Identification of Lepidoptera Larval Stages
A Maize Pest
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Identification of Lepidoptera Larval Stages
A Maize Pest

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Key words: Lepidoptera larval stages; Pests and diseases; Maize; Pest characterization.

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Fall armyworm (FAW)  
(*Spodoptera frugiperda*)
**Early larval stage 1 (L1)**

The head of a recently hatched larva is larger than the rest of its body. In addition, the setae (villi) are very visible throughout its body.
Late larval stage 1 (L1)

As the larva develops, its head looks more proportionate to the body and the setae are less visible.
**Early larval stage 2 (L2)**

The larva is passing to the next stage; it looks hyaline, and the tubercles from which setae grow, become more notorious.
**Late larval stage 2 (L2)**

As the larva develops, the reddish lateral stripes become more notorious.
**Early larval stage 3 (L3)**

In this stage, the lateral reddish stripes are evident and they are present throughout the body.
Late larval stage 3 (L3)

As the larva continues to develop, a dark stripe becomes evident on the side.
Early larval stage 4 (L4)

In this stage, the larva shows nearly colorless tubercles. Likewise, its head turns hyaline, almost transparent.
Late larval stage 4 (L4)

During this stage, the epicranial suture or inverted “Y” on head is completely defined. On the other hand, concentric rings begin to form in the mesothoracic segment.
Larval stage 5 (L5)

The larva turns a dark-brown color, while its setae are hardly visible.
Larval stage 5 (L5)

In addition, during this stage, organized spots form in line on every abdominal segment.
Larval stage 6 (L6)

At this stage, the larva has a noticeable appearance: the segments are hardly visible and it has a shiny surface.
Larval stage 6 (L6)

On the other hand, a reddish spot becomes visible on the first thoracic segment, which is useful to easily identify this stage.
Adult (male) ♂

The *Spodoptera frugiperda* male adult is characterized by the different colors of its fore wings.
**Adult (female)**

The *Spodoptera frugiperda* female adult is characterized by its larger size and its brownish-gray color.
Armyworm

(*Spodoptera sunia*)
**Early larval stage 1 (L1)**

The head of a recently hatched larva is larger than the rest of its body. This species has a very visible digestive system and tubercles from which setae grow.
Late larval stage 1 (L1)

During its development, the tubercles become more notorious, especially those in the dorsal thoracic segment.
Larval stage 2 (L2)

This stage is characterized by presenting a lighter head and well-developed lateral tubercles on the thorax.
Early larval stage 3 (L3)

In this stage, the last abdominal segment starts showing a reddish color.
Late larval stage 3 (L3)

The larva develops white areas adjacent to each tubercle.
Larval stage 4 (L4)

In this stage, triangles are developed on the dorsal region, where the white tubercles characteristic of this instar are located. It has a long orange stripe along the dorsal region (distinctive).
**Larval stage 5 (L5)**

The L5 larva is darker and no longer shows the orange dorsal stripe of L4.
Larval stage 5 (L5)

Despite tone differences among larvae, the prevailing characteristic is the absence of the longitudinal stripe in the center of the dorsal region.
Larval stage 6 (L6)

The L6 larva is large in size; it does not show any colors in the dorsal area and presents an orange color on the sides, under the spiracles.
Larval stage 6 (L6)

Note the orange color on the side, under the spiracles.
Adult (male) ♂

The *Spodoptera sunia* male adult is characterized by the different colors of its fore wings. However, they are not as notorious as in *S. frugiperda*. 
**Adult (female) ♀**

Unlike males, the *Spodoptera sunia* female adult is completely colorless.
Corn earworm (CEW)

(*Helicoverpa zea*)
Early larval stage 1 (L1)

The digestive system is very notorious; the last abdominal segment is black and it has a black spot located between the two rings in the first segments of the body.
Early larval stage 1 (L1)

Black spot characterizing the first larval stage.
Late larval stage 1 (L1)

As the larva develops, it becomes darker and shows a golden shade.
Early larval stage 2 (L2)

The whole body starts turning brown.
Late larval stage 2 (L2)

Over time, the larva turns darker and its tubercles become visible.
Early larval stage 3 (L3)

At the beginning, the larvae develop white spots on the sides.
Late larval stage 3 (L3)

The larva develops two white stripes on the dorsal region.
Larval stage 4 (L4)

It turns darker, the tubercles take a conical shape, and three stripes appear on the dorsal region.
**Larval stage 5 (L5)**

It turns lighter, while the stripe on the dorsal region becomes darker. The tubercles become discolored.
Larval stage 5 (L5)

Do you see them? Take a look.
**Larval stage 6 (L6)**

Hardly visible tubercles, and the dorsal stripe stands out.
Adult (male) ♂

The *Helicoverpa zea* male adult features a lighter color than the female. In addition, it has two dark spots on the fore wings.
Adult (female) ♀

The female shows a darker color than the male. It also shows cross-sectional pigmentation of its fore wings.
Sexual dimorphism in pupae
The same identification parameter is used for all three species.

**Figure 1.** Sexual dimorphism in *Copitarsia decolora*. (A) Female - (B) Male.

Sexual dimorphism (female) ♀
Sexual dimorphism (male) ♂
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