Greening Facts

- The vector of the disease the Citrus Psyllid *Diaphorina citri* was confirmed in Jamaica back in 2002.
- In 2009, the debilitating disease huanglongbing or citrus greening was confirmed in major citrus growing areas in Jamaica.
- Both the vector (psyllid) and the disease are now present island-wide.
- The psyllids have also been observed on the ornamental *Murraya paniculata* (Orange Jasmine).
- The psyllid reproduces only on the new soft flushes.
- In Jamaica the control of this disease involves an Area Wide Integrated Management System (A.I.M.S) requiring implementation by all stakeholders in the citrus industry and the public.

Area Wide Integrated Management System (A.I.M.S) involves:

- Establish management clusters among citrus farmers in all major growing areas
- Implement AIMS tactics within management clusters guided by a network involving personnel from Ministry of Agriculture & Fisheries & other key agencies
- Use clean citrus plants from certified nurseries

Commercial Programme

- Monitor psyllid population weekly, using tap sampling & yellow sticky traps
- Implement scheduled biological & chemical control programme for ACP on farms
- Release the biological control agent *Tamarixia radiata* in abandoned citrus
- Use nutritional programme being recommended for Citrus

- Practice safe and effective pest control strategies
- Practice good field sanitation
- Maintain accurate records

Residential Programme

- Drench citrus on residential properties with imidacloprid once to twice/year
- Release the biological control agent *Tamarixia radiata* on murraya on residential properties

NO A.I.M.S! NO CITRUS INDUSTRY!
PLEASE JOIN THE EFFORT TODAY!

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Status & Management of Citrus Greening & Its Vector in Jamaica

Ministry of Agriculture & Fisheries

Food and Agriculture Organization of the United Nations

Huanglonbing (HLB)/ Citrus Greening Disease

What is Greening?

It is a bacterial disease that greatly reduces yield and destroys the economic value of citrus fruits and eventually kills the tree. The disease specifically attacks all citrus species and poses no threat to humans or animals.

- There is no cure or resistance varieties of citrus available for this disease.

Cause of Greening

It is caused by phloem limited bacteria *Candidatus liberibacter* of which there are three (3) species, *africanus*, *americanus* and *asiaticus*. In Jamaica it is the *asiaticus* species that is present.

How is the disease spread?

- It is spread by the Asian Citrus Psyllid *Diaphorina citri* as they feed on the leaves. The adult psyllid must be infected in order to spread the disease.
- Greening can also be transmitted by grafting infected bud wood. It cannot be spread by wind or rain, or through contact with contaminated personnel.

Life cycle of the citrus psyllid

Eggs are laid on the newly emerging flush on the citrus. Hatch in 4 days.

Adults

Live for an average of 40 days.

Nymphs

Has 5 instars (or nymphal stages)

10 days later

Damage caused by Psyllid

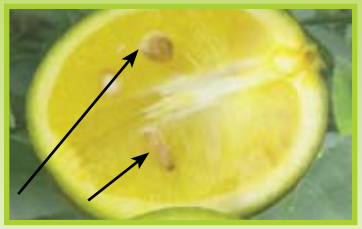
Notching on leaf caused by psyllid feeding

Symptoms of Greening

Mottling in lime leaves

Green islands

Colour inversion on fruit



Aborted seeds in fruit

Visual Symptoms of Citrus Greening & Its Vector

Ministry of Agriculture & Fisheries

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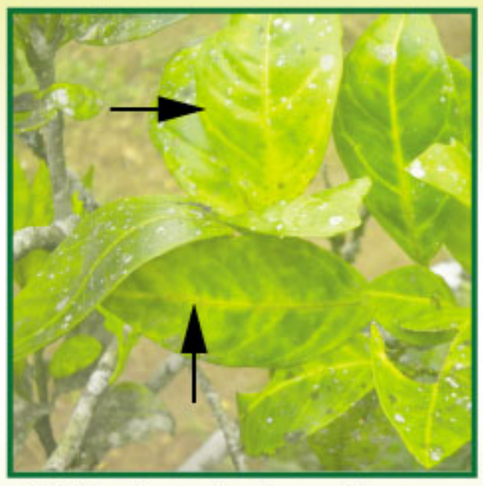
Citrus tree with 'Yellow Shoot'

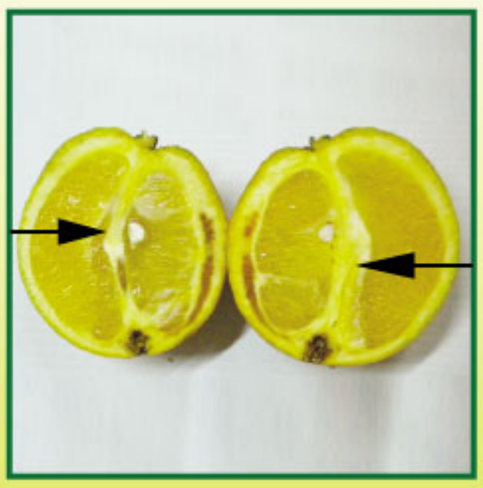
Classical blotchy mottle on lime



Yellowing of veins of leaves

Corky raised mid-veins

Colour inversion of fruit (ripening of fruit top to bottom)



Misshaped/lopsided fruit with curved columella

Navel fruit affected by greening

Normal seeds (A) and aborted seeds (B)

Vector: The Asian Citrus Psyllid (ACP) - Diaphorina citri

Psyllid eggs on young flush

Psyllid nymph secreting honey dew

Adult psyllids feeding on young flush

Notching of leaves caused by psyllid feeding

Not Citrus Greening

Magnesium deficiency

Greasy spot on both sides of leaves

Chimera (Genetic disorder)

Zinc deficiency