



Scanning the Journals

*A review of current
journal articles*

Researchers report the successful suppression of dollar spot in both preventative and curative applications by a biological control agent, the bacteria *Enterobacter cloacae*, in field experiments on putting greens in New York.

Extremely low levels of atrazine in irrigation water can significantly damage creeping bentgrass, especially when applied over a long period of time.

6

Bacterial Agent Suppresses Dollar Spot

In one of the few studies of its kind, Cornell researchers Eric Nelson and Cheryl Craft (Dept. Plant Pathology, College of Agriculture and Life Sciences) report the successful suppression of dollar spot in both preventative and curative applications by a biological control agent, the bacteria *Enterobacter cloacae*, in field experiments on putting greens in New York. While laboratory and greenhouse studies of similar biocontrol agents are not uncommon, investigations under actual field conditions are rare.

The two-year study was conducted on 60 year-old native soil putting greens (alkaline clay-loam, pH 7.2) at the Country Club of Rochester. Greens turf consisted of a mixture of creeping bentgrass and annual bluegrass, with a natural infestation of dollar spot.

In 1988, a one-time-only topdressing with the bacterial agent was applied as a preventive measure, and in a separate experiment a curative application was compared to the fungicide iprodione on highly diseased turf. The preventive application significantly reduced dollar spot as compared to control, and the curative application was as effective as the fungicide.

In 1989 monthly preventive treatments of the bacteria were applied, paired with parallel applications of the fungicide propiconazole. The bacterial agent was as effective as the fungicide, both achieving significant suppression of dollar spot as compared to controls. For some strains of bacteria, significant suppression of disease was observed for up to 2 months after application in both the preventive and curative studies. The bacterial agent was considered more effective as a preventive than a curative. The mechanism by which *E. cloacae* inhibits the fungal pathogen is unknown, but the authors suggest that both an enhanced nitrogen uptake by the plant as well as direct interference with fungal adherence to the host may be responsible. The authors further note that application of suitable bacterial strains could be made during routine topdressing of greens and tees, hence requiring no additional scheduling to achieve the preventive benefit.

(From: E.B. Nelson and C.M. Craft. 1991. Introduction and Establishment of Strains of Enterobacter cloacae in Golf Course Turf for the Biological Control of Dollar Spot. Plant Disease 75(5): 510-514.)

Creeping Bentgrass Ultra-sensitive to Atrazine

Researchers at Kansas State University, Manhattan, have discovered that extremely low levels of atrazine in irrigation water can significantly damage creeping bentgrass, especially when applied over a long period of time. Workers tested mature and seedling 'Penncross' creeping bentgrass in greenhouse pots with daily waterings contaminated by atrazine at levels ranging from 0.01 to 2.56 mg/liter. After 20 days of watering, damage thresholds were established at 0.05 and 0.08 mg/liter for seedling and mature bentgrass, respectively. Compare these numbers to the atrazine concentrations found in some groundwaters in the Midwest: 21.1 - 42.4 mg/liter, as reported in this paper!

The authors point out that warm season turfgrasses (Zoysiagrass, bermudagrass, centipedegrass, St. Augustinegrass) can detoxify atrazine whereas cool season turfgrasses cannot. Therefore, this problem can be especially acute in the north-south transition zone where both types of turfgrass may be grown on the same golf course, irrigated from the same groundwater source, and where atrazine is used for weed control on the warm season turf species. In these situations, sudden declines in the quality of bentgrass greens may be due to atrazine contamination of irrigation water, rather than disease.

(From: J.L. Nus and M.A. Sandburg. 1991. Creeping Bentgrass Damaged by Low Levels of Atrazine in Irrigation Water. HortScience 26(4):392-394.)

Short Cutts

continued from page 3

Continuing Support Appreciated

A special thanks goes out to those who have donated equipment in support of Cornell's Turfgrass Program:

Sponsor:	Equipment Donations:
S. V. Moffet Co., Inc. W. Henrietta, NY	- Jacobsen Greensking IV - Cushman Front Line - Ryan Jr. Sod Cutter
LESCO, Inc. Rocky River, OH	- LESCO 300
Eaton Equip. Corp. Hamburg, NY	- TORO Groundsmaster 224 - TORO Greensmaster 1000