RAMA UNIVERSITY

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FACULTY OF AGRICULTURAL SCIENCES AND ALLIED INDUSTRIES

DISEASES OF FIELD&HORTICULTURAL CROPS&

Management 1 PPA - 312

LECTURE 12

1. NAME OF DISEASE – WILT

COMMON NAMES-ROOT WILT (OR) KERALA WILT DISEASE

Pathogen- Phytoplasma

Symptom:

- Tapering of terminal portion of the trunk.
- Reduction of leaf size
- Abnormal bending or Ribbing of leaf lets termed as flaccidity.
- Flowering is delayed and also yield is considerably reduced.
- The characteristic symptom is the flaccidity of leaflets. This is the earliest visual symptom. In the beginning yellowing is restricted from the leaf tips to the middle of the leaves, necrosis of leaflets and deterioration and decay of root system are other salient features of the disease. The leaflets curve inwardly to produce ribbing so that the whole frond develops a cup like appearance. Abnormal shedding of buttons and immature nuts are also noticed.

Management:
Cultural Method:

- Cut and remove disease advanced, uneconomical palms yielding less than 10 nuts per palm per year
- Grow green manure crops - cowpea, sunhemp (*Crotalaria juncea*), *Mimosa invisa, Calapagonium mucanoides, Pueraria phaseoloides* etc. may be sown in coconut basins

during April-May and incorporated during September-October.

- Irrigate coconut palms with at least 250 litre water in a week.
- Adopt suitable inter/mixed cropping in coconut gardens.
- Provide adequate drainage facilities.

Biological method:

- In addition to the above, apply 50 kg FYM or green manure and 5 kg of neem cake / palm / year.
- Growing green manure crops like sunn hemp, sesbania, cowpea and calapagonium in the coconut basin and their incorporation in situ is beneficial as the practice reduces the intensity of the root (wilt) and increases the nut yield. The ideal green manure crops for the sandy and alluvial soils are cowpea and sesbania, respectively.

Chemical Method:

- Apply fertilizers for coconut palms in average management at the rate of 1.3 kg urea, 2.00 kg super phosphate and 3.5 kg potash (MOP) / palm / year in the form of urea, rock phosphate and muriate of potash, respectively.
- Magnesium may be supplied @ 500 g MgO per palm per year
- To manage the insect vectors, treat the top tow leaf axils with insecticide preparation. This can be prepared by mixing phorate 10 G with 200 g sand or powdered neem cake 250 g. Mix equal quantity of sand place around the base of the spindle.

2. NAME OF DISEASE – BUD ROT

Pathogen-Phytophthora palmivora

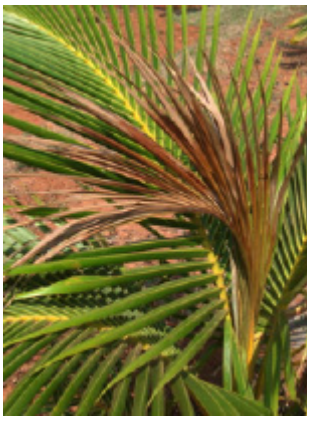
- First reported by butler in 1906
- Coconut, arecanut and palmyrah palm (Borassus flabellifer) are attacked
- Datepalm is immune to the disease
- Bud rot affects the palms at various stages of growth
- As the name indicates, the ultimate effect is rotting of terminal bud due to infection in or near the bud

Symptoms

- Severe on seedlings in nursery and young palms in the main field
- Loss of lustre and yellowish green discoloration of the heart leaf or spear leaf
- Water soaked lesions develop on the base of petioles of youngest leaves. Lesions turn brown and the basal tissues of the leaf rot quickly
- At this stage the spear leaf appears dried and withered
- Irregular, water soaked spots develop on the petioles of older leaves
- 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 base of the pulled out infected spear leaf shows watery rot and emits a foul smell
- The growing point in central crown (cabbage) may rot and in few months the tree may wilt
- Fungus also attacks female buttons and causes button drop particularly in periods of high relative humidity and rainfall
- Fungus attacks tender nuts causing fruit rot. Infected nuts become heavier because of water soaked fibre and fall down

Pale leaf



Leaf rot

Rooting of basal tissue

Drooping

Survival and spread

- Primary: Oospores or dormant mycelium in soil and infected debris
- Secondary: Sporangia and zoospores disseminated through rain splash, wind and rhinoceros beetle, Oryctes rhinoceros

Favourable conditions

- Seedlings and tender palms
- More infected palmyrah palms in the vicinity
- Rhinoceros beetle infestation
- High and frequent rainfall
- High relative humidity (>90%) and temperature of 18-20 0 C

Management

- Removal and burning of badly infected palms
- Infected trees can be saved if the disease is detected early by removing the infected tissues (surgery) and protecting by smearing the growing cabbage with Bordeaux paste
- Spray copper fungicides, Bordeaux mixture 1% or Copper oxychloride 0.3% three times at the beginning, middle and cessation of monsoon as a prophylactic measure

- Keep a mixture of $CuSO_4$ + NaCl (1: 3-5 parts) in a cloth bag in the crown or above bud
- Manage rhinoceros beetle