

# Current Huanglongbing status and management in Brazil

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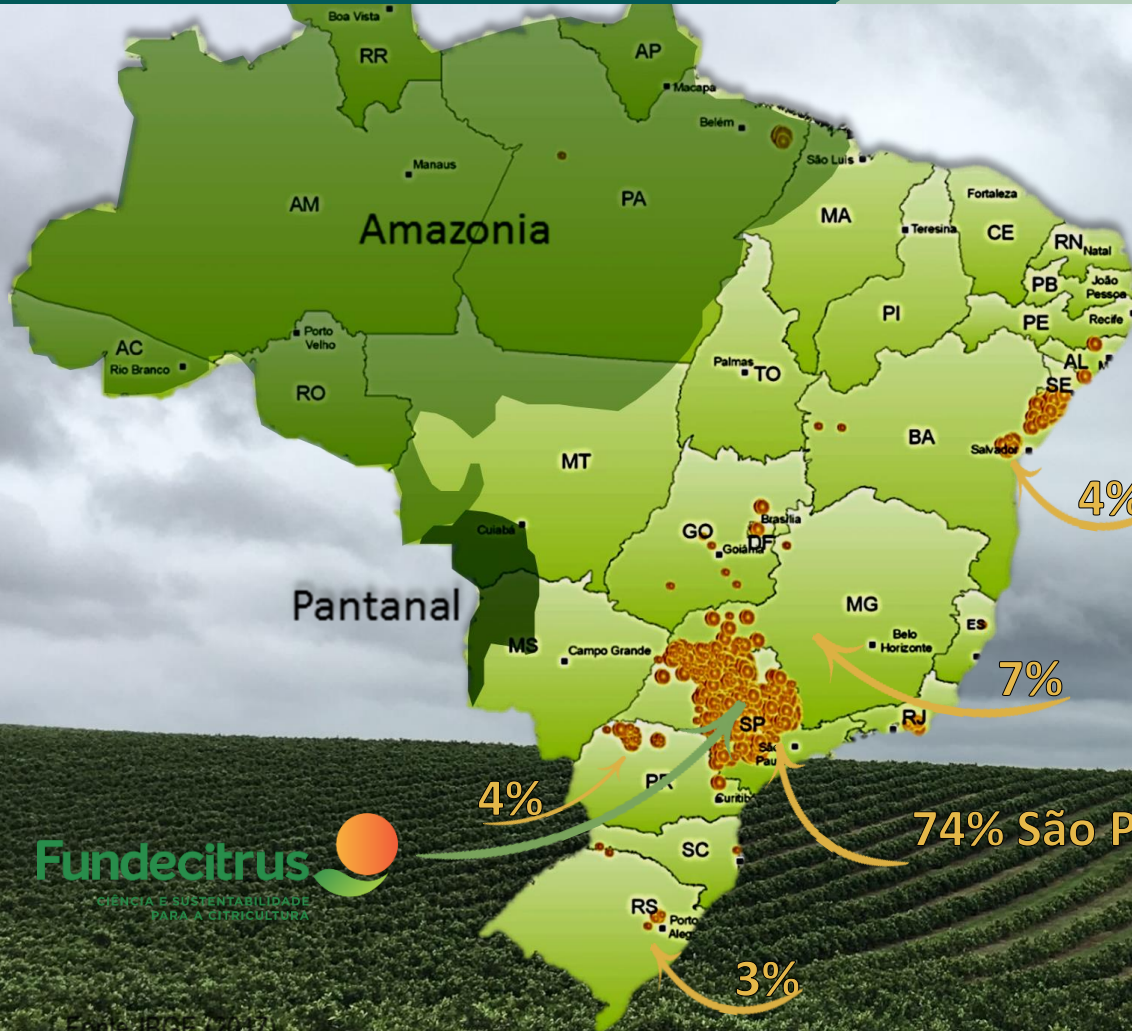
RESEARCH & DEVELOPMENT

*FUNDECITRUS, São Paulo state, Brazil*





# THE BRAZILIAN CITRICULTURE



The world's largest producer of orange and orange juice



94% of the production



# Fundecitrus



CIÊNCIA E SUSTENTABILIDADE  
PARA A CITRICULTURA



RESEARCH AND  
INNOVATION



EDUCATION IN  
CITRUS PROTECTION



TECHNOLOGY  
TRANSFER



CROP FORECAST  
SURVEY



COMMUNICATION

# THE SÃO PAULO CITRUS BELT

461,921 ha with citrus

9,600 citrus farms

~400,000 ha with oranges

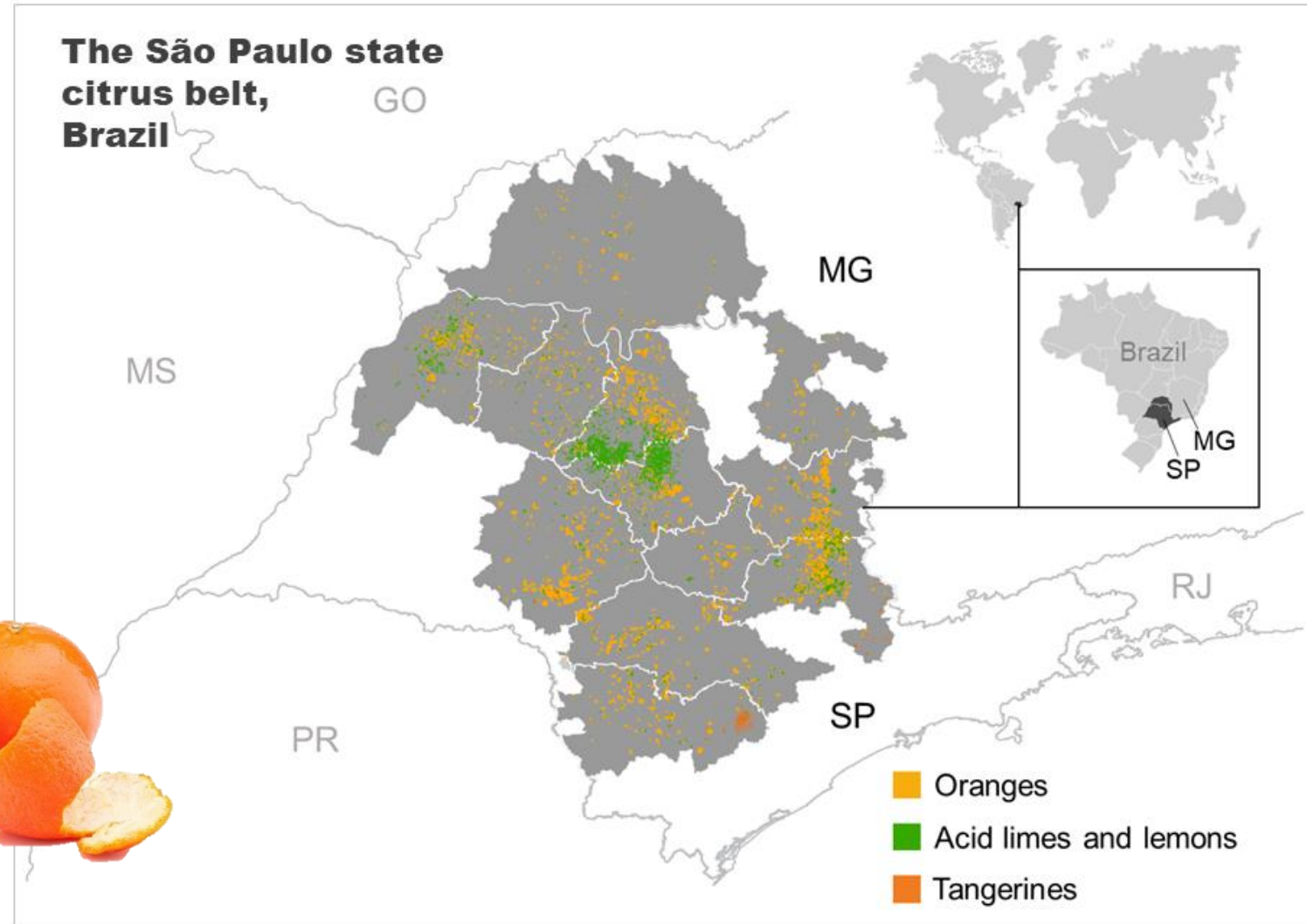
86%

11%

3%



Cultivated area

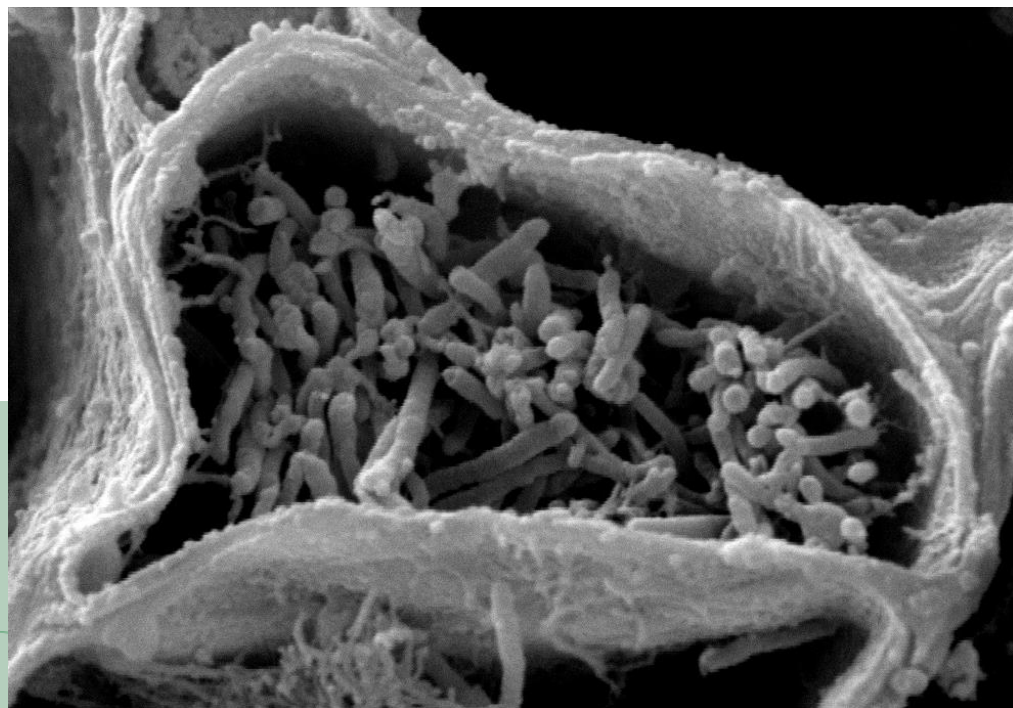




## HLB: A Worldwide Threat

*Candidatus Liberibacter asiaticus*

*Candidatus Liberibacter americanus* (Brazil only)



In Brazil since 2004

Systemic, phloem restricted bacterium

Vectored by a psyllid



*Diaphorina citri*

In Brazil since the 1940s



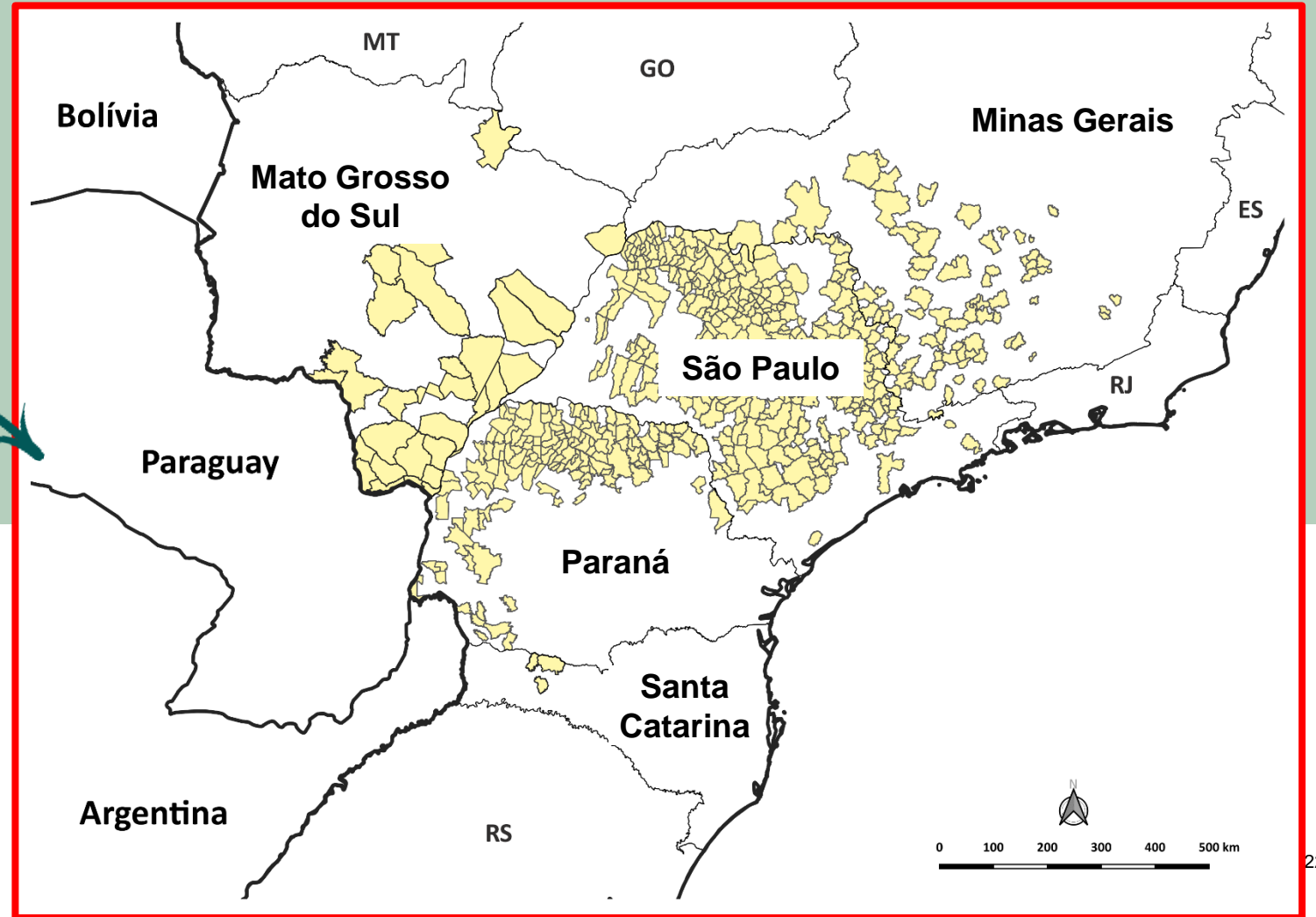
# HLB: A Worldwide Threat



Removal of symptomatic trees is mandatory up to year 8 and all non-commercial symptomatic trees

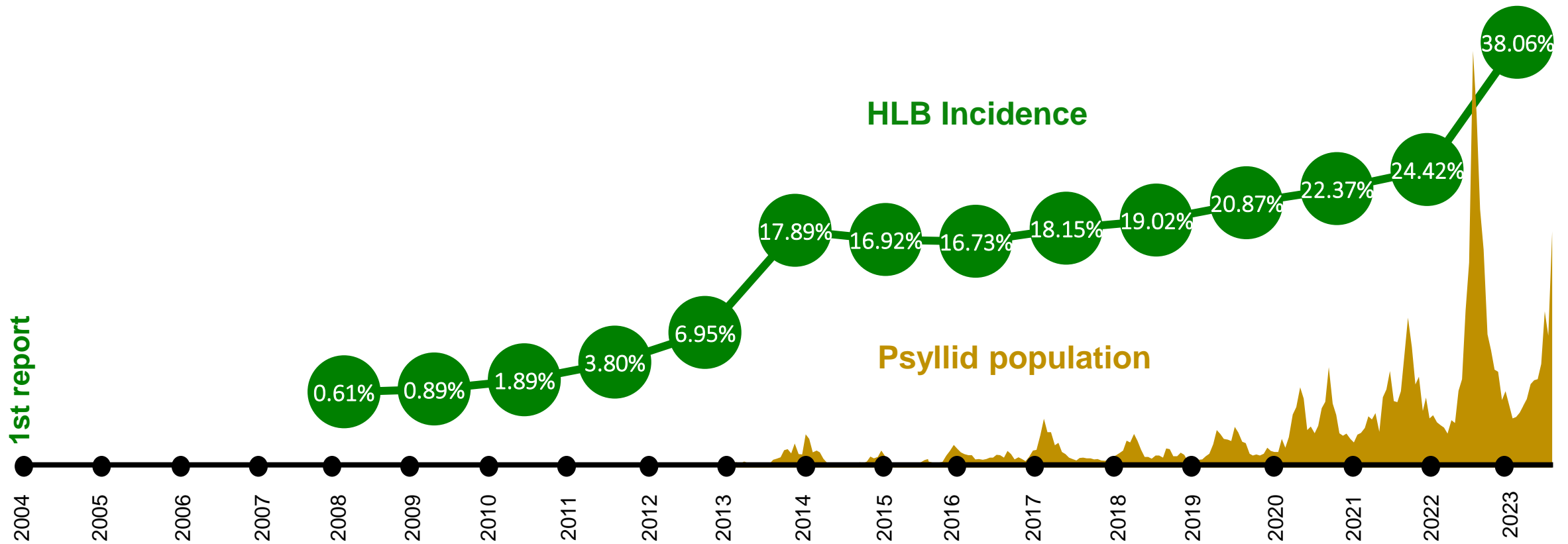


# HLB IN BRAZIL





# HLB AND PSYLLID INCREASE



Diseased trees

Trees flushing due to irrigation and pruning

Lack of insecticide rotation  
"psyllid resistance"

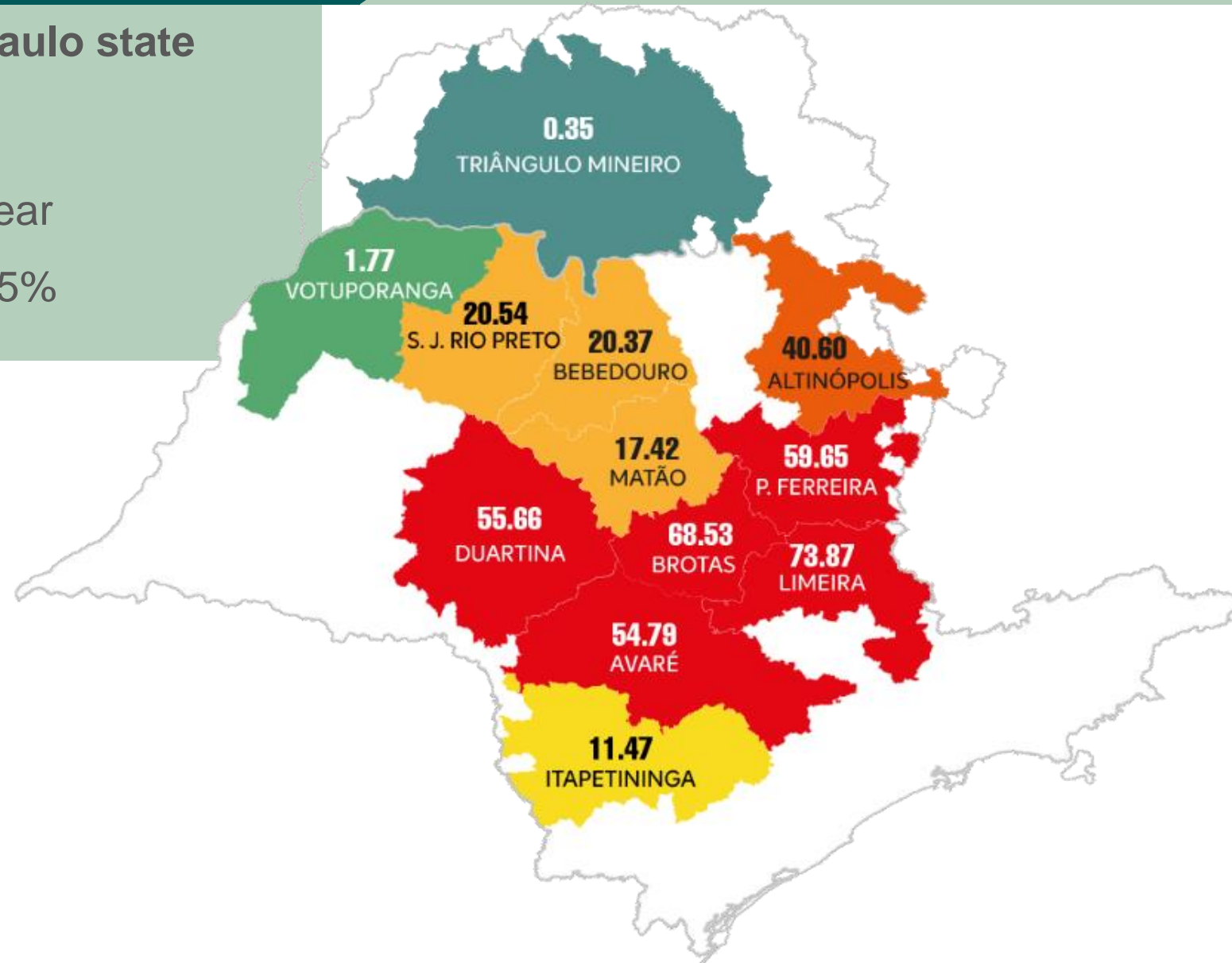


# HLB INCIDENCE

## Incidence in the São Paulo state Citrus Belt, Brazil

58% increase within a year

Varies from 73.87 to 0.35%





## HLB RELATED FRUIT DROP

### Fruit drop

Crop loss due to the disease is increasing

Total fruit drop in the citrus belt is ~21%

HLB >5%





## HLB DRIVES CHANGES



Protected nurseries



Irrigation  
~40%





# HLB DRIVES CHANGES

Valencia/Rangpur lime

Valencia/Flying Dragon

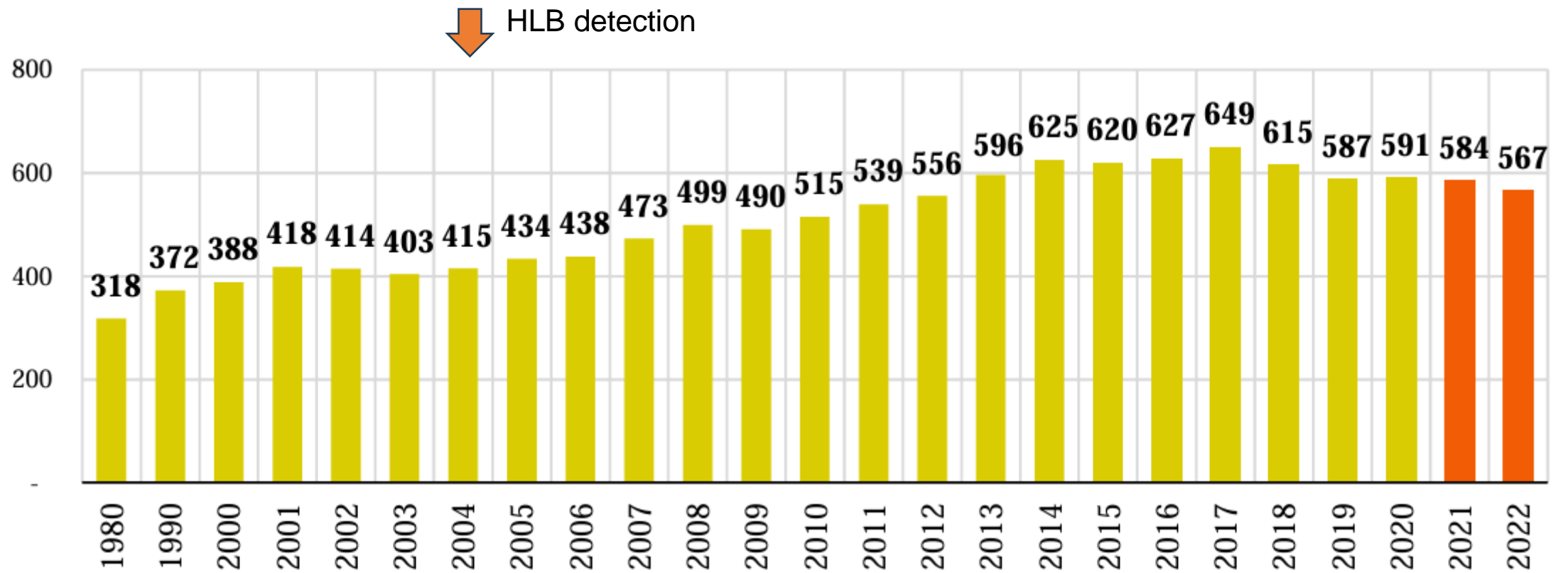
Tree size

Pruning

Pest management

# HLB DRIVES CHANGES

## Tree density/ha

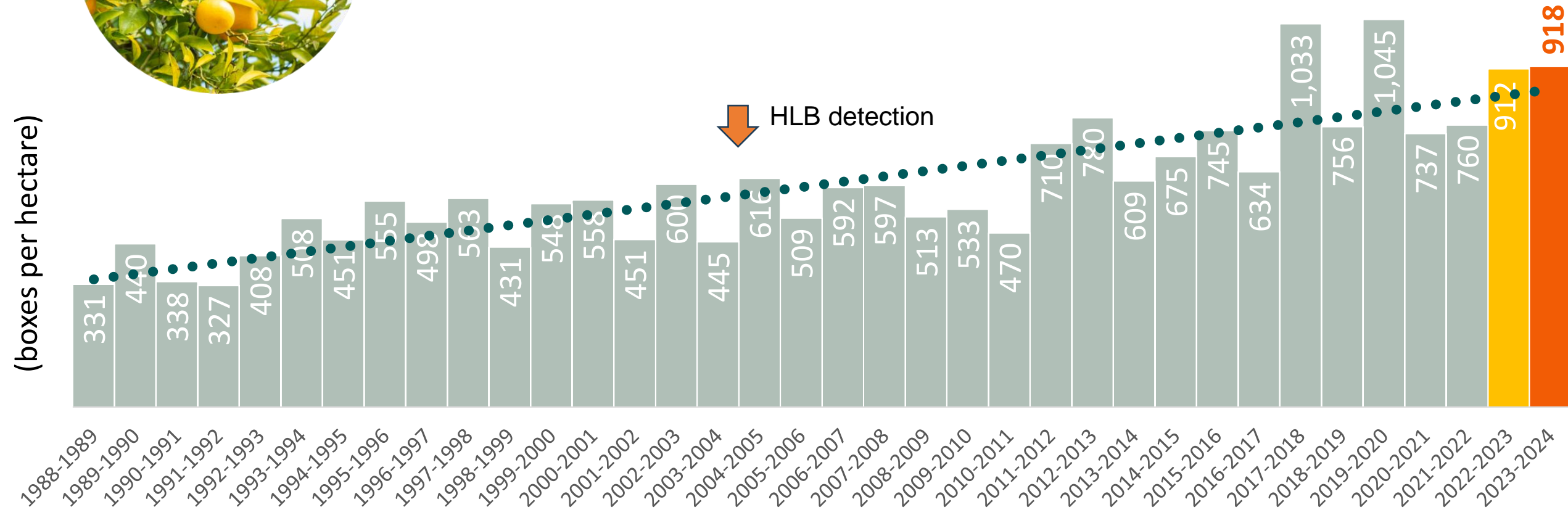




# HLB DRIVES CHANGES



## Productivity of orange trees in the São Paulo state Citrus Belt, Brazil





## FIRST LESSONS



- Once introduced, HLB can hardly be eradicated
- Short latency period and long incubation
- Long-distance vector dispersal
- Abundance of host plants in non-commercial orchards

The success of HLB control will depend on how  
**QUARANTINE REGULATORS**  
and **GROWERS**

face the disease from the  
**beginning** or **before**  
its detected





**In the absence of strict control of the psyllid, living with diseased trees inevitably leads to:**

- Disease spread
- Loss of production
- Higher premature fruit drop
- Worsening of fruit and juice quality
- Higher costs
- Shorter orchard lifespan
- Difficulty to establish new plantings
- Fewer growers, fresh fruit and juice processing facilities





# THE HARDEST LESSON



São Paulo, Brazil  
June/2004

**A citrus  
industry may  
collapse**



Florida, USA  
March/2015



Dominican Rep.  
April/2016



# HLB STRATEGIES OF CONTROL

Within the farm

Outside the farm

Intensive vector control at the border

Fertilization for rapid development

Healthy nursery trees

Planning of new plantings

Removal of affected trees on a regional scale

Psyllid monitoring

Tree inspection

Psyllid control

Controlling psyllids on a regional scale

Removal of affected trees



Saber quando e onde o psilídeo está no pomar é essencial para planejar as ações para combatê-lo. Armadilhas adesivas amarelas são mais eficientes para o monitoramento.

podem estar espalhados pela região, fornecendo populações da praga que prejudicam até mesmo os pomares que têm controle rígido de HLB.



# TRENDS AND CHALLENGES

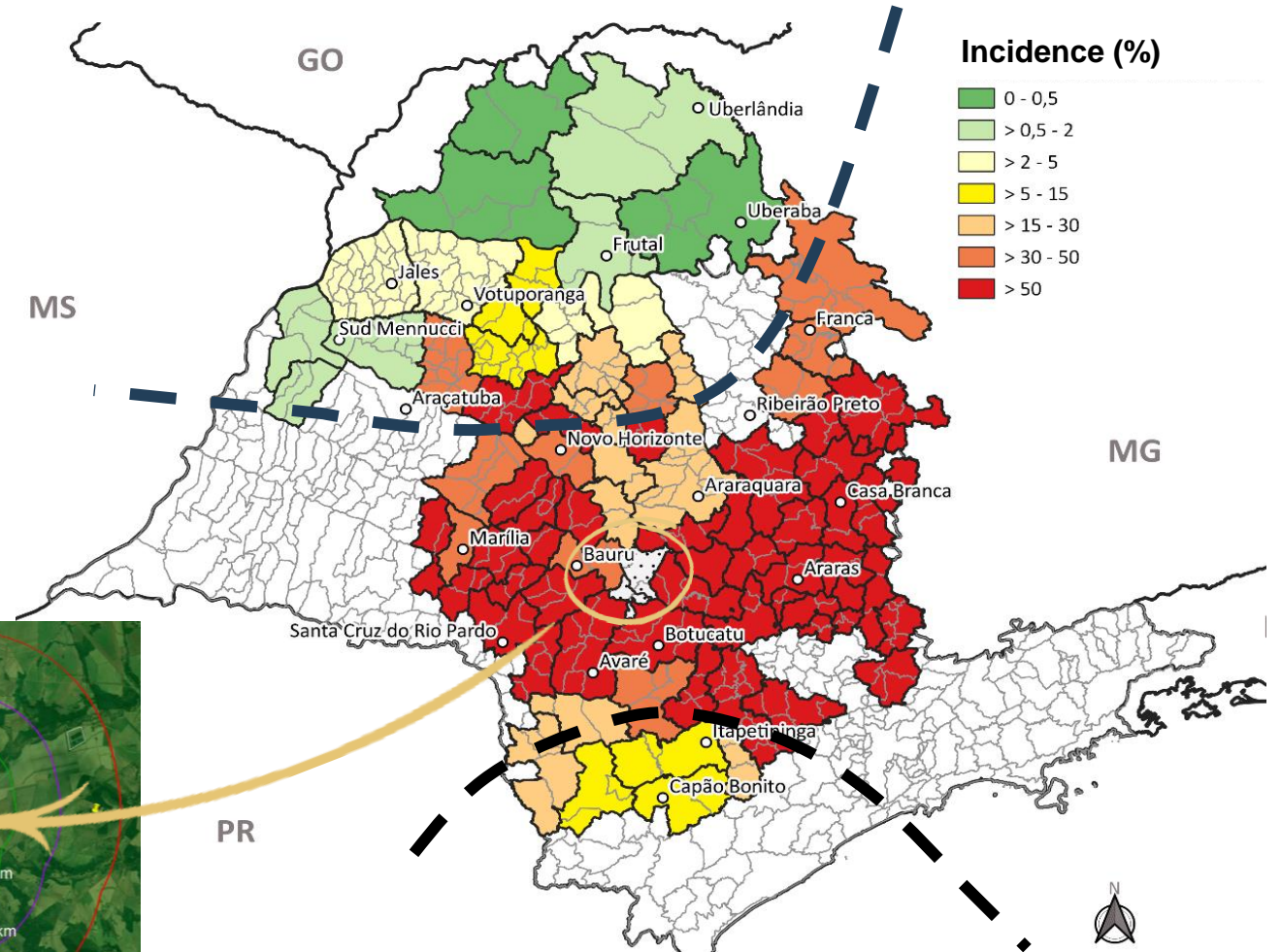
## Areas with HIGH incidence

Very difficult to establish new plantings  
Production drop | lower fruit quality  
Attempts to increase the longevity of orchards

## Migration to areas with LOW incidence of HLB

Isolated and larger properties  
Surveys, tree removal, and vector control  
Regional management

**Stay committed  
to the lessons!**





## HLB: CRITICAL AREAS ARE SUFFERING

- Growers are stopping to remove diseased trees
- Orange juice prices are high
- Almost impossible to establish new orchards
- An efficient treatment for HLB mitigation is needed





# PSYLLID MANAGEMENT IN THE SÃO PAULO CITRUS BELT

Psyllid monitoring



Kaolin



Inside

Biological control



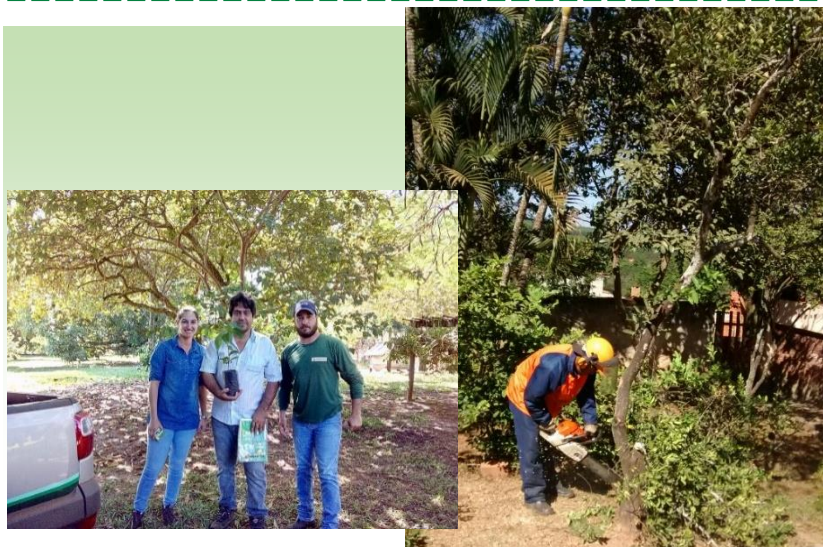
Chemical control



Outside



Eradication or replacement of psyllid hosts

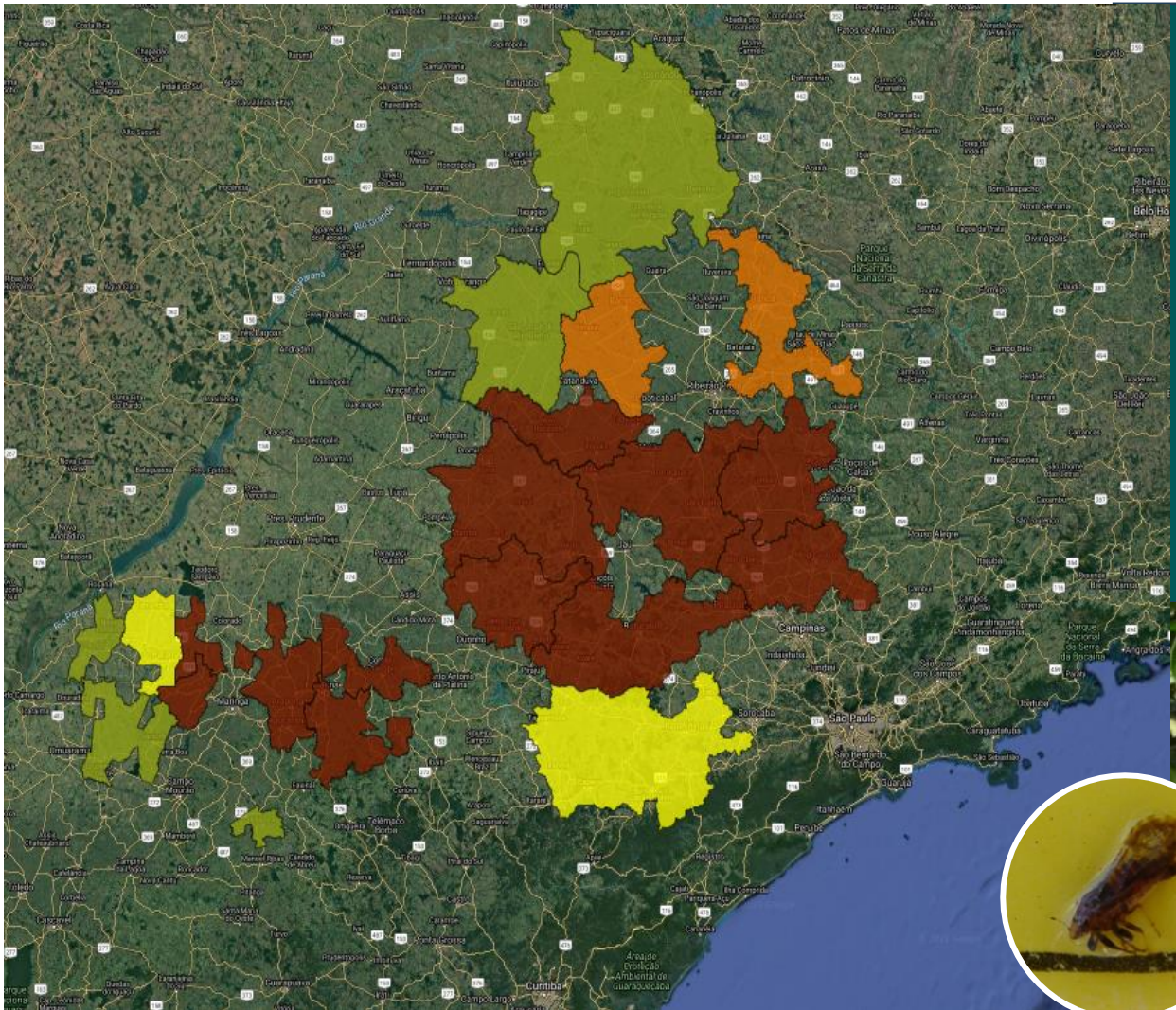


Release of *Tamarixia radiata*





# PSYLLID ALERT PLATAFORM



Level

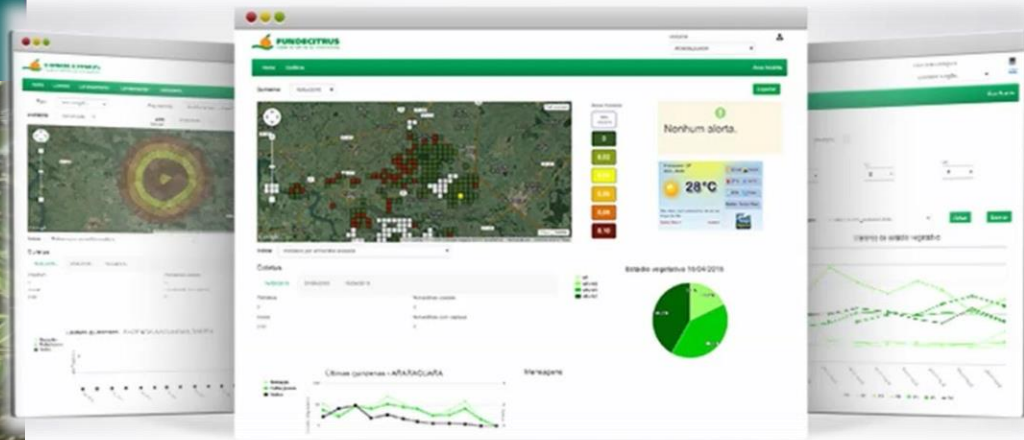
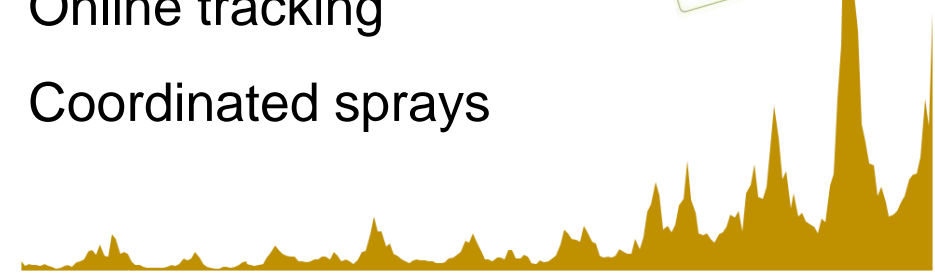
Low

Medium

High

Extreme

+32.000 yellow traps  
Monitored every 15 days  
Online tracking  
Coordinated sprays



<https://www.fundecitrus.com.br/alerta-fitossanitario>



# EXTERNAL MANAGEMENT

## Removal inoculum sources



### Around the farms

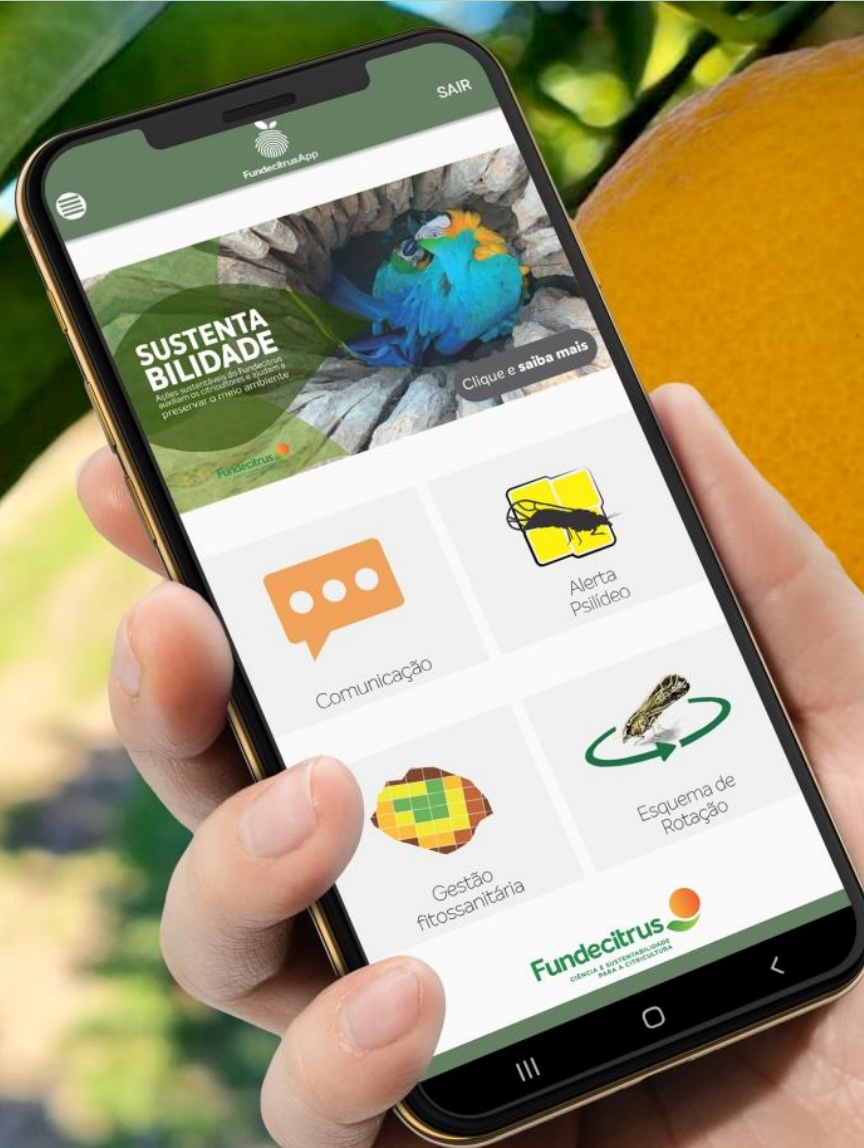
- 2018 to 2023: 4.8 mi citrus trees
- 2023: ~1 mi trees (~90% efficiency)



# INNOVATION



# FundecitrusApp





# COMMUNICATION





Awareness campaigns

#UNIDOS  
contra o  
GREENING

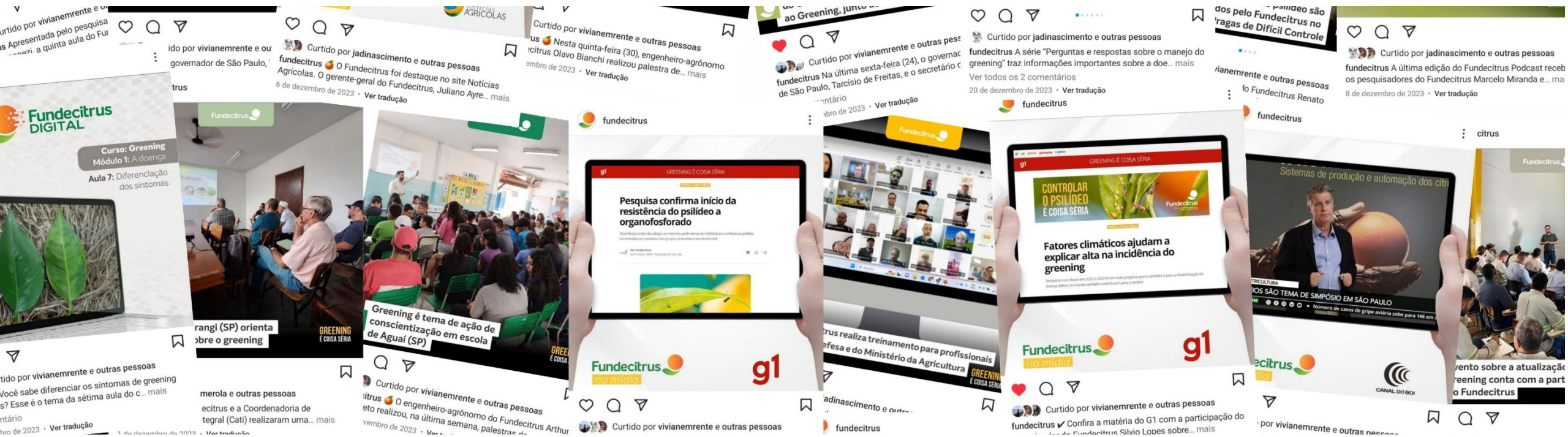
*United against greening*

**GREENING**  
**É COISA SÉRIA**

*Greening is a serious thing*



# COMMUNICATION





# Cheers!

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