

Validation report

qPCR PVS/PVX set/kits

Article No.: 859600 (qPCR PVS/PVX set 96) / 859200 (qPCR PVS/PVX set 192) /
859610 (qPCR PVS/PVX kit 96/10) / 859625 (qPCR PVS/PVX kit 96/25) /
859210 (qPCR PVS/PVX kit 192/10) / 859225 (qPCR PVS/PVX kit 192/25)

General information:

Target Pathogen	PVS (Potato virus S) / PVX (Potato virus X)
Genus	<i>Carlavirus</i> (PVS) / <i>Potexvirus</i> (PVX)
Method	Real-Time RT-qPCR, TaqMan (Multiplex)

Technical information:

Fluorophores	FAM: PVX Cy5: PVS JOE(HEX): IC
Cycling program	➤ 50°C for 20 min (Reverse Transcription) ➤ 95°C for 5 min (RT inactivation) ➤ 40 Cycles: ○ 95°C for 15 sec (Denaturation) ○ 60°C for 30 sec (Annealing / Extension)
Controls	Internal control (IC): artificial RNA included in Primers/Probes/IC Mix Negative control (NC): plant RNA Positive control (PC): RNA from PVS/PVX-infected potatoes
Extraction	The qPCR PVS/PVX kits include the potato DNA/RNA rapid extraction set, which is the validated extraction method for the qPCR PVS/PVX set/kits.

Host matrix:

Tested plant material	Leaf, tuber
Tested species infected	<i>Chenopodium Quinoa</i> (Quinoa) <i>Nicotiana tabacum</i> (Tobacco) <i>Solanum lycopersicum</i> (Tomato) <i>Solanum tuberosum</i> (Potato)

Specificity:

Analytical Specificity	100%
Number of tested samples from target organisms (True Positives)	60
Diagnostic Specificity	100%
Number of tested samples non-target organism (True Negatives)	56
Detected isolates / geographic regions (Inclusivity)	<u>PVS:</u> PVS ^A PV-0739 / MW051777 (Ecuador) PVS ^A PV-0758 / MW051778 (Chile) PVS ^A PV-0838 / MW051779 (Chile) PVS ^A PV-1186 / MW051780 (Peru) PVS ^A PV-1200 / MW051781 (Ecuador) PVS ^A PV-1201 / MW051782 (Bolivien) PVS ^A PV-1203 / MW051783 (Kolumbien) PVS ^A PV-0757 (Chile) PVS ^O PV-0740 (Niederlande)



	PVS ^o PV-0274 / MZ202332 (DE) PVS ^o PV-0574 (Deutschland) PVS ^o PV-0756 (Deutschland) PVS ^o PV-0789 (Deutschland) PVS ^o PV-0790 (Deutschland) PVS ^o PV-1251 (Österreich) PVS Kartoffel Noé (Schweiz, Potato) PVS Kartoffelblatt RAC (Schweiz, Potato) PVS W19-095 (Germany, Potato) PVS W19-094 (Germany, Potato) PVS W19-091 (Germany, Potato) PVS W22-061 (Germany, Potato) PVS W22-062 (Germany, Potato) PVS Tomate ACW (Schweiz, Tomato) PVS Quinoa ACW (Schweiz, Quinoa) PVS PV-1327 (Germany, Quinoa) <u>PVX:</u> PVX PV-0017 / MT613318 (Germany, Potato) PVX PV-0017 / MT613318 (Germany, Tobacco) PVX PV-0015 PVX Kartoffelblatt Charlotte (Schweiz) PVX N. tabacum ACW (Schweiz) PVX N. benthamiana ACW (Schweiz) PVX W22-063 (Germany, Potato)
Cross reaction with (Exclusivity)	None known
No cross reaction tested with (Exclusivity)	PLRV (Potato leafroll virus) PVA (Potato virus A) PVM (Potato virus M) PVY (Potato virus Y)
No matrix effect observed with (Selectivity)	<i>Solanum tuberosum</i> (Potato) – Tuber and Leaf <i>Nicotiana tabacum</i> "Xanthi" (Tobacco)

Sensitivity:

Diagnostic Sensitivity	100%
Analytical Sensitivity / LoD	10 ⁻⁴ to 10 ⁻⁶
Sensitivity on host matrix	Potato leaves: 10 ⁻⁴ to 10 ⁻⁶ Potato tubers: 10 ⁻³ to 10 ⁻⁵
Other sensitivity characteristics	-

Validation:

Internal validation	2022
External validation	Proficiency test (Germany) 2022 / 2023 and external validation with a private laboratory (Germany) testing 32 samples (9 PVS, 5 PVX, 2 PVS/PVX and 16 healthy).
Reproducibility	100%
Repeatability	100%
Validation information	Every year BIOREBA participates with PVS/PVX qPCR kit on an external proficiency test (PT).

Validation release Date:
March, 6th, 2024

QC manager:

Version: 3 – 09.10.2024 – Additional external validation and specificity data added.