1077-92-189 **Patrick Thomas Davis*** (davis1pt@cmich.edu), 2363 Geoffry, Warren, MI 48092, and **Andrew M. Ross** (andrew.ross@emich.edu). *Modeling the Spread of a Ug99-Type Wheat Pathogen in the United States of America.*

Stem rust of wheat (*Puccinia grammis tritici*) is certainly not a new fungal pathogen; however, in 1999 a new variety of the disease (which became known as Ug99) was discovered in eastern Africa. This new strain of wheat rust has become epidemic in this area of the world and has now spread to parts of Asia and the Middle East, resulting in significant crop loss. Moreover, Ug99 has shown an ability to overcome resistance genes bred into wheat cultivars intended to fend off stem rust. In this paper, we explore techniques to model the path of a hypothetical outbreak of a Ug99-variety stem rust in the United States of America and its effect on wheat production through a discrete deterministic model run via computer simulation. The model adapts a standard SEIR model for a single region of wheat and then extends it to consider the interactions between multiple regions, and finally throughout the entire country. The effects of distance and wind patterns are accounted for. We conclude with a discussion of the effectiveness of various proposed prescriptive measures regarding control procedures if the fungus were to reach U.S. soil. (Received August 28, 2011)