Food and Agriculture Organization of the United Nations

International Plant Protection Convention

Africa Phytosanitary Programme

(APP) Phase 2 · Train-the-Trainer workshop

23–27 June 2025 · Mpumalanga, South Africa

Development of Pest Survey Protocols

Arop Deng, IPPC Secretariat

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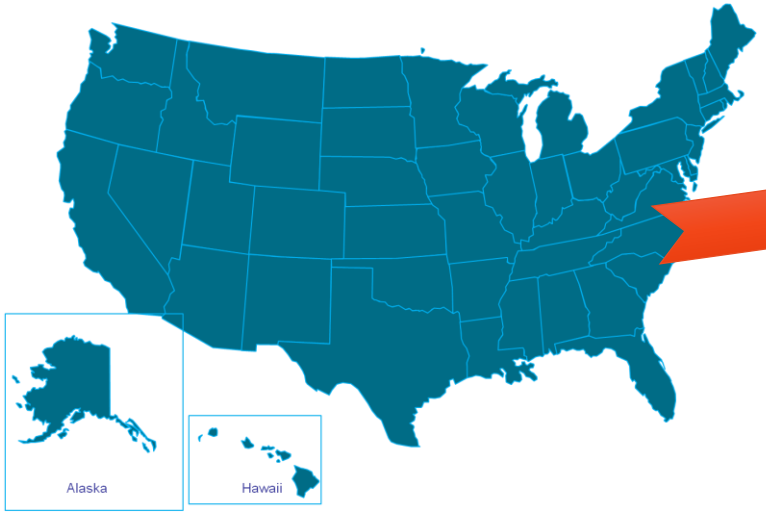
Plant Pest Risk Analysis Scientists- Raleigh, NC, USA

Developing a Pest Survey

- The purpose of this presentation is:
  - to tell you about how pest survey protocols are developed, and
  - present you with the tools and resources available to aid you in developing your own pest detection surveys in the future

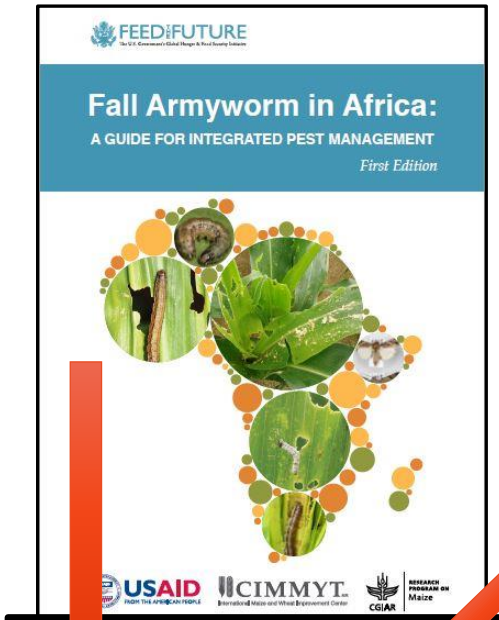


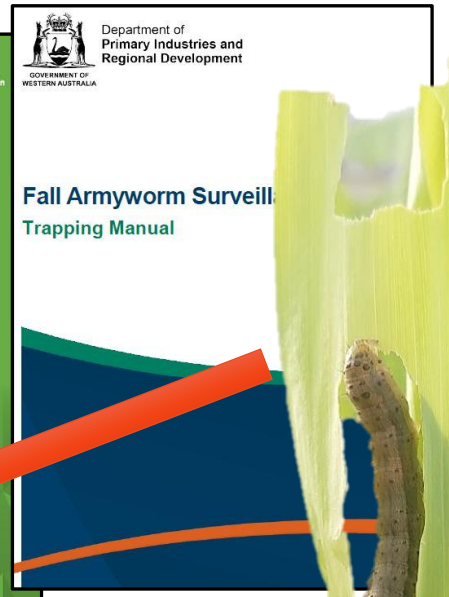
The European Union (EPPO), the International Plant Protection Convention (IPPC), FAO and other organizations and countries have a great deal of information useful in designing detection surveys

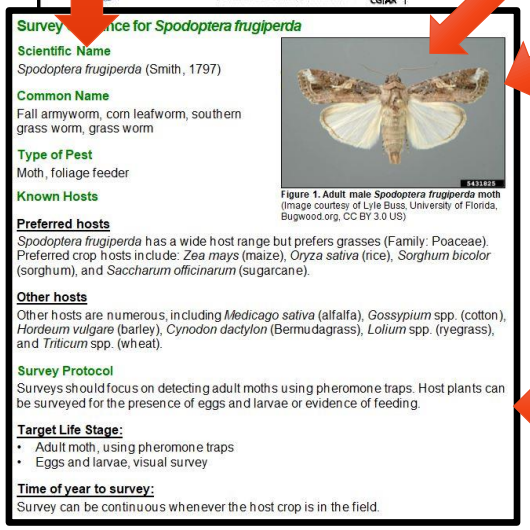
Non-Quarantine pests

Quarantine pests

Spodoptera frugiperda








CAPS
Cooperative Agricultural Pest Survey
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ABOUT
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COMMUNITY
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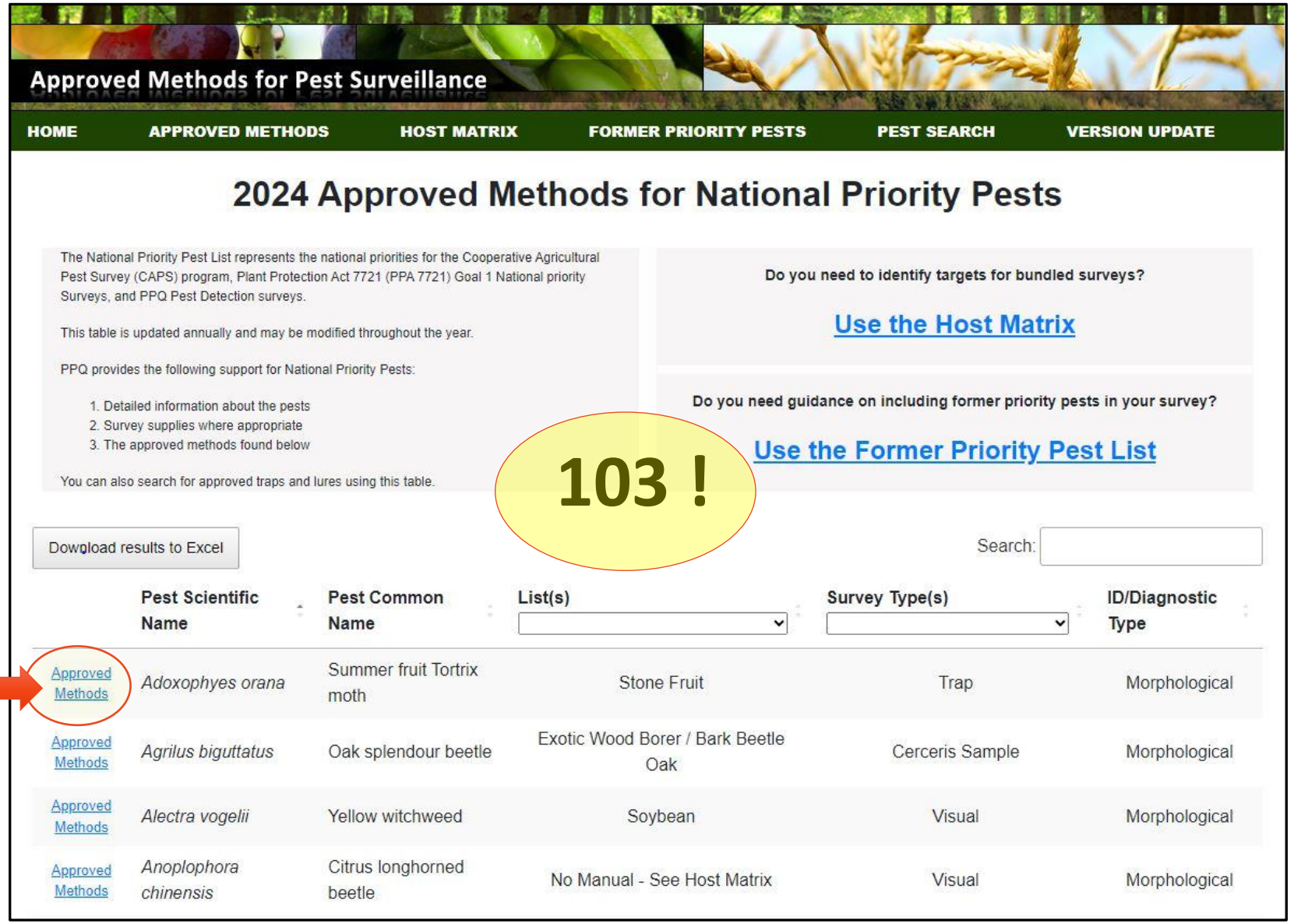
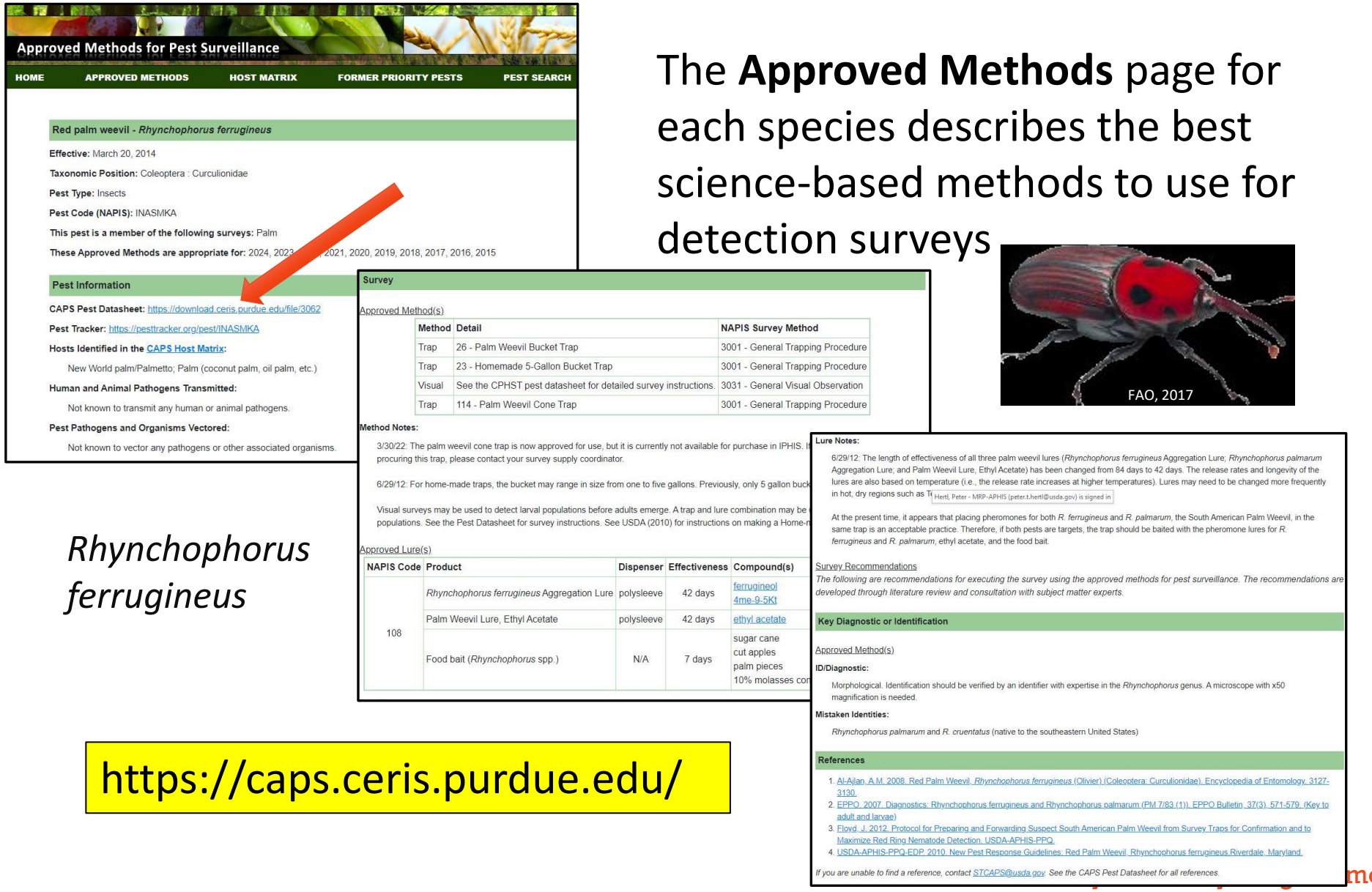
QUICK LINKS
Guidelines
OFP (CAPS)
SSF (CAPS)
Training
CAPS Resource and Collaboration Site
This site is designed to support the Cooperative Agricultural Pest Survey (CAPS) community. You'll find a variety of resources here including the approved methods for National Priority Pests. The CAPS Program is under the Animal and Plant Health Inspection Service (APHIS) - Plant Protection and Quarantine (PPQ).
PPQ safeguards U.S. agriculture and natural resources against the entry, establishment, and spread of economically and environmentally significant pests, and facilitates the safe trade of agricultural products.
The CAPS Program supports PPQ's mission by conducting exotic plant pest surveys through a national network of cooperators and stakeholders to protect American agriculture and natural resources.
Recent Updates:
The FY2024 CAPS Guidelines are available. Cooperators need to read and follow these guidelines when submitting workplans.
The National Priority Pest List was updated.
CAPS
Purdue University
https://caps.ceris.purdue.edu/
Pest Tracker


Approved Methods for Pest Surveillance
HOME
APPROVED METHODS
HOST MATRIX
FORMER PRIORITY PESTS
PEST SEARCH
VERSION UPDATE
2024 Approved Methods for National Priority Pests
The National Priority Pest List represents the national priorities for the Cooperative Agricultural Pest Survey (CAPS) program, Plant Protection Act 7721 (PPA 7721) Goal 1 National priority Surveys, and PPQ Pest Detection surveys.
This table is updated annually and may be modified throughout the year.
PPQ provides the following support for National Priority Pests:
1. Detailed information about the pests
2. Survey supplies where appropriate
3. The approved methods found below
You can also search for approved traps and lures using this table.
Do you need to identify targets for bundled surveys?
Use the Host Matrix
Do you need guidance on including former priority pests in your survey?
Use the Former Priority Pest List
103 !
Download results to Excel
Search:
Pest Scientific Name
Pest Common Name
List(s)
Survey Type(s)
ID/Diagnostic Type
Approved Methods
Adoxophyes orana
Summer fruit Tortrix moth
Stone Fruit
Trap
Morphological
Approved Methods
Agrilus biguttatus
Oak splendour beetle
Exotic Wood Borer / Bark Beetle Oak
Cerceris Sample
Morphological
Approved Methods
Alectra vogelii
Yellow witchweed
Soybean
Visual
Morphological
Approved Methods
Anoplophora chinensis
Citrus longhorned beetle
No Manual - See Host Matrix
Visual
Morphological

The **Approved Methods** page for each species describes the best science-based methods to use for detection surveys



Rhynchophorus ferrugineus

https://caps.ceris.purdue.edu/

CAPS Datasheets provide pest-specific information to support planning and completing early detection surveys.

Rhynchophorus ferrugineus

Scientific Name
Rhynchophorus ferrugineus (Olivier, 1790)

Common Name
Red palm weevil, Asiatic palm weevil, coconut weevil, red stripe weevil

Type of Pest
Weevil

Taxonomic Position
Class: Insecta, **Order**: Coleoptera, **Family**: Curculionidae (often listed as Dryophthoridae)

Figure 1. *R. ferrugineus* adult (Image courtesy of Amy Roda, USDA-APHIS).

Notes on taxonomy and nomenclature: There is an array of color variations across the native and introduced range of *Rhynchophorus ferrugineus* (Fig. 1), and the taxonomy has changed multiple times in the past. Recent molecular research suggests that *Rhynchophorus ferrugineus* may actually be a species complex composed of two or more cryptic species (Rugman-Jones et al., 2013).

Figure 2. *R. vulneratus* adult, red stripe color morph (Image courtesy of Center for Invasive Species Research)

A closely related and similar species, *Rhynchophorus vulneratus* (Panzer) (Fig. 2), was detected was detected and eradicated in Laguna Beach, California in 2010 (Hoddel et al., 2017; Rugman-Jones et al., 2013). PPQ acknowledges there are two species, but for detection and operational purposes, both will be handled in the same way.

Pest Recognition
This section describes characteristics of the organism and symptoms that will help surveyors recognize possible infestations/infections in the field, select survey sites, and collect symptomatic material. For morphological descriptions, see the Identification/Diagnostic resources on the AMPS pest page on the CAPS Resource and Collaboration website.

We used information from the existing pest datasheets to formulate the surveys for Africa…

and you can do the same to develop your own pest survey!

Not all pests are that easy…

Survey Guidance for *Diastocera trifasciata*

Scientific Name
Diastocera trifasciata (Fabricius)
Synonym: *Analeptes trifasciata* Fabricius

Common Name
Stem girdler

Type of Pest
Flat-faced longhorn beetle, branch girdler

Taxonomic Position
Class: Insecta **Order**: Coleoptera
Family: Cerambycidae **Subfamily**: Lamiinae

Figure 1. Adults of *D. trifasciata* (USDA)

Known Hosts

Preferred hosts
Anacardium occidentale (cashew), *Sterculia setigera* (kukkuki), and *Annona senegalensis* (wild soursop)

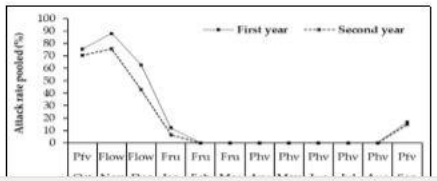
Other hosts
Adansonia digilata, Bombax costatum, Ceiba penlandra, Eucalyptus saligna, E. camaldulensis, E. globulus, Lannea nigrilana, L. triphylia, Sclerocarya birrea, Spondias monbin, and *Pseudospondias microcarpa*

Survey Protocol

Target Life Stage:
Visual survey for adults, however visual surveys of damage may be used to detect populations when adults are not present.

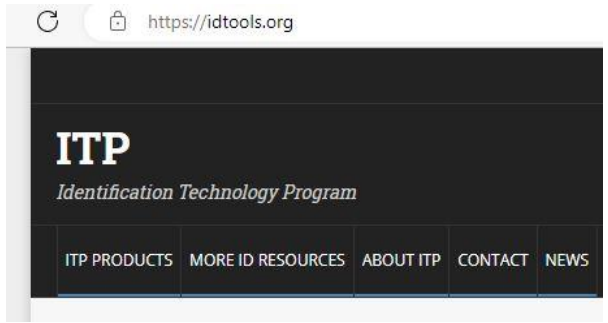
Time of year to survey:

- Visual surveys for adults on branches of host trees from the end of the dry season until flowers begin to appear on the trees.
- Visual surveys for cut branches containing eggs, larvae, and pupae can be carried out during the dry season when adults are not present.



In cases where survey protocols and methods have not been developed by other nations, the information will have to be extracted directly from the scientific literature.

For this pest, no lures or traps have been developed and only direct sampling methods are available for survey



Another useful site is our ID Tools Website which offers Identification Aids, photos, keys and other useful tools to help **confirm the identity** of specimens captured or collected during the detection survey.

https://idtools.org/

Key Points Summary

- Look for information developed by other countries and organizations
- Tailor the survey for your country based on the resources available
- For pests with no existing survey protocols, use the scientific literature to find the best survey methods available
- **Don’t be afraid to ask for help!** We all have an interest in facilitating trade and preventing the spread of plant pests

Thank you

Train-the-Trainer workshop

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