Scanning the Journals

A review of current journal articles

Wear tolerance of creeping bentgrass was improved by the higher rate of N application.

The best choice for the second application of preemergence herbicides is more of whatever worked best the first time.

Although ELISA was useful for detection, verification, and population monitoring of the pathogen, disease outbreaks were not foreseen by ELISA as hoped.

Wear Tolerance of Bluegrass and Bentgrass

The wear tolerance of turfgrass can be influenced by management practices (for example, mowing height). Data in the literature suggest that nitrogen applications improve bentgrass wear tolerance and recovery time, but there are conflicting reports regarding the usefulness of potassium for this purpose. To further document the effects of fertilizers on turfgrass wear tolerance, a four year study was undertaken by two Cornell researchers, Mark Carroll and Marty Petrovic.

The investigators used 2 rates of nitrogen and 4 rates of potassium, applied to creeping bentgrass and Kentucky bluegrass, and a rotating, motor driven pneumatic tire to simulate wear. After 200-300 passes, plots were evaluated visually for injury and cores were taken within and adjacent to the wheel track for biomass determinations. Recovery was evaluated for 8 to 14 days following episodes of wear.

The researchers found that wear tolerance of creeping bentgrass was improved by the higher rate of N application (48kg/ha, four times per year), but recovery from injury was unaffected by treatment differences. Kentucky bluegrass did not respond to treatment differences with regard to either wear tolerance or recovery time. Neither turf species showed any response to increased K levels, a result believed to be related to the relatively low levels of nitrogen used in these tests.

(From: M.J. Carroll and A.M. Petrovic, 1991. Wear Tolerance of Kentucky Bluegrass and Creeping Bentgrass Following Nitrogen and Potassium Application. HortScience 26(7): 851-853.)

Sequential Applications of Preemergence Herbicides

Is it a good idea to follow an application of one preemergence herbicide with another of a different kind? Probably not, say researchers at the University of Purdue, who studied the control of goosegrass and large crabgrass using different preemergent herbicides for an initial and follow-up application.

The control of annual grass weeds in turf with preemergent herbicides usually requires more than a single application for season-long effect. To see if there was a benefit in using a different material for the second application, the investigators applied a primary treatment of pendimethalin, followed six weeks later by a secondary application of benefin, benefin/trifluralin, bensulide, dithiopyr, oxadiazon, prodiamine, and pendimethalin. One treatment of dithiopyr alone at the six week interval was also tested.

The best large crabgrass control occurred in the pendimethalin/pendimethalin, pendimethalin/dithiopyr, and dithiopyr alone treatments. The best goosegrass control was provided by oxadiazon. The workers conclude that the effects of unlike herbicides are not additive, even when related, and the best choice for the second application is more of whatever worked best the first time.

(From: Z.J. Reicher, C.S. Throssell, and J. L. Lefton. 1991. Annual Grass Control in Cool Season Turf with Sequential Applications of Unlike Preemergence Herbicides. Weed Technology 5:387-391.)

Please note that dithiopyr is not registered for use in the state of New York.

ELISA to Monitor Pythium Blight

Pythium blight can strike quickly and with devastating effect during hot, humid weather, killing bentgrass, perennial ryegrass, and annual bluegrass. Developing forcasting aids for disease outbreaks, researchers at Ohio State University investigated the use of enzyme-linked immunosorbent assays (ELISA), utilizing pathogen-specific antibodies to monitor disease populations.

In a three year study, grass samples were collected from the university golf course on a Monday-Wednesday-Friday schedule and checked for the presence of Pythium using standard laboratory procedures in addition to ELISA. Although ELISA was useful for detection, verification, and population monitoring of the pathogen, disease

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Editor-in-Chief: Norman W. Hummel, Jr.
Acting Editor: Joann Gruttadaurio
Masthead Illustration: Benn Nadelman
Illustrations: Patti Witten and Timothy Tryon
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Short Cutts

Potential uses of the facility include pesticide and nutrient leaching studies and water use studies on turf.

AREST Facility

The AREST (Automated Rain Exclusion System for Turfgrass Studies) is located at the Cornell University Turfgrass Field Research Laboratory in Ithaca. The facility allows for relatively controlled studies to be conducted outdoors in a somewhat natural environment. There are three components to the AREST facility: 27 free draining lysimeters, an automated rain-out shelter and a sophisticated system for the collection of data. Potential uses of the facility include pesticide and nutrient leaching studies and water use studies on turf.

Each lysimeter is 12 feet by 12 feet in area and 15 inches deep. Each lysimeter has a separate drainage system and a separate irrigation system. The amount of irrigation applied and the amount of drainage lost can be recorded and subsamples of the drainage water can be collected automatically. The soil moisture potential and soil temperatures can also be measured for each plot.

The rain-out shelter is basically a large roof mounted on rails which can then be moved over or off of the plots. Closing the shelter over the lysimeters can either be done manually or automatically. The automatic closure of the shelter is triggered by an electronic rainfall sensor.

In addition to collecting irrigation and drainage data from each lysimeter, the data acquisition system also records a variety of weather information from an adjacent weather station. Air temperature, surface temperature, rainfall, evaporation, humidity, wind speed and net solar radiation are some of the data which can be collected. The data acquisition system has the ability to scan each of the different data sensors each second.

Currently, research is focussed on the fate of some of the more common pesticides applied to golf courses. The grass growing in the lysimeters is currently Penncross creeping bentgrass which is being maintained at fairway height.

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outbreaks were not foreseen by ELISA as hoped. The researchers conclude that a shorter sampling interval (perhaps several times daily) and/or a more sensitive assay may be necessary to produce useful forecasts of outbreaks of Pythium blight.

(From: W.W. Shane. 1991. Prospects for Early Detection of Pythium Blight Epidemics on Turfgrass by Antibody-Aided Monitoring. Plant Disease 75(9):991-925.)

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Cornell University
Ithaca, NY 14853