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Contact Us

Faith Oi
foi@ufl.edu
Nancy Sanders
nsanders@ufl.edu

Entomology & Nematology

Twitter [@UFEntomology](#)

[Facebook UFEntomology](#)

Online Training Available

<https://pmu.ifas.ufl.edu/>

<https://eces.ifas.ufl.edu/>

Additional Resources

University of Florida
Extension Publications

<http://edis.ifas.ufl.edu/>

Pest Management in and
Around Structures

PMU Focus - Biological Control

By Mike Bentley

In last month's issue, we wrapped up our three-part series on termite review. This month we will begin our new series on biological control. In this issue we introduce the practice of biological control and its significance in pest management.



Fig 1. Worker of the red imported fire ant, *Solenopsis invicta*. Photo: UF, D. Almquist.

Introduction to Biological Control

Biological control is a component of integrated pest management that reduces harmful pest populations using natural predators, parasites, or pathogens of those pests. To reduce the risk of organisms that are proposed as biological control from becoming pests themselves, they are quarantined and tested extensively before being released into a new environment. Biological control programs offer an effective means of managing pests that may be otherwise difficult to control with traditional chemical pesticides. Incorporating biocontrol into your pest management strategy can result in extended control, reducing the amount of pesticides needed while still achieving effective, and often long-term, control of damaging pests.

Biological Control of the Red Imported Fire Ant (*Solenopsis invicta*)

The red imported fire ant (RIFA) is an invasive pest that has

caused significant ecological damage throughout the southeastern United States (Fig 1). RIFAs are also capable of producing a painful sting. The common occurrence of RIFAs in urban areas, school yards, athletic fields, golf courses, parks and other recreational areas has created a high demand for effective and environmentally responsible treatment options.

Biological Control Agents

RIFA was introduced around the 1930's from South America without its biological control agents to suppress populations. As a result, it was hypothesized that populations in the southeast were five times greater in the years after its introduction. Since then, several biological control organisms have been isolated from South America and tested in the U.S. We will cover two of the biocontrol agents shown to suppress RIFA populations.

Several species of **parasitic phorid flies** also known as "decapitating flies" have been introduced from South America to areas where RIFA are established (Fig 2). Decapitating phorid flies reduce RIFA populations by killing worker ants directly (described below) and by disrupting the RIFAs foraging behavior. RIFA colonies can detect when the decapitating phorid fly is near, and respond by hiding, clustering, or taking a defensive posture. These responses disrupt the RIFAs high rate of foraging, ultimately impacting its ability to obtain resources to sustain the colony.

Sustaining phorid fly populations in areas where RIFA are established is important to achieving long term suppression of RIFA. The broadcast application of contact insecticides to completely eliminate RIFA may provide immediate short term relief, but can limit the longevity of the treatment by reducing or eliminating phorid fly populations. Phorid fly populations may be impacted when broadcast treatments kill phorid flies, too. Baits are a preferred method to broadcast insecticides because they provide a target-specific application method with no known lethal effects to beneficial phorid fly populations.

- The phorid fly has the same type of holometabolous life-cycle as a butterfly: egg, larva, pupa, adult.
- The phorid fly lays a single egg at the intersegmental membrane of the head and thorax or thorax and leg of the ant, depending on the species of fly.
- Once the egg hatches, the larva feeds on the insides of the ant, eventually migrating to the head of the ant where it begins the process of pupation.
- During this process, the head falls off and the adult phorid fly emerges, ready to repeat the process.
- See how phorid flies attack fire ants. [Click here](#).



Fig 2. A parasitic fly, *Pseudacteon tricuspis*, that attacks the red imported fire ant. Photo: UF, L. Buss.

Biological Pathogens

Microbial pathogens such as *Kneallhazia* (formerly *Thelohania*) *solenopsae* can be effective in eliminating RIFA colonies by impacting the queen's ability to produce eggs (Fig 3).

- *Kneallhazia solenopsae* can infect all growth stages of the fire ant, but is most debilitating when the fire ant queen is infected, ultimately reducing her ability to produce eggs.



Fig 3. Queens of the red imported fire ant, *S. invicta*. The queen on the right is infected with the microsporidian protozoan *Kneallhazia solenopsae*. Photo: UF, L. Buss.

Upcoming Training Opportunities:

If you plan on taking the [State Certified Operator examination](#) through PMU, please submit your applications by:

July 1 for the Oct 17 PMU [State Exam](#) for Termite and WDO
(Write "**PMU NOV WDO**" on the top line of the state application)

July 1 for the Nov 7 PMU [State Exam](#) for GHP
(Write "**PMU OCT GHP**" on the top line of the state application)

May Offerings

Foundations of General Household Pest Management

Date: May 28-30, 2014; Wed-Fri (Last one until Oct 1-3)

Registration deadline: May 23, 2013

Time: 8 AM-5 PM (W, TH); 8 AM-12 PM (F)

Place: UF/IFAS Apopka MREC, 2725 S. Binion Rd, Apopka, FL 32703-8504

Registration fee: \$375

Pest control matters. Cockroach allergen mitigation can be achieved with IPM. Class duration: 2.5 days.

- Study domestic and peridomestic cockroach species and how to control them as well as rodent, small fly, filth fly, fire ant and nuisance ant management.
- Review the labels of commonly used GHP products, practice pest inspections at PMU's house and develop treatment strategies focused on IPM.
- Do a vehicle inspection and spill drill with Paul Mitola from DACS.

[Register here](#)

June Offerings

Foundations of Termite Management

Date: June 18-20, 2014 (1 slot left, next course Sept 17-19)

Time: 8 AM-5 PM (W, TH); 8 AM-12 PM (F)

Place: UF/IFAS Apopka MREC, 2725 S. Binion Rd, Apopka, FL 32703-8504

Registration fee: \$375

Learn how termites exploit over 50 building construction elements and how to treat them in a hands-on environment in 2-days instead of 2 years.

- Practice doing a DACS vehicle inspection and spill drill with Paul Mitola from DACS before a crisis occurs.
- Hear about the top 10 reasons technicians get in trouble and how to avoid them from Mark Ruff, industry attorney.
- Get more in-depth information on termite biology and behavior as well as product label navigation. Class duration: 2.5 days.

[Register here](#)

July Offerings

Termite Basics 100

Date: July 30, 2014

Time: 8 AM-5 PM (W)

Place: UF/IFAS Apopka MREC, 2725 S. Binion Rd, Apopka, FL 32703-8504

Registration fee: \$175

This one-day class is geared for the new technician, sales or office staff. Will help fulfill 40 hour training requirement for new ID card holders.

- Learn about the general Florida Statute 482 requirements for technicians and sales staff.
- Be introduced to basic termite biology and behavior in the context of structural infestations.
- Learn to determine different slab types in the field and the common ways termites enter structures
- Practice basic methods for treatment

[Register here](#)

General Household Pests Basics 100

Date: July 31, 2014

Time: 8 AM-5 PM (TH)

Place: UF/IFAS Apopka MREC, 2725 S. Binion Rd, Apopka, FL 32703-8504

Registration fee: \$175

This one-day class is geared for the new technician, sales or office staff. Partially fulfills 40 hour training requirement for new ID card holders.

- Learn about the general Florida Statute 482 requirements for technicians and sales.
- Learn the basics concepts Integrated Pest Management.
- Learn how to monitor and make decisions about treatment.

[Register here](#)

ADDITIONAL COURSES

Enroll in the June 2014 Landscape IPM: Ornamentals and Turf, and take your first steps toward getting a UF Pest Management certificate or becoming LMA certified!

- The course is called "[Landscape IPM: Ornamentals and Turf.](#)"

- Course number IPM 4254
- Offered for UF credit and will also count towards a UF Certificate in Landscape Pest Management
- Available for students who are enrolled at UF or for people outside UF who are interested in the material
- Available 100% online, must have computer and internet access to take this class

The LMA will offer students who pass this class the opportunity to become LMA Certified without additional testing since they will be tested as part of the course.

Learn more about the UF distance program, including costs and how to register - <http://entnemdept.ufl.edu/academics/distance/>

To register for this course please complete a Nondegree Registration Request at the following website: <http://www.isis.ufl.edu/cgi-bin/eaglec?MDASTRAN=nda-intro>

You will need to fill out some personal information on the form and the following course information:

- Select Year and Term of Registration: 2014 Summer (June)
- College: THE COLLEGE OF AGRICULTURAL AND LIFE SCIENCES – Entomology Undergrad Distance Courses
- Course Information: Prefix- IPM. Number- 4254.

If you have trouble filling out this form and registering for the course please contact Ms. Ruth Brumbaugh, Entomology and Nematology Department Student Services Coordinator. Phone: 352-273-3912 Email: brumbaugh@ufl.edu . *Please let Ms. Brumbaugh know you are attempting to register for the course as a Nondegree seeking student so she knows how to help you.*

If you would like more information about the course please contact the course instructor Dr. Jennifer L. Gillett-Kaufman Phone: (352)273-3950 Email: gillett@ufl.edu. She cannot help you with registration and will forward all registration requests to Ms. Brumbaugh.

PMU Courses

WDO category

July 30, 2014, [Termite Basics](#). Anyone in sales, office management, or brand new to the industry, this is the course for you.

Sept 17-19, 2014, [Termite Foundations](#)

Oct 15-17, 2014, [Termite Masters](#), **must** have taken Foundations

Dec 3-5, 2014, [Termite Expert](#), **must** have taken Foundations and Masters

GHP Category

July 31, 2014, [GHP Basics](#) . Anyone in sales, office management, or brand new to the industry, this is the course for you

Nov 5-7, 2014, [GHP Masters](#), **must** have taken Foundations

L&O Category

Please contact Dr. Eileen Buss (eabuss@ufl.edu, (352) 273-3976) directly with questions concerning these courses.

Sept 24-26, 2014, [Turf Foundations](#). Doing turf work? This is a must have course.

Click on links for course descriptions or go to <http://pmu.ifas.ufl.edu/courses> for more information

Learn more from IFAS



- UF/IFAS has Extension Offices in each Florida's sixty-seven counties. We also have twelve Research and Education Centers and Research and Demonstration Sites (RDSs).
- If you need help a great place to start is your local County Extension Office. With an office located in every county it has never been easier to partner with the University of Florida and your local County Government. To find the office near you please visit:

<http://solutionsforyourlife.ufl.edu/ma>

