Biological Control of *Solanum viarum* (Solanaceae) in the USA: Current Status and Perspectives

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Tropical Soda Apple, *Solanum viarum* (Family: Solanaceae)

- Native to South America (Brazil, Argentina, Paraguay)
- First found in Florida, USA in 1988
- 0.4 million Hectares in 11 states
States infested (green) with *Solanum viarum*
Gratiana boliviana

- Adult
- Egg
- Larva
- Pupa
Leaf-beetle field releases
In Florida, May 2003
Florida counties where beetles have been released (green)
Polk County Field Cage 2003

May 14, 2003
Before Beetles Released

August 21, 2003
After Beetles Released
Okeechobee County

August 11, 2004
Beetles Released

October 26, 2004
After Beetles Released
Okeechobee County

June 02, 2005
Beetles Released

July 7, 2005
After Beetles Released

August 23, 2007
After Beetles Released
Polk County

May 2003

June 2007
August 15, 2005
Before Beetles Released

August 14, 2007
After Beetles Released

Sumter County
Okeechobee County

May 18, 2006
Beetles Released

August 23, 2007
After Beetles Released
Post Release Evaluations in Florida

-Monitoring

-Mark plants and quadrants at each location

-Changes in the target weed and Biocontrol agent recorded
Mean defoliation (%) of 20 TSA and total number of beetles in Polk County, FL 2003-05

TSA Defoliation (%) vs. Number of Beetles

- Red line: TSA Defoliation (%)
- Green line: Number of Beetles
Additional Biocontrol Agents

Gratiana graminea

Metriona elatior

Platyphora sp.

Anthonomus tenebrosus

Metriona elatior

Platyphora sp.
Open Field Experiment in Brazil with *Metriona elatior* (Family: Chrysomelidae)

276 adult beetles released

Evaluations were made weekly

4 Replications

TSA, eggplant, potato, tomato
Metriona elatior egg masses (multiple choice test) in Brazil

Egg Masses

10-Dec-03  13-Dec-03  26-Dec-03  5-Jan-04  12-Jan-04  16-Jan-04  26-Jan-04  3-Feb-04  Total

TSA
Potato
Eggplant
Tomato

349

0  50  100  150  200  250  300  350
Metriona elatior larvae (multiple choice test) in Brazil

Larvae:
- 10-Dec-03: 173
- 19-Dec-03: 137
- 26-Dec-03: 161
- 5-Jan-04: 73
- 12-Jan-04: 161
- 16-Jan-04: 229
- 26-Jan-04: 217
- 3-Feb-04: 17
- Total: 1681

Types:
- TSA
- Potato
- Eggplant
- Tomato
Brazilian Collaborators

University of Blumenau

University of San Pablo

University of Irati

University of Curitiba
Plans For 2008

• Increase Beetle Production
• Additional Field Releases
• Continue Post-Release Evaluations
• Conclude Field-Tests in Brazil with an additional Agent (*Platyphora* sp.)