



## 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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