Assay control terminology and description of rationale (IPPC control acronyms)

Type of controls	Definition	Rationale	Example
Endogenous internal control	A control that is present in the sample	To check for inhibition & successful extraction	Plant primers/probe (universal, generic, or specific) - COX and other housekeeping genes
Positive amplification control (PAC)	A sample containing the target organism	To ensure the assay is working as expected	Nucleic acid from an infected plant, pure culture or synthetic DNA
Positive extraction control (PEC)	Sample contains target organism	To ensure the extraction of target pathogen is successful	Nucleic acid from either artificially infected or spiked with target organism
Exogenous internal control (PAC/PEC)	A control that is spiked in the sample preparation	To monitor the extraction, amplification and detection works efficiently	Nucleic acid extracts or synthetic nucleotides with known concentration and sequence added to samples as controls
Plant Internal Control (PIC)	Same as endogenous internal control, but is plant targeted	To monitor false negatives	Housekeeping gene like COX or NAD
Negative Amplification Control (NAC)	No template control containing water	To monitor false positives	PCR grade water in the sample mix
Negative Extraction Control (NEC)	Sample containing healthy host plant DNA	To monitor contamination during nucleic acid extraction and/or cross-reactions with the host tissue	Extraction buffer or nucleic acid extract from uninfected host tissue