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TRI-OLOGY

A PUBLICATION FROM THE DIVISION OF PLANT INDUSTRY, BUREAU OF ENTOMOLOGY, NEMATOLOGY, AND PLANT PATHOLOGY

Division Director, Trevor R. Smith, Ph.D.



BOTANY

Providing information about plants:
native, exotic, protected and weedy



ENTOMOLOGY

Identifying arthropods, taxonomic
research and curating collections



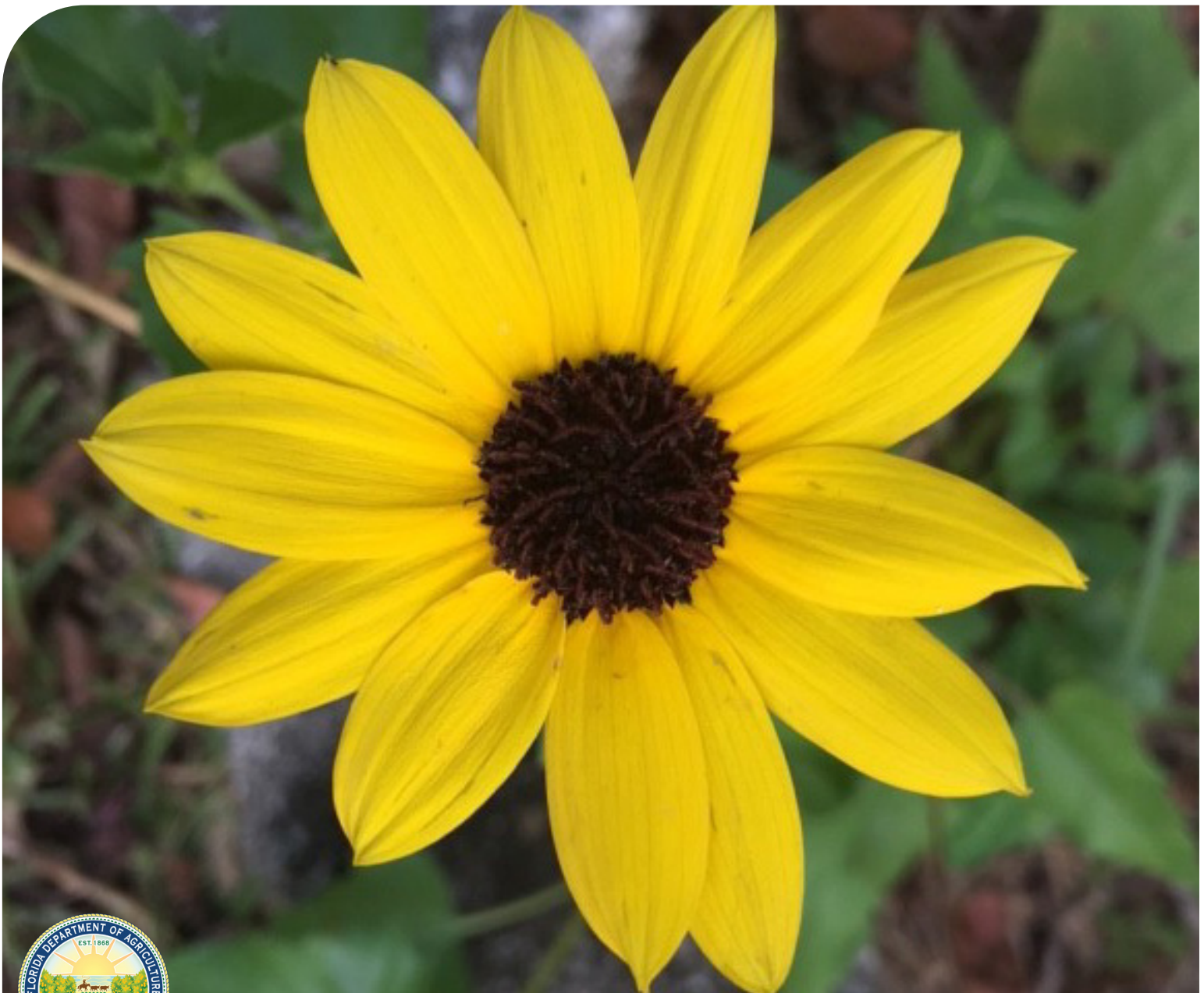
NEMATOLOGY

Providing certification programs and
diagnoses of plant problems



PLANT PATHOLOGY

Offering plant disease diagnoses
and information



Florida Department of Agriculture and Consumer Services • Division of Plant Industry



Phaenomerus foveipennis (Morimoto), a conoderine weevil.
Photo by Kyle E. Schnepf, DPI

ABOUT TRI-LOGY

The Florida Department of Agriculture and Consumer Services-Division of Plant Industry's (FDACS-DPI) Bureau of Entomology, Nematology, and Plant Pathology (ENPP), including the Botany Section, produces TRI-LOGY four times a year, covering three 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.

HOW TO CITE TRI-LOGY

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ACKNOWLEDGEMENTS

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We welcome your suggestions for improvement of TRI-LOGY. Please feel free to contact the [helpline](#) with your comments at 1-888-397-1517.

Thank you,

Gregory Hodges, Ph.D.

Editor

Assistant Director, Division of Plant Industry

Patti J. Anderson, Ph.D.

Managing Editor

Botanist, Division of Plant Industry

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Cover Photo

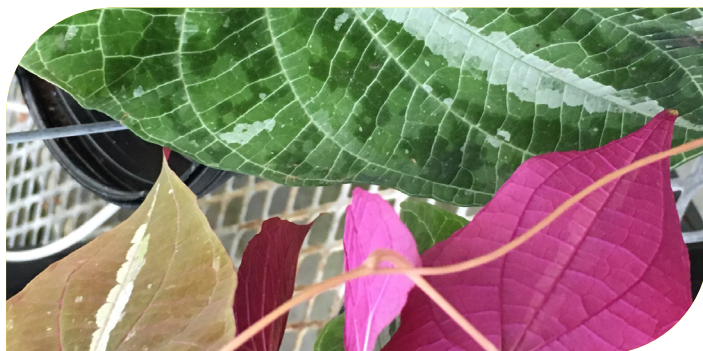
Helianthus debilis (dune sunflower) summer wildflower
Photo by Patti Anderson, DPI



HIGHLIGHTS

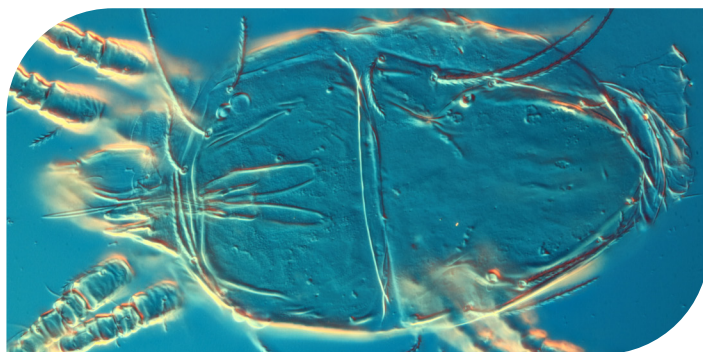


1 *Dioscorea dodecaneura* Vell. (ornamental yam; variegated monkey ball) is native across South America from Guyana in the north to Paraguay in the south and was first described from collections in Brazil. In Florida, this yam has escaped cultivation in Leon County, and now for the first time is reported in Alachua County where it was found in the Hogtown Creek Headwaters Nature Park.



1 - *Dioscorea dodecaneura* (ornamental yam), multicolored leaves.
Photo by Patti Anderson, DPI

2 *Terminalichus karachiensis* Anwarullah & Khan, a new Western Hemisphere record for a flat mite. This mite, known to feed only on *Terminalia catappa* (West Indian almond), was described from Pakistan. *Terminalichus* comprises a rare genus of only seven species. There is no evidence any of these species, native to South Asia, are pests.



2 - *Terminalichus karachiensis* Anwarullah & Khan.
Photo by Samuel Bolton, DPI

3 *Meloidogyne javanica* (Treub, 1885) Chitwood, 1949, the Javanese root-knot nematode, and *M. arenaria* (Neals, 1889) Chitwood, 1949, the peanut root-knot nematode, were found infecting and reproducing in roots of the woolly-leaf white sapote, *Casimiroa tetrameria* Millsp., and the curry leaf tree, *Murraya koenigii* (L.) Sprengel, two new host records. These nematodes were found during a survey in the arboretum of the Florida Department of Agriculture and Consumer Services, Division of Plant Industry, a collection including 36 species of Rutaceae, along with their hybrids and cultivars.



3 - *Murraya koenigii* (curry leaf) new host of the Javanese root-knot nematode (*Meloidogyne javanica*) and the peanut root-knot nematode (*M. arenaria*).
Photo by Randall Dean, DPI

4 *Septoria* sp. (fungal leaf spot), a new host record, was submitted on a cultivar of *Cannabis sativa* L. (hemp) from a nursery. Symptoms of this disease appear as brown, irregularly shaped spots with a yellow margin (halo). Lower leaves within the inner canopy are infected first because high humidity, leaf moisture and low air circulation found there are the conditions under which this fungus thrives.



4 - *Septoria* sp. symptoms (brown leaf spots with yellow halo on lower leaves) on a hemp cultivar of *Cannabis sativa*.
Photo by Mark Terrell, DPI





BOTANY

Compiled by Patti J. Anderson, Ph.D. and Alex de la Paz, B.S.

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 14,000 plant specimens and 1,400 vials of seeds.

QUARTERLY ACTIVITY REPORT

	APRIL - JUNE	2020 - YEAR TO DATE
Samples Submitted by Other DPI Sections	1,151	2,289
Samples Submitted for Botanical Identification Only	105	264
Total Samples Submitted	1,256	2,553
Specimens Added to the Herbarium	121	347

Some of the samples submitted recently are described below.

1 *Dioscorea dodecaneura* Vell. (ornamental yam; variegated monkey ball), from a genus of over 600 species native to tropical and warm regions, in the plant family Dioscoreaceae. This species is native across South America from Guyana in the north to Paraguay in the south and was first described from collections in Brazil. In Florida, this yam has escaped cultivation in Leon County and now is reported in Alachua County where it was found in the Hogtown Creek Headwaters Nature Park. The vine grows from an edible, tuberous, underground stem, twining counter-clockwise to a length of up to 4 m, usually dying back in winter except in the warmest climates. Leaves of this ornamental yam are alternate and roughly heart-shaped but quite eye-catching in color. The upper leaf blade surfaces are variegated dark and light greens marked with silvery veins while the lower surfaces vary from dark maroon to pinkish purple. Although the separate male (staminate) and female (pistillate) whitish-green flowers are inconspicuous, the fruits produce viable seeds. The plant can be grown indoors in cooler climates as an attractive foliage plant, while in warm regions (USDA zones 9-11) it can grow outdoors. Although it is likely to lose its leaves in winter, they return as the vine begins to regrow from the tuber in spring. This species has been known as *D. discolor* (meaning two distinct colors) in the past, and older references might use that synonym. (Mabberley 2017; Cullen *et al.* 2011; <https://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?taxonid=279849&isprofile=0&> [accessed 22 June 2020]; <http://plantsoftheworldonline.org/taxon/urn:lsid:ipni.org:names:323912-2> [accessed 22 June 2020];



1a - *Dioscorea dodecaneura* (ornamental yam), multicolored leaves.
Photo by Patti Anderson, DPI



1b - *Dioscorea dodecaneura* (ornamental yam), underside of multicolored leaves.
Photo by Patti Anderson, DPI



2 *Gladiolus dalenii* Van Geel (**African gladiolus**), from a genus of about 260 species native to Africa, Madagascar and Eurasia, in the plant family Iridaceae. The center of diversity for this genus is in Africa, but it is widely cultivated and introduced globally. This species was named by Pierre Corneille Van Geel in 1828 to honor the Dutch botanist Cornelius Dalen, who was the Director at Rotterdam Botanic Gardens. Ranging from eastern South Africa and Madagascar throughout tropical Africa and into western Arabia, this is one of the most widely distributed species of *Gladiolus*. It was introduced in the United States as an ornamental in gardens and landscapes but sometimes escapes and persists outside cultivation in Alabama, Florida, Louisiana and Mississippi. In Florida, it is found in disturbed sites in the central peninsula and panhandle. The sample submitted for identification this reporting period is a new county record for Hernando County. These perennial herbs grow from corms and can reach up to 2 m in height. The stems are erect and unbranched. Each plant has four to seven distichous leaves, both basal and along the stem. The leaf blade is narrowly lanceolate, parallel-veined and flat. Inflorescences are spicate with 2-14 secund to distichous flowers each subtended by two leaf-like bracts. Flowers consist of six tepals (in two whorls of three), three stamens and an inferior ovary with a three-branched style. The tepals are red to orange with yellow markings and are fused at the base into a distinctly curved tube. Fruits are broadly ellipsoid capsules divided into three compartments (three-locular) that split open to expose many broadly winged, glossy, light brown seeds (rarely a few are wingless). Flowering and fruiting occur from spring through summer. Hybrid strains of *Gladiolus* are widely cultivated as ornamentals around the world. This species has undergone crossing and subsequent selection to generate most of the popular ornamental hybrids used today. (Hernando County; B2020-160; Nora Marquez; 1 April 2020.) (Goldblatt 2002; Weakley 2015; Wunderlin and Hansen 2011; <https://florida.plantatlas.usf.edu/Plant.aspx?id=487> [accessed 29 June 2020]).

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2a - *Gladiolus dalenii* Van Geel (African gladiolus), whole plant
Photo by Chelsie Vandaveer, [Atlas of Florida Plants](#)



2b - *Gladiolus dalenii* Van Geel (African gladiolus), flower
Photo by Roger Hammer, [Atlas of Florida Plants](#)



BOTANY IDENTIFICATION TABLE

The following table provides information about **new county** records submitted in the current volume's time period. The table is organized by collection date in descending chronological order. The full version with more complete data is downloadable as a [PDF](#) or an [Excel](#) spreadsheet organized by collector name, except new county records are listed first.

NEW RECORD	COLLECTOR NAME	COUNTY	SAMPLE NUMBER	COLLECTION DATE	PLANT NAME
	Felipe N. Soto-Adames, Julieta Brambila	Alachua	B2020-231	6/7/2020	<i>Dioscorea dodecaneura</i>
	Nora V. Marquez	Hernando	B2020-160	4/1/2020	<i>Gladiolus dalenii</i>





ENTOMOLOGY

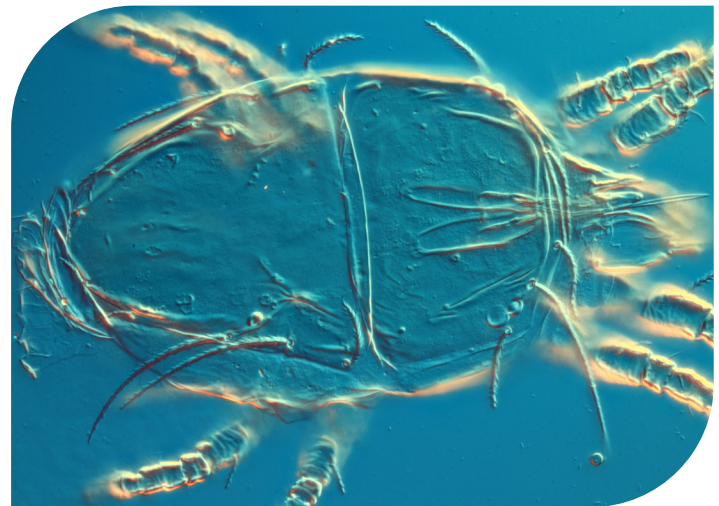
Compiled by Susan E. Halbert, Ph.D.

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 10 million specimens) and investigates the biology, biological control and taxonomy of arthropods.

QUARTERLY ACTIVITY REPORT

	APRIL - JUNE	2020 - YEAR TO DATE
Samples Submitted	1,250	2,516
Lots Identified	2,815	5,585
Specimens Identified	26,034	53,855

1 *Terminalichus karachiensis* Anwarullah & Khan, a new Western Hemisphere record for a flat mite. This mite, known to feed only on *Terminalia catappa* (West Indian almond), was described from Pakistan. *Terminalichus* is a rare genus of only seven species, all feeding on plants in the families Combretaceae and Myrtaceae. There is no evidence any of these species, native to South Asia, are pests. This new record of *T. karachiensis*, based on a single adult female, is clearly the result of the shipment of the host plant, *Terminalia catappa*, to Florida. Because *T. karachiensis* is a rare and small mite (body length <0.25 mm) and causes no discernible damage or symptoms, it readily evaded detection until this new record. (Miami-Dade County; E2020-1616; Lis Santos-Piloto; 23 April 2020.) (Dr. Samuel Bolton.)



1 - *Terminalichus karachiensis* Anwarullah & Khan.
Photo by Samuel Bolton, DPI

2 *Lepidocyrtus nigrosetosus* Folsom, neotropical grey humpbacked springtail, a new Continental USA record. The neotropical grey humpbacked springtail has the largest distribution of any species in the genus *Lepidocyrtus* in the New World. The species was originally described from Puerto Rico, but it has been reported from Brazil, Colombia, Costa Rica, Galapagos, Jamaica, Nevis, the US Virgin Islands, and now Florida. *Lepidocyrtus nigrosetosus* is very similar to other species reported from the Caribbean and Central and South America, and it was likely introduced into Florida on agricultural products. This species is not a plant pest; it feeds mostly on fungi. (Miami-Dade County; E2018-3962; Jake Farnum, CAPS; 12 July 2018.) (Dr. Felipe Soto-Adames.)



2 - *Lepidocyrtus nigrosetosus* Folsom, neotropical grey humpbacked springtail.
Photo by Felipe N. Soto-Adames, DPI

3 *Epidapus* sp., a fungus gnat, a new Florida state record. Only two species of this genus occur in North America, and both are known only from Connecticut and Massachusetts in the northeastern United States. These flies are very small and inconspicuous. Males are winged and fly, but the females are wingless and found on the soil. These Florida specimens were five females captured in an underground column trap. (Levy County; E2020-1310; Kyle Schnepf; 14 March 2020.) (Dr. Gary J. Steck.)



3 - *Epidapus* sp, a fungus gnat, wingless female.
Photo by Gary J. Steck, DPI



4 *Phaenomerus foveipennis* (Morimoto), conoderine weevil, a new Florida State record. This species is originally from Southeast Asia but has been recorded recently from Alabama and Georgia in the United States. It is not known to be a pest. There is no known host, but other members of the genus are associated with ambrosia beetle galleries. The exact nature of their relationship remains unclear, but it is believed this species has similar habits. (Jackson County; E2020-2332; Morgan Byron, CAPS, and Robert Leahy, USDA; 28 May 2020.) (Kyle E. Schnepf.)



4 - *Phaenomerus foveipennis* (Morimoto), a conoderine weevil.
Photo by Kyle E. Schnepf, DPI

5 *Seira steinmetzi* Wray, 1953, Steinmetz's seira, a new Florida State Record. Steinmetz's seira was originally described from a greenhouse in North Carolina in 1953, but it was not recorded again until 2000. In 1986, Mari-Mutt described *Seira distincta* from several localities in Puerto Rico, all of them from disturbed habitats (two urban gardens and a sugarcane field). In the following year, he reported the species from Massachusetts and Mexico. However, by 2000, Christiansen and Bellinger had examined the material Wray used to describe the species and concluded *S. distincta* was a junior synonym of *S. steinmetzi*. Christiansen and Bellinger also extended the distribution records of the species to Bermuda and Texas. The species has never been reported formally from a specific location in Florida until now. In addition to the 2020 report from Alachua County, the Florida State Collection of Arthropods holds two samples from Martin County collected in 2017 and one from Orange County collected in 2020. The confusing nomenclature of this species illustrates the difficulty in determining the origin and distribution of animal species. Steinmetz's seira is not a plant pest, although it probably is an adventive species. (Alachua County; E2020-2095; Julieta Brambila, USDA; 21 January 2020.) (Orange County; E2020-307; Kathy Gonzalez; 23 January 2020.) (Martin County; Felipe Soto, Janete Brito and Brian Alford; 16 March 2017.) (Dr. Felipe Soto-Adames.)

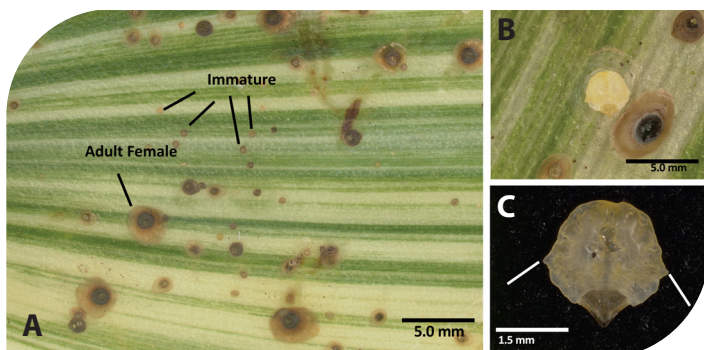


5 - *Seira steinmetzi*, Steinmetz's seira.
5a. specimen from Alachua County; 5b. specimen from Martin County.
Photo by Felipe N. Soto-Adames, DPI

6 *Acutaspis umbonifera* (Newstead), an armored scale insect, report of a recent outbreak in Florida. *Acutaspis umbonifera* (Newstead) is a pest in Brazil (Potes 1946). The only published record of its presence in the United States is from New York, probably from a greenhouse. It has been intercepted a few times from nurseries in Florida. The last three interceptions were heavy infestations on Bromeliaceae (*Neoregelia* sp. and *Guzmania lindenii*) from two nurseries. The presence of this species may cause economic damage to ornamental plants in Florida. (Alachua County; E2020-2212; Sam Hart; 12 June 2020), (Alachua County; E2020-2219; Sam Hart; 12 June 2020), (Lake County; E2020-1933; Mary Sellers; 20 May 2020.) (Dr. Muhammad Z. 'Zee' Ahmed.)

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6 - *Acutaspis umbonifera* (Newstead), armored scale insect.
6a. The infestation of *Acutaspis umbonifera* on Bromeliads in Gainesville, Alachua County, Florida. 6b. Light yellow colored adult female after the removal of the cover. 6c. Adult female showing two umbos (nearly unique to this species), one on each side.
Photos by Lily Deeter and Muhammad Z. 'Zee' Ahmed, FDACS-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.

PLANT SPECIES	PLANT COMMON NAME	ARTHROPOD GENUS AND SPECIES	ARTHROPOD COMMON NAME	COLLECTOR	RECORD
<i>Artemisia ludoviciana</i>	white sagebrush	<i>Coloradoa artemisiae</i>	aphid	Mary Sellers	NEW FLORIDA COUNTY RECORD
<i>Bambusa</i> sp.		<i>Kuwanaspis bambusicola</i>	bamboo thread scale	Thomas Lastrapes	QUARANTINABLE PEST
<i>Bauhinia variegata</i>	orchid tree; mountain-ebony; poor-man's orchid; Buddhist bauhinia	<i>Fundella pellucens</i>	Caribbean podborer	Alexander Tasi	NEW FLORIDA COUNTY RECORD
<i>Cajanus cajan</i>	pigeonpea; gandul; Congo bean	<i>Megalurothrips usitatus</i>	Asian bean thrips	Jake Farnum, Phellicia Perez	NEW FLORIDA HOST RECORD
<i>Cannabis sativa</i>	hemp	<i>Aculops cannabicola</i>	hemp russet mite	Mark Terrell	REGULATORY SIGNIFICANT
<i>Cannabis sativa</i>	hemp	<i>Ceratocapsus punctulatus</i>	mirid bug	Brian Alford	NEW FLORIDA COUNTY RECORD
<i>Cannabis sativa</i>	hemp	<i>Phorodon cannabis</i>	hemp aphid	Mark Terrell	REGULATORY SIGNIFICANT
<i>Citrus</i> sp.		<i>Fiorinia proboscidea</i>	proboscidea scale	Melanie Cain	NEW FLORIDA COUNTY RECORD
<i>Citrus</i> sp.		<i>Fiorinia proboscidea</i>	proboscidea scale	Lilliam Otero Pujol	QUARANTINABLE PEST
<i>Citrus</i> sp.		<i>Fiorinia proboscidea</i>	proboscidea scale	Melanie Cain	QUARANTINABLE PEST
<i>Citrus</i> sp.		<i>Nipaecoccus viridis</i>	lebeck mealybug	Lauren Diepenbrock	NEW FLORIDA COUNTY RECORD
<i>Coccoloba uvifera</i>	seagrape	<i>Scirtothrips coccolobae</i>	sea grape thrips	Scott Krueger	NEW FLORIDA COUNTY RECORD
<i>Colocasia esculenta</i>	dasheen; wild taro; taro	<i>Tarophagus colocasiae</i>	taro planthopper	Diane McColl, Melanie Cain	NEW FLORIDA COUNTY RECORD
<i>Cyamopsis tetragonolobus</i>	cluster bean, guar	<i>Megalurothrips usitatus</i>	Asian bean thrips	Jake Farnum, Phellicia Perez	NEW FLORIDA HOST RECORD
<i>Erigeron quercifolius</i>	oakleaf fleabane	<i>Illinoia goldamaryae</i>	aphid	Lisa Tyler	NEW FLORIDA COUNTY RECORD
<i>Fragaria x ananassa</i>	garden strawberry	<i>Ceratagallia</i> sp.	leafhopper	Logan Cutts	REGULATORY SIGNIFICANT
<i>Gomphrena serrata</i>	globe amaranth	<i>Lepidocyrtus pallidus</i>	silver lepidocyrtus	Nora Marquez	NEW FLORIDA COUNTY RECORD
<i>Haworthia</i> sp.	succulent	<i>Seira steinmetzi</i>	Steinmez's seira	Kathy Gonzalez	NEW FLORIDA COUNTY RECORD
<i>Hedera helix</i>	English ivy	<i>Arion</i> sp.	roundback slugs	Patricia "Karen" Coffey	REGULATORY SIGNIFICANT
<i>Iva imbricata</i>	seacoast marshelder	<i>Pissonotus albovenosus</i>	delphacid planthopper	Melanie Cain	NEW FLORIDA HOST RECORD
<i>Lablab purpureus</i>	hyacinthbean; Egyptian bean	<i>Megalurothrips usitatus</i>	Asian bean thrips	Jake Farnum, Phellicia Perez	NEW FLORIDA HOST RECORD
<i>Lactuca sativa</i>	lettuce, romaine lettuce, leaf lettuce	<i>Nothodelphax consimilis</i>	delphacid planthopper	Lisa Tyler	REGULATORY SIGNIFICANT
<i>Laurus nobilis</i>	laurel; bay leaf	<i>Parlatoria proteus</i>	proteus scale	LeAnn West	NEW FLORIDA HOST RECORD
<i>Ligustrum</i> sp.		<i>Scaphoideus titanus</i>	leafhopper	Victor Zeno	NEW FLORIDA COUNTY RECORD
<i>Litchi chinensis</i>	litchi, leechee	<i>Aceria litchii</i>	lychee erinose mite	George Warden	NEW FLORIDA COUNTY RECORD
<i>Manilkara jaimiqui</i>	wild dilly; wild sapodilla	<i>Augocoris illustris</i>	mimusops bug	Jake Farnum	NEW FLORIDA HOST RECORD
<i>Moringa oleifera</i>	horseradish tree	<i>Rhinacloa clavicornis</i>	plant bug	Phellicia Perez, Jake Farnum	NEW FLORIDA HOST RECORD
<i>Neoregelia</i> sp.		<i>Acutaspis umbonifera</i>	armored scale	Mary Sellers	QUARANTINABLE PEST
<i>Phaseolus lunatus</i>	butter bean, sieva bean, lima bean	<i>Megalurothrips usitatus</i>	Asian bean thrips	Juan Menendez	NEW FLORIDA HOST RECORD
<i>Phragmites australis</i>	common reed, reed carrizo	<i>Aclerda takahashii</i>	flat grass scale	Alexander Tasi	NEW FLORIDA COUNTY RECORD
<i>Quercus</i> sp.	oak	<i>Agalliopsis cervina</i>	leafhopper	Diane McColl	NEW FLORIDA COUNTY RECORD



PLANT SPECIES	PLANT COMMON NAME	ARTHROPOD GENUS AND SPECIES	ARTHROPOD COMMON NAME	COLLECTOR	RECORD
<i>Rubus</i> sp.		<i>Aphis ruborum</i>	permanent blackberry aphid	Alexander Tasi	REGULATORY SIGNIFICANT
<i>Solanum melongena</i>	eggplant	<i>Megalurothrips usitatus</i>	Asian bean thrips	Jake Farnum, Phellicia Perez	NEW FLORIDA HOST RECORD
<i>Terminalia catappa</i>	tropical almond	<i>Terminalichus karachiensis</i>	flat mite	Lis Santos-Piloto	NEW HEMISPHERE RECORD
<i>Vigna unguiculata</i>	cowpea, field pea, bean	<i>Megalurothrips usitatus</i>	Asian bean thrips	Juan Menendez	NEW FLORIDA HOST RECORD
		<i>Alofa sodalis</i>	minute pirate bug	Robinson Lawrence, Kenneth Branch	NEW FLORIDA COUNTY RECORD
		<i>Ancylosis bonhoti</i>	pyralid moth	James E. Hayden	NEW FLORIDA COUNTY RECORD
		<i>Arhyssus lateralis</i>	scentless plant bug	Stephen Friedt	NEW FLORIDA COUNTY RECORD
		<i>Asiphonella dactylonii</i>	root aphid	Kenneth Branch, Robinson Lawrence	NEW FLORIDA COUNTY RECORD
		<i>Bruchomorpha tristis</i>	planthopper	Kelly Douglas, Larry (Mo) Violet, Sam Hart, Mary Jane Echols, Susan Halbert, John McVay	NEW FLORIDA COUNTY RECORD
		<i>Enchenopa binotata</i>	two marked treehopper	Douglas Restom-Gaskill	NEW FLORIDA COUNTY RECORD
		<i>Epidapus</i> sp.	dark-winged fungus gnat	Kyle Schnepf	NEW FLORIDA STATE RECORD
		<i>Halyomorpha halys</i>	brown marmorated stink bug	Muhammad Haseeb	NEW FLORIDA COUNTY RECORD
		<i>Lepidocyrtus nigrosetosus</i>	neotropical grey humpbacked springtail	Jake Farnum	NEW US CONTINENTAL RECORD
		<i>Macrotomella carinata</i>	delphacid planthopper	Julien Beuzelin	NEW FLORIDA COUNTY RECORD
		<i>Phaenomerus foveipennis</i>	conoderine weevil	Robert Leahy, Morgan Byron	NEW FLORIDA STATE RECORD
		<i>Seira steinmetzi</i>	Steinmez's seira	Julieta Brambila	NEW FLORIDA STATE RECORD
		<i>Tagosodes dorsolineatus</i>	delphacid planthopper	Kenneth Branch, Robinson Lawrence	NEW FLORIDA COUNTY RECORD
		<i>Toxonprucha</i> n.sp.	erebid moth	Jake Farnum	NEW TO SCIENCE RECORD





NEMATOLOGY

Compiled by Sai Qiu, M.S.; Randall Dean; Janete A. Brito, Ph.D. and Renato N. Inserra, Ph.D.

This section analyzes soil and plant samples for nematodes, conducts pest detection surveys and provides diagnoses 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 predominant regulatory activities 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.

QUARTERLY ACTIVITY REPORT

	APRIL - JUNE	2020 - YEAR TO DATE
Morphological Identifications	3,010	6,251
Molecular Identifications *	305	710
Total Identifications	3,315	6,961

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

Nematode of Special Interest

1 The Javanese and the peanut root-knot nematodes, *Meloidogyne javanica* (Treub, 1885) Chitwood, 1949 and *M. arenaria* (Neals, 1889) Chitwood, 1949, were found infecting and reproducing in roots of the woolly-leaf white sapote, *Casimiroa tetrameria* Millsp., and the curry leaf tree, *Murraya koenigii* (L.) Sprengel, two new host records. (Polk County; N20-00640 and N20-00678; Randall Dean; June 2020.)

A nematode survey was conducted in the arboretum of the Florida Department of Agriculture and Consumer Services, Division of Plant Industry, in Winter Haven, which contains a collection of 36 species in the family Rutaceae representing 12 genera and hybrids. The genera included *Aegle*, *Afraegle*, *Amyris*, *Atalantia*, *Casimiroa*, *Citrus*, *Glycosmis*, *Hesperethusa*, *Microcitrus*, *Murraya*, *Poncirus* and *Zanthoxylum*. The hybrids consisted of *X Citroncirus webberi* J. Ingram and H. E. Moore and *X Citrofortunella* sp. The objective of this survey was the detection of root-knot nematodes (*Meloidogyne* sp.) in the roots of the species sampled in the arboretum. The results of the nematological analysis of the collected samples indicated the Javanese and the peanut root-knot nematodes (RKN) were infecting two trees belonging to the genera *Casimiroa* and *Murraya*. Another tree in the genus *Aegle*, *A. marmelos* (L.) Corrêa (bael tree), showed



1a - *Murraya koenigii* (curry leaf) new host of the Javanese root-knot nematode (*Meloidogyne javanica*) and the peanut root-knot nematode (*M. arenaria*).
Photo by Randall Dean, DPI



1b - *Meloidogyne arenaria* galls on roots of *Murraya koenigii* (curry leaf tree).
Photo by Janete Brito, DPI



galls and a few egg masses induced by an unidentified RKN. These findings suggest high variability in the host response to RKN in species of the Rutaceae, since only three genera out of 12 contained species infected by RKN. Neals (1889) reported production of galls and egg masses by the peanut RKN in roots of sour orange (*Citrus aurantium* L.) in Florida, but RKN infestations occurring in Florida citrus production areas are rare (Stokes, 1978). In the Americas and Mediterranean basin, there are a few reports of infections and reproduction by the Javanese RKN by Minz (1956) in roots of key lime [*Citrus aurantifolia* (Christm.) Swingle] in Israel and later, by Gill (1971) in roots of citrange (X *Citroncirus webberi*), mandarin (*Citrus reticulata* Blanco) and sour orange in California. Galls and egg masses produced by the coffee RKN (*M. exigua* Goeldi, 1982) were observed by Scotto La Massese (1969) in roots of *Citrus* sp. in the French West Indies. Other reports of the northern and southern RKN [*M. hapla* Chitwood, 1949 and *M. incognita* (Kofoid & White, 1919) Chitwood, 1949] on species of *Citrus*, trifoliate orange [*Poncirus trifoliata* (L.) Raf.] and citranges (X *Citroncirus webberi*) deal with production of galls without evidence of reproduction in the roots of these plants. In the survey, other species in the arboretum with curry leaf, bael and wooly-leaf white sapote were not infected by RKN, indicating they are not good hosts of the populations of the three RKN species present there. More than 60 percent of the sampled trees were in the genera *Citrus*, *Poncirus* and their hybrids, species typically used by the citrus industry for the selection of new rootstocks. Genes for resistance to RKN might be inherited from these parents. We would like to point out exotic RKN species, such as *M. citri* Zhang, Gao and Weng, 1990, infect and reproduce in species of the genus *Citrus* and occur in countries such as China and India in the Eastern Hemisphere (Vovlas *et al.*, 1996; Vovlas and Inserra, 2000). The arrival of these exotic RKN could have devastating effects for the Florida citrus industry. Strict implementation of nematode import phytosanitary actions and adherence to the nematode certification program for citrus nurseries are the most effective methods to avoid the arrival of these exotic RKN.

REFERENCES

- Gill, G. S. (1971).** Occurrence and reproduction of *Meloidogyne javanica* on three species of *Citrus* in California. *Plant Disease Reporter* 55: 607-608.
- Minz, G. (1956).** The root-knot nematode, *Meloidogyne* spp., in Israel. *Plant Disease Reporter* 40: 798-801.
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- Scotto La Massese, C. (1969).** The principal plant nematodes of crops in the French West Indies. Pp.164-183 In J. E. Peachey (ed.) *Nematodes of tropical crops*. Commonwealth Bureau of Helminthology. Technical Communication 40.
- Stokes, D. E. (1978).** Root-knot nematode infection to citrus. Nematology Circular No. 39. Florida Department of Agriculture and Consumer Services, Division of Plant Industry, Gainesville, Florida, 2 pp.
- Vovlas, N., Zhang, D. and Zhang, S. (1996).** Description of the host-parasite relationship of the root-knot nematode *Meloidogyne citri* with *Citrus unshiu*. Programme and abstracts of VIII Congress of International Society of Citriculture (12-17 May 1996), Sun City, South Africa, p. 156.
- Vovlas, N. and Inserra, R.N. (2000).** Root-knot nematodes as parasites of citrus. *Proceedings of the International Society of Citriculture*, IX Congress. 2000: 812-817.

COLLECTORS

Collectors submitting five or more samples processed for nematological analysis during April - June 2020.

COLLECTOR NAME	SAMPLES PROCESSED
Alford, Brian	5
Bentley, Michael	59
Blanco, Rogelio	135
Boyar, Jillian	119
Brown, Lance	8
Burgos, Frank	267
Clanton, Keith	127
Davis, Bobby	43
Echols, Janie	17
Rojas, Eric	166
Spriggs, Charles	77
Taylor, Donald	8
Wolfe, David	97
Yates, Johnny	30

SAMPLES FOR MORPHOLOGICAL ANALYSIS

	APRIL - JUNE	2020 - YEAR TO DATE
Multistate Certification for National and International Export	1,646	3,455
California Certification	502	927
Pre-movement (Citrus Nursery Certification)	40	116
Site or Pit Approval (Citrus Nursery and Other Certifications)	82	88

OTHER PURPOSES

	APRIL - JUNE	2020 - YEAR TO DATE
Identifications (Other Organisms)	0	0
Nematology Investigation	0	0
Plant Problems	44	94
Intrastate Survey, Random	145	362
Total	2,459	5,042

SAMPLES FOR MOLECULAR ANALYSIS

	APRIL - JUNE	2020 - YEAR TO DATE
Regulatory Purposes	305	710
Other Purposes	0	0
Identifications	0	0
Surveys	0	0
Total	305	710



PLANT PATHOLOGY

Compiled by Hector Urbina, Ph.D.; Jodi L. Hansen, M.S.; Taylor E. Smith, B.S.;
Kishore Dey, Ph.D.; Callie M. Jones and Maria C. Velez Climent, M.S.

The Plant Pathology section provides plant disease diagnostic services for the department. The agency-wide goal of protecting the flora of Florida very often begins with accurate diagnoses of plant problems. Management recommendations are offered where appropriate and available. Our plant pathologists are dedicated to keeping informed about endemic plant diseases along with those diseases and disorders active outside Florida in order to be prepared for potential introductions of new pathogens to our area.

1 *Septoria* sp. (fungal leaf spot), a new host record, was submitted on a cultivar of *Cannabis sativa* L. (hemp) from a nursery. Hemp is a new crop to Florida, defined by Florida statute as any part of the cannabis plant (e.g., flowers, leaves, etc.), whether growing or not and having a THC concentration not exceeding 0.3 percent on dry weight basis. A wide variety of products can be made from hemp including textiles, protein powders, hemp milk and cannabidiol (CBD) oil. Hemp is grown in conditions different from “medical marijuana,” high T delta-9 tetrahydrocannabinol (THC) cultivars of *C. sativa*. Many hemp growers in Florida will cultivate this crop outdoors, whereas, medicinal cultivars grown in Florida are kept within a more controlled environment, such as a greenhouse.

Septoria leaf spot is reported to be a common problem in other hemp growing states. Symptoms of this disease appear as brown, irregularly shaped spots with a yellow margin (halo). Lower leaves within the inner canopy are infected first because they provide the conditions in which this fungus thrives: high humidity, high leaf moisture and low air circulation. *Septoria* leaf spots may result in defoliation of lower leaves which reduces photosynthesis. Loss of vigor, slower growth and sometimes plant death can occur if seedlings are infected. The fungus can overwinter on infected leaf debris and dead plant material. Cultural controls for *Septoria* leaf spot include keeping relative humidity low, cleaning up dead plant material, avoiding overhead irrigation and leaving space between plants. Because hemp cultivation was illegal until recently, there are few federally registered fungicides currently available. (Lee County; 103835; Mark R. Terrell; 22 April 2020).



1 - *Septoria* sp. symptoms (brown leaf spots with yellow halo on lower leaves) on a hemp cultivar of *Cannabis sativa*.
Photo by Mark Terrell, DPI

QUARTERLY ACTIVITY REPORT

	APRIL - JUNE	2020 - YEAR TO DATE
Budwood	0	0
Citrus black spot	147	347
Citrus canker	72	160
Citrus greening / HLB	4,777	4,812
Honeybees	2	3
Interdictions	2	18
Laurel wilt	0	1
Pathology, general	710	1,515
Soil	12	62
Sudden oak death	0	1
Sweet orange scab-like disease	0	0
Texas phoenix palm decline	19	38
Water	0	0
Totals	5,741	6,957



🔍 PLANT PATHOLOGY IDENTIFICATION TABLE

The following table provides information about samples identified between April - June 2020. The table is organized alphabetically by plant species, with new records listed on the right.

PLANT SPECIES	PLANT COMMON NAME	CAUSAL AGENT	DISEASE NAME	LOCATION TYPE	SPECIMEN NUMBER	COUNTY	COLLECTOR	DATE	NEW RECORDS
<i>Agave</i> sp.	century plant	<i>Cucumber mosaic virus</i>	virus	nursery	103999	Pinellas	Thomas Lastrapes	5/8/2020	host
<i>Cannabis sativa</i>	industrial hemp	<i>Septoria</i> sp.	fungus	nursery	103835	Lee	Mark Terrell	4/22/2020	host
<i>Diospyros virginiana</i>	common persimmon	<i>Apscaviroid Persimmon viroid-2</i>	virus	nursery	104373	Alachua	Brian Alford	6/16/2020	state
<i>Dracaena braunii</i>	lucky bamboo	<i>Badnavirus Dracaena Mottle Virus</i>	virus	roadside	104127	Hillsborough	Lilliam Otero Pujol	5/21/2020	county
<i>Hibiscus rosa-sinensis</i>	hibiscus	<i>Carmovirus hibiscus chlorotic ringspot virus</i>	virus	trap site	103540	Manatee	Prem Kumar USDA	3/13/2020	county
<i>Hibiscus rosa-sinensis</i>	hibiscus	<i>Tobamovirus hibiscus latent Fort Pierce virus</i>	virus	nursery	104123	Hillsborough	Lilliam Otero Pujol	5/21/2020	county
<i>Hibiscus rosa-sinensis</i>	hibiscus	<i>Carmovirus hibiscus chlorotic ringspot virus</i>	virus	nursery	104123	Hillsborough	Lilliam Otero Pujol	5/21/2020	county
<i>Hibiscus rosa-sinensis</i>	hibiscus	<i>Tobamovirus hibiscus latent Fort Pierce virus</i>	virus	residence	104304	Charlotte	Juan Amador USDA	6/8/2020	county
<i>Hibiscus rosa-sinensis</i>	hibiscus	<i>Carmovirus hibiscus chlorotic ringspot virus</i>	virus	residence	104304	Charlotte	Juan Amador USDA	6/8/2020	county
<i>Hibiscus</i> sp.	hibiscus	<i>Carmovirus hibiscus chlorotic ringspot virus</i>	virus	nursery	103912	Osceola	Daniel Merced	4/48/2020	county
<i>Ligustrum</i> sp.	ligustrum	<i>Pseudocercospora diplusodonii</i>	fungus	nursery	102448	Alachua	Sam Hart	12/19/2019	state
<i>Petunia x hybrida</i>	garden petunia cultigen	<i>Petuvirus petunia vein-clearing virus</i>	virus	nursery	103198	Duval	Lisa Tyler	2/18/2020	state
<i>Quercus hemisphaerica</i>	Darlington oak, laurel oak	<i>Biscogniauxia atropunctata</i>	fungus	residence	104071	Alachua	homeowner	5/19/2020	host





TRI-LOGY

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1-888-397-1517

Florida Department of Agriculture and Consumer Services
Division of Plant Industry
1911 SW 34th St.
Gainesville, FL 32608-1201