

DISEASES OF COCONUT

DFHCM (2+1)

THEORY CLASS

5THSEM

MAJOR DISEASE OF COCONUT

Ganoderma basal stem rot	<i>Ganoderma lucidum, G. applanatum</i>
Bud rot	<i>Phytophthora palmivora</i>
Stem bleeding	<i>Ceratocystis paradoxa</i>
Grey blight	<i>Pestalotiopsis palmarum</i>
Tatipaka disease	Phytoplasma

GANODERMA WILT/ BASAL STEM ROT/THANJAVUR WILT

- Most serious and destructive disease of coconut.
- The disease is severe in lighter soils and on young palms.

Symptoms

- The fungus infects the roots and spreads upwards killing the entire root system.
- Older leaves droop and wither and remain suspended around the trunk for several months.
- Younger leaves remain green for sometime.
- Tree become barren due to suppression of inflorescence.
- Diseased tree dies slowly and often the stem cracks, giving out a dark brown ooze.
- The cortical tissues disintegrate and stem turn brown.
- Extensive rotting of roots and peeling of stem tissues
- In advanced cases the fungus produces the fruiting structures (**brackets**) **along the** sides of the basal trunk
- Diseased tree dies in about two years.

BASAL STEM ROT



PATHOGEN-*Ganoderma lucidum*,

G. applanatum

- Pathogen produces hyaline mycelium with frequent clamp connections.
- The fruiting body is perennial, usually lateral and is corky at first becoming woody later. **Basidiospores are thick walled brown and truncated at one end.**

DISEASE CYCLE

- P.I: The fungus is soil borne (Basidiospores)
- Wide host range: Mango, jack, citrus, Arecanut, coffee and tea
- S.I: Through irrigation water and by root contact (Mostly from March-August).

MANAGEMENT

PREVENTIVE MEASURES

- Dig isolation trenches of about 50cm wide and 1m deep, 2-3 m away from diseased palm to prevent spread of fungus
- Trenches dug for replanting should be filled with FYM, 5kg neem cake and *Trichoderma viride*
- Incorporate green manure crops like sunhemp and *Sesbania for moisture retention* and multiplication of antagonistic fungi.
- Avoid deep ploughing or digging which are likely to injure roots
- Arrange separate irrigation to each tree to prevent spread of fungus
- Apply FYM (200 kg) and neem cake (5-10 kg) to each tree during June – July months
- Also apply 2 kg superphosphate and 3 kg MOP in two splits, one in July and other in November
- Apply 40 liters of 1% BM in basin of each tree, yearly once, during August – September

CURATIVE MEASURES

- Destroy infected palms
- **Root feeding with tridemorph (6ml in 25 ml of water), 3-4 times an year, in early stages of infection.**
- Control bark eating caterpillar.

BUD ROT

- First reported by Butler in 1906.
- **Coconut and toddy palm (*Borassus flabellifer*) suffer badly**
- Also infects Palmyrah & Arecanut.
- Datepalm is immune to the disease
- Bud rot affects the palms at various stages of growth.
- As the name indicates, the ultimate effect is rotting of terminal bud due to infection in or near the bud.

SYMPTOMS

- Severe on young palms.
- **Yellowish green discoloration of the heart leaf or crown leaf.**
- The basal tissues of the leaf rot quickly and can be easily separated from the crown.
- Spindle withers and droop down.
- Older leaves develop irregular, water soaked spots which are sunken in nature.
- The leaves and sheath in the central spindle fall off leaving an outer whorl of green leaves.
- The withered central shoot can be pulled out very easily from the crown.
- The central crown may rot and in few months the tree may wilt
- Young nuts fail to mature and fall

BUD ROT



CONT...

PATHOGEN: *Phytophthora palmivora*

DISEASE CYCLE

- P.I: Through dormant mycelium oospores carried over summer months on the host debris. With the onset of monsoon rains, the fungus becomes active producing cottony mycelium that infects tender host tissue.
- S.I: Through sporangia with numerous zoospores which spread rapidly in the rain water or sporangia spread through wind and insects also.

FAVOURABLE CONDITIONS

- High R.H., Temperatures of 18-20 °C, presence of insect wounds and heavy rainfall aggravates the disease

Management

- Cutting and burning of badly infected palms.
- If the disease is detected early remove the infected portions and protect with Bordeaux paste (Tree surgery).
- Spray copper fungicides (B.M@1% or COC@0.3%) after on set of monsoon to prevent infection.
- Keep a mixture of $\text{CuSO}_4 + \text{NaCl}$ (1: 3-5) parts in a cloth bag in the crown or above bud.