Biological Control of Tropical Soda Apple using the beetle *Gratiana boliviana*

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Tropical soda apple (TSA), *Solanum viarum* Dunal (Solanaceae), is a perennial weed from South American which was first reported in Florida in Glades Co. in 1988, and has since spread to several other states including Georgia, North Carolina, Arkansas, Tennessee, Texas and Arizona. TSA invades rangelands, improved pastures and natural areas and an estimated one million acres are infested in Florida. Although cattle do not consume TSA leaf tissue, they readily feed on the fruits, and in doing so, transport seeds to new areas in their digestive systems, which is the primary means of spread. Cattle ranchers lose an estimated $6.5 to 16 million annually due to TSA infestations, and in 1995, TSA was added to the list of Federal Noxious Plants. In addition to negative effects to the cattle industry, TSA serves as a reservoir for several viruses and insect pests of cultivated crops.

Due to the importance of TSA as an invasive weed, a search for classical biological control agents in South America was initiated in 1994 by the University of Florida. One agent identified was *Gratiana boliviana*, a small, green, leaf feeding beetle. Both larvae and adults of *G. boliviana* feed on TSA leaves. In Florida, the beetles are active from about April to November, but enter a resting stage as adults during the winter months. The beetles require about 30 days to develop from egg to adult, and the adults live about 120 days. Females lay an average of around 130 eggs during their lifetime, allowing for rapid population build up during the summer months. Extensive host range studies revealed that *G. boliviana* would only oviposit and feed on TSA, and therefore a release permit was approved by state and federal authorities in 2003. The first release was made in May, 2003 in Polk County, Florida, and since then the beetle has been released at more than 250 sites in Florida, Georgia, Alabama and Texas. Establishment has been confirmed at several sites, and as far north as central Alabama. The impact of *G. boliviana* on TSA populations is currently being evaluated. *G. boliviana* does not result in rapid control of TSA, but densities of the weed decrease dramatically 2-4 years after initial release.