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A Division of The Davey Tree Expert Company

Black Olive Staining Management City of Coral Gables

***Presented By: Manny Nassar
The Davey Institute***



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OBJECTIVES

- **Provide a visual inspection for hard surface staining from Black Olive trees.**
- **Review a sample size area to represent completed work as a whole.**
- **Present rating criteria of staining based on severity.**
- **Examine results from rating to determine success of treatment.**

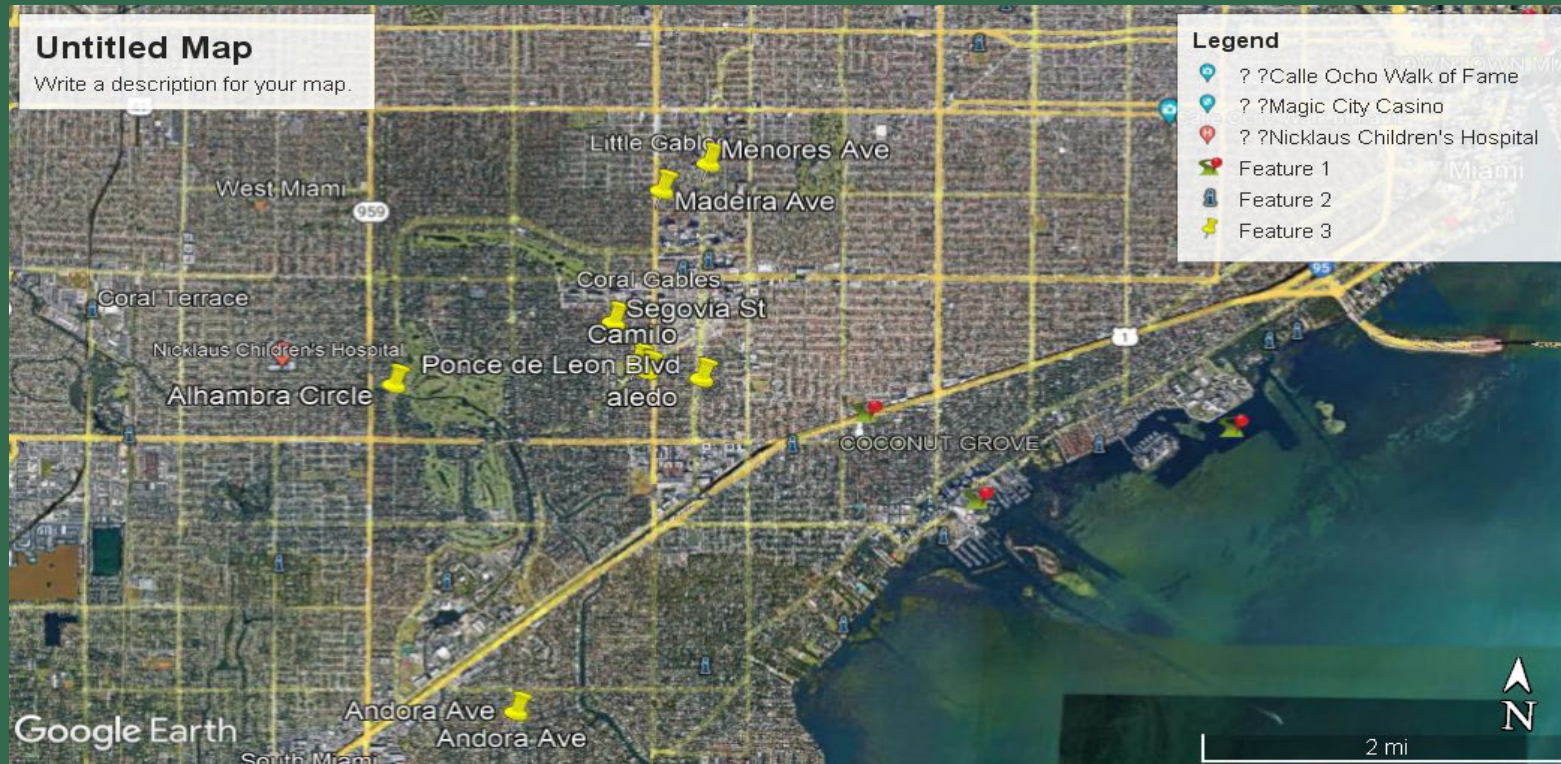
INTRODUCTION

- **The Black Olive tree, *Bucida buceras* is a prevalent shade tree found in residential landscapes and along municipal streets in southern Florida.**



INTRODUCTION

- **Coral Gables is home to more than 9,600 of these trees, which comprise up to 25% of the urban forest.**



BLACK OLIVE PESTS

- **There are two arthropod pests which primarily attack this species.**
 - **Bucida caterpillar, *Garella (Characoma) nilotica***
 - **An eriophyid mite *Eriophyes buceras***

BUCIDA CATERPILLAR

- **The larvae feed on leaves and flowers**
- **Also known as Bungee caterpillar due to their habit of dispersing on silken threads.**
- **At least two generations per season**



Image courtesy of en.wikipedia.org



Image courtesy of entnemdept.ufl.edu

ERIOPHYID MITE

- **Microscopic mites that often go undetected to the naked eye.**
- **Unlike most adult mites that have four pairs of legs, this mite only has two pairs.**
- **Life cycle development goes through four states; egg, first nymph, second nymph, and adult.**



Image courtesy of extension.umd.edu

BUCIDA CATERPILLAR

- **Can sporadically defoliate Black Olive trees, especially the smaller leafed cultivar 'Shady Lady'.**
- **Caterpillar feeding produces frass that causes rust-colored staining of sidewalks, streets, and objects under canopy.**
- **They also create a nuisance by swinging down on silken threads.**



ERIOPHYTES BUCERAS

- **Feeding by mites results in slim enlargements of the fruiting structure (flower ovary).**
- **These enlargements are 5-8 inches long galls that resemble green beans.**
- **When the galls become moist, they release an oily, rust-colored staining substance.**



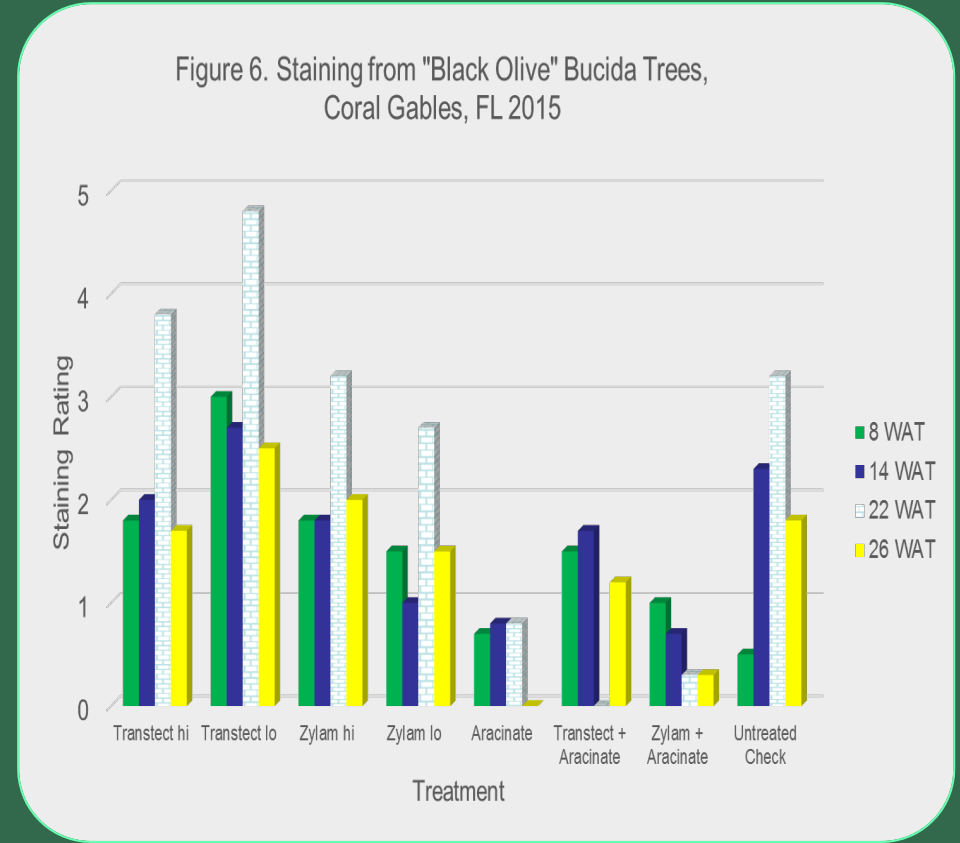
INITIAL VISUAL INSPECTION

- **Image taken in 2015 when Davey Tree began a study on controlling staining issue at the request of City of Coral Gables**



FIELD STUDIES

- **Field studies were conducted over a 4-yr period to evaluate the effectiveness of selected systemic insecticides.**
- **These studies were targeted to minimize staining associated with this caterpillar and mite.**



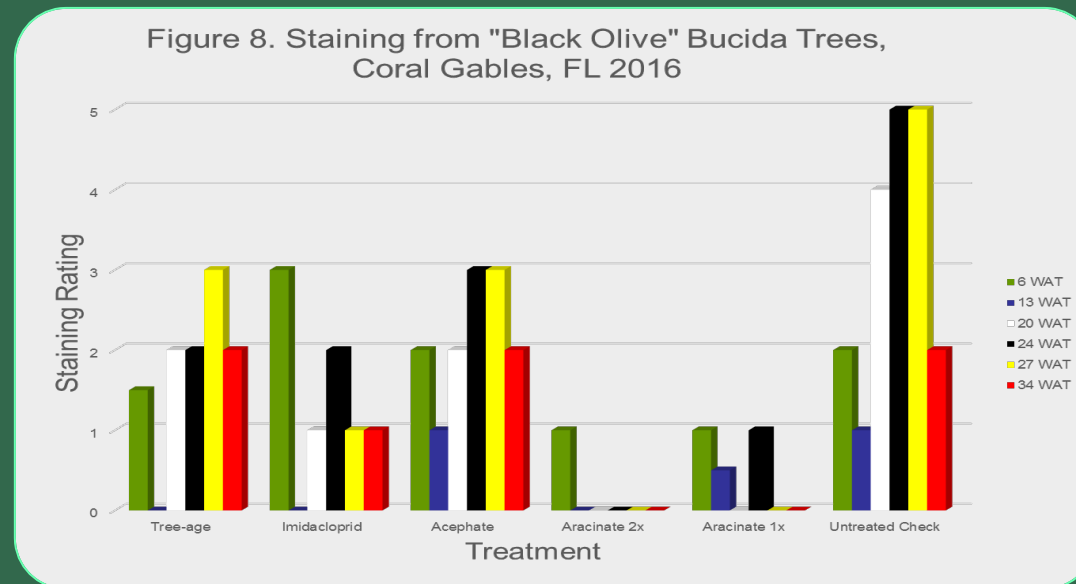
FIELD STUDIES

- **Several products were tested for controlling the mites and reducing staining.**
- **Products applied through trunk injection methods.**
 - **Improve delivery**
 - **Reduce spray drift**
 - **Minimize adverse environmental impacts**



FIELD STUDIES

- **In 2015 all products containing the active ingredient abamectin provided good staining reduction.**
- **In 2016, all product combinations containing the active ingredient abamectin provided excellent reduction in staining.**



FIELD STUDIES

- **Visual evaluations of streets and sidewalks around treated trees was conducted in 2017 and 2018.**
- **The treatment with aracinate provided a 99% success rate with less than 1% of trees associated with staining.**
- **The 1% displayed bark and cambium damage which may have interfered with product uptake and translocation into canopy.**



FIELD STUDIES

- **All treatments were applied in March and evaluations conducted in June and in September.**



Treated trees



Untreated trees



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FIELD STUDIES CONCLUSION

- **Trunk injection with abamectin reduces homeowner complaints associated with Black olive tree staining.**
- **Trunk injections with a product containing the active ingredient abamectin may be conducted annually or every 2 years.**
- **This will preserve a valuable species and protect the diversity of the urban forest in the city of Coral Gables.**

These studies were published in the journal Florida Entomologist

<http://www.bioone.org/doi/full/10.1653/024.100.0318>



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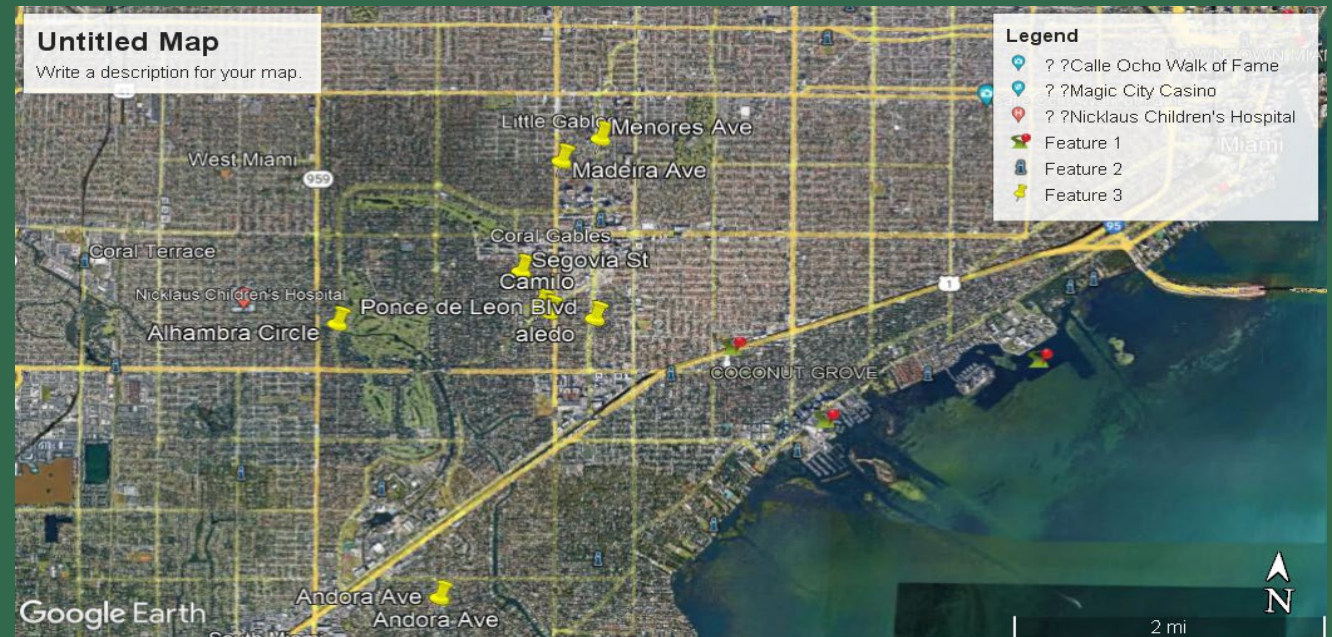
INJECTION SERVICES

- **Davey Tree was awarded the tree injection contract for 2,000 Black Olive trees within the city of Coral Gables in 2018.**
- **Black Olive trees to be injected are chosen by the city of Coral Gables.**
- **Criteria for those chosen to be included are based on severity of staining.**

STAINING EVALUATIONS

- **Visual inspections are completed mid to late summer.**
- **Objectives of the evaluations are to determine level of staining in a sample size of 15% of the total amount of trees treated.**

- **Yellow pushpins on map indicate streets where staining inspections were completed. This sample size changes each year.**





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STAINING RATING SYSTEM

- **Staining of sidewalks, driveways and roads are rated on a scale from 0 to 5.**
- **0 = no staining, 1 = very light staining, 2 = light staining, 3 = moderate staining, 4 = heavy staining, 5 = severe and objectionable.**

STAINING RATING SYSTEM



0 = No staining



1 = Very little staining
Spots seen in image are
mainly from fallen leaves

STAINING RATING SYSTEM



2 = Light staining



3 = Moderate staining

STAINING RATING SYSTEM



4 = Heavy staining



5 = Severe and Objectionable staining



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STAINING RATING SYSTEM



3 = Moderate staining may occur when the root system of tree is compromised either by girdling roots or severe soil compaction which limit uptake of product.



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STAINING RATING SYSTEM



4 = Heavy staining may occur when a portion of the main trunk is compromised and response growth is poor causing decay. This severely limits uptake of injected product.

STAINING RATING SYSTEM



Hypoxylon Canker



**Severe girdling
root**



**Areas of decay
or cavities**

5 = Severe and objectionable staining usually occurs when both the main trunk and roots are compromised. This either greatly limits or stops the uptake of abamectin altogether.



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REPORTS

- **Once the sample size has been inspected and rating is complete a report is compiled to summarize findings.**
- **Summary details street names where Black Olive staining was inspected along with the total number of trees inspected.**

CONCLUSION

- **In all of the post treatment evaluations conducted it has been concluded that majority of Black Olive trees treated with abamectin show a 0 – 2 stain rating where trees are in good to average condition.**
- **Black Olive trees with health concerns as discussed in this presentation generally show on average a 3 – 4 stain rating.**
- **When staining reaches a severe and objectionable grade it usually indicates severe health issues with tree.**



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CONCLUSION SUMMARY

- **The Davey Tree Expert Company has provided tree injection services for Black Olive trees to the City of Coral Gables based off scientific studies.**
- **All follow up inspections for spring injection treatments are completed in late summer (mid-late August).**
- **Inspections are completed on a random sample size of approximately 15% of the total trees injected.**



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Presentation submitted by:

Manny Nassar - Technical Advisor

The Davey Institute

ISA Certified Arborist & TRAQ FL-6791A

FNGLA Certified Horticultural Professional

407-468-0326

manuel.nassar@davey.com