Keith M. Howard

Assistant Professor

Education

Courses Taught

Research Interests

Publications

Ph.D Thesis: The Effect of Metalaxyl on Resistance in Populations of Phytophthora megasperma f. sp. glycinea

Education:

B.S Delaware State University Plant SciencesYear

M.S.University of Delaware, Plant Pathology

Ph.D,The Ohio State University, Plant Pathology

Courses Taught:

Plant Sciences 220(Bio\_220 course number)

Plant Sciences Laboratory(department acronym course number)

Research Interests:

Plant Pathology

Parasite-Plant Interaction

Fungal Biochemistry and Development

Microbial Physiology

1. Production of Indole-3-Acetic Acid in Pseudomonas solanacearum. Indole-3-acetic acid (IAA) is an important plant hormone which is produced in this important plant pathogen. We are interested in elucidating the precise biochemical pathway(s) by which IAA is produced and regulated. We ultimately wish to determine the importance of IAA as a virulence factor during pathogenesis. Studies are being conducted using GC-Mass spectrometry to identify potential biochemical intermediates leading to the production of IAA.

2. Nutritional parameters affecting the production of extracellular enzymes in Colletotrichum truncatum.We are evaluating both conidia and mycosclerotia as propagules to be used in the control of the noxious weed, Hemp sesbania (Sesbania exaltata). This endemic fungus, also known as a mycoherbicide, provides a natural alternative to reduction of chemical herbicides used in the environment. We are studying the production and role of exported cutinases produced during the infection process with the goal of optimizing their production. Secondly, we are evaluating mycosclerotia produced by the fungus as an effective soil inoculum to provide more uniform control of the weed.

3. Nutritional basis of sporulation in the biocontrol fungus Alternaria crassa and Alternaria cassiae. The effects of carbon, nitrogen and trace minerals on spore morphology and infectivity will be examined.

4. Oligosaccharide signaling in plants as mediated by Phytophthora and Pythium spp. Cell wall fragments from both plants and fungi can act as signaling agents to activate a number of host defense mechanisms during invasions. Studies will be undertaken to understand the mechanism of gene activation.

Selected Publications:

Howard, K.M., Smart, M.G. and R.J. Bothast. 1993. A Novel Method of Identifying Newly Produced Conidia in Submerged Liquid Culture. Mycologia 85: 127-130.

Smart, M. G., K. M. Howard and R. J. Bothast, 1992. Effect of carbon dioxide on sporulation of Alternaria crassa and Alternaria cassias. Mycopathologia 118: 167-171.

Schisler, D. A., K. M. Howard and R. J. Bothast, 1991. Coinoculation of the weed Sesbania exaltata with Colletotrichum truncatum and epiphytic bacteria to enhance pathogen efficiency. Biological Control 1: 261-268.