



Detection and identification of potato pathogens

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 infected seed tubers and crop samples to produce high quality seeds, potato tubers, and reduce crop losses.



FEATURES AND ADVANTAGES

- Rapid analysis and lower test costs
- High sensitivity and specificity
- Simultaneous analysis of 7 pathogens in 3 samples for DNA microchip kit (#007Q189) or 8 pathogens in 2 samples for RNA microchip kit (#007PZ79)
- Reducing user labor thanks to microchips with ready-to-use lyophilized PCR mixture
- Minimizing human error

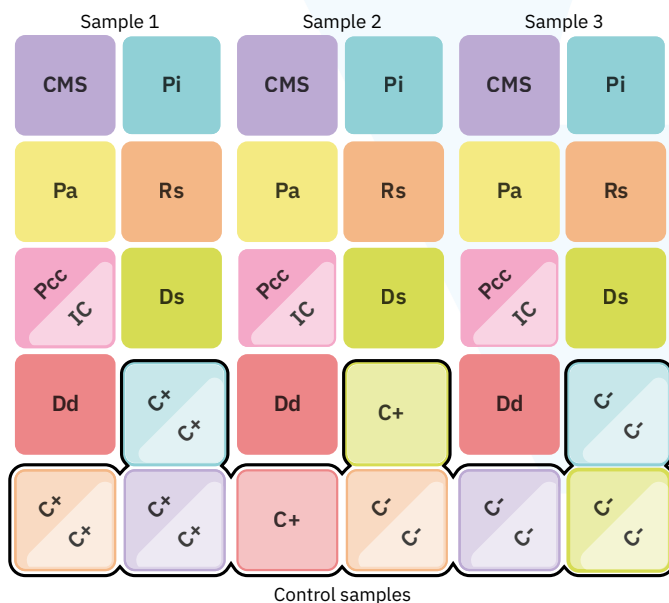


APPLICATION AREAS

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

MICROCHIP LAYOUT

Layout of the DNA Pathogens Microchip Kit



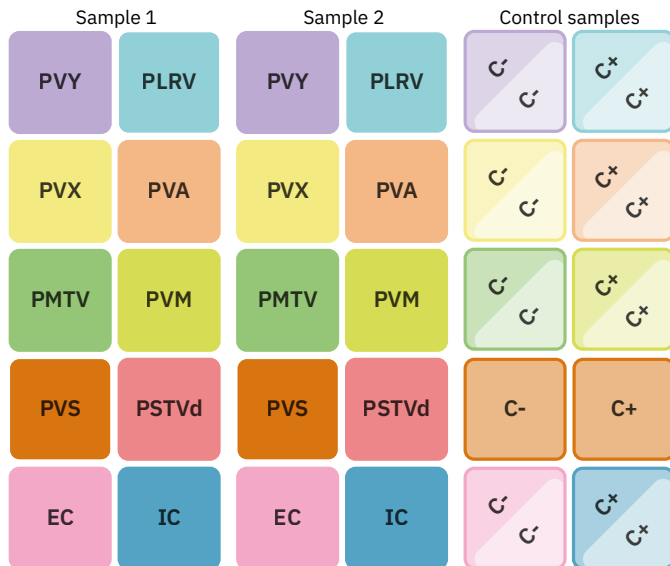
Test panel Bacteria and fungus (DNA)

- *Clavibacter michiganensis* subsp. *Sepedonicus* (CMS)
- *Phytophthora infestans* (Pi)
- *Pectobacterium atrosepticum* (Pa)
- *Pectobacterium carotavorum* subsp. *Carotavorum* (Pcc)
- *Dickeya solani* (Ds)
- *Dickeya dianthicola* (Dd)
- *Ralstonia solanacearum* (Rs)
- IC (Internal control)

Controls:

- C+ (Positive control sample)
- C- (Negative control sample)

Layout of the RNA Pathogens Microchip Kit



Test panel Viruses and viroid (RNA)

- Potato virus X (PVX)
- Potato virus Y (PVY)
- 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)
- IC (Internal control)
- EC (Endogenous control)

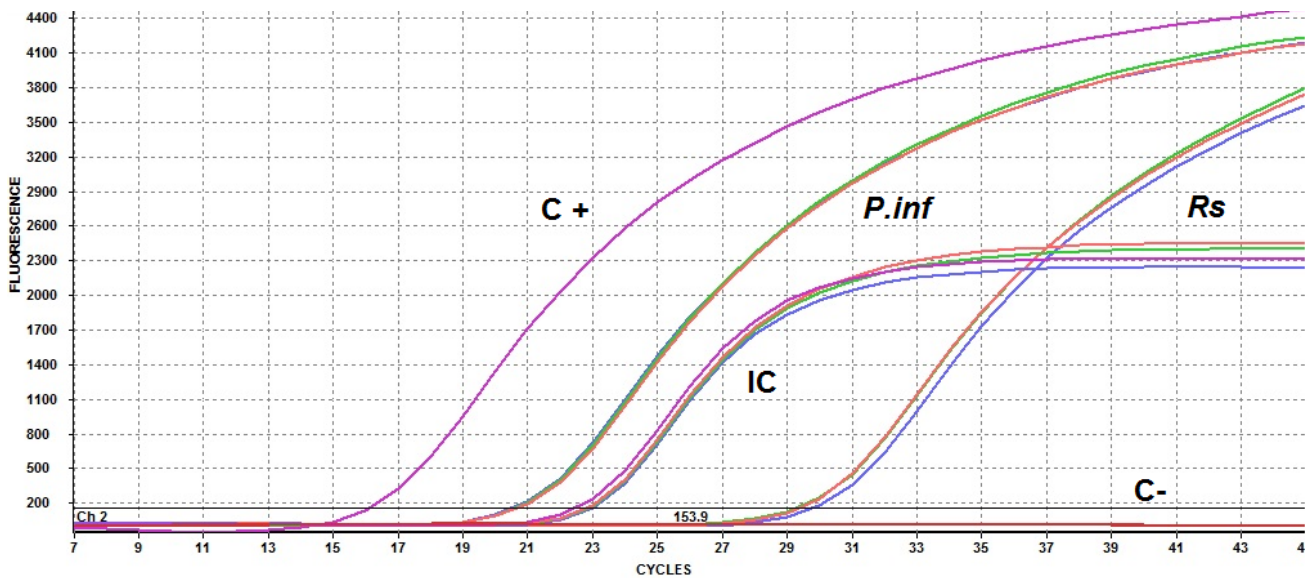
Controls:

- C+ (Positive control sample)
- C- (Negative control sample)

ANALYSIS WORK-FLOW

1. Extract DNA or RNA from potato samples (tubers, leaves, stems).
2. Add extracted DNA or RNA into the ready-to-use microchip that contains lyophilized reagents. Insert the microchip into the AriaDNA analyzer and run the analysis with a pre-set protocol on a computer.
3. Obtain real-time PCR results in 40 minutes (DNA pathogens) or in 50 minutes (RNA pathogens). The report can be printed.

RESULTS OF PATHOGEN DETECTION



Real-time PCR of potato tuber samples infected with *Phytophthora infestans* (*P.inf*) and *Ralstonia solanacearum* (*Rs*) pathogens (blue, red and green curves).

Positive controls C+ (pink), negative controls C- (orange) and internal controls IC are also shown.

