Is Your Fertilizer Working?

Michigan; A Patch of Green
GCSA Newsletter

Are your fertilizers working? Maybe you should read the following:

Nitrogen transformations in soil as affected by the fungicides benomyl, dyrene, and maneb. A. R. Mazur and T. D. Hughes, University of Illinois, Department of Horticulture. Agronomy Journal Vol. 67 (6) pp. 755-758.

In this study the objective was to determine the effect of benomyl (Tersan 1991), dyrene and maneb (Dithane M-22 and Tersan LSR) upon the conversion of nitrogen in the soil from NH4+ (ammonium) to NO3- (nitrate). Nitrate is the form of nitrogen thought to be most readily utilized by the grass plant. Most slow release fertilizers initially release the nitrogen as NH4+, and it must be converted by *Nitrosomonas* and *Nitrobacter* bacteria to the utilizable NO3- form. Therefore, primary interest was in the effect of the fungicides upon nitrification (conversion of NH4+ to NO3-).

High rates similar to those that might be found over a seasons application of benomyl, dyrene and maneb produced varying effects upon the rate of conversion of NH4+ to NO2- (nitrate) and NO3-. Benomyl applications had relatively little effect upon the rate of nitrification, and 4 weeks after application absolutely no effect was evident. Dyrene inhibited nitrification more than benomyl. Ammonium (NH4+) conversion was significantly reduced by all rates of application of dyrene. At the high rate of dyrene application it took 8 weeks to convert the applied NH4 to (NO2-+ NO3-). Whereas with benomyl and plots receiving no fungicide the comparable rate allowed complete conversion of NH4+ in 2 weeks.

Maneb produced the greatest effect upon nitrification causing conversion of the applied NH4+ to NO3- to not be complete 16 weeks after fungicide application. Maneb completely blocked nitrification.

From a practical standpoint these data might explain intermittent chlorosis noted after heavy applications of maneb to turf. These fungicides may create chlorosis by effectively blocking nitrification and decreasing the supply of NO3- available to the plant. This slight chlorosis is acceptable from a practical standpoint because the fungicides provide very effective disease control.

Much fine research is being conducted on turfgrass throughout the United States in an attempt to increase our general understanding of how cultural, climatic, edaphic and geographic factors influence the turfgrass plant.

Continuous support of turfgrass research is essential to achieving increased understanding of the complex workings of nature.