Entomology in GA 2010

New developments of interest to GMCA

UGA – Issues of Interest

- Budget – past two years, Agricultural and Environmental Sciences state budget reduced 21% for extension and research programs.
- 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 getting in is to attend another system school and transfer in as junior. Our College has some discretion in accepting students as long as they meet minimum requirements. (60 Cr. And 2.8 GPA).

Core Areas – UGA Entomology

- IPM Programs for broad range of cropping systems and other needs eg. public health
- 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.,

New program 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 interuption 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 more fully the functions and develop insect control tactics.

New Program with mosquitoes – Athens (not a new faculty member)

- Dr. Mike Strand – Athens
- Program - Immune responses of mosquitoes
- Cellular immune responses
- Humoral immune responses – antimicrobials produced much as we produce antibodies
- Mechanisms controlling immune responses
- Ultimate goal – how this might interrupt transmission of disease organisms or provide new ways to control mosquito populations.

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 around 1981 – continues until now
- Colony established around 1989 from Cupp Laboratory at University of Arizona – next 15 years was primarily bioassay development and evaluation related to Vectobac formulation development and improvement.
- This work is ongoing and is a major focus of the Lab.

Black Fly Lab. – New Directions I

- Began with pesticide work (2003-2008) - Overmyer
- Examination of environmental factors/contaminants in streams that might affect efficacy of *Bti* toxins.
- Antibiotics as stream contaminants – Iburg
- Stream chemistry and impacts of naturally occuring 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 factors specific to field sites – eg Susquehanna River in PA – Streamside bioassay purpose

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 trapping work and concepts to areas endemic for African River Blindness.
- Purposes two fold:
  1. Replace human sentinels for fly collection
  2. Use traps to determine infection levels in 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:

  Ray Noblet, Elmer Gray, Roger Wyatt, Joe Iburg, T. J. McGaha, plus Danny Mead and other collaborators and student workers.
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