CROP PROTECTION IN COCONUT

By

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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

Coconut Logs

Coco sawdust

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

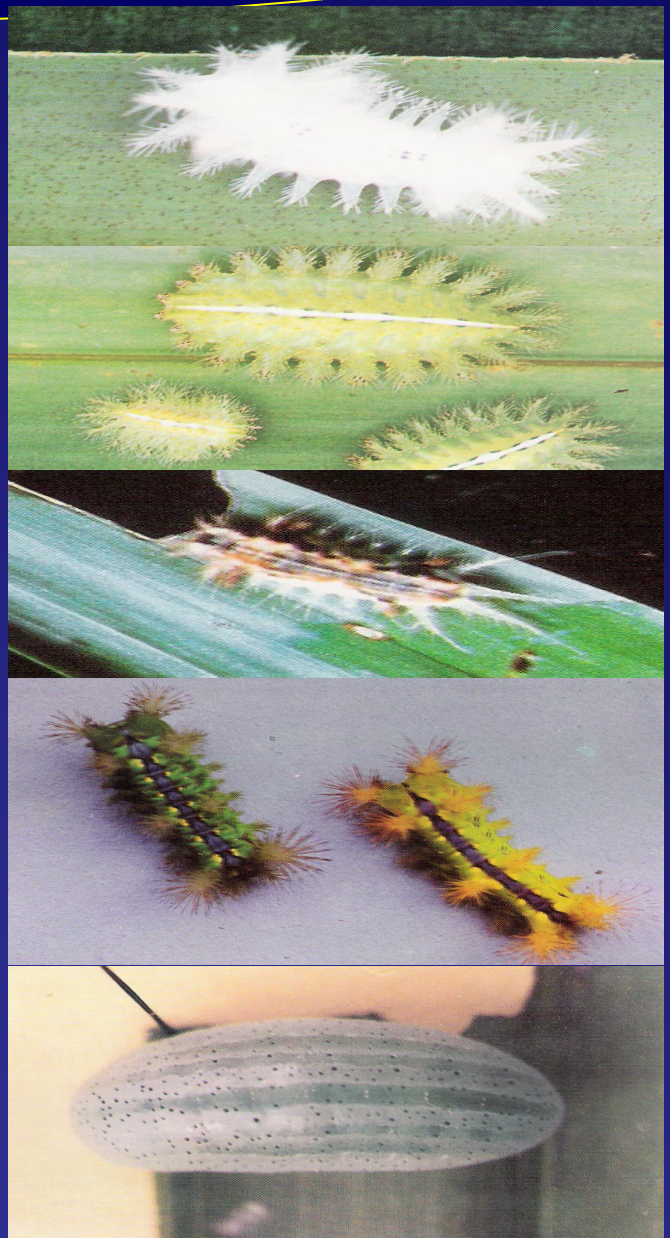
Asiatic Palm Weevil

Nature of damage

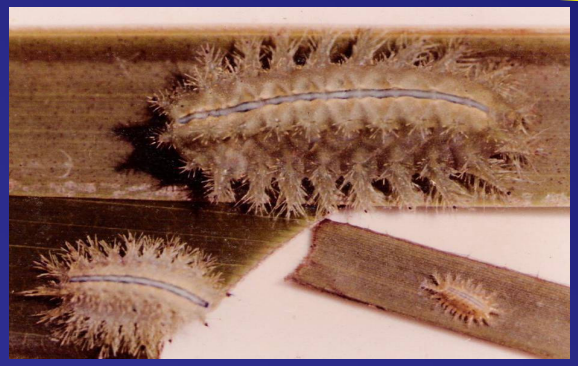
- Adult weevil oftentimes lays eggs on wounds on trunks or injuries caused by rhinoceros beetles.
- Larva tunnels and feed on fresh tissues of trunk and bud.
- Larva feed up to 50 days until they pupate

Slug Caterpillars (Limacodids)

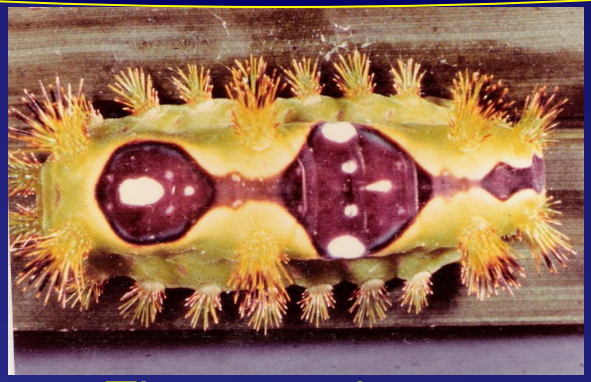
- Most destructive leaf feeder
- Heavy defoliation cause button fall leading to reduction in yield
- Two groups: nettle caterpillar and slug caterpillar
- Most common species : green, white, orange, brown, gelatine caterpillars
- Destructive stage : Larva



Other Slug Caterpillar Species



Thosea sp



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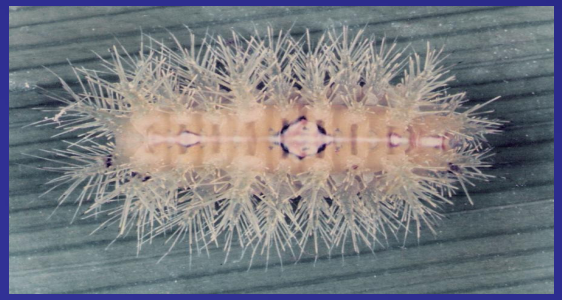


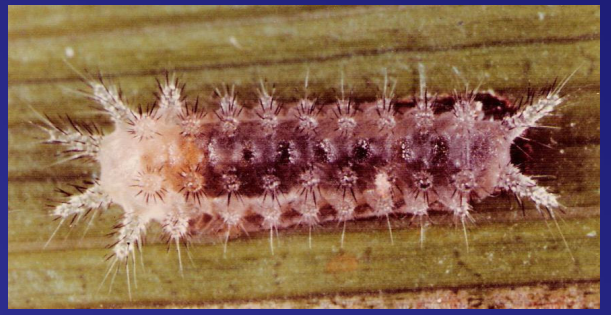
Thosea celebas

Setora sp

Susica malayana

Pygmamomorpha senescens West

Darna sp



Penthocrates sp

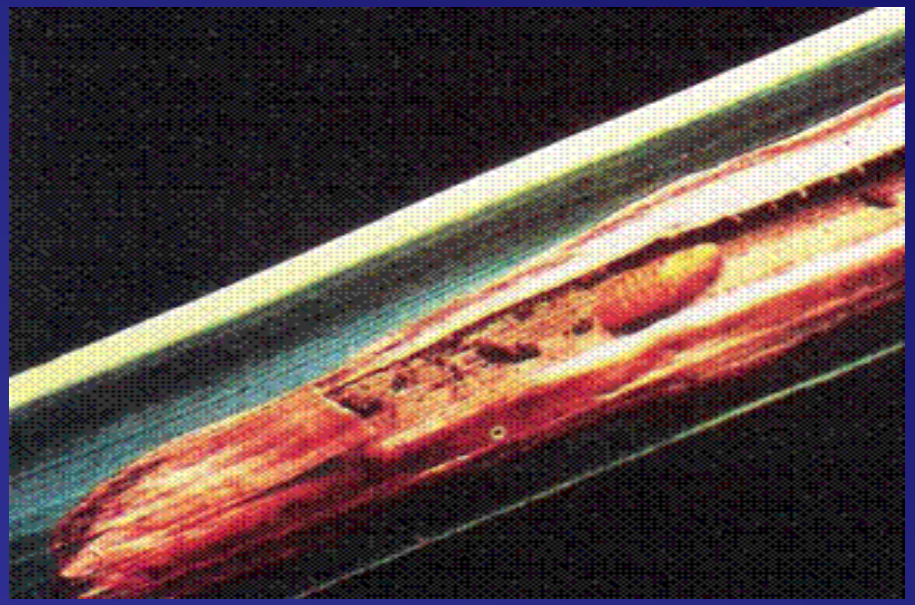
Slug Caterpillar

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



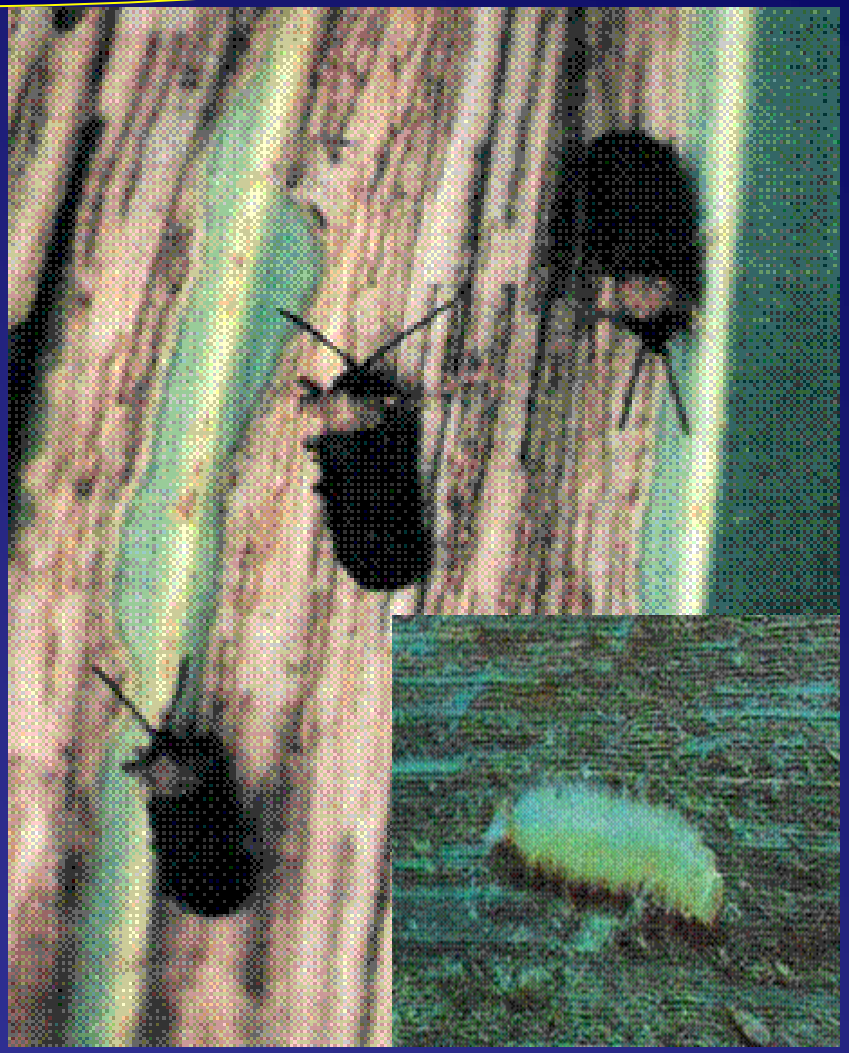
Coconut Leafminer
(*Promecotheca cumingii*

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)

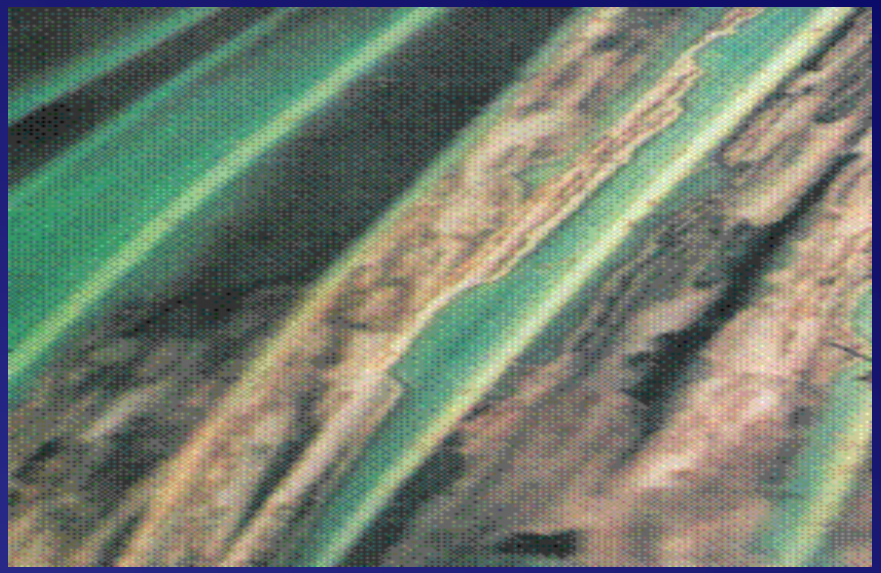
- Attacks nursery seedlings and young palms
- Destructive stage : Larva and adult
- Egg laying to adult in 17-35 days and from 170-180 eggs.
- Total life span - 101-202 days

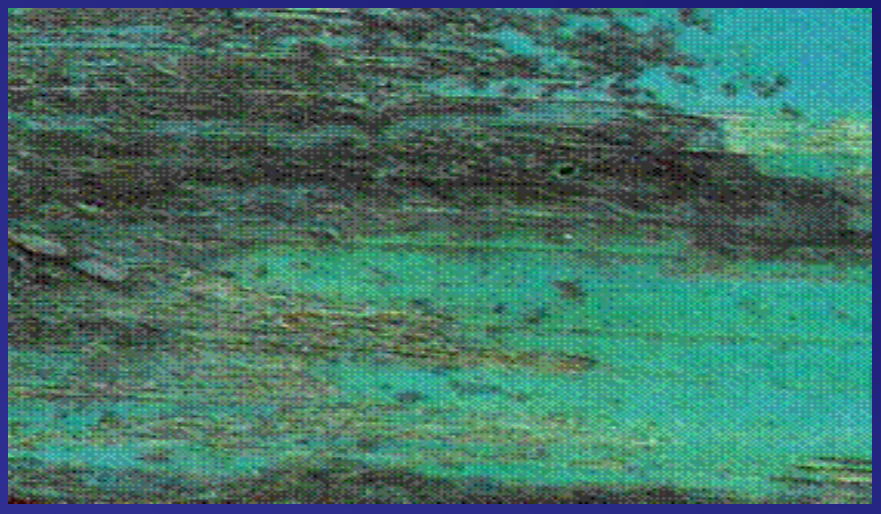


Two-Colored Hispid Beetle (*Plesispa reichei*)

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.

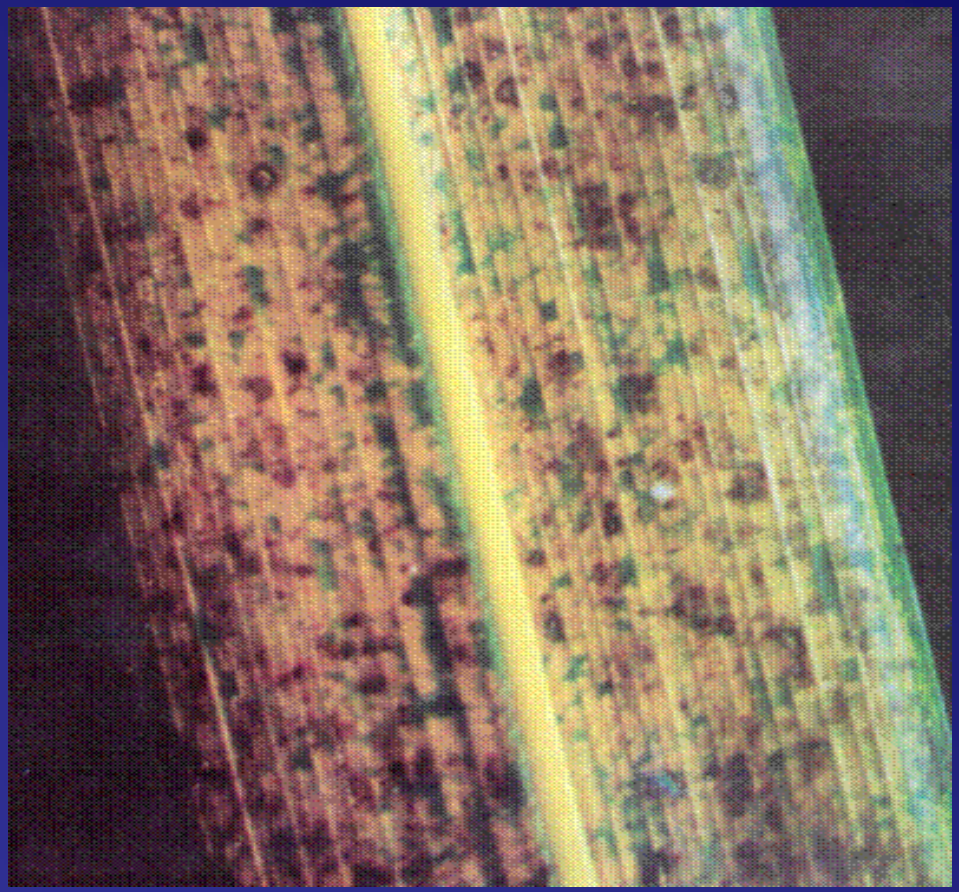




Two-Colored Hispid Beetle (*Plesispa reichei*)

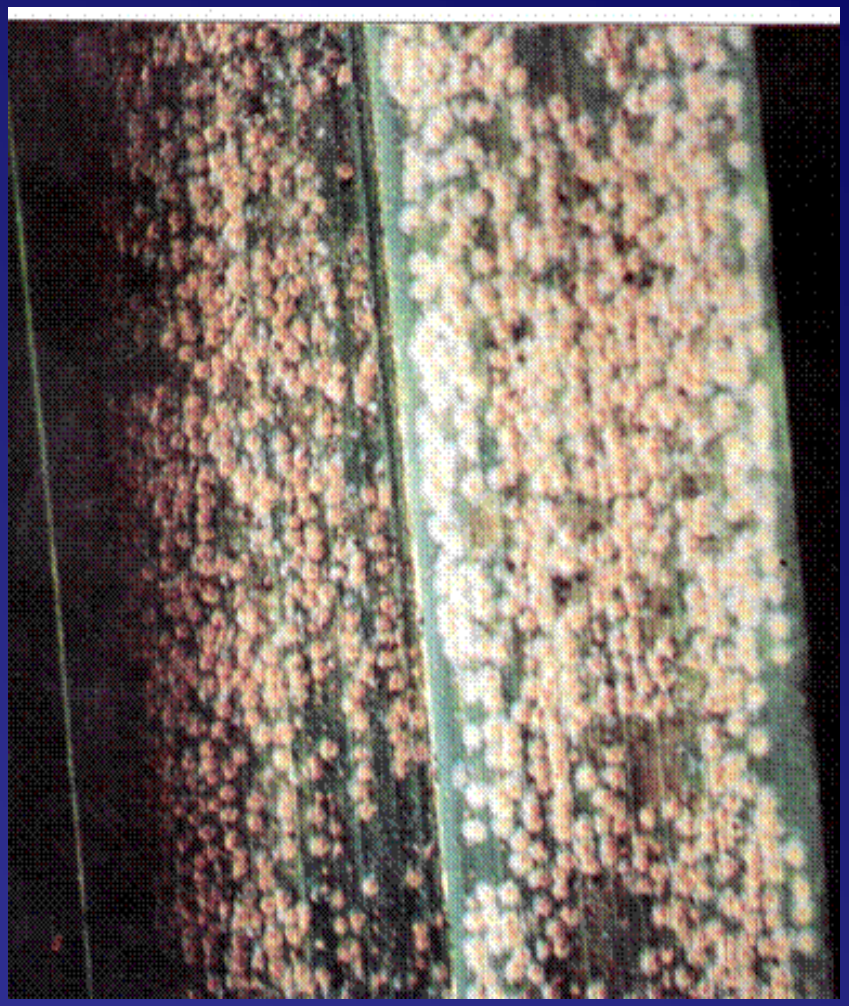
Damage

- Scales form crust on the leaf surface while sucking on the plants
- Damaged leaves turn yellow and dry up.



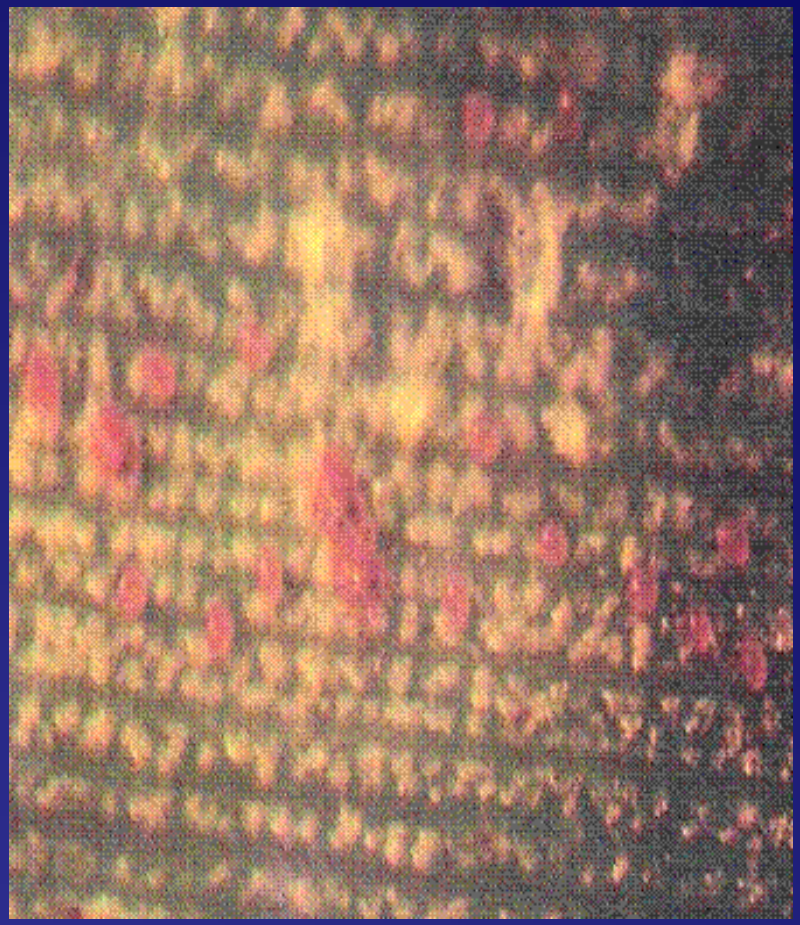
Coconut Scale Insect (*Aspidiotus destructor*)

- 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

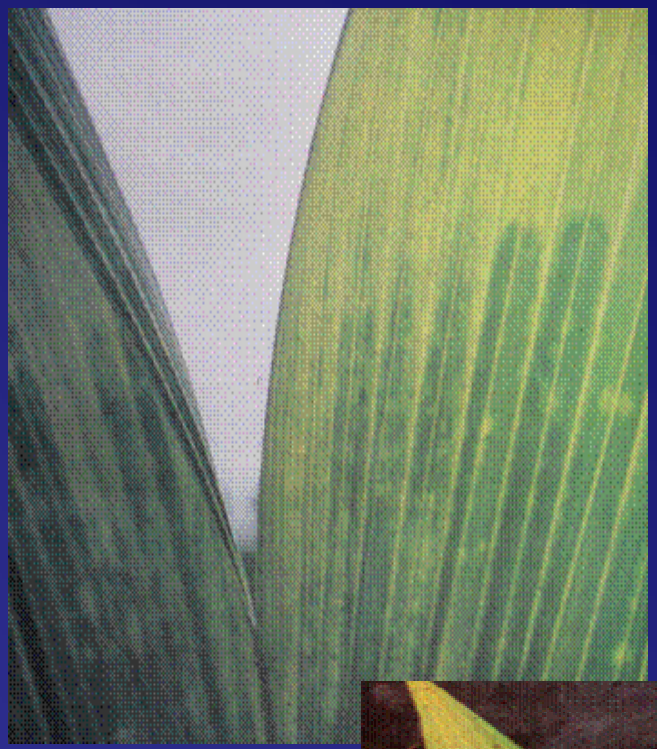
- Small arachnid
- Tiny red dots, stays on the lower surface of leaf
- 3 stages: egg, nymph, adult
- Injurious stages : larva, nymph, adult
- Mites feed on seedlings and mature palms
- Female lays 18 eggs throughout her lifetime
- Egg to adult – 6 days



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.

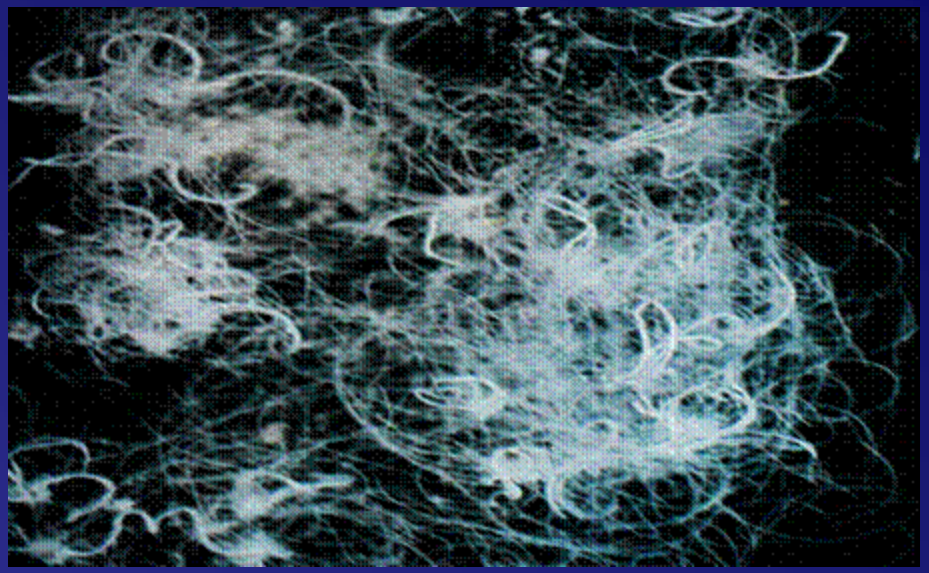
Damage

- suck the sap in the lower surface of leaflet
- Infested leaves shrivel, turn yellow then dry up
- Stunting of seedling

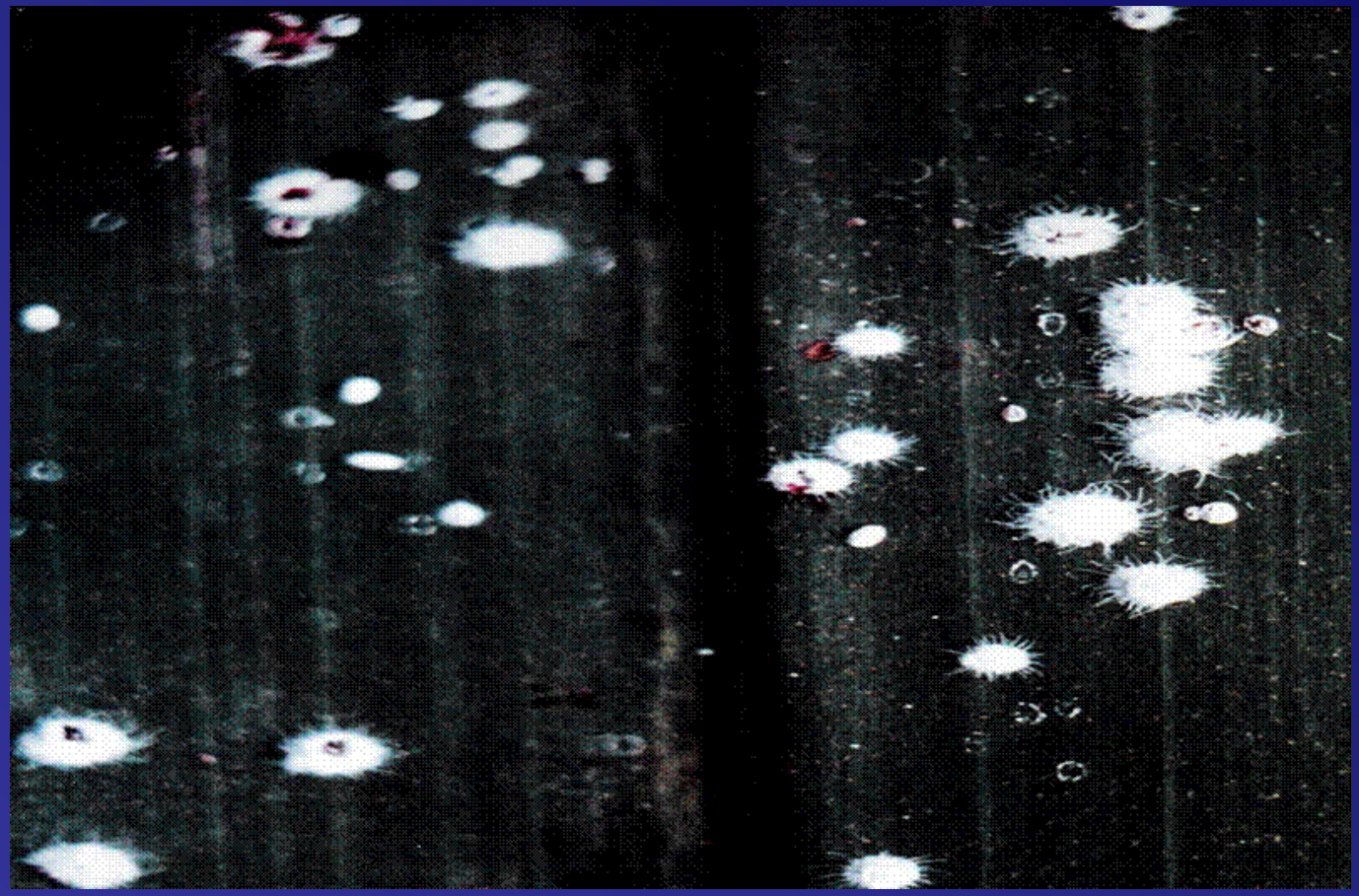
White Fly
(*Aleurodicus destructor*)

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

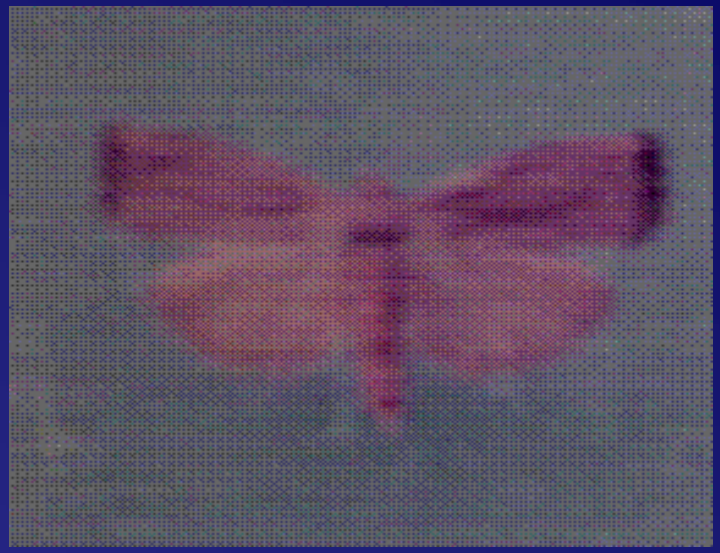
Mealy Bugs
(*Dysmicoccus brevipes*

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

NUT ROT

Symptoms

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

LEAF SPOT
Helminthosporium sp.

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.

Prevent or Control Coconut Pests and Diseases