

# TAME Lygodium (Old World Climbing Fern)

AN INDEPENDENT STUDY COURSE FOR  
RESTRICTED-USE PESTICIDE APPLICATORS



## Lygodium Control Workbook *(Edited 2009)*

By Ken Gioeli  
Extension Agent III / Natural Resources



# Preface

The independent study course: TAME Lygodium (Old World Climbing Fern) is designed for use by agricultural pesticide applicators intending to earn continuing education units toward renewal of their restricted-use pesticide licenses under the provisions of the Florida Pesticide Law (Chapter 487 Florida Statutes) and its rules (Chapters 5E-2 and 5E-9 of the Florida Administrative Code).

# References

Hornsby, A. and Rao, P. (1999). Behavior of pesticides in soils and water. [Available Online] <http://edis.ifas.ufl.edu//pdffiles/SS/SS11100.pdf>

Langeland, K. (2001). Natural Area Weeds: Old World Climbing Fern (*Lygodium microphyllum*). SS-AGR-21. Agronomy Department, University of Florida.

# Grading

Workbooks are graded on the second and last Fridays of the month.

## SECTION 1

# *Lygodium microphyllum*: Stopping This Ecological Threat

You should have received the following course materials: Video: "Stopping the Spread of *Lygodium* (Old World Climbing Fern)"; Fact Sheet: "Natural Area Weeds: Old World Climbing Fern (*Lygodium microphyllum*)"

Using the information contained within the "Natural Area Weeds: Old World Climbing Fern (*Lygodium microphyllum*)" fact sheet, answer the following:

1. Identify four things that might occur when a species is introduced to a new area

---

---

---

---

2. Define the term "invasive plant species."

3. Old World climbing fern is native on these three continents:

---

---

---

4. *Lygodium* was first recorded in cultivation at a Delray Beach nursery in this year:

5. *Lygodium* was first found growing in the wild in Martin County in this year:

6. Owing to the fern's ability to reproduce by wind-dispersed \_\_\_\_\_, new populations are found in remote areas far from existing populations.

7. Describe how *Lygodium* impacts natural areas.

8. Describe how *Lygodium* increases risk of wildfire damage in natural areas.

### TAME *Lygodium* (Old World Climbing Fern)

An Independent Study Course for  
Restricted-Use Pesticide Applicators  
\*The course must be completed and  
received by the St. Lucie County Extension  
office no later than the close of business  
on December 31, 2009. Students must  
have at least 70% of the questions  
answered correctly to  
receive CEU's.

## SECTION 2

# Lygodium Biology

**9 Across.** Lygodium's underground stem.

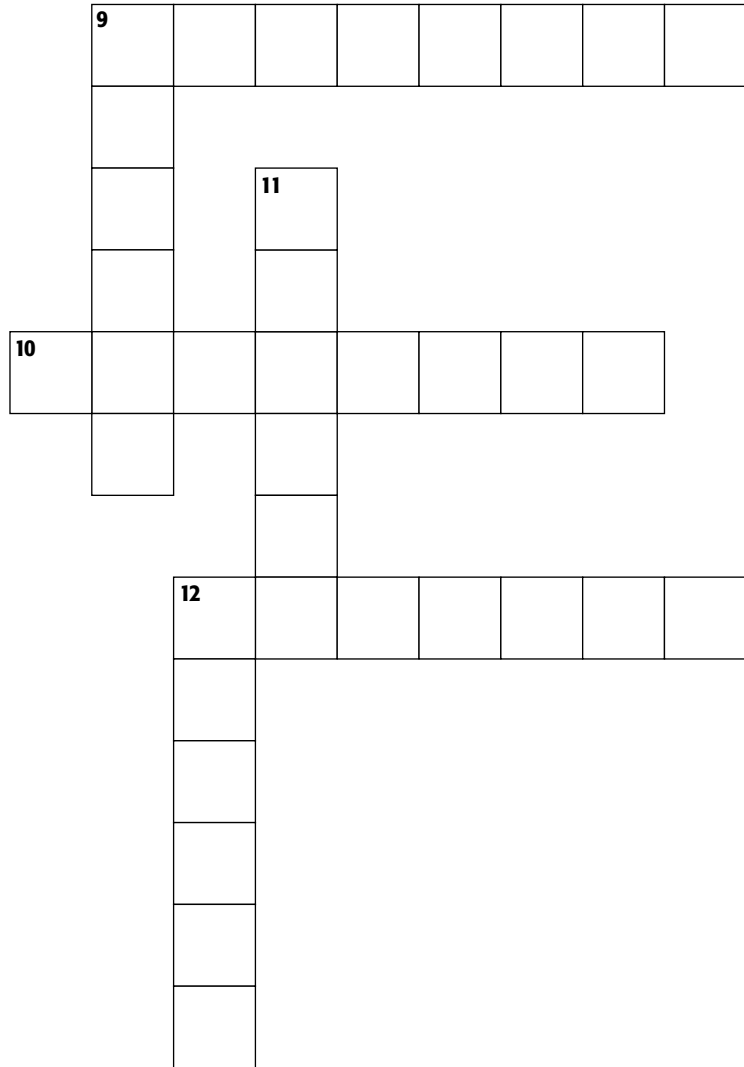
**9 Down.** The main stem of the frond.

**10 Across.** Lygodium's pairs of leaflets.

**11 Down.** Lygodium's leafy branches.

**12 Across.** \_\_\_\_\_ leaflets are fringed with tiny lobes of enrolled leaf tissue along the leaf margin, which cover the reproductive tissues.

**12 Down.** Lygodium consists of long \_\_\_\_\_ (to 90 feet long) that spread along the ground.



- 13.** True or false. Little is known about *Lygodium microphyllum*'s biology or management.
- 14.** True or false. Herbicides, often in combination with hand cutting or applied by helicopter, are now being used to control Lygodium; however, more research is needed.
- 15.** Identify three common names (not brand names) of herbicide products recommended for Lygodium control.

---



---



---

## SECTION 3

# Pesticides and the Environment

Directions: Triclopyr and Glyphosate are herbicides recommended for Lygodium control. During this section, you will learn how to compare the potential environmental impacts of these herbicides. Refer to Chart 1 in this Workbook and answer the questions below.

Chart 1

Herbicide	Koc Value	RRPI	RLPI	Aquatic LC50
Triclopyr	780	27	169	148 mg/L
Glyphosate	24,000	1	>2,000	8.3 mg/L

- 16.** The organic carbon adsorption coefficient is a value used to describe the relative affinity or attraction of the pesticide to soil materials and therefore its mobility in the soil. Pesticides with a Koc value less than 100 in sandy soils, or 50 or less in fine textured soils should be used with caution.

Yes or no. Should Triclopyr be used with caution in sandy soils?

Yes or no. Should Glyphosate be used with caution in sandy soils?

- 17.** The Pesticide Relative Runoff Potential Index (RRPI) is used to measure the relative immobility and availability of each pesticide in soil and its potential to remain near the soil surface and be subject to loss during the aqueous phase or sediment phase of runoff. The smaller the RRPI value of a pesticide, the greater its potential to be lost in runoff.

Which herbicide is most likely to be lost in runoff – Triclopyr or Glyphosate?

- 18.** The Relative Leaching Potential Index (RLPI) defines the relative pesticide mass as it moves through the soil. The smaller the RLPI value, the greater its leaching potential.

Which herbicide is most likely to leach into the surrounding environment - Triclopyr or Glyphosate?

## SECTION 4

# From the Video

Directions: Watch the video "Stopping the Spread of Lygodium (Old World Climbing Fern)" and answer the questions below.

19. There's a way to save Florida's native plants from extinction caused by Lygodium encroachment. People who care for lawns and natural areas can \_\_\_\_\_ for and \_\_\_\_\_ Lygodium.
20. How has Lygodium left its mark on Florida's environment?
21. Why does Dan Thayer think Lygodium is one of the worst forms of pollution?
22. Although Lygodium is called a fern, it actually grows more like a \_\_\_\_\_.
23. How should people transport suspected Lygodium specimens to the Extension office for identification?
24. Which herbicide does Carol Bailey say works best at controlling Lygodium?
25. Define translocation:
26. What are the three steps you need to take if Lygodium has traveled up into the tree canopy?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
27. How should the cut vine be disposed?

## SECTION 5

# Biological Control of *Lygodium microphyllum*

Directions: Read the "Biological Controls" section of Natural Area Weeds: Old World Climbing Fern (*Lygodium microphyllum*) and answer the questions below. This fact sheet is available online at <http://edis.ifas.ufl.edu/AG122>

28. What is the genus and species of the moth that was released in 2005 to biologically control Lygodium?
29. Where was the first moth's first U.S. release conducted in 2005?
30. True or False? It may several years or decades before the effects of biocontrols are known.
31. Metsulfuron methyl is labeled for application by state agencies to control Old World climbing fern growing in water. What is the brand name of the Metsulfuron product listed in Table 1 of Natural Area Weeds: Old World Climbing Fern (*Lygodium microphyllum*)? \_\_\_\_\_



# TAME Lygodium (Old World Climbing Fern)

A STUDY COURSE FOR RESTRICTED-USE PESTICIDE APPLICATORS

## COURSE ENROLLMENT FORM

\*The course must be completed and received by the St. Lucie County Extension office no later than the close of business on December 31, 2009. Students must have at least 70% of the questions answered correctly to receive CEU's.

\_\_\_\_\_  
Last Name First Middle

\_\_\_\_\_  
Mailing Address

\_\_\_\_\_  
City State Zip

( ) \_\_\_\_\_ ( ) \_\_\_\_\_  
Phone Number Fax Number E-mail

Pesticide License Type: Private \_\_\_\_\_ Public \_\_\_\_\_ Commercial \_\_\_\_\_

Pesticide License Number \_\_\_\_\_ Workbook Completion Date \_\_\_\_\_

I attest that the work completed in the TAME Lygodium (Old World Climbing Fern) is my own work.

\_\_\_\_\_  
Signature Date

Mail the completed TAME Lygodium (Old World Climbing Fern) Workbook, the signed enrollment form, and a check for \$10.00 made payable to the St. Lucie County 4-H Foundation to the following:

Ken Gioeli  
Extension Agent III / Natural Resources  
University of Florida / St. Lucie Co Extension  
8400 Picos Road, Ste 101  
Fort Pierce, FL 34945  
(772) 462-1660 ktgioeli@ufl.edu

Course participants will receive their CEU form after the Workbook has been graded. Ken reserves the right to refuse to grant CEU's unless all work is shown in the Workbook.

Please help us justify the continuation of online coursework such as this course. How much money do you estimate this course saved you or your employer?

Hourly wages that would have been spent attending in-person coursework if this one online course was not available to you?  
\$ \_\_\_\_\_

How much would your travel costs have been attending this course in-person (mileage, hourly wages, etc.) if this online course was not available to you? \$ \_\_\_\_\_

What costs would you or your employer have incurred in lost productivity had you attended this course in-person rather than online? \$ \_\_\_\_\_

In total, how much money did this course save you and your employer?  
\$ \_\_\_\_\_