

MAJOR INSECT PESTS OF CRUCIFERS

Diamondback moth: Plutella xylostella Cabbage head caterpillar: Crocidolomia spp. Cabbage webworm: Hellula undalis Striped flea beetle: Phyllotreta striolata Imported cabbageworm: Pieris rapae Cabbage looper: Trichoplusia ni Aphids: Myzus persicae, Lipaphis erysimi



Diamondback moth Plutella xylostella

Distribution: Cosmoploiton





Symptoms of damage

- feeding damage between the leaf tissues on the undersides of the leaf
- Later leaves appear with windows or holes
- Damage is confined to areas between the veins
- On young plants, the growing tips are eaten
- seedlings appear stunted







Life-cycle

- oviposition on leaves, singly or in groups of two or three, 160 eggs
- larva feeds on growing point
- 10 30 days
- pupation in silken cocoon on
- leaves, 5-15 days
- adult 16 days

Eggs are oval, yellowish-white and tiny glued to the upper and lower leaf surfaces usually along the veins or in uneven leaf surfaces

Pale yellowish-green to green caterpillars At maturity the larvae are spindleshaped (broader at the middle and tapering at both ends)





The forewing margins have a series of yellow wavy markings. When the wings are folded while the moth is at rest, these markings come together to form three yellow diamonds hence the name diamondback



Cabbage webworm Hellula undalis

Distribution:

- Asia Pacific
- N & W Africa
- America, only US and Peru





Symptoms of damage

- Growing point
- 1 larva/plant
- total destruction or
- multiple unmarketable heads
- damage important only in young plants











Life-cycle

- oviposition on leaves, stems, growing point
- 175 eggs, 2-3d
- larva feeds on growing point
- <mark>14 -18d</mark>
- pupation in soil near host-plant,
 3-7d
- adult 6 d













Cabbage head caterpillar *Crocidolomia binotalis*

Distribution

Asia Pacific
Africa- few
countries





Symptoms of damage

foliage feederskeletonize plant









Life-cycle

- egg masses of 9-120 eggs
- stems
- lower leaf surface major veins
- 75-300 eggs
- incubation 3-6 day







Larvae



- on leaf surface
- 5 instars
- 14 day







Pupae

in soilcocoons







Adults

weak flyerrarely found






Striped fleabeetle Phyllotreta striolata

Distribution:

- practically worldwide
- overwhelmingly
- crucifer feeder





shot holes on leaves & cotyledons can destroy plant completely only adults do damage







Life-cycle

Oviposition

- eggs in masses
- near base of stem on soil
- incubation 1 week

Larvae

- in soil
- feed on debris
- not host specific

Pupae

- in soil
- larvae-pupae (4w)













<u>Adult</u>

- on crucifer
- feeds on crucifer
- longevity 33-100 days
- two generation/season





Imported cabbageworm *Pieris rapae*

Distribution: - worldwide



- only cooler areas



- irregular holes
- start from leaf edge
- skeletonization









<u>Life-cycle</u>

Eggs:

Large, deep yellow bullet shape laid singly on foliage incubation 4-8 days

Larvae:

- Large, dark green surface feeder
- velvety appearance, yellow line
- 2-3 w







Pupae:

cocoons on plant surface underside of outer leaves - 7-12 d **Adults:** white butterfly Active on sunny days - Forewing difference - one dot male two dots females







Cabbage Looper Trichoplusia ni

Distribution:
worldwide except Australasia
sporadic in tropics
attacks non crucifers





- irregular holes in leaves
 larvae bore in cabbage head
- frass pellets on inner leaves





- Eggs singly, lower leaf surface
- typical looper larvae
- 3 pairs of legs + 2 pairs of prolegs, 5-6 segment
- white line over spiracle
- 5 instars
- pupation in debris on soil
- moth large











Aphids Cabbage aphid:

Brevicoryne brassicae

Turnip aphid:

Lipaphis erysimi

Green Peach Aphid:

Myzus persicae





Distribution:

- mainly in temperate region
- cool, dry areas of tropics





- sucking plant juices
- general weakening
- black sooty mold growth
- virus vector











- cabbage aphid: only females, alate + apterous
- turnip aphid: only females
- green peach aphid:
- sexual and asexual forms
- asexual form in tropics
- sexual form in cool highlands
- alate, apterous, viviparious
- crowding, temp, photoperiod, nutrition
- cause migration
- physiological races

Okra (Abelmoschus esculentus)


Cotton Leafhopper

(Amrasca devastans); also known as Amrasca biguttula biguttula Distribution: South- and Southeast Asia Hosts: cotton, okra, eggplant, potato, sunflower, etc

"Hopper Burn"



Cotton or melon aphid (Aphis gossypii)





Okra shoot & fruit borer

Earias vittella (Spotted bollworm) *Earias insulana* (Spiny bollworm)





Egg

- laid singly
- light-bluish, reticulation
- on shoot tips, buds, flowers
- 3-7 days, temp. effect



Larvae

- Neonate, 1.3 mm
- wander few hours
- bore in shoot, flower buds, fruits
- 5 instars
- 10-16 days
- white median longitudinal steak
- descend to soil pupation





Pupation

- 20 30 cm deep, or soil surface
- boat shaped cocoon
- dirty white to light brown
- 8-14 days



Adult moths

- emergence at dusk
- buff, medium size
- 13-15mm long, 30-34mm wing-exp
- forewing pale, green horizontal wedge
 hind wing, creamy white
 9.22 days
 - 8-22 days





- life-cycle 22-25 days
- 74 days in winter
- 8-12 generations
- no hibernation
 - slow down in winter
 - larva over-winter in cotton bolls
- throughout year
 - high temp + humidity prefer
- okra in summer \Rightarrow cotton in winter



Nature of damage (Young plants)

- larva bore in shoots
- withering, drooping
- growing point destroyed
- side shoots
- bushy appearance





Nature of damage (Mature plants)

- caterpillar bore into - buds, flowers, fruits - caterpillars move between parts - increase damage flower buds wither - no fruits - damaged fruits - direct yield loss



Cucurbits





Major pests of cucurbits - fruitflies -Bactrocera (formerly Dacus)

- chrysomelid beetles
 - -Aulacophora (formerly Raphidopalpa)

- Polyphagous arthropods

- Tetranychus spp., Aphis spp.,
- Epilachna spp., Amrasca spp.,
- Thrips spp., Spodoptera spp.



Major fruit fly species

- Melon fly Bactrocera cucurbitae
- Oriental fruit fly Bactrocera dorsalis
- Host preference
- Distribution
 - East-North Africa
 - Afghanistan to Vietnam



Eggs

- -soft fruit tissue
- -underneath epidermis
- -plug oviposition hole
 - hard brown tissue*
- 40 1000 large eggs*
 - 0.8 mm X 0.2 mm
 - hatch 1-2 days











Larva

- large larva*
 - 9-11 mm X 1-2 mm
- 3 instars
- 4-11 days
- fruit-fruit movement rare
- jump for pupation





Pupation

- larva burrow in soil
 - 4-5 cm
- barrel shaped, yellow pupa*
- 7-13 days
 - cold temp. much longer





Adult

- present year-round
- large brown fly*
 - -8-10 mm long
 - -12-14 mm wings exp.
- morphology
- feeding: nectar, plant sap
- longevity 5-15 months
- spread 50-100 km

Melon fly (Bactrocera cucurbitae)



Oriental fruit fly (Bactrocera dorsalis)





Nature of damage

- infestation duration

- flowering - fruiting

- fruits, inflorescence, leaves, stems

- oviposition punctures
- larval feeding on pulp*
- fruit small + yellow
- galling

