



EAG TALK

Our prized coconuts are in grave danger! Coconut (*Cocos nucifera*) and other palms on Antigua are being destroyed by lethal yellowing - a plant disease spread by an insect vector.

In 2012, its presence was confirmed here in a number of dying palms. Since the 1800s, this disease has caused devastating effects, particularly in Jamaica and later, Florida.

Lethal yellowing is caused by a microscopic organism, a phytoplasma, that is similar to but different from bacteria. The phytoplasma is a pathogen that affects 37 species of palm, according to the Institute of Food and Agricultural Sciences (IFAS; University of Florida), including date (*Phoenix dactylifera*). This phytoplasma is carried by the planthopper *Haplaxius (Myndus) crudus*, a piercing and sucking insect that itself does not cause significant damage to plants. The phytoplasma multiplies inside the gut of the planthopper. Similar to how some mosquitoes transmit disease, the insect sucks the sap after piercing a palm leaf, simultaneously injecting phytoplasma in its saliva into the palm. These phytoplasma are not known to survive outside of their palm or insect host.

The planthopper, the lethal yellowing disease vector, and its offspring remain infected for life.

To identify a palm affected by the agent of lethal yellowing, the signs and their progression are important but these can dif-

Lethal yellowing—Part 1

fer from one palm species to another. It is important to note that no sign is diagnostic on its own. In coconut palms, most-to-all nuts fall off prematurely. The area of the nut that was attached to the stem has a dark brown/black water-soaked appearance. (Note that other diseases can cause shedding of nuts.)

Next, flowers blacken and fall off. The third sign is leaf yellowing, typically starting from the oldest (lowermost) leaves and progressing towards the spear leaf at the centre of the crown. The leaves eventually turn brown and hang towards the base of the tree. In some palm species, the leaves turn reddish brown instead of yellow.

Once the spear leaf yellows, this indicates that the apical meristem (bud) has been affected and death is imminent. Once the bud collapses, the plant has died. Eventually, all leaves fall and the naked trunk is left standing.

It should be noted that several pest infestations can lead to yellowing/browning of older coconut leaves. With lethal yellowing, death usually occurs within three to six months of the first appearance of signs and within weeks of the yellowing of the spear. If death does not occur within six to seven months, the disease is not likely to be lethal yellowing. Definitive diagnosis can only be made through molecular techniques performed in a laboratory.

Once a palm is infected, studies indicate that it is infected for life. Because lethal yellowing is caused by a bacteria-like organism, an antibiotic, specifically,



Coconut trees in McKinnon's suspected to be affected by lethal yellowing (Photo courtesy Alan Scholl)

oxytetracycline (called OTC) has been shown to effectively manage the disease; the tree is not killed and production is saved in the case of coconut trees.

However, trees with more than 25 per cent of yellowing leaves are too far gone and not recommended by IFAS for treatment. As wisely advised by our local plant protection officials, uninformed use of this antibiotic (it is not a pesticide!) in coconut trees is not advised since this could contribute to the globally increasing problem of

antibiotic resistance in humans. Vector (insect) control is tempting but effectiveness of this method is dubious without significant drawbacks. Some palm varieties have shown resistance to the phytoplasma. These presently represent the longest term solution from an economic as well as practical view-point.

Disease management will be elaborated in subsequent articles. For further information on treatment options, contact the Plant Protection Unit at 764-1255 or 764-7378.

APUA MAINTENANCE WORK

The APUA Electricity Business Unit wishes to advise the general public that it has commenced maintenance work to clear power lines from overgrown trees and shrubs. This will be an ongoing process. Persons noticing trees which pose a threat to any electrical lines are asked to call 311 and make a report.