

# Optimal Control of Plant Virus Propagation

Mark Jackson

*University of Texas at Arlington*

---

## Abstract

Plants are vital to life. Unfortunately, plants can become infected with a virus. These viruses have a devastating impact on these plants, often times causing irreparable damage that causes the plants to die. In fact, plant viruses account for billions of dollars in crop loss every year. How are the viruses transmitted from one plant to another? Often times they are spread by a insect vector. To combat the virus transmission, there are a couple of solutions: using an insecticide or introducing a predator to feed on the insects. In this talk, a mathematical model of ordinary differential equations describing the interaction between plants, vectors and predators will be presented. Then a model of optimal control used to minimize the cost of introducing a predator and the cost of insecticides will be described and analyzed.

---