



# Novel Multiplex Assay Detects Citrus Pathogens

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## PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10,273,547	04/30/2019	2014-045

## OTHER INFORMATION

### KEYWORDS

fresh fruit, global foods, citrus, citrus  
 canker, citrus stubborn disease,  
 pathogen detection, HLB, Citrus  
 Variegated Chlorosis

## IMAGES



Photo from Agricultural Research Service

Photo by Mmacbeth

## BRIEF DESCRIPTION

### Background:

Citrus greening disease, also known as huanglongbing (HLB), has been a serious, pervasive problem caused by a multitude of plant pathogens. It has decimated many citrus trees, drastically decreasing orange production and costing the US economy an estimated \$11B every year. Currently, there is no cure for HLB, so the citrus industry is in dire need for a cost-effective method of early HLB detection.

### Brief Description:

## CATEGORIZED AS

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

## RELATED CASES

2014-045-0

UCR Researchers have developed a means to detect and identify multiple plant pathogens for disease diagnosis, including citrus greening disease. By developing a novel multiplex RNA assay, they discovered ten targets of nine citrus pathogens and a citrus control gene. In addition to the assays, target-specific probes were designed and implemented to improve the pathogen detection process. These assays were also coupled with high-throughput robotic extraction and purification procedures, optimized for citrus tissues. Furthermore, they also developed a 3-plex DNA assay system along with 3 targets for simultaneous detection, identification and quantification of plant pathogens.

## ADVANTAGES

- ▶ Increases uniformity and cost effectiveness
- ▶ User-friendly assay procedures
- ▶ Simultaneous detection, identification and quantification for the ten targets

## APPLICATIONS

- ▶ Detection of endemic and exotic plant pathogens
- ▶ Plant health monitoring services
- ▶ Citrus disease management

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