

MYTHIMNA SP.

Defoliating caterpillars

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IDENTITY

Latin name	<i>Mythimna sp., Leucania sp.</i>
Common name	Defoliating caterpillars (butterfly larvae)
Taxonomic classification	<i>Mythimna</i> : Insecta: Lepidoptera: Noctuidae: <i>Mythimna</i> <i>Leucania</i> : Insecta: Lepidoptera: Noctuidae: <i>Leucania</i>



Figure 1 -
Defoliating caterpillar with red stripes



Figure 2 -
Defoliating caterpillar with black stripes



Figure 3 -
Defoliating caterpillar with yellow stripes

MORPHOLOGY

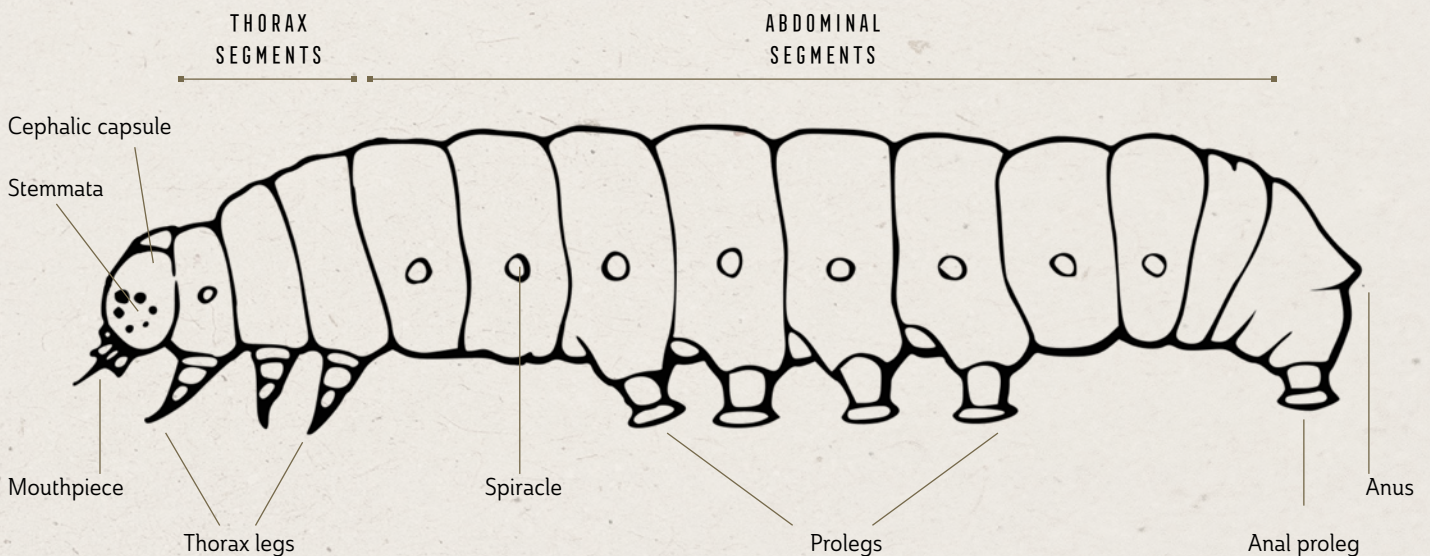


Figure 4 - Anatomy of a defoliating caterpillar

Description:

- Metamerised body (divided into segments) made of three main parts.
- Head: with a grinding mouthpiece.
- Thorax: the first three segments each have a pair of real legs.
- Abdomen: the final ten segments each have a pair of false legs with suction cups or hooks.
- Average total length: 25mm to 35mm.
- General colour of stripes: yellow, black or red.

DEVELOPMENT CYCLE

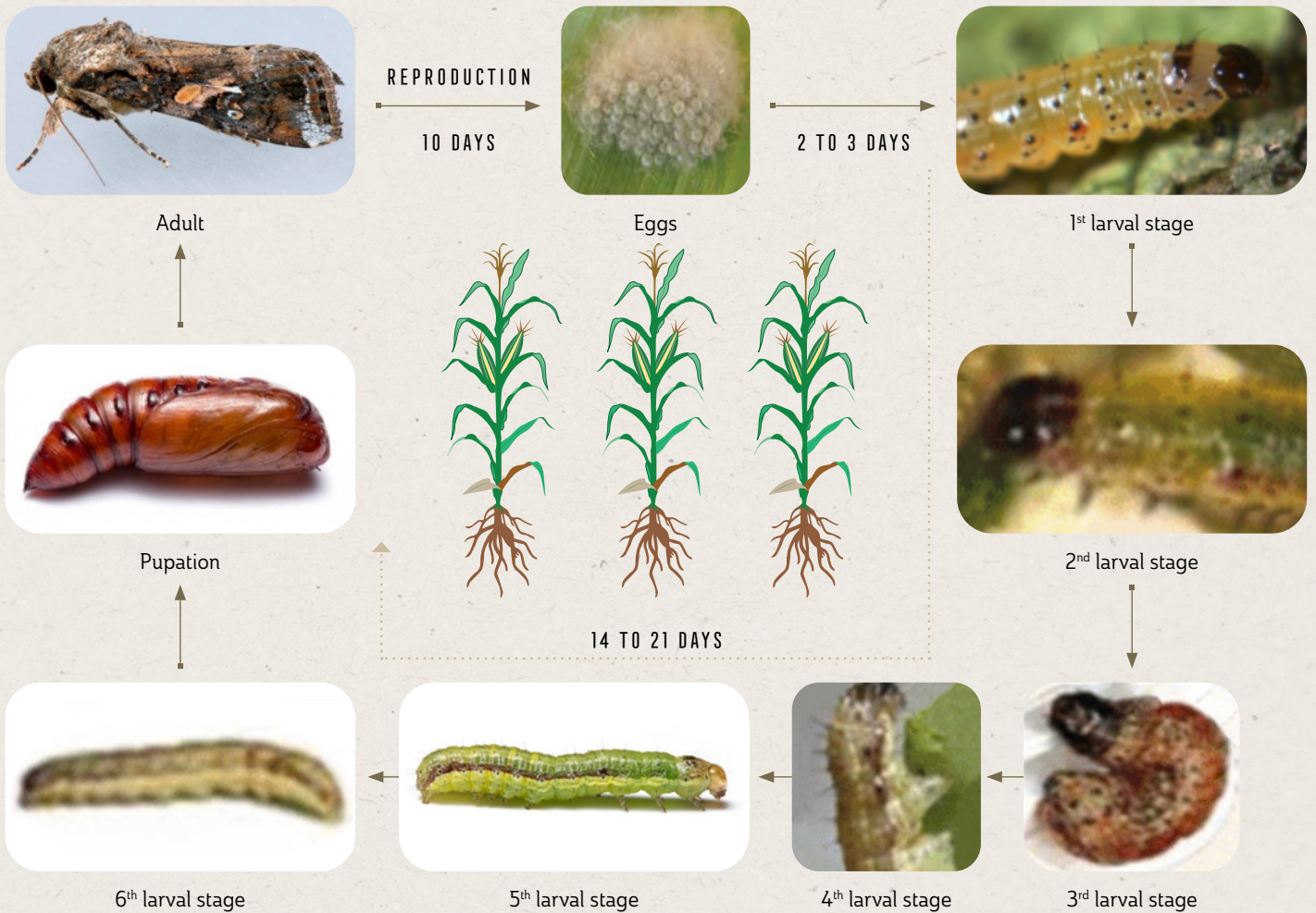


Figure 5 - Lepidoptera development cycle

- Egg:
 - Spherical, very slightly flattened at the top.
 - Around 0.6mm in diameter.
 - Colour: Very pale creamy white hyalin.



Figure 6 - Lepidoptera eggs



Figure 7 - Caterpillar/*Leucania* larva



Figure 8 - Chrysalis emerging from its cocoon

▪ Larvae (defoliating caterpillars):

- Stage which affects crops.
- 4-4.5cm long.
- Smooth epidermis.
- Variable colour (red, yellow, black or red stripes).
- Series of 5-6 metamorphoses prior to pupation.
- Larval stage to pupation: 14 to 21 days.

▪ Chrysalis/Nymph:

- Intermediate stage of development between caterpillar and adult.
- The nymph is contained inside a very loosely woven white oval cocoon.
- It is around 15mm long.
- It remains green for most of the time it is a nymph, and then turns brown just before emergence.
- From nymph to adult: 8 to 13 days.

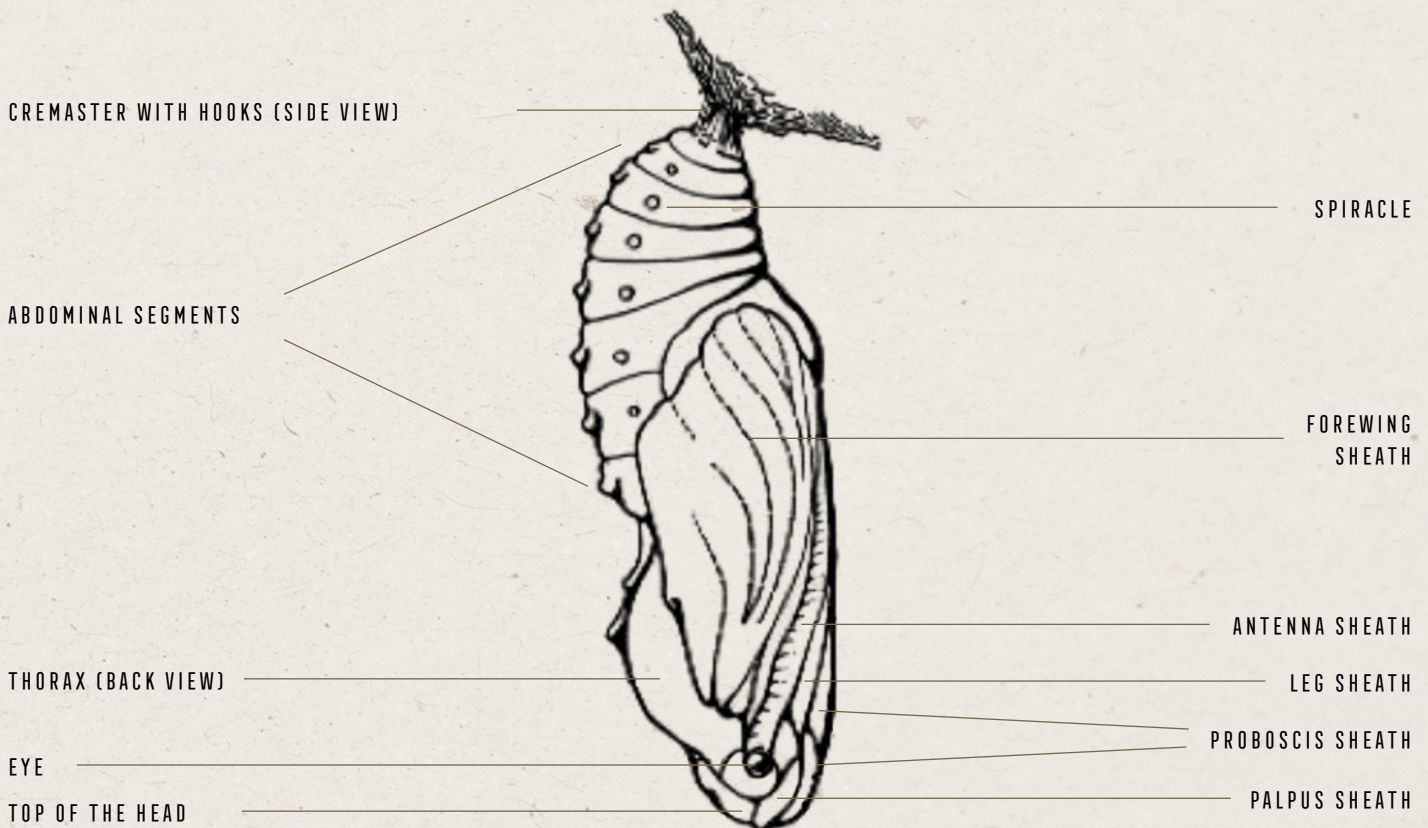


Figure 9 - Structure of a chrysalis

- Adult:
 - An adult butterfly is made up of three parts:
 - The head: hemispherical with two large eyes and a spiral-shaped proboscis which acts as a mouthpiece that they use to suck up nectar from flowers.
 - The thorax: to which the legs and wings are connected. It is made up of three segments.
 - The abdomen has ten segments.
 - Adults can be between 0.4cm and 30cm.



Figure 10 - Adult butterfly

HABITAT AND CONDITIONS CONDUCIVE TO ITS DEVELOPMENT

- Habitat: abundant vegetation - caterpillars are extremely voracious.
- Common period for the appearance of caterpillars: they can be present at various times of the year in the Penja region, but especially between seasons (when the climate changes from dry to rainy around March and April).

SYMPTOMS AND DAMAGE

Caterpillars feed on leaves (they can consume large quantities very quickly) and green shoots of support trees.



Figure 11 - Severe attack of caterpillars on pepper plant support trees



Figure 12 - Caterpillars on a tree

MONITORING STRATEGY

It is impossible to prevent the appearance of defoliating caterpillars, especially defoliating noctuids (which are active at night). The only solution to prevent their spread is to spot the larvae early enough and eliminate them.

Careful inspections of support trees must be carried out regularly by farmers to detect any early damage to above-ground parts of the plants (leaves, buds, stalks, etc.) or the presence of caterpillars.

Vegetation and trees surrounding the farm should also be inspected.

Swift detection of defoliating caterpillars enables pepper producers to take timely decisions (intervention threshold) to reduce the level of infestation in the orchard.

- ▶ **Penja pepper producers are advised to carry out this inspection using an observation and monitoring sheet provided in the appendix.**

GOOD FARMING PRACTICES TO COMBAT PROBLEM

- **Crop control:** Regular maintenance of the farm and the areas surrounding the plots (caterpillar host trees) reduces butterfly populations.
 - Prune pepper plants and support trees (April/May, July/August) as well as caterpillar host plants (coffee plants, fruit trees, etc.) nearby or combined with the pepper plants to prevent any excess shade.
 - Destroy accessible caterpillar nests.
- **Organic control:** Several organic control methods have been suggested to combat defoliating caterpillars.
 - Using the bacteria *Bacillus thuringiensis* for its insecticidal properties: in Cameroon, this bacteria is recommended for combating lepidoptera larvae on cabbages at a dosage of 0.5kg cp/ha (20g cp per 15 litres of spray).
 - Trapping moths using synthetic sexual pheromones.
 - Birds are natural predators of caterpillars. To attract them, you can install bird feeders close to the farm.

- **Control using plant protection products:** Control using plant protection products: chemical treatment is the most common method used to combat the spread of defoliating caterpillars. It should be noted that no product is currently approved to combat defoliating caterpillars on pepper plants (List of pesticides approved in Cameroon consulted on 4 March 2021). However, there are some commercially-available solutions authorised for other crops (see table below) that could be used on Penja pepper plants subject to prior authorisation from the competent authorities.

Solutions	Method of use	Status as per Regulation (EC) No 1107/2009	Crop-pest combination for which the active substance is approved in Cameroon	EU MRL for pepper
Cypermethrin 360g/l	100ml of cp/ha	Cypermethrin: Approved	Lepidoptera caterpillars and fruit flies/cotton plant	Cypermethrin: 0.1*
Bifenthrin 200g/l	1l pc/ha	Bifenthrin: Not approved	Insect pests/banana tree and plantain tree	Bifenthrin: 0.03
Beta-Cypermethrin 100g/l	15ml/15l spray	Beta-Cypermethrine: Not approved	Insect pests/cabbage	Cypermethrin: 0.1*

(*) cp: Commercial product

(*) Indicates the lower limit of the analytical determination

APPENDIX: OBSERVATION AND MONITORING SHEET

Campaign:

Date:

Plot code:

Vegetative stage:

Date of last treatment:

Product(s) used:

Observations:

INFESTATION LEVEL

Defoliating caterpillars:

Comments:

Sources: Figure 1 - Les noctuelles défoliatrices, wikiagri.fr | Figure 2 - Les noctuelles défoliatrices, wikiagri.fr |
Figure 3 - Les noctuelles défoliatrices, wikiagri.fr | Figure 4 - Morphologie d'adulte, chenille et nymphe des lépidoptères bio-enligne.com |
Figure 5 - Surveillance et Gestion de La Chenille Légionnaire (Spodoptera frugiperda) - Scientific Figure on ResearchGate |
Figure 6 - Les œufs de Papillons | Les œufs, Œuf, Lépidoptère pinterest.fr | Figure 7 - *Leucania loreyi* - Photo basc - www.galerie-insecte.org,
galerie-insecte.org | Figure 8 - chrysalide d'un papillon de nuit sortant de son cocon - Photo de ANIMAUX - Balades dans
le Puy-de-Dôme, andre63.canalblog.com | Figure 9 - Morphologie d'adulte, chenille et nymphe des lépidoptères bio-enligne.com |
Figure 10 - Papillon - Dictionnaire Visuel infovisual.info | Figure 11 - Le poivre de Penja: Guide des Bonnes Pratiques: COLEACP |
Figure 12 - Le poivre de Penja: Guide des Bonnes Pratiques: COLEACP