



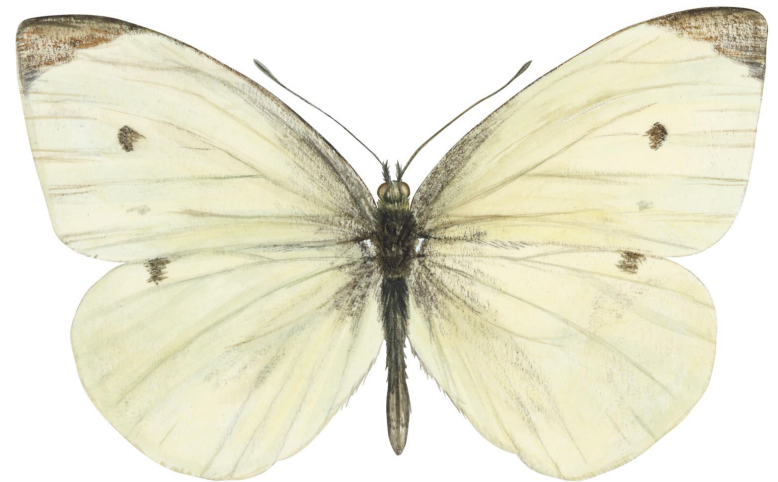
INSECT PESTS OF VEGETABLES

CABBAGE BUTTERFLY



Taxonomy

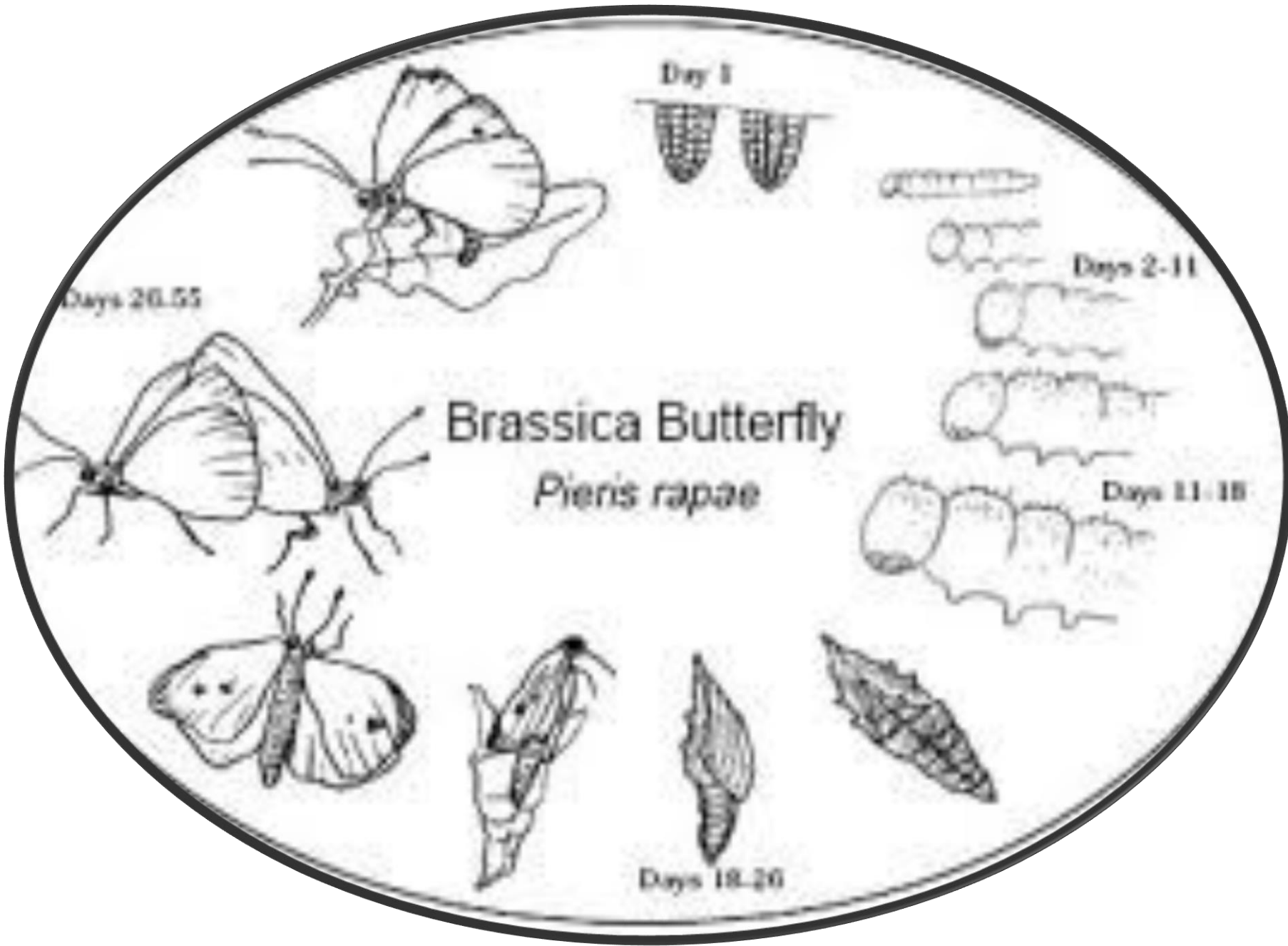
- *T.N:* *Pieris brassicae*
- *Family:* Pieridae
- *Order:* Lepidoptera



Identification

- Large, **body** blackish, **wings** yellowish white with a black patch on apical angle of each forewing
- **Females** bears two black spots on the upper side of each forewing
- **Larvae** are pale yellow or greenish yellow





Day 1

Days 2-11

Days 11-18

Days 18-20

Days 20-55

Brassica Butterfly

Pieris rapae

Life Cycle

- Females lays **egg in clusters** on under sides of leaves
- The eggs hatch in **2 weeks**
- **Larvae** period lasts for **3 weeks**
- **Pupal** period is for **2 weeks**
- This insect pest lives in **hills during summer** and in **plains during winter**

Damage

- The larvae feed and damage the leaves by **making big holes** in them and hence **reducing the photosynthetic area** of the plant



Control

- Collection and destruction of **eggs clusters** and larvae
- Catch adults by **hand nets**
- *Apantelese spp.* is a larval parasitoid of cabbage butterfly
- Spray

Iufenuron EC 200 ml/acre

Spinosad SC 80 ml/acre

RED PUMPKIN BEETLE



Taxonomy

- *T.N:* *Aulacophora foveicollis*
- *Family:* Chrysomelidae
- *Order:* Coleoptera



Fig. 81. *Aulacophora foveicollis* (Adult beetle).

Identification

- **Larvae** are creamy white, with a slightly darker oval shield at the back
- The **adult** beetles are oblong (rectangular)
- Their dorsal body surface is orange red and the ventral surface is black
- Short white hairs are present on the body



4. Adults
27 - 56 days



10-15 days



3. Pupa

Red Pumpkin Beetle:
Aulocophora foevicollis Lucas



1. Eggs

8-15 days



2. Grub

12-18 days

Life Cycle

- The beetles lay about 300 oval yellow eggs singly or in batches of 8-10 in moist soil near the base of the plants
- The eggs hatch in 2 weeks
- The grubs are full grown in 4 weeks and pupate in thick-walled earthen chambers in the soil
- The pupal stage lasts for 3 weeks and the beetles on emergence begin to feed and breed

Damage

- The beetles are very **destructive** to cucurbitaceous vegetables
- Particularly during **March- April** when the creepers are very young
- The grubs damage the plants by **bor-ing into the roots, underground stems** and sometime into the **fruits touching the soil**
- The beetles **injure the cotyledons, the flowers** and the foliage by biting holes into them



Control

- Deep ploughing to kill grubs in the soil
- To avoid its attack sowing of crop may be done in November
- Dusting the plants with ash temporarily repels the beetles
- Dusting the crop with 5% pyrethrum when there is no dew on the plants
- Light dusting with BHC 2.5% is also effective against beetles and has no adverse effect on plants
- Methyl parathion/dimethoate 0.02%
- Malathion 0.05%

HADDA BEETLE



Taxonomy

- *T.N:* *Epilachna duodecastigma*
- *Family:* Coccinellidae
- *Order:* Coleoptera



- **Two species of hadda beetles**

- *Epilachna duodecastigma*

- *E. vigintioctopunctata*

- Attack different solanaceous vegetables like brinjal, tomato and potato
- Another species *E. demurili*, attacks cucurbitaceous vegetables exclusively



Identification

Epilachna vigintioctopunctata

- Beetles are **deep red** and usually have **7-14 black spots** on each **elytron** whose tip is somewhat **pointed**

Epilachna duodecastigma

- **Deep copper-coloured** and have **six black spots** on each **elytron** whose tip is more **rounded**

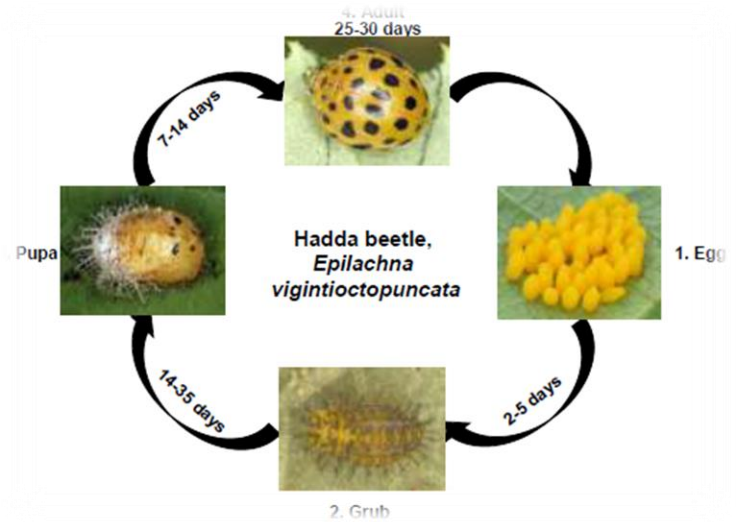
Epilachna demurili

- Beetles have a dull appearance and are **light copper colored**
- Each of their **elytron bears six black spots** which are surrounded by **yellowish rings**
- All the three species have **yellowish grubs**

Life Cycle

- The life cycle and the mode of damage of the **three species** of hadda beetles are **very similar**
- It passes the **winter** as a **hibernating adult** among heaps of dry plants or in cracks and crevices in the soil
- It resumes activity during **March-April** and lays **yellow cigar-shaped eggs**, mostly on the underside of leaves, in **batches of 5-40 each**
- A single female can lay up to **400 eggs** in her lifetime

- The **grubs** feed on the lower epidermis of the leaves and are full grown in 3 weeks
- The **pupae** are darker and are found fixed on the leaves, stems and most commonly at the base of the plants
- The pupal stage lasts for **2 weeks**
- There are **7 generations** in a year



Damage

- Both the **adults** and the **grubs** damage by feeding on the upper surface of the leaves
- They eat up regular areas of the leaf tissue, **leaving parallel bands** of uneaten tissue in between
- The leaves, thus present a **lace-like appearance**
- They **turn brown, dry up** and **fall off**, completely defoliating the plants



Control

- Grow **resistant varieties**
- **Destruction of attacked plants** or plant parts
- Hadda beetles can be controlled by using:

Diazinon 0.02%

Malathion 0.05%

BRINJAL FRUIT BORER



Taxonomy

- *T.N:* *Leucinodes orbonalis*
- *Family:* Pyralidae
- *Order:* Lepidoptera



Identification

- Caterpillars are creamy white, when young but become light pink when full-grown
- The moth is white with black spots on the dorsum of thorax and abdomen
- Its fore wing has black or brown spots and both wings fringed with bristles



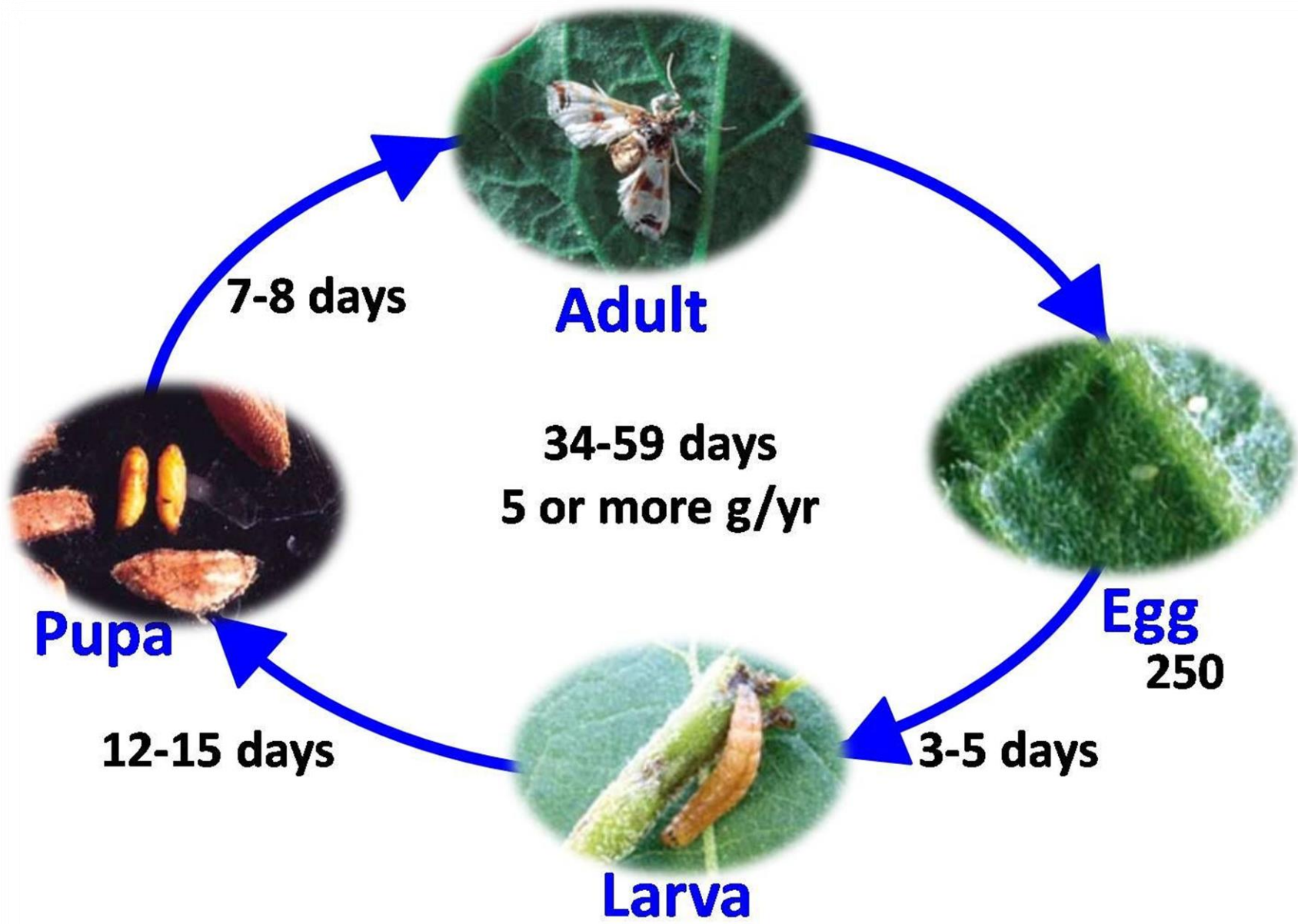


Fig. Life cycle of brinjal shoot and fruit borer

Life Cycle

- The caterpillars hibernate in winter and pupate early in spring
- The moths lay 50-100 creamy white eggs, singly or in batches of 2-4 on the underside of leaves, flower buds, green stems or fruits
- Eggs hatch in one week and larvae grow through 5 stages and are full fed in 4 weeks
- Larvae pupate in tough silken cocoon among the fallen leaves
- The pupal stages lasts 3 weeks and the life-cycle is completed in 6 weeks during the active season
- There are 5 over lapping generations in a year

Damage

- Young caterpillars **bore** into tender shoots near the growing points into the flower buds or into the fruits
- When the terminal shoots are attacked, the growing points are killed
- Damage to the fruits, particularly in the autumn is very severe



Control

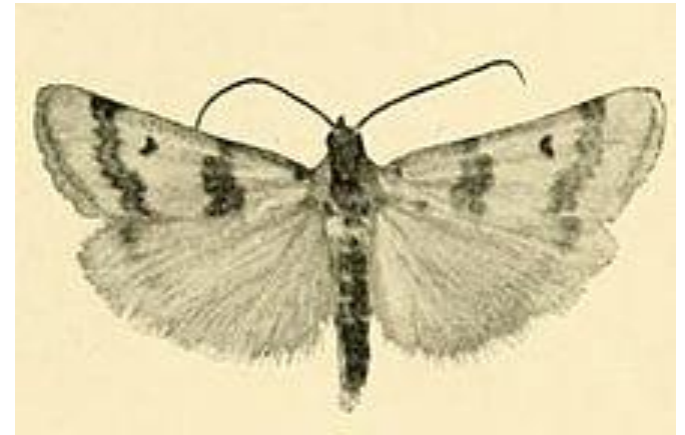
- Removal and destruction of damaged fruits, fallen leaves and shoots
- Deep ploughing should be done to destroy different pest stages in the soil
- Avoid continuous sowing and rationing of brinjal crop
- *Bracon spp.* is an important parasitoid of this pest
- Spray the crop with Emamectin benzoate 200 gram/acre

BRINJAL STEM BORER



Taxonomy

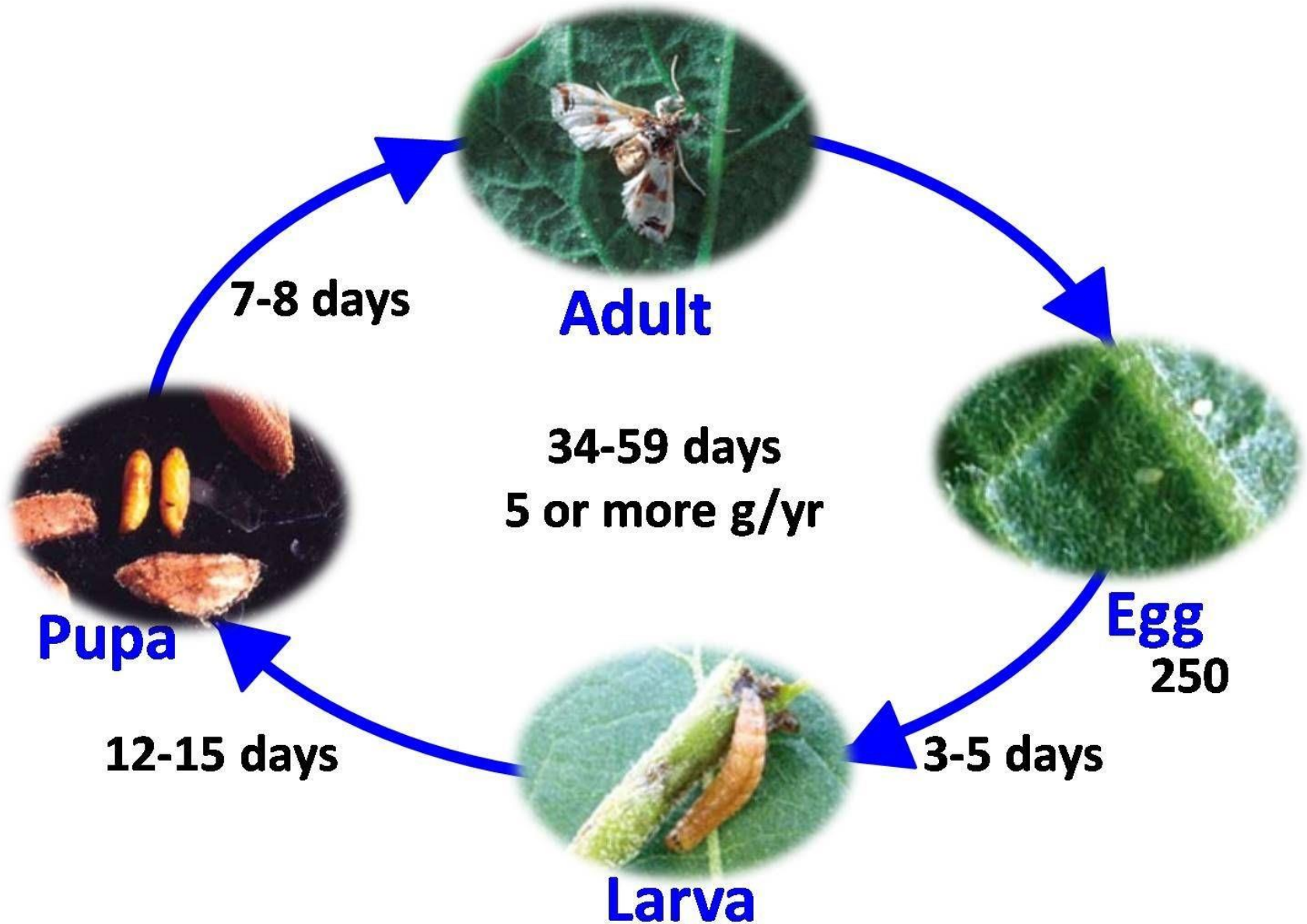
- *T.N:* *Euzophera perticella*
- *Family:* Pyralidae
- *Order:* Lepidoptera



Identification

- The **caterpillars** are creamy white and have a few bristly hairs and their body tapers posteriorly
- The **moths** have pale-yellow abdomen
- The head and the thorax are greyish
- The fore wings are pale straw yellow and the hind wings are whitish

Life Cycle



Life Cycle

- The pest is active from **March to October**
- The moths lay **cream colored, scale like eggs, singly or in batches**
- A single female may lay **100-200 eggs** in its life span of about a **week**
- The eggs hatch in **one week**
- They pass through **4 or 5 stages** and are **full-fed in 8 weeks**
- After pupation, they transform themselves into adults in one week
- Life cycle completed in **11 weeks**
- Pest has **5-6 overlapping generations** in a year

Damage

- The young larvae feed for a few minutes on exposed plant parts and then bore into the shoot by making longitudinal tunnels
- The caterpillars feed exclusively in the main stem and have never been observed to bore into the fruits
- As a result of their attack in the field, plants are seen withering and drying up



Control

- The withered plants should be uprooted and burned
- When the attack of this borer is serious, avoid rationing of brinjal crop
- Spray the crop with:

Emamectin benzoate 200 gram/acre

Cypermethrin EC 200-250 ml/acre