evaluated in the laboratory for their ability to inhibit the growth of the fungi and to inhibit disease expression. The results indicate that the melanin in *G. graminis* var. *graminis, G. incrustans* and *Magnaporthe poae* is DHN melanin. However, inhibition of melanin production does not appear to inhibit their ability to cause disease.

Seventy-five mutant strains of *G. graminis* var. *graminis* have been obtained. Twenty-nine have been evaluated for their ability to cause disease. All strains were still pathogenic; however, their ability to produce the sexual spores of this fungus and a structure called a hyphopodia were severely impaired. The remaining strains must be evaluated before we will know if this will be a viable method for obtaining biological control of patch diseases.

Dr. Monica Elliott

Cornell University

Microbial Basis of Disease Suppression in Composts Applied to Golf Course Turf

The goal of this project is to develop more effective biological control strategies with compost-based organic fertilizers by understanding the microbial ecology of disease-suppressive composts. The specific objectives of this study are to: 1) determine the spectrum of turfgrass pathogens suppressed by compost applications, 2) establish relationships between overall microbial activity, microbial biomass, and disease suppression in composts, 3) identify microorganisms from suppressive composts that are capable of imparting disease-suppressive properties to conducive composts or those rendered conducive by heat treatment, and 4) determine the fate of compost-derived antagonists in golf course putting greens following application of individual antagonists or composts fortified with these antagonists.

The suppressiveness of various composts to turfgrass disease caused by two different *Pythium* species and *Typhula incarnata* has been established. This extends the range of turfgrass pathogens already known to be suppressed by compost applications. In field studies, some composts are as effective as standard fungicides in suppressing *Pythium* root rot and *Typhula* blight on creeping bentgrass putting greens.

Laboratory studies have focussed on *Pythium* incited disease of creeping bentgrass. We have shown that disease suppression in some composts is a result of microbial activity, whereas suppression in other composts is due to non-microbiological factors. In general, immature composts (less than 1 yr old) are less suppressive to *Pythium* than mature composts (greater than 1.5 yr old). Sterilization of some composts eliminates disease-suppressive properties. These results further indicate a microbiological nature to disease suppression in these composts. In examining a number of suppressive and conducive composts, we have shown direct relationships between microbial activity and disease suppression.

In preliminary experiments with a poultry manure compost, populations of fungi and actinomycetes were quite low, whereas populations of bacteria ranged from 4.4 to 7.5 million cells per gram of compost. Current studies are focussing on the qualitative microbiological differences between suppressive and conducive composts, and the interactions of specific microorganisms with turfgrass pathogens. Our goal is to determine the key microorganisms inhabiting composts so that their physiology and ecology might be better understood. This information will be important in predicting whether composts, at particular stages of maturity, will be suppressive under a set of environmental conditions.

Dr. Eric Nelson

Iowa State University

Potential for Physiological Management of Symptom Expression by Turfgrass Infected by Bipolaris sorokiniana

Ethylene has been found to contribute substantially to the loss of chlorophyll in leaves of *Poa pratensis* infected by *Bipolaris sorokiniana* (leaf spot). The physiological basis of the elevated endogenous ethylene levels is unknown, however. This research project was initiated to determine if the endogenous ethylene, or its mode action, could be manipulated to prevent the loss of chlorophyll in infected leaves and thereby prevent yellowing. The ultimate objective is to develop a means of controlling disease symptom expression. Infection would not be prevented, but yellowing would not