

Insect herbivory on young and juvenile stages of *Solanum* spp. plants



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Introduction

The early stages in a plant's life cycle are usually **the most critical**, being subject to disease, predation, and parasitism. What happens during **early performance** will have large impacts later, especially in agricultural settings.

- The genus *Solanum* has both wild and crop species that host **enemies** on their leaves and in their roots
- Better understand how the biotic factors of herbivory on *Solanum* affect its **survival and development**

If wild species of *Solanum* can serve as good hosts for their enemies, might they keep enemies away from crops?

Herbivory was distributed unevenly across individuals



“Stage 1” individuals from day one of beetle herbivory to day three

“Stage 4” individuals from day one of beetle herbivory to day three



Results

An outbreak of spider mites in the lab reduced time availability for measurements and analysis, so these findings are still preliminary.

Individuals from all 3 species died, but not every stage had the same **mortality rate**:

Tomato: Stages 1 and 5 all survived
Eggplant: Stages 1, 4, 5 all survived
Thai eggplant: Only stage 3 all survived

Variance among survivors showed some individuals **recovering better than others**.

Conclusion

Further testing (of belowground enemy effects) and complete analysis will follow these initial findings to give us a fuller understanding of biotic effects on the early stages of plant growth and development.

- **Early stages are affected differently** by herbivory attacks. Some recover better than others.
- Future experiments can help determine a solution to preventing damage done by agricultural pests to crops.

Methods

Tomato (*S. lycopersicum*) and **eggplant** (*S. melongena* and *S. melongena-thai*) individuals were divided into 4-6 stages depending on their growth, number of leaves, and complexity.

Then, **potato beetles** (*Leptinotarsa decemlineata*) were placed on the leaves and left there until at least 30% - 50% of biomass had been **consumed**. Individuals were then uprooted, washed, and bagged for later measurement and analysis.



Plants were germinated in the same containers, then transplanted into individual pots to undergo experimental conditions

Potato beetles were collected from local farms and their population sustained in the lab



References

- 1- Mundim, F. M., Alborn, H. T., Vieira-Neto, E. H. M. & Bruna, E. M. A whole-plant perspective reveals unexpected impacts of above-and belowground herbivores on plant growth and defense
- 2- Edmonds, J. M. & Chweya, J. A. *Black Nightshades: Solanum Nigrum L. and Related Species*.