

TRI-OLOGY

A PUBLICATION OF THE FLORIDA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES, DIVISION OF PLANT INDUSTRY
ADAM H. PUTNAM, COMMISSIONER RICHARD D. GASKALLA, DIVISION DIRECTOR

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 Printer-Friendly PDF Version

DPI's Bureau of Entomology, Nematology and Plant Pathology (the botany section is included in this bureau) produces TRI-OLOGY six times a year, covering two months of activity in each issue. The report includes detection activities from nursery plant inspections, routine and emergency program surveys, and requests for identification of plants and pests from the public. Samples are also occasionally sent from other states or countries for identification or diagnosis.

Highlights

Following are a few of the notable entries from this volume of TRI-OLOGY. These entries are reports of interesting plants or unusual pests, some of which may be problematic. See Section Reports for complete information.

Sibinia sellata, a Continental USA record. This weevil species is native to Argentina. It is reported to be associated with purslane.



***Sibinia sellata* (a weevil)**
Photograph courtesy of Michael C. Thomas, [DPI](#)



Parthenium hysterophorus L. (parthenium, false ragweed, Santa Maria feverfew, whitetop weed) is a weedy annual

***Parthenium hysterophorus* L. (parthenium, false ragweed) flower**

Photograph courtesy of Bob Upcavage, [Atlas of Florida Vascular Plants](#)

found scattered in fields, disturbed or open areas and roadsides through much of the eastern United States. This species can be toxic to livestock and can cause severe dermatitis in humans. It has become a serious weed of croplands and pastures through

aggressive spread in Australia, Asia and Africa and is becoming a pest plant in the southern United States. This species can prevail over native plants through production of massive seed crops and allelopathic chemicals.

Erelieva parvulella, a State record. The closest known populations of this otherwise northern species of moth are in Illinois and New York. The larval biology is not known, and it has no economic importance.



***Erelieva parvulella* (moth)**
Photograph courtesy of James E. Hayden, [DPI](#)

Epitrimerus pyri, a State record. The pear rust mite occurs in most pear-growing regions worldwide. This species feeds on leaves and young fruits.

Ophiomyia kwansonis, a State record. An immature stage specimen of the daylily leafminer was

Section Reports

Botany

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Our Mission...getting it done

The mission of the Division of Plant Industry is to protect Florida's native and commercially grown plants and the State's apiary industry from harmful pests and diseases. Perhaps you'd be interested in learning more about the diseases facing Florida's citrus industry.

Citrus canker is a bacterial disease of citrus that causes premature leaf and fruit drop. Citrus canker is highly contagious and can be spread rapidly by windborne rain, lawnmowers and other landscaping equipment; people carrying the infection on their hands, clothing or equipment; or by moving infected or exposed plants. Symptoms on leaves, stems and fruit include brown, raised lesions surrounded by an oily, water-soaked margin. In addition,



***Ophiomyia kwansonis* (daylily leafminer) adult female**
Photograph courtesy of Gary J. Steck, [DPI](#)

detected during a routine inspection of a daylily nursery. The inspection was done in order to meet requirements of shipping plants to the European Union, which specify that plants are to be free of various leafminer pests.

***Raffaelea lauricola* (laurel wilt), a County record**, was reported to us for the first time from Sumter County. The pathogen was found on *Persea borbonia* (red bay) in Half Moon Wildlife Management Area. Laurel wilt infects

members of the plant family Lauraceae.

***Meloidogyne javanica*, the Javanese root-knot nematode**, was found infecting the roots of the perennial *Ophiopogon* sp. (mondo grass) in Hernando County.



***Ophiopogon* sp. (mondo grass) in a stand of uneven and sparse plants infected by *Meloidogyne javanica* (Javanese root-knot nematode).**
Photograph courtesy of Stephen R. Jenner, [DPI](#)

Acknowledgements:

The editors would like to acknowledge the work of all those who contributed information and explanations by providing data, photographs or text and by carefully reading early drafts. We also thank Scott Weinberg for his skillful use of web authoring tools to produce this report.

leaves may develop a yellow ring or halo. Old lesions in leaves may fall out, creating a shot-hole effect.

Citrus greening, also known as huanglongbing (HLB) or yellow dragon disease, is a bacterial disease that causes asymmetrical blotchy mottling of leaves. The disease may cause small, narrow leaves and short stems. Early in the disease progression, only one sector of the tree is affected. As the disease develops, trees show severe dieback and lack of productivity. Fruit from diseased trees is small and often misshapen, and affected fruit can taste bitter, medicinal and sour. In Florida, citrus greening is spread by the Asian citrus psyllid. In Africa, the African citrus psyllid is the vector. The African citrus psyllid has not been found in the United States.

Citrus black spot is a fungal disease marked by dark, speckled spots or blotches on the rinds of fruit, and the disease causes early fruit drop. It is spread by spores released from decomposing citrus leaves. Citrus black spot affects only citrus, with late maturing oranges, lemons, mandarins and grapefruit most susceptible.

The division works cooperatively with USDA/APHIS/PPQ to implement the Citrus Health Response Program, which helps to sustain the citrus industry, maintain growers' continued access to export markets and safeguard the other citrus-growing states against a

variety of citrus diseases and pests.



***Citrus maxima* (pomelo) with symptoms of citrus greening**
Photograph courtesy of Susan E. Halbert, [DPI](#)

We welcome your suggestions for improvement of TRI-
OLOGY. Please feel free to contact [me](#) or [Dr. Patti Anderson](#) with your comments.

[Dr. Wayne N. Dixon](#), editor
Assistant Director, DPI

Botany Section

Compiled by [Patti J. Anderson, Ph.D.](#)

This section identifies plants for the Division of Plant Industry, as well as for other governmental agencies and private individuals. The Botany Section maintains a reference herbarium with over 10,000 plants and nearly 1,400 vials of seeds. Some of the samples received for identification are discussed below:

***Imperata cylindrica* (L.) Beauv. (cogongrass)**, from a genus of 10 species widely distributed in tropical and warm temperate areas. Gramineae. This species has often been described as one of the ten worst weeds in the world. Both FDACS and USDA include cogongrass on their lists of noxious weeds. In 1993, DPI published a Botany Circular (No. 28) "Cogongrass, *Imperata cylindrica* (L.) Beauv. : A good grass gone bad!" which continues to be available on-line. Because few months pass without a submission of this species for identification, another description of the plant in Tri-ology seems appropriate. This perennial grass expands its territory with underground rhizomes creeping outward in all directions to produce new shoots while wind-dispersed seeds spread to more distant locations. Dense stands can eventually exclude other vegetation from an area by disrupting the processes of germination, growth and decomposition of other species and by the allelopathic effect of chemicals produced by the grass. Cogongrass flowers all year in Central and South Florida, but only in spring or fall in more northern locations. The striking white spike of flowers and the leaves with a pale, off-center midvein and scabrid margins help identify this species. Its leaves can grow to 1 m or more in length and up to 2 cm in width. Cogongrass was imported into in Florida for forage and erosion control in the 1940s and remains a costly introduction. (Sarasota County; B2011-460; Karen 'Lea' Etchells; 8 August 2011.) (Coile and Shilling 1993; Holm *et al.* 1977; Langeland *et al.* 2008; Mabberley 2008; http://wiki.bugwood.org/Archive:BCIPEUS/Imperata_cylindrica accessed 14 August 2011.)

***Parthenium hysterophorus* L. (parthenium, false ragweed, Santa Maria feverfew, whitetop weed)**, from a genus of 16 species in North America and the West Indies. Compositae/Asteraceae. This weedy annual is found in fields, disturbed or open areas and roadsides scattered through much of the eastern United States in the area roughly bounded by Massachusetts and Michigan to the north and south from Texas to Florida. Within Florida, the species is concentrated in counties of the southern peninsula and in seven counties of the Panhandle as well as Duval, St. Johns and Alachua counties. Although the seedlings begin with a basal rosette of leaves, as the plant grows to 1-2 m in height, it produces pale green, pinnately-lobed, gland-dotted leaves along the stem and branches. The white flower heads are borne in open panicle-like clusters, with five or sometimes six minute ray flowers (0.3 - 1mm) and 12-30 disc flowers. Although the leaves are similar to those of *Ambrosia artemesiifolia* (common ragweed), that species has opposite leaves at the base of the

Sample Submissions

	July/ Aug	Year to Date
Samples submitted by other DPI sections	1,822	5,396
Samples submitted for botanical identification only	180	541
Total Samples Submitted	2,002	5,937
Specimens added to the herbarium	15	41



***Imperata cylindrica* (cogongrass)**
Photograph courtesy of Shirley Denton, [Atlas of Florida Vascular Plants](#)

stem with alternate leaf arrangement toward the apex. In parthenium, all leaves are alternate. This species can be toxic to livestock and can cause severe dermatitis in humans. It has become a serious weed of croplands and pastures through aggressive spread in Australia, Asia and Africa and is becoming a pest plant in the southern United States. This species can overwhelm native plants through production of massive seed crops and allelopathic chemicals. (Hernando County; B2011-382; Stephen R. Jenner; 14 July 2011.) (Bryson and DeFelice 2009; <http://efloras.org/> accessed 15 September 2011; <http://www.issg.org> accessed 16 September 2011.)

***Tribulus cistoides* L. (burrnut, Jamaican feverplant, puncture vine)**, from a genus of 25 species in tropical and warm areas, mainly of Africa, with one species from Europe. Zygophyllaceae. This prostrate or ascending perennial is a weedy herbaceous plant usually found growing in sandy soil. The pubescent stems can reach 50 cm in length. This species has opposite, pinnately compound leaves with five to ten pairs of leaflets, each 5-15 mm long and up to 8 mm wide, and stipules 5-8 mm long. The flowers are 20-40 mm across with pubescent sepals and five bright yellow petals. The flower includes intrastaminal glands that connect to form a five-lobed ring around the base of the hirsute ovary. The lovely flower is followed by the fruit that inspires the common name, "puncture vine." It is a spiny schizocarp that splits into five woody mericarps. These spiny fruits are thought to have found their way to the United States embedded in airplane tires and were spread from military bases in Florida by the 1940s. This species is listed as a Category II invasive by the Florida Exotic Pest Plant Council. (Miami-Dade County; B2011-540; Richard L. Blaney and Roberto Delcid; 29 August 2011.) (Correll and Correll 1982; Langeland *et al.* 2008; Wunderlin and Hansen 2011; <http://plants.ifas.ufl.edu/node/652> accessed 15 September 2011; http://www.zimbabweflora.co.zw/speciesdata/family.php?family_id=240 accessed 14 September 2011.)

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***Parthenium hysterophorus* (parthenium, false ragweed) flower**
Photograph courtesy of Bob Upcavage, [Atlas of Florida Vascular Plants](#)



***Parthenium hysterophorus* (parthenium, false ragweed) leaf**
Photograph courtesy of Keith Bradley, [Atlas of Florida Vascular Plants](#)



***Tribulus cistoides* (puncture vine)**
Photograph courtesy of Forest & Kim Starr, starrimages@hear.org

Press, New York, New York. 1,021 p.

Wunderlin, R.P. and B.F. Hansen. 2011. Guide to the vascular plants of Florida, 3rd edition. University Press of Florida, Gainesville, Florida. 784 p.



***Tribulus cistoides* (puncture vine)**

Photograph courtesy of Forest & Kim Starr,
starrimages@hear.org

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Entomology Section

Compiled by [Susan E. Halbert, Ph.D.](#)

This section provides the division's plant protection specialists and other customers with accurate identifications of arthropods. The entomology section also builds and maintains the arthropod reference and research collection (the Florida State Collection of Arthropods with over 9 million specimens), and investigates the biology, biological control and taxonomy of arthropods.

***Sibinia sellata*, a Continental USA record.** This weevil species is native to Argentina. It is reported to be associated with purslane. Its pest potential is not known. (Miami-Dade County; E2011-4145; Olga Garcia; 24 August 2011.) (Dr. Michael C. Thomas.)

***Erelieva parvulella*, a State record.** The closest known populations of this otherwise northern species of moth are in Illinois and New York. The larval biology is not known, and it has no economic importance. (Levy County; E2011-5637; James E. Hayden; 30 July 2011.) (Dr. James E. Hayden.)

***Epitrimerus pyri*, a State record.** The pear rust mite occurs in most pear-growing regions worldwide. This species feeds on leaves and young fruits. Feeding by large populations of pear rust mites can stop terminal growth and cause browning of the underside of leaves. Pear rust mites overwinter under loose bark and crevices. (Suwannee County; E2011-5481; Warren C. 'Cal' Welbourn, Kristi M. Jukovich, Mary J. 'Janie' Echols and W. Wayne Bailey; 15 August 2011.) (Dr. W.C. 'Cal' Welbourn.)

***Ophiomyia kwansonis*, a State record.** An immature stage specimen of the daylily leafminer was detected during a routine inspection of a daylily nursery. The inspection was completed to meet requirements of shipping plants to the European Union, which specify that plants are to be free of various leafminer pests. In July, during inspections of two daylily nurseries in Apopka and one in Alachua County, leaf mines, immature stages and adults were found to be abundant. Leaf mines on daylily, presumably caused by this same pest, have been noted for at least two years in numerous states in the eastern United States, including Maryland where presence of the daylily leafminer now has been confirmed. The pest previously was known to occur in Japan and Taiwan. (Orange County; E2011-1388; Lance A. Brown; 17 March 2011.) (Dr. Gary J. Steck.)

***Bactrocera correcta*.** An Asian guava fruit fly was caught in a methyl eugenol trap in the Orlando area. This is an invasive, polyphagous fruit fly pest that occurs naturally in South and Southeast Asia. In response, a trapping array has been put in place over an 81-square mile area surrounding the detection site. No additional flies have been detected to date. (Orange County; E2011-5871; Anthony Puppelo; 23 August 2011.) (Dr. Gary J. Steck.)

Sample/Specimen Submissions

July

Samples Submitted	778
Specimens Identified	7,626

August

Samples Submitted	1,253
Specimens Identified	14,343

Year to Date

Samples Submitted	6,201
Specimens Identified	78,758



***Sibinia sellata* (a weevil)**

Photograph courtesy of Michael C. Thomas, [DPI](#)



***Erelieva parvulella* (moth)**

Photograph courtesy of James E. Hayden, [DPI](#)

Entomology Specimen Report

Following are tables with entries for records of new hosts or new geographical areas for samples identified in the current volume's time period as well as samples of special interest. An abbreviated table, with all the new records, but less detail about them, is presented in the body of this web page and another version with more complete data is downloadable as a PDF or an Excel spreadsheet.

The tables are organized alphabetically by plant host if the specimen has a plant host. Some arthropod specimens are not collected on plants and are not necessarily plant pests. In the table below, those entries that have no plant information included are organized by arthropod name.

 [Download full spreadsheet in PDF format](#)

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***Ophiomyia kwansonis* (daylily leafminer) larva**

Photograph courtesy of Gary J. Steck, [DPI](#)



***Ophiomyia kwansonis* (daylily leafminer) adult female**

Photograph courtesy of Gary J. Steck, [DPI](#)



***Hemerocallis* sp. (daylily) with mined leaves**

Photograph courtesy of Gary J. Steck, [DPI](#)

Plant Species Name	Plant Common Name	Arthropod Species Name	Arthropod Common Name	County	New Records
<i>Artocarpus heterophyllus</i>	jackfruit	<i>Nipaecoccus viridis</i>	Lebbeck mealybug	Palm Beach	HOST
<i>Basella alba</i>	Ceylon spinach	<i>Pseudococcus jackbeardsleyi</i>	a mealybug	Miami-Dade	HOST
<i>Brassica oleracea</i>	broccoli, cauliflower	<i>Plutella xylostella</i>	diamondback moth	Suwannee	INTERDICTION INTERCEPTION
<i>Brassica rapa</i>	field mustard, rape mustard	<i>Aleurodicus rugioperculatus</i>	a whitefly	Miami-Dade	HOST
<i>Bulnesia arborea</i>	Maracaibo lignumvitae; verawood	<i>Tetraleurodes acaciae</i>	acacia whitefly	Miami-Dade	HOST
<i>Capsicum annuum</i>	pepper	<i>Bactericera cockerelli</i>	potato psyllid	Suwannee	INTERDICTION INTERCEPTION
<i>Capsicum annuum</i>	pepper	<i>Bactericera cockerelli</i>	potato psyllid	Broward	REGULATORY INCIDENT

<i>Capsicum annuum</i>	pepper	<i>Ferrisia virgata</i>	striped mealybug	Duval	HOST
<i>Citrus aurantium</i>	sour orange	<i>Micrathena sagittata</i>	arrow shaped orbweaver	Hardee	COUNTY
<i>Citrus sinensis</i>	sweet orange	<i>Bactrocera correcta</i>	Asian guava fruit fly	Orange	REGULATORY INCIDENT
<i>Citrus x paradisi</i>	grapefruit	<i>Leucophenga varia</i>	a drosophilid fly	Sumter	COUNTY
<i>Citrus x paradisi</i>	grapefruit	<i>Philornis porteri</i>	a muscid fly	Polk	COUNTY

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Nematology Section

Compiled by [Jason D. Stanley, M.S.](#), [R. N. Inserra, Ph.D.](#), and [Janete A. Brito, Ph.D.](#)

This section analyzes soil and plant samples for nematodes, conducts pest detection surveys and provides diagnosis of plant problems, in addition to completing identification of plant parasitic nematodes involved in regulatory and certification programs. State of Florida statutes and rules mandate the principal part of the regulatory activity of the section. Analyses of plant and soil samples include those from in-state programs, plant shipments originating in Florida destined for other states and countries, as well as samples intercepted in Florida from outside the United States.

Nematodes of Special Interest

***Meloidogyne javanica* (Treub 1885) Chitwood, 1949, the Javanese root-knot nematode**, was found infecting the roots of a perennial *Ophiopogon* sp. (mondo grass). (Hernando County; N2011-00760; Stephen R. Jenner; 30 June 2011.)

Mondo grass (*Ophiopogon* sp.) is a stoloniferous perennial in the lily family (Liliaceae) originating from India, Japan and Korea. This plant is a grass-like ground cover, similar to *Liriope muscari*, used for landscaping. Dieback and stunting of this evergreen are common in Florida and are caused mainly by pathogenic fungi, such as *Phytophthora* spp., *Pythium* spp. and *Rhizoctonia* spp., and root-knot nematodes. Records from the Division of Plant Industry indicate that more than one species of root-knot nematode is involved in the decline of this grass. Recently, the Javanese root-knot nematode, *Meloidogyne javanica*, was detected in severely galled roots of stunted mondo grass plants growing in a sod grass operation in Central Florida. Another root-knot nematode species, which has not yet been identified, was associated with *M. javanica*. The nematode infected plants showed uneven and sparse growth. Their leaves were chlorotic and desiccated. Effective management practices are limited for nematode-infested mondo grass sod operations because there is no registered chemical that can cure the infections. Appropriate cultural practices, such as application of organic matter, balanced fertilization and appropriate irrigation, can mitigate the damage from nematodes.

Collectors submitting five or more samples that were processed for nematological analysis in July - August 2011

Anderson, James L.	49
Anderson, J. Mikaela	15
Bailey, W. Wayne	21
Bentley, Michael A.	8

Sample Submissions

	July/ Aug	Year to Date
Morphological Identifications	2,015	9,375
Molecular Identifications	247	404
Total Samples Submitted	2,262	9,779

Certification and Regulatory Samples

Multistate Certification for National and International Export	1,595	6,977
California Certification	226	1651
Pre-movement (Citrus Nursery Certification)	56	226
Site or Pit Approval (Citrus Nursery and Other Certifications)	37	104

Other Samples

Identifications (invertebrate)	4	10
Plant Problems	40	106
Intrastate Survey, Random	57	301
Molecular Identifications*	247	404

*The majority of these analyses involved root-knot nematode species

Burgos, Frank A.	149
Edenfield, Carrie S.	139
Gonzalez, Katherine A.	5
LeBoutillier, Karen W.	191
Ochoa, Ana L.	55
Pate, Jo Ann	32
Qiao, Ping	167
Spriggs, Charles L.	145



***Meloidogyne javanica* (Javanese root-knot nematode) and another unidentified root-knot species were found in a stand of uneven and sparse mondo grass plants.** Photograph courtesy of Stephen R. Jenner, [DPI](#)



***Ophiopogon* sp. (mondo grass), infected by root-knot nematodes, with symptoms of chlorotic and desiccated leaves.** Photograph courtesy of Stephen R. Jenner, [DPI](#)

Plant Pathology Section

Compiled by [David A. Davison](#)

This section provides plant disease diagnostic services and conducts a citrus germplasm introduction program. The agency-wide goal of protecting Florida agriculture very often begins with accurate diagnosis of plant problems. Disease management recommendations are offered where appropriate and available. Our plant pathologists are dedicated to keeping informed about plant diseases outside Florida in order to be prepared for potential introductions of new pathogens.

***Raffaelea lauricola* (laurel wilt)** is reported for the first time from Sumter County, on *Persea borbonia* (red bay) in Half Moon Wildlife Management Area. Laurel wilt infects members of the plant family Lauraceae, including the important Florida crop, avocado. For more information about this pathogen, see the Save the Guac campaign (www.savetheguac.com). (Sumter County; P2011-52554; Stephen R. Jenner and James R. Holm; 18 August 2011.)

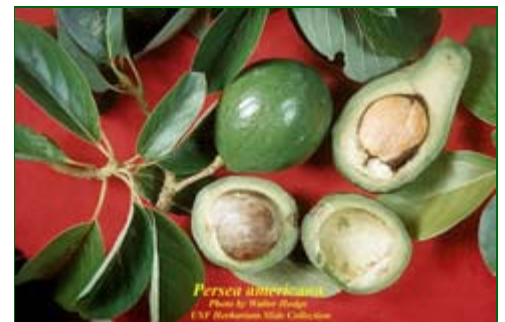
Sample Submissions

	July/ Aug	Year to Date
Pathology	452	2,424
Bee	2	24
Soil	8	27
Citrus canker	350	1,409
Citrus greening	1,780	5,217
Sweet orange scab-like disease	11	213
Miscellaneous	7	51
Total Samples Submitted	2,610	9,365



***Persea borbonia* (red bay)**

Photograph courtesy of Dennis Girard, [Atlas of Florida Vascular Plants](#).



***Persea americana* (avocado)**

Photograph courtesy of Walter Hodge, [Atlas of Florida Vascular Plants](#).

Plant Pathology Sample Report

Following is a table with entries for records of new hosts or new geographical areas for samples identified in the current volume's time period as well as samples of special interest. The table is organized alphabetically by plant host.

	Plant Common	Causal	Disease		Log				New
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Plant Species	Name	Agent	Name	Location	County	#	Collector	Date	Records
<i>Hedera helix</i>	English ivy	<i>Acidovorax</i> sp.	leaf spot	Harmony Gardens, Inc.	Alachua	51185	Cheryl A. Jones	7/21/11	
<i>Laurus nobilis</i>	laurel; bay leaf	<i>Raffaelea lauricola</i>	laurel wilt	Residence	Miami-Dade	51743	Phellicia P. Perez, Mary Young Cong, Julio C. Garica	8/2/11	Host
<i>Persea americana</i>	avocado	<i>Raffaelea lauricola</i>	laurel wilt	Residence	Miami-Dade	51568	Phellicia P. Perez, Mary Young Cong, Julio C. Garica	7/28/11	
<i>Persea borbonia</i>	red bay	<i>Raffaelea lauricola</i>	laurel wilt	Half Moon Wildlife Management Area	Sumter	52554	Stephen R. Jenner, James R. Holm	8/18/11	County
<i>Stevia rebaudiana</i>	sweetbush; candyleaf; sweet honeyleaf	<i>Pseudomonas cichorii</i>	bacterial leaf spot and rot	Cross Bayou Farms, Inc.	Citrus	50936	Stephen R. Jenner	7/17/11	Host

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