Aphids
Damage to Plants: Honeydew & dark frass, leaf discoloration, puckered leaves.
Solutions:
• Green Lacewing - Chrysoperla rufilabris
• Ladybugs - Hippodamia convergens
• Minute Pirate Bug - Orius insidiosus
• Assassin Bugs - Zelus renardii
• Aphid Parasites - Aphelinus abdominalis, Aphidius ervi & Aphidius colemani
• Aphid Predator - Aphidoletes aphidimyza
• Spinosad
• Beauveria bassiana

Budworms
Damage to Plants: Chewed, deformed or dying buds.
Solutions:
• Minute Pirate Bug - Orius insidiosus
• Assassin Bugs - Zelus renardii
• Moth Egg Parasites - Trichogramma sp.
• Spinosad
• Bacillus thuringiensis var. kurstaki (Btk)

Cutworms
Damage to Plants: Missing or damaged seedlings cut right at soil level.
Solutions:
• NemAttack Beneficial Nematodes
  - Steinernema carpocapsae (Sc)
• Moth Egg Parasites - Trichogramma sp.
• Spinosad
• Bacillus thuringiensis var. kurstaki (Btk)
• Cutworm collars

Flea Beetles
Damage to Plants: Jumping insects, chewed leaves, small white buckshot holes.
Solutions:
• Assassin Bugs - Zelus renardii
• Beauveria bassiana

Cyclamen & Broad Mites
Damage to Plants: Flowers can wither, distorted leaves, leaves curled inward, dark & streaked foliage, compact leaf masses.
Solutions:
• Mite Predator - Neoseiulus (=Amblyseius) fallacis
• Amblyseius andersoni, Neoseiulus (=Amblyseius) californicus & Amblyseius swirskii
• Thrips Predator - Neoseiulus (=Amblyseius) cucumeris

Fungus Gnats
Damage to Plants: Yellowing leaves, wilting plants, lack of root structure, damage may appear as nutrient deficiency.
Solutions:
• Fungus Gnat Predator - Stratiolaelaps scimitus (=Hypoaspis miles)
• Rove Beetle - Dalotia coriaria
• NemAttack Beneficial Nematodes
  - Steinernema feltiae (Sr)
• Beauveria bassiana
• Bacillus thuringiensis israelensis (Bti)

Grubs
Damage to Plants: Yellowing leaves, wilting plants, lack of root structure, damage may appear as nutrient deficiency, non-existent roots.
Solutions:
• NemaSeek Beneficial Nematodes
  - Heterorhabditis bacteriophora (Hb)
• NemAttack Beneficial Nematodes
  - Steinernema riobrave (Sr)

MEET OUR BENEFICIAL INSECTS

Green Lacewings
Assassin Bugs
Minute Pirate Bugs
Ladybugs

Whitney Cranshaw, Colorado State University, Bugwood.org
Alton N. Sparks, Jr., University of Georgia, Bugwood.org
David Jones, University of Georgia, Bugwood.org
R.J. Reynolds Tobacco Company, Bugwood.org
**Mealybugs/Scale**

**Damage to Plants:** Leaves may wilt, drop off easily, be discolored or reduced in size. Infested plants may have a distorted stem or growing points.

**Solutions:**
- Ladybugs - *Hippodamia convergens*
- Mealybug Destroyer - *Cryptolaemus montrouzieri*

**Root Aphids**

**Damage to Plants:** Lack of vigor, withering leaves, yellowing leaves, signs of nutrient deficiency.

**Solutions:**
- NemAttack Beneficial Nematodes - *Heterorhabditis bacteriophora (Hb)*
- *Beauveria bassiana*

**Russet Mites**

**Damage to Plants:** Leaflets curl, chlorosis, necrosis, lower leaves dry out, leaves look bronze in color.

**Solutions:**
- Thrips Predator - *Neoseiulus (=Amblyseius) cucumeris*
- Mite Predator - *Amblyseius andersoni, Neoseiulus (=Amblyseius) fallacis, Neoseiulus (=Amblyseius) californicus & Galendromus occidentalis*
- Sulfur

**Slugs/Snails**

**Damage to Plants:** Silver trail left on leaves, holes in leaves.

**Solutions:**
- Spinosad
- Iron Phosphate

**Spider Mites**

**Damage to Plants:** Webbing, leaf edges curling or burned, slowed growth, speckled, leathery golden leaves.

**Solutions:**
- Mite Predators - *Amblyseius andersoni, Phytoseiulus persimilis, Neoseiulus (=Amblyseius) fallacis, Mesoseiulus longipes, Galendromus occidentalis & Neoseiulus (=Amblyseius) californicus*
- Minute Pirate Bug - *Orius insidiosus*
- Spidermite Destroyer - *Feltiella acarisuga & Stethorus punctillum*
- Ladybugs - *Hippodamia convergens*
- Assassin Bugs - *Zelus renardii*

**Slugs/Snails**

**Damage to Plants:** Silver/bronze scarring on leaves & stems, browning & drying leaves, puckered leaves.

**Solutions:**
- Green Lacewing - *Chrysoperla rufilabris*
- Assassin Bugs - *Zelus renardii*
- Mite Predator - *Amblyseius swirskii*
- NemAttack Beneficial Nematodes - *Steinernema feltiae (Sf)*
- Minute Pirate Bug - *Orius insidiosus*
- Fungus Gnat Predator - *Stratiolaelaps scimitus (=Hypoaspis miles)*
- Spinosad
- *Beauveria bassiana*
- Thrips Predator - *Neoseiulus (=Amblyseius) cucumeris*

**Whiteflies**

**Damage to Plants:** Piercing/sucking marks, dust like substance when touched, silver/white coloring.

**Solutions:**
- Green Lacewing - *Chrysoperla rufilabris*
- Minute Pirate Bug - *Orius insidiosus*
- Whitefly Parasite - *Encarsia formosa & Eretmocerus eremicus*
- Mite Predator - *Amblyseius swirskii*
- Whitefly Predator - *Delphastus catalinae*
- *Beauveria bassiana*

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**ARBICO Organics Difference**

Visit arbico-organics.com for our full line of beneficial, biological and botanical pest control solutions.

**History**

We have been in business for over 35 years servicing conventional, transitional and organic growers.

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For the home gardener to the commercial grower, we pride ourselves on the quality and selection of available products.

**IPM Specialists**

Our on-staff IPM Specialists are ready to listen to your needs and recommend solutions tailored to your situation.