

# PORTABLE INSECTARY DESIGN FOR USE IN FLORIDA'S CLIMATE

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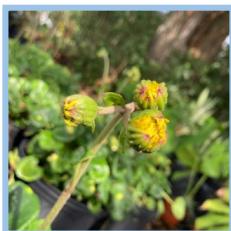


## INTRODUCTION

Insectaries provide many benefits for nurseries, growers, and backyard gardeners. The goal of insectary installation is to attract different types of beneficial insects: pollinators and pest predators. While research supports the use of large insectaries, small-scale growers or home gardeners often need a compact and portable design. The goal is to use compactable plants that attract and support predatory insects and pollinators.

Within the United States, Florida differentiates itself from other states due to its unique microclimate. The sub-tropical climate provides opportunities for year-round planting, and as such, attracts pests year-round.

The Rockledge Garden's greenhouse was surveyed for pest problems through weekly visits. This allowed me a first-hand look into the roles of specific arthropod species on the property. Through observation, live capture, and discussions with management, a list was compiled of insects affecting fall crop yield.



Aphids on one of the many plants within the greenhouse.

## OBSERVATIONS

Pest invertebrate observed on plant crops include various grasshoppers, true bugs, aphids, thrips, and mealybugs. Multiple species of syrphid flies, native and exotic bees, and other insects were observed beyond the greenhouse towards the back of the property. Another goal of this project is to attract these beneficials already located nearby.

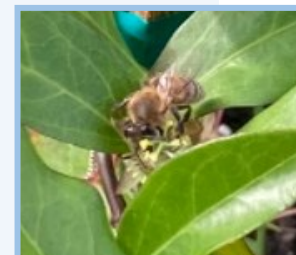
Further identification is needed to determine whether specialist predators are located in this area.

## METHODS

The identification of particular plant structures was necessary in determining whether a plant species was favorable to Order Diptera [flies]. Based on nectar accessibility research, a correlation was observed between flower depth and fly visitation. The study highlighted the unprotected stylopodium in members of the family Apiaceae (van Rijn and Wäckers). Dill and cilantro, part of this family, were chosen due to these factors. Year round growth and continuous reseeding were other factors in dictating whether to use these plants in the insectary.

Possible candidates were also checked for extrafloral nectaries [EFN]. Plants with additional nectar-producing structures outside of the flowering body provide supplemental food sources. It has been hypothesized that EFN aid in a plant's defense by attracting both beneficial and pest insects (Mizell).

Red salvia and corkystem passionflower include EFN but were also chosen due to their status as Florida natives. A variety of native wildflowers are more likely to bring in a variety of native insects.



A large presence of beneficial insects was located in the area above, most likely due to plants with EFN and other nectar/pollen sources nearby.

## DISCUSSION

Several of the specialist predators researched have not been found to be located in Florida. According to USDA research, there are a small number of tachinid, flesh flies and robber flies that specifically target grasshoppers in the United States (Hostetter). Most of these, however, are located in the western United States. Bee flies have most likely been observed near species of the Ipomoea genus and of the castor plant on the edge of the property. Further identification is needed.

## FUTURE RESEARCH

The next step involves the implementation and observation of the nectary. I plan to pursue a long-term study of the nectary to document seasonal insects, plants and if a modification of the initial plan is needed.

Further study is necessary in order to identify the insects in recently surveyed areas. Bee mimics were found near wild growing plants with EFN. Capture is required to identify whether any specialist predators or additional beneficial insects are present in the area.

## CITED REFERENCES

- Hostetter, D. L. "Natural Enemies Attacking Grasshopper Nymphs and Adults." *Agricultural Research Service*, United States Department of Agriculture, 30 June 2021, [www.ars.usda.gov/ARSUserFiles/30320505/grasshopper/Extras/PDFs/IPM%20Handbook/I8.pdf](http://www.ars.usda.gov/ARSUserFiles/30320505/grasshopper/Extras/PDFs/IPM%20Handbook/I8.pdf).
- Mizell, Russell F. "Many Plants Have Extrafloral Nectaries Helpful to Beneficials." *EDIS*, vol. 2004, no. 9, Dec. 1969, <https://doi.org/10.32473/edis-in175-2004>.
- van Rijn, Paul C. J., and Felix L. Wäckers. "Nectar Accessibility Determines Fitness, Flower Choice and Abundance of Hoverflies That Provide Natural Pest Control." *Journal of Applied Ecology*, edited by Marc Cadotte, vol. 53, no. 3,