Treatment and Inspection Methods Laboratory

Last Modified:

The Treatment and Inspection Methods Laboratory (TIML, formerly Miami) is co-located with the Agricultural Research Service at the Subtropical Horticulture Research Station in Florida. The mission of the laboratory is to develop and validate commodity inspection, treatment, and pest management technologies.

Specific goals include: the development of new quarantine treatments and techniques and modifying existing methods that mitigate risks associated with quarantine pests; validation of existing treatments; support of PPQ operational and preclearance programs (such as facility approvals and certifications); development of risk management systems and systems approaches; and development and optimization of port technologies and processes relating to pest exclusion.

Recent Accomplishments

Expand All

Treatment Schedule Development and Support

- Reviewed cold treatment research protocols for Mediterranean fruit fly in Spanish clementines and four species of fruit flies in Hawaiian citrus.
- Approved final efficacy data for irradiation of mango pulp weevil in Philippine mangoes and cold treatment of Queensland fruit fly in Australian grapefruit.
- Reviewed research and provided technical recommendations for the importation of spinach seed with *Phomopsis* spp.
- Reviewed ethyl formate research for control of light brown apple moth on grapes.
- Reviewed research protocols for Asian citrus psyllid, citrus black spot, and citrus canker.
- Reviewed fruit fly development data as one component of a hot water immersion study on oversized Peruvian mangoes.
- Approved three spray schedules to disinfest Japanese beetle and other flying hitchhikers in cargo holds and containers to replace 10% d-phenothrin (no longer registered).
- Compiled guidelines for research supporting fruit fly cold treatment development to standardize and identify criteria for treatment research and evaluation.
- Compiled guidelines for research supporting phytosanitary irradiation treatment development.
- Contributed to development of international irradiation dosimetry standards produced by the American Society for Testing and Materials (ASTM) dosimetry committee.
- Explored nitric oxide fumigation as an alternative to methyl bromide fumigation.
- Evaluated potential treatments for avocado during the oriental fruit fly outbreak in South Florida.

Technical Support for Field Operations and Preclearance Programs

- Approved air cargo covers for covering pallets of perishable commodities during fumigation.
- Approved new options for placement of circulation fans in fumigation chambers.

- Approved modified atmosphere packaging for Mexican guavas.
- Reviewed protocol and provided guidance on Australian pilot project for in-transit cold treatment of mixed citrus consignments.
- Developed operational guidelines for sulfuryl fluoride fumigations of containerized logs.
- Approved plans and construction proposals for new types of fumigation chambers at South Florida Logistics Services.
- Certified and approved equipment, facilities, and conveyances for cold treatment of fruit: certified 123,438 self-refrigerated containers and 32 vessels; approved plans for three new vessels and/or significant alternations of existing vessels and one warehouse.
- Approved two international hot water mango facilities and equipment for mango treatment; approved changes to eight existing international hot water mango facilities.
- Developed new irradiation policies concerning process configurations approvals, calibration of dosimetry systems, and insect-proof packaging.
- Recertified five international irradiation facilities.
- Evaluated x-ray technology for detecting fruit flies in grapefruit.
- Developed a new tool for cutting mangoes at ports of entry to inspect the mangoes for insect pests.
- Provided recommendations on screening materials for pest-proof packaging of Costa Rican Dracaena
- Assisted Field Operations in California to prepare for phosphine fumigation of California citrus exports.

Analytical Chemistry Support

- Developed a chemical assay for the determination of light brown apple moth pheromone blend in mating disruption products
- Developed a chemical assay to determine d-phenothrin content in aerosol products for the Japanese Beetle Program
- In conjunction with DHS, developed elemental analysis test to determine mango origin.
- Developed 4 chemical assays for the evaluation of active ingredient content in solid dispensers used in PPQ’s Fruit Fly Program.

- Provide on-going chemical support to PPQ's Fruit Fly Program evaluating solid dispensers and liquid formulations as part of the program's Quality Assurance Survey Plan (QASP).
- Conducted chemical analysis on submitted priority samples for PPQ's Boll Weevil Program.
- Completed cooperative field study evaluating the correlation of release rates and fly capture rate for trimedlure solid dispensers and 3C solid dispensers.
- Developed a chemical assay for detecting the presence/absence of khapra beetle larvae in rice using mass spectrometry and portable gas chromatography (zNOSE™).
- Completed pre-demonstration study on zNOSE™ capability to distinguish between khapra beetle larvae infested rice and non-infested rice.

Domestic and Off-Shore Survey, Mitigation and Biological Control Programs

- Developed an attract and kill strategy for Giant African Snail using a synthetic lure based on volatiles found in papaya oil that increased the attraction of snail bait by over 80%
- Showed in a two year study that the South Florida Giant African Snail eradication program removed all reproductive snails leading to a rapid decline and their eventual elimination from infested properties
- Determined that predatory mirids (*Nesidiocoris tenuis*) established in the U.S. effectively control the sweet potato whitefly (*Bemisia tabaci*) in tomatoes. The same species also controls the tomato leaf miner, *Tuta absoluta*, in Europe.
- Discovered that a native mirid *(Macrolopus preclarus*) controls sweet potato whitefly in tomato but caused less damage than (*Nesidiocoris tenuis*) and may thus offer a better option to tomato growers
- Determined the non-citrus host range of the flat mite vector of citrus leprosis in Florida to help focus surveyor and management efforts should citrus leprosis be detected in the U.S.
- Tested avocado seed moth lures attractiveness to non-target moths in South Florida and helped optimize the processing of traps by shown what manufacture lures have lower attraction to non-targets.
- Determined that native natural enemies were attacking passion vine mealybug (*Planococcus minor*) and the pest numbers were not increasing in South Florida.

The findings lead to the deregulation of the pest.
- Optimize the trapping system for the tomato leaf miner (*Tuta absoluta*) by showing that hot melt pressure sensitive adhesives were easier to screen for non-target moths compared to traditional sticky traps and they caught similar number of moths.

Contact

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