

The Hibiscus Bud Weevil: Biology & Ecology



Alexandra M. Revynthi

Yisell Velazquez Hernandez, Maria A. Canon, Marcello De Giosa, Isamar Reyes-Arauz, Paola Villamarin, Ana Garcia, A. Daniel Greene & German Vargas

The Hibiscus Bud Weevil (HBW) (*Anthonomus testaceosquamosus*)

- Native to northeastern Mexico and southern Texas
- First detection in FL in 2017
- Present in Miami-Dade, Broward and Hernando counties
- A regulated pest!

PEST ALERT

FDACS-P-01883
Pest Alert created May 2018

Florida Department of Agriculture and Consumer Services
Division of Plant Industry

***Anthonomus testaceosquamosus* Linell, the hibiscus bud weevil, new in Florida**

Paul E. Skelley; Bureau of Entomology, Nematology and Plant Pathology
Lance S. Osborne; UF/IFAS Mid-Florida Research and Education Center
DPIHelpline@FreshFromFlorida.com or 1-888-397-1517

The Hibiscus Bud Weevil (HBW)



500µm



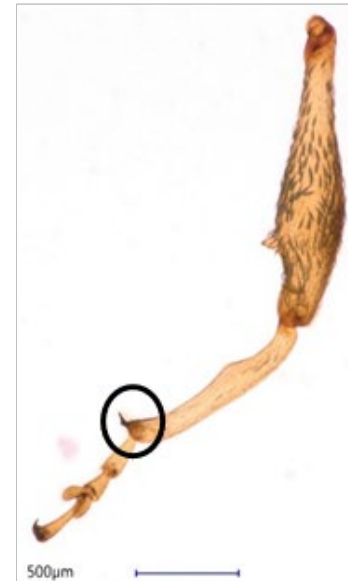
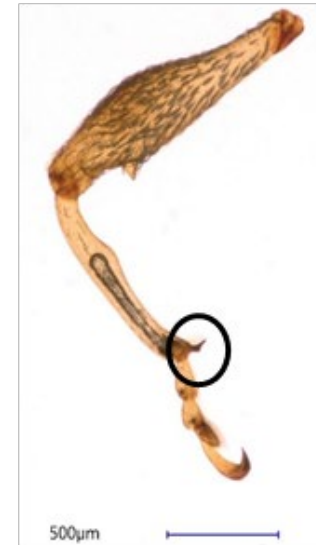
Photo: D. Carrillo

HBW Female vs. Male

♀



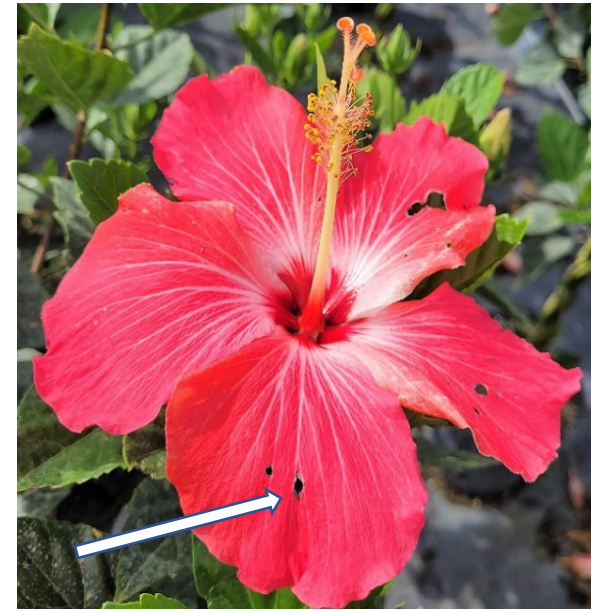
♂



Reynthi et al., EDIS
2021, pp. 1–7.

HBW Damage

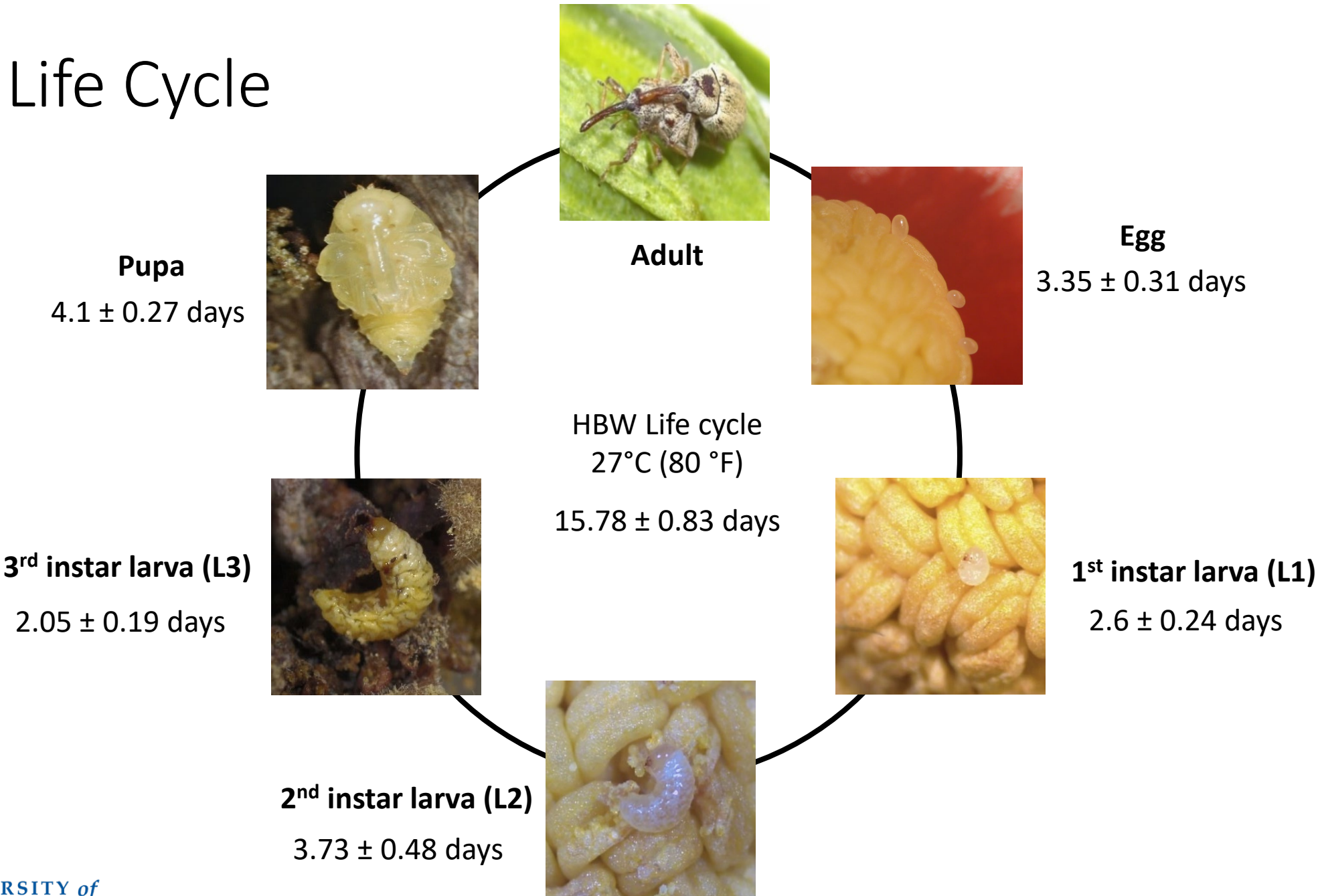
Photos: Y. Velazquez Hernandez & J. Rodriguez



HBW Damage



HBW Life Cycle



Hibiscus Bud Midge

- “Gnat”
- Causes bud drop



Photo: Y. Velazquez

Photos: C. Mannion

Hibiscus bud weevil larva



Hibiscus bud weevil pupa



Hibiscus bud midge larva



Hibiscus bud midge pupa



Hibiscus Bud Weevil
Vs.
Hibiscus Bud Midge

Photo: Y. Velazquez

Photos: C. Mannion

Effect of Temperature on HBW Development

Temperat. (°F)	Egg	First Instar	Second Instar	Third Instar	Pupa	Egg to Adult
50	78.2 ± 0.55	X	X	X	X	X
55	13 ± 1.33	4.9 ± 0.86	12.75 ± 2.46	87 ± 14.01	X	X
80	3.35 ± 0.31	2.6 ± 0.24	3.73 ± 0.48	2.05 ± 0.19	4.1 ± 0.27	15.78 ± 0.83
93	5.5 ± 0.29	2.53 ± 0.29	8.92 ± 1.3	25.5 ± 8.86	X	X

Reproduction of the HBW

- At 80 F on average 5.9 eggs/Female/Day
- Require mating
- They cannot reproduce when feed only on pollen



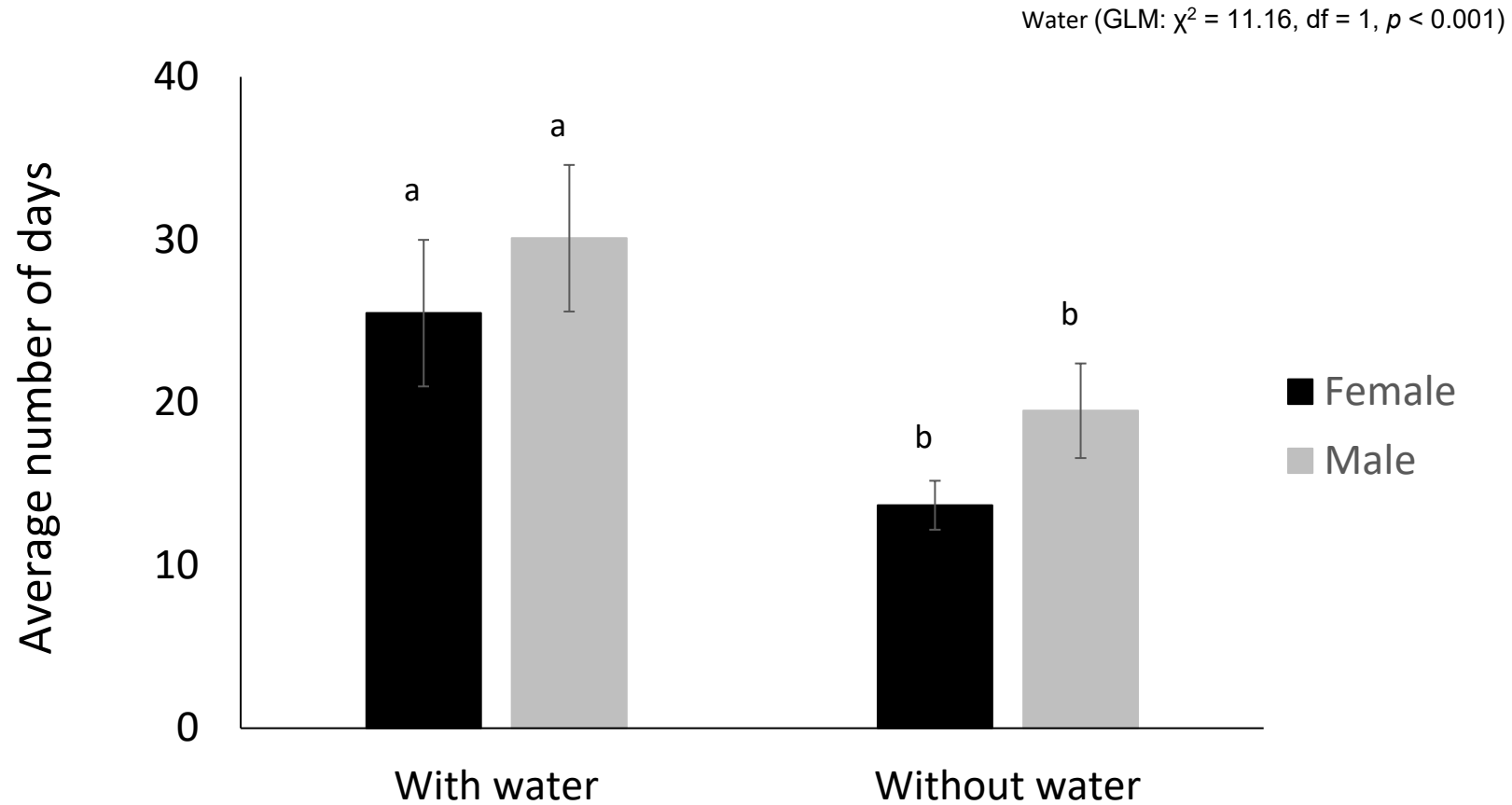
Longevity of the HBW

- When virgin, females live longer than males
 - ♀ 109 and ♂ 86 days
- When mated, males live longer than females
 - ♀ 47 and ♂ 111 days



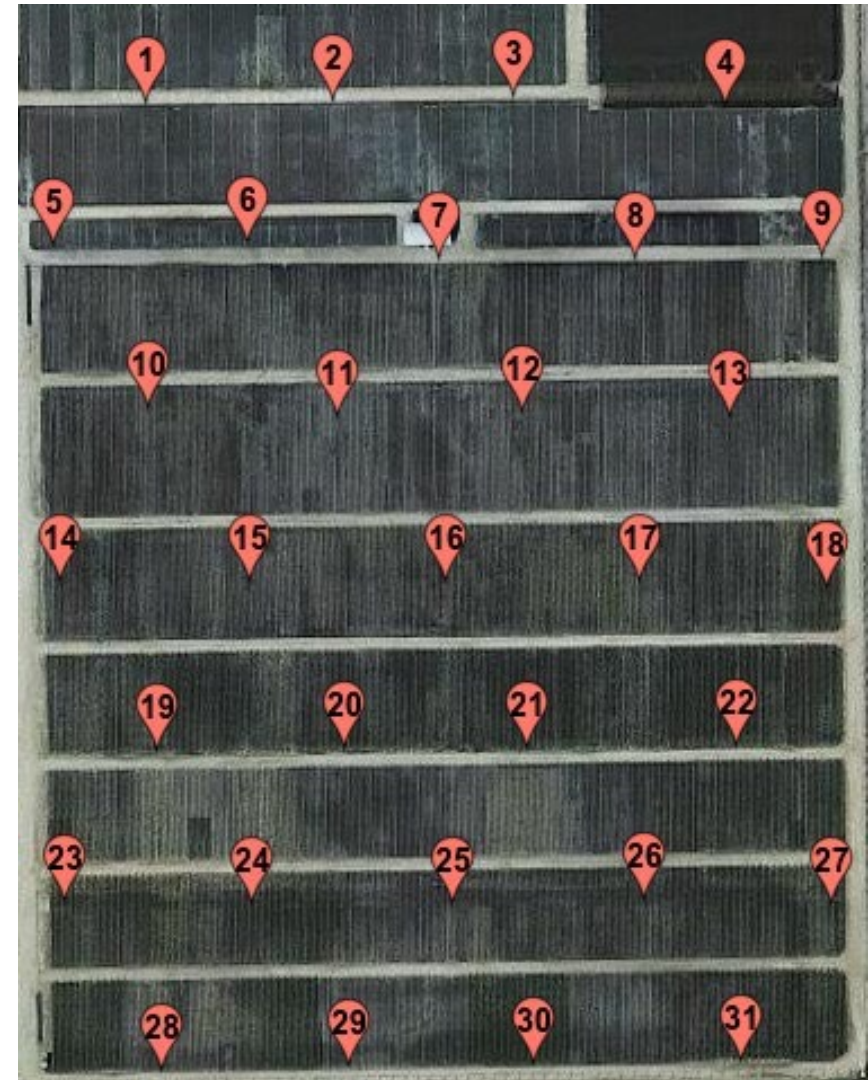
Y.Velazquez H.

Survival With and Without Water



Monitor of HBW Populations in a Nursery

- Bi-weekly sampling of hibiscus buds from
 - the plants
 - the ground
- 31 Yellow sticky cards
- Single and double varieties
- Different flower colors

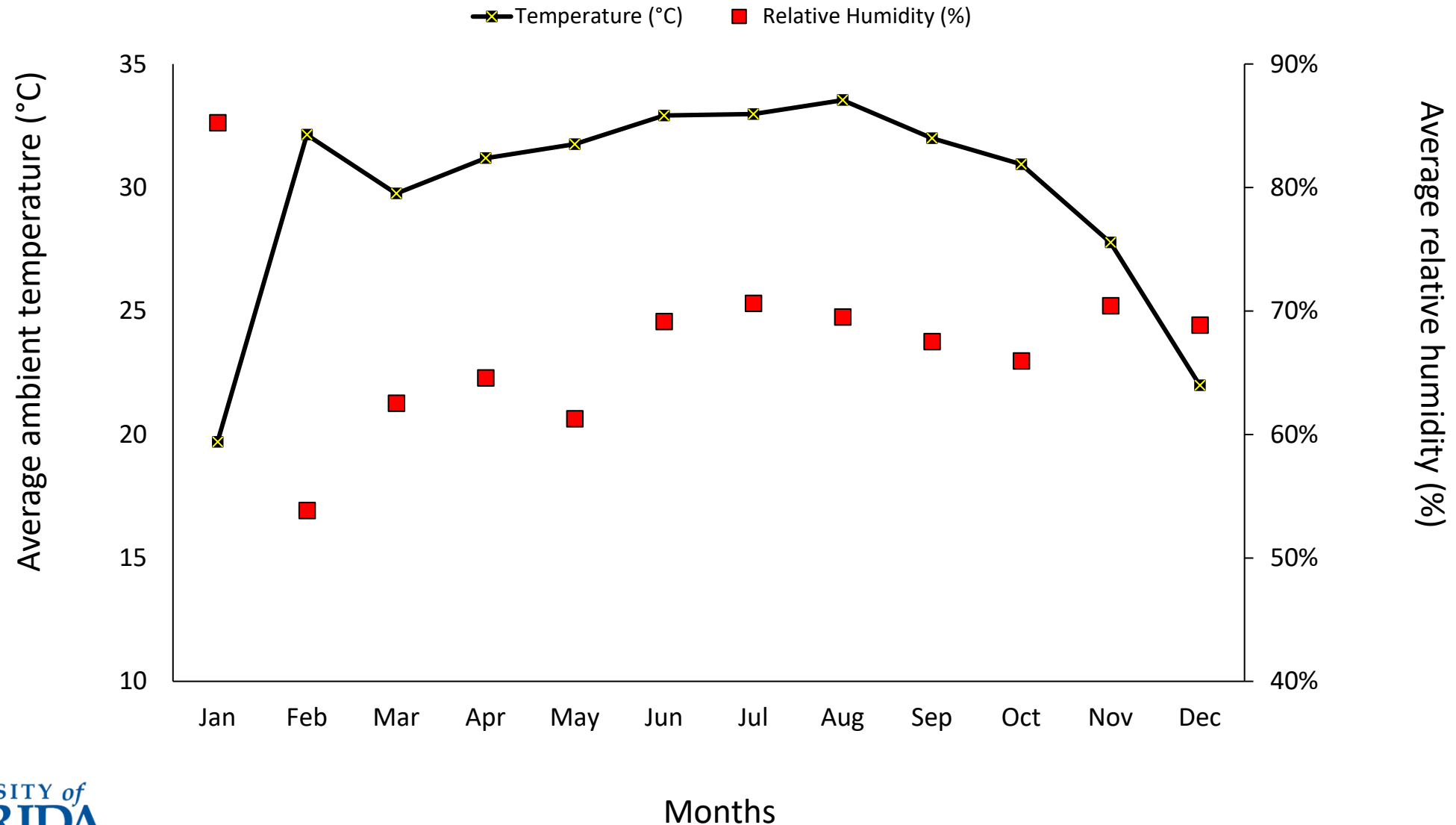


5 Acres

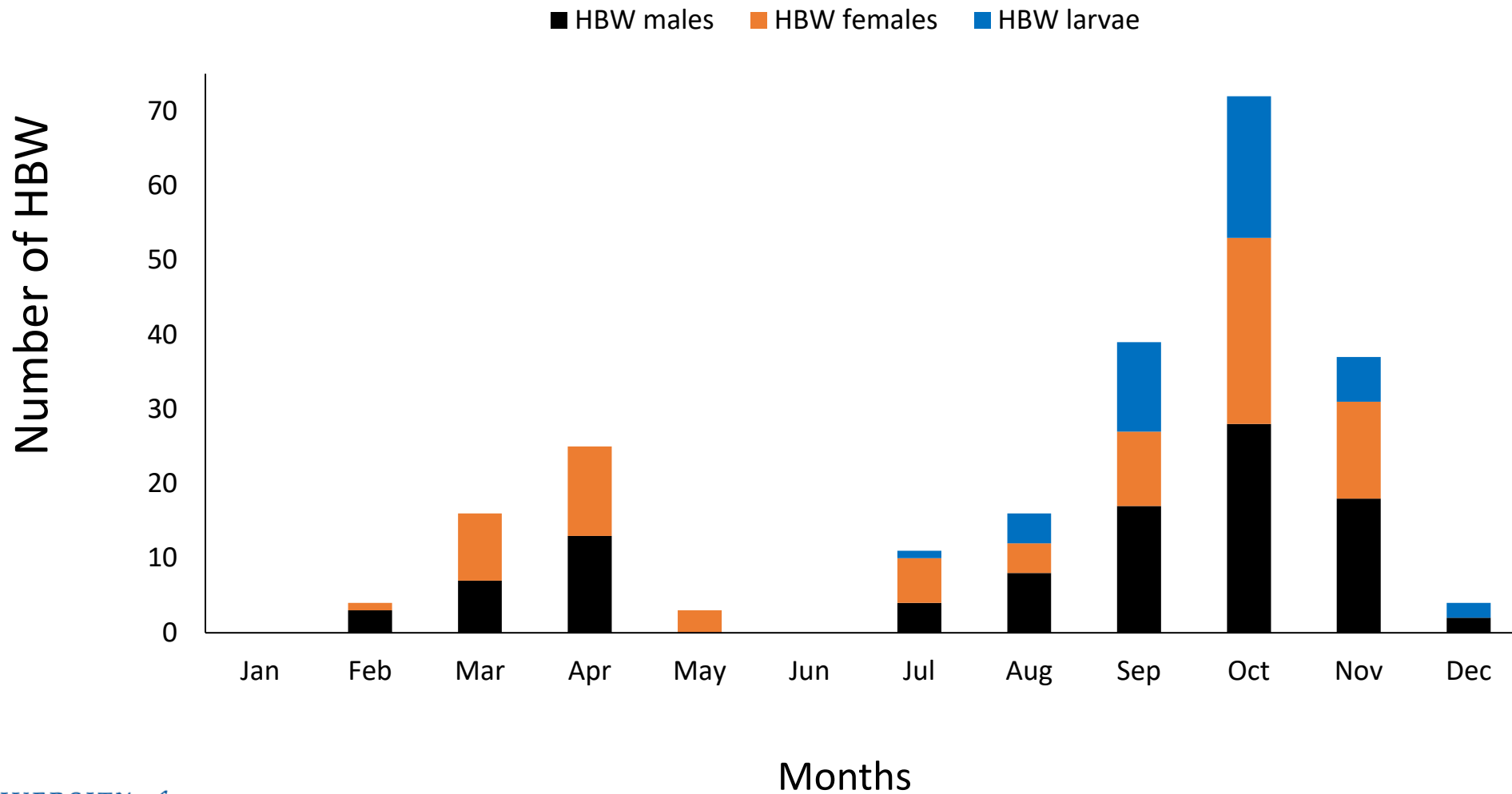
Monitor of HBW Populations in a Nursery



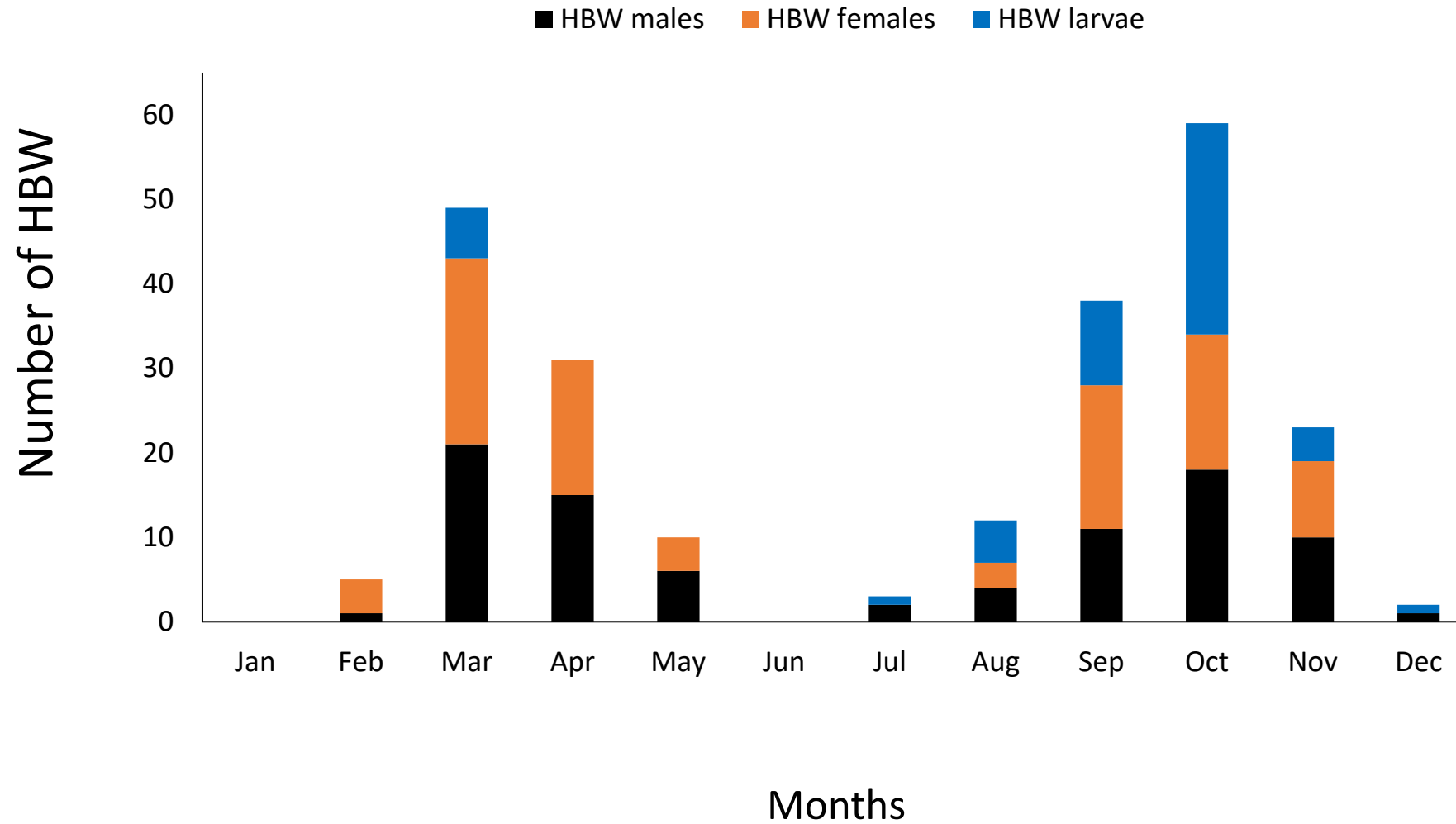
Climatic Conditions During 2023 Sampling



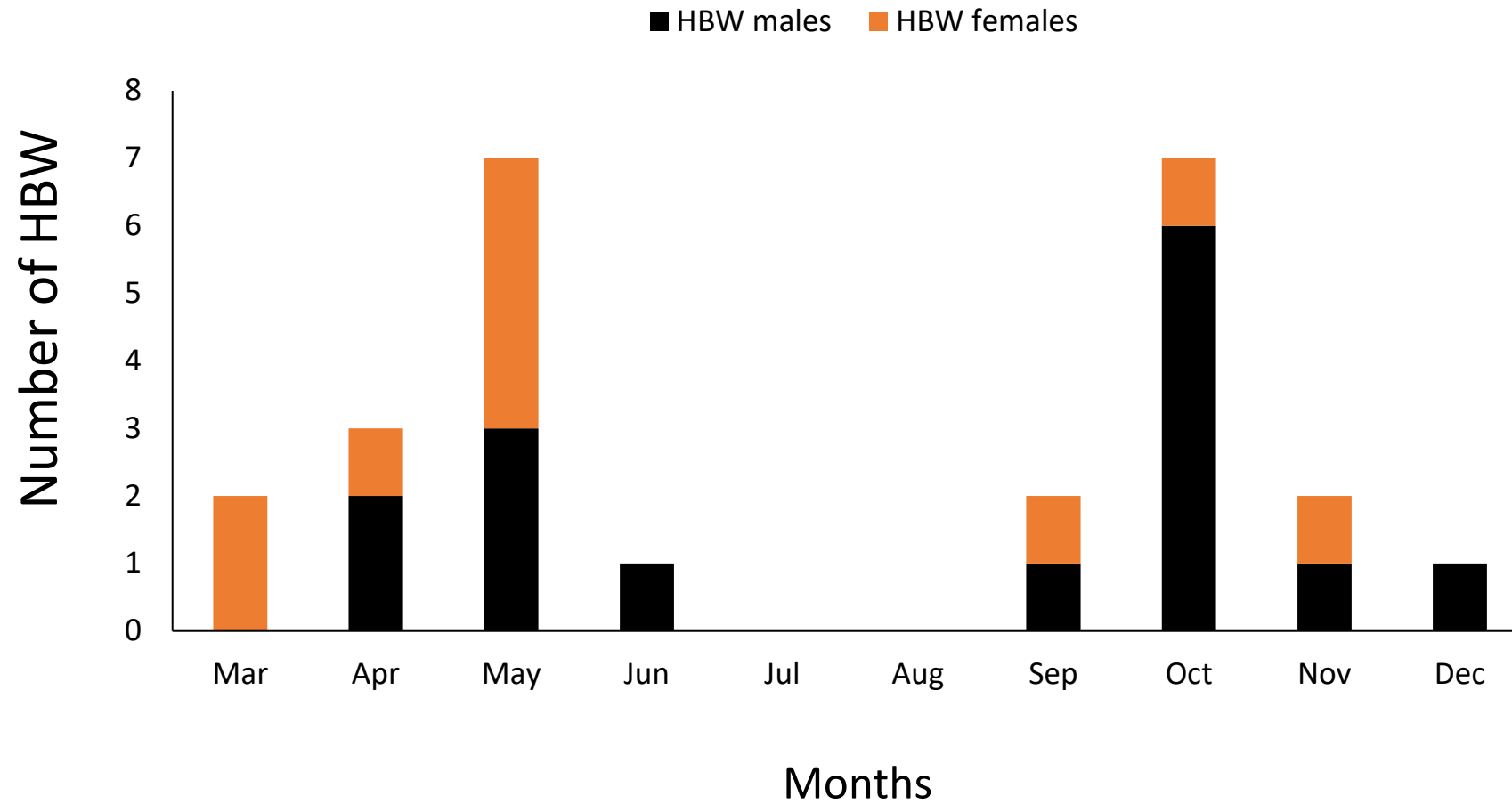
Emerged HBW from Buds on the Plants



Emerged HBW from Buds on the Ground



HBW Caught on Yellow Sticky Cards



Why the HBW Populations Do Not Disappear?

Does the HBW have an alternative host?

Okra

- *Abelmoschus esculentus* or *Hibiscus esculentus*
- Same family as Hibiscus (Malvaceae)
- Cultivated in FL, March-November
- It flowers approx. within 55-65 days



Photos: Y. Velazquez Hernandez

Can HBW Complete its Life Cycle on Okra?

- Experiments at 80 °F, 70% RH and 12:12 / L:D
- Two bud sizes:
 - 0.7 inch (1.87 cm)
 - 2 inch (5 cm)
- Development and reproduction



HBW Development on Okra buds

Bud Size (inch)	Egg	First Instar	Second Instar	Third Instar	Pupa	Egg to Adult	Mortality
0.7	4.2 ± 0.21	2.9 ± 0.34	2.5 ± 0.34	1.4 ± 0.52	0.4 ± 0.71	11.3 ± 0.69	77.4%
2	5.26 ± 0.17	2.03 ± 0.4	2.32 ± 0.46	3.42 ± 0.8	1.81 ± 0.68	14.84 ± 1.29	58.06%
Hibiscus	3.35 ± 0.31	2.6 ± 0.24	3.73 ± 0.48	2.05 ± 0.19	4.1 ± 0.27	15.78 ± 0.83	10%

HBW Reproduction on Okra

- Eggs laid on okra buds: 0.1 eggs/Female/Day
- Big buds: max 3 eggs/day
- Small buds: max 2 eggs/day



Take-home Messages

- HBW can successfully complete its life cycle within 2 wks. at 80 °F on hibiscus and okra
- South FL conditions favorable for HBW throughout the year
- HBW activity picks in spring and fall
- Okra can serve as alternative host

Resources

TROPICAL RESEARCH & EDUCATION CENTER

HIBISCUS BUD WEEVIL

The hibiscus bud weevil is a pest of tropical hibiscus (*Hibiscus rosa-sinensis* L.). This weevil originates from northeastern Mexico and southern Texas and was first found in Florida in May 2017. This pest feeds and oviposits in the flower buds. As a result of the larval feeding, severe bud drop is observed, decreasing the marketability of the crop. The hibiscus bud weevil is a regulated pest by the Florida Department of Agriculture and Consumer Services, Division of Plant Industry (FDACS-DPI). Because of this designation, any nursery found with this weevil must sign and follow a compliance agreement with FDACS-DPI to reduce the chance of spreading the weevil.

RESOURCES

- Pest alert 2018
- EDIS Publication
- Biology of *Anthonomus testaceosquamosus* Linell, 1897 (Coleoptera: Curculionidae): A New Pest of Tropical Hibiscus
HBW handout english
- HBW handout Spanish

The Hibiscus Bud Weevil, *Anthonomus testaceosquamosus* Linell (Coleoptera: Curculionidae)



ENY-2069

<https://doi.org/10.32473/edis-IN1328-2021>

The Hibiscus Bud Weevil (*Anthonomus testaceosquamosus* Linell, Coleoptera: Curculionidae)¹

Alexandra M Revynthi, Yisell Velazquez Hernandez, Juleysy Rodriguez, Paul E Kendra, Daniel Carrillo, Catharine M Mannion²

El Picudo del Botón del Hibisco (*Anthonomus testaceosquamosus* Linell, Coleoptera: Curculionidae)¹

Alexandra M Revynthi, German Vargas, Yisell Velazquez Hernandez, Paul E Kendra, Daniel Carrillo y Catharine M Mannion²

Article

Biology of *Anthonomus testaceosquamosus* Linell, 1897 (Coleoptera: Curculionidae): A New Pest of Tropical Hibiscus

Alexandra M. Revynthi^{1,*}, Yisell Velazquez Hernandez¹, Maria A. Canon¹, A. Daniel Greene¹, German Vargas¹, Paul E. Kendra² and Catharine M. Mannion¹

Article

Lethal and Sublethal Effects of Contact Insecticides and Horticultural Oils on the Hibiscus Bud Weevil, *Anthonomus testaceosquamosus* Linell (Coleoptera: Curculionidae)

A. Daniel Greene^{1,*}, Xiangbing Yang², Yisell Velazquez-Hernandez¹, German Vargas¹, Paul E. Kendra², Catharine Mannion¹ and Alexandra M. Revynthi^{1,*}

Article

A Prophylactic Application of Systemic Insecticides Contributes to the Management of the Hibiscus Bud Weevil *Anthonomus testaceosquamosus* Linell (Coleoptera: Curculionidae)

German Vargas^{1,*}, A. Daniel Greene², Yisell Velazquez-Hernandez¹, Xiangbing Yang³, Paul E. Kendra³ and Alexandra M. Revynthi¹

O bicudo do botão do hibisco (*Anthonomus testaceosquamosus* Linell, Coleoptera: Curculionidae)¹

Alexandra M Revynthi, Livia M S Ataíde, Yisell Velazquez Hernandez, Paul E Kendra, Daniel Carrillo, Catharine M Mannion²

Thank you!

Alexandra Revynthi, PhD
Assistant Professor
Ornamental Entomology & Acarology

University of Florida, IFAS
Tropical Research and Education Center
18905 SW 280 Street
Homestead, FL 33031

arevynthi@ufl.edu

T: +1 786-217-9244



Miami-Dade County Agricultural Manager's Office
Hibiscus Bud Weevil Task Force
Paul E Kendra
Catharine Mannion
Xingbo Wu



NACA: 58-6038-8-004



FAIN: 21SCBPFL1022
28486

