

Management

- **Priority:** Protect the palm from injury, remove disease sources early, maintain adequate moisture, and prefer biological management wherever appropriate.
- **Biological management:** Apply *Trichoderma harzianum* (CPTD28) talc formulation as paste on bleeding patches + 5 kg neem cake enriched with *T. harzianum* (CPTD28)/palm to the basin; irrigate and mulch. Repeat quarterly for one year.
- **Chemical alternative:** Chisel out bleeding patches and apply hexaconazole 5 EC @ 0.1%; root-feed 100 ml of 5% hexaconazole 5 EC quarterly + basin drench with 40 L of 0.1% hexaconazole 5 EC.

ARECANUT: LEAF SPOT DISEASE

LOOK FOR

- **Initial stage:** Yellow specks or brown/dark brown/black spots with a halo appear on leaf lamina. Grey spots with purple margins may also appear.
- **Lesion development:** Spots enlarge and coalesce, forming large lesions with yellow halos. Spots can be seen on nuts and leaf sheath also.
- **Leaf blight:** Advanced lesions develop into blighted appearance. Mainly outer and middle whorls; Severity decreases from outer to inwards.
- **Severe infection:** Seedlings may become stunted or die. In adult palms, leaflets wither, and leaves become dry and droop. Nuts may split at the infection site and fall off.



Management

- **Quarantine:** diseased seedlings should not be transported to healthy areas.
- **Phyto-sanitation:** Severely affected leaves should be removed and destroyed to prevent further spread.
- Proper drainage, lime application in acidic soils and balanced nutrient application
- Initial stage, spraying with 1% Bordeaux mixture or copper oxychloride 50% WP (2g per litre of water)
- Severe condition, spraying propiconazole 25% EC (1ml per litre of water) or tebuconazole 38.39 % SC (1ml per litre of water), followed by propineb 75% WP (2g per litre of water), along with wetting agent.

Watch for these pests and diseases

COCONUT

Black Headed Caterpillar
Opisina arenosella



Slug Caterpillar
Parasa lepida



Whitefly Complex
Aleurodicus rugioperculatus
Paraleyrodes bondari



Stem Bleeding Disease
Theilaviopsis paradoxa



ARECANUT

Red & White Mites
Raoiella indica &
Oligonychus indicus



Leaf Spot Disease
Colletotrichum gloeosporioides



COCOA

Tea Mosquito Bug (TMB) complex
Helopeltis theivora,
Helopeltis bradyi
Helopeltis antonii



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Climate Resilient
Pest & Disease Management
During Hot & Dry Weather

PROTECT YOUR PLANTATION CROPS
COCONUT • ARECANUT • COCOA

Key Climatic Factors
Accelerating Pest & Disease Outbreaks

- ❖ **High Temperature:** Faster pest development and more generations.
- ❖ **Heat & Drought:** Stressed crops become more vulnerable to sucking pests, mites and diseases.
- ❖ **Microclimate Shifts:** Heat and humidity changes can favour pest & disease build-up.
- ❖ **Erratic Monsoon:** Alters natural pest mortality, favouring soil pests and chafer beetles.

BEAT THE HEAT : KEY ACTIONS

- ✓ Apply dolomite or gypsum as needed.
- ✓ Use composted FYM or vermicompost.
- ✓ Incorporate green manure/green leaves to improve soil structure and organic matter.
- ✓ Use CPCRI bioinoculants such as Kera Probio, KerAM or Kalpa Vriddhi.
- ✓ Mulch the palm basin to conserve moisture and beneficial microbes.
- ✓ Apply organic cakes or bio-suppressive compost to improve soil health and suppress soil-borne diseases.
- ✓ Scout regularly and identify pest hotspots early.
- ✓ Conserve the predators and parasitoids
- ✓ Prefer need-based, biological and ecological management.

COCONUT: BLACK-HEADED CATERPILLAR

LOOK FOR

- Caterpillars construct silk galleries on the underside of fronds and scrape green chlorophyll, leaving palms scorched and severely unproductive

Management

- **Severe infestation:** Cut and burn heavily infested lower-whorl leaves and the next four leaves with live stages.
- **Sporadic outbreaks:** Spray the underside of fronds with chlorantraniliprole 18.5 SC @ 1 ml/L
- **Biological control:** Release parasitoids at the appropriate stage: *Goniozus nephantidis*: 20/palm, *Bracon brevicornis*: 30/palm



COCONUT: WHITEFLY

LOOK FOR

- Nymphs and adults feed heavily on undersurface of leaves, secreting honeydew that fosters sooty mould. This sooty mould blocks light absorption, causing severe photosynthetic depletion and lower nut yields.

Management

- **Pesticide holiday:** Avoid insecticides to conserve natural enemies: *Encarsia guadeloupeae*, *Apertochrysa sp.*, ladybird beetles and sooty-mould scavenger beetle *Leiochrinus nilgirianus*.
- **Severe infestation:** Spray water or neem oil emulsion 0.5% on the lower surface of leaflets.
- **Maintain palm health:** Follow soil-test-based nutrition, recycle organic biomass and provide timely irrigation.
- **Ecological intensification** using crop-habitat diversification to suppress invasive whiteflies and promotion of tolerant varieties



COCONUT: SLUG CATERPILLAR

LOOK FOR

- Scraping and window-like patches on leaflets.
- Irregular holes and skeletonization
- Severe infestation may cause defoliation

Management

- Conserve naturally occurring predators and parasitoids and avoid unnecessary broad-spectrum insecticides.
- Deploy light traps at a density of 5 traps per hectare to mass-trap adult moths.
- Release *Pediobius sp.* parasitoid wasps at a rate of 60 wasps per palm on 10% of your trees when the pest is in its early larval stage.
- ⚠ **Do not handle slug caterpillars with bare hands; hairs/spines may irritate skin.**

ARECANUT: LEAF MITES

ON LOWER SURFACE LOOK FOR



Red mites



Reddish stain on the finger



White mites



White webs on the finger



Yellowing, bronzing and drying of the leaves

Management

- Provide proper shade, irrigation, and balanced nutrition
- Cut and remove the severely infested leaves along with mite colonies
- If the infestation is low, neem oil emulsion (5ml per litre) or Wettable Sulphur 80% WP (2g per litre) can be sprayed twice at 15- day intervals
- Severely infested young palms can be sprayed with spiromesifen 22.9% SC (1ml per litre of water) targeting the underside of the leaves

COCOA: TEA MOSQUITO BUG (TMB)

WATCH FOR

- **Feeding:** Nymphs and adults suck sap from young shoots, cherelles and pods.
- **Lesions:** Feeding causes black necrotic lesions on affected tissues.
- Severe infestation leads to shoot dieback, cherelle scorching and subsequent wilting.

Management

- **Shade regulation:** Follow proper pruning and training practices.
- **Critical stages:** Ensure protection during flushing, flowering and fruiting.
- **Low infestation:** Spray *Metarhizium anisopliae* (1×10^8 CFU/ml or g) or neem oil @ 0.5%.
- **Severe infestation:** Spray lambda-cyhalothrin 5 EC @ 0.3 ml/L (0.03%) or imidacloprid 17.8 SL @ 0.4 ml/L (0.04%).



COCONUT: STEM BLEEDING DISEASE

WATCH FOR

- **Bleeding:** Reddish-brown fluid oozes from trunk cracks and turns black on drying.
- **Progressive spread:** Longitudinal cracks/patches start at the stem base and spread upward.
- **Internal decay:** Patches enlarge and coalesce; underlying tissues become black, fibrous and decayed.
- **Cavities:** Advanced decay forms cavities that release fluid when the bark is pressed or punctured.
- **Crown symptoms:** Premature yellowing of outer-whorl leaves, reduced crown size and trunk tapering.
- **Nut fall:** Occurs at advanced stages and is often more severe under drought stress.