

Validation report

DAS-ELISA TSWV

Article No.: 190177 (TSWV Complete kit 96) / 190175 (TSWV Complete kit 480) / 190172 (TSWV Complete kit 960)

General information:

Target Pathogen	TSWV (Tomato spotted wilt virus)
Genus	<i>Orthotospovirus</i>
Method	DAS-ELISA

Technical information:

Antibodies	Polyclonal and monoclonal antibodies developed against a Bulgarian isolate of TSWV from tobacco. The reagents react with all isolates of TSWV (Serogroup I and II). Serogroup I: TSWV Serogroup II: GRSV, TCSV, ... Serogroup III: INSV, ...
Sampling	Leaf samples: 1:50 (w/v) in extraction buffer "General"
Controls	Negative control (NC): lyophilized extracts from healthy plants Positive control (PC): lyophilized TSWV infected plant extracts
Working volume	200 µl / well

Host matrix:

Tested plant material	Leaf Transmittable by nature (various thrips species) and mechanical transmission
Tested species infected	<i>Capsicum annuum</i> (Pepper) <i>Chrysanthemum</i> (Chrysanthemum) <i>Eustoma grandiflorum</i> (Lisianthus) <i>Impatiens</i> "New-Giunea" (Impatiens) <i>Ligularia</i> (Ligularia) <i>Nicotiana benthamiana</i> (Tobacco) <i>Nicotiana tabacum</i> "Xanthi" (Tobacco) <i>Nicotiana occidentalis</i> (Tobacco) <i>Solanum lycopersicum</i> (Tomato)

Specificity:

Analytical Specificity	100%
Number of tested samples from target organism (True Positives)	>100 (Valitest: 43.8% PT: 100%)
Diagnostic Specificity	100% (Valitest: 71.3% PT: 100%)
Number of tested samples non-target organism (True Negatives)	>100 (Valitest: 38.0% PT: 100%)
Detected isolates / geographic regions (Inclusivity)	TSWV 1277 Mt-Favet #2 (Switzerland, Tomato) TSWV 1277 (Switzerland, Tobacco) TSWV 1400 (Switzerland, Tobacco) TSWV (France, Chrysanthemum) TSWV (Germany, Tomato) TSWV PV-0182 (Bulgaria, Tobacco) TSWV PV-0204 (Germany, Impatiens)

	TSWV PV-0389 (Brazil, Tobacco) TSWV PV-0393 (Bulgaria, Tobacco) TSWV PV-1175 (Hungary, Pepper) TSWV USA (US, Tomato) TSWV 77 (France, Chili pepper) TSWV 2011 (Italy, Pepper) TSWV (Italy, Tomato) TSWV (Italy, Hot pepper) TSWV 2015 (Italy, Pepper) TSWV (Italy, Lisianthus) TSWV 21007721 (Netherlands, Ligularia)
Cross reaction with (Exclusivity)	<u>Orthotospovirus Serogroup II:</u> ANSV (Alstroemeria necrotic streak virus) CSNV (Chrysanthemum stem necrosis virus) GRSV (Groundnut ringspot virus) TCSV (Tomato chlorotic spot virus)
No cross reaction tested with (Exclusivity)	<u>Orthotospovirus:</u> INSV (Impatiens necrotic spot virus) IYSV (Iris yellow spot virus) <u>Others:</u> AMV (Alfalfa mosaic virus) BCMV (Bean common mosaic virus) GLRaV-6 (Grapevine leafroll-associated virus 6) PDV (Prune dwarf virus) PeAMV (Petunia asteroid mosaic virus) PRSV (Papaya ringspot virus) RBDV (Raspberry bushy dwarf virus)
No matrix effect observed with (Selectivity)	<i>Allium fistulosum</i> (Spring onion) <i>Allium sativum</i> (Garlic) <i>Capsicum annuum</i> (Pepper) <i>Cyclamen purpurascens</i> (Cyclamen) <i>Pelargonium</i> (Geranium) <i>Nicotiana occidentalis</i> (Tobacco) <i>Solanum lycopersicum</i> (Tomato)

Sensitivity:

Diagnostic Sensitivity	Valitest: 96.4% PT: 100%
Analytical Sensitivity / LoD	10^{-3} to 10^{-6} dilution of infected tissue (pathogen titer unknown) TSWV PV-1175: 10^{-6} TSWV PV-0182: 10^{-3} TSWV PV-0389: 10^{-4}
Sensitivity on host matrix	TSWV on leaves of tomato: 1:156'250 dilution TSWV on fruits of tomato: 1:156'250 dilution Pathogen titers unknown
Other sensitivity characteristics	<u>Valitest:</u> Accuracy: 81.8% Power: 96.4% False negative rate: 3.6% False positive rate: 28.7%

Validation:

Internal validation	1991, 2005 and 2021 (last internal validation)
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External validation	Validation by 1 external research partner in 1991 (US). 1 PT in 2009 between two laboratories (14 samples) Participation on EU H2020 project «Valitest» (n°773139) with these reagents (14 labs).
Reproducibility	100% (Valitest: 95.5%)
Repeatability	100% (Valitest: 97.6%)
Validation information	Internally, the reagents have been validated with the BIOREBA isolate collection composed of various samples collected within the last 40 years.

Validation release Date:
May, 22nd, 2023

QC manager:



Version: 2 – 24.09.2024