1014-92-1428   **Janet Andersen*** (`jandersen@hope.edu`), Department of Mathematics, Hope College, Holland, MI 49422-9000, and **Tom Bultman**, Department of Biology, Hope College, Holland, MI 49422-9000. *Modeling Tri-trophic Interactions.* Preliminary report.

In collaboration with an ecologist, we are modeling the interactions of a tri-tropchic system consisting of Tall Fescue (Festuca arundinacea), fall armyworm (Spodoptera frugiperda), and a parasitoid wasp (Euplectrus comstockii) with a system of three differential equations. The grass may be infected with a fungal endophyte that produces lolines and peramines, chemicals that inhibit the growth of herbivores. We are exploring whether these chemicals also have a detrimental effect on the parasitiod wasp and how that changes the dynamics of our model. We have analyzed the model analytically and have also performed experiments to obtain plausible values for the crucial parameters. (Received September 28, 2005)