The Sugarcane Aphid (Hemiptera: Aphididae): An Invasive Pest of Sorghum in North America

International Conference on Agri-Biotech and Environmental Engineering

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San Antonio, TX

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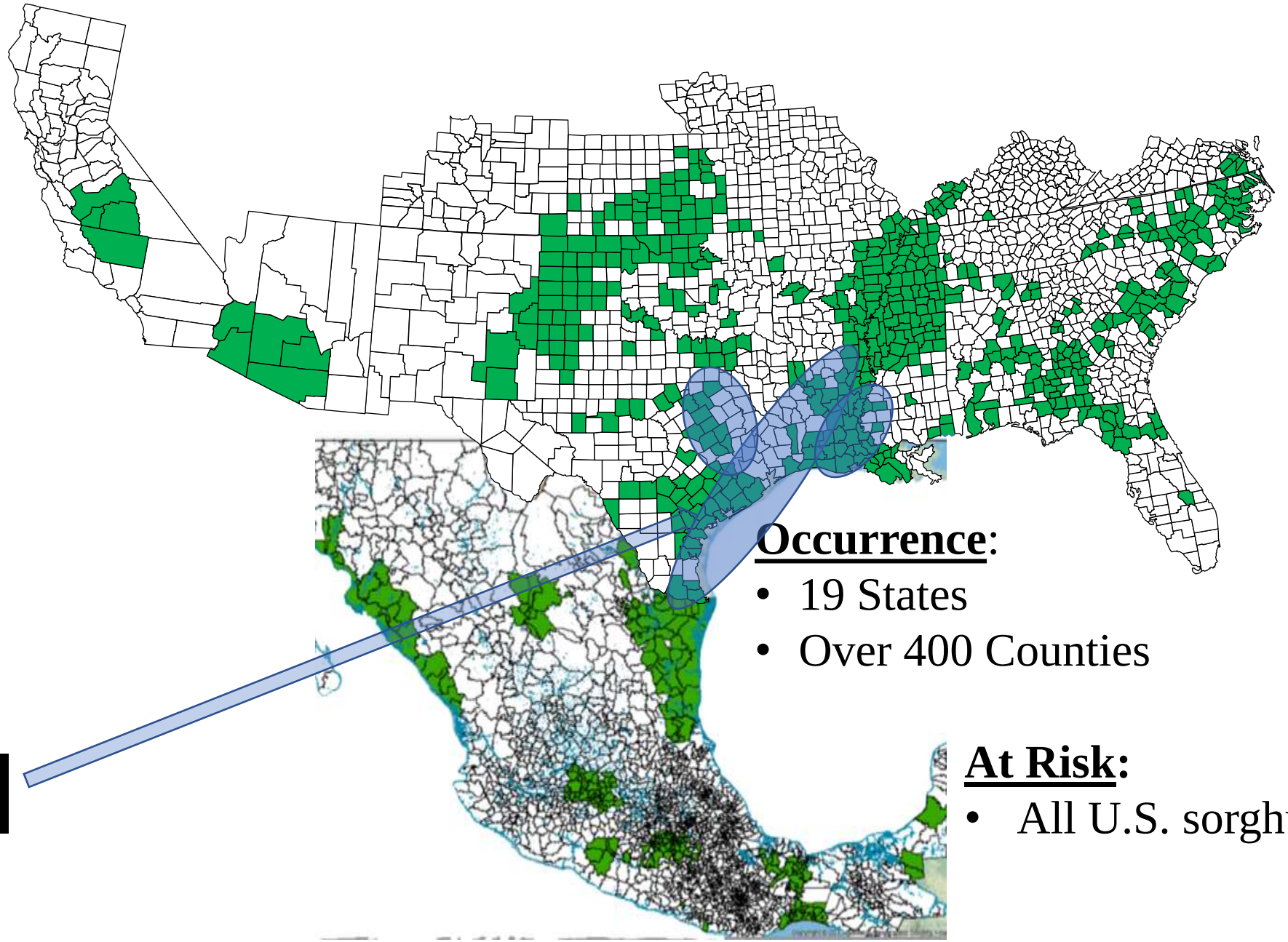
Agenda: Sugarcane Aphid (SCA):

- Background
- Management
  - Threshold and Insecticides
    - Insecticide Seed Treatments
    - Foliar
    - At Harvest
  - Biological control
  - Sudden Region Wide Collapse
  - Host Plant Resistance
- Moving Forward

October 30, 2016



2013

<u>Occurrence</u>:

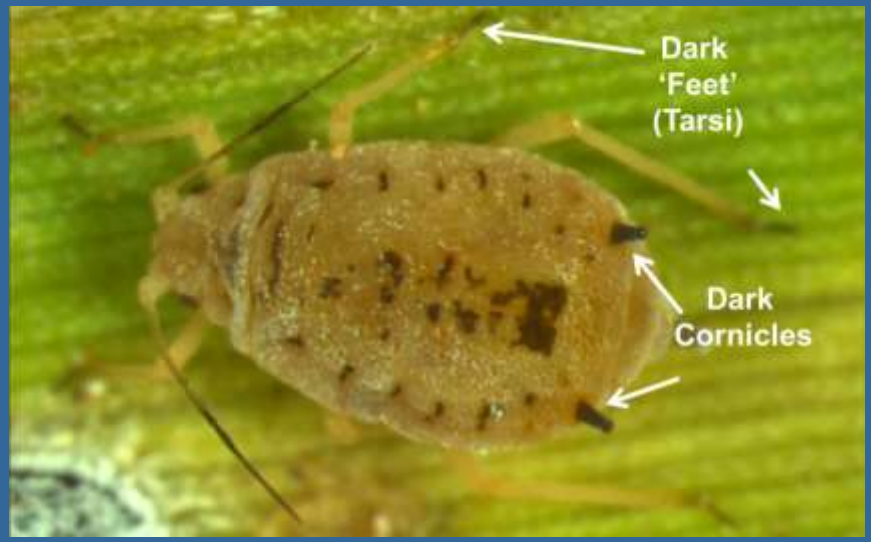
- 19 States
- Over 400 Counties

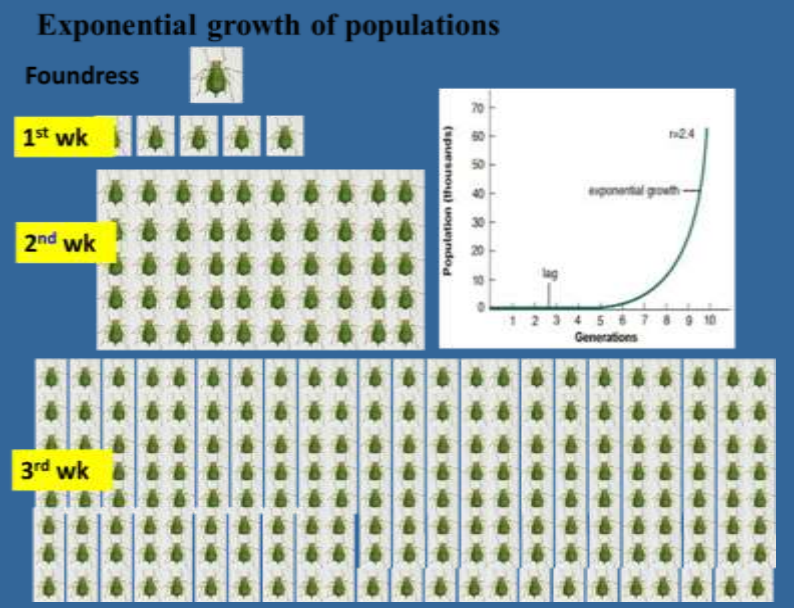
<u>At Risk</u>:

- All U.S. sorghum

Background: Education for ALL!

- Identification – Unique Characteristics
- Biology – All female & exponential growth
- Damage – sap feeders, general plant decline, honeydew, sooty mold, move to heads
- Insecticide – sorghum labeled insecticides not working
- Biological Control – Not well understood
- Host plant resistance – not available



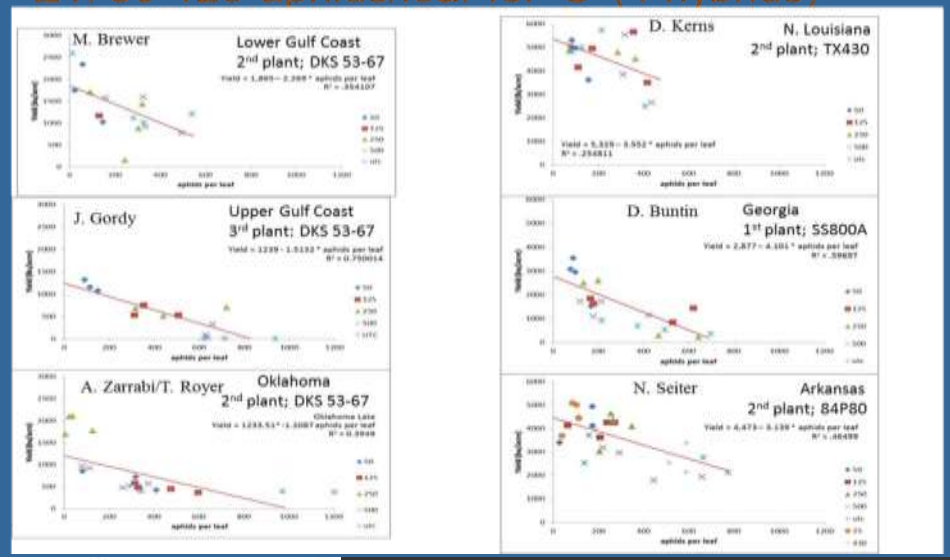


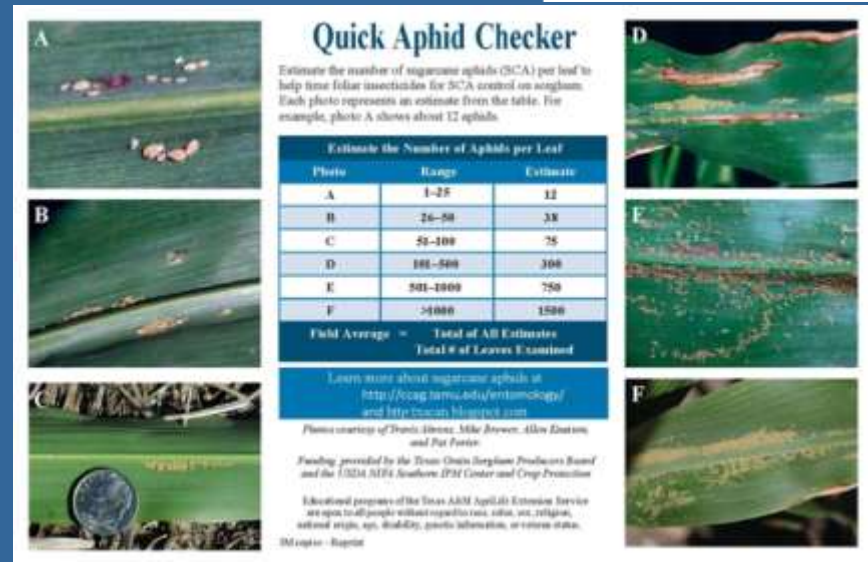
Management: Threshold and Outreach

- **Threshold**
  - **Avg. of 50 – 125 Aphids/Leaf**
    - **Regional variations**
  - **Number to make treatment decisions**
  - **Scouting Card**

- **Educational Programming**
  - **Field**
  - **Classroom**
  - **Publications**

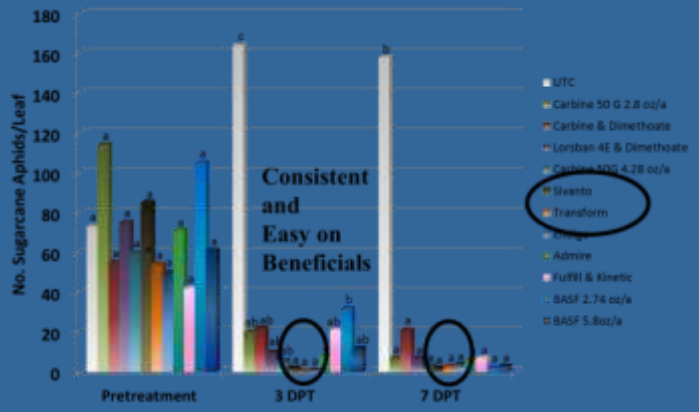
- Vegetative: EILs: 75-175 aphids/leaf
  ET: 50-125 aphids/leaf for 'S' (4 hybrids)

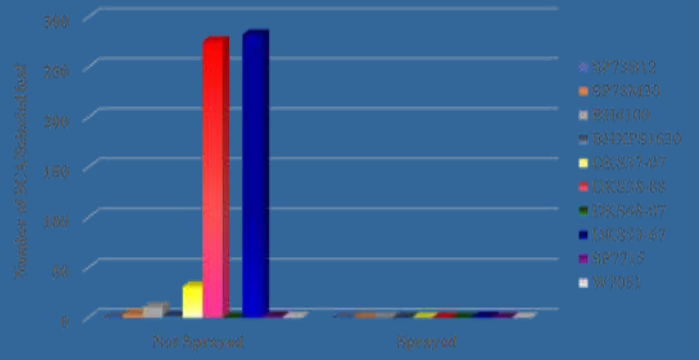




Management: Insecticides – Initial Defense

- **Insecticides labeled for aphids ineffective**
- **Seed Treatments – Early Protection but not when needed**

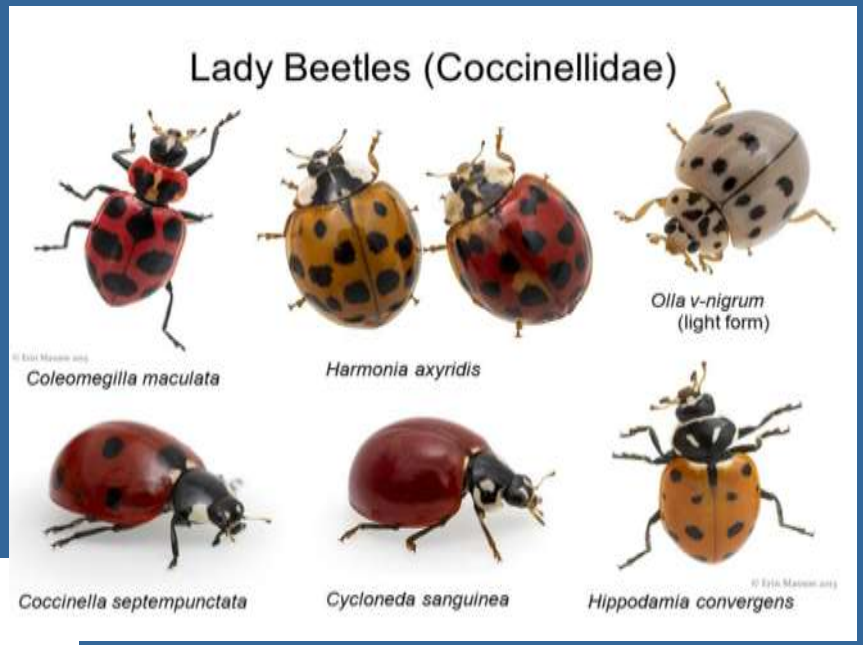


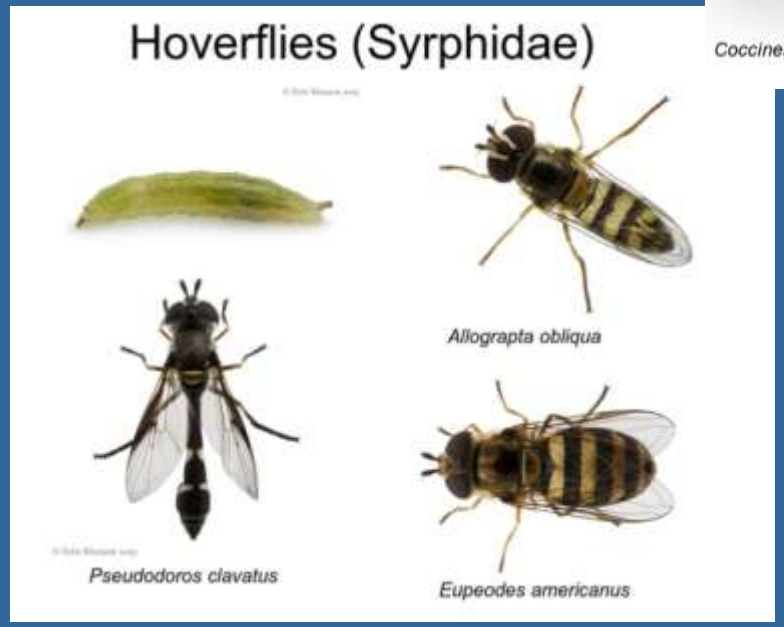


- **Foliar Insecticides – Numerous Research Trials**
  - **Transform & Sivanto –**
    - **Consistent**
    - **Safe to SCA biological control**
    - **w/harvest aids**
- **Continue looking**

Biological Control

- Numerous and well documented
- Some help but generally ineffective as control agents
- Best fit may be in conjunction with resistant (tolerant) sorghum





Sudden Collapse: Predictability

Some Predictability

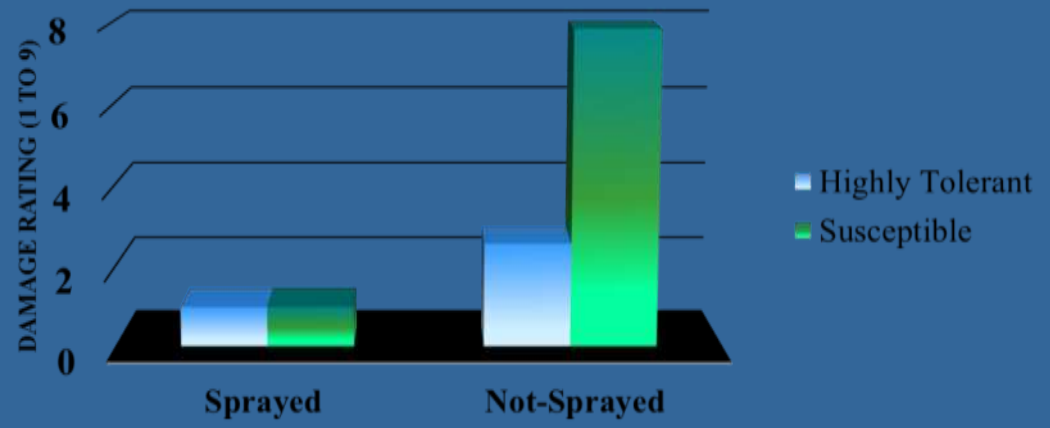
- **May be weather related**
- **Extreme heat may have an effect**
- **Heavy dew???**
- **Cool and wet conditions**
  - **Entomopathogens?**

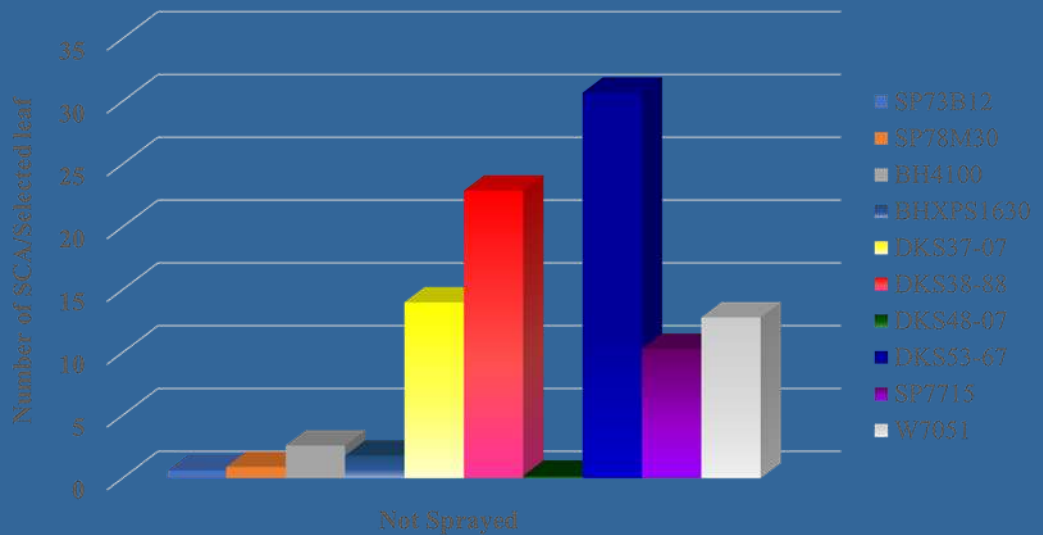
Fungal Entomopathogen:

- *Lecanicillium lecanii*
- Strain specific
- High relative humidity
- Temperature range between 77 and 86 F
- On possible cause for widespread collapse
- Hard to predict

Sorghum Resistance to SCA

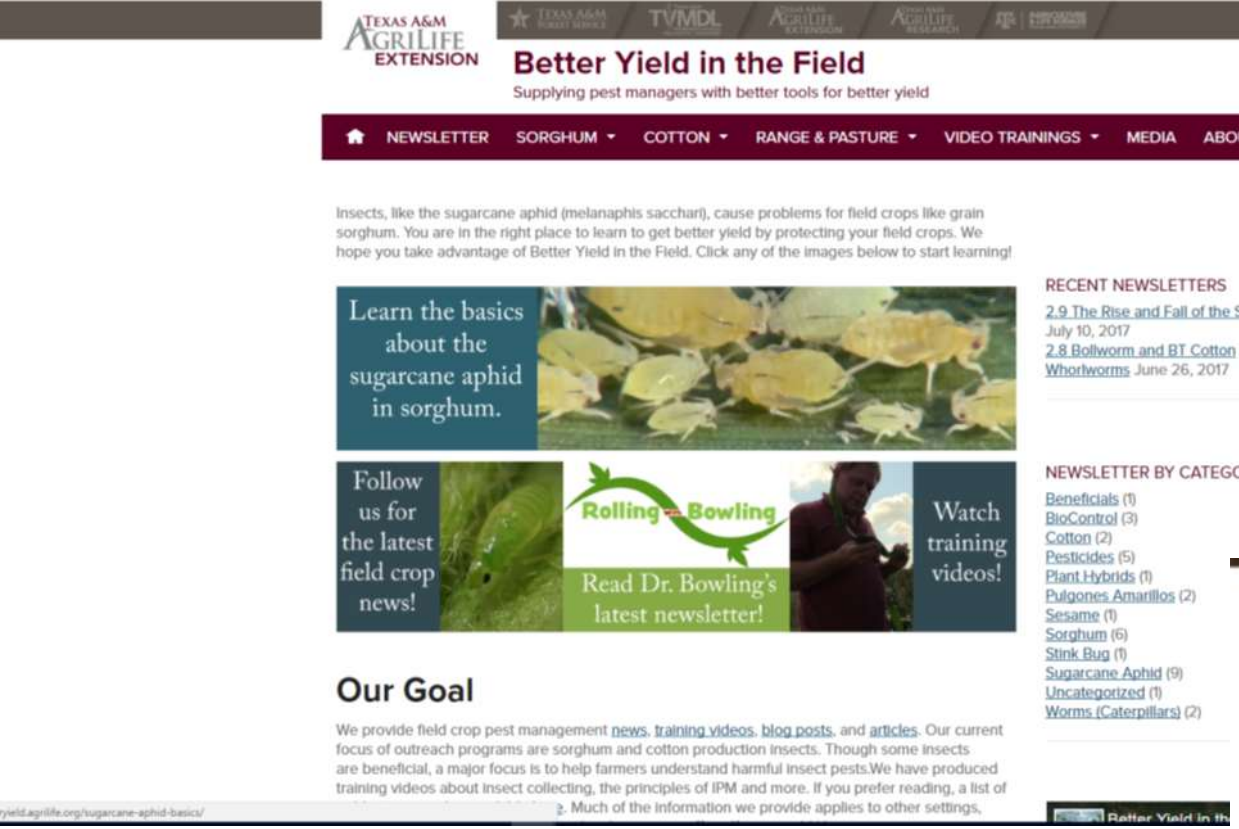
- Highly desirable
  - Cost effective
  - Works well with other IPM practices
    - ➢ Biological control
- Not Perfect
  - SCA will colonize
  - Scouting important
- Line-up continuing to grow
  - Current research and list
- Heavy dew?





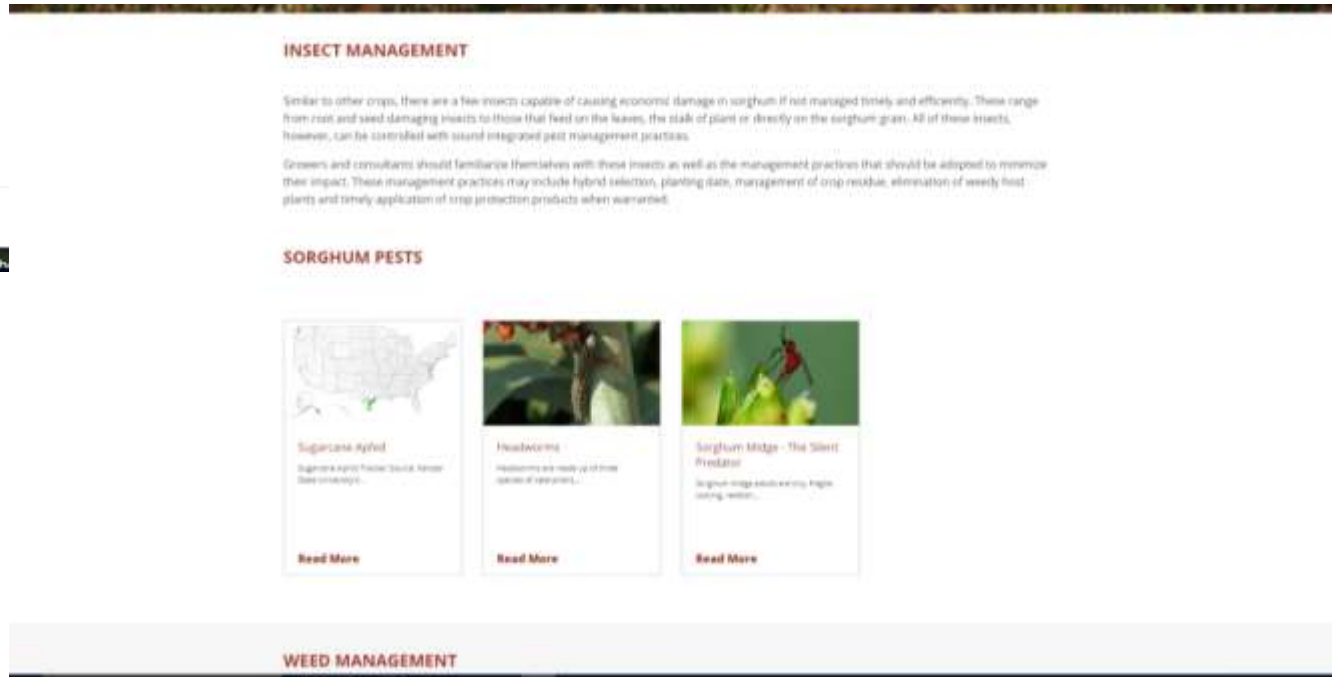
SCA Management – Moving Forward

- Intensive sampling sorghum for SCA
  - Refine economic thresholds
  - Enhance sampling/scouting procedures
- ET for SCA tolerant sorghum
- Sorghum Tolerance/Biological Control
  - Compatibility of SCA tolerant sorghum and natural enemies
- Areawide SCA Management
  - Landscape of sorghum w/ and w/o SCA tolerance and biological control

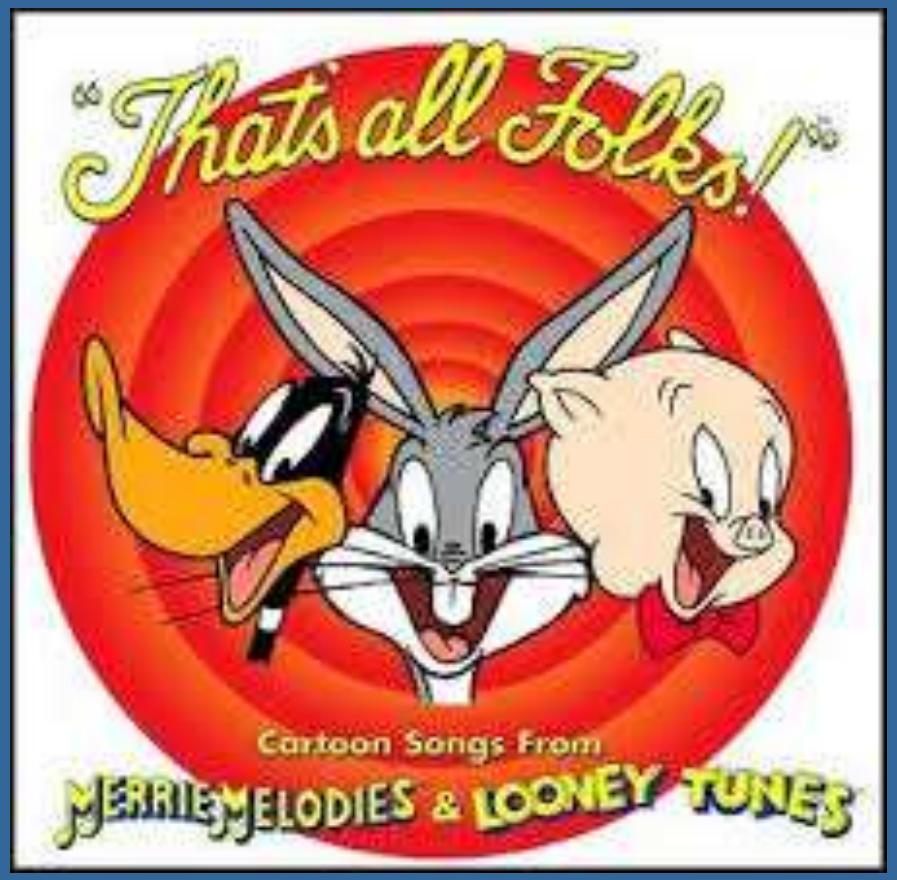


http://betteryield.agrilife.org/

http://www.sorghumcheckoff.com/newsroom/2016/03/28/sugarcane-aphid/



Thank You!



Questions!