



Diagnostics for Citrus Greening Disease

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PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	9,389,230	07/12/2016	2012-622

OTHER INFORMATION

KEYWORDS

citrus, citrus pathogens, citrus stubborn disease, CSD, HLB, S. Citri, fresh fruit, global foods, antibody-based serological detection, immunoassay-based diagnostic, plant bacterial disease, plant bacterial pathogen, huanglongbing, HLB, citrus greening disease, infected trees, tree disease, insect-transmitted disease, phloem

IMAGES



CSD affected fruit and leaf

CATEGORIZED AS

- ▶ [Agriculture & Animal Science](#)
- ▶ [Other](#)
- ▶ [Plant Traits](#)
- ▶ [Plant Varieties](#)

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BRIEF DESCRIPTION

Background:

Citrus greening disease, also known as Huanglongbing (HLB), is a bacterial disease caused by insect-transmission and phloem-limited bacterial pathogens. It is a serious threat to the global citrus industry, decimating many citrus trees and costing the economy billions in damages annually. The most commonly used method of nucleic-acid based pathogen detection is not ideal with low-titer (low concentration of antibodies to antigen) and it cannot detect the erratic distribution of the bacterial pathogens.

Brief Description:

UCR researchers have developed a proof-of-concept for using secreted proteins of bacterial pathogens to detect bacterial diseases. These abundant and stable secreted proteins serve as robust detection markers for immunoassay-based diagnostics. Compared to current methods, this novel method is more high-throughput, economical, and able to

monitor the pathogens dispersed throughout the plant transportation system.

ADVANTAGES

- ▶ Robust detection - secreted proteins are abundant and stable
- ▶ Rapid, cost-effective processing of large samples
- ▶ Monitors variable distribution of pathogens, and not just at the site of infection
- ▶ Proof-of-concept experiment available in a simple kit

APPLICATIONS

- ▶ Identify infected trees where pathogens are unevenly distributed
- ▶ Field survey for plants

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