Changes to Compendia distribution data: the distribution tables, maps and references in datasheets have been restructured to handle the data better for updating and align with a geographic standard. Further details are available on the About page.

PRA Tool for plant commodity and pest-initiated Pest Risk Analysis. Available as an addition to the CPC.

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Datasheet

Pseudococcus elisae (banana mealybug)

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Summary

Last modified
24 November 2019

Datasheet Type(s)
Pest
Natural Enemy

Preferred Scientific Name
Pseudococcus elisae

Preferred Common Name
banana mealybug

Taxonomic Tree
Domain: Eukaryota
Kingdom: Metazoa
Phylum: Arthropoda
Subphylum: Uniramia

There are no pictures available for this datasheet

If you can supply pictures for this datasheet please contact:

Compendia
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More information

Class: Insecta

Host Plants and Other Plants Affected

Aglaonema
Annona squamosa (sugar apple)
Citrus aurantiifolia (lime)
Coffea arabica (arabica coffee)
Musa (banana)

More...

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Identity

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Preferred Scientific Name

Pseudococcus elisae Borchsenius, 1947

Preferred Common Name

banana mealybug

International Common Names

English: mealybug, banana

Taxonomic Tree

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Domain: Eukaryota
Kingdom: Metazoa
Phylum: Arthropoda
Subphylum: Uniramia
Class: Insecta
Order: Hemiptera
Suborder: Sternorrhyncha
Unknown: Coccoidea
Family: Pseudococcidae
Genus: Pseudococcus
Species: Pseudococcus elisae

Notes on Taxonomy and Nomenclature

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Gimpel and Miller (1996) discovered that the species previously identified as P. elisae actually included two cryptic species, and described Pseudococcus jackbeardsleyi. Unfortunately, P. elisae is much more restricted in its distribution and host preferences than its sibling P. jackbeardsleyi. Therefore, the literature is full of misidentifications. References to P. elisae by Beardsley (1986), Williams (1988), and Williams and Granara de Willink (1992) apparently refer to a mixture of both species; reference to P. elisae by Williams and Watson (1988), Lit et al. (1990), Lit and Calilung (1994), Nakahara (1981), and Sugimoto (1994) apparently refer to P. jackbeardsleyi only. It is unclear which species is referred to in Charlin (1972) recording 'P. elisae' from Easter Island or the study of Stover (1975) in Honduras, but it is suspected that the former is P. jackbeardsleyi and the latter is P. elisae.

Description

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Adult female in life

According to Gimpel and Miller (1996), this species has 16 or 17 pairs of thin waxy filaments around the body margin that are short on the head and long on the posterior end of the abdomen. Body length is about 2.5 mm and is approximately twice as long as the longest waxy filament. The female is covered with a thin layer of powdery white wax, but this does not completely hide the pale orange body colour. The crushed body is reddish brown. A white waxy ovisac is produced that is longer than or equal to the length of the body of the adult and encloses the eggs.

Slide-mounted adult female

Gimpel and Miller (1996) published a technical description. A diagnosis is as follows: With many discoidal pores in a conspicuous sclerotized rim surrounding the eye. Marginal oral-collar tubular ducts with small rims. With 1-13 oral-rim tubular ducts on dorsum of abdomen, usually about 8. With 1-3 ventral oral-rim tubular ducts on each side of body between cerarius 13 and abdominal segment II. Without a lateral oral-rim tubular duct on either side of dorsum of abdominal segment VII. Hind tibia usually shorter than or equal to length of hind femur. With more than 20 multilocular pores on venter of abdominal segment IV and 2-19 such pores on segment III. Translucent pores present on hind femur and tibia.

Slide-mounted third-instar females

A technical description is given by Gimpel and Miller (1996). A diagnosis of the third-instar female is as follows: With 0-4 dorsal oral-rim tubular ducts on thorax and with 0-3 on abdomen. Without mediolateral oral-rim tubular ducts on dorsum of abdomen. Eye with a slightly sclerotized rim surrounding it and 2-6 discoidal pores on rim. Head with 2-3 oral-collar tubular ducts on each side of body and with 2-4 such ducts between cerarii 10 and 11. Some marginal oral-collar tubular ducts with slight rim.

Distribution

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Although many of the records of P. elisae are quarantine records primarily from USA ports-of-entry, the repetitive nature of these interceptions suggest that the species is well established in most of the countries listed. The species has a fairly limited distribution in Central America and northern South America. It is reasonable to expect it to continue to expand its distribution.

The distribution map includes records based on specimens of P. elisae from the collection in the Natural History Museum (London, UK): dates of collection are noted in the List of countries (NHM, 1982).

Distribution Table

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The distribution in this summary table is based on all the information available. When several references are cited, they may give conflicting information on the status. Further details may be available for individual references in the Distribution Table Details section which can be selected by going to Generate Report.

Last updated: 23 Apr 2020

Continent/Country/Region	Distribution	Last Reported	Origin	First Reported	Invasive	Reference	Notes
Europe							
Netherlands	Absent, Confirmed absent by survey					NPPO of the Netherlands (2013); EPPO (2020)	15 survey observations in 2012.
North America							
Costa Rica	Present					Gimpel and Miller (1996)	
Cuba	Present					Niebla Rumbaut et al. (2010)	
Guatemala	Present					Gimpel and Miller (1996)	
Honduras	Present					Gimpel and Miller (1996)	
Mexico	Present					Tokihiro (2006)	
Panama	Present					Gimpel and Miller (1996)	
United States	Present					CABI (Undated)	Present based on regional distribution.
-Hawaii	Present					Tokihiro (2006)	
South America							
Brazil	Present					NHM (1982)	
-Espirito Santo	Present					Culik et al. (2006)	
Chile	Present					Tokihiro (2006)	
Colombia	Present					Gimpel and Miller (1996)	
Ecuador	Present					Gimpel and Miller (1996)	

Risk of Introduction

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Contamination of fruit for export may cause rejection at ports-of-entry in countries where this mealybug does not occur.

Habitat

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Occurring primarily on the leaves and fruit of the host.

Hosts/Species Affected

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Because of confusion about the identity of this species, the only reliable reference about P. elisae hosts is Gimpel and Miller (1996). Most (but not all) published records of P. elisae pertain to P. jackbeardsleyi. Unfortunately, the only way to validate the records is to re-examine voucher specimens, if they exist.

This species is most commonly found on banana. It has been reported on only six host genera in five families, but it is anticipated that a much wider range of hosts will be found when it is studied in the banana-growing areas of Central and South America.

Host Plants and Other Plants Affected

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Plant name	Family	Context
Aglaonema	Araceae	Other
Annona squamosa (sugar apple)	Annonaceae	Other
Citrus aurantiifolia (lime)	Rutaceae	Other
Coffea arabica (arabica coffee)	Rubiaceae	Other
Musa (banana)	Musaceae	Main
Musa x paradisiaca (plantain)	Musaceae	Main
Psidium guajava (guava)	Myrtaceae	Other

Growth Stages

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Fruiting stage, Post-harvest, Vegetative growing stage

Symptoms

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The undersides of leaves can become covered with the white ovisacs produced by the adult females in heavy infestations (Gimpel and Miller, 1996).

List of Symptoms/Signs

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Sign	Life Stages	Type
Fruit / external feeding		
Leaves / external feeding		

Biology and Ecology

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There is no published information on the biology of P. elisae. In Ecuador, it is reported to have multiple generations each year and to occur primarily on the leaves and fruit of the host (GV Manley, Standard Fruit Co., San Jose, Costa Rica, personal communication, 1985).

Mealybugs in general have four female and five male instars (including the adults). The first instar is usually more mobile than the rest. The adult female lays her eggs in a waxy sac called an ovisac attached to the host-plant. The eggs usually hatch in a few hours to a few days and the first instars escape from the ovisac and crawl on the host searching for a suitable feeding site. First-instar larvae are sometimes transported by wind. Male first instars are similar to female first instars, but male second instars form a waxy sac and pass through two more non-feeding instars (the prepupa and pupa) before becoming winged adults. Females do not form an ovisac until they are adults. Adult males cannot feed and usually survive for no more than a day. It is assumed that most mealybug males locate females by a pheromone. Males can often be seen in flight early in the morning or late in the day when winds are generally calm. Mealybugs have from one to eight or nine generations a year depending on the weather conditions and species of mealybug.

Notes on Natural Enemies

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Although it is likely that this species has an array of natural enemies, none have been reported in the literature. Mealybugs usually have associated parasites in the Chalcidoidea, particularly the Encyrtidae, and predators in the Coccinellidae. Other natural enemies include fungi, lacewings, occasional flies, and mites.

Impact

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The banana mealybug has been reported to cause damage to bananas in Central America (Beardsley, 1986).

Detection and Inspection

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Best detected by visual inspection of host, particularly on the undersides of leaves and in the developing fruit bunches. The large white ovisacs are the most easily seen structure on the host.

Similarities to Other Species/Conditions

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Adult females of P. elisae are most similar to Pseudococcus jackbeardsleyi but differ by having: small rim associated with many marginal oral-collar tubular ducts, especially on thorax; 1-13 dorsal oral-rim tubular ducts on abdomen; up to two ventral oral-rim tubular ducts on each side of body between cerarius 13 and segment II; without lateral oral-rim tubular duct on abdominal segment VII; tibia usually shorter or equal in length to femur; with more than 20 multilocular pores on venter of segment IV. Whereas, P. jackbeardsleyi has: no rim associated with marginal oral-collar tubular ducts; 14-27 dorsal oral-rim tubular ducts on abdomen; more than two ventral oral-rim tubular ducts on each side of body between cerarius 13 and segment II; usually at least one lateral oral-rim tubular duct on abdominal segment VII; tibia usually longer than length of femur; usually with less than 15 multilocular pores on venter of segment IV. Adult females of Pseudococcus elisae are also similar to Pseudococcus landoi, but differ by having translucent pores on the hind femur which are absent on the latter species.

Third-instar females of P. elisae are most similar to third instars of P. landoi but differ by having: longest anal-lobe seta greater than 100 mm long; and hind tibia 123-158 mm long. Whereas, P. landoi has: longest anal-lobe seta less than 90 mm long; and hind tibia 151-188 mm long. Third-instar females of P. elisae also are similar to P. jackbeardsleyi but differ by having: four or fewer oral-rim tubular ducts on thorax, fewer than three on abdomen; without mediolateral oral-rim tubular ducts on abdomen; cerarius 10 well developed; without oral-rim tubular ducts on submargin of venter from segment II to cerarius 13. Whereas, P. jackbeardsleyi has: four or more oral-rim tubular ducts on thorax, more than five on abdomen; with at least one mediolateral oral-rim tubular duct on abdomen; cerarius 10 usually absent or represented by one or two conical setae and five or fewer trilocular pores; with one or more oral-rim tubular ducts on submargin of venter from segment II to cerarius 13.

Prevention and Control

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Due to the variable regulations around (de)registration of pesticides, your national list of registered pesticides or relevant authority should be consulted to determine which products are legally allowed for use in your country when considering chemical control. Pesticides should always be used in a lawful manner, consistent with the product's label.

There is no published information concerning control strategies for this species.

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Distribution Maps

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