

# Major Coconut Diseases and their Control

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## INTRODUCTION

The gigantic coconut palm is as much prone to diseases as any other crop. Fatal diseases like Thanjavur wilt, Anabe roga, Ganoderma root rot and debilitating diseases like Root (wilt), Leaf rot and Stem bleeding occur in various parts of the country. Bud rot disease is a killing disease prevalent in all coconut growing areas. In view of the resulting economic loss, these diseases are of major concern to all coconut growers. An understanding of the problems and ways of managing / controlling them is considered of common interest.

## THANJAVUR WILT, ANABE ROGA, GANODERMA ROOT ROT

These three diseases prevalent in Tamil Nadu, Karnataka and Andhra Pradesh are grouped together on the basis of the similarities in the symptoms of the disease and possible causal agent. Thanjavur wilt is known so, as it made its appearance in Thanjavur area in Tamil Nadu. Anabe roga of Karnataka derived the name from the fructification (anabe) developing on the dying and dead palms. Ganoderma root rot prevalent in Andhra Pradesh is a similar disease.

**Symptoms :** The common symptoms of the three diseases is the abnormal wilting of the leaves from the older to the younger ones, ultimately causing the death of the palm in six months to three years from the appearance of the wilting of leaves. The dried leaves remain hanging on the crown for a long time till the crown topples. In several cases slight oozing of a reddish coloured fluid from the basal part of the trunk through small cracks occur. The bleeding is usually confined to less than a metre of the lower part of the trunk and is also not an essential symptom. Several palms wilt and die with-

out exhibiting the bleeding symptom. Development of brackets or the fruiting bodies of Ganoderma is also noticed in some palms towards the late stages of disease or after the death of the palm.

**Cause of the disease :** Development of brackets or the fruiting bodies of Ganoderma on the affected palms suggests involvement of this fungus in disease incidence. However, experimental evidence to prove this is yet to be established.

**Control :** The suspected pathogen being a soil organism initially



Thanjavur wilt

affecting the root system, opening of trenches around diseased palms to prevent spread to the adjacent palms and treatment with fungicides are the recommended control measures. Soil drenching with sulphur or 1.0 per cent Bordeaux mixture in the trench as well as the base of adjacent palms is advisable. Efficacy of the curative treatments depend on severity of the disease. Early detection of the disease and prompt adoption of plant protection measures will be effective in checking the disease. Destruction of all the infected material - the bole and the roots will - also help in preventing the spread of the disease.

#### COCONUT ROOT (wilt) DISEASE

The most important disease affecting the coconut crop in Kerala is the root (wilt) disease popularly known as "Kattu Veezcha". The disease was reported about 100 years ago from southern Kerala in three isolated pockets in Kottayam and Alleppey districts. At present the disease is prevalent from the northern part of Trivandrum district to the southern part of Trichur in a contiguous manner. The disease also occurs sporadically in Trichur, Palghat, Malappuram, Kozhikode and Cannanore districts with varying intensities. It has also been observed in Tamil Nadu; in Kanyakumari, Tinneveli and Coimbatore Districts.

**Symptoms :** The characteristic symptom of the disease is an abnormal bending of the leaflets termed as ribbing or flaccidity. Necrosis of the margin of the leaflets and yellowing of older leaves are also associated sym-



Root wilt

ptoms. Shedding of immature nuts, reduction in number and size of nuts and poor development of the kernel also occur. With the progress of the disease the growth and productivity of the palm dwindles. The disease affected palms survive for several years in an uneconomical condition. Palms of all ages are prone to the disease although young palms in the early bearing stage are more susceptible to the disease. The disease is prevalent in all types of soil and a variety of environmental conditions but is more frequent in low lying areas, hill slopes and banks of rivers and channels.

**Probable cause:** The disease is suspected to be caused by an ultra microscopic organism known as MLO (Mycoplasma like organism), based on the presence of these bodies in the growing

parts of the disease affected palms (Solomon, personal communication). Earlier fungi and nematodes capable of causing root rot were reported associated with the disease. Their role in disease incidence has not been proved experimentally.

**Management of the disease:** The disease being non-fatal and debilitating in nature provides scope for rejuvenation of the crop by proper agronomic measures. Increase in the yield of disease affected palm by regular manuring, irrigation and intercropping, particularly those in the early stage of disease was reported. Adoption of these management practices in improving the productivity of the disease affected palms where the disease is rampant is recommended. Eradication of badly diseased palms and

implementation of plant protection measures like fungicidal spraying for controlling leaf rot disease will further augment economic returns.

Complete eradication of all disease affected palms in areas of sporadic disease incidence in Trichur District has indicated that systematic roguing of diseased palms will help in "containing" the disease.

### LEAF ROT DISEASE

This disease generally occurs associated with root (wilt) disease. However, stray cases of leaf rot may occur in root (wilt) disease-free areas. In such cases the disease remains mild and gets cured naturally. But when associated with root (wilt) disease, leaf rot incidence leads to rapid deterioration of the palm. The disease is favoured by wet and cool climate.

**Symptoms :** Blackening of the tender leaflets due to rotting from tip downwards and margin inwards is the characteristic symptom. The dark areas when dry wither away leaving deformed leaves on maturity. In acute conditions the rotten portions stick together and the leaf fails to unfold.

**Cause :** The disease is caused by a fungus *Bipolaris halodes* which infects the tender leaflets. Initially, the fungal infection develops as brownish black lesions on the cream coloured leaflets. Later the lesions coalesce to form patches of rotten area. The infection stops as the leaves mature since the fungus is incapable of affecting mature green leaf tissue.

**Control:** Leaf rot disease can be controlled by spraying with copper fungicides like 1.0 per cent Bordeaux mixture (freshly prepared) or 0.5 per cent copper oxychloride as well as 0.3 per cent organic fungicide like Maneb. The spraying should be done twice in a year, once during April - May and again during September-October, to coincide with pre-monsoon and break in the monsoon periods. As the



Leaf rot

fungus is active on the tender leaves, the spray should cover the central spindle and the surrounding young leaves to provide necessary protection. Removal of all infected parts of leaves and burning them will help to prevent the spread of the disease.

### BUD ROT DISEASE OF COCONUT

Bud rot is a common disease in all coconut growing areas but its incidence is generally sporadic.

In rare instances groups of palms are affected in an epidemic manner. The disease is highly season bound occurring during the cool humid periods during monsoon. Young palms aged 5-15 years are generally affected.

**Symptoms :** Usually the disease is recognized when the central spindle withers and collapses. Rarely the young leaves surrounding the spindle leaf appear pale yellow. Dark brownish lesions of various sizes appear at the base of the petiole as well as on the leaf sheath. The base of the central spindle appears rotten and in advance cases of disease the fleshy crown including the growing point rots, emanating a foul smell. Consequently the palm dies, although the older leaves with fruit bunches may remain healthy for a couple of months.

**Cause:** The disease is caused by a fungus *Phytophthora palmivora* which infects the tender growing tissues leading to the collapse of the palm. The fungal infection may set in through the axils of the young leaves and run up to the growing point. The growth and activity of the fungus are determined by low temperature and high humidity and also



Bud rot

availability of water in the leaf axils. During the monsoon when these conditions prevail, the fungus causes the disease in about five weeks.

**Control:** The disease can be controlled by adopting prompt treatment. The rotted parts in the crown of the affected palm should be completely cut and removed. The wound should be dressed with Bordeaux paste and kept covered to protect it from rain. The infected material should be burnt to prevent the spread of the fungus. Palms adjacent to the diseased one may be given prophylactic spray-



Coconut palm affected by stem bleeding

ing with 1.0 per cent Bordeaux mixture.

#### STEM BLEEDING

Stem bleeding is a common malady affecting mature palms. This occurs in most of the coconut growing areas. Rarely the palms die due to stem bleeding. Palms with extensive bleeding with bark partially lost can survive and remain productive.

**Symptoms :** Bleeding or oozing of a brownish fluid through cracks starting from the base of the trunk and extending upwards as the disease progresses is the only visual symptom. On chiselling out the bark at the bleeding point dark brown lesions indicating rotten tissues can be seen. These lesions are restricted to the peripheral region of the trunk. Such internal rotting can also occur higher up on the trunk in an affected palm where the bleeding is confined to the basal part of the trunk.

**Cause(s):** A fungus *Ceratostomella paradoxa* is associated with the disease, but is not considered the cause of the disease. Adverse soil conditions like severe drought followed by heavy rains, sudden change in soil acidity, presence of clay strata

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— Editor

in sub soil layer, accumulation of toxic products in reclaimed soils are suspected to be associated with disease incidence

**Control:** Chiselling out of the decayed tissue under the bleeding patches and application of tar, or Bordeaux paste on the wound checks the disease to a certain extent. Correction of the adverse soil conditions to the extent possible and application of organic manures are advisable until specific remedies are available.

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