

Insect Pests of Cotton

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SPOTTED BOLLWORM



Technical names: *Earias insulana*
Earias vitella

Family: Noctuidae

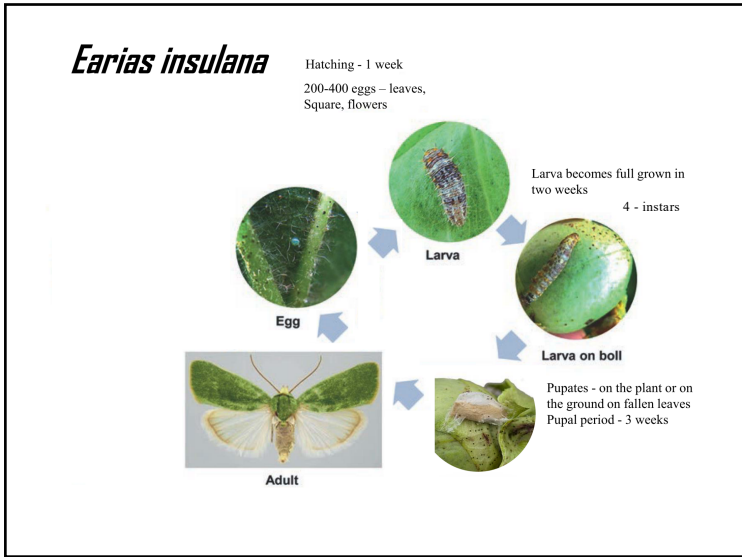
Order: Lepidoptera

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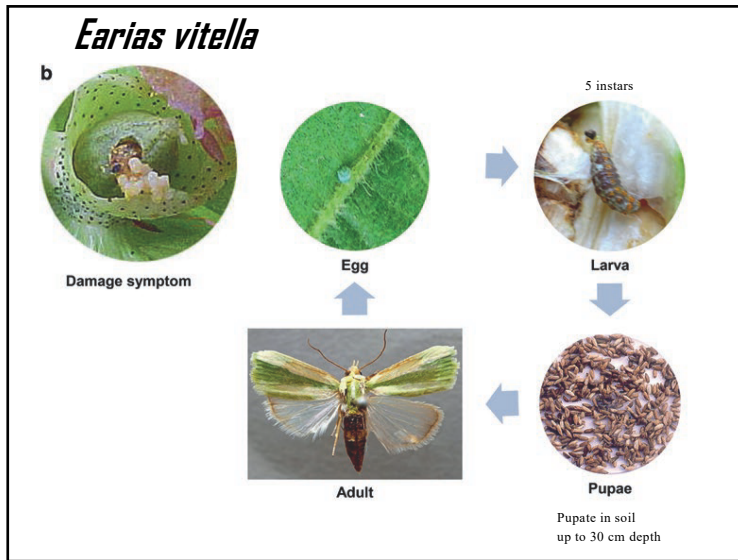
Identification

<p><i>Earias insulana</i></p> <ul style="list-style-type: none"> The eggs are light green Larva - greenish white with black marks on the body Adult moths - forewings completely green 	<p><i>Earias vitella</i></p> <ul style="list-style-type: none"> The eggs are green. Larvae - brownish. Longitudinal green band in the middle of fore wing 
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Damage

- Firstly, the larva bore on the young shoots which wither away and dry up
- Then they bore the squares, flowers and buds and eat the internal contents
- Lot of shedding of these parts
- Lint is also of poor quality

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Control

- Clean cultivation and destruction of alternate host plants
- Use of resistant varieties
- Natural enemies of the pest (predators, parasitoids) should be promoted in the field
- Application of insecticides
 - Cypermethrin EC 200-250/acre
 - Spinosad SC 80ml/acre
 - Emamectin benzoate EC 75ml/acre

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Pink Bollworm

Technical Name: *Pectinophora gossypiella*
 Family: Gelechiidae
 Order: Lepidoptera

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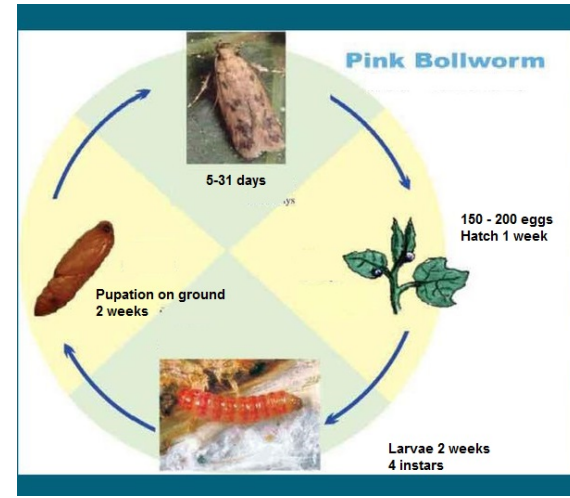
Identification

- Eggs - oval and white
- Larva - pink color
- Adults - dark brown with blackish spots on forewings



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Life Cycle



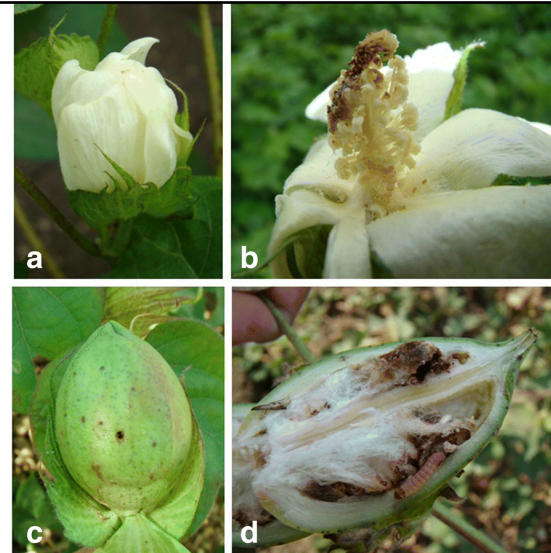
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Damage

- Larva bore the squares, flowers and bolls and eats the internal contents
- Two adjoining seeds join and form "Double Seed".
- Hibernating larvae lie in the double seed for many months and pass winter
- If the larvae enter in the squares, such squares do not open properly and called "Rosette Flowers"
- After attack on bolls the larvae close its entrance
- Lot of shedding of these parts
- Lint is of lower quality



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Control

1. Clean cultivation and destruction of sticks, fallen bolls
2. After picking, grazing of sheep on the unwanted bolls in the field
3. Natural enemies of the pest (predators and parasitoids) should be promoted in the field
4. Application of triazophos EC 1000ml/acre

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American Bollworms

- Technical name: *Helicoverpa armigera*
- Family: Noctuidae
- Order: Lepidoptera

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Identification

- Larvae – greenish with dark grey lines on body
- Moth – yellowish brown with black kidney shaped mark on underside of forewings

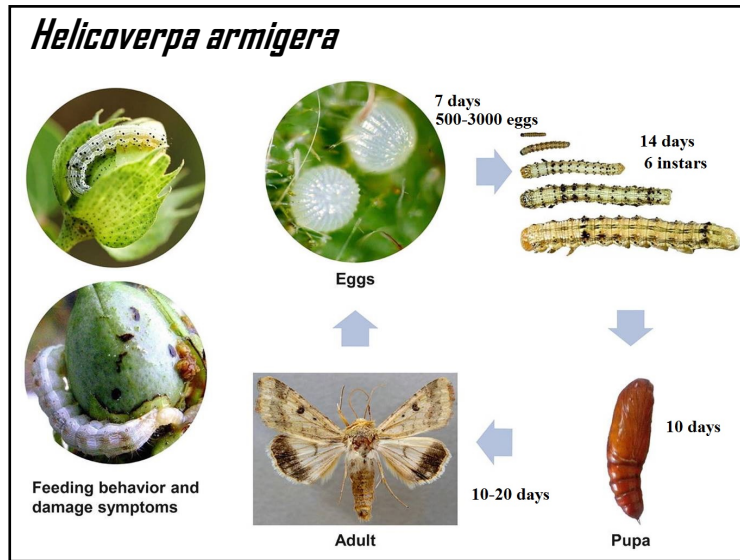


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Life cycle

- Female lay egg singly on fruiting parts, leaves
- Eggs - round, greenish yellow
- Pupate in soil
- Pupae – dark brown, sharp spine at end
- 8 generation per year
- Cannibalism

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Damage

- Larvae – polyphagous
- Feed on foliage, bolls – reduce yield
- Bolls show prominent hole
- Dirty faeces accumulate on the boll surface
- Damage is not uniform – in patches

Two photographs showing damage to a boll. The left image shows a boll with a prominent hole and dirty faeces accumulated on the surface. The right image shows a boll with a hole, illustrating the damage caused by the larvae.

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Control

- Avoid cultivation of alternate host like okra, tomato, tobacco
- Resistant cultivars
- Biological control agents; Ichneumonid wasp – larval parasitoid
- Spray profenofos EC 800 ml/acre

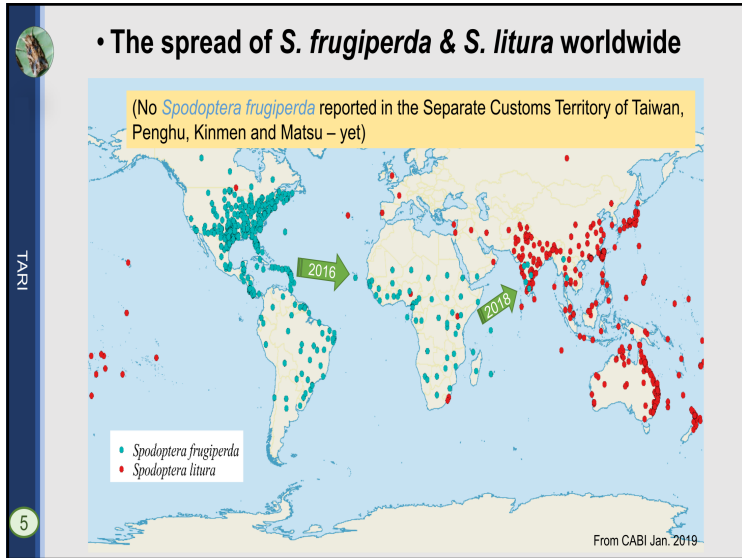
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Armyworm

- T.N: *Spodoptera litura*
- Family: Noctuidae
- Order: Lepidoptera

A photograph of an Armyworm moth (*Spodoptera litura*), showing its characteristic brown and black patterned wings and body.

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Identification

- Eggs: round, green color then turn yellow to black

Eggs

Egg mass Egg mass with early instars emerging

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- Larvae: dull brown – later turn green

Identification: larvae

Fourth and fifth instar larvae

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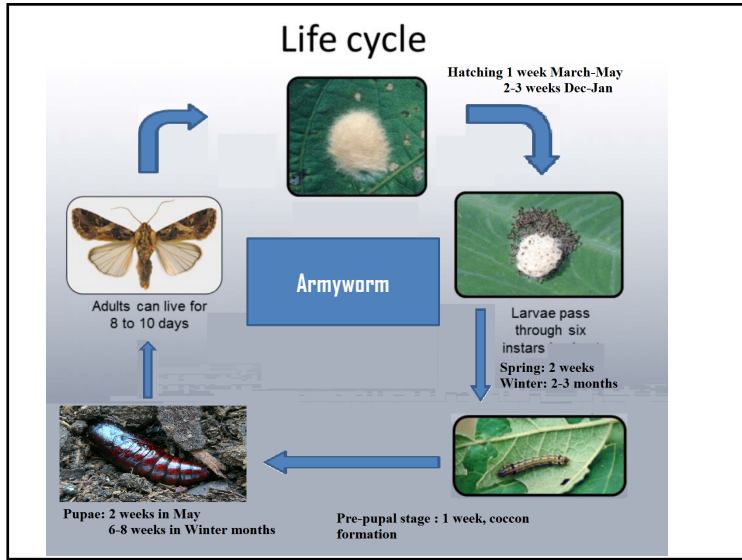
- Adult: pale brown

Identification: adults

female (left) and a male (right) male

Note: Positive identification requires dissection of adult.

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Damage

- Freshly emerged larvae – feed on tender leaves,
- Mature larvae – feed on older leaves, skeletonize them
- Fecal pellets are quite prominent
- In case of severe attack – whole leaves including midrib consumed – looks like grazed by cattle

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Case Study - Controlling *Spodoptera litura*

S. litura
(Tobacco cutworm, Armyworm)

- Order: Lepidoptera
- Family: Noctuidae
- Genus: *Spodoptera*

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Control

- Sticky traps and light traps
- Biological control
- Insecticides
 - Lufenuron EC 800ml/acre

Biological control agents

- Parasitoids
 - *Snellenius manilae* (Ashmead)
 - *Charops bicolor* (Szepligeti)
- Fungus
 - *Beauveria brongniartii*
 - *Metarhizium anisopliae*
- Bacteria (Commercial application)
 - *Bacillus thuringiensis*
- Virus
 - NPV
- Entomopathogenic nematodes (thread worms)



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Recorded Natural Enemy in the Separate Customs Territory of Taiwan, Penghu, Kinmen and Matsu	
	<i>Andrallus spinidens</i> (Fabricius)
Hemiptera	<i>Cantheconidea furcellata</i> (Wolff)
	<i>Orius strigicollis</i> (Poppus)
	<i>Zicrona saenulata</i> (Linnaeus)
Neuroptera	<i>Mallada basalis</i> (Walker)
	<i>Mallada desjardinsi</i> (Navás)
	<i>Apanteles ruficus</i> (Haliday)
	<i>Campoplex chionidae</i> (Uchida)
	<i>Charops bicolor</i> (Szepligeti)
	<i>Chelonus formosanus</i> (Sonan)
	<i>Cotesia plutellae</i> (Kurdjumov)
	<i>Cotesia ruficrus</i> (Haliday)
Hymenoptera	<i>Euplectrus</i> sp.
	<i>Meteorus</i> sp.
	<i>Microplitis rufus browni</i> (Ashmead)
	<i>Microplitis pallidipes</i> (Szepligeti)
	<i>Microplitis tubercuifer</i> (Wesmael)
	<i>Snellenius manilae</i> (Ashmead)
	<i>Telenomus remus</i> (Nixon)
	<i>Trichogramma dendrolimi</i> (Matsumura)
	<i>Calloida splendidula</i> (Fabricius)
Coleoptera	<i>Chlaenius naeviger</i> (Morantz)
	<i>Paederus fuscipes</i> (Curtis)
	<i>Pterostichus javanus</i> (Dejean)
Diptera	<i>Pseudogonia rufifrons</i> (Wiedemann)