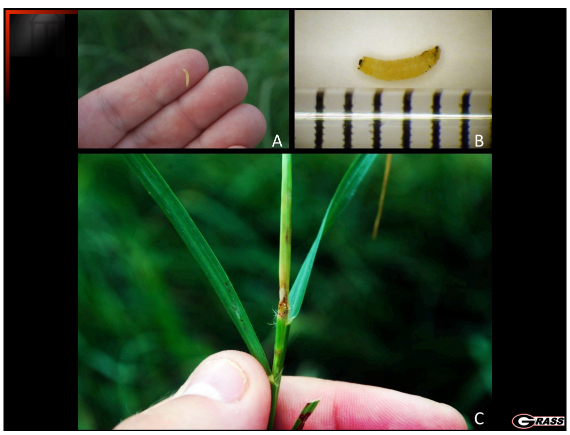
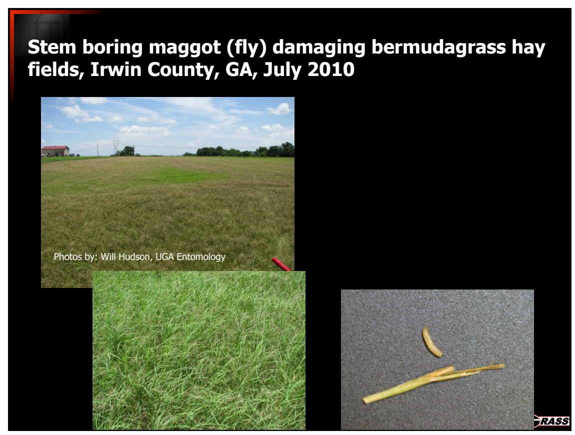
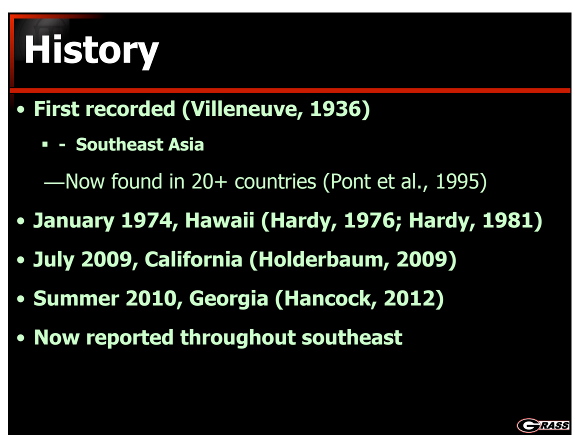
Forage Conference at GCA Convention

Bermudagrass Stem Maggot: Agronomic Research Update







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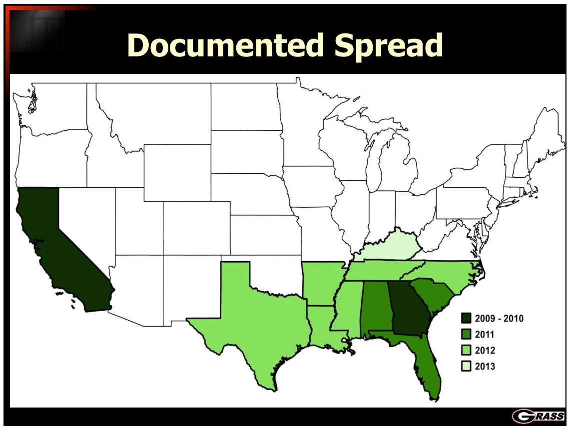

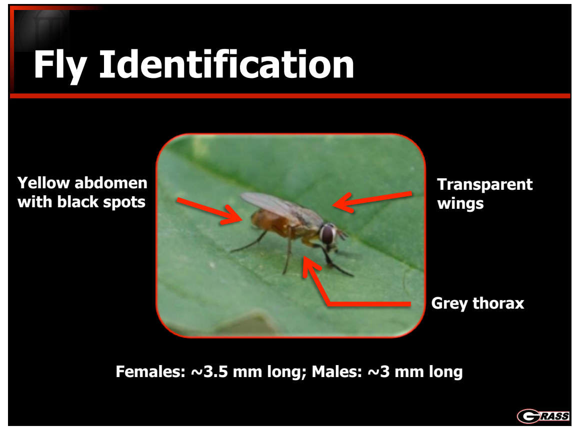

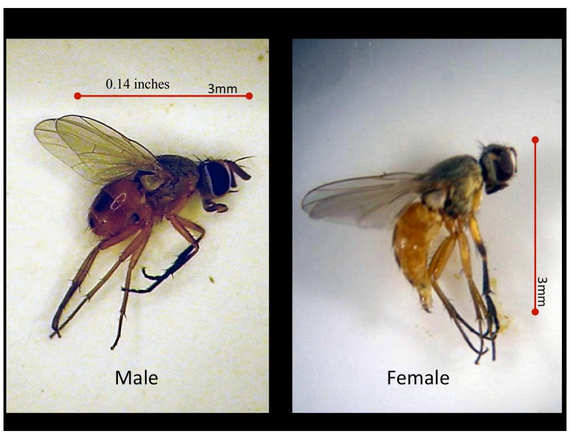

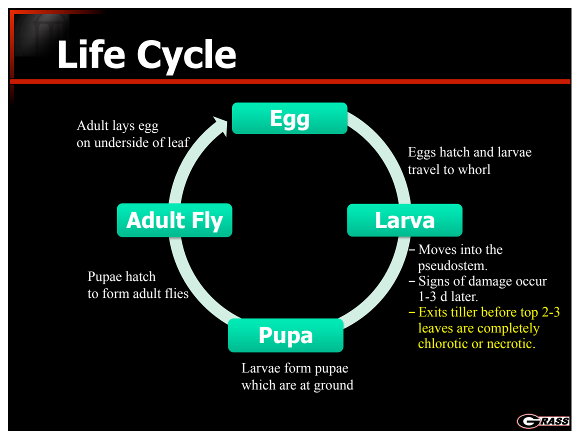

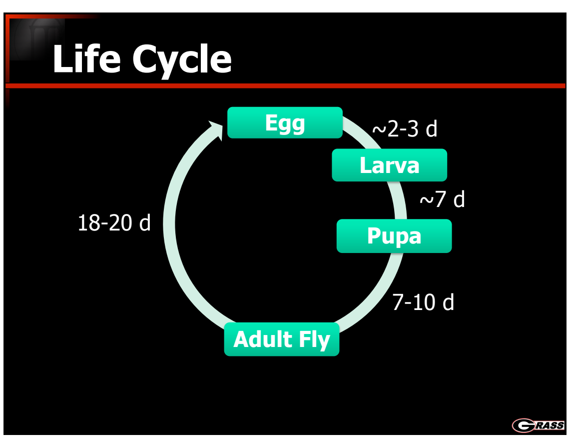

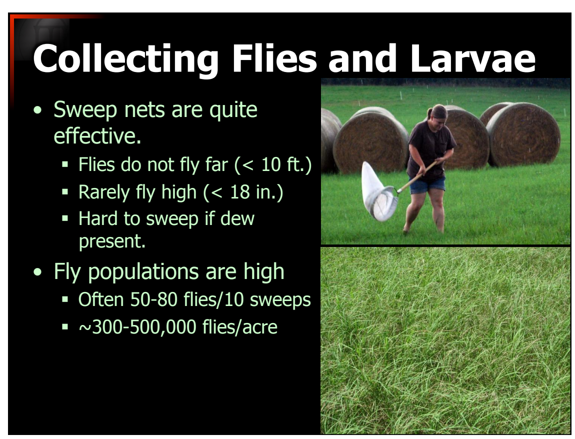

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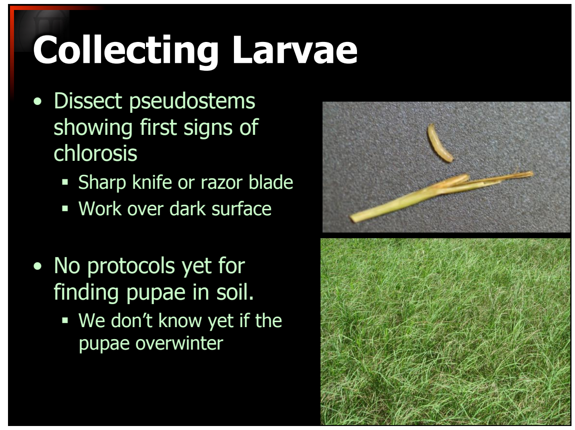

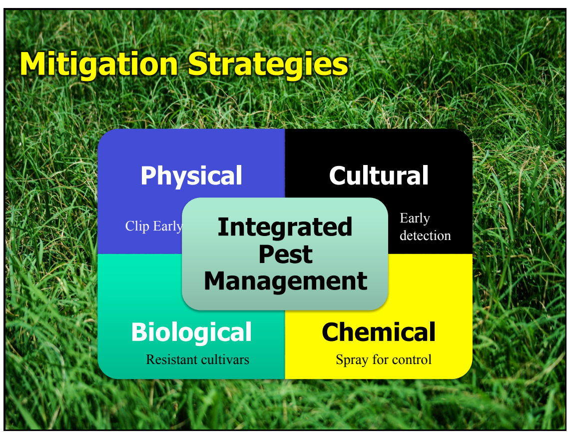

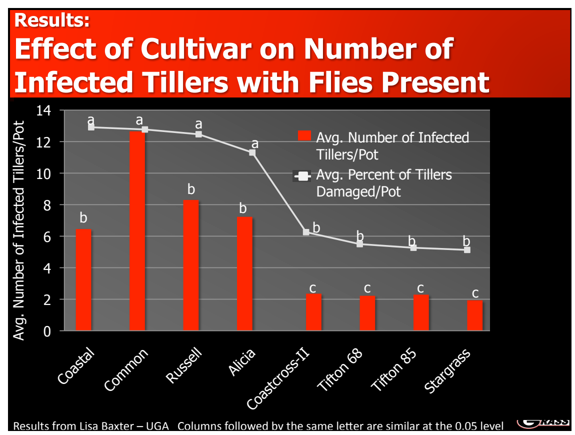

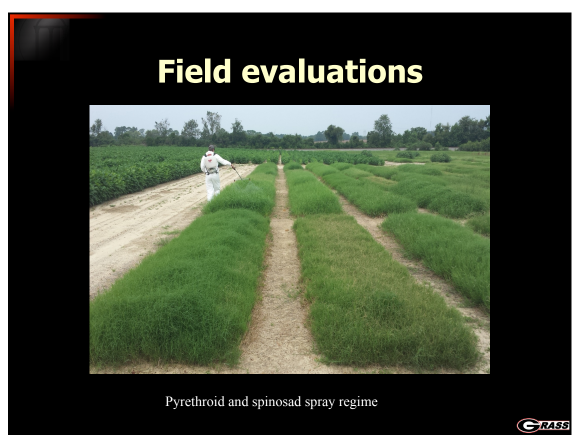

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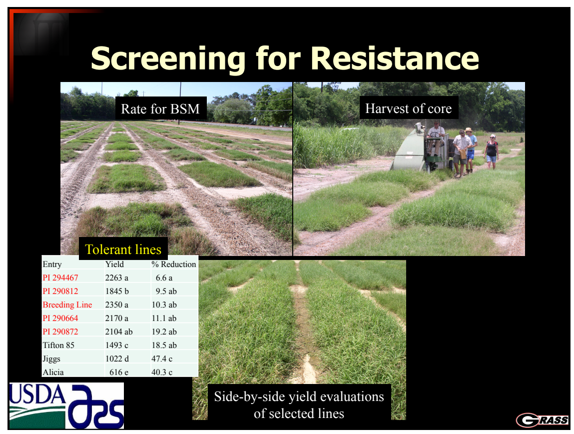
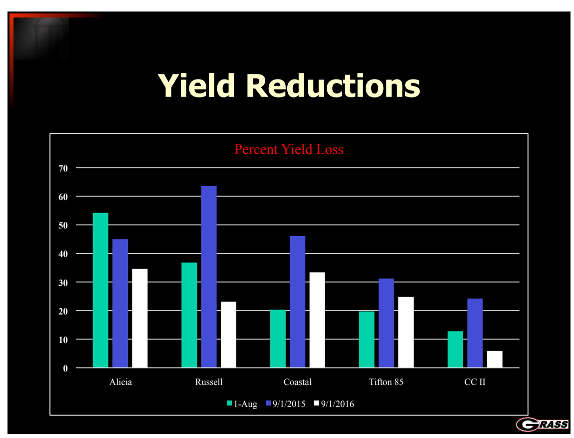


Entry	Yield	% Reduction
PI 294467	2263 a	6.6 a
PI 290812	1845 b	9.5 ab
Breeding Line	2350 a	10.3 ab
PI 290664	2170 a	11.1 ab
PI 290872	2104 ab	19.2 ab
Tifton 85	1493 c	18.5 ab
Jiggs	1022 d	47.4 c
Alicia	616 e	40.3 c



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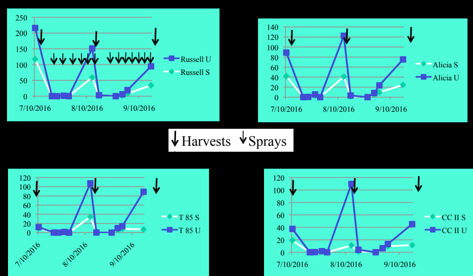
Fly numbers – Sprayed vs Untreated



Mitigation Strategies

Strategy is contingent upon timing

- If signs of BSM damage occur when the bermudagrass is 6-8 in. tall, (~3 wk after prev. cutting/grazing), then clip (remove if possible) and employ chemical suppression technique.
  - The grass is unlikely to grow out of this damage.
  - Delayed action can rob yield from future growth

Mitigation Strategies

Chemical suppression technique requiring 2 applications:

- 1st App: 7-10 d after cutting
  - Apply a labeled rate of an insecticide
    - Pyrethroids, such as Baythroid, Karate, Mustang Max, etc. ($)
    - Spinosad, such as Tracer or Blackhawk ($$) ????
- 2nd App: repeat 7-10 d later (or 14-20 d after cutting)

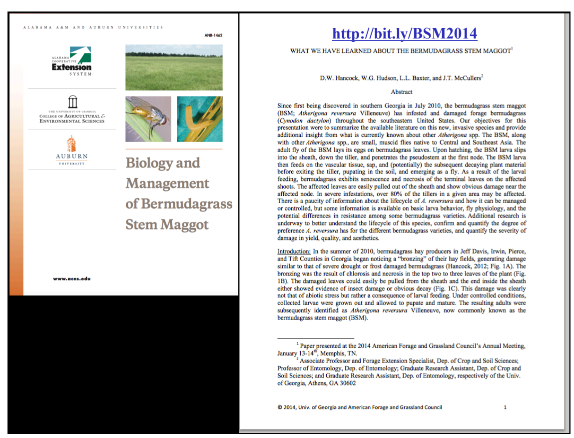
Mitigation Strategies

Chemical suppression technique requiring 2 applications:

- Total cost of both applications:
  - ~$2-3 of product/acre + ~$4-5 application cost/acre x 2
  - **$12-18/acre/clipping**
  - **When to apply?**
  - **See signs of the fly – then apply**

Future Research

- **Life cycle and reproductive potential of BSM**
  - **Necessary to refine timing of suppression techniques**
- **Determine most cost-effective strategies for managing and/or controlling BSM**
- **Develop a BSM network among the southern states using smartphone apps to report damage of presence of flies – For an early warning systems**



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Biology and Management of Bermudagrass Stem Maggot

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WHAT WE HAVE LEARNED ABOUT THE BERMUDAGRASS STEM MAGGOT[1]

D.W. Hancock, W.G. Hudson, L.L. Baxter, and J.T. McCullers[2]

Abstract

Since first being discovered in southern Georgia in July 2010, the bermudagrass stem maggot (BSM; *Atherigona reversura* Villeneuve) has infested and damaged forage bermudagrass (*Cynodon dactylon*) throughout the southeastern United States. Our objectives for this presentation were to summarize the available literature on this new, invasive species and provide additional insight from what is currently known about other *Atherigona* spp. The BSM, along with other *Atherigona* spp., are small, muscid flies native to Central and Southeast Asia. The adult fly of the BSM lays its eggs on bermudagrass leaves. Upon hatching, the BSM larva slips into the sheath, down the tiller, and penetrates the pseudostem at the first node. The BSM larva then feeds on the vascular tissue, sap, and (potentially) the subsequent decaying plant material before exiting the tiller, pupating in the soil, and emerging as a fly. As a result of the larval feeding, bermudagrass exhibits senescence and necrosis of the terminal leaves on the affected shoots. The affected leaves are easily pulled out of the sheath and show obvious damage near the affected node. In severe infestations, over 80% of the tillers in a given area may be affected. There is a paucity of information about the lifecycle of *A. reversura* and how it can be managed or controlled, but some information is available on basic larva behavior, fly physiology, and the potential differences in resistance among some bermudagrass varieties. Additional research is underway to better understand the lifecycle of this species, confirm and quantify the degree of preference *A. reversura* has for the different bermudagrass varieties, and quantify the severity of damage in yield, quality, and aesthetics.

Introduction: In the summer of 2010, bermudagrass hay producers in Jeff Davis, Irwin, Pierce, and Tift Counties in Georgia began noticing a "bronzing" of their hay fields, generating damage similar to that of severe drought or frost damaged bermudagrass (Hancock, 2012; Fig. 1A). The bronzing was the result of chlorosis and necrosis in the top two to three leaves of the plant (Fig. 1B). The damaged leaves could easily be pulled from the sheath and the end inside the sheath either showed evidence of insect damage or obvious decay (Fig. 1C). This damage was clearly not that of abiotic stress but rather a consequence of larval feeding. Under controlled conditions, collected larvae were grown out and allowed to pupate and mature. The resulting adults were subsequently identified as *Atherigona reversura* Villeneuve, now commonly known as the bermudagrass stem maggot (BSM).

[1] Paper presented at the 2014 American Forage and Grassland Council's Annual Meeting, January 13-14th, Memphis, TN.
[2] Associate Professor and Forage Extension Specialist, Dep. of Crop and Soil Sciences; Professor of Entomology, Dep. of Entomology; Graduate Research Assistant, Dep. of Crop and Soil Sciences; and Graduate Research Assistant, Dep. of Entomology, respectively of the Univ. of Georgia, Athens, GA 30602

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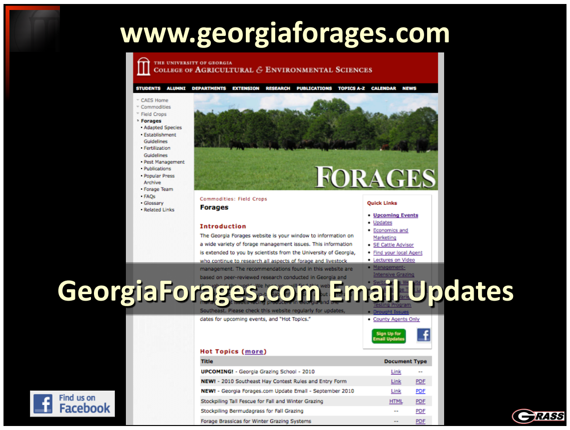
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