Wheat Insect Update

Kathy Flanders

Hradland, August 15, 2012
April 24: 90% infested stems, average 16 flies per stem, 4 heads/ft²
Hessian fly life stages

Adult

Eggs on upper leaf

Larvae →

← puparia*

* Oversummering stage

Photos courtesy of R. Ratcliffe, slide courtesy David Buntin
Oversummering flaxseeds led to heavily infested volunteer wheat
Tillage and Rotation Practices

2009 Alabama Hessian Fly Survey

Percent of Fields

- rotated - no till
- rotated - disked
- wheat after wheat - no till
- wheat after wheat - disked

Hessian Fly Infestation
- none
- Low 1-20%
- Moderate 21-45%
- High >45%

Number of fields indicated by the numbers inside the bar segments.
Distance from Wheat after Wheat

Oversummering Pupae

P=0.26
The Perfect Storm - 2008

- Wheat acreage increased 2006, 2007
- Seed wheat supply problems – S varieties planted
- No at-planting insecticides - withdrawn
- More continuous wheat
- Few “Biotype L” resistant varieties
- Minimum tillage
Progeny 117
57% infested stems
0 bu/A

Oglethorpe
3% infested stems
30 bu/A

(highest yielding variety was 42 bu/A, sprouting and other issues)
H7H8 Gene: Percent Effectiveness Against Hessian Fly
H13 Gene: Percent Effectiveness Against Hessian Fly
Varieties - 2009 Alabama Hessian Fly Survey

Hessian Fly Infestation
- none
- Low 1-20%
- Moderate 21-45%
- High >45%

This is preliminary information, still missing variety information from 13 fields.
The Perfect Storm – 2012-2013?

• Hessian fly had a really good time in 2011-2012
• No shortage of flies in producer fields
• Lots of flaxseeds in no-till systems
• Plenty of thundershowers

• May set us up for having lots of flies emerge in late August and early September
IPM Recommendations

• Select a Hessian fly resistant variety.
• Plant oats, or a Hessian-fly resistant wheat for grazing.
• If possible, use a moldboard plow to bury wheat debris.
• Control volunteer wheat.
• Do not use susceptible wheat for wildlife plantings.
• Avoid continuous planting of wheat in the same field.
• Do not plant wheat before the recommended planting date for your area.
• If a susceptible variety is grown, consider using an systemic insecticide seed treatment.
Barley Yellow Dwarf

- Aphids spread the virus
- Virus causes yield loss
- Control the aphids to control the virus

- Scout wheat for aphids
- Tank mix an insecticide with liquid fertilizer in late winter if aphids are present
aphids insert their stylets into the phloem to feed

Direct injury

Indirect injury

virus transmission

Healthy     Infested

barley yellow dwarf

(honeydew and sooty mold)
Barley Yellow Dwarf
Figure 2. Reddened, twisted leaves are a symptom of BYD
Wingless forms
apertae
develop within the field

Winged form
alatae or alates
can be from the same field, surrounding fields, or from long distances

(rose grass aphids, Univ. of CA photos)
most aphids on small grain are parthenogenetic females - asexual reproduction

give "birth" to aphid nymphs by the time they are 7-18 days old, have 50-60 young during 20-30 days

aphids are cold-blooded so development rate is faster during the fall and the spring than in the winter

biological control agents such as ladybugs and parasitic wasps can control populations
Effect of Insecticide Treatment and Timing on BYD Symptoms, Blackville, SC 1997

Symptomatic FL / M

18 Apr

Check
Cygon 17 Feb
Di-Syston 17 Feb
Karate (2.56) 17 Feb
Karate 7 Jan
Karate 18 Mar
Karate 17 Feb
Gaucho + Karate 17 Feb

1 2 3 4 5
0 1 2 3 4 5

a b c d a d d

a b c b d d d
Effect of Insecticide Treatment and Timing on Wheat Grain Yield, Blackville, SC 1997

![Bar graph showing the effect of insecticide treatments on wheat grain yield.](image)

- **Check**
- **Gaucho**
- **Cygon 17 Feb**
- **Di-Syston 17 Feb**
- **Karate 7 Jan**
- **Karate 17 Feb**
- **Karate (2.56) 17 Feb**
- **Karate 18 Mar**
- **Gaucho + Karate 17 Feb**
Effect of planting date on aphid numbers in winter wheat at Griffin, GA in 1994/1995

Days after Sept. 15

Aphids / meter of row

- Sept. 15
- Oct. 18
- Nov. 23
Sampling for aphids can be tricky - sometimes it seems they are here today and gone tomorrow.

small, hard to see anyway hiding below ground?
killed by natural enemies?

choose warmer days, look at the entire plant, including the base of the plant below the soil line.
<table>
<thead>
<tr>
<th>Growth Stage</th>
<th>No. aphids per row foot</th>
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<tbody>
<tr>
<td>Seedling (to 30 dap)</td>
<td>1-2 bird cherry-oat, 10 greenbugs or sugarcane aphids</td>
</tr>
<tr>
<td>6-10 &quot; tall plants</td>
<td>6 aphids</td>
</tr>
<tr>
<td>Stem elongation</td>
<td>2 aphids per stem</td>
</tr>
<tr>
<td>Boot/Flag leaf</td>
<td>5 aphids per stem</td>
</tr>
<tr>
<td>Head emergence</td>
<td>10 aphids per head</td>
</tr>
<tr>
<td>Soft/Hard dough</td>
<td>Do Not Treat</td>
</tr>
</tbody>
</table>
What to Spray?

• Later generation pyrethroids control aphids and BYD

• Organophosphates control aphids but not BYD