FLORIDA ENTOMOLOGICAL SOCIETY
2009 ANNUAL MEETING ABSTRACTS

MONDAY AFTERNOON, JULY 27, 2009

8:00 – 5:00
POSTER DISPLAY SESSION 1 (Authors present from 2:00 – 3:00 PM; take down by 5:00 PM)
Island Room

DSP 1. Life histories, Morphology and Diversity in the Genus *Adaina* (Lepidoptera: Pterophoridae). **D. Matthews**, McGuire Center for Lepidoptera & Biodiversity, Florida Museum of Natural History, P.O. Box 112710, Gainesville, FL 32611. **Abstract**: The genus *Adaina* Tutt, includes 27 species worldwide, most neotropical in distribution. Larval hostplants are restricted to Asteraceae. Larvae are flower borers, stem gallers, or leaf skeletonizers. Larval morphology and chaetotaxy corresponds with feeding habit. Adults of endophagous feeders are white to yellow, with few markings, while those of external feeders exhibit darker maculation. Life histories and morphological features of representative species are presented, including a recently identified gallicolous species on Siam weed, *Chromolaena odorata*.

DSP 2. USDA-ARS strategies to address the imminent threat of redbay ambrosia beetle and laurel wilt disease to avocados in Florida**. P. E. Kendra**, W. S. Montgomery, E. Q. Schnell, J. Niogret, N. D. Epsky, R. R. Heath, R. J. Schnell, T. Ayala-Silva, A. W. Meerow, and M. Winterstein, USDA-ARS, Subtropical Horticulture Research Station, 13601 Old Cutler Rd., Miami, FL 33158. **Abstract**: Laurel wilt, a deadly fungal disease of avocado and other trees in the Lauraceae, is vectored by the redbay ambrosia beetle *(Xyleborus glabratus*). First detected in GA in 2002, the beetle has spread to SC and FL to within 70 miles of commercial avocado areas. Impact is potentially devastating to the avocado industry in FL, CA, and Mexico. Scientists at the USDA-ARS in Miami have coordinated efforts to address the threat of this pathogen/pest complex.

DSP 3. Antennal and behavioral responses to putrescine and ammonium bicarbonate in the Caribbean fruit fly (Diptera: Tephritidae). **P. E. Kendra**, W. S. Montgomery, N. D. Epsky, and R. R. Heath, USDA-ARS, Subtropical Horticulture Research Station, 13601 Old Cutler Rd., Miami, FL 33158. **Abstract**: A current trapping system for *Anastrepha* fruit flies uses a 2-component lure that emits ammonia and putrescine, both regarded as protein cues. This study used electroantennography and flight tunnel bioassays to quantify olfactory and behavioral responses of *A. suspensa* to vapors from ammonium bicarbonate and putrescine lures. Results indicate that (1) olfactory response of females varies according to physiological state, and (2) the putrescine component is responsible for the female-biased attraction observed with this system.

DSP 4. The small hive beetle: oviposition, longevity and intrinsic rate of natural increase on two diets. **R. T. Arbogast**, B. Torto, and P. E. Teal, Center for Medical, Agricultural, and Veterinary Entomology (CMAVE), ARS, USDA, 1700 SW 23rd Drive, Gainesville, FL 32608. **Abstract**: Small hive beetles were reared from egg to adult on pollen dough or orange to determine developmental time and survival. Pairs of adults were placed on each of the two diets, and the number of eggs laid and female deaths were recorded daily until all of the females were dead. The data were used to construct life-tables and tables of age-specific fecundity, which were then used to calculate the intrinsic rate of natural increase on each diet.

DSP 5. Analysis of expressed sequence tags and complete mitochondrial genome of the blue-green sharpshooter, *Graphocephala atropunctata*. **L. Hunnicut,** W. Hunter, J. Mozonik, North Carolina State University, 4801 Five Leaf Lane #128 Raleigh, NC 27613.

DSP 6. Novaluron: New Tool for Nitidulid Sap Beetle Management in Strawberries**. J. F. Price** and C. A. Nagle, University of Florida, Gulf Coast Research and Education Center, 14625 CR 672, Wimauma, FL 33598. **Abstract:** Nitidulid sap beetles have become more problematic in strawberry production since loss of methomyl. Adults create holes and adults and larvae reside in fruit causing shipment rejection. Experiments were performed 2006-2009 to identify mitigating agents. The insect growth regulator novaluron in varying patterns of use virtually eliminates larvae in fruit and prevents reproduction of nitidulids in strawberry fields. Novaluron alone or in combination with bifenthrin can be useful to reduce losses to sap beetles substantially.

DSP 7. Phylogenetic relationships of true butterflies (Lepidoptera: Papilionoidea) inferred from elongation factor-1α, COI and 16S ribosomal RNA Sequences. **M. Il Kim**, Xinlong Wan, M. Jee Kim, H. Cheon Jeong, Neung-Ho Ahn, Ki-Gyoung Kim, and Iksoo Kim, College of Agriculture & Life Sciences, Chonnam National University, Gwangju 500-757, Republic of Korea. **Abstract**: There has been a substantial controversy on the phylogenetic relationships among butterfly families and several competing phylogenetic hypothesis have been suggested. Among them the relationships of (Nymphalidae + Lycaenidae) + Pieridae) + Papilionidae) has been further widely accepted. In this study, we sequenced EF1-α, COI, and 16S rRNA from 62 species belonging to four true butterfly families, Papilionoidea. Phylogenetic analyses using BI, ML, and MP showed that the traditionally recognizable families were strongly supported as monophyletic groups, with the exception of Nymphalidae, wherein the singly included species of Danainae was placed as basal lineage of the Nymphalidae + Lycaenidae group. Phylogenetic relationships among families supported the sister group relationship of Nymphalidae and Lycaenidae strongly by all analyses and placed Papilionidae as the most basal lineage of the Papilionoidea. On the other hand, the relationships of Nymphalidae and Lycaenidae group to Pieridae were either unresolved, revealing trichotomy, or the relationships of (((Nymphalidae + Lycaenidae) + Pieridae) + Papilionidae) as previously supported by several morphological and molecular works were supported. Detailed within-family relationships among some genera also are shown in the presentation.

DSP 8. The complete DNA sequence and genome organization of the mitochondrial genome of the white-spotted flower chafer, *Protaetia brevitarsis* (Coleoptera: Cetoniidae). **M. Jee Kim**, M. Yeon Hong, M. Il Kim, B. Rae Jin, and I. Kim, College of Agriculture & Life Sciences, Chonnam National University, Gwangju 500-757, Republic of Korea. **Abstract**: The complete nucleotide sequences of the mitochondrial genome (mitogenome) from the white-spotted flower chafer, *Protaetia brevitarsis* (Coleoptera: Cetoniidae) was determined. The 20,319-bp long circular genome is the longest among the completely sequenced arthropods. This extraordinary length of the genome stemmed from 5,654-bp long A+T-rich region composed of twenty-eight 117-bp tandem repeats, seven 82-bp tandem repeats, and each two 19-bp and 38-bp tandem repeats. The *P. brevitarsis* contains a typical gene complement, order, and arrangement identical to most common type found in insects. The *P. brevitarsis* COI gene does not have typical ATN codon. Thus, we also designated it as AAC (arginine), which is found in the start context of all sequenced Polyphaga within Coleoptera. All tRNAs showed stable canonical clover-leaf structure of other mt tRNAs, except for $tRNA^{Ser}$(AGN), DHU arm of which could not form stable stem-loop structure. The 5 bp-long motif sequence (TAGTA) that has been suggested to be the possible binding site for the transcription termination peptide for the major-strand also was found between $tRNA^{Ser}$(UCN) and ND1, as have been detected in all sequenced coleopteran insects.

DSP 9. Insecticidal activity of ginkgo (*Ginko biloba* L.) extract against brown plant hopper. **H. Burm Lee**, Chang-Jin Kim, I. Kim, Division of Applied Bioscience and Biotechnology, College of Agriculture and Life Sciences, Chonnam National University, Gwangju 500-757, Republic of Korea. **Abstract**: Ginkgo is a genus of highly unusual non-flowering plants with one extant species, *G. biloba*, which is regarded as a living fossil. In this study, the insecticidal activities of ginkgo extract were examined against several insects such as brown plant hopper (*Nilapavata lugens)*, diamondback moth (*Plutella xylostella*), and two-spotted spider mite (*Tetranychus urticae*). The methanol extract of ginkgo was active to *Nilapavata lugens*, *Plutella xylostella* and *Tetranychus urticae*. Especially, the ginkgo root extract was highly active against *Nilapavata lugens*. This study shows that the ginkgo extract may be effectively used as a biocontrol agent against notorious insects in a sustainable agriculture.

DSP 10. Bioinsecticidal potential of culture extract from *Serratia* sp. EML-SE1 against diamondback moth. **H. Uk Jeong**, H. Yeon Mun, H. Keun Oh, I. Kim and H. Burm Lee College of Agriculture & Life Sciences, Chonnam National University, Gwangju 500-757, Republic of Korea. **Abstract**: Diamondback moth (*Plutella xylostella* L.) belonging to genus Lepidoptera is a notorious pest of cruciferous crops worldwide. We evaluated the bioinsecticidal activity of the liquid cultures (LB and NB) of a bacterial strain, *Serratia* sp. EML-SE1, isolated from a diseased diamondback moth. The pathogenicity of a bacterial strain to diamondback moth was confirmed by the following procedures: treatment of liquid culture on cabbage leaves, ingestion of inoculated cabbage and mortality response. For the test, twenty 3rd instar larvae of diamondback moth were placed on the Chinese cabbage leaf in a round plastic cage (Ø 10 × 6 cm) and sprayed with the liquid cultures. After 72 hours, insecticidal activity of LB and NB cultures of

Serratia sp. against *P. xylostella* larvae showed 91.7% and 88.3%, respectively. In addition, the bioinsecticidal activity on potted cabbage with 14 leaves in a growth cage (165 × 83 × 124 cm) also was similar to that of plastic cage experiment. Summarized, the *Serratia* sp. EML-SE1 may be a potent candidate as a bioinsecticidal agent to control diamondback moth.

DSP 11. Effects of two insect growth regulators, buprofezin and diflubenzuron, on Asian citrus psyllid, *Diaphorina citri* Kuwayama. **D. Raj Boina**, Rajinder S. Mann, P. Clayson, S. Tiwari, and L. L. Stelinski, Entomology and Nematology Department, University of Florida, IFAS, Citrus Research and Education Center, Lake Alfred, FL 33850. **Abstract**: Asian citrus psyllid, *Diaphorina citri,* is a cosmopolitan pest of citrus crops. During plant sap feeding, it may transmit bacteria that are presumably responsible for causing huanglongbing
disease in citrus. In this laboratory study, we have evaluated the toxicity of two insect growth regulators (IGRs), buprofezin and diflubenzuron, against various life stages of *D. citri*. Both the IGRs effectively suppressed *D. citri* egg hatch and emergence of adults from treated nymphs in a concentration-dependent manner. The potential of using these two IGRs as biorational insecticides for *D. citri* control is discussed.

DSP 12. Management of soil insect pests of sweet potato in Louisiana**. R. Story**, A. Hammond, J. Murray and T. Smith, Entomology Dept., 402 Life Sciences Bldg, LSU, Baton Rouge, LA 70803. **Abstract**: Objectives of the study were to 1) determine the efficacy of sweet potato growers' soil insect management practices, 2) quantify the relationship between the abundance of adult life stages of Diabrotica and Phyllophaga and subsequent damage by the larval stages of these insect pests to sweet potato roots at harvest, and 3) determine if planting and harvest date, and soil characteristics (organic matter, san, silt and clay content) are correlated with insect damage. Diabrotica (banded and spotted cucumber beetles) predominated in sweep net counts. Banded cucumber beetles outnumbered spotted cucumber beetles by a factor of about 100 (mean banded cucumber beetles/25 sweeps across the 3 years was 0.7 compared to 0.006 spotted cucumber beetles). Phyllophaga pheromone trap capture was positively correlated with percent white grub damaged roots. The relationship between Diabrotica sweep count numbers and rootworm damage and Phyllophaga trap catch and white grub damage is illustrated graphically in Figures 3 and 4. Rootworm damage did not show any correlation with soil characteristics, planting date, or harvest date.

DSP 13. Observations on an Eriophyid Mite on Loropetalum**. G. L. Leibee,** Moh L. Kok-Yokomi, and A. L. Shober, Mid-Florida REC/IFAS/UF, 2725 Binion Road, Apopka, FL 32703-8504. **Abstract**: Loropetalum (especially cultivar 'Ruby') plants with symptoms of deformed leaves and shortened internodes are often infested with eriophyid mites. These symptoms have been shown to be induced by copper deficiency and are often attributed to the presence of the mites. Studies were conducted to evaluate the efficacy of insecticides and miticides at controlling this mite and reducing damage on plants with and without sufficient copper.

DSP 14. Update on the Citrus Greening Bibliographical Database. **H.A. Arevalo**, A.B. Fraulo and P.A. Stansly, Southwest Florida Research and Education Center, University of

Florida –IFAS, 2686 SR 29N, Immokalee, FL 34142. **Abstract**: The citrus greening database was initiated in 2008 and now includes over 1400 bibliographical references in several languages. Forty percent of the references have links to the original documents. The database is visited monthly by 600 unique visitors each of whom averages four visits per month. We are continually updating information, adding entries, and adding new links thanks to the financial support of the Florida Citrus Production Research Advisory Council (FCPRAC).

1:30 – 4:35
SYMPOSIUM: West Indian Taxonomy and Biogeography
Organizer/Moderator: Howard Frank, Dept. of Entomology & Nematology, University of Florida, Gainesville, FL.
Caloosa B

1:35
1. A new antillocorine (Hemiptera: Rhyparochromidae) genus from the Neotropics. **Julieta Brambila (**USDA-APHIS, Gainesville, FL) and Luis Cervantes (Instituto de Ecologia, Xalapa, Veracruz, Mexico). **Abstract:** A new genus in the hemipteran tribe Antillocorini is described from the Neotropical region based in part on specimens intercepted in U.S. ports of entry. In coloration, species in this new genus are most similar to many *Botocudo* species, with which they are easily confused, while in structure they appear to be closer to *Cligenes distinctus* and *C. grandis*, also of Neotropical distribution.

1:55
2. The Biogeography of Caribbean Lampyridae **Marc A. Branham** (Entomology/Nematology, UF, Gainesville, FL). **Abstract:** The biodiversity and distribution of Caribbean fireflies will be presented. The geological history of the Caribbean region as well as evidence of extinction and dispersal will be discussed in relation to the current biogeographic pattern found in present day Caribbean fireflies.

2:15
3. An update on the taxonomy, biodiversity and biogeography of the butterflies of the West Indies. **Jackie Miller**, McGuire Center, UF, Gainesville, FL. **Abstract:** The origin, divergence, and distribution of the butterfly fauna of the West Indies has long been a subject of discussion and controversy. The fauna of these islands is truly remarkable given that 14 of 121 genera and 170 species of 350 are endemic with taxa that are associated with continental faunas. A brief historical overview of the possible faunal origins, island size and associated endemism, and recent conservation problems and initiatives will be discussed.

2:35
4. Advances in Caribbean Orthopterology. **Daniel E. Perez-Gelabert**, Smithsonian Institution, Washington, DC. **Abstract:** The Caribbean fauna of Orthoptera is still not well known, but advances during the last 30 years have been significant. I will discuss some of the major advances and the current state of knowledge of the fauna.

Most work has been on the taxonomy of grasshoppers and tetrigids. But a major advance has just been made on the very large fauna of crickets inhabiting the Caribbean islands.

3:15

5. Termites of the West Indies: their origins and means of dispersal. **Rudi Scheffrahn** , Ft. Lauderdale REC, University of Florida, Ft. Lauderdale, FL. **Abstract:** Termites mate as wingless adults following dispersal flights. Therefore, aerial dispersal by flying termites is only effective over several hundred meters. Long-distance dispersal by natural forces involves both vicariant and overwater dispersal, with the latter being more prominent for termites. Recent survey discoveries in the Caribbean Basin indicate that aboreal and wood nesting termite distribution patterns are the result of overwater dispersal by infested flotsam. Soil-nesting higher termites of the Greater Antilles originated from Central America by vicariate dispersal. Pest species have dispersed in this region during the last 500 years, primarily by boat traffic. I will provide specific examples of each dispersal method.

3:35

6. Sex on the beach: The evolution of male courtship structures in Caribbean tiger moths and their relatives (Arctiidae). **Rebecca Simmons**, University North Dakota, Grand Forks, ND. **Abstract:** Male tiger moths use various cues to court females, involving either scent or sound. The Euchromiini and Ctenuchini display various male androconia to release male pheromones; alternatively, some of these species lack male pheromone dispersing structures altogether. This study uses mitochondrial, ribosomal and nuclear DNA to construct a phylogeny of the euchromiine and ctenuchine tiger moths, which include several representatives from the Caribbean. Male androconia and ultrasound use are mapped onto the resulting phylogeny to examine the evolution of mating cues within these lineages.

3:55

7. Renaissance in West Indian faunal studies. **Paul Skelley** (Mike Thomas), Florida State Collection of Arthropods, Gainesville, FL.

4:15

8. History of butterfly exploration in Hispaniola. **Andrei Sourakov**, McGuire Center, University of Florida, Gainesville, FL. **Abstract:** The history of Hispaniolan exploration for butterflies goes back to 1742. There were several important researchers and works published on the subject. After a brief account of this early research, the speaker's own experiences and discoveries while working on Hispaniolan butterflies are shared. The focus of the talk is on phylogenetic relationships within the most diversified of the Caribbean butterflies, genus *Calisto* (Nymphalidae: Satyrinae).

1:30 – 4:37

CONCURRENT SESSION: Student Paper Competition, Doctor of Philosophy and Master of Science

Moderator: Michael Rogers, University of Florida, CREC, IFAS, Lake Alfred, FL.
Everglades A

Ph.D. Papers

1:35

9. Development and Reproductive Potential of *Amblyseius largoensis* when feeding on the Red Palm Mite, *Raoiella indica* (Acari: Tenuipalpidae). **Daniel Carrillo**, University of Florida, Tropical Research and Education Center, 18905 SW 280th Street, Homestead, FL 33031. **Abstract**: The red palm mite (RPM), *Raoiella indica* (Acari: Tenuipalpidae) is an invasive pest of palms and other plant species in Florida and in the Caribbean Region. The predator, *Amblyseius largoensis*(Acari: Phytoseiidae) appears to be the most frequent predator of the RPM in Florida and in the Caribbean. The goal of this research was to evaluate development and reproductive potential of the predator, while feeding on the red palm mite.

1:48

10. Comparison of three sampling methods for soil surface arthropods in organic mulches. **Harsimran K. Gill,** Robert McSorley, Marc Branham, Susan E. Webb, Gaurav Goyal, and Heidi HansPetersen, Department of Entomology & Nematology, 970 Natural Area Drive, P.O. Box 110620, Gainesville, Fl 32611-0620. **Abstract:** Mulching by spreading organic matter around plants can control the attack of insect pests and weeds. A field experiment was conducted to compare three different sampling methods to determine the impact of different kinds of mulches (pine bark, residues of sunn hemp, sorghum-sudangrass, and cowpea) on the soil surface arthropods. Pitfall trap sampling was found to be the most useful method compared with board traps and Berlese-funnel methods.

2:01

11. Development of 'corn silk flies' in alternative hosts. **Gaurav Goyal,** G.S. Nuessly, J.L. Capinera, D.R. Seal, G.J. Steck, and K.J. Boote, Everglades Research and Education Center, 3200 East Palm Beach Road, Belle Glade, FL 33430. **Abstract:** Four species of picture-winged flies (Diptera: Ulidiidae) have been reared from corn ears collected from across the southeastern U.S. However, corn is not available year round to support these species. Results will be presented from lab studies designed to evaluate other crop and non-crop plants for their potential as ovipositional and developmental hosts of three corn silk fly species, *Euxesta eluta* Loew, *E. stigmatias* Loew, and *Chaetopsis massyla* (Walker).

2:14

12. The impact of weeding on arthropod communities in pepper. **Heidi N. HansPetersen,** McSorley, R., Liburd, O. E., Chase, C. E., Hildebrand, P. E., Krueger, R. and Gill, H. K. Department of Entomology & Nematology, 970 Natural Area Drive, P.O. Box 110620, Gainesville, Fl 32611-0620. **Abstract:** Pest and natural enemy abundance and yields were compared in pepper (*Capsicum annuum*) plots

with different weed densities: 100% weed-free; 50% weed-free; 50% weed-free intercropped with bush bean, (*Phaseolus vulgaris)*; and an unweeded control. Pitfall traps were used to estimate the relative abundance of several arthropod groups and families. Retaining some weeds within the agricultural landscape may influence the movement of beneficial arthropods without negatively impacting yields.

2:27

13. Evaluation of fungal pathogens as biological control agents of chilli thrips, *Scirtothrips dorsalis* (Thysanoptera: Thripidae) on pepper. **Vivek Kumar**, Dakshina R. Seal, David J. Schuster and Lance Osborne. University of Florida-IFAS, Tropical Research and Education Center, Homestead, FL 33031. **Abstract**: Chilli thrips is a newly introduced pest in Florida and is dispersing quickly all over the state. It is a potential threat to our fruit, ornamental and vegetable industries. Since its advent there is paucity of information on management of chilli thrips. In present study role of fungal pathogens; *Beauveria bassiana*, *Metarhizium anisopliae* and two strains of *Paecilomyces* have been evaluated in conjunction with biorational insecticides in regulating population of *Scirtothrips dorsalis* on pepper.

2:40

14. Feeding Behavior and Management of Flea Beetles in Southern Highbush Blueberries in Florida. **T.W. Nyoike** and O. E. Liburd, Department of Entomology & Nematology, 970 Natural Area Drive, P.O. Box 110620, Gainesville, FL 32611-0620. **Abstract**: Flea beetles are the most damaging summer pest in southern highbush blueberries. Field experiments were conducted to determine the most abundant species, type of damage and preferred vegetative growth for the species. *Colaspis pseudofavosa* Riley was the most abundant species feeding on younger leaves. Among the insecticides evaluated, Mustang® was the most effective insecticide in suppressing flea beetle populations.

2:53

15. Flower thrips (*Frankliniella* spp.) dispersal into blueberry fields over space and time. **Elena M. Rhodes** and Oscar E. Liburd, Department of Entomology & Nematology, 970 Natural Area Drive, P.O. Box 110620, Gainesville, FL 32611-0620. **Abstract**: Flower thrips are key pests of Florida blueberries. Field experiments were conducted to examine thrips dispersal into a blueberry planting from nearby clover plants over space and time. The only spatial difference was recorded during week two of sampling. There were significantly more thrips per trap in the third row compared with the first and forth rows, and the clover field. Over time, there was a significant positive linear relationship between thrips numbers and temperature.

3:19

16. Distribution of Blueberry Gall Midge (Diptera: Cecidomyiidae) Infestation and Parasitism by *Aprostocetus* sp. (Hymenoptera: Eulophidae**). Craig R. Roubos** and Oscar E. Liburd, Department of Entomology & Nematology, 970 Natural Area Drive, P.O. Box 110620, Gainesville, FL 32611-0620. **Abstract**: Blueberry gall midge,

Dasineura oxycoccana (Johnson), is a key pest of rabbiteye blueberries in the southeastern United States. Larvae feed in developing flower and leaf buds. The distribution of larval infestation was investigated, and found to be highest in the border rows. To assess parasitism, infested blueberry leaf buds were dissected and midge larvae removed. Parasitism was highest in third instar larvae and in larvae found in the outermost layer of leaf buds.

M.S. Papers

3:32

17. Integrated Pest Management in University of Florida structures and landscapes**.** **Kevyn Juneau**, Norman Leppla, and Wayne Walker, Department of Entomology & Nematology, 970 Natural Area Drive, P.O. Box 110620, Gainesville, FL 32611-0620. **Abstract**: Integrated Pest Management was advanced in University of Florida housing. Pesticide and pest complaint data were collected for campus apartments in Maguire Village between 2003 and 2008. There was a decrease in the amount of pesticide used per year, and high-risk pesticides were replaced with low-risk pesticides. However, there was no change in the number of pest complaints. These results demonstrated a reduction in pesticide risk with no increase in the risks associated with pests.

3:45

18. Identification and distribution of *Frankliniella schultzei* (Trybom) on selective hosts in South Florida. **Garima Kakkar,** Dakshina R. Seal, Philip Stansly and Oscar Liburd, University of Florida-IFAS, Tropical Research and Education Center, Homestead, FL 33031. **Abstract**: Of the devastating genus *Frankliniella*, *F. schultzei* (Trybom) is an emerging pest of various economically important vegetable crops in south Florida. Infestation by darker forms of *F. schultzei* makes it difficult to distinguish them from *Frankliniella fusca* and other thrips, bringing in the need to identify them correctly. In addition, spatial and within plant distribution were studied to develop management practices of this thrips causing damage either due to its feeding behavior or TSWV transmission.

3:58

19. A genomic analysis of the SNARE protein family of the pea aphid, *Acyrthosiphon pisum*. **Laura Hunnicut** and Wayne Hunter**,** North Carolina State University, 4801 Five Leaf Lane #128 Raleigh, NC 27613. **Abstract**: Annotation of the recently completed pea aphid genome enabled the identification of 24 transcripts that encode putative SNAREs (soluble N-ethylmaleimide-sensitive factor adaptor protein receptors). Members of this family of proteins are required for fusion of transport vesicles with acceptor membranes. Here we present an overview of the general and structural features of these proteins and associate particular SNAREs with defined positions within the eukaryotic intracellular membrane-trafficking pathway.

4:11

20. Evaluation of two biological control agents of *Microtheca ochroloma* **Cecil O. Montemayor** and Ronald D. Cave, IFAS, Indian River Research and Education Center, Entomology and Nematology Department, 2199 S. Rock Road, Fort Pierce, FL 34945. **Abstract:** The yellow-margined leaf beetle (YMLB), *Microtheca ochroloma* Stål, native of South America, is a pest in cruciferous crops. Little information is available in the literature about natural enemies of this pest. Therefore, the objective of this study was to evaluate the efficacy of the predator *Podisus maculiventris* (Say) and the fungus *Isaria fumorosea* (*Ifr*) Wize to control YMLB. The predator preyed in all stages of the YMLB and the fungus infected larvae of the YMLB.

4:24

21. Mating disruption of grape root borer. **William Sanders** and Oscar Liburd, University of Florida Entomology and Nematology Dept., 970 Natural Area Drive Gainesville, FL 32611. **Abstract**: Grape root borer (GRB) is the key pest of grapes in Florida and Georgia. The primary control (Lorsban®) available to growers is not a viable option due to use restrictions and the coincidence of pest emergence and grape harvest. This study evaluates mating disruption as a control method for GRB in Florida vineyards. The study also evaluates a relatively new, paraffin wax based dispenser technology (SPLAT) for use as a carrier for GRB pheromone.

TUESDAY MORNING, JULY 28, 2009

8:00 – 5:00
POSTER DISPLAY SESSION 2 (Authors present from 2:00 – 3:00 PM; take down by 5:00 PM)
Island Room

DSP 15. Methods to monitor Asian citrus populations on commercial and research plots in Florida. **M.J. Ortez**, H.A. Arevalo and P.A. Stansly, Southwest Florida Research and Education Center, University of Florida –IFAS, 2686 SR 29N, Immokalee, FL 34142. **Abstract:** We compared the Yellow Corn Root Worm Sticky Trap (YCRW)[Great lakes IPM. Inc.], "The ACP Trap" (Alpha-Scents ™) hung in the tree canopy, and tap sampling for their effectiveness in monitoring Asian citrus psyllid (ACP) populations for field experiments and commercial use. Over a period of two weeks under various ACP densities, YCRW trap consistently captured more psyllids than "The ACP Trap". However, tap samples were less time consuming and as reliable as sticky traps even at low populations.

DSP 16. Compatibility of Entomopathogenic Fungus, *Isaria fumosorosea* and the Aphid Parasitoid, *Lysiphlebus testaceipes* for Controlling the Brown Citrus Aphid. **D. Pick**, P. B. Avery, W. B. Hunter, D. G. Hall, and C. A. Powell, Florida Atlantic University, Wilkes Honors College, 5353 Parkside Drive, Jupiter, FL 33458. **Abstract**: *Isaria fumosorosea* and *L. testaceipes* was assessed on citrus seedlings under caged conditions, for managing the brown citrus aphid, *Toxoptera citricida*. The parasitoid treatments alone and in combination with *Isaria fumosorosea,* produced better aphid control than the

fungal treatment for the duration of both experiments. The compatibility of the bio-insecticide PFR 97™ with the aphid parasitoid demonstrated potential for its use in future IPM programs controlling the brown citrus aphid.

DSP 17. Leafhopper Virus in Texas glassy-winged sharpshooters. **P. Marshall**, W.B. Hunter, D. Hail, and B. Bextine, University of Texas-Tyler, 3900 Univ. Blvd., Tyler, TX. Abstract: Adult leafhoppers in Texas were shown to be infected with a new strain of the leafhopper virus, *Homalodisca vitripennis virus*, HoVV-1(TX), isolated from Glassy-winged sharpshooters, *Homalodisca vitripennis*, (Hemiptera: Cicadellidae) collected from grapevine. Genetic characterization identified 10 SNP's in the capsid which produced amino acid changes. Further experiments will determine if HoVV-1(TX) is more or less pathogenic than the original virus isolated from leafhoppers in California and Florida.

DSP 18. Integration of ssRNA Viruses in Multiple Insect Taxa. **D.M. Tufts**, K. Spencer, W.B. Hunter, and B. Bextine, University of Texas-Tyler, 3900 Univ. Blvd., Tyler, TX. **Abstract**: The *Picornaviridae* superfamily consists of over 450 species of positive single stranded RNA viruses. These viruses infect many organisms, including mammals, birds, and insects. Analysis demonstrated that viruses in the subgroup *Dicistroviridae* have integrated into genomes of *S. invicta* and *A. mellifera,* however, no integration into the glassy-winged sharpshooter, *H. vitripennis* was detected .

DSP 19. Expressed Sequence Tags from Three Leafhopper Vectors of Pierce's Disease of Grapevine. **W.B. Hunter,** K.S. Shelby, L.E. Hunnicutt, R.F. Mizell, III, and C. Tipping, USDA, ARS, US. Hort. Res. Lab, 2001 South Rock Rd., Ft. Pierce, FL 34945. **Abstract**: Leafhoppers are considered the second most important vector of agricultural diseases after aphids. We examined transcription expression across three sharpshooter leafhoppers; *Homalodisca vitripennis, Graphocephala atropunctata*, and *Oncometopia nigricans,* which are vectors of the bacterium, *Xylella fastidiosa*, which causes Pierce's disease of grapes. The EST sequences reported in this study have been deposited in GenBank's dbEST, NCBI.

DSP 20. Advantages of a Metagenomics Approach to Solve Huanglongbing. **W. B. Hunter,** USDA, ARS, US. Hort. Res. Lab, 2001 South Rock Rd., Ft. Pierce, FL 34945. **Abstract**: Metagenomics. Cost of sequencing is now not only feasible, but is considered the first step towards solving difficult problems, like HLB, where there may be one or more unknown pathogens. Metagenomics aims to isolate and sequence nucleic information from the host insect and microbes (bacteria, viruses, fungi) such that all the genomic information is produced in the shortest possible time, thus identifying potential pathogens for further examination.

DSP 21. Leafhopper-Infecting Rhabdovirus: New Taastrup-like Virus. **W. B. Hunter** and S. Adkins, USDA, ARS, US. Hort. Res. Lab, 2001 South Rock Rd., Ft. Pierce, FL 34945. **Abstract**: A new viral pathogen of leafhoppers was discovered. The unclassified virus is a negative sense, single-stranded RNA virus, which appears to be a new member

of the order *Mononegavirales*, in the family *Rhabdoviridae*. The virus was isolated from an ornamental plant, and when applied to leafhopper cell cultures caused rapid and severe cell death.

DSP 22. Asian Citrus Psyllid (*Diaphorina citri*) Cell Cultures for Liberibacter Propagation. M. Marutani-Hert, **W.B. Hunter**, and D.G. Hall, USDA, ARS, US. Hort. Res. Lab, 2001 South Rock Rd., Ft. Pierce, FL 34945. **Abstract**: Multiple psyllid cell cultures were established using a defined medium, HH70, and embryonic tissues. Cell morphology consisted of both fibroblast-like and monolayers which have been maintained for over 8 months. Two cultures have been shown to contain DNA from the *Diaphorina Wolbachia,* and *Candidatus* Liberibacter asiaticus. Further efforts will optimize the growth conditions for these bacteria.

DSP 23. Cell Culture Systems for the Study of ssRNA Viruses. **W. B. Hunter,** USDA, ARS, US. Hort. Res. Lab, 2001 South Rock Rd., Ft. Pierce, FL 34945. **Abstract**: Cell cultures were established from two insects known to be viral host of Dicistroviruses, the glassy-winged sharpshooter (*Homalodisca coagulata*), and the honey bee (*Apis mellifera*). Embryonic tissues produced cultures which consisted of fibroblast-like, monolayer, and suspension cells. Both the leafhopper and bee cultures have been shown to support virus replication. These cell systems advance the tools needed to understand leafhopper viral pathology and colony collapse disorder in honey bees.

DSP 24. *Diaphorina citri-Reovirus* (Reoviridae). M. Marutani-Hert, **W.B. Hunter**, and D.G. Hall, USDA, ARS, US. Hort. Res. Lab, 2001 South Rock Rd., Ft. Pierce, FL 34945. **Abstract**: The potential use of a viral pathogen to reduce psyllid populations was examined. Infection rates within psyllid populations, and viral pathogenicity on insect cell cultures as a rapid screening tool were determined. We identified 20% of psyllids were infected in colonies, and up to 55% in field populations. Rates of virus infection were similar for adult males and females. Psyllid-infecting viruses may provide valuable delivery systems to aid the development for population suppression technologies.

DSP 25. Microbial community of Asian Citrus Psyllids. M. Marutani-Hert, **W.B. Hunter**, and D.G. Hall, USDA, ARS, US. Hort. Res. Lab, 2001 South Rock Rd., Ft. Pierce, FL 34945. **Abstract**: Psyllids contain a rich microbial fauna which includes endosymbionts. We analyzed eubacterial 16S-23S rDNA and identified transcripts from field collected psyllids feeding from citrus. These data suggest psyllids are supported by 3-4 endosymbiotic bacteria, a *Wolbachia* specie, and at least 4 other bacteria. This represents the most microbial species described from psyllids. These bacteria most likely interact with Liberibacter asiaticus when it occurs in psyllids.

DSP 26. *Apocnemidophorus pipitzi* (Coleoptera: Curculionidae), a Stem Boring Weevil of Brazilian Peppertree, *Schinus terebinthifolius* (Anacardiaceae): Preliminary Results on Biology and Host Range**. J. P. Cuda**, J. L. Gillmore, J. C. Medal, B. Garcete-Barrett and W. A. Overholt, Entomology & Nematology Dept, PO Box 110620, Gainesville, FL 32611-0620. **Abstract**: Brazilian peppertree (BP), *Schinus terebinthifolius* Raddi, is an aggressive invasive weed of disturbed and natural areas in peninsular Florida. Surveys

conducted recently in southeastern Paraguay revealed the presence of several new natural enemies of BP. One of these is the stem boring weevil *Apocnemidophorus pipitzi* (Faust). Preliminary studies on the weevil's biology and laboratory host range suggest that *A. pipitzi* probably is a BP specialist, and may have potential as a biological control agent.

DSP 27. Rearing optimization of two races of the Fall armyworm *Spodoptera frugiperda* feeding on natural host plants. M. Medina Hay-Roe and **R. Meagher,** USDA, ARS, CMAVE 1600-1700 SW 23rd Drive Gainesville FL 32608. **Abstract**: Two ecological races of the Fall armyworm *Spodoptera frugiperda* were raised under laboratory conditions, feeding on natural host plants (corn and bermuda grass). Three rearing containers were used: a plastic container and a vertical cylinder to test fitness when feeding gregariously, and individual cups to test fitness in isolation. Survivorship, mortality and fitness (measured by the pupal mass and wing length of the final adult) were measured for each testing method.

DSP 28. Integrated management of Chili thrips, *Scirtothrips dorsalis* Hood (Thysanoptera: Thripidae), on peppers. **M. Dogramaci**, J. Chen, S. Arthurs, L. Osborne, M. Brennan, K. Houben, Mid-Florida Research and Education Center, 2725 Binion Road, Apopka, FL 32703. **Abstract**: *Scirtothrips dorsalis* Hood (Thysanoptera: Thripidae) is a new invasive pest to Florida that poses a significant economic threat to US agriculture and trade. It is highly polyphagous and attack more than 100 hosts from 40 different families including a wide range of vegetable, fruit, and ornamental crops, such as pepper, tomato, eggplant, bean, onion, strawberry etc. In this study, 158 pepper varieties were tested and some of these varieties were highly resistance to Chili thrips.

8:30 – 11:00
WORKSHOP: Biology and Control of Bed Bugs
Organizer/Moderator: Phil Koehler and Roberto Pereira, Dept. of Entomology & Nematology, University of Florida, Gainesville, FL.
Caloosa Ballroom

8:30
Introduction to Heat Treatment and Demonstration Set Up - Roberto Pereira

8:55
Review of Bed Bug Biology - Philip Koehler

9:20
Inspection Methods - Wayne Walker

9:45
Bed Bug Detection by Dogs - Margie Pfiester and Pepe Peruyero

10:10
Fumigation for Bed Bug Control - Ellen Thoms and Eric Hobelmann

10:35
Heat Treatment Demonstration Wrap-up and Discussion - Roberto Pereira

8:00 – 11:45
SYMPOSIUM: Industry Symposium: Common Turf & Ornamental Pests in Florida: Their biology, damage and control tactics.
Organizers/Moderators: Scott Ferguson, Atlantic Turf & Ornamental Consulting, Vero Beach, FL, and Geri Cashion, EcoSolutions, Inc., Palm Harbor, FL.
Everglades B and C

8:05
22. Chemical Control of the red palm mite, *Raoiella indica* in Puerto Rico and Florida. **Jorge E. Peña**, Lance Osborne, and J. C. Rodrigues, University of Florida, IFAS, Tropical Research and Education Center, Homestead, FL; University of Florida, IFAS, Central Florida Research and Education Center, Apopka, FL; and University of Puerto Rico at Rio Piedras, P. R. **Abstract**: Several insecticides were tested for efficacy against the red palm mite on potted coconut palms kept inside of a greenhouse in Rio Piedras, Puerto Rico and on field grown coconut palms in Broward county, Florida. Mite populations were recorded before infestation and regularly every week after treatment for approx. 3-4 weeks after treatment. In Florida, all treatments (Pylon, Sanmite, Shuttle, Tetrasan, Thiolux, Ultiflora, Avid + oil and Avid + Silwet) were statistically low in mite density compared to the untreated control for 42 days after spray. Avid treatments, which were applied twice were statistically lower than the control 28 days after the second spray. In general, Sanmite and Avid + Glacial had the lowest mite densities throughout the experiment. During the second test, 28 days after treatment, all Tetrasan treatments and sulfur had the lowest density compared to the control. In Puerto Rico, the acaricides, Ultiflora, Tetrasan, Floramite, Shuttle, Kelthane and Forbid were significantly different from the untreated control.

8:25
23. Common scales in Florida ornamentals: Their biology, damage and control strategy. **Scott Ferguson**, Atlantic Turf & Ornamental Consulting, Vero Beach, FL. **Abstract**: The most common scales encountered in Florida ornamentals are the Magnolia white scale, Tea scale and Florida red scale (Diaspididae); the Florida wax scale, Indian wax scale and Tuliptree scale (Coccidae); and the Cottony cushion scale and Cottony maple scale (Margarodidae). Scale feeding reduces plant vigor and heavily infested leaves may drop off the plant. The soft scales also produce honeydew, which serves as a substrate for the sooty mold fungus. Control tactics will be discussed.

8:45
24. Examples of thrips biocontrol in Florida. **Steven Arthurs**, University of Florida, IFAS, Central Florida Research and Education Center, Apopka, FL.

9:05

25. **Olga Kostromytska**, Dept. of Entomology, University of Florida, Gainesville, FL. **Abstract**: To determine the neurotoxic effect of neurophysiological recordings of the mole cricket nerve cord were conducted. Two-dimensional arena assays were conducted to demonstrate ability of adult mole crickets to detect insecticides. Similar Petri dish assays were conducted for young and older nymphs. Most tested insecticides caused increase in spontaneous nerve cord activity, thus had a neuroexcitatory effects. Indication of avoidance of sand treated with indoxacarb, imidacloprid and fipronil was observed in the behavior assays.

9:25

26. Billbug (Coleoptera: Curculionidae) seasonal phenology and management in Florida. **Ta-I Huang**, Dept. of Entomology, University of Georgia, Athens, GA. (to be presented by **Eileen Buss**)

10:05

27. Developing solutions for Fig Whitefly in South Florida. **Greg Pagano**, Bayer Environmental Science, Orlando, FL. **Abstract**: Fig whitefly, *Singhiella simplex*, entered the United States and spread quickly through South Florida. The fig whitefly causes severe defoliation on weeping fig, *Ficus benjamina*, and other Ficus species including banyan trees. Ficus plants are a significant portion of the tree canopy of Miami-Dade County's urban core leading to concern about finding solutions for this pest. Bayer was able to partner with the University of Florida, Miami-Dade County, and Vizcaya Museum and Gardens to test chemical options for control of this pest.

10:25

28. Insecticides Change, but Resistance Continues: Developing a Functional IPM Program for Southern Chinch Bugs**. Eileen Buss**, Dept. of Entomology and Nematology, University of Florida, Gainesville, FL.

10:45

29. Mealybugs- A Review of Common Mealybugs Affecting Ornamentals in Florida. **Nancy Rechcigl**, Syngenta Professional Products, Bradenton, FL. **Abstract**: Mealybugs are a common insect pest of ornamentals and can be found on plants grown in the greenhouse, outdoor nurseries and interiorscapes. They have piercing-sucking mouthparts that penetrate into the phloem and remove plant sap. They can be found feeding on roots, branches, young stems, leaves, flowers and fruits, causing stem dieback and generally weakening the plant affecting growth and vigor. The biology, characteristics, identification and control of common Mealybugs in Florida will be discussed.

11:05

30. Trying to manage resistance in spider mites. **Lance Osborne**, University of Florida, IFAS, Central Florida Research and Education Center, Apopka, FL

8:00 – 11:15

CONCURRENT SESSION: Submitted Papers Agricultural and Urban Entomology
Moderator: Stephen L. Lapointe, USDA-ARS, 2100 South Rock Rd, Ft Pierce, FL 34945.
Jasmine Room

8:05
31. A Comparison of Sticky Traps for Monitoring Asian Citrus Psyllid
David G. Hall and Mamoudou Setamou, USDA-ARS, 2100 South Rock Rd, Ft Pierce, FL 34945. **Abstract**: Four sticky traps differing in color and trapping adhesive were evaluated for monitoring Asian citrus psyllid in citrus. Two traps were bright yellow color, one with a traditional gluey adhesive and the other with a new adhesive material. The other traps studied were treated with the new adhesive material, one was medium green and the other was lime-green. The traps were compared in three Florida groves and three Texas groves. Results of the study will be presented.

8:12
32. Optimal diet for production of normative adults of the Diaprepes root weevil, *Diaprepes abbreviatus.* **Stephen L. Lapointe**, Randall P. Niedz, Terence J. Evens and David G. Hall, USDA, ARS, U.S. Horticultural Research Laboratory, 2100 South Rock Road, Ft. Pierce, FL 34945. **Abstract**: Insect diets are complex mixtures and therefore amenable to optimization through geometric experiment designs to de-convolute effects of proportion and amount. We constructed a four-component design that included three principal drivers identified previously and added cellulose as a non-nutritive filler that could be scaled to produce adults of a desired mass. The dataset allows us to prescribe diet recipes to produce adults within a wide range of mass, including that of feral weevils.

8:24
33. Quantifying dispersal of Asian citrus psyllid, *Diaphorina citri* Kuwayama, by an immunomarking technique. **Dhana Raj Boina,** Wendy L. Meyer, and Lukasz L. Stelinski, Entomology and Nematology Department, University of Florida, IFAS, Citrus Research and Education Center, Lake Alfred, FL 33850. **Abstract**: Asian citrus psyllid, *Diaphorina citri,* is an important pest of citrus. It efficiently vectors bacteria that are the presumptive causative agents of huanglongbing or citrus greening disease. In this study, a recently developed immunomarking technique was evaluated for marking and tracking movement of *D. citri* in Florida citrus groves for better understanding the spread of both *D. citri* and HLB. It was determined that *D. citri* moved bi-directionally between managed and unmanaged groves separated by 60-100 m within 3 d with a greater number of *D. citri* adults moving from unmanaged into managed grove than from managed into unmanaged grove (net movement).

8:36
34. The effect of guava (*Psidium guajava* L.) leaf volatiles on the attraction of Asian citrus psyllid (*Diaphorina citri* Kuwayama) to host plants**. W.L. Meyer**, E.O.

Onagbola, R.L. Rouseff, J.M. Smoot, P.J. Clayson, and L.L. Stelinski. University of Florida, CREC, 700 Experiment Station Rd., Lake Alfred, FL 33850. **Abstract**: Guava interplanted with citrus has been reported to reduce populations of the Asian citrus psyllid (*Diaphorina citri* Kuwayama) (ACP) and leaf volatiles may function as repellents. Dimethyl disulfide (DMDS) was recently identified from guava leaves. DMDS significantly reduced the attractiveness of citrus volatiles to ACP in laboratory bioassays while compounds homologous to DMDS did not. In a small plot field study, populations of ACP were significantly reduced by deployment of DMDS compared with untreated control plots.

8:48

35. Exclusion techniques reveal significant biotic mortality suffered by Asian citrus psyllid *Diaphorina citri* (Hemiptera: Psyllidae) populations in Florida citrus. **Jawwad A. Qureshi** and Philip A. Stansly. Department of Entomology and Nematology, University of Florida – IFAS, SWFREC, 2686 SR 29 N, Immokalee, FL 34142. **Abstract**: Colonies of *D. citri* immatures on young shoots of citrus were protected with sleeve cages and sticky barriers or left unprotected through adult emergence. Estimated net reproductive rate (R_0) was 5- to 27- fold higher for colonies in full cages compared to the unprotected colonies reduced mainly by predators and some parasitism by *Tamarixia radiata*. These findings suggest that natural enemies of *D. citri* deserve conservation for sustainable management of *D. citri* and huanglongbing.

9:00

36. Effect of insecticides on the intra-block dispersal of the Asian citrus psyllid, *Diaphorina citri* Kuwayama. **H.A. Arevalo** and P.A. Stansly, Southwest Florida Research and Education Center, University of Florida – IFAS, 2686 SR 29N Immokalee, FL 34142. **Abstract**: The intra-block dispersal of the Asian citrus psyllid (ACP) was monitored in a block Valencia oranges. The block was divided into 16 plots, half of which were regularly treated with insecticide and the rest were left untreated. Our results showed that ACP from untreated plots did not re-colonize the neighboring treated plots.

9:12

37. Progress towards identifying semiochemicals for the Diaprepes root weevil, *Diaprepes abbreviatus*. **Stephen L. Lapointe,** USDA, ARS, U.S. Horticultural Research Laboratory**,** 2001 South Rock Road**,** Ft. Pierce, FL 34945. **Abstract**: A semiochemical-based attractant for the Diaprepes root weevil has been sought since introduction of this polyphagous pest to Florida in the 1960s. Recent progress includes the identification of a set of putative kairomones consisting of common plant volatiles, a hypothetical aggregation pheromone that induces arrestment behavior as shown in wind tunnel experiments, and a putative pheromone of unknown function isolated by GC-EAD. A synthesis of current knowledge of semiochemical-mediated communication in this species is presented.

9:24

38. Impact of Thrips on Cowpea. **Paul McLeod,** Dept. of Entomology, Agri. 321, University of Arkansas, Fayetteville, AR 72701. **Abstract**: In greenhouse studies, tobacco thrips, *Frankliniella fusca*, caused severe yellowing and distortion of seedling cowpea foliage. However, at densities of up to 10 thrips per seedling plant, yields were not reduced. When flower thrips, including *F. tritici* and *Sericothrips variabilis*, were caged on blooming cowpea, impact on yield was minimal.

9:36

39. South Florida under siege: New species 1989-2008. **Adrian Hunsberger** and Julietta Brambila, University of Florida, Miami-Dade Co. Extension, 18710 SW 288th Street, Homestead, FL 33030. **Abstract**: Since 1989, 146 new species in Florida have been found first in Broward and Miami-Dade Counties. This number includes arthropods (137 new species), gastropods (n = 3), and plant pathogens (n = 6) that were first continental or state finds. Miami-Dade accounted for 76.7% of these records. Since 2002, new species detections increased from 5.9 to 11.6 per year. Case studies and possible pathways will be discussed.

10:15

40. Recruit™ HD - A paradigm shift in the evolution of termite bait technology**. J. E. Eger**, J. DeMark, M. Tolley, M. Lees, M. Messenger, E. Thoms, M. Fisher, M. Melichar, R. Hamm, J. McKern, Dow AgroSciences, 2606 S. Dundee St., Tampa, FL 33629. **Abstract**: The use of baiting for control of subterranean termites has changed and improved over many years. The most successful commercial bait product is the Sentricon® Termite Colony Elimination System introduced in the early 1990s and currently marketed by Dow AgroSciences. A new baiting concept utilizing a highly durable bait (Recruit HD) is being developed and tested throughout the United States which may dramatically change the way in which baits are utilized. Noviflumuron, a benzoylurea chitin synthesis inhibitor, is also the active ingredient in the current Sentricon system and has demonstrated consistent termite colony elimination through numerous research trials and commercial use since 2005. Over 100 structures across the U.S. are currently involved in research trials with this new concept. Summaries of these sites as well as laboratory findings of efficacy, palatability and durability will be presented. Current data support this concept as a revolutionary new method of termite control with reduced use of pesticide active ingredient compared to traditional liquid termiticide treatments.

10:27

41. Insecticide resistance in house flies collected from Florida dairies**. P.E. Kaufman**, S.J. Nunez, R.S. Mann, M.E. Scharf and C.J. Geden, Entomology and Nematology Dept, PO Box 110620, Univ. of Florida, Gainesville, FL 32611. **Abstract**: Five house fly strains from four Florida dairies were evaluated for resistance to betacyfluthrin, permethrin, imidacloprid and nithiazine. At the LC_{90} level, greater than 20-fold resistance was found in two of the strains for permethrin and one strain for imidacloprid. Betacyfluthrin LC_{90} resistance ratios exceeded 10-fold resistance in three strains. The relatively underutilized insecticide nithiazine had the lowest resistance ratios, however, 4-fold LC_{90} resistance was observed in one strain.

10:39

42. Plant genotype effects on a host specific thrips and the impact on biological control. **G.S. Wheeler,** D. A. Williams and L.A. Mound, USDA/ARS/IPRL, 3225 College Ave, Ft Lauderdale, FL 33314. **Abstract**: Originally from Brazil, *Pseudophilothrips ichini* was a candidate for biological control and was introduced into quarantine to determine safety for field release. However, the thrips in quarantine was nutritionally incompatibility with the genetic varieties of the host that occur in Florida. Although this thrips was collected on the host in Brazil, its survival was less than 5% when fed the Florida variety of the host. DNA and morphological analysis of the thrips has determined that the quarantined species is incorrectly identified and constitutes a new cryptic species *Pseudophilothrips* n. sp.

10:51

43. Effects of light intensity on Tropical Soda Apple and the consequences for performance of its biological control agent, *Gratiana boliviana* (Chrysomelidae). **Rodrigo Diaz,** W. A. Overholt, G. Wheeler, E. Rosskopf and C. Aguirre, University of Florida, 2199 S. Rock Rd.. Fort Pierce, FL 34951. **Abstract**: We examined how light intensity affected the architecture, aminoacid contents and trichome density of Tropical Soda Apple (TSA), *Solanum viarum* (Solanaceae). TSA plants were grown in a greenhouse either covered with a shade cloth (75% blockage) or under open conditions. Plants from the shade conditions had larger leaves, greater aminoacid contents, and lower trichome density than plants grown in the open. We assessed how these differences affected the performance of *Gratiana boliviana*. Immatures had shorter development time and greater survival, and adults had higher fecundity on plants under shade compared to open conditions.

11:03

44. Advances in mating disruption for control of the citrus leafminer, *Phyllocnistis citrella*. **Stephen L. Lapointe** and L. L. Stelinski, USDA, ARS, U.S. Horticultural Research Laboratory, 2001 South Rock Road, Ft. Pierce, FL 34945. **Abstract**: We examined proportionality and concentration of sex pheromone blends for mating disruption for citrus leafminer using geometric designs. Either major component was effective at disrupting mating in field trials; (*Z,Z,E*)-7,11,13-hexadecatrienal was approximately 13 times more effective compared with (*Z,Z*)-7,11-hexadecadienal. A third component isolated from *P. citrella* pheromone glands, (Z)-7-hexadecenal, was not effective. Results support a non-competitive model and sensory imbalance as the mechanism of mating disruption in this species.

TUESDAY AFTERNOON, JULY 28, 2009

2:35 – 5:35

SYMPOSIUM: Entomology of Florida Flowers
Organizer/Moderator: John Sivinski, ARS, USDA, Gainesville, FL.
Jasmine Room

2:40

45. Conserving natural enemies with flowering plants: estimating attraction. **John Sivinski**, USDA-ARS, CMAVE 1600 SW 23rd Dr., Gainesville, FL 32604. **Abstract:** Flower morphology and volatile chemistry are related to the numbers and types of parasitoids captured in Malaise traps baited with various flowering plants. Such information may guide efforts to conserve natural enemies by encouraging native and other plants in agricultural settings.

3:00

46. Wasp gardening to control pest mole crickets. **Howard Frank**, Dept. of Entomology and Nematology, University of Florida, Gainesville, FL. **Abstract**: *Larra bicolor* (Hymenoptera: Crabronidae) is a biocontrol introduction to Florida, where it now occurs in at least 46 counties. Its hosts are pest (*Scapteriscus*) mole crickets. Need by the adults for nectar as an energy source provides the opportunity to attract and sustain wasp populations in areas where its services in killing pest mole crickets are wanted.

3:20

47. Squash bees found in Florida and their interesting relationship with *Cucurbita.* **Glenn Hall**, Dept. of Entomology and Nematology, University of Florida, Gainesville, FL.

3:40

48. Top-down, bottom-up and caught in the middle: living as a flower thrips. **Stuart Reitz**, USDA-ARS, CMAVE, Tallahassee, FL. **Abstract**: The population dynamics and ecology of thrips has long been a source of fascination for ecologists and entomologists alike. A number of classic ecological studies have fostered the view that the greatest influences on thrips populations are abiotic factors. In this presentation, the importance of biotic factors in regulating flower thrips abundances and how these factors affect the pest status of flower thrips will be examined.

4:15

49. Key native Florida plants for butterflies. **Jaret Daniels**, McGuire Center for Lepidoptera and Biodiversity, Florida Museum of Natural History, University of Florida, Gainesville, FL**. Abstract**: A number of native plants that support Florida butterflies are noted and discussed.

4:35

50. Floral attractants for monitoring pest moths. **Rob Meagher**, Center for Medical, Agricultural and Veterinary Entomology, USDA-ARS, Gainesville, FL. **Abstract**: Many species of moths, including pest species, are known to be attracted to volatile compounds emitted by flowers. Some of the flower species studied included glossy abelia, night-blooming jessamine, three species of *Gaura*, honeysuckle, lesser butterfly orchid, and Oregongrape. The volatiles released by these flowers contain

multiple compounds. Tests in Florida have shown that some of these compounds can attract moths to traps in large numbers.

4:55

51. Exploring new insect repellents using plants native to the southeastern United States. **Brian Quinn**, USDA-ARS, CMAVE, Gainesville, FL. **Abstract**: The southeastern United States contains many species of endemic plants, many of which have yet to be studied for compounds useful to mankind. New botanical insect repellents are needed to disrupt West Nile Virus in the United States and other serious vector-borne diseases such as dengue and malaria that commonly occur in other countries. A systematic search for plants containing bioactive compounds that could repel mosquitoes is a possible method for abating the spread of the costly and deadly diseases.

2:35 – 5:05

WORKSHOP: Turf & Ornamental Pest Identification
Organizers: Lyle Buss, Dept. of Entomology & Nematology, University of Florida, Gainesville, FL; Doug Caldwell, Horticulture Agent, Collier County Extension, Naples, FL; Catherine Mannion, University of Florida-TREC, Homestead, FL; Stephen Brown, Horticulture Agent, Lee County Extension, Naples, FL; Scott Ferguson, Atlantic Turf & Ornamental Consulting, Vero Beach, FL.
Caloosa Ballroom

2:35

Identification of aphids, scales, mealybugs, whiteflies, leafminers and spider mites. **Scott Ferguson** Atlantic Turf & Ornamental Consulting, Vero Beach, FL.

2:55

Identification of Beetles in South Florida. **Catharine Mannion,** Ornamental Entomologist, Dept. of Entomology & Nematology, University of Florida, Homestead, FL

3:15

Identification of Pest Caterpillars in South Florida. **Doug Caldwell**, Horticulture Agent, Collier County Extension, Naples, FL.

3:35

Identification of Turf Insects. **Lyle Buss**, Insect Identification Lab, Entomology & Nematology Dept., University of Florida, Gainesville, FL.

WEDNESDAY MORNING, JULY 29, 2009

8:15 – 11:55

SYMPOSIUM: Florida Exotic Pests: Current Status and Future Challenges
Organizers/Moderators: Paul Kendra, ARS, USDA, Miami, FL, and Jorge Peña, University of Florida-TREC, Homestead, FL

Everglades B and C

8:20

52. Seasonal abundance of *Crypticerya genistae* (Hempel) (Hemiptera: Monophlebidae) and its natural enemies in south Florida. **Divina M. Amalin**, C. Mannion, A. Roda, P. Perez and L. Bradshaw. Florida and Offshore Biological Control Initiative, University of Florida and USDA-APHIS-PPQ, Miami, FL. **Abstract**: The population of *C. genistae* significantly reduced from 2007 to 2008. Two biological control agents, *A. circumclusa*, a predatory coccinellid, and *S. cocciphila*, a parasitoid phorid fly, where found associated with *C. genistae*. Destructive samplings revealed 51.0% predation by *A. circumclusa* and 52.8% parasitism by *S. cocciphila* on *C. genistae*. Since the initial find of *C. genistae* in July 7, 2005 in south Florida, it remains in the weedy areas and not spreading to other agricultural areas.

8:40

53. *Planococcus minor*, a potential mealybug threat to the Caribbean and U.S. mainland. **Antonio W. Francis,** M. T. Kairo, and A. L. Roda. Florida Agricultural and Mechanical University, Center for Biological Control, Tallahassee, FL. **Abstract**: Passionvine mealybug, *Planococcus minor* is a high priority pest on the CAPS list and is recorded in several countries in the Caribbean, Central and South America. Research in Trinidad was undertaken to confirm the presence of this mealybug, its pest status, and main host plants. A survey to identify natural enemies and the impact of key parasitoids were also conducted. Knowledge generated will be used to develop technology for surveillance and control of this pest.

9:00

54. The hibiscus erineum mite, *Aceria hibisci* (Acari; Eriophyidae), a threat to Florida's hibiscus and the other exotic Eriophyoidea in Florida. **Cal Welbourn,** J. E. Peña, and J. C. Rodrigues. Florida Department of Agriculture and Consumer Services, Division of Plant Industry, Gainesville, FL. **Abstract**: The hibiscus erineum mite, *Aceria hibisci,* was discovered on *Hibiscus rosa-sinensis* L. (Malvaceae) in the Fiji islands in 1906 and 90 years later it arrived in the Caribbean region where it currently threatens hibiscus in Florida. Feeding by this mite can severely deform young leaves and developing vegetative buds. Over the last five years nine exotic eriophyids have been discovered on various Florida plants including, *Mangifera indica* and *Cocos nucifera*.

9:20

55. Evaluation of two potential biological control agents of the cycad Aulacaspis scale in Florida. **Veronica Manrique**, R. D. Cave, R. Nguyen, P. B. Avery, J. A. Castillo-Altamirano, and D. Mancero-Castillo. University of Florida, Indian River Research and Education Center, Fort Pierce, FL. **Abstract**: The cycad aulacaspis scale (CAS) (*Aulacaspis yasumatsui*), native to Southeast Asia, is a pest of ornamental cycads in Florida. Data on the host-range testing, biology, and consumption rates of a new species of lady beetle in the genus *Phaenochilus*, a voracious predator of CAS from Thailand, will be presented. Preliminary data shows that the entomopathogenic

fungus *Isaria fumosorosea* can infest first and second instar CAS. The potential use of these two agents will be discussed.

9:40

56. Modifying citrus IPM programs post-establishment of the Asian citrus psyllid and citrus greening disease. **Michael E. Rogers,** T. A. Ebert, A. E. Tsagkarakis, P. B. Avery, and L. L. Stelinski. University of Florida, Citrus Research and Education Center, Lake Alfred, FL. **Abstract:** The Asian citrus psyllid, *Diaphorina citri* Kuwayama (Hemiptera: Psyllidae), poses a serious risk to the Florida citrus industry due to its status as a vector of the bacterial pathogen which causes citrus greening disease, also known by the Chinese name 'Huanglongbing' (HLB). Current management of this pest/disease complex involves extensive use of insecticides. This presentation will highlight current research aimed at developing more sustainable citrus IPM programs with psyllid/HLB management as a primary focus.

10:15

57. Chilli thrips – Florida's new exotic resident. **Cindy McKenzie**, S. Arthurs and L. Osborne. USDA-ARS, U.S. Horticultural Research Laboratory, Fort Pierce, FL. **Abstract**: *Scirtothrips dorsalis* Hood synonyms include chilli, castor, berry, Assam and yellow tea thrips. As of May 2009, this pest has established in 30 counties in Florida since its detection in 2005 on roses from Palm Beach County. Chilli thrips attacks over 100 recorded host plants from 40 different families. They are primarily foliage feeders and damage turns tender leaves, buds and fruits bronze in color and damaged leaves curl upward and appear distorted.

10:35

58. An Old World pest run amok in New World Florida: Sri Lanka weevil, *Myllocerus undecimpustulatus undatus* Marshall (Coleoptera: Curculionidae), coming to agricultural, landscape, and natural habitats near you. **Gregg S. Nuessly,** C. Mannion, and J.E. Peña. University of Florida, Everglades Research and Education Center, Belle Glade, FL. Abstract: The Sri Lanka weevil is an invasive species first discovered in Florida in 2000. In nine years, it has spread to 18 Florida counties on both coasts. Adults cause excessive leaf damage to at least 130 plant species, including commercial tropical fruits, native and ornamental plants. The immature stages are spent entirely in the soil where larvae damage roots. Much is yet to be learned to develop sustainable management strategies for this pest.

10:55

59. Using portable gas spectrometry for the detection of invasive pests at ports of entry. **Amy L. Roda**, P. E. Kendra, S. W. Weihman, E. Varona, W. S. Montgomery, E. Q. Schnell, A. Vázquez, N. D. Epsky, and R. R. Heath. USDA-APHIS-PPQ, Center for Plant Health Science and Technology, Miami, FL. **Abstract**: Inspectors at ports of entry are faced with the daunting task of trying to find regulated insect and plant material amongst the millions of articles passing through inspection stations daily. Small insects, pests concealed inside plant material and plant diseases can easily

escape detection and invade the country. In a collaborative effort, portable gas chromatography technology was tested to determine if volatile signatures could be used to detect fruit fly larvae concealed in grapefruit and to distinguish permissible bonsai trees species from prohibited citrus species.

11:15

60. The redbay ambrosia beetle, *Xyleborus glabratus*: A threat to avocados. **Jorge E. Peña**, J. L. Capinera, J. H. Crane, L. L. Stelinski, P. E. Kendra, A. E. Mayfield, and J. L. Hanula. University of Florida, Tropical Research and Education Center, Homestead, FL. **Abstract**: Laurel wilt (LW) is a disease caused by *Raffaelea* sp., a fungal symbiont associated with the recently-introduced redbay ambrosia beetle (RAB), *Xyleborus glabratus*. Impact of RAB as a vector of the disease to avocado is a threat to avocado production in the US. Since 2006, we have a) tested susceptibility of different avocado cultivars to RAB, b) tested potential contact chemicals for control of ambrosia beetles in avocado, and c) conducted surveys to determine extent of infestation of avocados in Florida. Here we present the results of these investigations and provide information on future research.

8:15 – 10:30

CONCURRENT SESSION: Submitted Papers Agricultural Entomology
Moderator: Russell F. Mizell III, NFREC-Quincy, 155 Research Road, Quincy, FL 23251.
Caloosa A

8:20

61. Temporal and spatial variation in infestation of fruit by *Anastrepha* spp. in Puerto Rico: Support for a fruit fly-free zone. **David A. Jenkins** and Ricardo Goenaga, USDA-ARS Tropical Agriculture Research Station, Mayaguez, PR 00680. **Abstract**: Key in establishing a fruit fly-free zone is developing an understanding of the fruit fly's life history, including longevity, how far they can move, and the effect of host density on population fluctuations. Anecdotal evidence has led us to believe that the southern portion of Puerto Rico supports much lower populations of both *Anastrepha obliqua* and *A. suspensa*. We present data supporting this fact, including host densities for different parts of the island, infestation rates of different fruits on different parts of the island, and population fluctuations on different parts of the island.

8:32

62. Efficacy of Drench, Drip and Foliar Applications of Systemic Insecticides in Southwest Florida Vegetable Crops. **B.C. Kostyk**, Riefer, R., and Stansly, P.A., University of Florida, Institute of Food and Agricultural Sciences, Southwest Florida Research and Education Center, 2686 State Rd. 29 N, Immokalee, FL 34142. **Abstract**: The systemic insecticides , Coragen®(ranaxypyr = chlorantraniprole), and HGW86® (cynaxypyr = Cyantraniliprole) and Durivo® (chlorantraniprole + thiamethoxam) were field tested on tomato and zucchini . Drench, Drip tape injection, and foliar application techniques were evaluated against silverleaf whitefly,

Bemisia tabaci Gennedius , Pickleworm, *Diaphania nitidalis* (Stoll), Melonworm, *Diaphania hyalinata* Linnaeus, and Southern Armyworm, *Spodoptera eridania* (Cramer). Drench applications provided the longest residual control in all trials regardless of insecticide, pest or crop species.

8:44

63. Feasibility of grape root borer, *Vitacea polistiformis* Harris, larval acoustic detection in Florida vineyards**. R. W. Mankin**, W. R. Sanders, O. E. Liburd, and L. L. Stelinski, USDA-ARS Center for Medical, Agricultural, and Veterinary Entomology 1700 SW 23rd Dr. Gainesville, FL 32608. **Abstract**: Grape root borer (GRB) is an important pest of grapes in the Eastern US. The larvae feed on grape roots, reducing vine vigor and increasing susceptibility to pathogens and drought. A study was conducted in 3 vineyards to test whether infestations could be identified using acoustic methods. Sounds were detected where a larva was recovered, and we are conducting analyses to distinguish GRB sounds from signals by other insects

8:56

64. Detection and monitoring methods for glassy-winged sharpshooter, *Homalodisca vitripennis* and other leafhoppers. **Russell F. Mizell**, III and Peter C. Andersen, NFREC-Quincy, 155 Research Road, Quincy, FL 23251. **Abstract**: The glassy-winged sharpshooter, *Homalodisca vitripennis*, is an important vector of the bacterium *Xylella fastidiosa*, causal agent of Pierce's disease and other leaf scorch diseases. It is also an invasive species in California and a few other countries. Management of this leafhopper or any pest requires efficient monitoring and detection methods. Current methods for monitoring and some interesting leafhopper behavior exploitable to improve monitoring efficiency will be discussed.

9:06

65. Western flower thrips (*Frankliniella occidentalis*) versus snap beans in the Everglades Agricultural Area. **N. Larson** and G.S. Nuessly, Everglades Research and Education Center, University of Florida, IFAS, 3200 E. Palm Beach Rd, Belle Glade, FL 33430. **Abstract**: Snap bean growers in the Everglades Agricultural Area (EAA) have had to deal with Florida flower thrips, *Frankliniella bispinosa*, for many years. April 2009 brought western flower thrips (WFT), *F. occidentalis*, into late-planted snap bean fields for the first time in the EAA, causing significant leaf and pod damage. Results of an insecticide trial to control WFT in snap beans will be presented along with thoughts and concerns for future thrips management in this crop.

9:18

66. Control of Chilli thrips, *Scirtothrips dorsalis* Hood (Thysanoptera: Thripidae) under various regimes of insecticides. **Dakshina R. Seal**, University of Florida-IFAS, TREC, Homestead, FL 33031. **Abstract**: *Scirtothrips dorsalis* Hood is a newly introduced pest in the Greater Caribbean. It causes serious economic damage to fruits, ornamentals and vegetables. It is a strong vector of various viral, bacterial and fungal diseases. Radiant® provides significant reduction of chilli thrips. Requiem® significantly reduced larvae and adults of chilli thrips when applied in rotation with

Radiant®. Effectiveness of some new insecticides on the control of chilli thrips will also be reported in the present study.

9:24

67. Western Flower Thrip Management. **David Sui** and Joe Funderburk, UF/IFAS Palm Beach County Extension, 599 N. Military Trail, West Palm Beach, FL 33415.
Abstract: Western flower thrip *(Frankliniella occidentalis)* is a serious pest on peppers, tomatoes, beans, and many other vegetables. Annual loss to cull reaches 10-30% even with conventional insecticide sprays, which run the risk of induced chemical resistance. The key to WFT IPM is to enable growers for on-farm ID and differentiation of WFT from native thrip species which compete with WFT. The smart IPM is to conserve natural enemies and spray only when exceeding economic threshold.