

# LepIntercept

An identification resource for intercepted Lepidoptera larvae



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## CRAMBIDAE - *Neoleucinodes elegantalis* (Guenée)

### Taxonomy

Pyraloidea: Crambidae: Spilomelinae: *Neoleucinodes elegantalis* (Guenée)

Common names: tomato fruit borer

### Larval diagnosis (Summary)

- Stemma 1 and stemma 2 closely spaced
- Prothoracic shield without spots or faintly mottled
- Pale body pinacula
- SD1 pinacula on A2 and A7 not reduced
- Inconspicuous SD2 setae and pinacula on A3-6
- SV group on A1 unisetose
- SD1 anterior or anterodorsad of the spiracle on A8
- Host is a cultivated species of *Solanum*

### Host/origin information

*Neoleucinodes elegantalis* is most commonly intercepted on cultivated *Solanum* originating from Central or South America. Interceptions from Brazil account for more than 60% of all records.

Origin	Host(s)
Brazil	<i>Solanum</i>
Ecuador	<i>Solanum</i>
Honduras	<i>Solanum</i>
Peru	<i>Solanum</i>
Venezuela	<i>Solanum</i>

### Recorded distribution

*Neoleucinodes elegantalis* is widely distributed throughout Mexico, Central America, South America, and the Caribbean (Hayden et al. 2013).

### Identification authority (Summary)

Morphology, host, and origin are important considerations when identifying *N. elegantalis*. It seems safest to restrict identifications of *N. elegantalis* to those larvae with the combination of morphological characters listed above and originating from the New World on cultivated *Solanum*. Given the subtle larval differences among species of *Neoleucinodes*, interceptions on wild *Solanum* species should probably stop at genus unless the specimen very clearly fits characters of *N. elegantalis*.

### Pest characterization

(Based on Cavey 2001, Diaz et al. 2013, Hayden et al. 2013)

- Taxonomy: **Medium**. Species identification is often possible.
- Distribution: **High**. *Neoleucinodes elegantalis* is not present in the U.S.
- Potential Impact: **High**. *Neoleucinodes elegantalis* is a pest species.

This ranking characterizes *Neoleucinodes elegantalis* as quarantine significant for the U.S.

### Larval diagnosis (Detailed)

Capps (1948) described the larva of *N. elegantalis* and included a setal map. Diaz and Solis (2007), Diaz et al. (2013) and Hayden et al. (2013) added larval photographs, discussed its relationship to sibling species in the genus, and included detailed notes on identification. Other



Fig. 1: Late instar, lateral view



Fig. 2: Late instar, lateral view



Fig. 3: Head and thorax, lateral view



Fig. 4: T1 shield

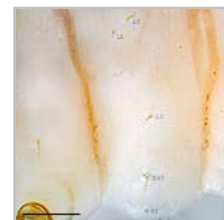


Fig. 5: SV group on A1

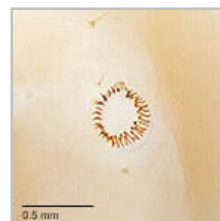


Fig. 6: Crochets



Fig. 7: Head



Fig. 8: Hypo. complex

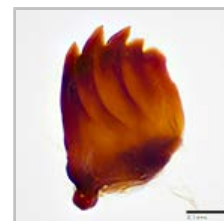


Fig. 9: Mandible

partial descriptions were given by Capps (1963), Passoa (1985), Weisman (1974, 1986), and Solis (2011).

Typically, the head and prothoracic shield are pale yellow, the body pinacula are not pigmented, and D1 on A2-8 lacks dark spots on the anterior margin of the pinacula (Weisman 1986). Capps (1963) mentioned that S1 is touching or anterior to a vertical line connecting stemmata 2 and 3, stemma 2 is closer to stemma 1 than stemma 3, and the prothoracic shield has light brown markings. He noted variation in the SV group of A1 (normally bisetose but frequently unisetose) and the crochets (often in a circle but weaker laterally on at least some of the prolegs). The first mandibular rib has an inner tooth (called a projection on the lower tooth by Capps).

Diaz and Solis (2007) separated *N. elegantalis* from the newly described *N. silvaniae* in several ways. *Neoleucinoides elegantalis* usually has flat pale body pinacula that is concolorous with the cuticle. These pinacula are dark, sclerotized, raised and contrasting in *N. silvaniae*, particularly on the mesothorax. The prothoracic shield of *N. elegantalis* has light brown markings but lacks a black reniform spot posterior to XD2. This is different from the dark brown prothoracic shield of *N. silvaniae* with a black reniform spot posterior to XD2. The SD2 seta on A3-8 is short and located on pale pinacula in *N. elegantalis*. Both SD2 and its pinaculum are more prominent in *N. silvaniae*.

Hayden et al. (2013) [see below] studied the larvae of *N. elegantalis*, *N. torvis*, and *N. prophetica*. Unlike most *N. elegantalis*, both *N. torvis* and *N. prophetica* have a spot on the anterior margin of D1 on A2-8 that is either dark or pale. The illustration of *N. torvis* differs from *N. elegantalis* in that the genal marking is large, only the dorsal surface is contrastingly pink and both the thoracic D and SD pinacula are large and pigmented. The prothoracic shield is mottled with no defined lateral spots and there is only a trace of a spot at the posterior margin. The larval photograph of *N. prophetica*, although dark from preservation, has the thoracic D and SD pinacula large and raised, perhaps being pigmented in living material. The large diameter of the prothoracic spiracle, compare to the spiracle on A1, seems unusual. The prothoracic shield is mottled, with no trace of spots. The SD1 pinacula of A2 and A7 are not reduced in any species of *Neoleucinodes* and SD1 is anterior or anterodorsad of the spiracle on A8 (Hayden et al. 2013).

As discussed in the data sheet for *L. orbonalis*, Weisman (1986) used the presence of a dark spot on the anterior margin of D1 on A2-8 to separate *L. orbonalis* from *Neoleucinodes*. However, some *Neoleucinodes*, including *N. elegantalis*, also have this spot (Solis 2011, Hayden et al. 2013).

Passoa (1985) cited a record for frequent captures of *D. nitidalis* in eggplant fruit from El Salvador. This could be a case of general confusion; both *D. nitidalis* and *N. elegantalis* have mature larvae with a similar coloration. It may also represent a case of *N. elegantalis* having a bisetose SV group on A1 as mentioned by Capps (1948). At least with port interceptions, most *Neoleucinodes* specimens are unisetose (SPIC).

## Identification authority (Detailed)

Morphology, host, and origin are important considerations when identifying *N. elegantalis*. The presence of a unisetose SV group on A1 seems to be very distinctive for recognizing *Neoleucinodes* and close relatives worldwide. It was used in several keys (Passoa 1985, Weisman 1986, Solis 2011, Hayden et al. 2013) for partially identifying *Neoleucinodes*. Other sibling species of *Neoleucinodes* with known larvae (*N. torvis*, *N. silvaniae*, and probably *N. prophetica*) have pigmented pinacula, at least on the mesothorax. The body pinacula of *N. elegantalis* are pale and D1 on A2-8 usually lacks dark or pale spots on the anterior margin of the pinacula.

Unlike other *Neoleucinodes* that occur throughout Latin America, *N. silvaniae* is currently only known from Colombia (Diaz et al. 2013). Old World interceptions cannot be *Neoleucinodes*.

It seems safest to restrict identifications of *N. elegantalis* to those larvae with stemma 1 and stemma 2 closely spaced, a prothoracic shield without spots that is at most faintly mottled, body pinacula that are pale, SD1 pinacula on A2 and A7 not reduced, an inconspicuous SD2 seta and pinaculum on A3-6, a unisetose SV group on A1, SD1 being anterior or anterodorsad of the spiracle on A8 and the host being a cultivated species of *Solanum*. Given the subtle larval differences among species of *Neoleucinodes*, and a need to study variation in the taxonomic characters, interceptions on wild *Solanum* species should probably stop at genus unless the specimen very clearly fits characters of *N. elegantalis*.

## More information

Hayden, J. E., S. Lee, S. C. Passoa, J. Young, J.-F. Landry, V. Nazari, R. Mally, L. A. Somma, and K. M. Ahlmark. 2013. **Digital Identification of Microlepidoptera on Solanaceae**. USDA-APHIS-PPQ Identification Technology Program (ITP). Fort Collins, CO.

## Origin records

*Neoleucinodes elegantalis* has been intercepted from the following locations:

Argentina, Aruba, Bolivia, Brazil, Colombia, Costa Rica (?), Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Peru, Suriname, Trinidad and Tobago, Venezuela

Origins from outside of Mexico, Central America, South America, and the Caribbean likely represent misidentifications and are not listed here.

## Host records

*Neoleucinodes elegantalis* has been intercepted on the following hosts:

*Abelmoschus esculentus*, Araceae, *Brassica* sp., *Cajanus cajan*, *Capsicum annuum*, *Capsicum*

*pubescens*, *Capsicum* sp., *Coccinea grandis*, *Cucumis* sp., *Cucurbita* sp., *Cyphomandra* sp., *Diospyros* sp., *Fabaceae*, *Inga edulis*, *Inga* sp., *Lucuma* sp., *Lycopersicon esculentum*, *Lycopersicon* sp., *Mangifera indica*, *Mentha* sp., *Passiflora edulis*, *Physalis ixocarpa*, *Psidium guajava*, *Sechium edule*, *Solanaceae*, *Solanum aethiopicum*, *Solanum berejena*, *Solanum betaceum*, *Solanum integrifolium*, *Solanum melongena*, *Solanum muricatum*, *Solanum quitoense*, *Solanum* sp., *Solanum torvum*, *Solanum tuberosum*, *Spondias* sp., *Syzygium jambos*, *Vigna unguiculata*, *Zea mays*

Plants listed here that are not cultivated species of *Solanum* need confirmation.

## Setal map

