

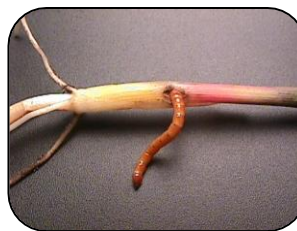
Pest Facts

- Wireworms are the larvae of many beetle species from *Agriotes*, *Conoderus*, *Limonius*, *Hemicrepidius* and *Melanotus* genera
- Wireworm species are destructive pests of crop plants worldwide, especially in temperate regions
- Wireworms are important in many spring-seeded crops because of potential stand losses
- In most cases, wireworms are spring pests only as they move deeper and may aestivate as soils warm during the summer
- Hosts: any fibrous rooted plant species, including corn, pasture, small grains and other grasses
- Larvae are opportunistic; unable to move more than a few inches, they must feed on what is present.



Impact on Crop

- Wireworms feeding on the seed may prevent germination and give rise to missing plants and uneven stands
- Feeding on the young plant or root system can give rise to uneven plant development and lower ability of the affected plants to compete
- Feeding on the whorl or growing point above the seeds may stunt, kill plants or give rise to abnormal development
- Yield loss is common when stands are damaged



Key Characteristics of Wireworm Damage

- Missing plant or seed
- Stunted or misshapen seedling
- Holes across leaves as whorl unrolls
- For positive ID, wireworm must be found

Related Species with Look-a-Like Symptoms



Billbug: adult and larvae feed on young seedling; adult may feed to growing point and make similar row of holes in expanding leaves



Stinkbug: may probe seedling and dissolve growing point causing stunting, tillering and holes in leaves



Cutworm: feeding on growing point may cause stunting, holes in leaves or tillering



Seed Corn Beetle: damaged kernel or young seedling



White Grub: root feeding causes uneven emergence and early growth; white grubs are often found along with wireworms in areas of the field

Seed Corn Maggot (right): feeds on germ, hollowing out the kernel; maggot (larva) or pupa may be present



Wireworm Larvae



Wireworm larvae have shiny yellow to brown hard bodies or creamy white soft bodies with dark and hardened heads and tails

Click Beetle (wireworm adult)



Adult wireworms, known as “click beetles”, are yellow, brown, black, or gray and slender with a bullet shaped abdomen

Wireworm Lifecycle

- Wireworms develop through complete metamorphosis
 - Egg, larva, pupa, adult
- Eggs are laid in the soil
- Larvae development can require one to five years depending on species; some species require six years per generation
- Generations often overlap
- Overwinters in soil
- Adults are known as click beetles

Management Considerations

- Favorable conditions for wireworms include porous, well-drained loam; previous crops of grasses and small grains in the rotation; early planting
- Scouting wireworms and determining the need for treatment is often difficult
 - Large numbers of wireworms can be clustered throughout the field
 - Wireworms can persist for several years
 - Larvae at different development levels coexist in soil
 - Damage is mostly below ground level
 - Wireworms move deeper as soils warm in late spring

Best Management Practices

- Wireworms must be treated at planting. Rescue treatments after emergence are ineffective.
- To determine if treatment is needed, wireworm population levels may be assessed before planting. Several methods and attractants are available.
- Insecticide seed treatments (ISTs) may provide early-season protection against wireworms. High-rate ISTs are more effective.
- Heavy infestations may require a soil insecticide treatment at planting.
- Currently there are no Bt or other transgenic technologies effective against wireworms.



Missing plants due to wireworm feeding



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