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
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.
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
- 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.
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
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.
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