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**Christina J Edholm\***, 203 Avery Hall, Lincoln, NE 68588, and **Chris Guiver, Richard Rebarber, Brigitte Tenhumberg, Stephanie Lloyd, Yu Jin, Jim Powell** and **Stuart Townley**. *Management of Diaprepes Root Weevil*. Preliminary report.

Diaprepes Root Weevils are an invasive species having a substantial negative impact on citrus tree growth in regions, such as Florida and California. At the larva stage of the life cycle Diaprepes Root Weevils cause destruction of citrus trees at the root level resulting in destruction of citrus crops. The detrimental economic effect for farmers motivates research into how to minimize the economic loss due to the Diaprepes Root Weevil. For our work, we used optimal control theory to determine levels of pesticide or biological control to apply to the Diaprepes Root Weevil to reduce the economic loss. We minimize a cost functional, which takes into account the cost of applying the control and the damage done by the weevils, determining how much control to apply over time. Our model takes into account the life-span of the nematodes. We have also considered a model which incorporates the spatial spread of the weevil into the problem. (Received September 03, 2015)