BUG BIZ
Pest Management and Insect Identification Series
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Chrysodeixis includens, Soybean Looper

(Lepidoptera: Noctuidae)

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Description

Soybean looper is a species of owlet moth (Noctuidae) that utilizes many host plants and is a serious agricultural pest. Mature larvae are green caterpillars that may reach 1 1/2 inch (36 mm) or slightly more in length. Irregular white stripes are present along the sides and top surfaces that are variable in appearance among different caterpillars. Caterpillars possess three pairs of true legs on the forebody and three pairs of leglike fleshy prolegs, one pair each on the fifth and sixth abdominal segment, and a single pair on the end of the body. This arrangement of prolegs is typical of members of the subfamily Plusiinae, with many similar species. The common name "loopers" is a result of the characteristic looping motion of the caterpillars due to the distribution of prolegs. Eggs are round, about 1/50 of an inch (0.5 mm) in diameter and white in color, becoming brown just prior to larval hatch. Larvae are darker after hatching and become lighter and brighter green as they mature. Freshly formed pupae are greenish brown but darken as they mature. Pupal coloration varies according to the caterpillar's host plant.

Adult soybean looper moths have spread wingspans of 1 1/4 to slightly more than 1 1/2 inches (28 to 39 mm) and body lengths of 1/2 to 3/4 of an inch (13 to 18 mm). The forewings are a mottled golden to dark brown, with a pair of silver spots on each wing against a dark brown background about one-third the distance from the wing base. In some specimens, the two silver spots may be in contact. The hindwings are dark brownish gray, darkening towards the outer margins.

Due to the external similarities of many species in this group of moths, positive identification can be challenging for a nonspecialist. Proper identification is crucial to making correct decisions about pest management. In case of doubt, a qualified insect diagnostician or soybean pest specialist should be consulted.

Adult soybean looper (Russ Ottens, University of Georgia, Bugwood.org, Creative Commons 3.0).

Soybean looper, larva (Clemson University - USDA Cooperative Extension Slide Series, Bugwood.org, Creative Commons 3.0).

Life Cycle

As with all members of the order Lepidoptera, soybean loopers go through complete metamorphosis comprising egg, larva, pupa and adult development stages. Adult moths are active at night, when they visit flowers for nectar, seek mates and lay eggs. Females follow airborne pheromone plumes produced by males to locate mates. Females may lay up to 600 eggs in batches of various sizes on the undersides of leaves. Maximum adult life span is about two weeks. Caterpillars hatch in three days or less under optimal conditions and immediately begin feeding. Larvae begin feeding on the undersides of plant leaves, creating a distinctive window-like feeding pattern that progresses from the bottom of the plant to the top. As they grow older, they consume the entire leaf except for the thicker veins. Caterpillars undergo six growth stages (instars) as they mature. After the final stage, the larva transforms into a pupa within a loose cocoon, typically on the underside of a leaf. Duration of the pupal stage is seven to nine days, depending on conditions, especially temperature. A full generation requires less than one month in southern U.S., and soybean loopers in Louisiana can complete four generations annually.

Economic Importance

Soybean looper caterpillars feed on at least 73 species of plants in 29 families. Their pest status is mainly due to feeding on soybean, a favored host, although other crops such as cowpeas, cotton and sweet potato may be impacted. Soybeans adjacent to cotton fields appear to be particularly susceptible to damage due to availability of nectar from cotton flowers.

Larvae in later fourth to sixth instars cause the most damage. While soybean loopers feed primarily on foliage, they may attack soybean pods when present in large numbers, leading to more direct losses in production. During 2022 soybean looper was the third costliest insect pest of soybean in the U.S., accounting for almost 13% of insect related losses.

Management

Integrated approaches using biological enemies in combination with cultural and chemical management strategies that address various defoliating pests provide the best overall control of soybean looper. Regular field monitoring, particularly of the lower crop canopy, can help detect soybean looper larvae early and prevent damage.

Soybean looper damage (John C. French Sr., Retired, Universities:Auburn, GA, Clemson and U of MO, Bugwood.org, Creative Commons 3.0).

Biological control. Soybean looper eggs and caterpillars are utilized as hosts by a variety of parasitoid wasps, including *Copidosoma truncatellum* (Encyrtidae), *Campoletis sonorensis*, *Mesochorus discitergus*, *Microcharops bimaculatus* (all three Ichneumonidae), *Casinaria plusiae* (Chalcididae) and *Cotesia grenadensis* (Braconidae). Parasitoid flies in the family Tachinidae, such as *Voria ruralis* and *Patelloa similis*, attack the larvae. Additionally, products containing baculoviruses and *Bacillus thuringiensis* have been employed as means of controlling soybean looper infestations.

Chemical control. Insecticides such as indoxacarb, methoxyfenozide or spinetoram are utilized for control of soybean loopers and other defoliators when predetermined defoliation levels are detected during scouting. Pyrethroid, carbamate and organophosphate insecticides are not recommended since resistance to these products has been reported. Consult the current Louisiana Pest Management Guide for currently approved insecticides. Always follow label directions exactly.

Cultural control. Early maturing crop varieties can be grown to help prevent infestations of soybean loopers. Creating open spaces within the crop field can attract birds that feed on soybean looper larvae, providing natural control of the pest.

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Contact Us: For advice about arthropod identification or diagnosis, contact the LSU AgCenter Department of Entomology. Reach the department through the Contact Us webpage: https://bit.ly/36c4awm.

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