2008 Hay Production School
Insect Management Options for Hay Producers

Hay Pasture Insects
- Grass Pastures
  - Fall armyworm
  - Mole crickets
  - Chinch bugs
  - Spittle bugs
  - Grubs/Green June beetle
- Alfalfa
  - Alfalfa weevil
  - Aphids
  - Potato leafhopper
  - Blister beetles
- Fire ants

Hay Pasture Insects

Armyworms
True Armyworm
May occur in late winter / spring in cool, wet conditions.

Fall Armyworm
Hot, dry summers favor the development of fall armyworm!

Fall Armyworm overwinter in Florida and the Caribbean.

Moths fly into Georgia in late spring (April or May)

Five or more generations per year.

Fall Armyworm Identification

Dr. David Buntin
Extension Entomologist
Fall Armyworm Sampling and Thresholds

Scout pastures and hayfields during hot, dry summers. (Pheromone traps for moths)

Sweep net foliage for small larvae. Examine 1 sq. ft area and count larvae. Check brown/dead grass or where birds are feeding.

3 or more larvae (¼ inch or longer) per sq. ft

Hot, dry summers favor the development of fall armyworm!

Fall armyworm Control

Treat larvae with an insecticide when they are small, before they have caused damage:

<table>
<thead>
<tr>
<th>Insecticide</th>
<th>Rate per acre</th>
<th>Grazing Interval (days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sevin / carbaryl</td>
<td>maximum</td>
<td>14</td>
</tr>
<tr>
<td>Mustang MAX</td>
<td>4 fl. oz.</td>
<td>0 (1 for hay)</td>
</tr>
<tr>
<td>Lannate 2.4LV</td>
<td>2 pt</td>
<td>7 (3 for hay)</td>
</tr>
<tr>
<td>Tracer 4SC</td>
<td>1-2 oz</td>
<td>Dry (3 for hay)</td>
</tr>
<tr>
<td>Dimilin 2L</td>
<td>2 oz</td>
<td>0</td>
</tr>
</tbody>
</table>

Lannate is not labeled for use on fescue. Methyl parathion is labeled but is only effective on small larvae.

Dimilin®2L Worm Control Trial - Florona Stargrass

Dr. Paul Mislevy – IFAS Range Cattle Station, Ona, FL

Applied 9/06/06 in 30 gals/A + COC – Pump Field Location

Chinch bugs

- Suck plant juices causing plants to be yellowed, stunted or death.
- Usually worse in dry conditions.
- Very difficult to control.
- Mustang MAX

Two-lined Spittlebug

- Nymphs in spittle mass.
- Suck plant juices and inject toxin.
- Multiple generations.
- Adult insecticides (Sevin, Mustang MAX) fair at best.
- Burn old stubble may reduce populations.

Grubs, May beetles & June beetles

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Extension Entomologist
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Life Cycle of the Green June Beetle

Damage by green June beetle larvae

Chicken litter, cow manure, wet decaying hay attracts Green June beetles

Winfield, Alabama

Litter starting spring 1996
3 tons per year

Source: K. Flanders, Auburn Univ.

Green June beetle larvae needed to cause 25% stand loss

<table>
<thead>
<tr>
<th>Forage type</th>
<th>Grubs per square foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seedlings</td>
<td>1-2</td>
</tr>
<tr>
<td>Established tall fescue</td>
<td>4</td>
</tr>
<tr>
<td>Overseeded winter annuals</td>
<td>1</td>
</tr>
<tr>
<td>Coastal bermudagrass</td>
<td>6 – 8?</td>
</tr>
<tr>
<td>Common bermudagrass</td>
<td>10?</td>
</tr>
</tbody>
</table>

Steps to Successful Control

- Check for disturbed soil and green June beetle grubs in mid-September.
- Coverage is important - mow or graze before applying insecticide.
- Boom sprayer with 25-30 gal. water per acre.
- Apply late in the day.
- Insecticides:
  - Sevin (80S, 50WP, XLR) other brands of carbaryl @ highest rate
  - Do not graze or cut hay for 14 days after application.
- Check field after a week to determine if a second application is needed.

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Fall vs. Spring Damage

**Fall**
- Excellent control
- Damage harder to find
- Good coverage may be difficult

**Spring**
- Moderate control
- Damage easy to find
- "Revenge" spray

May beetles, Chafers & Japanese beetles

- May beetles
- Chafer beetles
- Japanese beetle

Other grubs: complete renovation and replanting

Mole Crickets tunnel in soil and damage grass roots.
- No economically materials effective currently labeled.
- Parasitic nematode providing suppression.

Alfalfa Weevil

- Adults oversummer.
- Lay eggs in fall.
- Larvae in first growth cycle.
- Defoliate leaf tips.
- In GA, late Feb. – April.

Alfalfa Weevil populations in 4 years at Central Branch Station, Eatonton, GA

- Adult oversummer.
- Lay eggs in fall.
- Larvae in first growth cycle.
- Defoliate leaf tips.
- In GA, late Feb. – April.

Threshold ($100/ton):
- 30-40% infested terminals and larvae present.
- Sweep net: 20+ larvae per sweep.
- Stem count:
  - 6-8": 0.5 larvae per stem,
  - 8-14": 1.0 larvae per stem,
  - 14+": 1.5 larvae per stem

Insecticides:
- Furadan 4F @ 1-2 pt/A
- Lorsban 4E @ 1-2 pt/A
- Pyrethroids:
  - Baythroid XL,
  - Warrior 1CS,
  - Mustang MAX,
  - Permethrin
- Steward 1.25SC

20+ gal spray/A; Check harvest interval.

Dr. David Buntin
Extension Entomologist
Aphids in Alfalfa

- Aphids can be very abundant without causing damage.
- Cut early if possible.
- Insecticides if needed

Potato Leafhopper

- Thresholds (hoppers per sweep)
  - 3-7 in – 0.5
  - 8-10 in – 1.0
  - 11-14 in – 2.0
  - 14+ in – 4.0 or cut

Blister Beetles

- Contaminate hay, crush beetles in hay
- Aggregation of beetles
- Early cutting has reduced risk of infestation

Perennial Peanut

- Pest insects not well studied
- Grasshoppers,
- Potato leafhopper??
- Aphids & Peanut Stunt Virus
  - PSV is transmitted by aphids
- Insecticides:
  - Mustang MAX
  - Baythroid XL
  - Sevin & Warrior (maybe)

Fire Ant Life Stages

- Social insects with division of labor among castes
- Queens lay as many as 200 eggs per day
- The average colony contains 100,000 to 500,000 workers.
- Winged reproductives leave the mounds in nuptial flights and found new colonies

Perennial Pastures

- Treat in pastures where heavy livestock birthing will occur.
- In hay pastures, treat when mounds are so numerous they interfere with haying operations.
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**Bait** = carrier + food attractant + active ingredient (insecticide or growth regulator)

**Fire Ant Baits for Hay fields**
- **AMDRo or AMDRO PRO (HYDRAMETHYLNON)** – 1 to 1.5 lbs per acre.
- **EXTINGUISH (METHOPRENE)** – 1 to 1.5 lbs per acre.
- **EXTINGUISH PLUS (AMDRo)** – 1.5 lbs per acre.
- **AWARD (=LOGIC) (FENOXYCARB)** - (Non-food animals, Horse only).

**Fire Ant Distribution in United States**
- Introduced Mobile, AL in 1918 and 1930’s

**Reasons not to control fire ants**
- Cost.
- Special equipment for broadcasting.
- Usually <80% control.
- If stop control, may have initial rebound greater than original infestation.
- Fire ants help suppress other insects.

**Fire Ant Quarantine on Hay Transport**
- Hay and crop straw regulated.
- Ship anywhere within quarantine area.
- All of SC, GA, FL, AL, MS and LA.
- Outside area may require permit.
- USDA: “Both baled hay and straw stored in direct contact with the ground are ineligible for movement.”
- Hay bales remain in field only a short time.
- Stacked bales: bottom layer cannot be shipped.
- Currently no insecticide treatments in hay or straw.

**Questions?**