



Lethal Bronzing aka Texas Phoenix Palm Decline FACT SHEET

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1. What is Lethal Bronzing formerly known as Texas Phoenix Palm Decline?

Lethal Bronzing (LB) was formerly known as Texas Phoenix Palm Decline. As with lethal yellowing (LY), Lethal Bronzing is a fatal and systemic palm disease caused by a bacterium (16SrIV-D phytoplasma) which can kill certain palms quickly.

The causing phytoplasma is likely transmitted by sap-feeding insects such as planthoppers. LB can also be spread through movement of infected palms.

2. When was LB discovered and how did it find its way to Florida?

LB was first reported in *Phoenix* spp. of palm in Texas in 1980 (McCoy et al. 1980) and then confirmed in Texas in 2002. Four years later, LB was reported on the western coast of Florida (Sarasota to Tampa) affecting *Phoenix* (date) species.

In early 2008, LB was confirmed as the cause of declining cabbage palms (*Sabal palmetto*) in Hillsborough and Manatee counties. Subsequently, LB has been found throughout many of Florida's central and southern counties and there is sporadic occurrence in the northern portion of Florida (Harrison and Elliott 2016).

There is no solid scientific evidence to date demonstrating the mechanism by which LB found its way to Florida.

3. How is LB spread?

LB is spread by an insect vector believed to be highly mobile. In general, vector insects, infected palm trees and movement of phytoplasma-carrying vector insects on their alternative grass hosts are believed to be the avenues through which the LB phytoplasma is dispersed.

4. Has scientific research definitively identified the vector?

To date, there is no definitive identification or confirmation of the vector.

5. Which palms are susceptible to the disease? Are any palms more susceptible than others?

The LB phytoplasma seems to have a wider range of host palms than lethal yellowing (LY). To date, LB phytoplasma has been reported in:

Bismarck Palm (<i>Bismarckia nobilis</i>)	Edible Date Palm (<i>Phoenix dactylifera</i>)
Cabbage Palm (<i>Sabal palmetto</i>)	Pygmy Date Palm (<i>Phoenix roebelinii</i>)
Canary Island Date Palm (<i>Phoenix canariensis</i>)	Queen Palm (<i>Syagrus romanzoffiana</i>)
Carpentaria Palm (<i>Carpentaria acuminata</i>)	Senegal Date Palm (<i>Phoenix reclinata</i>)
Christmas Palm (<i>Adonidia merrillii</i>)	Wild Date Palm (<i>Phoenix sylvestris</i>)

At this time, it appears *P. canariensis*, *P. dactylifera*, *P. sylvestris* and *S. palmetto* are more susceptible than the other palms.

6. Which states are confirmed to have Lethal Bronzing?

Texas, Florida, Louisiana are the states in which LB is confirmed.

7. In which Florida counties is LB confirmed? Are these confirmations found primarily in landscape settings or in production nurseries?

At this time, FDACS-DPI confirms LB is found in the following counties:

Alachua	Highlands	Lake	Polk
Desoto	Hillsborough	Manatee	Sarasota
Duval	Indian River	Orange	Volusia
Hardee			

Palm samples submitted to the University of Florida Diagnostics Center in Gainesville are primarily from palms in landscape settings – not production nurseries.

8. Are there any federal or interstate LB-related quarantines, special phytosanitary certificates or permit requirements governing palm shipments from Florida?

Yes. Texas and Louisiana have restrictions on shipping LB-host palms to those states.

9. Are there any special LB-related regulations governing the movement of palms within Florida?

Not at this time. In the event a nursery is quarantined for LB, movement of palms from such nursery is then restricted. If the nursery has a specific location under quarantine, then only the LB-host palms in the affected location are quarantined with restrictions on their movement.

10. When, how and how often are Florida palm nurseries inspected for LB?

Nurseries which are known exporters of host palms are inspected as required by the destination requirements. Florida Department of Agriculture and Consumer Services Division of Plant Industry inspectors (FDACS-DPI) check for LB any time they inspect a nursery with host palms.

11. How many Florida palm nurseries are confirmed to have LB?

No Florida nurseries are quarantined for the presence of LB at this time.

12. What steps can be taken to treat LB-host palms or mitigate or prevent its spread?

To date, the only recommendations for alleviating spread are the removal of infected trees and preventative injections of Oxytetracycline (OTC). The latter recommendation is based on the assumption LB responds the same to OTC as does Lethal Yellowing disease (LY). (For additional information, please read #17 below).

13. If there is no LB or vector in the immediate area, can the disease still be spread from one palm to another? If so, how?

No. Insect transmission is the only method by which phytoplasmas are transmitted. If the insect vector is not present, no spread will occur.

14. Given LB is not visually symptomatic during its early stages, how long does it take for an infection to become visibly apparent?

It is highly variable depending on a palm's growth conditions, stress factors and other environmental conditions. Nonetheless, LB is believed to take two to five months from inoculation to visible symptom development. A period of gradual decline followed by complete inhibition of growth often occurs about one month before the end of the symptomless phase.

15. Once a LB-infected palm becomes visibly symptomatic, how long will it take before it dies?

Death of a palm infected with LB phytoplasma generally occurs within months of the onset of symptoms. To date, there is no solid data which can estimate how long it takes before an LB-diseased palm dies. Once infected, a palm declines quickly although the rate of decline is dependent on a palm's growth conditions, stress factors and other environmental conditions.

16. How reliable are molecular diagnostic tests in determining LB infections?

The current molecular diagnostic tests are very reliable and very specific with respect to different strains which cause either LB or LY. Yet, false negatives are possible early in an infection because the pathogen may not be distributed equally across the host tissue. However, false negatives can be reduced if proper protocols are followed.

If LB symptoms are visibly present, false negatives can only occur due to human error in sampling or handling. Other diseases and abiotic conditions can cause dieback, yet a negative diagnosis for LB will be a true negative in such a case.

17. With LB-host palms, are OTC inoculations useful tools in production nurseries and/or landscape settings?

If a palm is already infected with LB phytoplasma, scientists do not believe OTC applications are useful to stop a palm from declining. Yet, based on the assumption LB responds the same to OTC as does LY, then properly executed OTC injections into palm trunks may be useful preventatives. No special license is needed or required to inoculate palms with OTC. Additional research needs to be conducted to further evaluate OTC applications and their frequency in LB control.

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