

# Caterpillars that attack potatoes

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Apart from the potato tuber moth, at least 12 caterpillars, all larvae of night flying moths, attack potatoes. These larvae may be troublesome in fields that are not regularly sprayed against other pests. They appear in potato fields overnight, especially where alternative host, e.g. weeds, are growing nearby and from where the moths colonize a potato field. The young larvae that hatch from eggs and the early instars usually do not inflict severe damage, and they are only noted when the larvae are near fully grown and when damage symptoms become noticeable. The caterpillars that have been recorded to damage potatoes are; African bollworm, tomato semi-looper, plusia semi-looper, tomato moth, lesser armyworm, scopula looper, citrus looper, axylia moth, owlet caterpillar, bear caterpillar, the translucent ermine and the death's head hawk moth. All these larvae damage potato plants by chewing irregular holes into leaves.

## **African bollworm (*Helicoverpa armigera*)**

Owing to confusion over the scientific names given to this pest in the past, the African bollworm is also known as the American bollworm. The African bollworm is one of the world's most polyphagous and destructive agricultural and home-garden pest. It attacks nearly all vegetable crops, cotton, maize, wheat, grain sorghum, oats, lucerne, hemp, cape gooseberry, chickpea and groundnut, and also damages many ornamental plants and various weeds. They range in colour from greyish-brown to brown to dull yellow. The moth is approximately 18 to 20 mm long. The moths live for 2–3 weeks and females lay on average 700 eggs, which hatch in 3–4 days, depending on temperature. Young larvae are darker in colour than older ones, with prominent small black spots or bumps on their backs from which hairs protrude. All larvae are covered with sparsely spaced hairs, but body colour may vary considerably. Older larvae may be green, yellowish, brown or even pink. A characteristically white to beige longitudinal band



The bollworm is a wide-spread pest and attack many crops.



The semi-looper larvae always walk with a loop.



The plusia semi-looper moth has a characteristic yellow mark on the wings.



The tomato moth caterpillar is a large and robust larva.

or stripe is always present, running the length of the body on both sides. Larvae moult (casting of skins) 6–7 times and reach a length of approximately 30 mm when fully grown. Four to six generations may be completed per year and a diapause phase (arrested development) occurs in winter.

## **Tomato semi-looper (*Chrysodeixis* sp.)**

This is a serious pest of tomato but also attacks banana, cotton, a few other crops as well as certain weed species. Although it is the most common looper found on potatoes, it is only occasionally troublesome. Unlike the African bollworm, this looper hides on the underside of leaves and is usually found on the lower parts of the plant. One generation is completed in approximately one month in summer, but the life cycle takes much longer in winter. The adult moth is brown

with pale/white oval markings near the centre of each forewing and approximately 20 mm long. Like most moths, they are active at night and are seldom seen in fields. One moth can lay as many as 600 eggs. The tomato semi-looper is under effective natural biological control in unsprayed fields.

## **Plusia semi-looper (*Trichoplusia orichalcea*)**

Also known as the cabbage semi-looper, this larva of a night-flying moth is also troublesome on bean, crucifers, pea, sunflower and other crops. Young larvae skeletonize potato leaves, but older larvae chew larger holes. These semi-loopers seldom become serious pests of potatoes, but may damage young plants. The adult moth (approximately 20 mm long) is easily recognized by a large, near-triangular, golden/yellow area on each forewing. As the name of semi-

loopers suggests, they walk by arching their bodies in a semi-loop while moving.

### **Lesser armyworm (*Spodoptera exigua*)**

Armyworms, as the common name implies, feed in groups. However, the "true" armyworm, *Spodoptera exempta*, is not known to feed on potatoes, but can be a pest on grasses, cereals and other crops. It is the lesser armyworm, *Spodoptera exigua*, which is sometimes found damaging foliage in potato fields. Also known as the pigweed caterpillar, lesser cotton leafworm or the beet armyworm, this pest also attacks lucerne, beet, maize, spinach, peas, groundnuts, cotton, tobacco, *Amaranthus* and grasses. Apart from South America, it has a worldwide distribution and is a pest wherever the above-mentioned crops are grown. The moths are approximately 15 mm long, pale-grey or brown with brown to orange markings on each forewing (13a). The hind wings are whitish with dark veins and outer edges. Up to 600 eggs are laid by each female, in clusters of 30–100 on lower leaf surfaces. During warm weather, the eggs hatch in four days and larvae are fully grown after approximately 12 days. They can grow up to 30 mm in length and colour may vary with growth stages. Young and older individuals may look different. Variation in mature caterpillars is also common, from dark green with a black line running along the sides of the body to pale green with a thin white line. Other colour variations may occur. Young caterpillars have the tendency to spin fine silken threads near their feeding sites, causing young tender leaves to curl upwards. These curls serve as hiding places for the young larvae during the

day. Mature larvae pupate in the soil and moths appear 10–14 days after pupation, depending on prevailing temperatures. Damage by larvae is usually not severe.

### **Tomato moth (*Spodoptera littoralis*)**

The tomato moth, *Spodoptera littoralis*, is also known as the cotton leafworm or grey-streaked moth. It also attacks soybean, tobacco, peanut, sweet potato, maize, spinach, cabbage, bean, cucurbits, tomato and sunflower. The wings of this moth have intricate geometric patterns of brown, grey and tan. They are approximately 20 mm in length. Females may lay up to 1500 eggs in groups of up to 300. The eggs are laid on the underside of leaves and are covered with brown or yellow down (hair and scales) from the moth's body. Young larvae are gregarious and may feed in groups, but disperse later. They are fully grown after 3–4 weeks. Mature larvae are large and robust, up to 40 mm in length. They vary considerably in colour, from brown to brown with distinct rows of black, crescent-shaped spots on a yellow lateral line, to darker in colour. Like most moth pests of potato, a generation is completed in approximately one month during the warmer seasons. Owing to their size, larvae can consume relatively large amounts of leaf material. However, they are not often found or troublesome in potato fields.

### **Other caterpillars**

Various other caterpillars are found to attack potatoes in South Africa. Those newly recorded include the Scopula looper (*Scopula* sp.), Citrus looper (*Ascotis reciprocaria*), the Axylia moth (*Axylia annularis*), the owlet caterpillar (*Nodaria*

*uliginosalis*), the bear caterpillar (*Automolis* sp.) and the translucent ermine (*Spilosoma lutescens*). The potato tuber moth is not regarded as a caterpillar but as a leafminer. Another very large caterpillar, the death's head hawk moth, *Acherontia atropos*, (up to 7 cm), is often found feeding on potato foliage. These caterpillars are sometimes noted in potato fields and may injure young potato plants. See "Guide to Potato Pests and their Natural Enemies", available from ARC-Vegetable and Ornamental Plant Institute, for photographs and more information on these caterpillars.

### **Control**

It is only the five caterpillar species discussed that may be considered as potential pests. The others occur in too low a number and are too infrequent to be labelled serious pests. Insecticides are available to control bollworm and loopers. However, most other insecticides used against other pests, e.g. tuber moth and leafminers, will also control the potato caterpillars. Even if these caterpillars are not controlled chemically, their presence will usually not result in significant yield loss. Only under exceptional circumstances, e.g. when the plants are small and/or when very large caterpillar numbers appear in fields, may foliage loss due to the pest cause significant yield loss. Smaller plots, e.g. those of small scale farmers, may be at a higher risk. In these cases, it is recommended that larvae be collected by hand and destroyed. Mortalities due to insect diseases and natural enemies play an important role in regulating caterpillar numbers in fields where chemical control is not implemented.