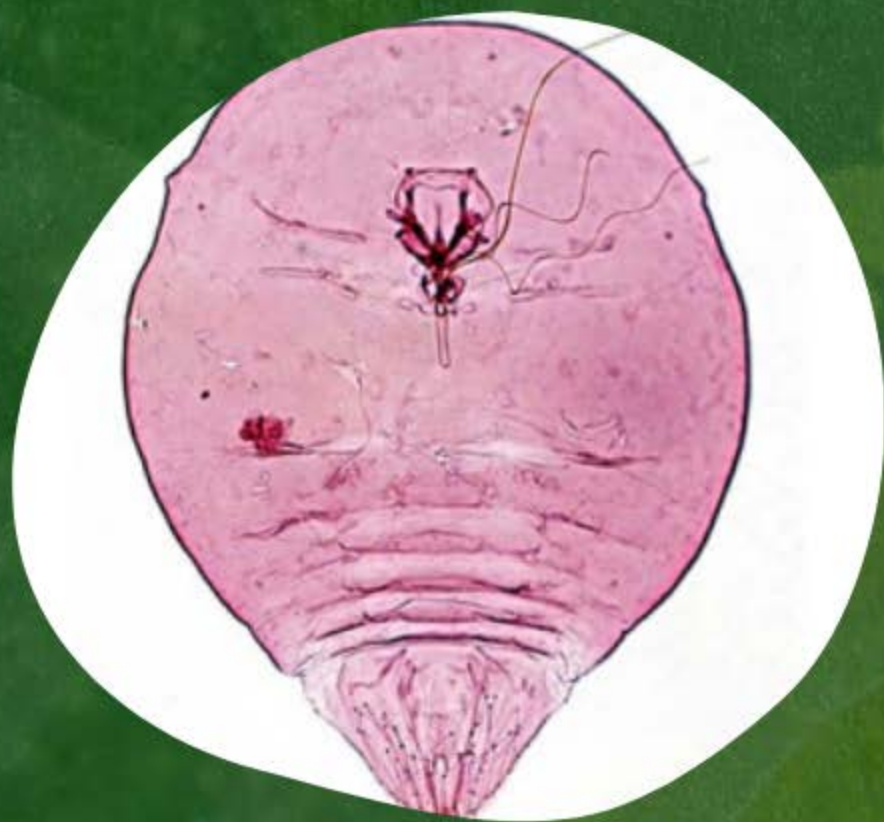


# TRIVIA ON COCOONUT PEST





**Figure 1. Coconut Scale Insect (CSI)**

**Local and Common Name:**  
“Cocolisap”, and False Coconut Scale

**Scientific Name:**  
*Aspidiotus rigidus*

**Order:**  
Hemiptera

**Family:**  
Diaspididae

**Host Crops:**  
Coconut, and banana

**Alternate Host Crops:**

- Mangosteen
- *Chrysalidocarpus lutescens*,
- *Cyrtostachys sp.*,
- *Metroxylon sp.* (sago palm), and
- *Nypa fruticans* (nipah palm) (Reyne, 1948).

**Known Predator/s:**

- *Aphytis spp.* (Aphelinidae);
- *Comperiella calauanica*; and
- *Pteroptrix parvipennis*.

### ***Did you know?***

The first report of the said pest in the Philippines was on 2009. However, it was already been sighted in the northern Sulawesi, Indonesia during 1925-1928.





### ***Damage Symptoms***

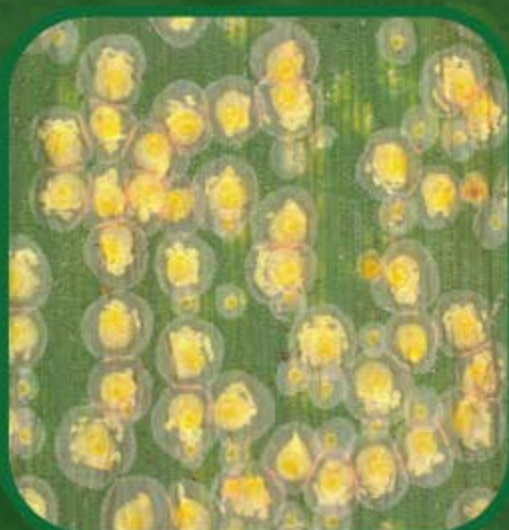
- Yellow spots appear on leaves as the female adult inserts its thread-like stylet due to the toxicity of saliva injected into plant tissues while feeding
- Yellow spots coalesce, turning entire frond to yellow then brown and it eventually fall off
- Young green fruits appeared mature because of the thick crust of CSI colonies enveloping the nuts.
- The bright yellow color of severely infested coconut palms is clearly visible from a distance

### ***Major Infestation of *A. rigidus* in the Philippines***

1. **2010 and 2016** - Southern Tagalog region of Luzon Island.
2. **2017 and 2020** - Zamboanga Peninsula, Mindanao Island.
3. **2023** -Negros Occidental, Visayas Island.

### ***Action Taken Against CSI to Coconut in the Philippines***

BPI has issued a Special Quarantine Order No. 02 Series of 2014 which comprises of Rules and Regulations to Implement the BPI Special Quarantine Order No. 01 Series of 2014 " Declaring Severe Infestation of *Aspidiotus* spp. and *Unapis* sp. In Mangosteen (*Garcinia mangostana*) and Lanzones(*Lansium domesticum*), respectively, Including Other Scale Insects Affecting Other Plants in the Coconut Scale Insect (CSI) Outbreak Areas of Batangas, Cavite, Laguna, and Quezon and Providing Measures to Manage Its Spread from Infested to Non-Infested Areas" has been Promulgated to Address the Movement, Transfer and Carrying of Plants, Planting Materials and Plant Products and Other Parts of Mangosteen and Lanzones and Including Other Plants that maybe Affected by Scale Insects.



## ***Life Cycle of A. rigidus***

### ***For Both Male and Female CSI at:***

#### ***1. Eggs and crawler emergence***

**a. Eggs** - are light yellow in color, black eye spots develop as they mature.

**b. Crawlers** - referred as the **1st instar stage**, has well-developed appendages, antennae and eyes; oblong shaped and yellowish in color.

#### ***2. White cap and pre-second instar***

**a. White cap stage** - they produce whitish thread of wax intertwined together through body movements especially in the pygidium, becomes immobile and their body sizes increased.

**b. Pre-second instar** - referred as the **nipple stage**.

Concentric circles on the scale becomes discernible, scale and body sizes increased, body appeared greenish and somewhat swollen.

**3. Second instar** - yellowish in color, loses their appendages and antennae. However, they develop body ridges and changes color upon molting.

### ***For Male CSI at:***

#### ***4. Pre-pupal, pupal, and adult stage***

**a. Pre-pupal** - are slender or tapered (v-shaped) towards the posterior end with elliptical-like scale covering, light yellow body, its pygidial structure quite retained. Its black eye spots is its prominent feature.

**b. Pupal** - genitalia and appendages starts to develop, body and scale further elongates, and loses its pygidial structure. Also, its initial antennae forms.

**c. Adult stage** - are yellow in color, having fully developed antennae, eyes, appendages and wings.

**Note:** Female does not undergo pre-pupal, pupal, and adult stage. Instead they undergo:

#### ***4. Third instar and adult stages.***

**a. Third instar** - referred to as **pre-oviposition stage**. They prepare to develop and produce eggs.

**b. Adult stage** - referred to as **oviposition stage**. They produced more scale covering at the abdominal tip to make enough room for laying and incubation of eggs.

### ***Mode of Dispersal***

- Wind
- Dropping from the palm

### ***Feeding Behavior***

- Found in the lower leaf surface, blocking stomata thereby destroying the chlorophyll.

### ***Favorable Conditions for Pest Development***

- Dense populations of host crops.
- Humid climate.
- Strong winds, which facilitates pest dispersal.



# PEST MANAGEMENT RECOMMENDATIONS

## Biological Control

- Use of biological control agents like parasitoids (*Comperiella* spp.) and predators, (green lacewing, (*Chilocorus nigrita* and *Telsimia nitida*).

## Cultural Control

- Pruning of infested fronds, leaflets and nuts (following PCA's Pruning Procedures) and proper disposal;
- Fertilization after application of mitigation measures;
- Felling of senile palms which are severely infested and are no longer productive, and replanting (after CSI population decreased significantly)

## Chemical Control

- Trunk injection using systemic pesticides (judiciously applied, FPA registered insecticide). *Note: It is not recommended to trees with mature/harvestable fruits.*;
- Use of botanical (with known pesticidal property against scale insects);
- Use of insect growth regulators (specific to *Aspidiotus rigidus*)



Figure 2. Adult male and female *C. calauanica* parasitoid against CSI.



### **References:**

- Almarinez, et al., 2020. Biological Control: A Major Component of the Pest Management Program for the Invasive Coconut Scale Insect, *Aspidiotus rigidus* Reyne, in the Philippines.
- Dao, et al., 2020. Discovery of false coconut scale (*Aspidiotus rigidus*) and three of its primary parasitoids in Việt Nam, and likely species origins.
- Evans, G. A., 2015. *Aspidiotus rigidus*.
- Gamboa, R., 2014. Cocolisap and other threats to coconut industry.
- Cortaga, C. Q., et al., 2019. Comparative Life History of Coconut Scale Insect, *Aspidiotus rigidus* Reyne (Hemiptera: Diaspididae), on Coconut and Mangosteen.
- Integrated Crop Protection Division, Davao Research Center, Research and Development Branch, Philippine Coconut Authority.
- Bureau of Plant Industry, 2014. *Aspidiotus rigidus*.

### **Photo credit:**

- Evans, G. A., 2015. *Aspidiotus rigidus*.
- Almarinez et. al, 2016. A. Adult female *Comperiella calauanica* sp. n.; B. Adult male *C. calauanica* sp. n. and C. Female *C. calauanica* sp. n. ovipositing on *Aspidiotus rigidus* nymph.
- Dengarden, 2023. 10 Uses of Coconut Tree.
- BPI - Crop Pest Management Division, 2023.

