

Entomology in GA 2012

Developments and Issues of interest
to GMCA

Ray Noblet, Elmer Gray, & Joe Iburg

UGA – Issues of Interest

- Budget – FY 11 and FY12 Budget years, Agricultural and Environmental Sciences state budget reduced 21% for extension and research programs. 3% more FY 13 (Current)
- Students and enrollment options & issues
- Entomology enrollment – 20 undergraduates, 45 graduate students
- Reorganizing Cooperative Extension Programs – GA County Issues and Priorities

Issues of Interest II

- UGA Enrollment Issues – Sometimes different in different colleges. Eg. Terry College of Business strictly limits enrollment
- Best option for students getting into UGA is to attend another GA system school and transfer in as a junior.

Faculty Searches Underway

Integrated Pest Management Coordinator

Dr. Paul Smith moved to New Mexico – Hope to refill by January 01, 2013.

Biological Control

Dr. John Ruberson of Tifton Campus moved to Kansas State as Head of the Department of Entomology – Hope to Refill by March 01, 2013.

Crop Insect Pest Management - Peanuts

Tifton Campus. Hope to fill by January 01, 2013

Core Areas – UGA Entomology

- IPM Programs for broad range of cropping systems & other needs eg. Urban, public health pests.
- Basic Insect Sciences – modern biology, host/pathogen relationships, etc.,
- Urban and household/structural
- Medical entomology/livestock & poultry
- Systematics and evolutionary biology, invasive species, applied ecology etc.,

Recent programs I – Plant Vector Biology

- Dr. Babu Srinivasan – Tifton Campus
- Program – Transmission of viruses causing plant disease in GA Crops. Eg. TSWV in crops, Viruses in Vegetable crops.
- Research Focus – studying the process of transmission, interactions of the virus with vector, plant and env. -- resulting in disease.
- Goal – to control the disease through interruption of transmission, vector control etc.

New Program II – Insect Symbionts

- Dr. Kerry Oliver, Athens Campus
- Program – associations between insects and heritable microorganisms. Part of insect host –pathogen interaction group.
- Symbionts often provide benefits such as -
 1. defense against natural enemies,
 2. providing nutrients that insect can't synthesize such as vitamins.
- Ultimate goal – Understand Symbiotic Relationships more fully & possible potential for developing insect control tactics.

Ongoing Research with mosquitoes – Athens

- Dr.s Mike Strand, Mark Brown – Athens
- Program - Immune responses and endocrine system of mosquitoes
- Cellular immune responses
- Humoral immune responses – antimicrobials produced much as we produce antibodies
- Mechanisms controlling immune responses
- Ultimate goal – interrupt transmission of disease or develop new mosquito controls.

Black Fly Lab. – Background

- First involvement with black fly work – 1970'S. much of the early work was disease transmission and vector biology and field control of vector black fly species
- Work with *Bti* began in 1981 – continues until now
- Colony established around 1989 from Cupp Laboratory at University of Arizona – next 15 years was bioassay development and evaluation related to Vectobac formulation development and improvement, and use of black flies in environmental studies.
- This work is ongoing and is a major focus of the Lab.

Black Fly Lab. – New Directions I

- Began with pesticide work at Clemson, and 2003-2008 at UGA - Overmyer
- Examination of environmental factors/contaminants in streams that might affect efficacy of *Bti* crystalline protein toxins.
- Antibiotics as stream contaminants – Iburg
- Stream chemistry and impacts of naturally occurring materials in streams. Examples – clays, silicon particles, cellulose

Black Fly Lab – New Directions II

- Streamside bioassay I – Mortality based – Gray & Iburg
- Streamside Bioassay II – Feeding based – Iburg & Gray
- Examination of turbidity and other factors in streams specific to certain field sites – eg Susquehanna River in PA –
- Feeding rate studies - Iburg

Black Fly Lab. – New Directions III

- Gates Foundation Work – Focus is more effective and new ways to manage African River Blindness Transmission by black flies.
- Egg pheromone work
- Bioassays to verify attractants & the parameters under which they work– and feasibility to incorporate into traps
- Develop traps using attractants and verify in field sites in north GA and in TN with a closely related species

Black Fly Lab – New Directions IV

- Work with other collaborators (USF Tampa, Central America and Africa) to transfer research findings and concepts to areas endemic for African River Blindness.
- Purposes:
 1. Replace human sentinels for fly collection
 2. Use traps to determine infection levels of vector populations.
 3. Possibly control disease spread through control of female black fly vectors.

Conclusions & Acknowledgements

- UGA black fly research program, probably one of the world's leading efforts in black fly vector biology and management. Exciting period for black fly work.
- Support: Valent Bioscience Corp. Gates work supported by Bill & Melinda Gates Foundation
- Research Team:
Elmer Gray, Roger Wyatt, Joe Iburg, T. J. McGaha, Ray Noblet plus Danny Mead, and other collaborators and student workers.
- Thanks to GMCA for Support of Entomology & UGA