

Insect Management for Sweetpotatoes¹

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Sweetpotatoes are widely grown in Florida, especially on small farms. In addition to the traditional moist, orange-fleshed varieties, a dry, white-fleshed type, the boniato, is extensively grown in south Florida. Both types are the same species (*Ipomoea batatas*), and their pest problems are similar. The purpose of this article is to provide information on the insect pests of sweetpotato and their management for growers, Extension agents, and anyone interested in the topic.

Foliar pests such as whiteflies are generally of minor concern. They include leafminers, whiteflies, and armyworms. Due to the minor economic impact of foliar pests in sweetpotatoes, it is not recommended to spray insecticide in order to conserve the natural enemies of these pests.

The most serious pests are the immature stages feeding on roots: sweetpotato weevil, wireworms, banded cucumber beetle, pale-striped flea beetles, and sweetpotato flea beetles. In south Florida, *Diaprepes* spp. weevils and white grubs including larvae from the Cuban May beetle are recurrent pests. Other white grubs will also feed on sweetpotato roots. A table of pesticides labeled for sweetpotato can be found in the updated annual [UF/IFAS Vegetable production Handbook](#).

Sweetpotato Weevil *Cylas formicarius*

<http://edis.ifas.ufl.edu/IN154>

Eggs are oval, white or pale yellow, and are inserted in the vine or fleshy roots. The larvae are found in small holes on the surface of the potato. They can also be found in the vine. Development takes 1 month, and the adults can live up to 4 months. Adults are easily recognizable with their black head and elongated snout (Figure 1). The antennae, thorax, and legs are reddish-brown to orange, and the abdomen and elytra are metallic blue. Larvae are 1/3 inch in length, legless, and white (Figure 2).



Figure 1. Sweetpotato weevil adult.
Credits: Lyle Buss, UF/IFAS

1. This document is ENY-473, one of a series of the Entomology and Nematology Department, UF/IFAS Extension. Original publication date August 2001. Revised September 2007, March 2010, June 2013, and February 2017, July 2020, and August 2021. Visit the EDIS website at <https://edis.ifas.ufl.edu> for the currently supported version of this publication.
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Figure 2. Sweetpotato weevil larva in a sweetpotato tuber.
Credits: Lyle Buss, UF/IFAS

Sweetpotato weevil is the most serious pest of sweetpotatoes. Even minor damage by weevil larvae induces the production of terpenes that give an extremely bitter taste, making the tuber unmarketable. Some varieties of sweetpotato (Regal, for instance) have some resistance to the weevil as well as other beetle pests, but the most popular, orange-fleshed variety, Beauregard, is highly susceptible.

In areas of the state where weevils are not common, it is very important to use only certified slips or transplants from weevil-free areas to avoid introducing weevils. The adult weevil does not have wings, and the larval stages are most often moved by transporting infested plants or storage roots (potatoes).

Cultural practices can help reduce insect problems. Ideally, soil should be turned two to three months before planting. Weeds that can be used by weevils for overwintering should be controlled. Hot and dry conditions increase risk of sweetpotato weevil damage; therefore, irrigation significantly reduces the number of sweetpotato weevils and decreases damage. During the growing season, keeping storage roots covered with soil helps reduce damage by preventing female weevils from laying eggs directly in roots. Crop rotation is also important: avoid growing sweetpotatoes in the same field two years in a row. New fields should be at least a mile from old fields. Remove and destroy crop residues and culls immediately after harvest. Empty and clean potato storage areas thoroughly at least a month before harvesting the new crop.

Control of sweetpotato weevil can be achieved with insecticides, most notably systemic insecticides applied at planting. Growth regulators have also been described as particularly efficient for controlling sweetpotato weevil. The female sex pheromone of the sweetpotato weevil has

been described and can be used either for mass trapping of males or pheromone disruption. Pheromone-baited traps are found to be effective in reducing weevil numbers and damage resulting from sweetpotato weevil. Biological control agents include parasitoids and the fungus *Beauveria bassiana* that can be applied to the crops. Interestingly, fire ants are a good predator of sweetpotato weevil, and colonies within sweetpotato crops should be conserved when possible.

Wireworms *Conoderus rudis* and *Conoderus scissus*

http://entnemdept.ufl.edu/creatures/veg/beetle/conoderus_scissus.htm

http://entnemdept.ufl.edu/creatures/veg/beetle/conoderus_rudis.htm

Wireworms are the larvae of click beetles (Figure 3). They damage sweetpotato by feeding directly on the potato, where they make a circular hole at the surface. There are two species of wireworms prone to attack sweetpotato in Florida: *Conoderus rudis* and *Conoderus scissus* (Figure 4). Eggs are deposited just below the soil surface. The larvae of both species are hard, chestnut brown, smooth, and vary from $\frac{1}{3}$ to $1\frac{1}{10}$ inches in length. Young larvae need live vegetable material to survive and grow.

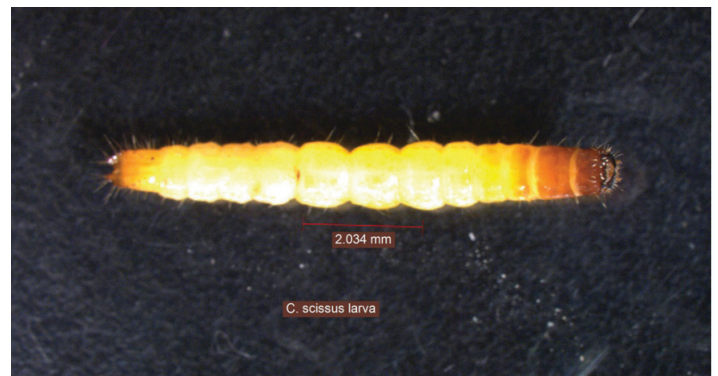


Figure 3. *Conoderus scissus* larva.
Credits: Dak Seal, UF/IFAS

Cultural practices include sanitation of sweetpotato crops and removal of field debris. Previous cropping history and crop rotation can affect the level of wireworm infestation. Crops such as sorghum or soybeans grown in the preceding season increase risks of damaging wireworm infestations. Conversely, winter wheat results in a significantly lower infestation. If using a cover crop during the summer, late planting of the cover crop also reduces wireworm densities. As insecticide treatments for wireworms must be applied at planting, an assessment of the wireworm population must be made in advance. Wireworms can be monitored with

bait traps or with the shovel method. Preventive treatment is recommended for an average of 4 or more wireworms per 20 shovelful (10 inches deep and 6 inches in diameter) of soil. .

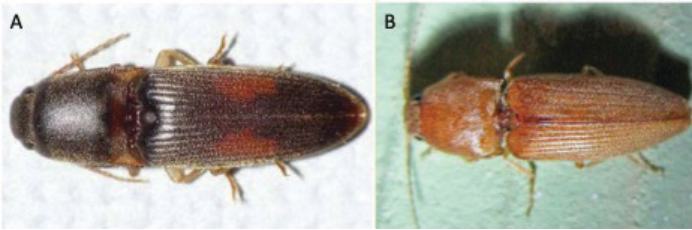


Figure 4. Adult click beetles (A) *Conoderus rudis*; (B) *Conoderus scissus*. Credits: Dak Seal, UF/IFAS

Banded Cucumber Beetle

Diabrotica balteata

<https://edis.ifas.ufl.edu/publication/in250>

Banded cucumber beetle is a chrysomelid beetle. The adult (Figure 5) is green and yellow with a red head. While the adults can defoliate sweetpotato, the major damage is made by the larvae (Figure 6) below ground. Banded cucumber beetle larvae damage sweetpotato roots by feeding. The larval body is white to yellow and $\frac{1}{10}$ to $\frac{1}{3}$ inch in length.



Figure 5. Banded cucumber beetle adult. Credits: Lyle Buss, UF/IFAS

Banded cucumber beetles can be controlled with granular insecticides applied at time of planting. Of the varieties currently grown in Florida, Jewel is the only one with some resistance to this beetle.



Figure 6. Banded cucumber beetle larva. Credits: Lyle Buss, UF/IFAS

White Grubs *Phyllophaga* spp.

<https://trec.ifas.ufl.edu/mannion/pdfs/May-JuneBeetle.pdf>

True white grubs are larvae of May and June beetles (*Phyllophaga* spp.) that encompass 18 species across Florida. Eggs are laid in the soil where the larvae develop for up to 3 years. Adults emerge between May and June to feed, mate, and lay eggs. Larvae are creamy white, between $\frac{3}{4}$ to $1\frac{1}{4}$ inches and C-shaped with a brown to reddish head and 3 pairs of brown legs (Figure 7). In older larvae, the hind of the abdomen is enlarged and darkened. White grubs feed on decaying vegetation, but they also feed on roots and can damage sweetpotato tubers.



Figure 7. White grub (*Phyllophaga* sp.). Credits: Lyle Buss, UF/IFAS

Sampling for white grubs is done by taking soil samples to a depth of 1 foot. The soil samples are examined, and larvae are counted. Treatment is recommended when there are over four white grubs per foot. The easiest cultural practice is to harrow the soil before planting the sweetpotato slip to expose larvae to predators.

Links

Vegetable Production Handbook of Florida - Potato Production <https://edis.ifas.ufl.edu/pdffiles/cv/cv13100.pdf>