Baraboo and then to LaCrosse, the area below the "V" that is drawn is a region of calcium and magnesium rich groundwater. Irrigation with this water raises soil pH. Given a few years, soil pH values rise to 7.6 or more. This high pH favors growth of the take-all patch organism. In fact, unless soil pH is reduced to about 6.0, chemical control of the pathogen is very difficult. Ammonium sulfate has the highest residual acidic value of any fertilizer used on turf and, therefore, is an effective soil acidifying agent. This is the reason for interest in incorporating ammonium sulfate into turf fertility programs.

Three things have to be kept in mind when using ammonium sulfate. One is the fact that it is a soluble N carrier that, unlike even urea, does not require any type of chemical reaction to become available for uptake by turfgrass. Turfgrass response is immediate and continues only until much of the ammonium sulfate N is used up. Frequent application at low rates is essential to avoid large surges in turfgrass growth and to maintain satisfactory color. Secondly, ammonium sulfate is second only to ammonium nitrate in its burn potential and has a salt index nearly four times greater than that of methylene ureas and sulfur-coated urea. Irrigation shortly after application of ammonium sulfate is an essential part of using the fertilizer on high maintenance turf. Finally, there is the issue of how often and at what rates ammonium sulfate need be used to reduce or control soil pH.

I cannot give you a precise answer to this question. It depends on the hardness of your irrigation water, how much irrigation is required, the existing soil pH, and the texture and organic matter content of the soil. The more calcium and magnesium that goes on in the irrigation water, the finer the soil texture and the higher its organic matter content, the more acidity needed to reduce or control soil pH. Research has shown that the amount of acidity generated through application of ammonium sulfate is strictly a function of how much of the fertilizer you apply annually. Frequency and time of application of ammonium sulfate have no bearing on its effectiveness in reducing soil pH.

Q: I very much enjoyed Mike Carlson's report at Expo '94 on the research he has been doing at the Noer Facility and in the laboratory. I'll admit I don't know him; could you tell a little about him personally, his research, when he'll be done, and how he's funded? BROWN COUNTY

A: Mike is a 1985 graduate from Penn State's 4-year Turf Management Program. After his junior year, he did his internship at the Medina Country Club. His first position after graduation was as Assistant Superintendent at the Sweetwater Country Club in Houston. In October of 1987 he became the Assistant at the Ventana Canyon Country Club in Tucson. His next move was to La Crosse, where he became the Superintendent at the Maple Grove Country Club in January, 1989. Three years later he came to Madison to begin working toward a Master's Degree under my direction. His return to school was prompted by several things. Most important was the fact that Mike's experiences had led him to believe that more in-depth formal education in the plant and soil sciences would enhance his chances of someday realizing his goal of becoming the Superintendent at a premier golf course.

Mike was the ideal person for the research project to which he was assigned. The goal of the project is to determine the properties one needs to consider when selecting an organic amendment for blending into the rootzone mix of USGA putting greens. This project, which is being generously funded by the O.J. Noer Turfgrass Foundation, required eventual construction and maintenance of a USGA specification putting green containing 10 different rootzone mixes. We devoted many long weekends to site preparation, installation of the drainage and irrigation systems, blending the rootzone mixes, and placing the mixes in forty 8' by 8' cells. During all of the 1993 season Mike maintained and monitored the grow-in of the green. In the midst of this, he performed many lab analyses and conducted a greenhouse trial with simulated putting greens.

Mike has completed all his coursework, has conducted the requisite literature review and has all his laboratory, greenhouse and field data statistically analyzed. The next and final step is to write his M.S. degree thesis. For obvious reasons, we'd like to have this done before he assumes another superintendent position. But if a good opportunity arises, he's in a position where he can leave and work on the thesis as time permits.

Mike brought to the project a wealth of practical knowledge and experience, enthusiasm, a penchant for a lot of hard work, and unsurpassed devotion to the golf turf management profession and to the game itself. He'll leave with added knowledge that allows him to peruse the most technical of literature, to critically evaluate new information for its practical value, to communicate more effectively at all levels of the profession, and to enhance even more his superb problem solving capabilities.

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Q: Give us your reaction to Bob Erdahl's writing about aerification in the last issue of The Grass Roots, please. LACROSSE COUNTY

A: As usual, Bob has done a fine job, first in assembling the survey and then in presenting the results. He did not however, ask the question "Why do you aerify"? I gather from reading the article that once in awhile the question was answered anyway. It seems the main reasons are to ensure quality playing surfaces on *Poa* infested putting greens and to control fairway thatch that seemingly is worsened by going to light weight mowing. Reading between the lines, I perceived that winterkill and the reaction invoked, that of overseeding, is another common reason for aerifying. These are all valid reasons for aerifying.

The article I wrote was perceived by many as an anti-aerification message. That was not my intent. What I attempted to do was two things; call to your attention to what recent research has indicated to be the virtues and limitations of aerification as a cultural practice and to get superintendents to question why they aerify. My message was to aerify when you have a defensible reason to do so and have investigated your particular problems and are reasonably sure aerification is the answer. I stand by that message.

Q: I'm confused by the shakeup in the College of Agriculture I've read about in a number of places, including The Grass Roots. Will it affect any of the research, teaching and extension activities in the turf program at the UW? OZAUKEE COUNTY

A: The shakeup you refer to is what is deemed necessary to overcome a $3 million plus budget deficit in the College. As long as our turf group stays intact, there should be no reductions in our research, teaching and extension efforts. Should one of us leave for any reason, the position would certainly not be filled for the next three years. After three years, the position might be filled, but only if the College Administration became convinced that the position has high priority in the College.

Q: A few years ago we briefly thought about composting plant debris from our golf course — leaves, grass clippings and the like. It didn't get past the talking stage, however; the benefits just didn't match up with the costs. Now, the clubhouse manager wants to compost wastes and leftovers from his restaurant operation. He asked about the opportunity to do that along with compostable material from our golf course operation. His disposal costs are high and he estimates 2/3 of his wastes are compostable. Can coffee grounds and table leftovers be composted with bentgrass clippings and oak leaves? What do you think about this cooperative effort? MILWAUKEE COUNTY

A: Wastes from the restaurant and the golf course can be composted together. There are, however, two things that have to be kept in mind. One is that the restaurant wastes **must not** contain any meat scraps or animal fats. When placed in the urban compost pile, these materials do a couple of naughty things; they serve as breeding sites for flies and attract some neat vermin such as skunks, rats, mice and raccoons. Because you'd be using bentgrass clippings, you have to be prepared to daily blend and add to the compost pile equal volumes of dry leaves and fresh plant material. This so- called cooperative venture would have to be very cooperative. There'd have to be a sworn statement from the restaurant as to the composition of their wastes

and, in all fairness, the clubhouse should help with composting costs — purchase of a shredder/mixer, preparation of a DNR-approved composting site, extra labor, etc. I'd give this venture some very careful thought and probably pay someone to come in and assess the cost and feasibility before making any commitments.

Q: Here we go again: I'm rebuilding some greens to USGA Green Section specs. What do you recommend for the 20% in the 80/20 rootzone mix?

A: In answering this question, I'll make the assumption that you're not going to send sand and organic amendment samples to a lab for testing. In making this assumption, I'm eliminating composted materials from consideration, leaving us with only inorganic materials and peat as choices. We've used one of the inorganic products in our research and cannot recommend it as a replacement for the organic amendment. Thus, I'd shy away from the inorganics until we see the results of some long term research with them. This leaves peat as the material of choice. The USGA specs cite only one criteria for peat selection; it should contain 85% or more organic material. This is a safe and reasonable recommendation. However, Mike Carlson's research indicates that what is really important is the moisture holding capacity of the rootzone mix. This depends as much on the type of sand used as the organic amendment. Sand that shades to the finer side of the USGA specs will hold more water and peats that contain 50 to 85% organic matter seem to perform as well as those that are more than 85% organic. This means that many of our local peats can be used in rootzone mixes. They must, however, be peat and not muck. Peat contains readily identifiable plant fibers. Muck does not.

We have observed that uniformity of bentgrass emergence is key to the quality of putting greens for at least a year after seeding. To achieve uniform emergence, the rootzone mix must have good moisture retention capacity and the moisture retained uniformly throughout the top inch. To meet the latter requirement, the peat need be reduced to a particle size of 2mm or less.

Q: I've been using fertilizers with the trace or micro element package added. Am I doing any good, or am I wasting my money? Any risk of toxicity problems? RICHLAND COUNTY

A: At least up until now, we have not seen a confirmed micronutrient deficiency on turfgrass in Wisconsin. If we do, it's going to take more than the amounts of micronutrients in a typical package to correct the problem. Some of my colleagues have expressed concern that repeated use of fertilizers that contain unneeded micronutrients may lead to toxicities. I'm not aware of any instance where this has happened. If it does, it will most likely be on acid soils.

One of the seniors in the Turf and Grounds Management Program is conducting a study in the greenhouse. He'll be reporting the results of this study in a later issue of The Grass Roots. Suffice it to say at this time that he'll be presenting evidence that one time when micronutrient applications are a must is at the time of bentgrass establishment on 80/20 rootzone mixes.

So why do so many fertilizers contain micronutrients and so many users deliberately purchase fertilizers because of the presence of micronutrients? I'm not sure of the reason or reasons, but suspect its an outgrowth of an earlier era when the attitude was " It doesn't cost much and its good insurance". This is the type of attitude that leads to accusations that the turf industry is environmentally irresponsible.

Q: There are rumors that some units of government in Wisconsin want to ban the use of phosphate fertilizers or phosphorus containing fertilizers on turf. Several questions: 1. Is there evidence to support claims that phosphate fertilizers are contaminating surface waters? 2. If passed, what are some potential problems in turf establishment and nutrition? WAUKESHA COUNTY

A: So far, the banning of phosphate application on turf has not gone beyond home lawns in individual communities. These bans range from total to a partial ban wherein application is permitted only if soil tests indicate a need for phosphate. Madison is considering this type of partial ban and applying it only to commercial applicators, not homeowners.

To say that grassed areas do not contribute phosphate to runoff waters would be totally irresponsible. But what's important to note is how much P is involved and where it comes from. Numerous studies conducted by turf researchers have led to the generalization that P in runoff water from cropland averages 10 times more than from properly maintained turf. Thus, one can reasonably say that until the watershed of a lake contains 10 times more area in turf than cropland, banning P fertilization will have no detectable effect on the amount of P entering the lake each year. Also at issue here is the source of P in runoff water from turf. My own research, while still limited time-wise, indicates that between September 15, 1993, and this past March 7, of the total amount phosphate detected in the 1.12 inches of runoff collected, 78% of the P was contained in runoff from snow melt in February and March. Is this fertilizer P? Chances are next to nil that this is fertilizer P. Rather it is P leached from the dead tissue from dormant grass. Recent research has shown that nearly 30% of the P in frozen turfgrass tissue is leachable. These observations lend credence to what some people have been saying for some time now; the bulk of P in runoff water from residential areas is in early spring, during snowmelt, and comes from decaying leaves and other types of dead vegetation in the area. If what science indicates is true, banning phosphate use on home lawns will have little to no effect on the amounts of phosphorus annually entering our lakes and streams.

In communities where phosphate use on lawns is banned unless a need is indicated by soil test, special actions have been necessary to ensure homeowners access to phosphate-free fertilizers. All natural organic fertilizers contain phosphate, as does virtually every synthetic fertilizer available to home owners. What communities have done is go to local fertilizer distributors and have them blend a zero P fertilizer for local use by homeowners. Personal experiences with these locally prepared fertilizers have generally not been favorable. They're typically loaded with soluble N (urea), contain little or no SRN, use KCl rather than K-sulfate as the potassium carrier, have widely ranging particle sizes that preclude uniform application, and tend to set up like concrete if stored over winter. I'm ready to predict that in the long run, these low quality fertilizers are going to cause more harm then good on home lawns.

Banning all use of phosphate on home lawns is a sure route to eventual degradation of those lawns and eventual increases in the amount of runoff and sediment losses that occur. Except on soil with very high phosphate levels, the nutrient is a must for turf establishment. Without P, the grass stand is thin to begin with and only gets worse over time. The same holds true when soil P levels in established turf drop below the optimum and are not restored.