Prepared by CABI and EPPO for the EU under Contract 90/399003

Data Sheets on Quarantine Pests

Spodoptera eridania

IDENTITY

Name: *Spodoptera eridania* (Cramer)
Synonyms: *Laphygma eridania* (Cramer)
Prodenia eridania (Cramer)
Xylomyges eridania (Cramer)
This species has many other synonyms, see Todd & Poole (1980).
Taxonomic position: Insecta: Lepidoptera: Noctuidae
Common names: Southern armyworm (USA)
Semitropical armyworm (English/USA)
Gusano negro (Spanish)
Bayer computer code: PRODER
EPPO A1 list: No. 196
EU Annex designation: I/A1

HOSTS

S. eridania is a polyphagous generalist feeder recorded on a wide range of plant species including many grasses and dicotyledonous species. Crops damaged include aubergines, *Beta*, *Capsicum*, cassava, cotton, several Brassicaceae, a wide range of legumes, maize and other Poaceae, potatoes, sweet potatoes, tobacco, tomatoes, yams, and many pot plants and vegetables.

Many different crop hosts are available in the EPPO region, especially those more commonly grown in the southern part of the region. Sugarbeet and field tomatoes could be especially vulnerable, as well as a wide range of vegetables and flowers, including those grown in glasshouses.

GEOGRAPHICAL DISTRIBUTION

EPPO region: Not established, but recorded quite commonly most years as an accidental introduction from the New World.
North America: Mexico, USA (southern parts - Florida, North Carolina, South Carolina to southern Kansas, Texas and Washington). Vagrant at higher latitudes.
Central America and Caribbean: Cuba, Dominica, Dominican Republic, Grenada, Guadeloupe, Honduras, Martinique, Nicaragua, Puerto Rico, Trinidad and Tobago, St. Lucia, St. Vincent and Grenadines.
South America: Recorded throughout the tropical parts of this continent, including Brazil, Chile, Ecuador (Galapagos Islands), French Guiana, Guyana, Paraguay and Peru.
EU: Absent.

BIOLOGY

Eggs are laid in large batches on the leaves of the host plant, protected by a layer of grey bristles from the female abdomen. Development usually takes 4-8 days. Larvae, as with some other Noctuidae, are gregarious and remain together on the leaf for the first two instars, and the resulting damage is typically leaf skeletonization. The third instar larvae disperse and become more solitary and nocturnal. During the day they hide in the leaf litter or plant foliage, and emerge to feed on the leaves at night. Larval development usually takes 14-18 days. As with other Noctuidae, the rate of larval development is affected by the quality of diet and prevailing temperatures; the latter also affects the adult condition. Caterpillars can act as 'armyworms' and sometimes swarm and migrate to adjacent fields when food is scarce. Occasionally large larvae have been recorded acting as cutworms.

Pupation takes place in the soil in a weak earthen cell and typically requires 9-12 days. Adults are nocturnal in habit.

This is essentially a subtropical species and so a development temperature of 20-25°C is preferred, and breeding may be continuous. The life cycle can be completed in 28-30 days, but up to 40 days is common. There are several to many generations per year, the number depending on local conditions. Experiments in Brazil by Foerster & Dionizio (1989) showed that development at both temperature extremes was retarded - at 17°C the life cycle took 115 days and at 30°C it took 33 days and at this temperature pupae weighed less and survival rates were lower. As a generalist feeder which is easy to rear, this species is being used in many feeding experiments at the present time.

DETECTION AND IDENTIFICATION

Symptoms

Leaf-eating is the main damage to the host plant, and in extreme cases complete defoliation may occur. The caterpillars are not normally seen because they are nocturnal feeders, but the first two instars are gregarious and can be seen in clusters on the foliage. Initial damage to the leaves may be skeletonization. Tomato fruits may be holed. Large larvae sometimes act as cutworms.

Morphology

Eggs

Subspherical in shape and laid in large groups on the plant foliage, and covered with a layer of grey bristles (scales) from the abdomen of the female.

Larva

There are usually six instars. Fully grown caterpillars measure 35-40 mm. Young larvae are black with yellow lateral lines, but older instars are grey-brown with a dorsal row of paired black triangular spots, and subdorsal reddish lines when older; the head capsule is yellow-brown. Larvae are characterized by a prominent yellow subspiracular line which is broken by a dark (sometimes diffuse) spot on the first abdominal segment (Levy & Habeck, 1976). A full description of the larvae is given in Crumb (1956).

Pupa

A typical noctuid pupa, shiny brown, and 19-20 mm long.

Adult

A sturdy grey-brown moth, wing-span 28-40 mm, forewings grey sometimes with a central dark spot or bar, hindwings white. Adults might be confused with some European Cuculliinae, especially some *Cucullia*, but these latter moths usually do not have hindwings of the characteristically translucent white coloration. Also the forewing margin of *S. eridania* is squarer and less oblique - the Cuculliinae as a group have more slender, elongate and pointed wings than *Spodoptera* and other Amphipyrinae. The posterior angle

of the forewing is narrowly divided from the rest of the wing by an irregular, oblique, pale band. The principal definitive features are in the male genitalia (Todd & Poole, 1980).

MEANS OF MOVEMENT AND DISPERSAL

In the New World, *S. eridania* does not engage in long-distance migrations, so it would be most unlikely to make a transatlantic crossing as a flying adult. It is not known how the infestation of the Galapagos Islands was effected, but it might have been by flying moths. The frequent European records, most years, are usually of intercepted larvae on the foliage of infested host plants (Seymour, 1978, etc.), but occasionally in the UK and other parts of Europe larvae are found on plants and some adult moths are taken in light traps.

PEST SIGNIFICANCE

Economic impact

Usually only a minor pest on most crops in the New World, but occasionally serious infestations occur. Most damaging to tomato fruits and sweet potatoes, although many vegetables and flowers can be heavily attacked locally on occasions. Since most damage is caused by leaf-eating, light infestations on field crops can be tolerated and ignored, but on tomatoes and ornamentals control may more often be required. Defoliation can occasionally occur, especially in an 'armyworm' situation.

Control

Insecticidal sprays are the usual means of killing the larvae on the plant foliage when damage is seen. Insecticides recommended for *Helicoverpa* control can be used for *Spodoptera*; 17 chemicals are listed by King & Saunders (1984) and 29 by COPR (1983). Natural control by parasitic Hymenoptera and Tachinidae seems to be of importance. Since *S. eridania* is more often only a minor pest, control is only occasionally required.

Phytosanitary risk

S. eridania was recently added to the EPPO A1 list of quarantine pests, but is not listed as a quarantine pest by any other regional plant protection organization. As a subtropical species (temperature optima between 20 and 25°C) it would be most likely to become established in southern Europe. In the New World it is not especially recorded as a glasshouse pest, but in a new location (e.g. the EPPO region) it might become so. *S. eridania* occurs very regularly in Europe on imported plant produce from the New World, and it has been found on tomatoes and other local plants in the UK (Seymour, 1978). It is, therefore, obvious that the pest can be introduced to the EPPO region by trade pathways and that it could find suitable crop plants and climatic conditions. The addition to the EPPO list harmonizes it with EU Directive Annex I/A1.

PHYTOSANITARY MEASURES

Plants for planting should come from a place of production inspected and found free from the pest during the previous months. Certain types of plants (e.g. cuttings) may be treated by being held at low temperatures - less than 1.7°C for 2-4 days followed by fumigation (OEPP/EPPO, 1984).

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