Turfgrass Disease Diagnostic Lab – Annual Report

By Jeffrey Gregos, Douglas Maxwell, and Gary Gaard, Department of Plant Pathology, University of Wisconsin-Madison

Background: The Turfgrass Disease Diagnostic Lab (TDDL) at UW-Madison was organized in the spring of 1995 as a separate part of the Plant Pathogen Detection Clinic in the Department of Plant Pathology. The TDDL was created to provide more extensive turfgrass disease diagnosis to the commercial turf industry of the State, to provide an evaluation of management strategies for turfgrass diseases, and to initiate a research program on turfgrass disease diagnosis. Some immediate goals were to provide a rapid turnaround-time, voice contact with professional turfgrass managers, information on the diagnosis procedures, and recommendations for disease management.

Activities for the TDDL for 1998:

1998 Funding Drive

In 1998 around $23,000 dollars were obtained from 85 contracts to help support the TDDL. This funding is used for the daily operations, mailings, supplies, equipment, and about 45% of Jeff Gregos's salary. The required funding for 1999 will be similar to that raised in 1998.

Samples processed: From April to Nov. 23, 1998, 200 turf samples were processed.

Commercial turfgrass samples (paid) = 43
Commercial turfgrass samples (contracts) = 76
Subtotals of commercial samples
Golf Course samples = 94
Sod grower samples = 6
Lawn care samples = 15
Athletic field samples = 4
Homeowner samples = 81

Of the commercial samples, 5 were from out-of-state.

Research

Snow Mold Trials

In the fall of 1997 Snow Mold Control Plots (75 treatments) were established in six locations across the State (Hudson, Superior, Sayner, Land O' Lakes, Stevens Point, and Verona). Data was obtained in the spring and field days were hosted at five of the locations, with about 100 people participating in the field days.

For the fall of 1998 the Snow Mold Research Program was established at 3 sites (Land O' Lakes, Stevens Point, and Verona). Each site has three experiments, chemical control evaluation, snow mold sensitivity, and carrier volume experiments. The chemical control evaluation has 50 entries this year and three different timings. This snow mold management trial is funded by the Northern Great Lakes Golf Course Superintendents Association (NGLGCSA) and several chemical companies.

The Snow Mold Sensitivity Experiment is in the first year of a two-year study. This study is investigating the effectiveness of 14 different chemicals in controlling the snow mold pathogens. This study also has a laboratory experiment, which will be conducted this winter. This study is possible thanks to support from the NGLGCSA and Wisconsin Turfgrass Association (WTA).

The third study is evaluating the importance of carrier volume on the efficacy of fungicides for snow mold control. Three volumes (1 gal/1000ft2, 2 gal/1000ft2, and 4 gal/1000ft2) and 10 treatments are being evaluated. This study will be conducted for two years with financial support from the WTA

Dollar Spot Trials

Three studies were conducted this past year for the evaluation of dollar spot control. One study included 39 chemical treatments applied on a preventative basis. Several of these treatments were reduced-rate mixtures and an ongoing study from the summer of 1997. This study was funded from support from agricultural chemical companies.

The second study was evaluating the role that carrier volume plays on the length of efficacy on the chemical applications. Nine single chemical treatments at three carrier volume rates were evaluated. This is the first of a two-year study that is being funded by the WTA.

The final study is being conducted to evaluate the reduced-rate mixtures on the control of resistant populations of dollar spot. The site chosen is known to contain both DMI and benzamidizole resistant strains of Sclerotinia homoeocarpa, as determined by loss of effectiveness of these class of fungicides. This was the first year of a two-year study that is currently not funded.

Pythium Blight Trial

In 1998 the TDDL became one of two Universities with the capability of providing reliable field data on Pythium blight control. Two gothic arch greenhouses were built at the Noer Facility for this research. Both

greenhouses contain overhead mist systems, and thus, the temperatures and humidity can be maintained even when the outside weather is not favorable for Pythium blight development. The initial investment has already been regained after only one year of operation, and over 1/3 of the trial is sold out for next year. Chemical companies are providing all of the funding for this experiment.

Brown Patch Trial

This past year a 30 treatment trial was conducted at the O. J. Noer Facility. The area for the brown patch trial was also re-establish due to the requirement of additional space for snow mold experiments. Included in this year's trial were the reduced-rate mixtures that have been very effective in controlling dollar spot. Funding was obtained from agricultural chemical companies.

Basal Rot Anthracnose Trial

In the summer of 1997 the TDDL and WTA split the cost of the construction of a 20,000 sq. ft. research green, of which 5,000 sq. ft. was established with plugs from Blackhawk, C. C. This area has a mixed stand of poa/bentgrass (70/30). Early in the summer the *Poa annua* developed symptoms of basal rot anthracnose, at which time a 15 treatment curative control evaluation was initiated. No funding was obtained in this first year, but several chemical companies have shown interest in being involved in this research next year.

Take-all Patch Trial

The trial from 1997 was completed with the rating of fall applied treatments. Additionally, a new area was established this fall and treatments will be evaluated next summer. Agricultural chemical companies are providing funding for this work.

Wisconsin Sod Trial

The summer of 1998 marked the second growing season for this trial. This trial is a long-term study evaluating the effects that establishment method and annual aerifiction have on the development of disease. This year there was data on the development of leaf spot, but no patch diseases have been observed to date. This trial will continue for another three years with support from the WTA.

Molecular Methods for Detection of Turfgrass Pathogens

Continued efforts to develop molecular (DNA)-based methods for characterizing the major turfgrass pathogens. These methods are now being used in the Introductory Plant Pathology class this fall. The sequence data for several turfgrass fungi were submitted to the National Data Base for Genetic Information at the National Institute of Health, Washington, DC. Initially funded by WTA and continued funding from gift support and Maxwell's salary savings.

Grants and Proposals

Interdisciplinary Hatch Grant

The Interdisciplinary Hatch Grant has been prepared by members of the Horticulture, Agronomy, and Plant Pathology Departments. This grant is for the selection and production of turfgrass germplasm for resistance to snow mold. This will be the direction of Mr. Gregos' master program. The funding was approved and the research was initiated in the summer of 1998. Plots have been established at three sites around the state (Verona, Stevens Point, and Land O' Lakes). Additional work will be conducted this winter in growth cambers. The initial funding for this project will go until 2000.

GCSAA National Grant Proposal

A collaborative grant proposal has been submitted to the GCSAA by John Stier, Department of Horticulture and Jeff Gregos to evaluate the persistence of snow mold control chemicals under winter conditions. The funding for this project will start in 1999, if it is approved.

Audubon Sanctuary/Ice Age Trail

Gary Gaard continues his work with the establishment of the O. J. Noer Facility as an Audubon Sanctuary and the section of the Ice Age National Trail that passes through the facility. He has established patches of Care-Free fescues and two new prairies along the trail as part of the wild life enhancement program.

Future Plans

It is proposed that the Wisconsin Turfgrass Association and the UW-Madison continue the partnerships to fund a full-time turfgrass Specialist. This person would have the following responsibilities: diagnosis of the turfgrass diseases (nearly full-time from May to Oct.), provide expanded educational and outreach programs, and assist in applied research. The Plant Pathology Department has made a commitment for the near future and Mr. Jeff Gregos was hired in October 1996 to fill this position. Additional student helpers (partially paid by gift funds) will be hired to assist Mr. Gregos in plot maintenance. Mr. Gary Gaard is hired by the Dept. of Plant Pathology at 40% time for the turfgrass program. A new faculty member will hopefully arrive by May 1999 and Douglas P. Maxwell will return to the Department about February 1999 after nearly 2 years in the Dean's office.