

HOSTS PLANTS

The main host of LY is coconuts (*Cocos nucifera*) but at least 30 species of palms are susceptible to infection. The following genera contain susceptible species: *Allagoptera*, *Arenga*, *Arikuryroba*, *Borassus*, *Caryota*, *Chrysalidocarpus*, *Cocos*, *Corypha*, *Dictyosperma*, *Gaussia*, *Hyophorbe*, *Latania*, *Livistona*, *Mascarena*, *Nannorrhops*, *Phoenix*, *Pritchardia*, *Trachycarpus*, *Veitchia*

Distribution

Current location of the pathogen includes:

- **Caribbean:** Cayman Islands, Bahamas, Belize, Cuba, Dominican Republic, Haiti, Jamaica, Netherlands Antilles, St. Kitts and Nevis
- **Central America:** Honduras, Guatemala,
- **North America:** Mexico - Yucatan Peninsula; USA – Florida, Texas
- **Africa:** Benin, Cameroon, Ghana, Nigeria, Togo. Possibly Tanzania, Togo

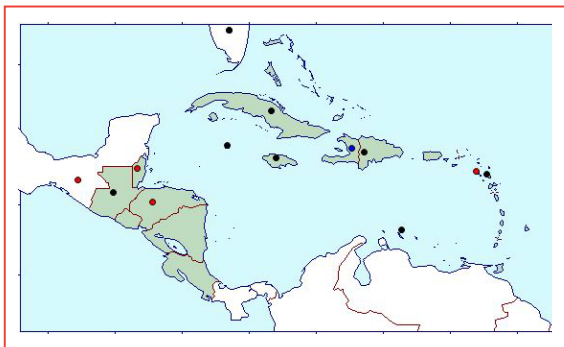


Figure 6 Map of the Caribbean region showing distribution of LY

- Black= Present, no further details
- Blue= Widespread
- Red= Localised

SPREAD AND POTENTIAL PATHWAYS

Natural spread results from the movement of the vector *H. crudus*. Infected vegetative plant material, including ornamental species, could carry the pathogen in international trade. The vector is less likely to be carried by palms, as palms are infested only by the actively mobile adults. *H. crudus* itself could possibly be moved in international trade as nymphs in soil accompanying palms.

MANAGEMENT & CONTROL

Cultural Control

The most practical long term solution to controlling lethal yellowing is the use of resistant cultivars. Coconut cultivars, such as the 'Malayan Dwarf' or hybrid 'Maypan' (Malayan Dwarf x Panama Tall), have exhibited acceptable levels of resistance in most areas.

Chemical Control

Chemical control is achieved by application of the antibiotic oxytetracycline HCl (often referred to as OTC) administered to palms by liquid injection into the trunk. The antibiotic can also be used preventively to protect palms when lethal yellowing is known to occur in the area

Economic Impact

Lethal yellowing can cause almost total destruction of a population of susceptible palms. In the 1970s, an estimated 10 million Jamaica Talls were destroyed and recent reports suggest that despite measures to curtail economic loss, over one million coconut plants were lost to the disease from 1990 to 2008. Similar losses have been reported from Mexico and Honduras.

What can We do?

- Do NOT bring into your country any palms, seedlings or vegetative material of palms without the required Plant Quarantine Import Permits/Approval
- When you travel declare all agricultural items.
- If you suspect that a particular palm had LY disease, report this immediately to your Ministry or department of Agriculture



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CARIBBEAN
PLANT HEALTH
DIRECTORS
PROTECTING CARIBBEAN AGRICULTURE

PRIORITY PEST THREATS TO THE REGION LETHAL YELLOWING OF COCONUT



Candidatus *Phytoplasma palmae*

Lethal yellowing is a devastating disease that affects palms including coconuts. It is caused by a phytoplasma, specialized bacteria that are transmitted between plants by insect vectors.

PROTECT

Safeguard our agriculture & environment do NOT bring in undeclared vegetative material.

DETECT

Monitor for Signs & Symptoms of Lethal Yellowing.

REACT

Report any suspect palms to your Ministry or Department of Agriculture.

LETHAL YELLOWING OF COCONUT

Candidatus Phytoplasma palmae

The phytoplasma that causes lethal yellowing is called *Candidatus Phytoplasma palmae* and it is spread by the plant hopper, *Haplaxius crudus* (Fig1).



Fig1 *Haplaxius crudus* Source: CABI CPC, 2006

SIGNS AND SYMPTOMS

Lethal yellowing (LY) gets its name from the yellowing and drooping of palm fronds beginning with the lower fronds and advancing up through the crown. The disease characteristically has the following progression:

1. Premature dropping of mature and immature coconuts (fruits on other varieties) in a process called 'shelling'. Most of the fallen nuts will have a brown or black water-soaked area immediately under the calyx (Fig2)



Figure 2 Black, water-soaked area under the calyx of coconut affected by LY. Credit: N.A. Harrison, <http://edis.ifas.ufl.edu/pp146>

2. Flower stalks (inflorescences) begin to blacken. Most male flowers will be dead on the blackened inflorescences and no fruits will set.



Necrosis (blackening) of newly emerged inflorescence on the Atlantic tall coconut ecotype. Source: CABI CPC 2006

3. Palm fronds start to yellow (or, in the case of some species, turn greyish-brown), beginning with the older, lower fronds and advancing upward through the crown. Fronds that have yellowed will die, turn brown and hang down (Fig3).



Figure 3 Coconut palm dying from LY. Source: <http://www.forestryimages.org/>

4. The spear leaf collapses and the bud dies. By the time that this happens, the tree is already dead (Fig.4)



Figure 4 Dead spear leaf Source: <http://www.keepelutheragreen.com/AboutLY>

5. The entire crown falls from the tree leaving a forlorn 'telephone pole' stalk (Fig5.)



Figure 5 "telephone poles" in Eastern Jamaica. Credit Juliet Goldsmith