

# SpraySaver - Full Automated Broad-spectrum Crop Pathogen Detection using DNA and LFD

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Live project

Application number: 26757

Competition: Productive and sustainable crop and ruminant agricultural systems



# Spraysaver developed root rot detection devices

*P. Infestans* – Potato Blight

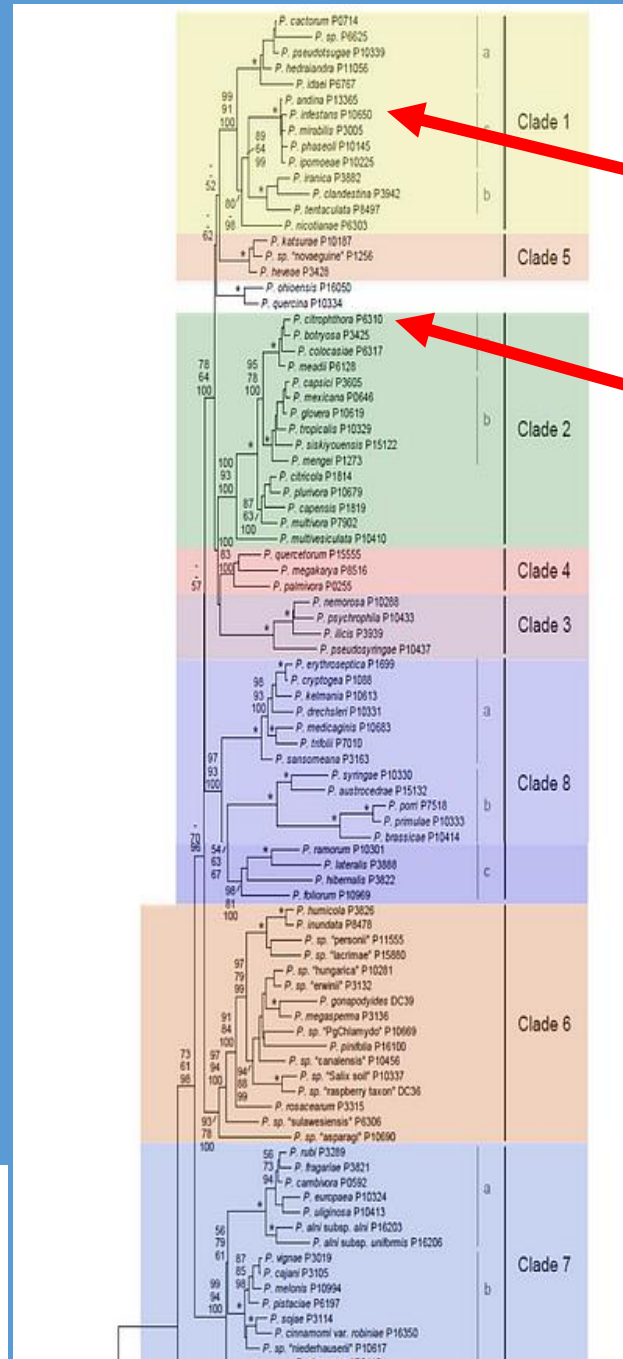
*P. Citrophthora* root rot of Citrus

Classification of *Phytophthora* species

One problem is that the classification keeps changing

Detects Clades 1, 7, 8 – 3C4 IGG

Genus specific – 3H7 IGG

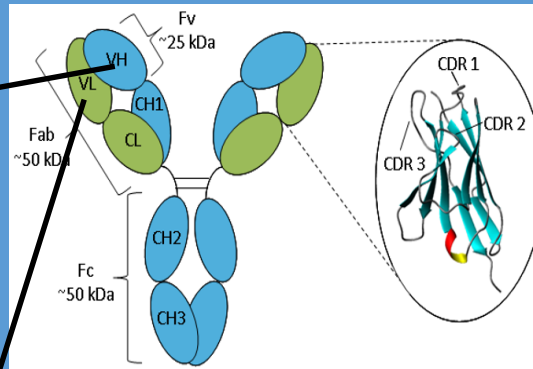




# Phytophthora LFD 3H7 IgG Sensitivity

## VH Sequence

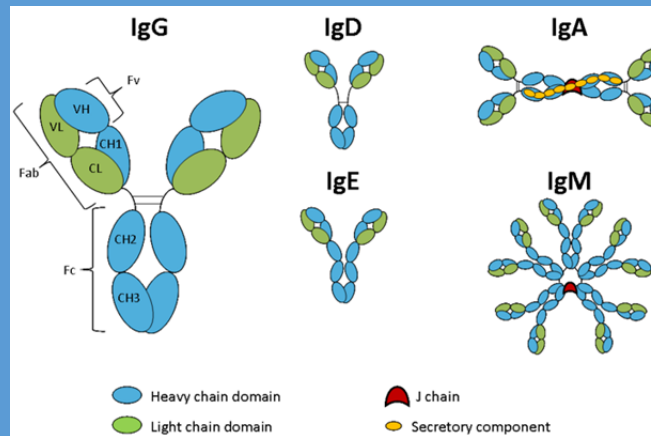
```
CAGATCCAGTTGGTGCAGTCTGGACCTGAGCTGAAGAA
GCCTGGAGAGACAGTCAAGATAAGGGACGGTTTGCCTT
CTCTTTGGAAACCTCTGCCAGCACTGCCTATTTGCAGATC
AACAACTCAAAAATGAGGACATGGCTACATATTTCTGT
GTAAGACGGGCGGATGCTCACTGGGGCCAAGGGACTC
TGGTCACTGTCTCTGCA
```



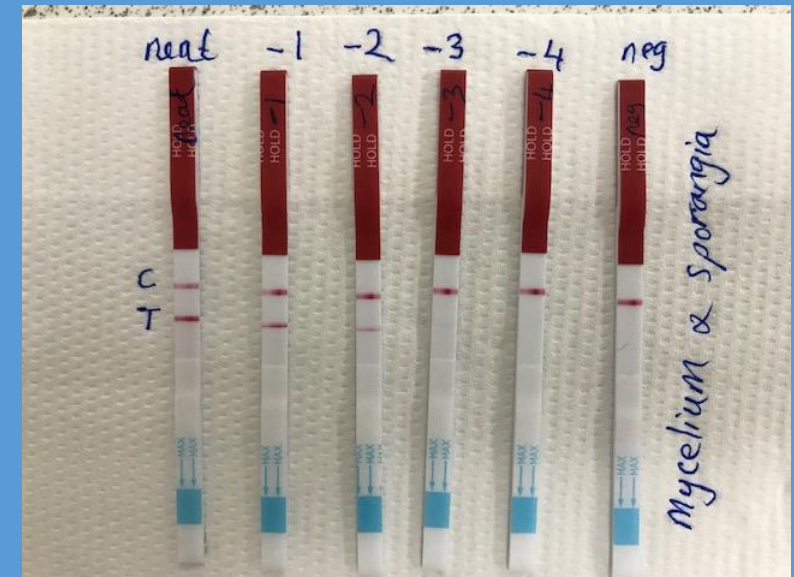
## VL Sequence

```
CAAATTGTTCTCACCCAGTCTCCAGCAATCATGTCTGCATCT
CCAGGGGAGAAGGTCACCATGACCTGCAGTGCCAGCTCAA
GTGTAAGTTACATGCAGTGGTACCAGCAGAAGTCAGGCAC
CTCCCCAAAAGATGGATTTATGACACGATGCTGCCACTTAT
TACTGCCAGCAGTGGAGTAGTAACCCGTGGACGTTCCGGTG
GCGGCACCAAGCTGGAAATCAAA
```

## CH7 Sequence Data



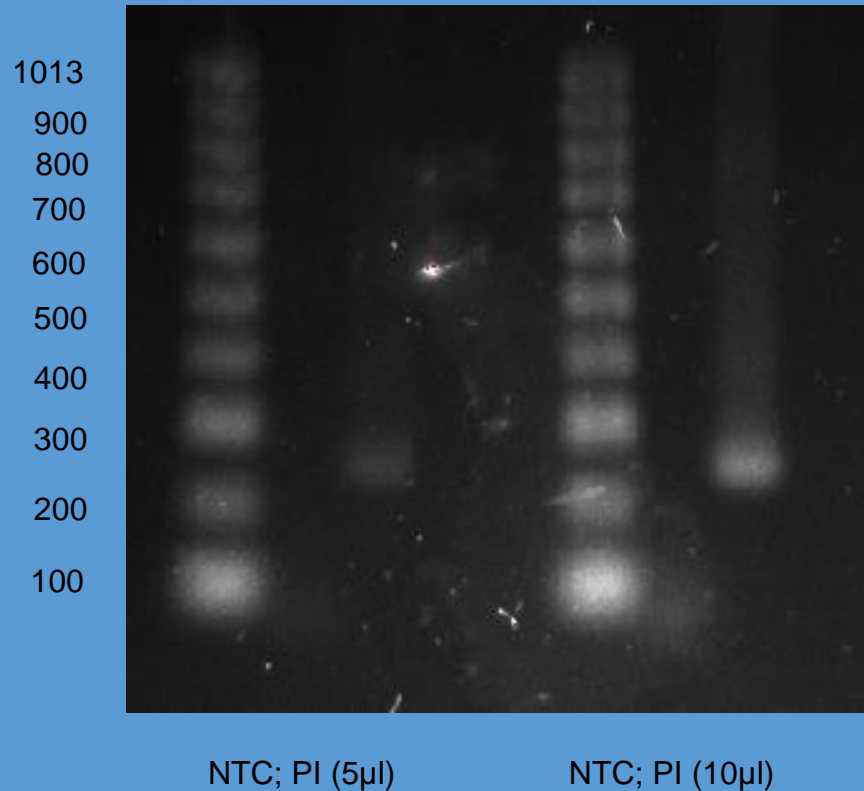
Dilution	Test line	Control line
Undiluted (5 x 10 <sup>-5</sup> sporangia ml)	279	193
10 x dilution	197	262
100 x dilution	92	313
1000 x dilution	15	309
10,000 x dilution	7.0	321
Negative (buffer only)	9.0	319



*Phytophthora infestans* - Fab development and selection

# Q14 Work WP3

## Developing a Molecular Test for *Phytophthora infestans* for confirmation of 3H7 LFD device output



*Phytophthora infestans* PCR

Primer sequences:

PI F: AGATGATGTTGGATGATTG

PI R: TGCCTGATTTCTACCTTCT

Samples diluted 1/10

245 bp

*Phytophthora* PCR Test

H.S. Judelson P.W. Tooley (2000) Enhanced Polymerase chain reaction methods for detecting and quantifying *Phytophthora infestans* in plants. *Phytopathology* 90, 1112-1119.

# LFD Autosampler

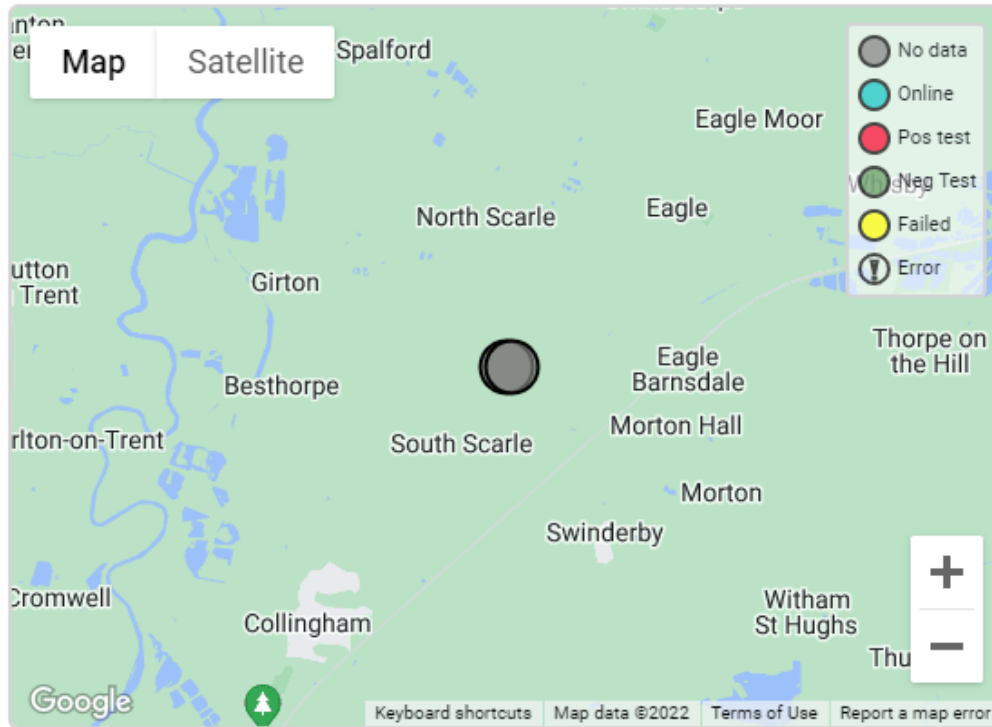
Testing the LFD Autosampler  
In the Lab

LFD Reader

LFD Chamber



Summary

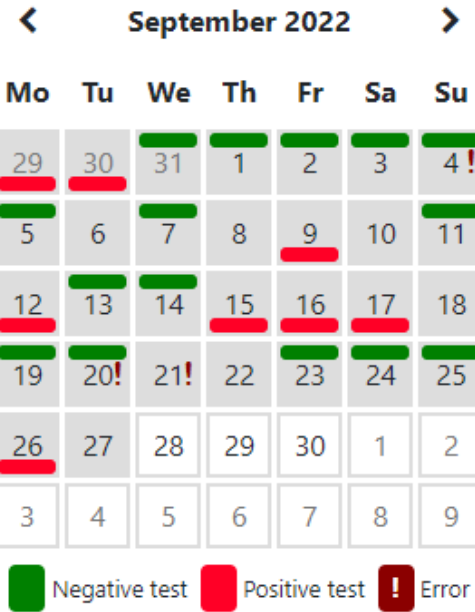


Click a device on the map to see data or choose from the list below

SPEARHEAD 2 LFD

Move device

Results history





# LFD Autosampler North Scarle Results 2022

Potato Blight at North Scarle (September 2022)

