



## DETECTION AND IDENTIFICATION OF **POTATO PATHOGENS** USING MICROCHIP REAL-TIME PCR ANALYZER ARIADNA®

Potato is a vegetatively propagated important food crop. However, it is affected by many fungal, bacterial and viral pathogens that deteriorate tuber quality and reduce yield. The manifestation of latent virus infection of potato seeds into the grown crop also causes high economical loss to the potato seed producers and crop growers. The management of such problems depends on the timely identification of diseased or defective seed tubers, seeds, and crop samples to produce high quality seeds, potato tubers, and reduce crop losses.



Microchip-based real-time PCR analyzer AriaDNA



Nucleic acid extraction kit



Microchip kit for detection of potato pathogens

### ▶ TEST PANEL OF POTATO PATHOGENS IN THE MICROCHIP KITS

#### BACTERIA AND FUNGUS (DNA)

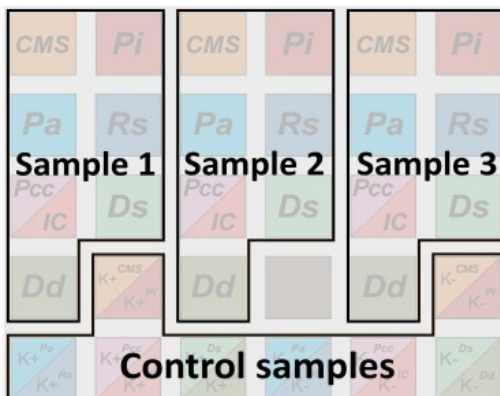
- *Clavibacter michiganensis subsp. sepedonicus*
- *Phytophthora infestans*
- *Pectobacterium atrosepticum*
- *Pectobacterium carotavorum subsp. carotavorum*
- *Dickeya solani*
- *Dickeya dianthicola*
- *Ralstonia solanacearum*

#### VIRSES AND VIROID (RNA)

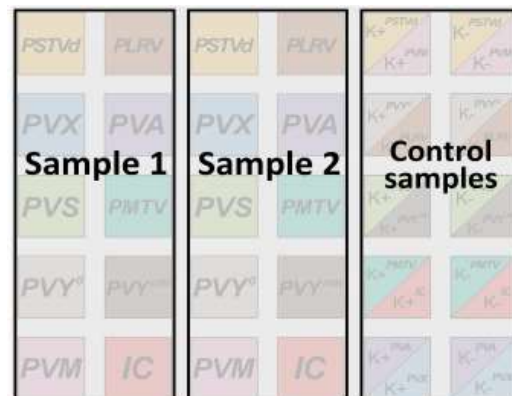
- *Potato virus X (PVX)*
- *Potato virus Y, strain O (PVY-o)*
- *Potato virus Y, strain NTN (PVY-ntn)*
- *Potato virus A (PVA)*
- *Potato virus S (PVS)*
- *Potato virus M (PVM)*
- *Potato leafroll virus (PLRV)*
- *Potato mop-top virus (PMTV)*
- *Potato spindle tuber viroid (PSTVd)*

### ▶ APPLICATION AREAS

- Detection and identification of viral, bacterial and fungal potato diseases
- Detection of latent potato infection
- Seeds and propagating material control



Layout of the DNA Pathogen Microchip Kit



Layout of the RNA Pathogen Microchip Kit



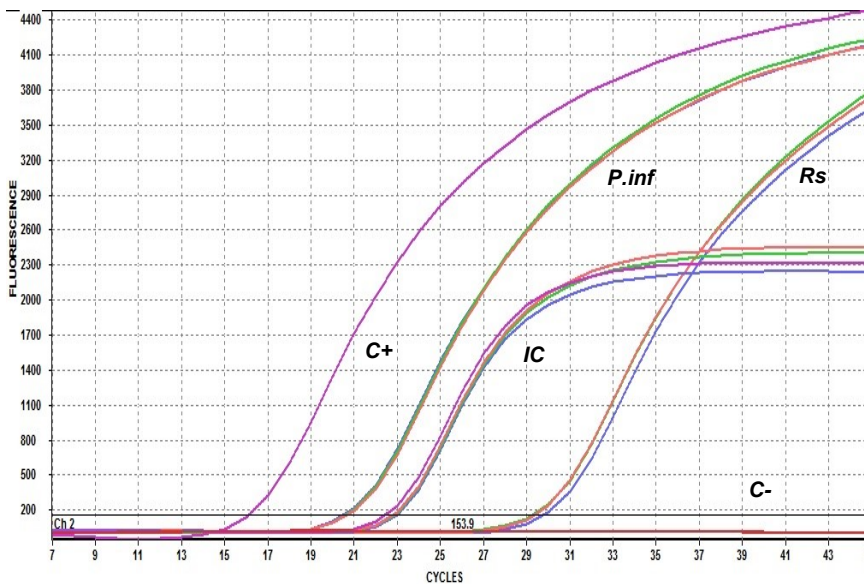
### ADVANTAGES OF THE MICROCHIP-BASED REAL-TIME PCR

- Microchips with ready-to-use lyophilized PCR mixture reduce user labor
- Rapid analysis and lower test costs
- High sensitivity and specificity
- Simultaneous analysis of 7 or 9 pathogens in 3 or 2 samples for DNA or RNA pathogens, respectively
- Minimize human error

### ANALYSIS FLOW-CHART

**1** Extract DNA and/or RNA from potato samples (tubers, leaves, stems)

**2** Mix extracted DNA/RNA samples with PCR buffer and add them into the microchip reactors



Results of real-time PCR of potato tuber samples with *Phytophthora infestans* (*P.inf*) and *Ralstonia solanacearum* (*Rs*) pathogens (blue, red and green curves). Also shown positive control samples C+ (pink curves), negative control samples C- (orange curves) and internal control sample (IC).

### The results of pathogen detection in potato samples

**3** Insert the microchip into the AriaDNA® analyzer and run the analysis via the software on a PC

**4** Obtain real-time PCR results and print report in 45 minutes (DNA pathogens) or in 60 minutes (RNA pathogens)

The information and specifications in this publication are subject to change without notice.

**Lumex Instruments Canada**  
 0890278 B.C. Ltd.  
 Unit 207, 31510 Gill Ave.,  
 Mission, B.C., V4S0A1, Canada  
 Toll free: +1 866-233-6057  
 Phone: +1 709-570-7538  
 info@lumexinstruments.com  
 www.lumexinstruments.com