CROP PROTECTION IN COCONUT

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Major and Minor Insect, Arthropod and Vertebrate Pests & Diseases of Coconut
Rhinoceros Beetle

- Most destructive pest
- Attacks young and old palms
- Injurious stage: ADULT
- 4 stages (egg, larva, pupa, adult)
- Female lays as many as 156 eggs
- Life span: 3 - 4 mos.
- Egg to adult: 5 - 7 mos.
Rhinoceros Beetle

Damage

- Adult bores through the bud causing symmetric cuts on the leaves upon unfolding.
- Primordial spathes also cut in the process causing decrease in yield.
Rhinoceros Beetle

Breeding sites

Decaying heaps of:

- Cow manure
- Corn Cobs
- Rice Straw
- Rubber trunks
Asiatic Palm Weevil

- 2 species *Rhynchophorus schach*, *R. ferrugineus*
- As destructive as rhino beetle
- Attacks 5-yr old palms and older
- Injurious stage - larva
- 4 stages (egg, larva, pupa, adult)
- Female lays up to 240 eggs
- Egg to death of adult - about 200 days
Asiatic Palm Weevil

Nature of damage

- Adult weevil oftentimes lays eggs on wounds on trunks or injuries caused by rhinoceros beetles.
- Larva tunnels and feed on fresh tissues of trunk and bud.
- Larva feed up to 50 days until they pupate.
Slug Caterpillars (Limacodids)

- Most destructive leaf feeder
- Heavy defoliation cause button fall leading to reduction in yield
- Two groups: nettle caterpillar and slug caterpillar
- Most common species: green, white, orange, brown, gelatine caterpillars
- Destructive stage: Larva
Other Slug Caterpillar Species

Thosea sp

Thosea asigna

Thosea sp D

Thosea celebas

Setora sp

Susica malayana

Pygmmamomorphpha senescens West

Darna sp

Penthocrates sp
Slug Caterpillar

Damage

- Outbreaks usually occur after a long dry period
- Life span: up to 11 wks
- Larva eats the leaf lamina leaving only the midribs and the spear leaves thus reducing photosynthesis and yield
Coconut Leafminer
*Promecotheca cumingii*

- Occurs in outbreak proportions after long dry periods
- Severe cases: burnt appearance of leaves
- Undergoes 4 stages
- Takes about 8 wks from egg to adult emergence
Coconut Leafminer
*(Promecotheca cumingii)*

**Damage**

- Both larva and adult cause damage on leaves.
- The adult feeds on the lower surface along the veins.
- The larva mines into the leaf lamina eating up the chlorophyll.
Two-Colored Hispid Beetle  
(Plesispa reichei)

- Attacks nursery seedlings and young palms
- Destructive stage: Larva and adult
- Egg laying to adult in 17-35 days and from 170-180 eggs.
- Total life span - 101-202 days
Two-Colored Hispid Beetle
(*Plesispa reichei*)

**Damage**

- Larvae, adults feed on the lower and upper surfaces of the partially folded leaves. The injuries ran parallel to the veins.
- Severe infestations lead to death of seedlings.
Two-Colored Hispid Beetle
\((Plesispa reichei)\)

Damage

- Scales form crust on the leaf surface while sucking on the plants
- Damaged leaves turn yellow and dry up.
Coconut Scale Insect
(Aspidiotus destructor)

- Infests seedlings, mature palms, flowers and nuts. Multiplies fast
- 3 stages: egg, nymph, adult. Takes 35 days to complete
- Injurious stage: crawlers, adults
- Male are winged; female, wingless
Spider Mites

- Small arachnid
- Tiny red dots, stays on the lower surface of leaf
- 3 stages: egg, nymph, adult
- Injurious stages: larva, nymph, adult
- Mites feed on seedlings and mature palms
- Female lays 18 eggs throughout her lifetime
- Egg to adult – 6 days
Spider Mites

Damage

- Mites suck the sap of leaf, causing discoloration.
- Heavily infested leaves turn brown or rusty and eventually dry up.
Aphids

*Cerataphis lataniae, Astegopteryx nipae*

*Hysteroneura sp.*

- Serious in seedlings and intercrops
- Infest leaves and shoots
- 2 stages: nymph, adult
- No males recorded
- Winged or wingless
- Very prolific
Aphids
*Cerataphis lataniae, Astegopteryx nipae Hysteroneura sp.*

**Damage**

- suck the sap in the lower surface of leaflet
- Infested leaves shrivel, turn yellow then dry up
- Stunting of seedling
White Fly
(*Aleurodicus destructor*)

**Damage**

- Attacks mature palms. Produces sooty molds that turn the leaves and intercrops black.
- Distinctive waxy filaments adorn the body.
Mealy Bugs
*(Dysmicoccus brevipes)*

Mealy bugs with sooty molds
Mealy Bugs
*(Dysmicoccus brevipes)*

- Lay eggs in batches in common egg sac with 10-81 eggs
- Nymphs: minute and mobile, locates suitable sites to settle on the underside of the leaflet
- Adults: Female with soft segmented body covered with white wax, larger than male
- Male is long and winged or wingless
- Gives out a blood-red fluid when crushed
Mealy Bugs

(*Dysmicoccus brevipes*

**Damage**

- Mealy bugs suck the plant sap resulting to chlorosis of infested leaves
- They secrete abundant sticky honey dew which serves as substrate for sooty molds that hinder photosynthesis
Spike Moth
(*Tirathaba rufivena*)

- Important during the early up to 5 years of growth of coconut
- Causes button fall
- Decreases yield in heavy infestations
- 4 stages: egg, larva, pupa, adult
- Injurious stage - larva
- Takes 36 days from egg to adult
Spike Moth
(*Tirathaba rufivena*)

**Damage**

- Larvae feed on inflorescences that are constricted and do not open properly, particularly found in early bearing varieties
- Migrate and bore through the buttons where they complete their life cycle
Rats

Damage

- Reduce nut yield by 23 - 40 percent
- Most common species: *Rattus tanezumi*, (formerly *R. r. mindanensis*)
- Nutfall dramatically increases during dry season
- Feed on all ages of nuts
INTEGRATED CONTROL OF COCONUT DISEASES

BUD ROT (*Phytophthora palmivora*)
- Deadly to young and old palms
- The fungus is adapted to humid environment.
- Infected palm dies in 3 to 9 months
- Colored varieties found more susceptible
BUD ROT
(*Phytophthora palmivora*)

**Damage**

- Wilting of one of the spear leaves
- Yellowing, drooping and drying of leaves
- Rotten bud emits foul odor
- Remaining nuts are still able to mature
NUT ROT
*(Phytophthora palmivora)*

**Damage/ Symptoms**

- Premature nutfall
- A nut or whole bunch is affected
- Favors high humidity as in bud rot
Symptoms

- Sunken water-soaked lesions on the nut surface
- When split, meat is slimy with fermenting odor
Symptoms

- Infects young and old palms
- During severe infection seedling may die or is rendered unfit for field planting
- Delayed bearing of palm or reduced yield
LEAF SPOT
*Helminthosporium* sp.

**Symptoms**

- First, the disease appear as small yellowish circular spots. In severe cases, spots coalesce forming blights and leaves dry up.