

# 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

September 11, 2017

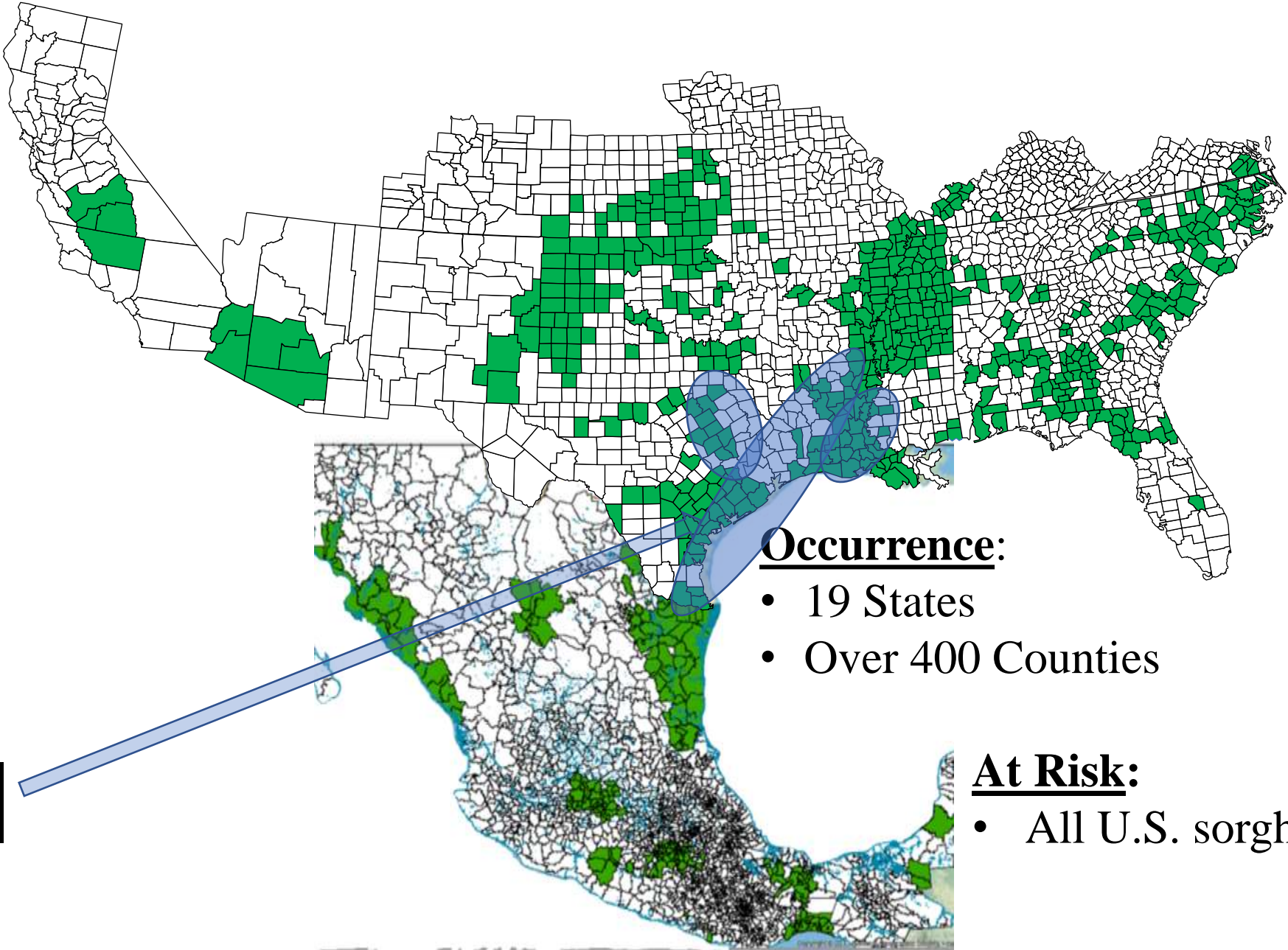


# Agenda: Sugarcane Aphid (SCA):

- ❖ 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



**Occurrence:**

- 19 States
- Over 400 Counties

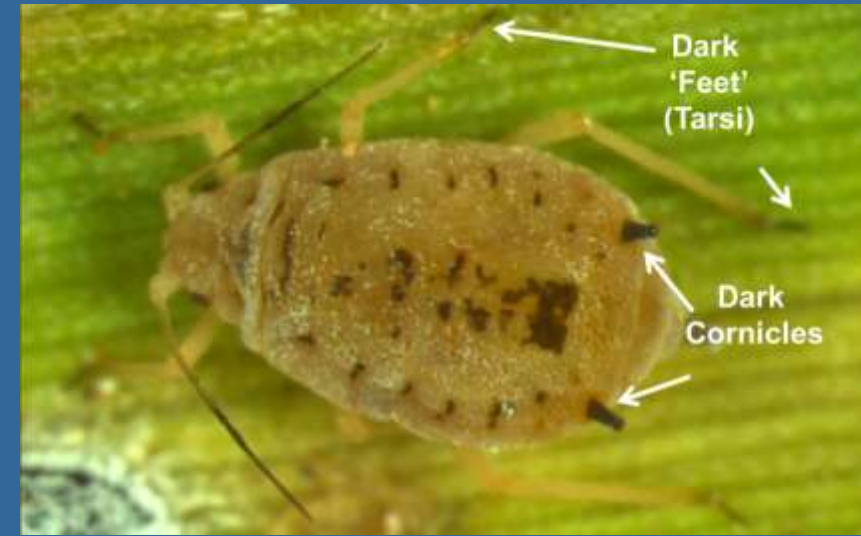
**At Risk:**

- All U.S. sorghum

2013

# 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



Exponential growth of populations

Foundress



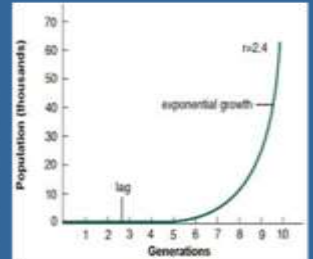
1<sup>st</sup> wk



2<sup>nd</sup> wk



3<sup>rd</sup> wk



# Management: Threshold and Outreach

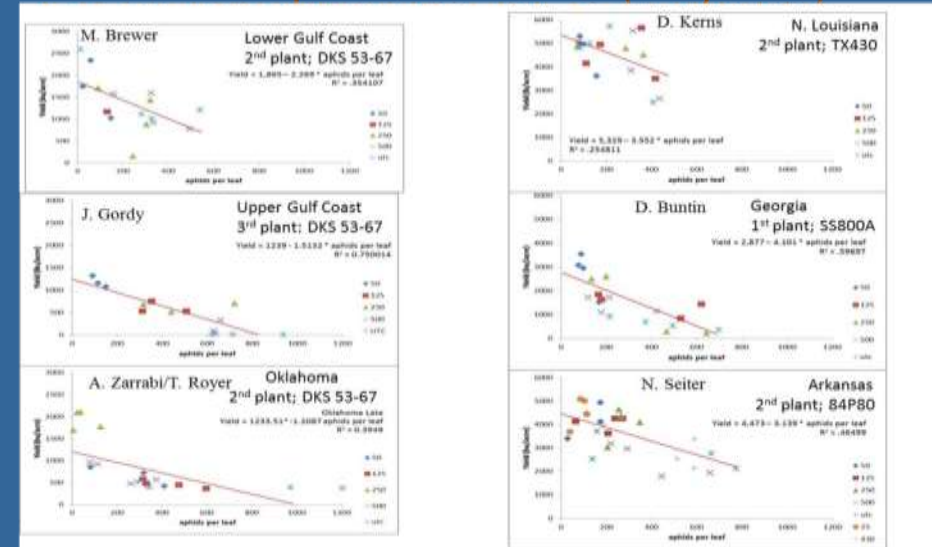
- **Threshold**

- 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)



### Quick Aphid Checker

Estimate the number of sugarcane aphid (SCA) per leaf to help time foliar insecticides for SCA control on sorghum. Each photo represents an estimate from the table. For example, photo A shows about 12 aphids.

Photo	Range	Estimate
A	1-25	12
B	26-50	33
C	51-100	75
D	101-500	300
E	501-1000	750
F	>1000	1500

Field Average =  $\frac{\text{Total of All Estimates}}{\text{Total \# of Leaves Examined}}$

Learn more about sugarcane aphids at <http://ocag.tamu.edu/entomology/> and <http://texasagriculture.com>

Photos courtesy of Travis Hines, Mike Brown, Allan Easton, and Pat Parry.

Funding provided by the Texas A&M Sorghum Producers Board and the USDA NIFA Southern IPM Center and Crop Protection

Educational program of the Texas A&M AgriLife Extension Service not open to all people without regard to race, color, sex, religion, national origin, age, disability, genetic information, or veteran status.

3/14/16 - Revised

TEXAS A&M AGRILIFE EXTENSION

## The Sugarcane Aphid: Management Guidelines for Grain and Forage Sorghum in Texas

Allen Braxton, Robert Bowling, Michael Brown, Ed Brown, and Pat Parry  
Texas A&M AgriLife Extension and Research, Texas A&M University

The sugarcane aphid (SCA) is currently one of the most important insect pests of grain and forage sorghum in Texas. Until recently the SCA fed only on sugarcane in the US, but in 2013, it was found feeding on sorghum near Beaumont, TX. This sorghum-feeding SCA biotype developed because of a genetic change in the existing US population or was introduced into the US from elsewhere. In 2015, the sugarcane aphid was also found in sorghum in the Rio Grande Valley and the Texas Gulf Coast as well as in north Texas, southern Oklahoma, Louisiana, and Mississippi.

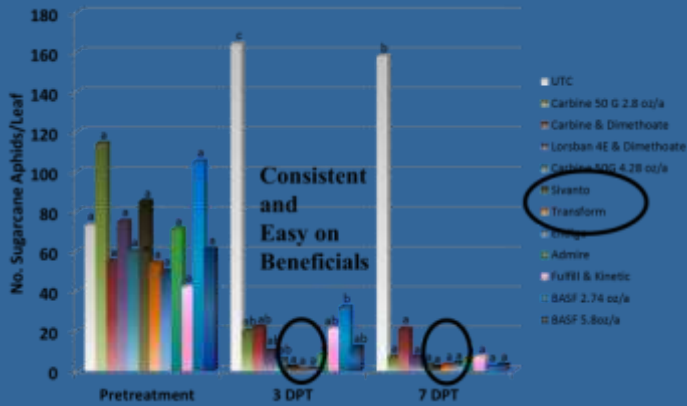
Sugarcane aphids overwintered the 2013 winter in south Texas and spread throughout much of Texas and 12 other southern states during the spring and summer of 2014. In 2015, the SCA spread through Texas into Oklahoma and Kansas, eventually infesting 17 states. This area encompasses 90 percent of the US sorghum acreage.

This pest can be economically controlled to prevent crop loss and harvest difficulties associated with the honeydew it creates. However, to control SCA effectively, growers must assess infestations frequently and use that information to properly time any needed insecticide applications. SCA-resistant hybrids are being developed and will play an important part in managing the sugarcane aphid. These resistant hybrids are currently being tested and evaluated.

Figure 2. A colony of several hundred sugarcane aphids.

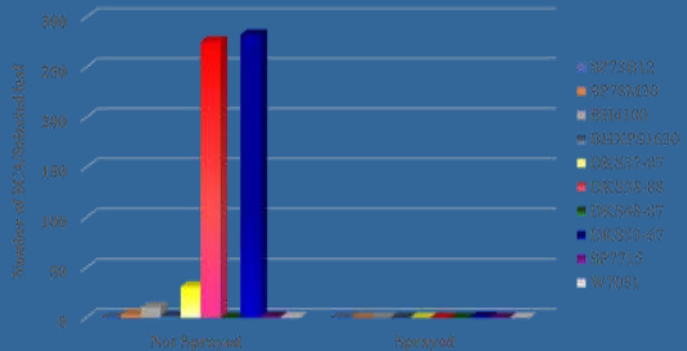
# Management: Insecticides – Initial Defense

- 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

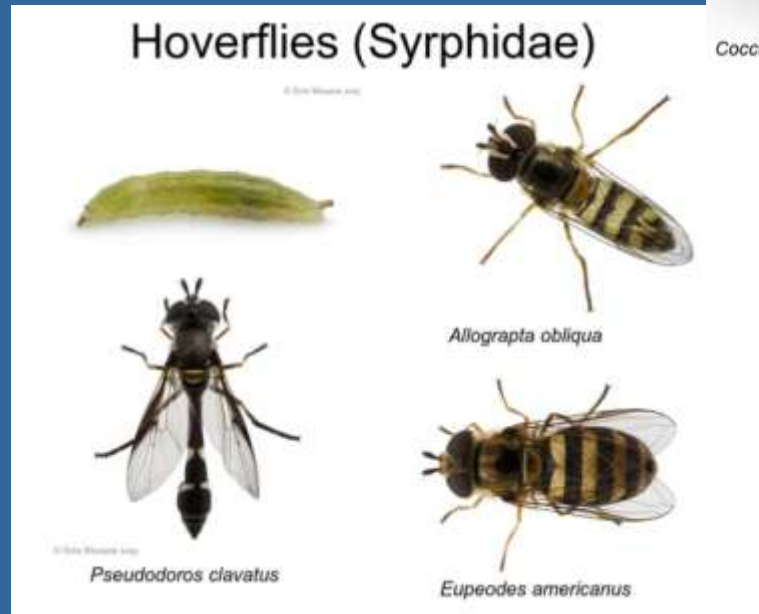


## • Continue looking



# 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?





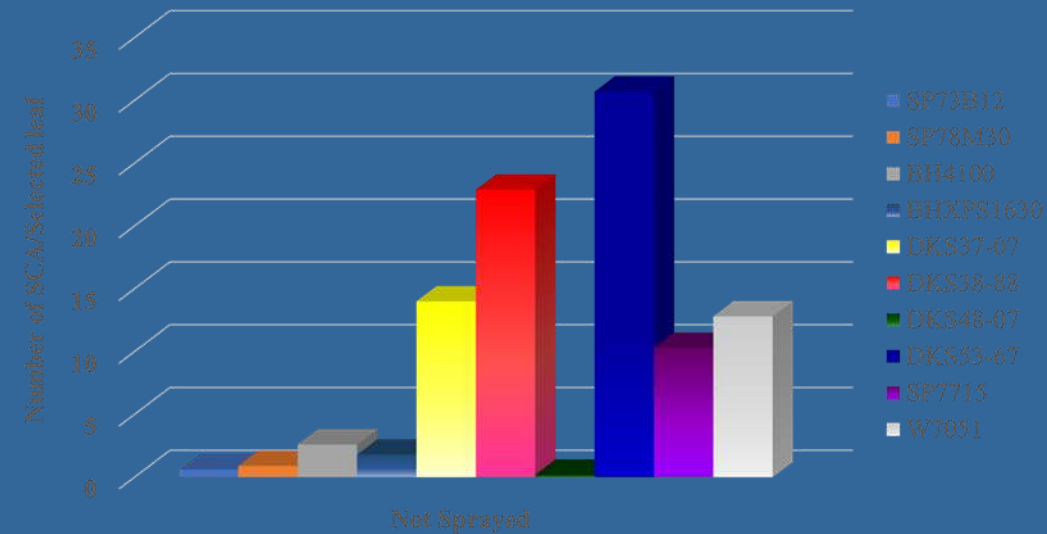
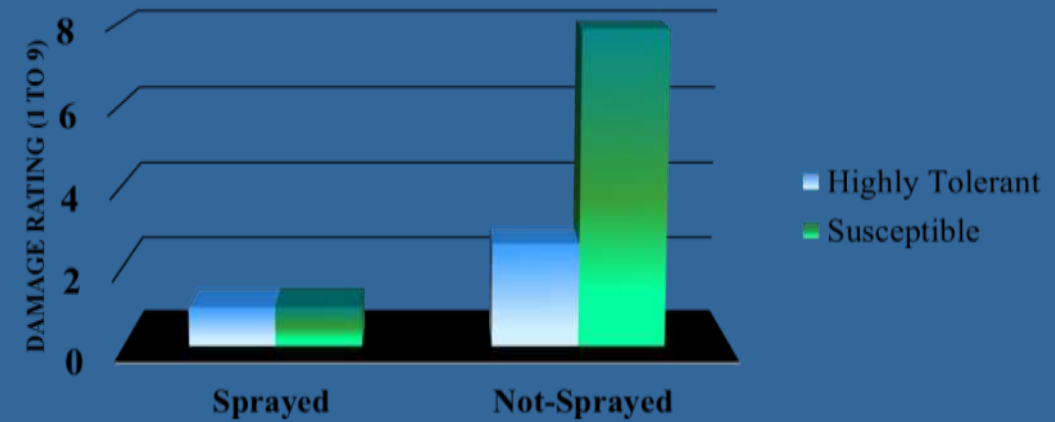
# Fungal Entomopathogen:

- *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**



## Better Yield in the Field

Supplying pest managers with better tools for better yield

Insects, like the sugarcane aphid (*melanaphis sacchari*), cause problems for field crops like grain sorghum. You are in the right place to learn to get better yield by protecting your field crops. We hope you take advantage of Better Yield in the Field. Click any of the images below to start learning!

Learn the basics about the sugarcane aphid in sorghum.



Follow us for the latest field crop news!



Watch training videos!

### Our Goal

We provide field crop pest management [news](#), [training videos](#), [blog posts](#), and [articles](#). Our current focus of outreach programs are sorghum and cotton production insects. Though some insects are beneficial, a major focus is to help farmers understand harmful insect pests. We have produced training videos about insect collecting, the principles of IPM and more. If you prefer reading, a list of [articles](#). Much of the information we provide applies to other settings,

#### RECENT NEWSLETTERS

- [2.9 The Rise and Fall of the Sugarcane Aphid](#) July 10, 2017
- [2.8 Bollworm and BT Cotton](#) July 1, 2017
- [Whorlworms](#) June 26, 2017

#### NEWSLETTER BY CATEGORY

- [Beneficials](#) (1)
- [BioControl](#) (3)
- [Cotton](#) (2)
- [Pesticides](#) (5)
- [Plant Hybrids](#) (1)
- [Pulgones Amarillos](#) (2)
- [Sesame](#) (1)
- [Sorghum](#) (6)
- [Stink Bug](#) (1)
- [Sugarcane Aphid](#) (9)
- [Uncategorized](#) (1)
- [Worms \(Caterpillars\)](#) (2)

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

#### INSECT MANAGEMENT

Similar to other crops, there are a few insects capable of causing economic damage in sorghum if not managed timely and efficiently. These range from root and seed-damaging insects to those that feed on the leaves, the stalk of plant or directly on the sorghum grain. All of these insects, however, can be controlled with sound integrated pest management practices.

Growers and consultants should familiarize themselves with these insects as well as the management practices that should be adopted to minimize their impact. These management practices may include hybrid selection, planting date, management of crop residue, elimination of weedy host plants and timely application of crop protection products when warranted.

#### SORGHUM PESTS



**Sugarcane Aphid**  
Sugarcane aphid (Melanaphis sacchari) is a pest of sorghum.

[Read More](#)



**Headworms**  
Headworms are made up of two species of caterpillars.

[Read More](#)



**Sorghum Midge - The Silent Predator**  
Sorghum midge (Eumecurus nigropictus) is a pest of sorghum.

[Read More](#)

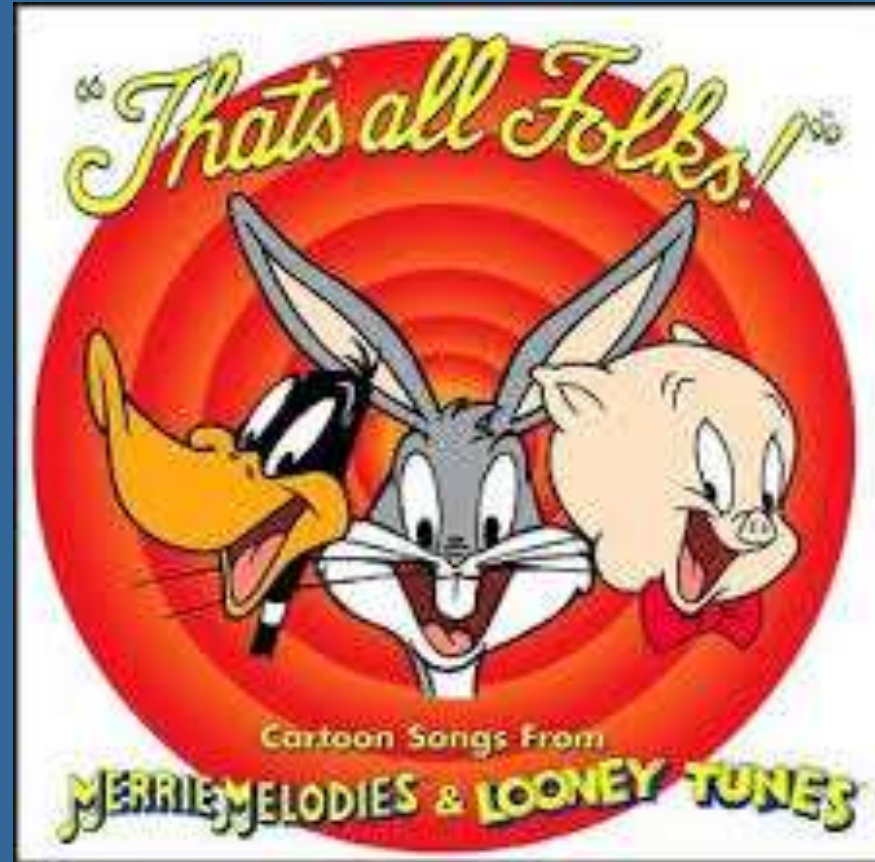
yield.agrilife.org/sugarcane-aphid-basics/

Better Yield in the

<http://betteryield.agrilife.org/>

#### WEED MANAGEMENT

# Thank You!



# Questions!