2010 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, Blister beetles

- Perennial peanuts

- Fire ants

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

Five or more generations per year.

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Hot, dry summers favor the development of fall armyworm!

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 (½ inch or longer) per sq. ft:

Treat larvae with an insecticide when they are small, before they have caused damage.
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Fall armyworm Control

<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>Lannate 2.4LV</td>
<td>2 pt</td>
<td>7 (3 for hay)</td>
</tr>
<tr>
<td>Mustang MAX</td>
<td>4 fl oz</td>
<td>0 (1 for hay)</td>
</tr>
<tr>
<td>Karate Z (2.08)</td>
<td>1.28 - 1.92 fl oz</td>
<td>0 (7 for hay)</td>
</tr>
<tr>
<td>Baythroid XL</td>
<td>2.6 - 2.8 fl oz</td>
<td>0 (0 for hay)</td>
</tr>
<tr>
<td>Intrepid 2F (suppl.)</td>
<td>4 - 8 fl oz</td>
<td>0 (7 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 (1 for hay)</td>
</tr>
</tbody>
</table>

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

Chinch bugs
- Suck plant juices causing plants to be yellowed, stunted or death.
- Usually worse in dry conditions.
- Very difficult to control.
- Insecticides,
  - Mustang MAX (4 fl oz)
  - Karate Z (1.92 fl oz.)
  - Baythroid XL (2.8 fl oz.)
  - Use Max. label rate

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

Grasshoppers
- Eat foliage, nymphs most damaging.
- Worse in dry conditions.
- Edge treatment possible.
- Adults hard to kill.
- Insecticides,
  - Sevin / Carbaryl 4L, 80S
  - Baythroid XL (2.8 oz)
  - Mustang MAX
  - Karate Z
  - Dimilin 2L (1-2 oz/A, small nymphs (preventive)).

Grubs, May beetles & June beetles

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

Dr. David Buntin
Extension Entomologist
Life Cycle of the Green June Beetle

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

Larvae damages roots, disrupt soil contact with roots

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

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>

Green June Beetle Control

- Insecticides:
  - *Sevin* (80S, 50WP, 4F) other brands of carbaryl @ highest rate
  - Do not graze or cut hay for 14 days after application.
- Coverage is important - mow or graze before applying insecticide.
- Boom sprayer with 25-30 gal. water per acre.
- Apply late in the day.
- Check field after a week to determine if a second application is needed.

May beetles, Chafer & 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.

Threshold ($100/ton):
- 30-40% infested terminals and larvae present.
- Sweep net: 20+ larvae per sweep
  - Stem count:
    - 5-12": 0.5 larvae per stem,
    - 12-14": 1.0 larvae per stem,
    - 14": 1.5 larvae per stem

Insecticides:
- Lorsban 4E @ 1-2 pt/A
- Pyrethroids:
  - Baythroid XL / Tombstone
  - Karate Z, Warrior 1CS, Silencer, others
- Mustang MAX,
- Permethrin
- Steward 1.25SC
  - 20+ gal spray/A; Check harvest interval.

Other Alfalfa Insects
- Pea aphid
- 3-Cornered alfalfa hopper
- Various caterpillars
- Potato leaf hopper
- Spotted alfalfa aphid
- Blister Beetles
  - Toxic to horses.
  - Contaminate hay, crush beetles in hay.
  - Aggregation of beetles.
  - Early cutting has reduced risk of infestation.
- Perennial Peanut
  - “Pest free”, Insects not well studied
  - Aphids & Peanut Stunt Virus
    - PSV is transmitted by aphids
    - Aphid control?
  - Grasshoppers.
  - 3 Cornered alfalfa hopper, Potato leafhopper??
  - Caterpillars / armyworms.
  - Others?
Perennial Peanut Insecticides

- Mustang MAX (EC), 2.8 – 4.0 fl. oz / acre.
- 3-day cut-graze interval.
- Dipel DF / ES (other Bt products): armyworms
- Others?????

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

Fire Ant Distribution in United States

- Introduced Mobile, AL in 1918 and 1930’s

Fire Ant Quarantine and 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 (GA Dept. AG).
- 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.
- Currently no insecticide treatments for hay or straw.


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.

Fire Ant Baits for Hay fields

- AMDRO or AMDRO PRO (HYDRAMETHYLNON) 1 to 1.5 lbs per acre. 7-day harvest interval
- EXTINGUISH (METHOPRENE) – 1 to 1.5 lbs per acre.
- EXTINGUISH PLUS (AMDRO) – 1.5 lbs per acre.
- ESTEEM Ant Bait (PYRIPROXYFEN) 1.5 – 2 lb per acre; 1 day harvest interval. Mix with Amdro Pro
- AWARD (FENOXYCARB) - (Non-food animals, Horse only). 1 – 1.5 lb per acre
Fire Ant Baits for Pasture / Hay fields

- Usually <80% control.
- About $15 per acre.
- Skip swath: every other 25 ft swath, almost full control.
- Aerial application.

- Pastures: June after most mating flights for 1 application per year.
- April treatment may re-infest in May / June

May not be feasible in South GA.