Developing an auto-disseminator of pathogenic fungus spores for ACP control in dooryard citrus

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I. Scent attractants

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II. Formulation & initial testing of Ifr 3581

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Isaria fumosoroseus (= Paecilomyces fumosoroseus)

Avery et al. [www.irrec.ifas.ufl.edu/pavery.php](http://www.irrec.ifas.ufl.edu/pavery.php)
Avery et al. (2009) *Florida Entomologist* 92:608
Jackson et al. (1997) *Mycological Research* 101:35
An *Isaria fumosorosea* isolate from south Texas (*Ifr* 3581) killed > 93% of Asian citrus psyllids within four days of laboratory application of resuspended blastospores to nymphs and adults. Cadavers developed mycosis.

Moran et al. Poster Presentation to the 2009 Annual Meeting of the Society for Invertebrate Pathology
Basis of auto-disseminator design

**ACP reproduces only on flush.**

**ACP is attracted to flush aroma.**
J. Patt and M. Sétamou *Environ. Entomol.* In Press

**Approach:**
Base dispenser on the visual, aromatic and tactile characteristics of flushing shoots.
ACP auto-disseminator prototype
Visual attractants

Flush of Thai lime, *Citrus hystrix*

‘ACP trap’ Alpha Scents, Inc.
Tactile cues

ACP feeding from leaf margins

Scent attractants

- Linalool
- Limonene
- Monoterpenes
- Monoterpene esters
- Beta-caryophyllene
- Beta-pinene
- Sesquiterpenes

Scented backing

Scent dispenser
Sour orange

Flush

linalool

\(\alpha\)-terpineol

linalyl acetate

Mature

linalool

\(\alpha\)-terpineol

linalyl acetate

Citrus hystrix

citronellal

citronellyl

citronellol

citronellol

Mexican lime

limonene

geranial
Greenhouse test of petitgrain oil attractiveness to ACP.
% Increase in Trapped ACP: Unscented v. Scented with petitgrain oil

% increase

Unscented  Scented

Post-release time period (mins)

15-30  30-45  45-60

n.s.

n.s.

* t-test, P < 0.05  N = 5 replicated tests
Dispenser evaluations, progress to date:

1. Free-flying ACP visited auto-disseminators then flew to potted orange trees. N = 245 ACP on trees.

2. After a 5 hr exposure to the dispensers, 15% died from *Ifr* infection within 18 days.

3. Demonstrated that *Ifr* spores remained viable on auto disseminator for at least 10 days.
Development of scent attractants

Electrophysiological (EAG) analysis

Optimization of synthetic mixtures, EO fractions

Analyze aromas of south Asian ACP host-plants

Conduct field tests

Development of spore dispenser

Improve infection level

Demonstrate horizontal transfer

Conduct field tests: blastospores v. conidia?