

Grape Root Borer and Vineyard Management

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Who am I?



Image Credit: Russ Ottens, University of Georgia,
Bugwood.org



Image Credit: University of Georgia, Bugwood.org

Why IPM (Integrated Pest Management)?



Where is it Damaging my Plant?



H.C. Ellis, University of Georgia, Bugwood.org

IPM System

REDUCE RISK.....

Pest outbreaks &
disease epidemics

Environmental
contamination

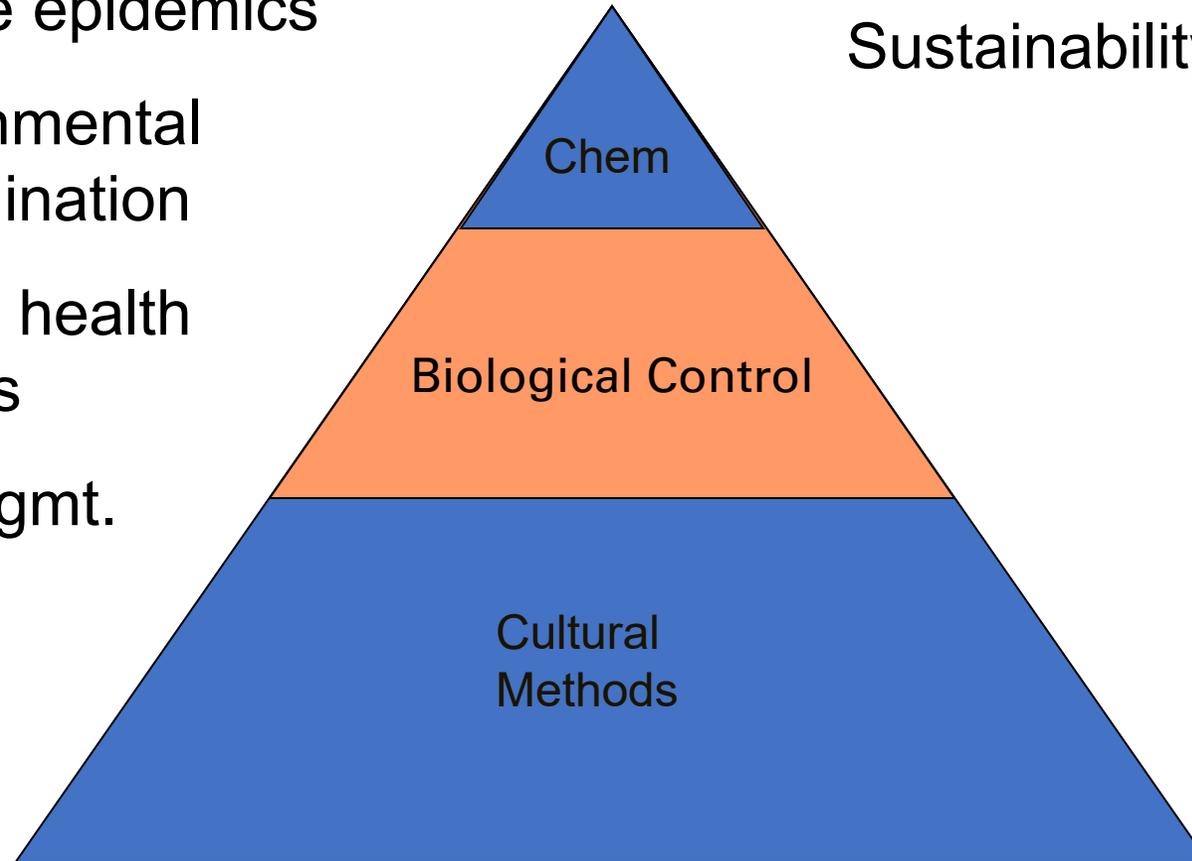
Human health
hazards

Pest mgmt.
costs

INCREASE...

Reliability

Sustainability







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[Environmental](#)
[Applying IPM](#)

IPM Florida
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Extension/Education
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Agricultural IPM
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 Greenhouse Crops
 Vegetable Crops
 Fruit Crops
 Ornamentals
 Pastures, Turf and Sod
 Livestock
 Organic and Sustainable
 Other Crops

Community IPM
 Biting, Stinging, Nuisance Pests
 Household IPM
 Landscape IPM
 Home Gardening IPM
 Public Health IPM
 Institutional IPM

Environmental IPM
 Invasive Arthropods
 Invasive Diseases
 Invasive Plants
 Invasive Species

Applying IPM
 Guides and Handbooks
 IPM Academy
 IPM Planning Guides
 Scouting
 Pest Identification and Diagnosis
 Pest Management Methods
 Thrips IPM Program
 Insect Rearing
 Area-wide IPM and SIT

Additional Information
 Southern States IPM Websites
 EDIS
 Crop Profiles
 Pest Management Strategic Plans
 Solutions for your Life
 eXtension

 [Whitefly IPM](#)

 [Guide for Purchasing and Using Commercial Natural Enemies](#)

 [Lovebug IPM](#)

 [Living Extension IPM Field Laboratory](#)

 [Mole Crickets](#)

 [Community IPM](#)

Additional IPM Information

National Institute of Food and Agriculture IPM Program

Regional IPM Centers:

- National Funding Opportunities
- National Pest Management Strategic Plans & Crop Profiles
- Southern IPM Center - Current News
- Southern IPM Center - Employment

UF/IFAS Centers and Programs:

- Center for Landscape Conservation & Ecology
- Center for Sustainable and Organic Food Systems
- Extension Offices and Research and Education Centers
- School IPM Information Source
- Small Farms and Alternate Enterprises
- Solutions for Your Life (SFYL)

eXtension:

[IPM Resources-
IPM Florida \(ufl.edu\)](#)

[EDIS Publications
Ask IFAS - Powered by EDIS \(ufl.edu\)](#)

[UF/IFAS News
UF/IFAS News - \(ufl.edu\)](#)

[UF/IFAS Pest Alert
UF/IFAS Pest Alert - UF/IFAS Pest Alert \(ufl.edu\)](#)

[UF/IFAS BRE Lab
UF Biosecurity Research & Extension Lab
\(ufl.edu\)](#)

[UF/IFAS Small Fruits and Vegetable IPM Lab
Welcome to the Fruit & Vegetable IPM Lab at
The University of Florida! \(ufl.edu\)](#)

UGA Extension Viticulture Blog

Home Blog About

Preparation for grape root borer – 2020

Jun 21, 2020 | Written by [Blaauw](#)



We are within a few weeks of the anticipated initial emergence of grape root borer (GRB) adults in North Georgia. If you are planning on implementing mating disruption as a management tactic for GRB and you haven't deployed your pheromone dispensers/ties, now is the time to get those distributed.

If you are unfamiliar with grape root borer (pictured above), GRB is a clearwing moth with larvae that tunnel into the larger roots and crown of grape vines and feed below the soil surface. Symptoms of infested vines include poor growth and fruit set, and potentially complete root girdling and vine death. As such grape root borer is a significantly destructive vineyard pest in southern grape production.

Adult GRB are day flying moths that are reddish brown in color and resemble paper wasps, particularly when flying. The adults generally emerge early July, mate, and then the females lay eggs on the soil surface, leaves, and weeds within eight days emerging. The eggs hatch in approximately two weeks and larvae immediately tunnel into the soil in search of grape roots. The larvae are cylindrical, cream-colored with a brown head, and 1.5 inches long when mature. The larvae spend nearly two years feeding within the roots. During the summer of the second year, larvae will pupate near the soil surface before emerging as adults.



Grape root borer monitoring trap.

Because the adults and the larvae often go unnoticed until the vine begins to decline, management can be a little tricky. Fortunately, GRB adults can be monitored using a simple bucket trap and pheromone (pictured above). Traps and pheromone can be purchased from sites like [Great Lakes IPM](#) and assembly instructions can be found [here](#). The abundance of moths captured on a weekly basis can be used to determine both presence of grape root borer in your vineyard and to determine peak activity periods, which will be used to time management activities.

One preemptive management strategy is weed control. Eliminating weeds around the base of vines reduces the sites for egg laying and improves spray coverage for GRB management.



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- [EVEE Grower Town Hall Reminder](#)
- [Eastern Viticulture and Enology Forum \(Town Hall Meeting 2\)](#)
- [The Japanese Beetles are Back in Town](#)
- [Muscardine Webinar: Summer Vineyard Management](#)

ARCHIVES

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Monitoring-Identifying the Problem



Seasonal Distribution of GRB (Grape Root Borer) in Muscadine Grapes on Vine Age and Cultivar

- Improve our understanding of seasonality of GRB
- Understand Vine Age Effects
- Understand Cultivar Effects
- Clayton Bania, MS/DPM student

Methods and Materials

2019 to 2020

Lakeridge Vineyard

Pheromone traps were deployed over 65 acres across the vineyard. Traps were checked weekly from deployment to season end.

2019: 5/28-11/5

2020: 3/24-11/15

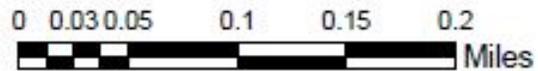


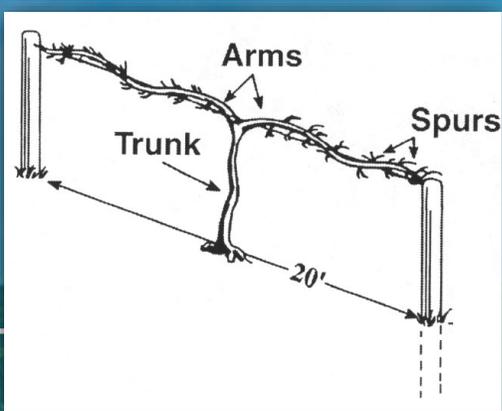
To more accurately define our experiment, the use of GIS software and drone imaging was used.

2019 Lake Ridge Trap Placement



2020 Lake Ridge Trap Placement





Lures were replaced every 3 weeks.
Insecticide strips were replaced ever 8 weeks.

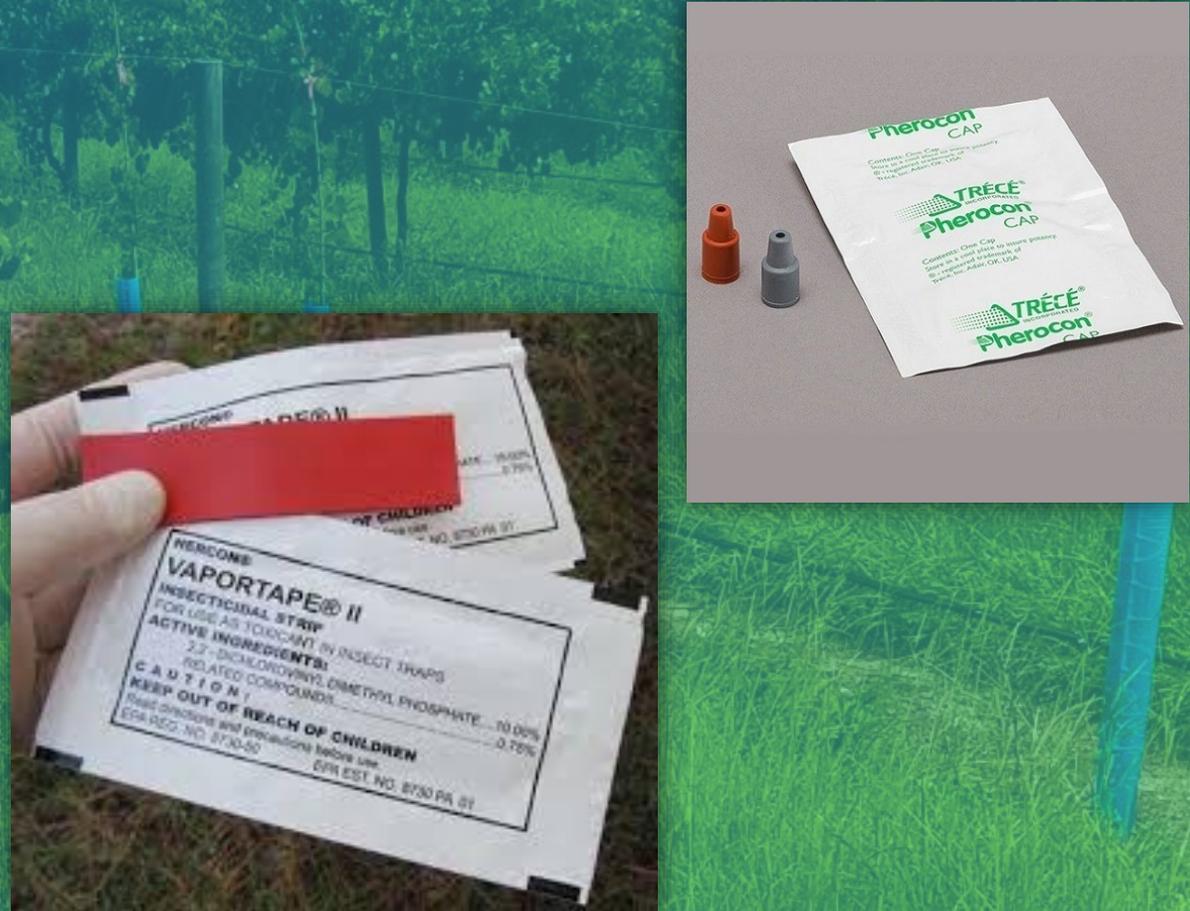
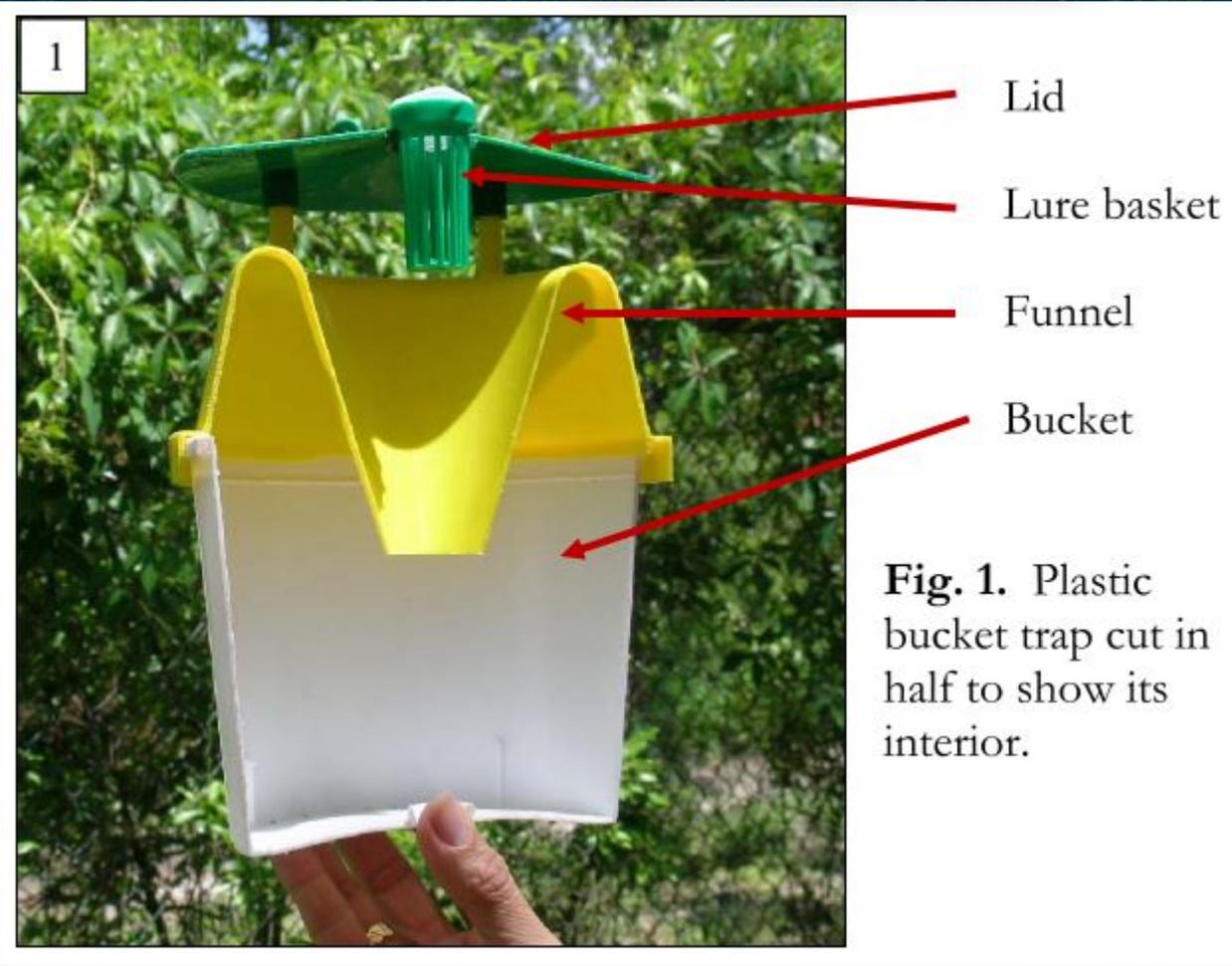
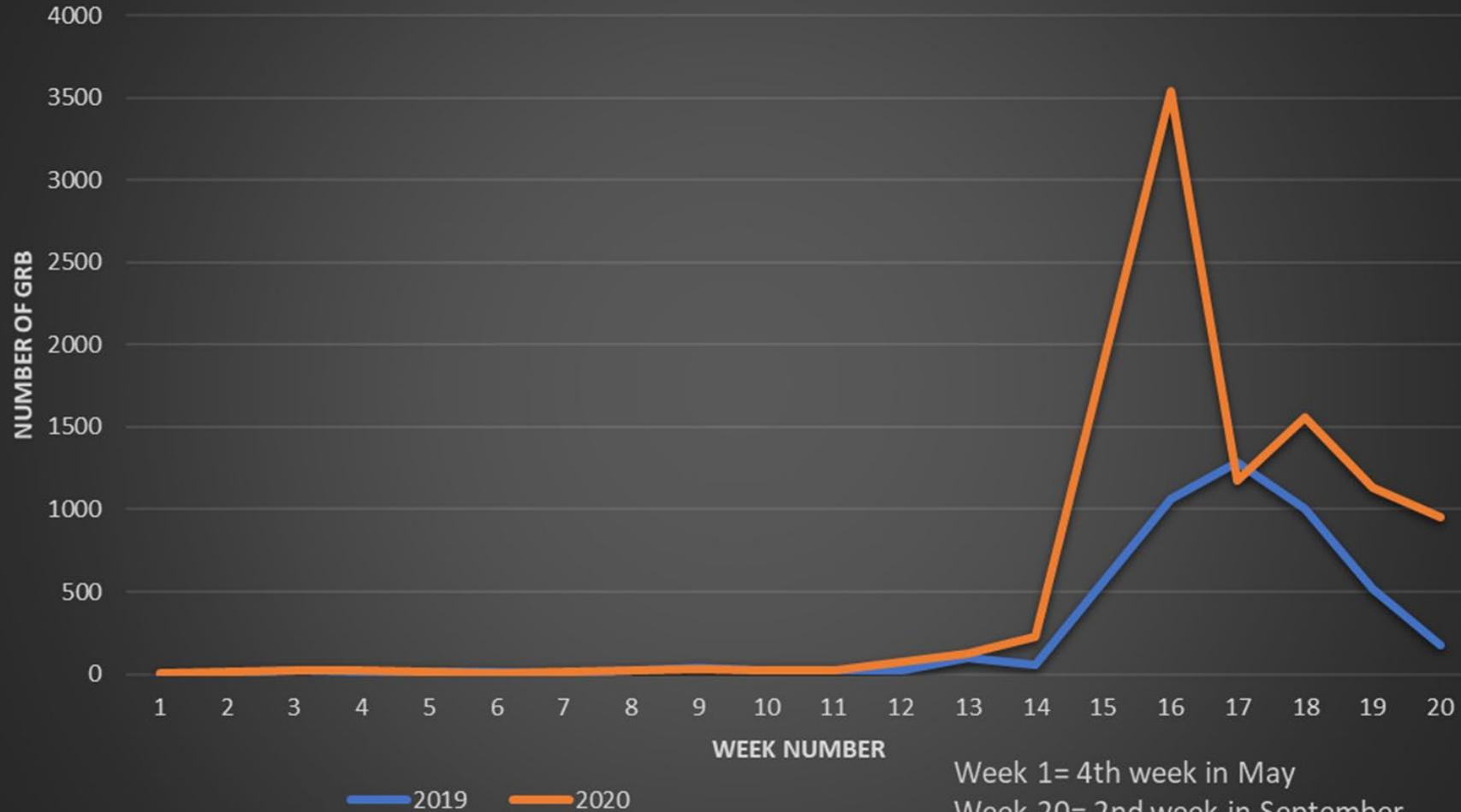


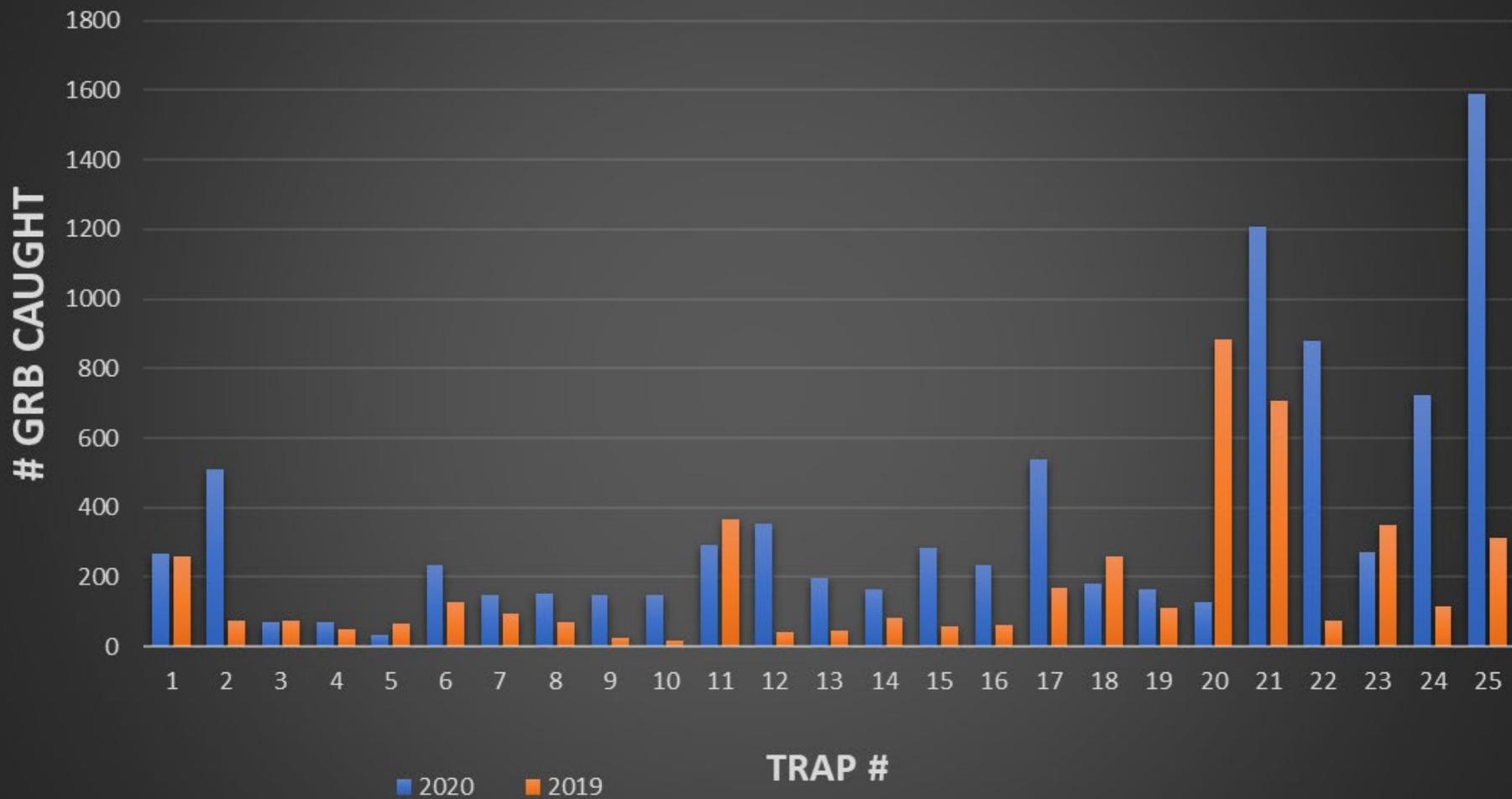
Photo credit: Juliete Brambila USDA APHIS PPQ

Results and Analysis

GRB 2 year comparison of Total caught by Week



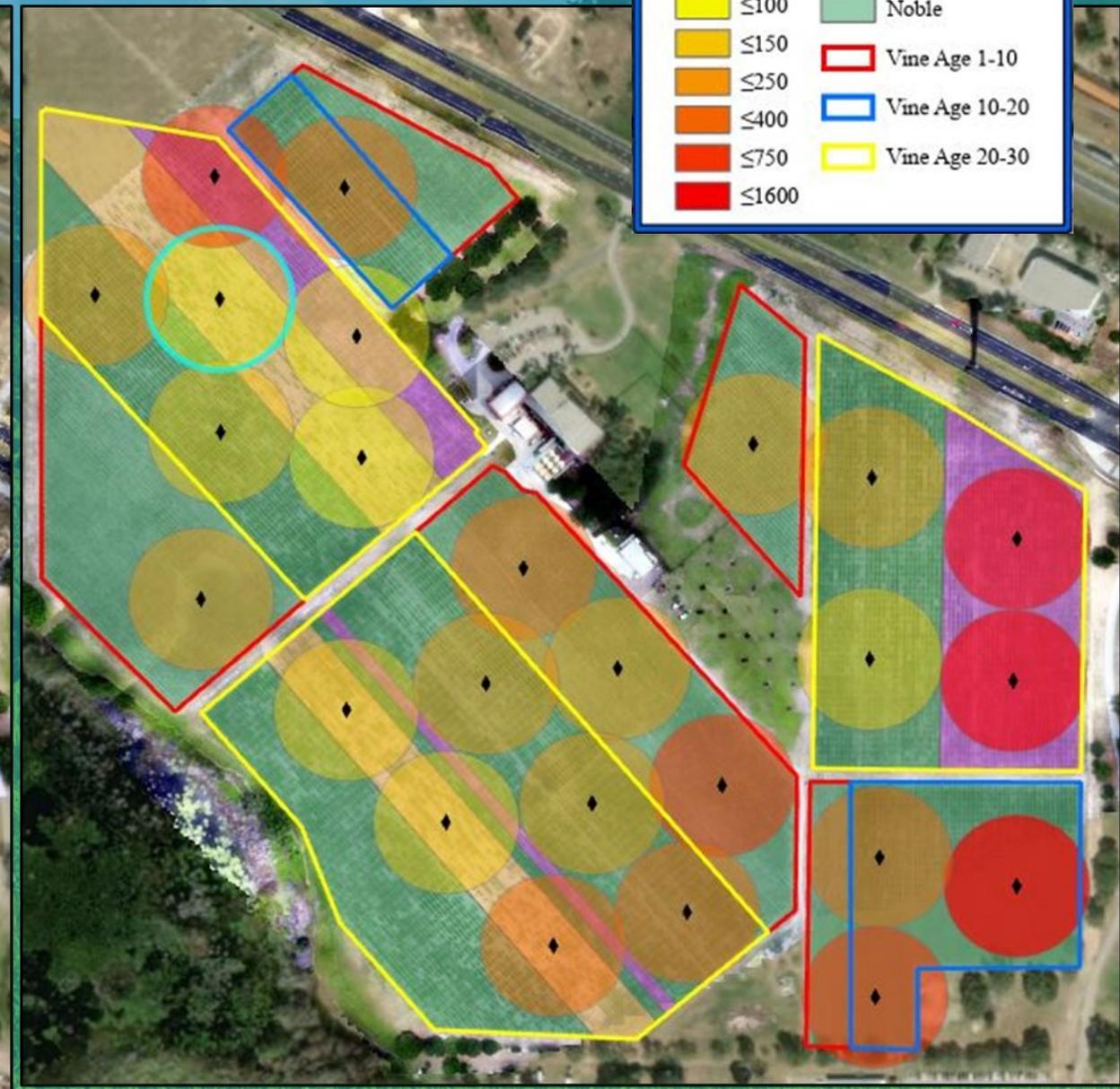
Total GRB catch by Trap Number



2019 Trap Deployment

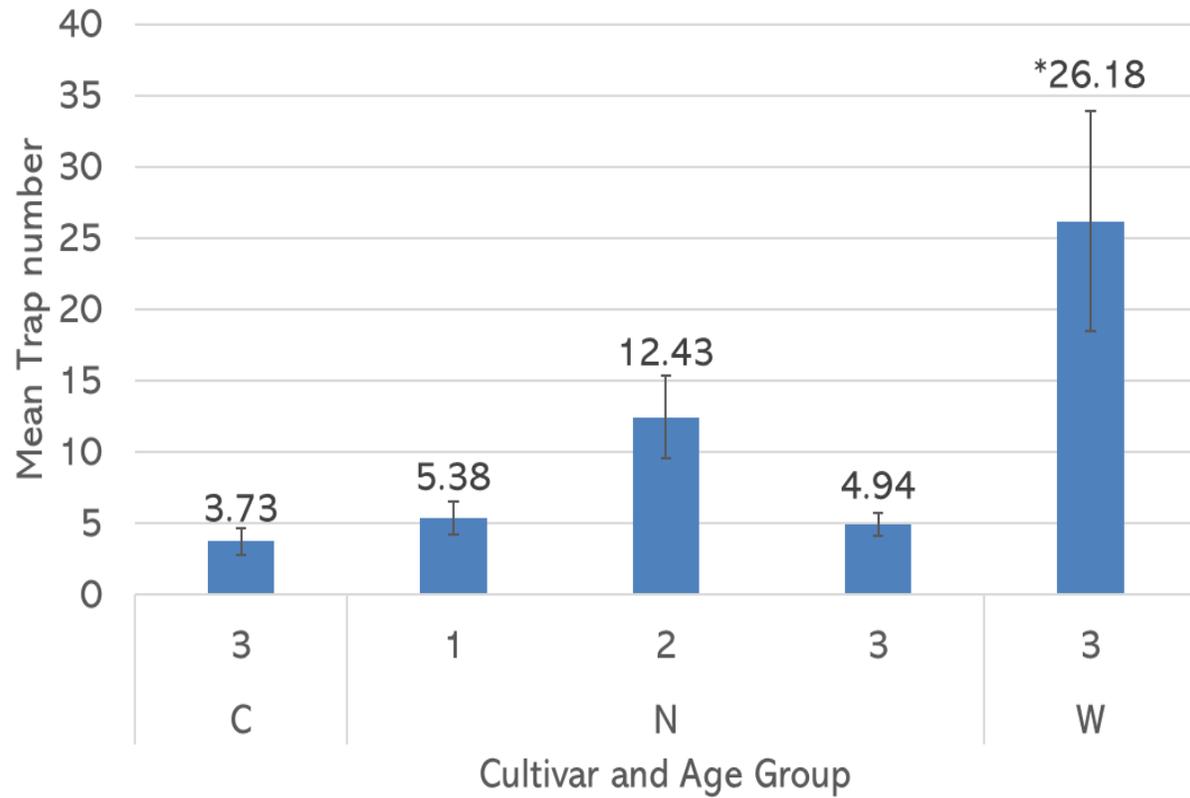


2020 Trap Deployment

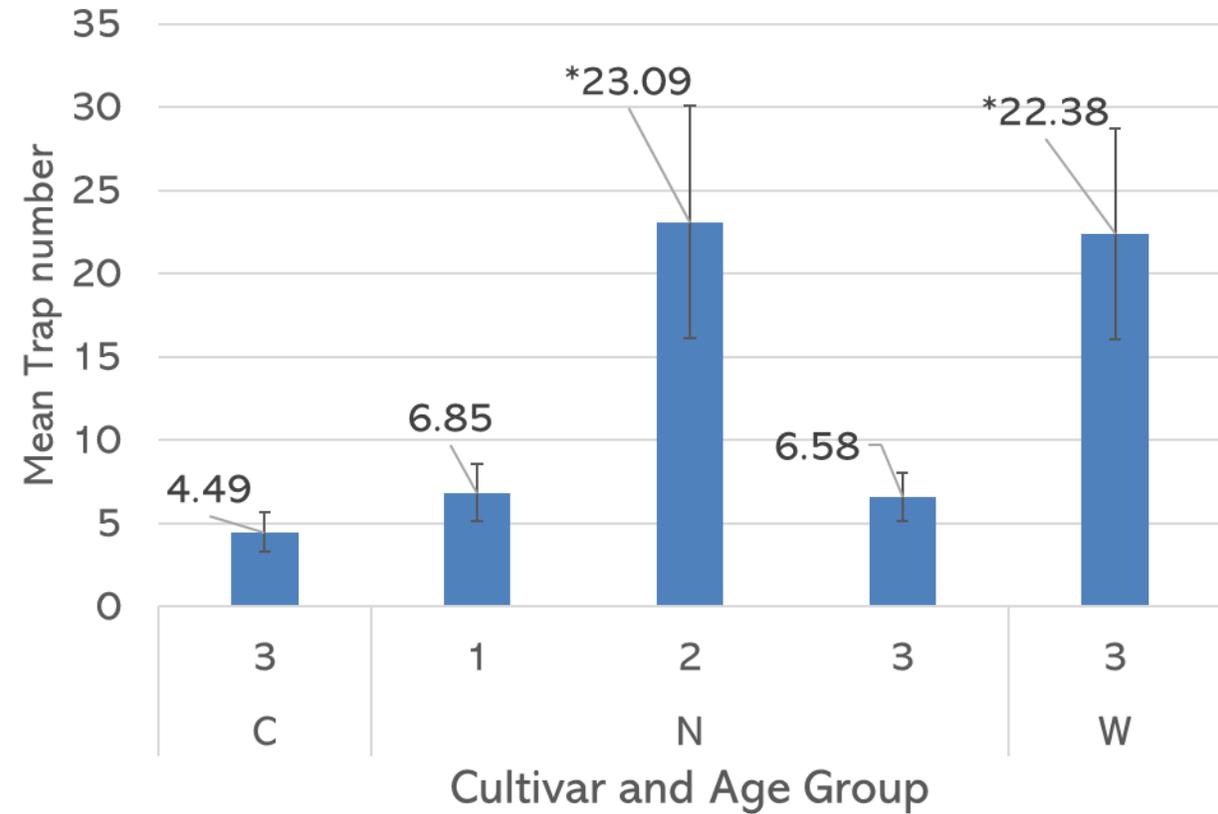


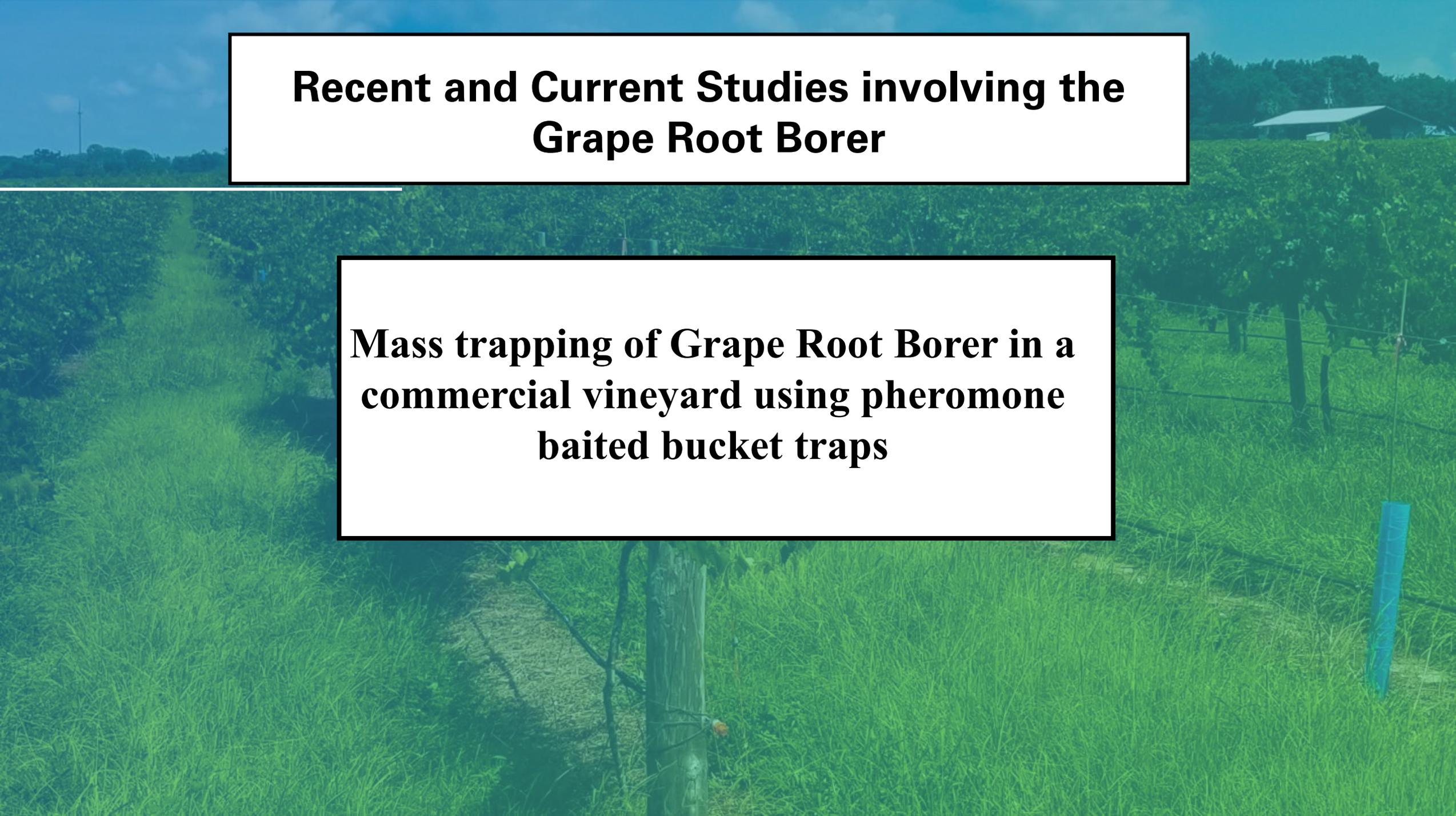
◆ Trap	Carlos
TotGRB	Welder
≤100	Noble
≤150	Vine Age 1-10
≤250	Vine Age 10-20
≤400	Vine Age 20-30
≤750	
≤1600	

2019 GRB Trap Means



2020 GRB Trap Means





Recent and Current Studies involving the Grape Root Borer

**Mass trapping of Grape Root Borer in a
commercial vineyard using pheromone
baited bucket traps**

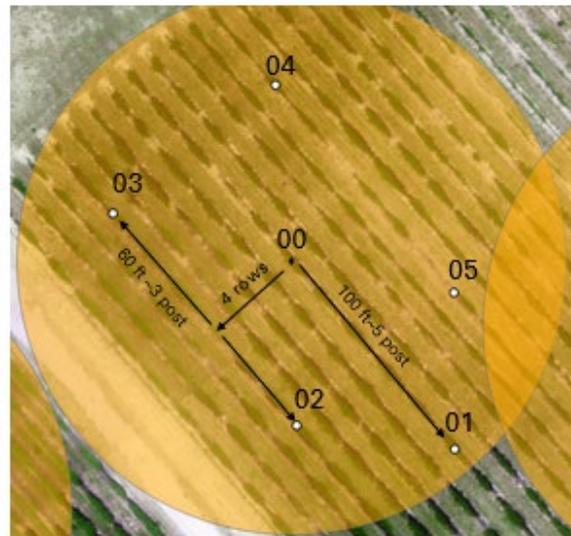
Bodies!



- **This study will use 420 traps**
- **70 traps are being monitored for weekly data.**
- **8-week deployment**
- **Insect strips cut into halves and replaced every 8 weeks**
- **Pheromone lures replaced ever 6-weeks**

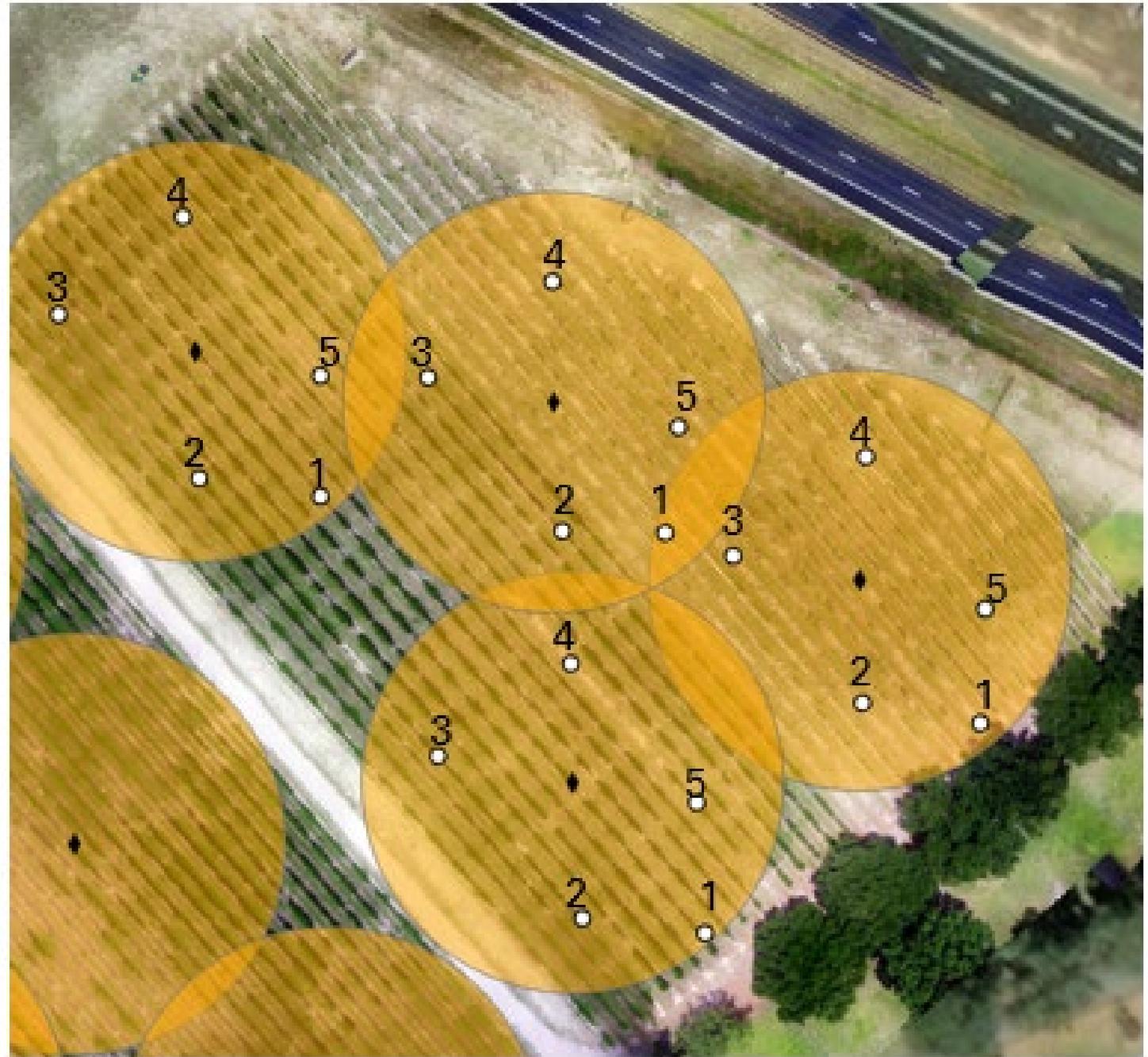


- Trap are laid out in 2 stages, the initial 70, followed by 6 sub-traps inside 1 acre area of the original 70 traps.

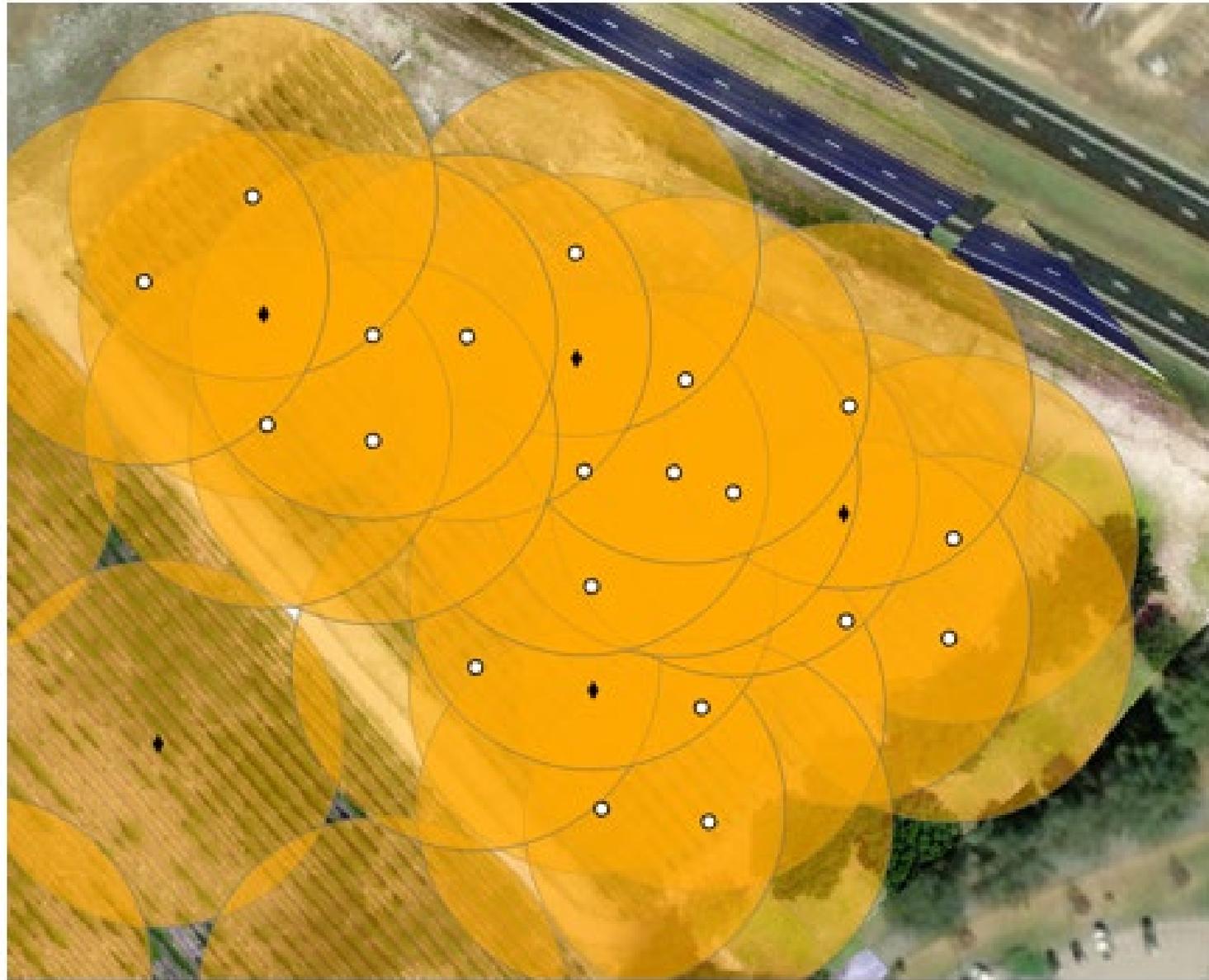


◆ Initial 70

○ 2nd round



**A final overlay of all
the traps using a 1-
acre area range**



Mating Disruption



Image from UGA Extension, and it can be purchased through Helena Chemical
[Preparation for grape root borer – 2020 | UGA Extension Viticulture Blog](#)

Pest Management Considerations



Nematodes?

Image from Arbico Organics

[NemaSeek Beneficial Nematodes Heterorhabditis bacteriophora \(arbico-organics.com\)](http://www.arbico-organics.com)

Independence Day Holiday
 ARBICO Organics will be closed July 3, 4 & 5. We will reopen July 6. [Learn More >](#)



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Heterorhabditis bacteriophora

Seeks Out Stationary Pests including grubs, root zone weevils, citrus weevils, Japanese beetles, black vine weevils, ticks, queen ants/termites and more. Great for gardens, lawns, fields, pastures and orchards.

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10 Million SKU: 1220301	\$42.95	<input type="text" value="1"/>	BUY NOW
50 Million SKU: 1220302	\$72.00	<input type="text" value="1"/>	BUY NOW
250 Million SKU: 1221703	\$198.00	<input type="text" value="1"/>	BUY NOW
500 Million SKU: 1221706	\$270.00	<input type="text" value="1"/>	BUY NOW

DESCRIPTION
INSTRUCTIONS
SHIPPING INFO
TECHNICAL
DOCS
REVIEWS

Best Choice For Beetle Grub Control!

NemaSeek Beneficial Nematodes, *Heterorhabditis bacteriophora*, actively seek out pest insects in the soil. Beneficial Nematodes are live microscopic organisms (non-segmented round worms) that naturally occur in soil throughout the world. The beneficial nematodes we sell are parasitic to insect pests that typically have a developing (larval or pupal) stage of life in the soil. They have been known to parasitize above ground stages of adults, nymphs and larvae. **They will not harm mammals, aquatic life, birds, reptiles or amphibians.** After being applied to the soil, the nematodes locate pests and enter through various body openings or directly through the body wall. Once inside, the nematodes produce bacteria that is injected into the pest's blood.

Beneficial Nematodes release the bacteria in order to create food and a proper environment for their own reproduction. As the food resources within the dead pest become scarce, the nematodes exit and immediately begin searching for a new host. As long as there are suitable hosts, nematodes will continue to survive and parasitize in the soil.

Shelf Life: Up to 2 weeks (refrigerated and unopened in original container).

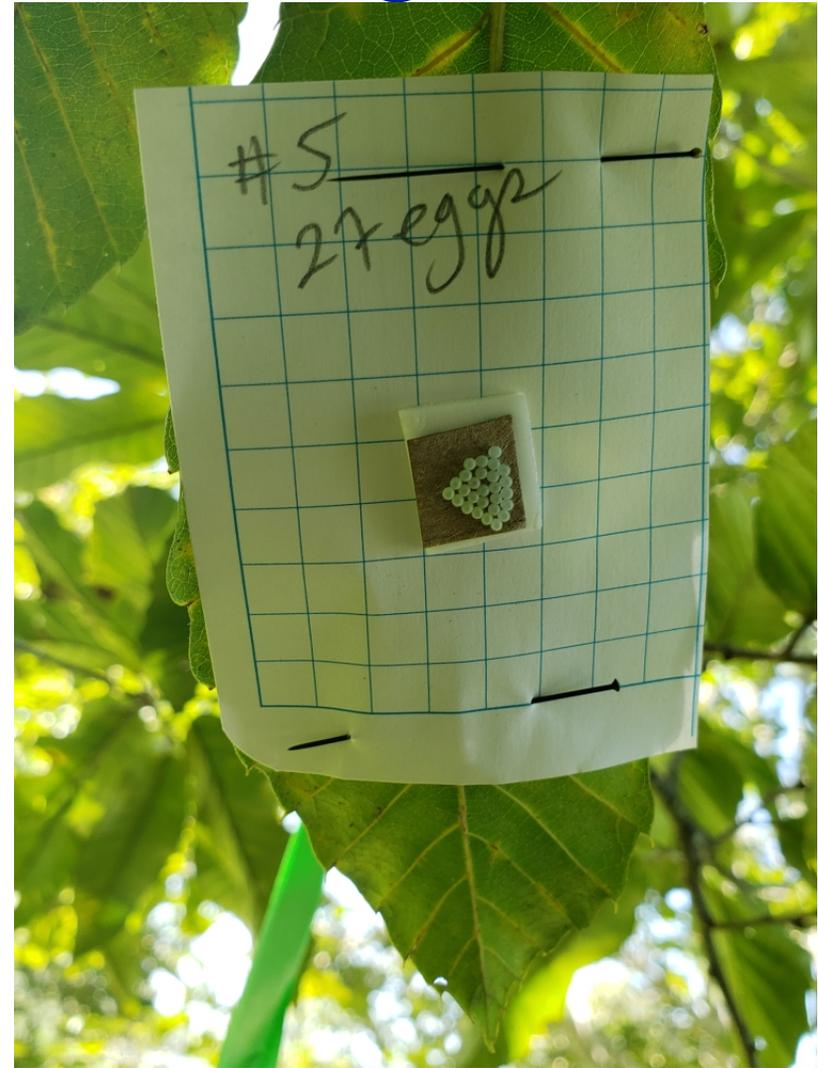
How Much Do I Need? Order enough to treat the full infested area. Quantities and treatment areas are approximate.

Quantity	Treatment Area	Shipping Method
5 million	1,600 sq. ft.	2nd Day
10 million	3,200 sq. ft.	2nd Day
50 million	1 Acre	2nd Day
250 million	5 Acres	Next Day
500 million	10 Acres	Next Day

This Product Controls These Pests or Diseases: Ants (Queen), Asparagus Beetle (*Crioceris asparagi*; *Crioceris duodecimpunctata*), Banana Moth, Banana Weevil, Berry Root Weevil, Billbug, Black Vine Weevil, Borers (Ins Borer, Tree, Vine), Carrot Weevil (*Listronotus oregonensis*), Chafers (European, Masked), Citrus Root Weevil, Colorado Potato Beetle (*Leptinotarsa decemlineata*), Corn Rootworm, Cranberry Root Weevil, Cucumber Beetle (Spotted) (*Diabrotica undecimpunctata howardi*), Flea Beetles, Gall Midges, Grape Root Borer, Grubs, Humpbacked Flies/Phorid Flies, Japanese Beetle (*Popillia japonica Newman*), Leafminers, May/June Bugs (*Phyllophaga sp.*), Root Weevils, Scarabs, Sugarcane Stalk Borer,

bacteriophora/organic-lawn-care#section3_tab_1790

Other Example Efforts in Biological Control



Other Examples in Biological Control



Acknowledgements-Lakeridge Winery



WELCOME TO LAKERIDGE WINERY & VINEYARDS

Lakeridge Winery & Vineyards opened its doors in February 1989 in Clermont, Florida and sits on a 127-acre estate in gently rolling countryside some 25 miles west of downtown Orlando. This area was once the center of the State's grape industry. After years of phenomenal growth, Lakeridge ranks as Florida's largest premium winery, and remains a pioneer in the development of premium and sparkling wines from the native Muscadine grape varieties Noble, Carlos and Welder, as well as Vinifera varieties to include Chardonnay, Pinot Grigio, Petite Sirah and Cabernet Sauvignon.

Our Vineyards

The winery overlooks 80+ acres of planted vineyards, pioneering the production of native muscadine grapes. Every year, the vines provide an abundant crop of grapes - the building blocks for our award-winning Lakeridge wines.

Weekends at the Winery

Come out and enjoy our expansive vineyard green, including delicious food from some of the area's best food trucks, and of course your favorite Lakeridge wines by the glass at our outdoor bar. Check out our [Weekends at the Winery Event page](#) for more details.



Questions?

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