A CALIBRE SCIENTIFIC COMPANY
BIOREBA

Validation report

DAS-ELISA Tobamovirus broad-spectrum (Tobamo)

Article No.: 152977 (Tobamo Complete kit 96) / 152975 (Tobamo Complete kit 480) / 152972 (Tobamo Complete kit 960)

General information:

Target Pathogen	Members of the genus *Tobamovirus*
Genus	*Tobamovirus*
Method	DAS-ELISA

Technical information:

Antibodies	Complementary polyclonal antibodies developed against isolates from different Tobamoviruses.
Sampling	Leaf samples: 1/20 /w/v) in extraction buffer "General" Fruit samples: 1:20 (w/v) in extraction buffer "General" Seed samples: 1:20 (w/v) in extraction buffer "General" and soaking the samples at 4°C for 4 hours before homogenization.
Controls	Negative control (NC): lyophilized extracts from healthy plants Positive control (PC): lyophilized Tobamovirus-infected plant extracts
Working volume	200 µl / well

Host matrix:

Tested plant material	Leaves, fruit, seed Seed transmittable, mechanical transmittable
Tested species infected	*Solanum lycopersicum (Tomato)* *Capsicum spp. (Peppers)* *Nicotiana spp. (Tobacco)* *Lactuca sativa* (Lettuce) Cucumis sativus (Cucumber) Cucumis metuliferus (Horned melon) Lagenaria siceraria (Bottle Gourd)

Specificity:

Analytical Specificity	100%
Number of tested samples from target organisms (True Positives)	36
Diagnostic Specificity	100%
Number of tested samples non-target organism (True Negatives)	20
Detected isolates / geographic regions (Inclusivity)	**Bell pepper mottle mosaic virus** BPeMV PV-0170 (Netherland, Egg plant) **Cucumber green mottle mosaic virus** CGMMV 290216 (USA, Bottle Gourd) CGMMV 210318 (Switzerland, Horned melon) CGMMV 270521 (Switzerland, Cucumber) CGMMV 051022 (Switzerland, Cucumber)

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	Pepper mild mottle virus PMMoV 1394 (Switzerland, Bell Pepper) PMMoV 1394 (Switzerland, Tobacco) PMMoV 1174 (Switzerland, Tobacco) PMMoV PV-1272 (Denmark, Pepper) **Sunn-hemp mosaic virus** SHMV PV-0156 (Bean) **Tobacco mild green mosaic virus** TMGMV PV-1128 (USA, Tobacco) **Tobacco mosaic virus** TMV 030907 (Switzerland, Tobacco) TMV 616 (Switzerland, Tomato) TMV 616 (Switzerland, Tobacco) TMV 270521 (Switzerland, Cucumber) **Tomato brown rugose fruit virus** ToBRFV INF.110721-A (Israel, Tomato) ToBRFV INF.110721-B (Israel, Tomato) ToBRFV INF.110721-C (Israel, Tomato) ToBRFV INF.110721-D (Israel, Tomato) ToBRFV INF.110721-E (Israel, Tomato) ToBRFV INF.110721-F (Israel, Tomato) ToBRFV INF.130721-C (Israel, Pepper) ToBRFV 120724 (Switzerland, Tomato) ToBRFV PV-1236 (Germany, Tomato) ToBRFV PV-1244 (Germany, Tomato) ToBRFV PV-1241 (Israel, Tomato) ToBRFV PV-1278 (Netherlands, Tomato) ToBRFV PV-1300 (Cyprus, Tomato) **Tomato mottle mosaic virus** ToMMV PV-1267 (USA, Tomato) **Tomato mosaic virus** ToMV 280213 (Switzerland, Tomato) ToMV 200717 (Switzerland, Lettuce) ToMV 281217 (Switzerland, Tomato) ToMV 160813 (Switzerland, Tomato) ToMV 1341 (Switzerland, Tobacco) ToMV 1341 (Switzerland, Tomato) **Turnip vein clearing virus** TVCV PV-1128 (Germany, Petunia)
Cross reaction with (Exclusivity)	None known
No cross reaction tested with (Exclusivity)	CMV (Cucumber mosaic virus) INSV (Impatiens necrotic spot virus) PepMV (Pepino mosaic virus) TBRV (Tomato black ring virus) TBSV (Tomato bushy stunt virus) TNV (Tobacco necrosis virus) ToANV (Tomato apex necrosis virus) ToRSV (Tomato ringspot virus) TSV (Tobacco streak virus) TSWV (Tomato spotted wilt virus) TYLCV (Tomato yellow leaf curl virus)
No matrix effect observed with (Selectivity)	*Solanum lycopersicum* (Tomato) – leaf and seed *Capsicum annuum* (Chilli) – leaf and leaf *Cucumis sativus* (Cucumber) – leaf and seed *Cucurbita sp.* (Sqash) – leaf and seed *Cucurbita pepo* (Zucchini) – seed

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	Nicotiana sp. (Tobacco) – leaf *Chenopodium quinoa* (Quinoa) - leaf

Sensitivity:

Diagnostic Sensitivity	100%
Analytical Sensitivity / LoD	10^{-3} – 10^{-6} dilution of infected tissue (pathogen titer unknown)
Sensitivity on host matrix	Infection detected (pathogen titer unknown) - ToBRFV tomato leaves: up to $3.9*10^{-6}$ dilution - ToBRFV tomato fruit: up to $3.1*10^{-4}$ dilution - ToBRFV tomato seed: up to $1.5*10^{-5}$ dilution - CGMMV melon leaves: up to $3.9*10^{-6}$ dilution - CGMMV melon seed: up to $1.2*10^{-3}$ dilution - PMMoV tobacco leaves: up to $7.8*10^{-5}$ dilution - ToMV tomato leaves: up to $3.1*10^{-4}$ dilution - ToMV tomato seed: up to $2.5*10^{-2}$ dilution - TMV tomato leaves: up to $1.9*10^{-7}$ dilution
Other sensitivity characteristics	Testing of 1'000 tomato seed ToBRFV-infected tomato seed were mixed with healthy tomato seed: - 100% Infection: up to $1.5*10^{-5}$ dilution - 40% Infection: up to $1.5*10^{-5}$ dilution - 10% Infection: up to $6.2*10^{-3}$ dilution - 1% Infection: up to $1.25*10^{-3}$ dilution

Validation:

Internal validation	2026
External validation	-
Reproducibility	100% (BIOREBA)
Repeatability	100% (BIOREBA)
Validation information	The internal validation was done with the internal collection of BIOREBA strains and species.

Validation release Date:
October 30th, 2026

QC manager:



Version: 1 – 30.10.2026

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