



ASEAN PLANT QUARANTINE CENTRE AND TRAINING INSTITUTE

SUDDEN WITHER OF OIL PALM

Other names

Sudden wither
 Marchitez sorpresiva
 Tostada
 Hart rot
 Sudden wilt
 Fatal wilt
 'Deperissement brutal'

Principal host

Oil palm (*Elaeis guineensis* Jacq.)

Alternate hosts

Wild palm (*Maximiliana marina*)
 Coconut (*Cocos nucifera*)
 Cocoa (*Theobroma cacao*)

Euphorbia foliolosa

E. prostrata
E. bacteriana
E. hirtella
Asclepias curassavica

Geographical distribution

Colombia, Venezuela, Surinam, Trinidad, Ecuador, Peru and Brazil.

Causal agent

Sudden wither is caused by a *Phytomonas* sp., a uniflagellated protozoan member of the Trypanosomatidae. It is morphologically indistinguishable from *Phytomonas staheli*.

Symptoms

Foliar symptoms of sudden wither are first seen as reddish-brown discoloration towards the tips of distal pinnae in the oldest fronds (Fig. 1). The discoloration spreads along the frond, with younger fronds being progressively affected, until the entire crown has a greyish appearance as though it is scorched by fire. Spear leaves frequently fail to open and may turn necrotic and collapse, with a secondary soft rot descending towards the meristem. In the intermediate stages, the foliage passes through a pale green colour, becoming yellow and reddish-brown before becoming grey. Speed of discoloration takes 2—4 weeks. Early symptoms of sudden wither also include loss of fruit lustre followed by rotting of fruit and cessation of flowering (Fig. 2). The female inflorescence aborts and there is abscission of fruit from developing bunches. By the time the first symptoms are seen, tertiary and quaternary roots would have been destroyed. Internal root symptoms show destroyed cortical tissues, these remaining a fairly liquid consistency during wet weather, but are necrotic and detached from the vascular cylinder during drier periods. The palms usually die within three months of the first visible symptoms.



Fig. 1. Foliar symptoms of sudden wither disease.

The pathogen

Occurrence of the disease-causing agent is intra-phloemic. Flagellates are observed only in mature sieve elements of the protophloem and metaphloem. Each individual is about 20 μm long and can pass through sieve plates and occurs in the roots, meristematic zone, spear base and inflorescence stalks. Phloem infested by the flagellates is not necrosed and their distribution within the palm is uneven. Sap pressed from infested tissues contains large numbers of the flagellates which are visible under oil immersion. It has not been possible to culture the pathogen, so pathogenicity has yet to be proven. Leaf symptoms could be the result of toxins produced by the pathogen.

Haplaxius pallidus (Hemiptera) is the insect vector, with the adults feeding on the palm foliage and the nymphs on the roots of the weed, *Panicum maximum*. The average incubation

tion period was found to be 148 days. The disease can also be transmitted through injection of sap from an infected palm.

The root miner *Sagalassa valida* (Glyphipteridae) and the disease are closely associated since the pest attack is always found when sudden wither occurs. However, the disease does not always occur when there is a miner attack.

In Ecuador, Chenon.(1) reported that *Lincus* spp. (Hemiptera) were closely associated with the transmission of sudden wither of oil palm.

Economic importance

Sudden wither is one of the most serious oil palm diseases causing severe losses in South America. Palms over two years old, occasionally younger, are attacked. Losses of up to 90% have been reported in Colombia. In Peru, 25% loss of four-year old palms has been recorded (2). Disease incidence of 20% has also been reported in Ecuador. The disease is of great economic importance when it is severe, there being no known cure, and palms die in two weeks after foliar symptoms appear.

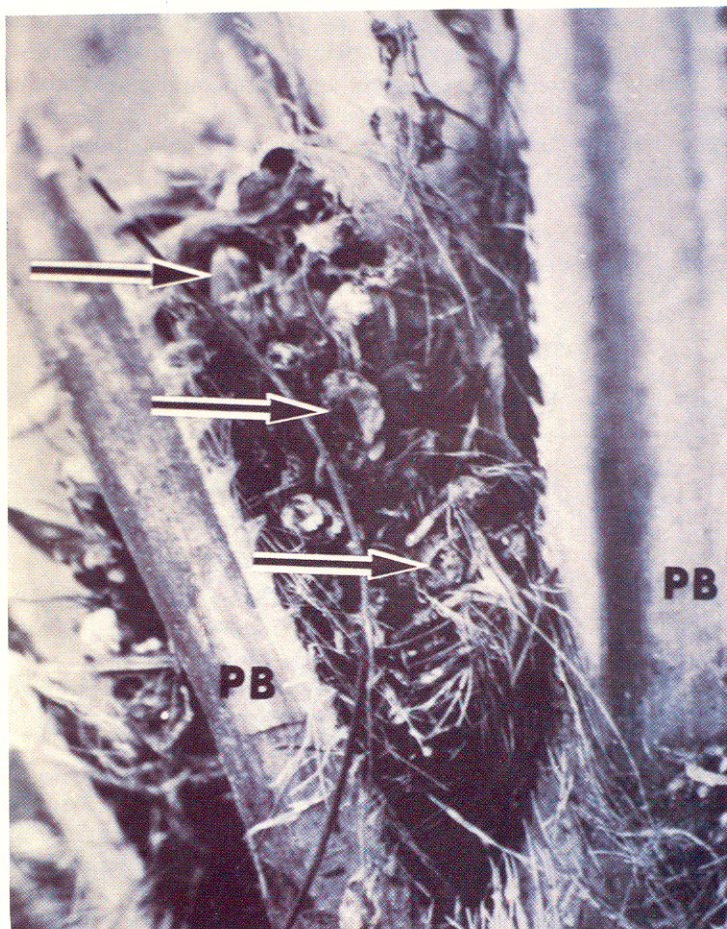


Fig. 2. Fruit cluster surrounded by petiole bases from an oil palm infected with marchitez sorpresiva. The individual fruits have rotted.

Potential within ASEAN

At present, the ASEAN Region, where cultivation of oil palm is of high economic importance, is free of this disease. Accidental spread to this Region would result in heavy losses as no effective control measures exist. In addition, the disease is a potential hazard to cocoa and coconut which are also extensively grown as cash crops. It is, therefore, imperative to enforce complete prohibition on plant material likely to introduce the disease from areas where the disease is present. Plant materials should only be imported as depulped seed that has been adequately treated with chemicals.

Control

There is no known chemical control for sudden wither disease. Measures for disease prevention or avoidance should be practised. Should *Sagalassa* be involved, control can be achieved by using endrin at 0.4% for young palms and 1.0% for adult palms (4). Preventive applications are made every 3—4 months. Where infestation is high, curative applications are recommended at intervals of six weeks until less than 20% of primary roots are freshly attacked.

Great promise lies in the use of resistant planting material. Resistance of *Elaeis oleifera* and its hybrids with *E. guineensis* may be attributed to root characteristics influencing pest attack. Resistant material shows greater lignification and development of both the hypodermis and external cortical parenchyma, together with the presence of condensable tannin in cells of the endodermis and neighbouring phloem cells. Yields of these hybrids are lower than those obtained from *E. guineensis*.

Photos through the courtesy of Thomas, D.L., University of Florida, USA.

REFERENCES

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