What’s Bugging You?
Pumpkin Insect Management

Let’s Look at Beneficial Insects First
(Parasitoid Wasps)

‘Parasitic Wasps’ are not actually parasites, they are parasitoids. A true parasite is something that lives at the expense of its host but doesn’t actually kill it. Parasitoids nearly always kill their host.

Wasp Parasitoid of Aphids

Aphid Mummies

Aphids killed by parasitoid wasps
Image by Alan Windham, UT

Braconid Wasp Emerging From Aphid

Tachinid Fly Eggs on Stink Bug

Image by UPICextra
**Big-Eyed Bugs (Predators)**

*Color:* Usually Black or Pale Yellowish Green with Minute Black Spots on Head and Thorax.

*Facts:* 1/8 to 1/4 in. Long, Native Predators in Orchards and Field Crops.

*Food:* Aphids, Leafhoppers, Caterpillars, Plant Bugs, and Mites.

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**Minute Pirate Bugs (Predators)**

*Color:* Black-and-White Patterned.

*Facts:* Sold Commercially to Control Greenhouse Pests.

*Food:* Adults and Nymphs Feed on Spider Mites, Thrips, Small Caterpillars, Leafhopper Nymphs, Small Insects, & Eggs.

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**Damsel Bugs (Predators)**

*Color:* Yellowish, Gray, or Brown.

*Facts:* Adults Overwinter and Emerge in April and May.

*Food:* Aphids, Thrips, Plant Bugs, Leafhoppers, Treehoppers, Small Caterpillars, and other Insects.

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**Hover Fly Larva Eating Aphids**

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**Lady Beetle Eggs**
**Lady Beetle Larvae & Adults**

1. Convergent Lady Beetle  
2. Lady Beetle Larva  
3. Spotted Lady Beetle  
4. Twice-Stabbed Lady Beetle

**Lady Beetle Pupa**

**Pests (Aphids)**

- **Aphid Insecticides**
  - Pymetrozine (Fulfill 50 WDG)
  - Flonicamid (Beleaf 50 SG)
  - acetamiprid (Assail 30 SG)
  - bifenthrin (Brigade 2EC & other brand names)
  - thiamethoxam (Actara 25 WDG, Platinum 2SC)
  - imidacloprid (Admire Pro 4.6 F)

**Pymetrozine (Fulfill 50 WDG)**

- Affected aphids and whiteflies stop feeding shortly after exposure, but they may remain on the foliage until they die, which is usually within 4-10 days.

- Excellent translaminar movement in the sprayed leaf and is rainfast as soon as the spray dries.
Pymetrozine (Fulfill 50 WDG)
- Mode of Action Group 9B, selective homopteran feeding blockers
- Pyridine azomethine insecticide class

Flonicamid (Beleaf 50 SG)
- Mode of action group 9C, selective homopteran feeding blockers
- Pyridine carboxamide insecticide class
- Rapid feeding cessation although the aphids and plant bugs could remain on the plant until they desiccate

acetamiprid (Assail 30 SG)
- MOA Group 4, Neonicotinoid class of chemistry
- Translaminar activity (moves across leaf from spray side to unsprayed side)
- Rainfast once the spray has dried, 0 day PHI
- For control of aphids, whiteflies, squash vine borer and several other pests on pumpkins

Thiamethoxam (Actara 25 WDG, Platinum 2 SC)
- MOA Group 4, Neonicotinoid insecticide class
- Soil applied systemic
- Recommended for control of aphids, cucumber beetles and whitefly on pumpkins

Thiamethoxam (Actara 25 WDG, Platinum 2 SC)
- Actara is rapidly taken up into the foliage after application and rainfast once dried on treated plants
- Actara is recommended for control of aphids and whiteflies on pumpkins

Imidacloprid (Admire Pro 4.6 F)
- MOA Group 4, Neonicotinoid insecticide class
- Soil applied systemic
- Recommended for control of aphids, cucumber beetles and whitefly on pumpkins

Platinum is a long lasting soil applied systemic insecticide
Platinum is labeled for use on tobacco, cucurbit vegetables, fruiting vegetables, tuberous and corm vegetables
Platinum is recommended for aphid and whitefly control on pumpkins
**Silverleaf Whitefly**

**Whitefly Insecticides (New Chemistry)**
- pyriproxyfen (Knack 0.86 EC)
- thiamethoxam (Actara 25 WDG, Platinum 2 SC)
- imidacloprid (Admire 2F, Admire Pro 4.6 F)
- dinotefuran (Venom 70 SG)
- acetamiprid (Assail 30 SG)
- buprofezin (Courier 40 SC)
- spiromesifen (Oberon 2 SC)

**Pyriproxyfen (Knack 0.86 EC)**
- Insect growth regulator that suppresses development within the whitefly egg & it inhibits metamorphosis & adult emergence
- Translaminar activity in leaf
- MOA Group 7, Pyridine insect growth regulator insecticide class

**Cucumber Beetles**

**Striped Cucumber Beetle Feeding Damage**

Heavy adult feeding can kill transplants or seedlings within 1 to 2 days while feeding on roots by the larvae can stunt plants, delaying maturity and fruit development

**Southern Corn Rootworm or Spotted Cucumber Beetle**
**Bacterial Wilt Susceptibility**

- Jack-o-lantern pumpkins and most varieties of squash are rarely susceptible (this is good)
- Hubbard and butternut squash are susceptible
- Some processing pumpkins that are a cross between jack-o-lantern and butternut are susceptible
- Muskmelons and cucumbers are very susceptible

**Cucumber Beetles**

- Since jack-o-lantern pumpkins are rarely susceptible to bacterial wilt, insecticides are justified only to stop beetles from defoliating plants or feeding on the fruit

**dinitofuran (Venom 70 SG)**

- MOA Group 4, Neonicotinoid insecticide class of chemistry
- High water solubility for easy uptake by roots and rapid translocation in plant and rapid knockdown of pests
- When applied to foliage, it is rapidly absorbed and has translaminar movement

**Venom 70 SG**

- Recommended for control of thrips and whiteflies on pumpkin

**buprofezin (Courier 40 SC)**

- MOA Group 16, Inhibits chitin biosynthesis – Type 1 (insect growth regulator)
- Effective against nymph stages of whiteflies on cucurbits
- Suppresses oviposition by adult insects & reduces viability of eggs

**buprofezin (Courier 40 SC)**

- Treated susceptible pests may remain alive on the plant for 3-7 days, but feeding damage is typically very low
- Good coverage is essential since it does not have systemic or translaminar activity
- It is not disruptive to beneficial insects & mites
**Spiromesifen (Oberon 2 SC)**

- Active on contact on all development stages of mites, although juvenile mites are more susceptible than adults.
- Effective against whitefly nymphs and has a significant effect on the pupal stage.
- Novel mode of action (MOA Group 23, inhibitors of lipid biosynthesis) and in the Tetronic acid insecticide class.

**Twospotted Spider Mites**

- Nymph
- Larva (6 legs)
- Egg
- Adults

**Caterpillar Control on Pumpkins**

- Pyrethroids such as permethrin (various brand names), bifenthrin (various brand names), Danitol 2.4 EC, & Asana XL.
- Older chemistry (Thionex 3 EC, Thionex 50 WP).
- Indoxacarb (Avaunt 30 WDG).
- Methoxyfenozide (Intrepid 2F).
- Spinetoram (Radiant 1SC).
- Rynaxypyr (Coragen 1.67 SC).
- Flubendiamide (Synapse 24% WG).

**Pickleworm**

**Pickleworm Pupa and Moth**
**Indoxacarb (Avaunt 30 WDG)**

- New oxidiazine class of insecticides, Novel MOA Group 22 A, Voltage-dependent sodium channel blockers
- Blocks the movement of sodium ions into certain nerve cell ion channels, resulting in paralysis and death of the pest species
- Reduced-risk pesticide with minimal impact on beneficial insects and mites

**Indoxacarb (Avaunt 30 WDG)**

- Primarily a larvicide, but it also has activity on eggs and adults of many insect pests
- Broad-spectrum lepidopteran insecticide that also controls other pests including Colorado potato beetle, leafhoppers, and tarnished plant bug

**Yellowstriped Armyworm**

- Barrel-chested appearance of larva
- Large black spot above last pair of true legs

**Methoxyfenozide (Intrepid 2F)**

- MOA Group 18 Biopesticide Insect Growth Regulator, Diacythydrazine Class
- Feeding typically ceases within hours of ingestion
- Within several days, lepidopterous larvae undergo an incomplete & developmentally lethal premature molt

**Methoxyfenozide (Intrepid 2F)**

- Virtually no effect on any Order of insects or arthropods except Lepidoptera
- This conservation of beneficial arthropods makes it an ideal tool for Integrated Pest Management
- While rainfast as soon as dry, efficacy or residual will of course be reduced with exposure to rainfall or irrigation

**Spinetoram (Radiant)**

- MOA Group 5, Nicotine acetylcholine receptor agonists (not Group 4), Spinosyn Class, soft on most parasitoid & predaceous insects
- Longer residual control and somewhat better efficacy than SpinTor
- For control of lepidopterous caterpillars (not for control of yellowstriped armyworm), leafminers, & thrips
- We have replaced SpinTor with Radiant for lepidoptera caterpillar control in our recommendations although SpinTor is still a good choice for many situations
**Chlorantraniliprole or Rynaxypyr (Coragen)**

- MOA Group 28, Ryanodine receptor modulators, New class of insecticides, the anthranilic diamides, with a novel mode of action
- Has contact activity but it is most effective through ingestion of treated plant material
- Conserves certain beneficial arthropods (predators and parasites)
- Systemic (soil applied) and translaminar (foliar applied)

**Flubendiamide (Synapse WG)**

- MOA Group 28, Anthranilic diamides class of insecticides, Same MOA Group and insecticide class as with Coragen
- For control of Lepidopteran caterpillars only
- Easy on beneficial arthropods
- Spray coverage is important
- Provides good residual (10-11 days)
- One day pre-harvest interval

**Squash Vine Borer**

- Adult is a clearwing moth related to dogwood borer that overwinters as pupa
- Starts laying eggs when cucurbits begin to bloom

**Squash Vine Borer Control**

- acetamiprid (Assail 30 SG)
- bifenthrin (Brigade 2 EC & other brand names)
- esfenvalerate (Asana XL)
- permethrin (various brand names)
- endosulfan (Thionex 3 EC, Thionex 50 WP)
Squash Vine Borer

Look for first sign of borer frass at entrance holes in stems in May-June. Two insecticide applications spaced 5 to 7 days apart will control the majority of newly hatching larvae before they enter vines. A second generation occurs in August.

Squash Bug

Squash BUGS

- Squash bugs prefer squash and pumpkins over other cucurbits
- The key to management is early detection and control of nymphs

Squash Bug Control

- Pyrethroids - bifenthrin, permethrin, esfenvalerate (Asana XL)
- carbaryl (Sevin and other brand names)
- dinotefuran (Venom 70 SG)

Horned Squash Bug

High populations can cause fruit to collapse or be unmarketable.
Think Big!

Wendel Smith in Lawrence County

Questions?

Squash bugs

http://www.sripmc.org/docs/SoutheasternVegetableGuide.pdf