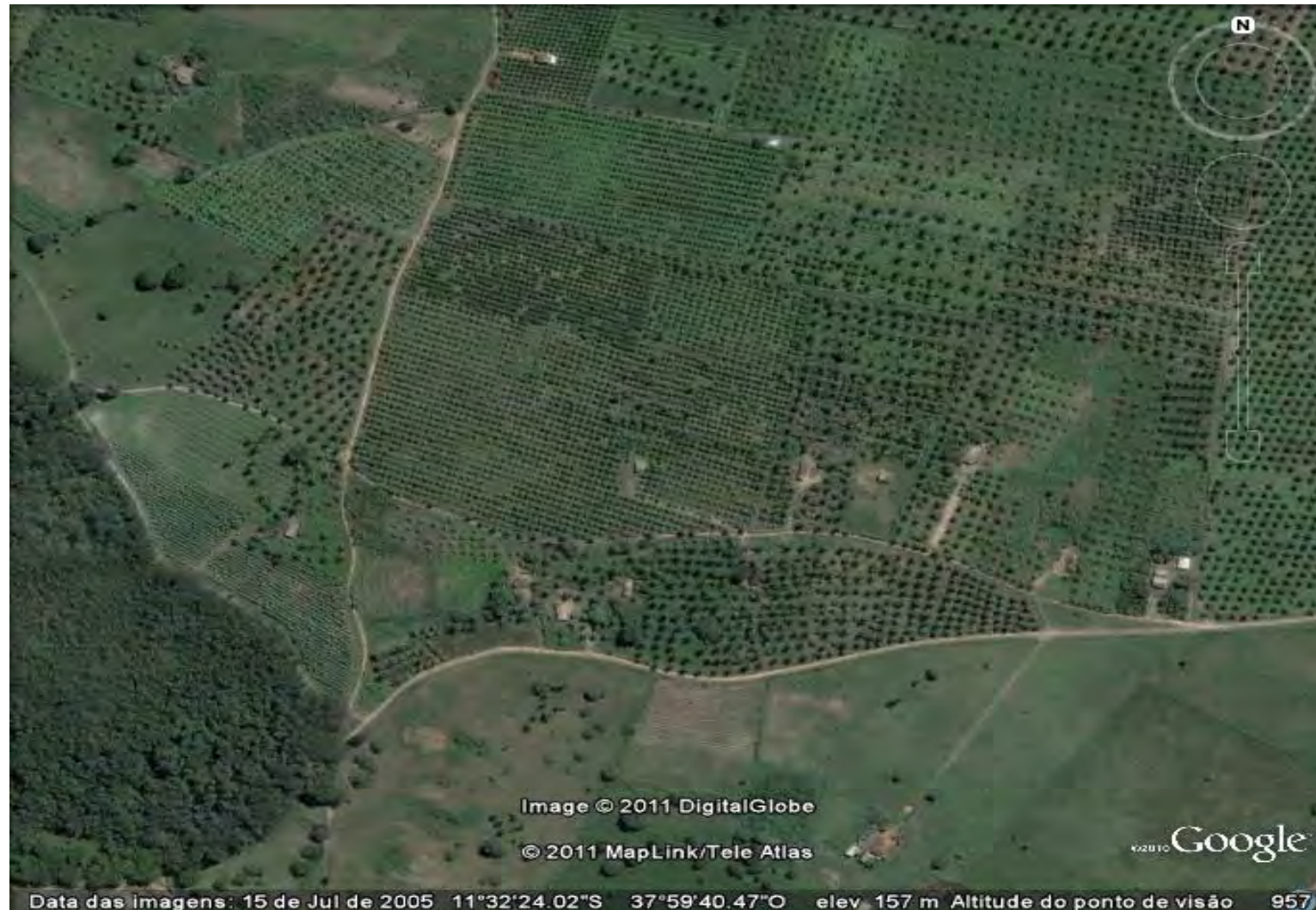


Complex landscape

*Multiple smallholder
family properties*



Low technological level

- Low plant health literacy
- Low access to credit



A map of South America with country names in bold: Rica, Panamá, Venezuela, Guiana Francesa, Guiana, Suriname, Colômbia, Equador, Peru, Bolívia, Paraguai, Chile, Argentina, and Uruguai. Major cities are marked with dots: Bogotá, Medellín, Quito, Lima, Assunção, Buenos Aires, Montevidéu, and Santiago. Brazilian states are labeled: AMAPÁ, RORAIMA, AMAZONAS, ACRE, RONDÔNIA, MATO GROSSO, MATO GROSSO DO SUL, PARANÁ, SANTA CATARINA, RIO GRANDE DO SUL, GOIÁS, Brasília, TOCANTINS, MARANHÃO, CEARÁ, RIO GRANDE DO NORTE, PARAÍBA, PERNAMBUCO, ALAGOAS, BAHIA, SERGIPE, ESPIRITO SANTO, RIO DE JANEIRO, and SÃO PAULO. The state of Bahia is highlighted with a red border.





Food and Agriculture
Organization of the
United Nations



International
Plant Protection
Convention



Department
for Environment
Food & Rural Affairs

PROJECT
HLBβioMath

ARMs

Areas of Regional
Management

London, 21 – 23
September 2022

**International
Plant Health
Conference**

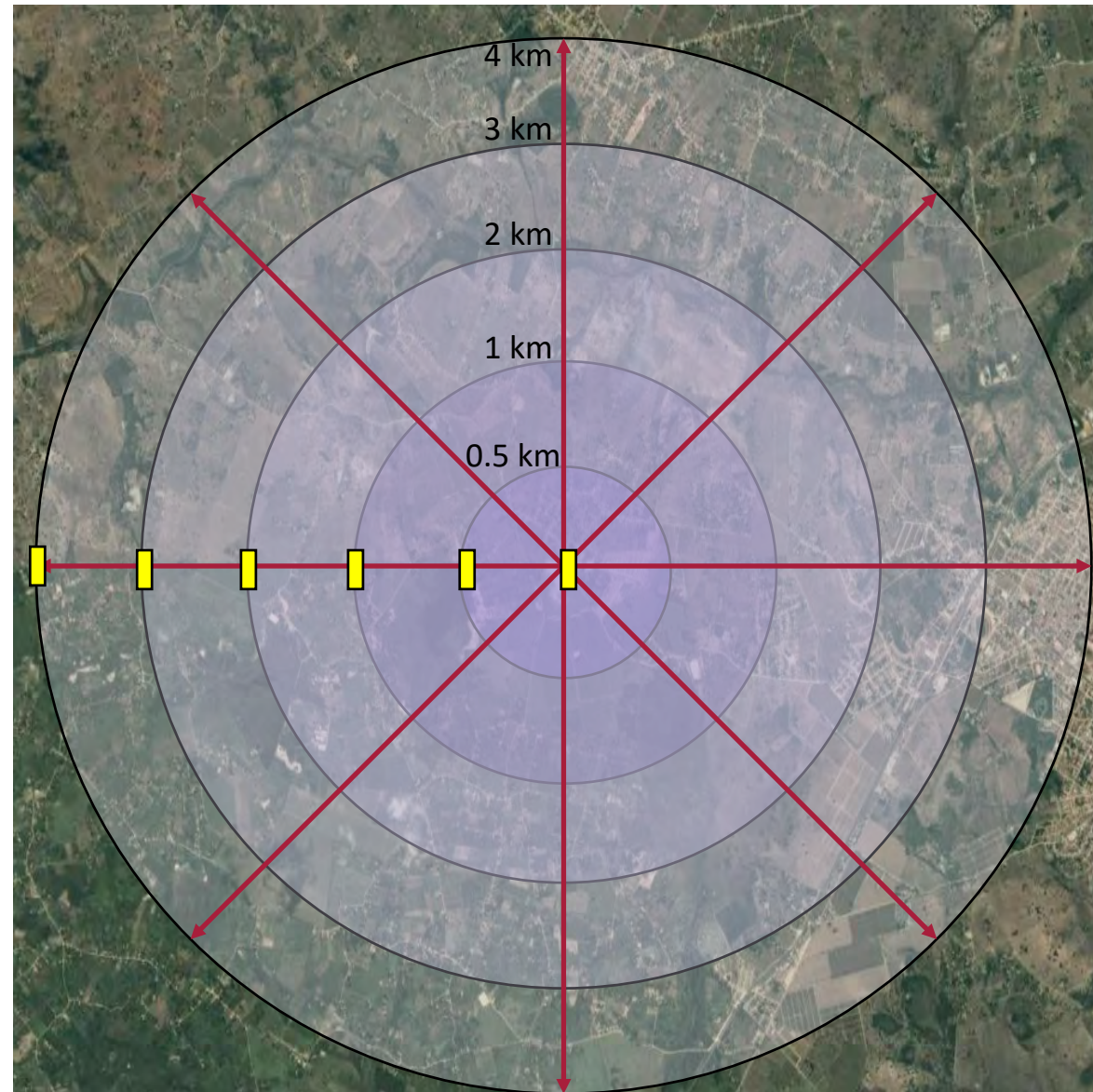
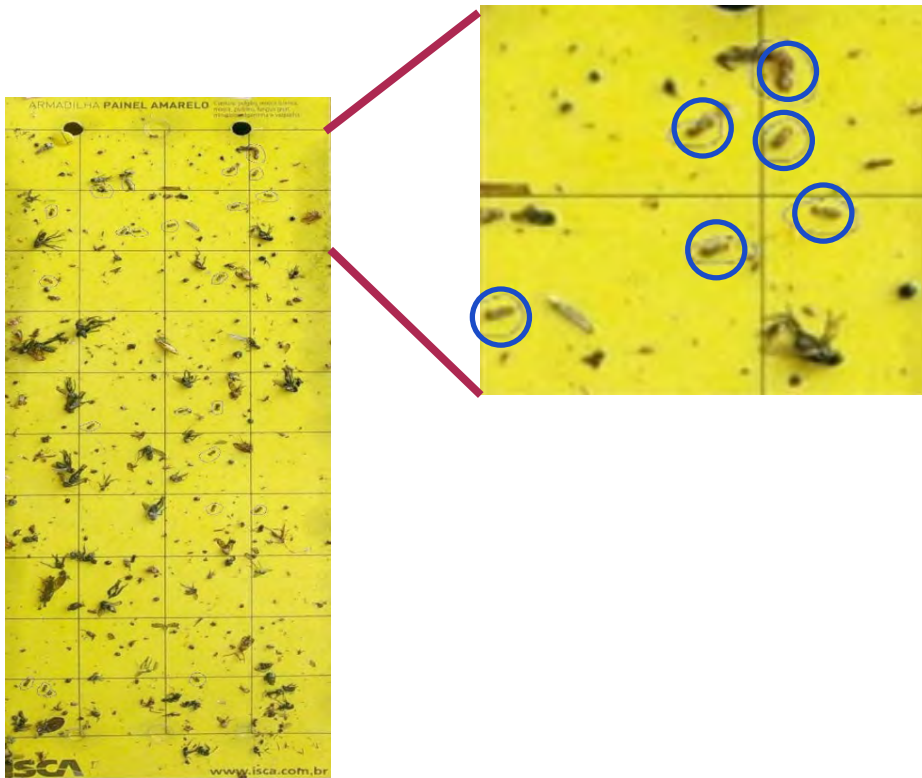


Embira ARM

Monitoring sites at interceptions 

Perimeter: 25.1 km

Area: 50.3 km²



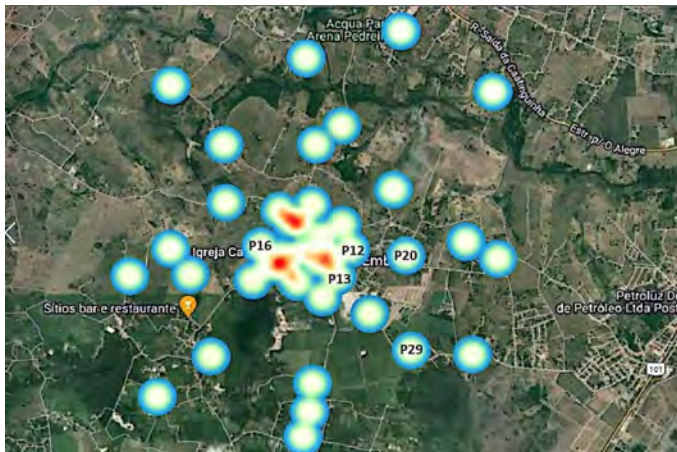
PROJECT
HLB β ioMath

Vector Abundance

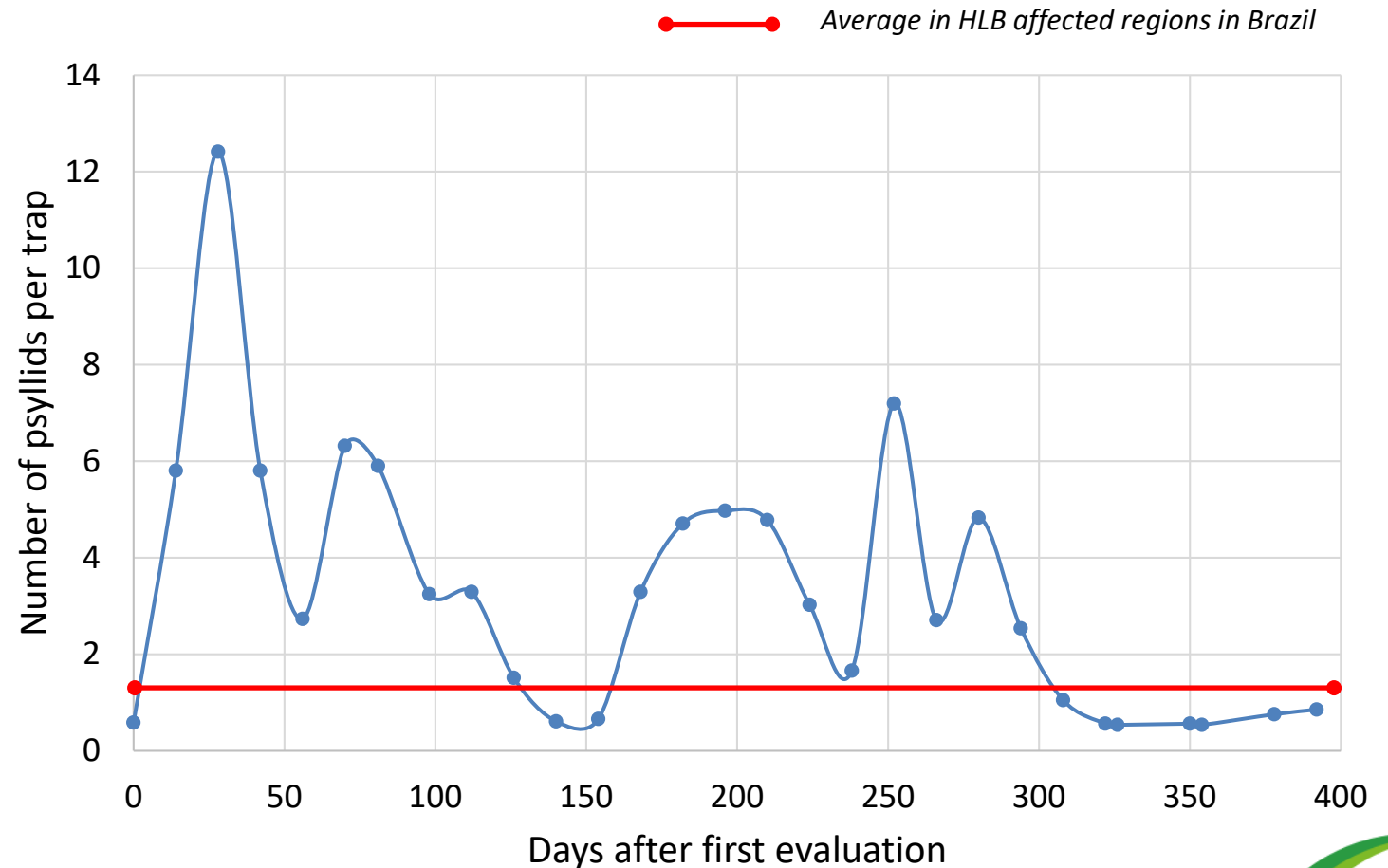
Very high psyllid populations

Higher in traps near urban areas

No Vector Control



Heatmap of trapped psyllid

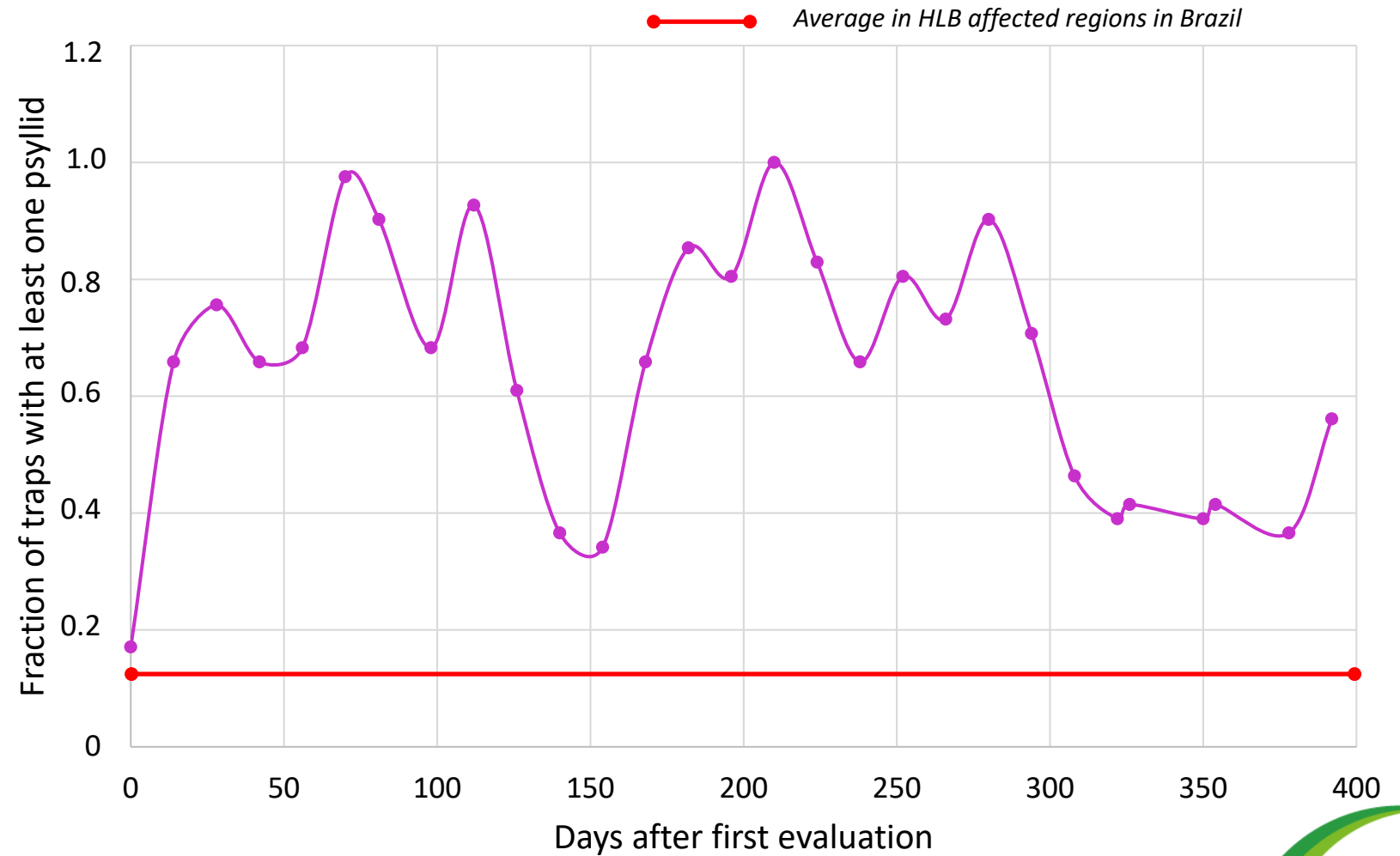


Vector Occupancy

Proportion of traps with
at least one vector

Very high occupancy

No Vector Control





Food and Agriculture
Organization of the
United Nations



International
Plant Protection
Convention



Department
for Environment
Food & Rural Affairs

PROJECT
HLBβioMath

Sentinel Routes

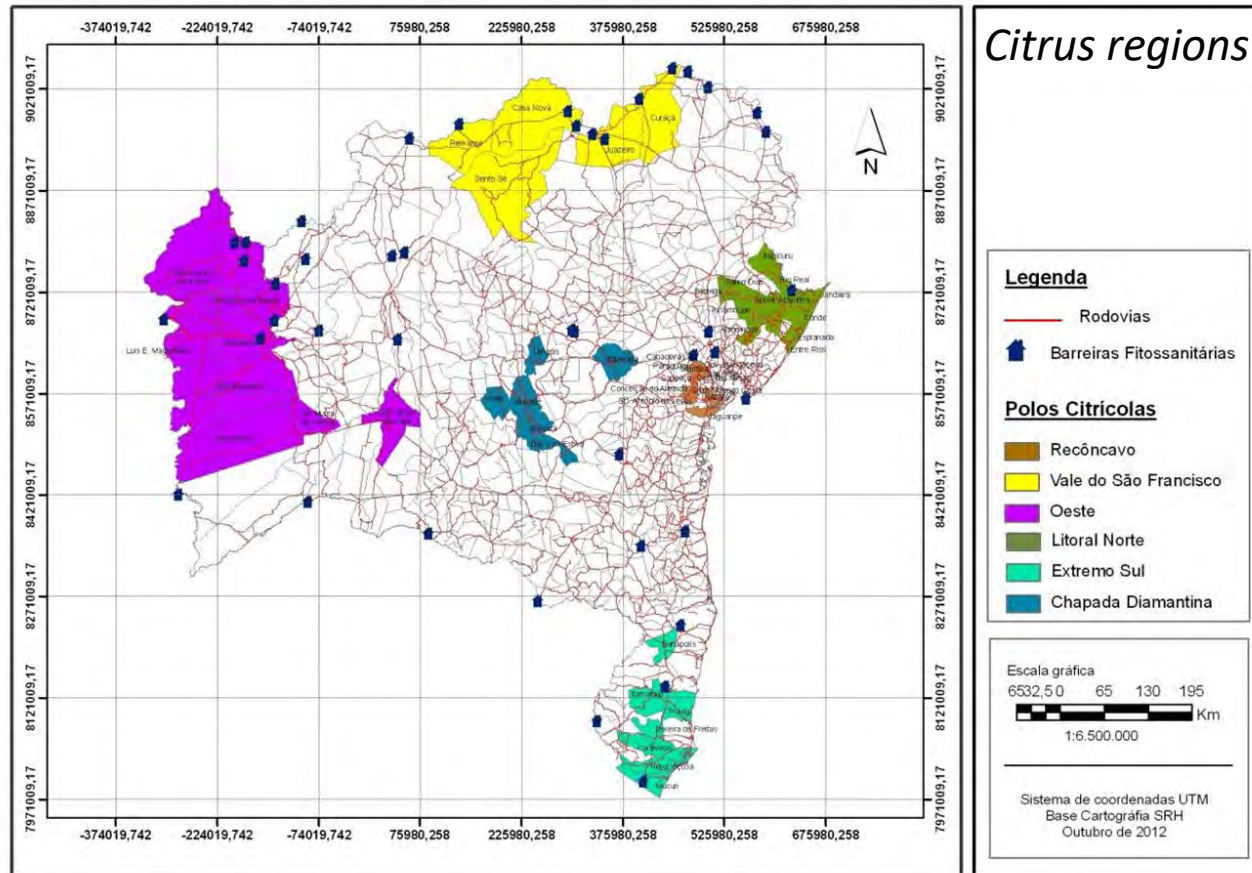
Transects for capturing and test HLB vectors

London, 21 – 23
September 2022

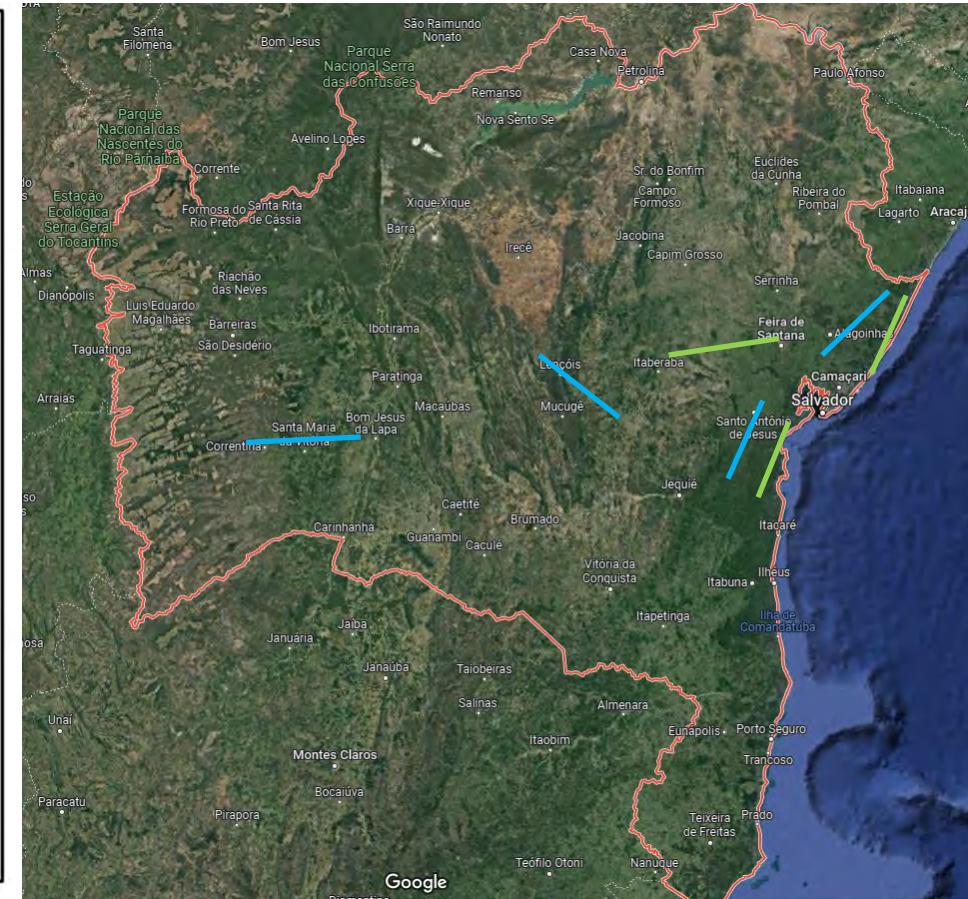
**International
Plant Health
Conference**



Sentinel Routes in Bahia

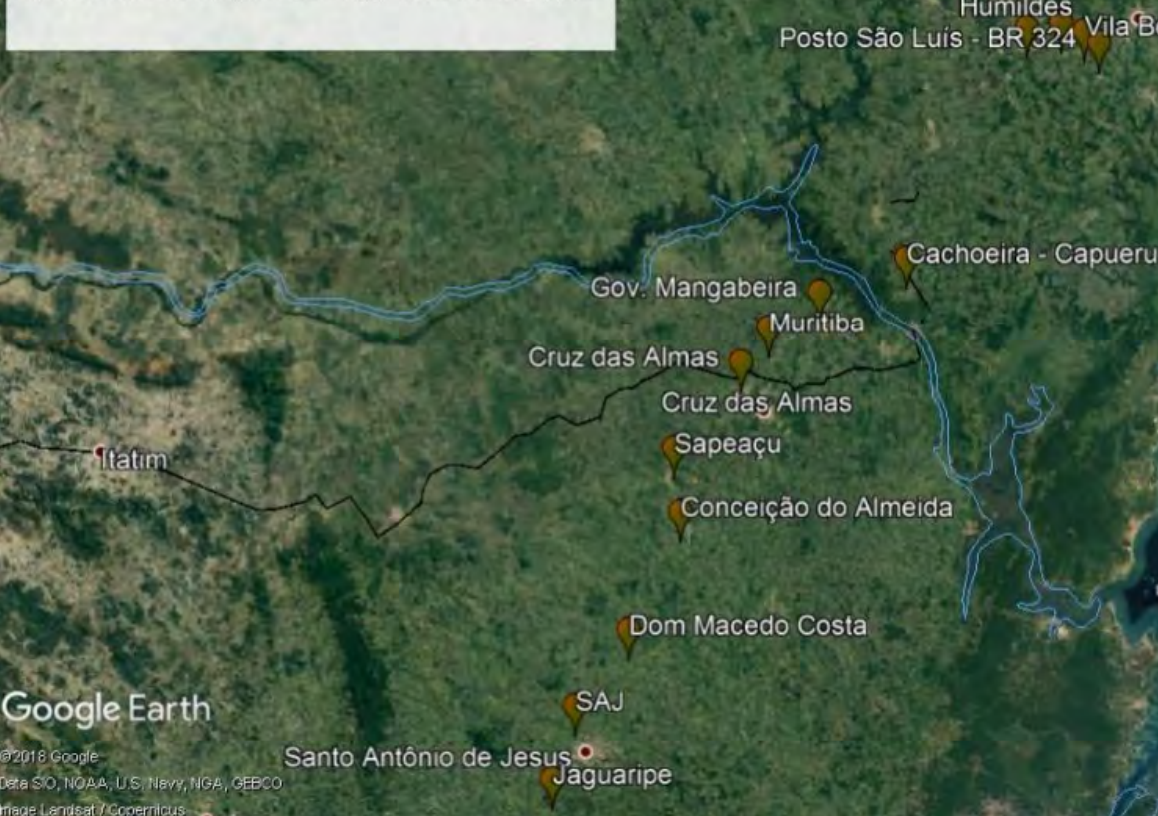


Citrus regions in Bahia

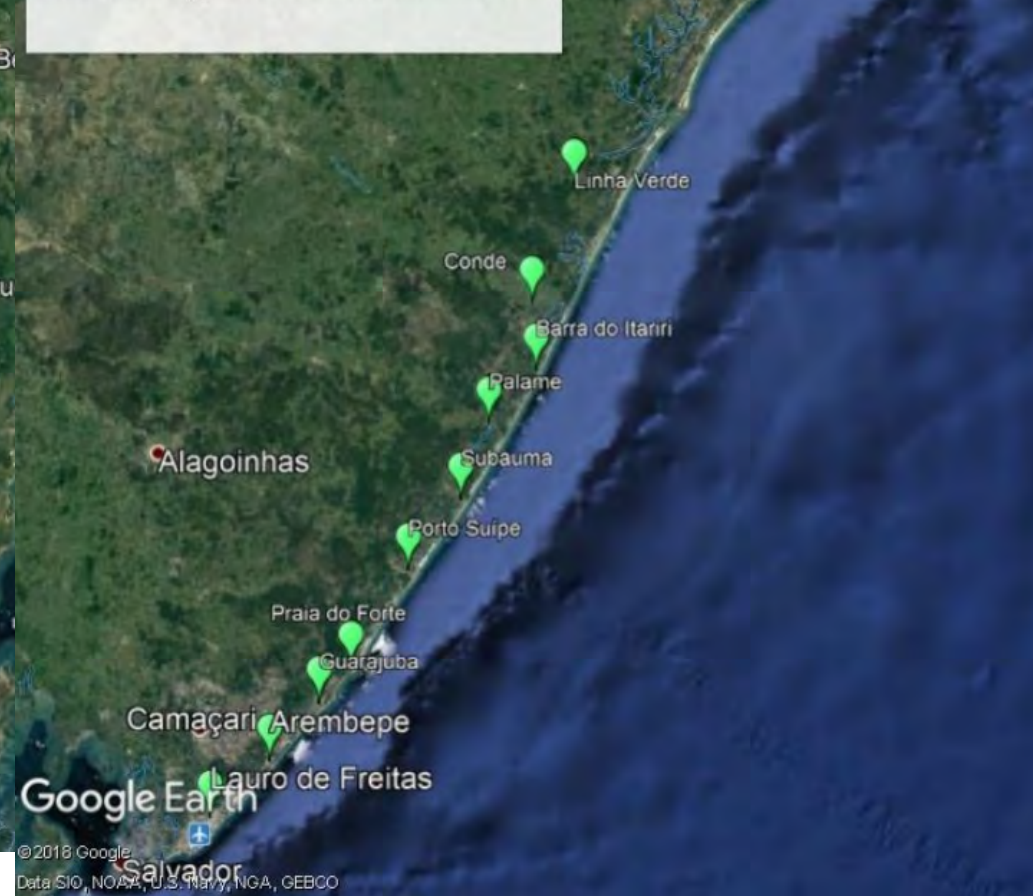


Sentinel Routes in Bahia

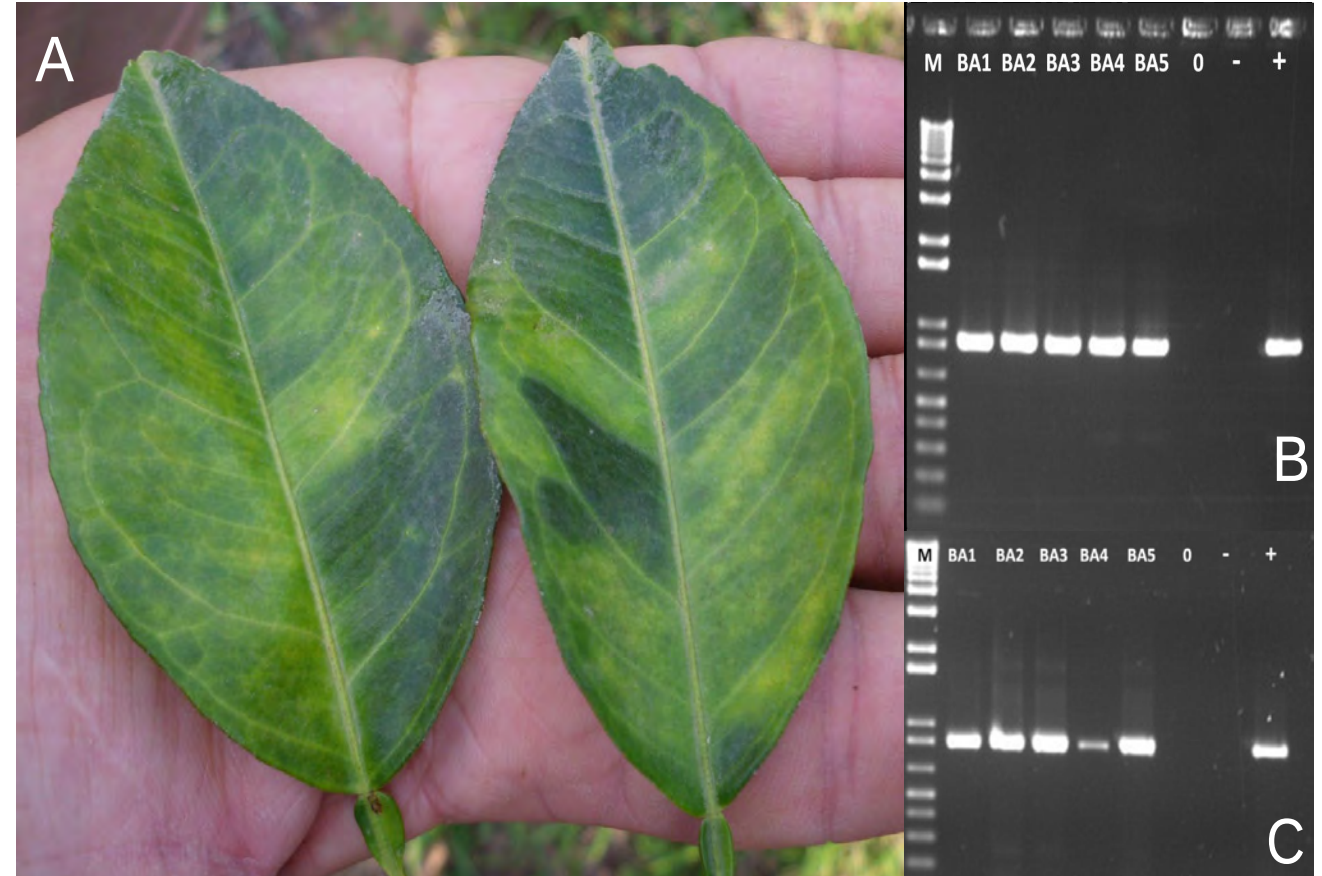
Rota Sentinela: BR 101 Sul a BR324



Rota Negativa: Linha Verde



Oeste 2012: Phytoplasma group IX. Negative for HLB



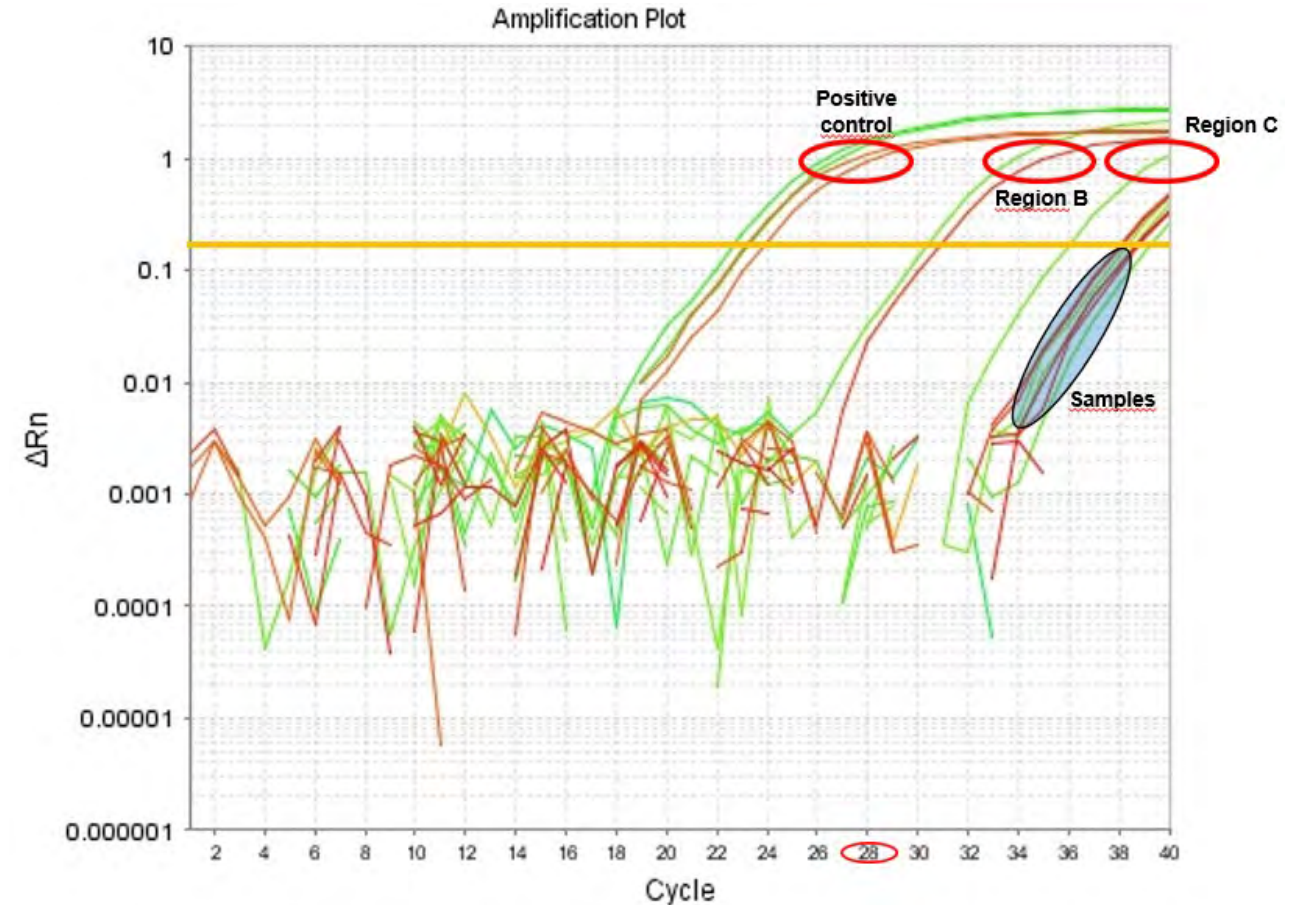
(A) Orange leaves with HLB-like symptoms. (B) PCR, primers P1/P7 nested rU3/fU5. (C) PCR, primers P1/P7 nested D7f2/D7r2.

— Sentinel Routes
— Control Routes

Chapada 2013: CLas positive in vectors



— Sentinel Routes
— Control Routes



Chapada 2013: Clas negative in plants



Surveillance perimeters



Eradication of *Citrus* and *Murraya* within the perimeters

Chapada 2018: negative for HLB



Secretaria de Agricultura e Abastecimento - SAA
 Agência Paulista de Tecnologia dos Agronegócios
 Instituto Agronômico
 Centro APTA Citros Sylvio Moreira / Clínica Fitopatológica
 Via Anhanguera, km 158 - 13490-970 - Cordeirópolis - SP - Brasil
 (19) 3546 1399 / CNPJ: 46.384.400/0145-22
 Laboratório Credenciado: MAPA - Portaria Nº 121, de 08/11/2016 / RENASEM - SP-16331/2017

Cordeirópolis, 05/12/2018
 LAUDO Nº 1663/18

LAUDO FITOPATOLÓGICO RG: 783/18

☐ OFICIAL ☒ NÃO OFICIAL

Proprietário: ADAB - Ag. Estadual de Defesa Agropecuária da Bahia
 Empresa: Fazenda Bioenergia
 Propriedade: Av. Adhemar de Barros, 967 - Ondina
 Endereço: Salvador
 Município: (71) 3116-8407; 3116-8466
 Contato: Suelly Xavier de Brito Silva
 Requerente: Recebimento das amostras: 14/11/2018
 Data: Término da análise: 05/12/2018
 Matriz: ☒ FOLHA ☐ RAIZ
 Método: qPCR ME-CF-002

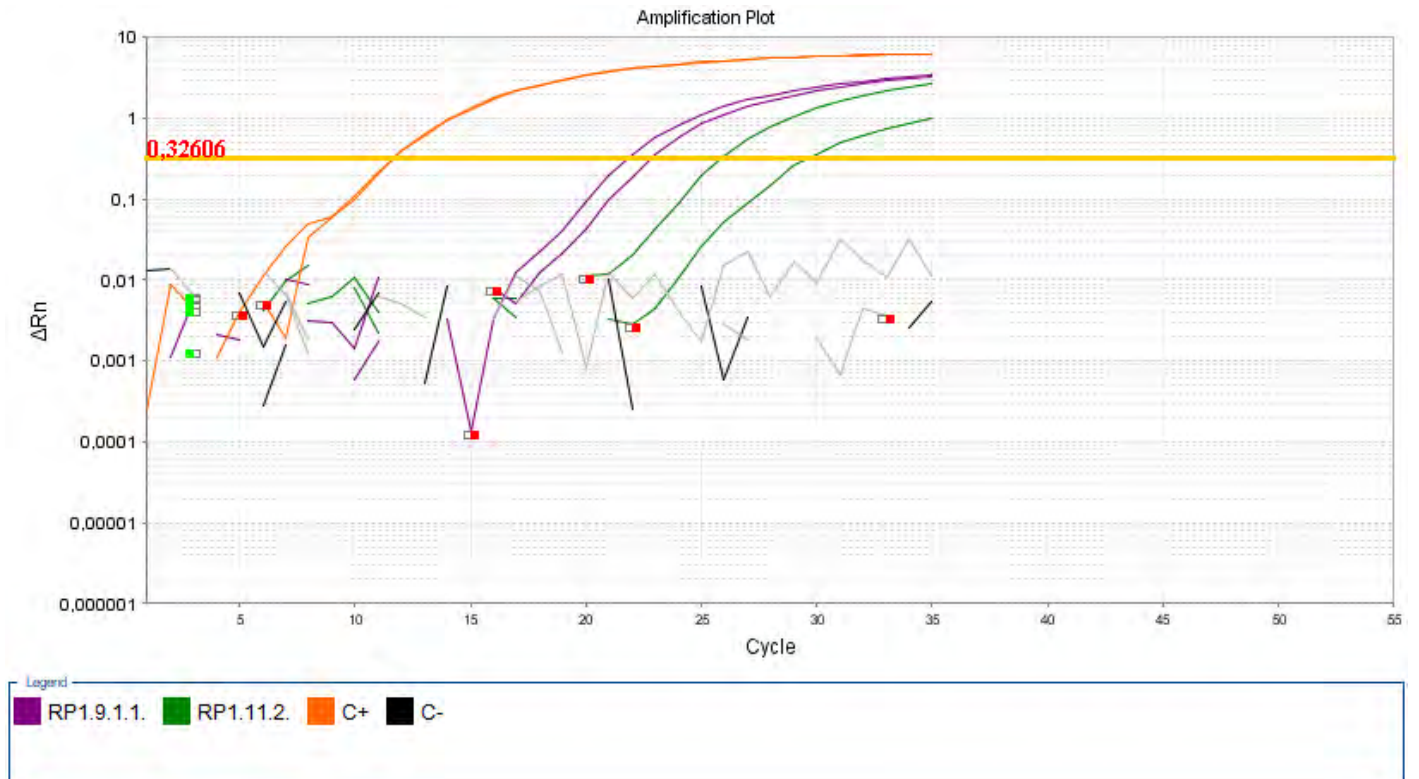
Patógeno: *Candidatus Liberibacter* spp.

Nº	Identificação das amostras	Resultado
1	A01 - planta 01	NEG
2	A02 - planta 02	NEG

POS = presença do patógeno NEG = ausência do patógeno

— Sentinel Routes
 — Control Routes

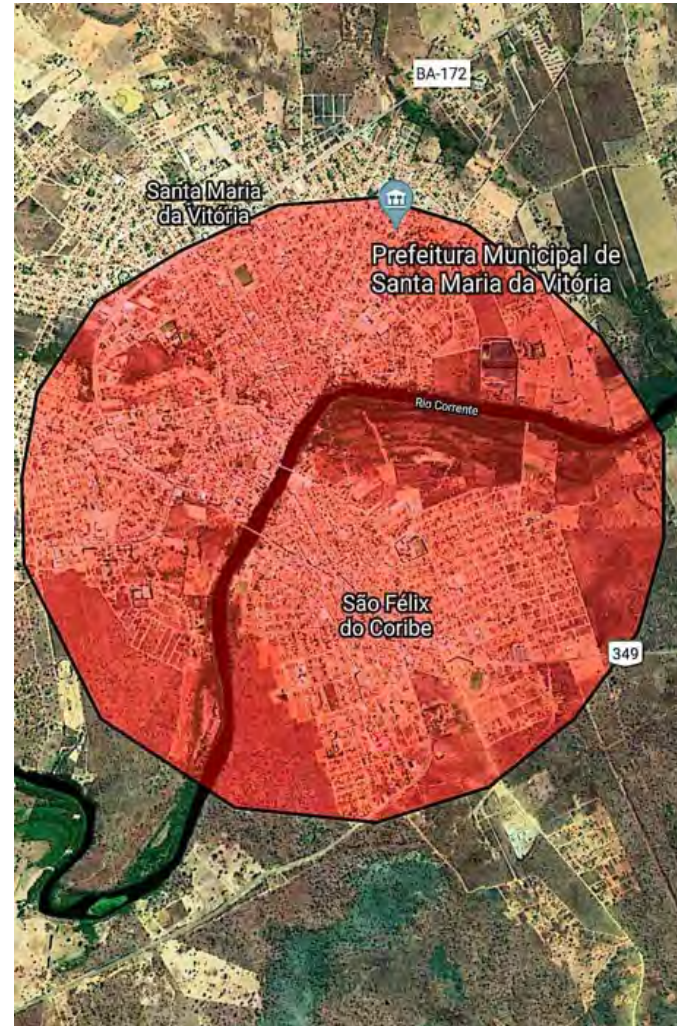
Oeste 2022: CLas positive in vectors



— Sentinel Routes
— Control Routes

Oeste 2022: CLas negative in plants

4km radius





Food and Agriculture
Organization of the
United Nations



International
Plant Protection
Convention



Department
for Environment
Food & Rural Affairs

PROJECT
HLBβioMath

Sentinel Routes and ARMs are accessible, available and affordable. They are still to be used beyond the regional plant health agencies

Francisco Ferraz Laranjeira

Director General, Embrapa Cassava & Fruits

London, 21 – 23
September 2022

International Plant Health Conference

