
ZINC TOXICITY - An Increasing Problem?

Certain heavy metals, such as zinc (Zn) and copper (Cu), are essential nutrients required for turfgrass growth. If either is totally deficient the plant dies. These two heavy metals are micronutrients, which means they are required by the plant in very small amounts. When either zinc or copper are applied to the turfgrass area they tend to remain near the soil surface due to their water insolubility, particularly at a neutral to alkaline soil reaction (pH).

Characteristic toxicity symptoms include a lack of rooting, which gets progressively more severe over several years, and a lack of lateral stem development, both rhizomes and stolons, at higher toxicity levels. In many cases this problem has been associated with high-sand root zones which varied outside the limits of the USGA root zone modification guidelines. This problem has been observed on creeping bentgrass (*Agrostis stolonifera* var. *stolonifera*), bermudagrass (*Cynodon* spp.), and perennial ryegrasses (*Lolium perenne*).

The most common problem has been a zinc (Zn) toxicity, which seems to be accentuated by a high soil iron (Fe) level and sometimes a high soil manganese (Mn) level. The source of the excessive zinc may vary including (a) being present in the sand deposit obtained from a large river where industrial dumping has occurred recently, (b) topdressing with a sand from a manufacturing source in which heavy metals were added during the sand utilization, and (c) post-turf establishment addition in a locally-mixed composition fertilizer usually applied through an irrigation system.

Development of such zinc toxicity problems can be avoided if appropriate chemical tests are conducted at the time each material source is selected. The cost of a test is small, but the importance will be great once high levels of the relatively immobile zinc are in place in the surface root zone. Frequently, the only option is total reconstruction of the root zone. Thus, be forewarned.

PUBLICATIONS AVAILABLE:

Turfgrass Patch Diseases - caused by ectotrophic root-infecting fungi.
APS Press. 161 pages. (1993).

The numerous ectotrophic root infecting fungi described as patch diseases have only become identified and characterized as serious diseases of turfgrasses since 1984. This book contains seven papers by individual groups of authors that provide a historical perspective and subsequent up-to-date evaluations of the science-based information and understanding of the patch diseases attacking diseases. This would be a good book for those seeking detailed scientific information on patch disease problems of turfgrasses.

Contact. APS Press, The American Phytopathological Society, 3340 Pilot Knob Road, St. Paul, Minnesota 55121-2097, USA.

TEXAS TURFGRASS RESEARCH - 1993
CBR 510. Consolidated Progress Reports 5104 to 5146. The Texas Agricultural Experiment Station, Texas A&M University. (1994).

This is an annual research report prepared by the turfgrass researchers of the Texas Agricultural Experiment Station encompassing 42 individual research reports. The reports are presented within five topic areas of I. Growth and Development, II. Turfgrass Cultivars, III. Environment, IV. Pests, and V. Culture. The majority of the research is oriented to warm-season turfgrasses.

Contact. Department of Agricultural Communications, Reed McDonald Building, Texas A&M University, College Station, Texas, 77843, USA.
Phone: 409-485-2876.