

EUROPEAN AND MEDITERRANEAN PLANT PROTECTION ORGANIZATION
ORGANISATION EUROPEENNE ET MEDITERRANEENNE POUR LA PROTECTION DES PLANTES
Summary sheet of validation data for a diagnostic test

The EPPO Standard PM 7/98 *Specific requirements for laboratories preparing accreditation for a plant pest diagnostic activity* describes how validation should be conducted. It also includes definitions of performance criteria.

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| Laboratory contact details | National Institute of Biology, Department of Biotechnology and Systems Biology Vecna pot 121, 1000 Ljubljana, Slovenia |
| Short description of the test | Report on the results of the test performance study on detection and identification of tomato mottle mosaic virus (ToMMV) using molecular tests |
| Date, reference of the validation report | 2024-09-17 - Report on the results of the test performance study on detection and identification of tomato mottle mosaic virus (ToMMV) using molecular tests. |
| Link to other validation data | - Report on the results of the test performance study on detection and identification of tomato mottle mosaic virus (ToMMV) using molecular tests. Report on the results of the test performance study on detection and identification of tomato mottle mosaic virus (ToMMV) using molecular tests - Report on the results of the test performance study on detection and identification of tomato mottle mosaic virus (ToMMV) using molecular tests. Report on the results of the test performance study on detection and identification of tomato mottle mosaic virus (ToMMV) using molecular tests - Report on the results of the test performance study on detection and identification of tomato mottle mosaic virus (ToMMV) using molecular tests. Report on the results of the test performance study on detection and identification of tomato mottle mosaic virus (ToMMV) using molecular tests - Report on the results of the test performance study on detection and identification of tomato mottle mosaic virus (ToMMV) using molecular tests. Report on the results of the test performance study on detection and identification of tomato mottle mosaic virus (ToMMV) using molecular tests - Report on the results of the test performance study on detection and identification of tomato mottle mosaic virus (ToMMV) using molecular tests. Report on the results of the test performance study on detection and identification of tomato mottle mosaic virus (ToMMV) using molecular tests - Report on the results of the test performance study on detection and identification of tomato mottle mosaic virus (ToMMV) using molecular tests. Report on the results of the test performance study on detection and identification of tomato mottle mosaic virus (ToMMV) using molecular tests - Report on the results of the test performance study on detection and identification of tomato mottle mosaic virus (ToMMV) using molecular tests. Report on the results of the test performance study on detection and identification of tomato mottle mosaic virus (ToMMV) using molecular tests - Report on the results of the test performance study on detection and identification of tomato mottle mosaic virus (ToMMV) using molecular tests. Report on the results of the test performance study on detection and identification of tomato mottle mosaic virus (ToMMV) using molecular tests - Report on the results of the test performance study on detection and identification of tomato mottle mosaic virus (ToMMV) using molecular tests. Report on the results of the test performance study on detection and identification of tomato mottle mosaic virus (ToMMV) using molecular tests - Report on the results of the test performance study on detection and identification of tomato mottle mosaic virus (ToMMV) using molecular tests. Report on the results of the test performance study on detection and identification of tomato mottle mosaic virus (ToMMV) using molecular tests - Report on the results of the test performance study on detection and identification of tomato mottle mosaic virus (ToMMV) using molecular tests. Report on the results of the test performance study on detection and identification of tomato mottle mosaic virus (ToMMV) using molecular tests - Report on the results of the test performance study on detection and identification of tomato mottle mosaic virus (ToMMV) using molecular tests. Report on the results of the test performance study on detection and identification of tomato mottle mosaic virus (ToMMV) using molecular tests - Report on the results of the test performance study on detection and identification of tomato mottle mosaic virus (ToMMV) using molecular tests. Report on the results of the test performance study on detection and identification of tomato mottle mosaic virus (ToMMV) using molecular tests |

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| Validation process according to EPPO Standard PM7/98? | yes |
| Is the lab accredited for this test? | no |
| Was the validated data generated in the framework of a project? | Euphresco |
| If yes, please specify | Euphresco project 2022-A-394 (Validation of molecular diagnostic methods for the detection and identification of tomato mottle mosaic virus (ToMMV-detect)) |
| Description of the test | |
| Organism(s) | Tomato mottle mosaic virus / Tobamovirus maculatusellati (TOMMV0) |
| Detection / identification | detection and identification |
| Method(s) | Molecular Conventional RT PCR |
| Method: Molecular Conventional RT PCR | |
| Reference of the test description | |
| As or adapted from an EPPO diagnostic protocol | no |
| New test being considered for inclusion in the next version of the EPPO diagnostic protocol? | yes |
| As or adapted from an IPPC diagnostic protocol | no |
| Reference of the test | Sui et al., 2017 |
| Is the test modified compared to the reference test | no |
| Kit | |
| Is a kit used | yes |
| Manufacturer name | QIAGEN |

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| Specify the kit used | OneStep RT-PCR kit |
| Kit used following the manufacturer's instructions? | yes |
| Other information | |
| Reaction type | Simplex |
| Performance Criteria : | |
| Organism 1.: | Tobamovirus maculatussellati(TOMMV0) |
| Analytical sensitivity | |
| What is smallest amount of target that can be detected reliably? | at least to 2.5×10^4 dilution of isolate ToMMV NIB V 373 (level of agreement between experiments: 100%). |
| Diagnostic sensitivity | |
| Proportion of infected/infested samples tested positive compared to results from the standard test, see appendix 2 of PM 7/98 | 54.3% |
| Standard test(s) | Calculation was done on the basis of health status of the samples. Isolates used: ToMMV NIB V 373 dilutions 2.5×10^1 to 2.5×10^8 of isolate ToMMV NIB V 414 dilutions 2x and 2×10^1 . |
| Analytical specificity - inclusivity | |
| Number of strains/populations of target organisms tested | two ToMMV isolates (NIB V 373 and NIB V 414). |
| Specificity value | / |
| Analytical specificity - exclusivity | |
| Number of non-target organisms tested | 3 healthy tomato samples (two seeds, one leaves), 11 isolates of 9 other tobamovirus species (CGMMV isolate NIB V 403, ObPV isolate NIB V 364, ORSV isolate NIB V 365, PaMMV isolate NIB V 366, PMMoV isolate NIB V 408, TMGMV isolate NIB V 404, TMV isolates: NIB V 405 and 413, ToBRFV isolate NIB V 331, ToMV isolate NIB V 410, ToMV isolates NIB V 406). |
| Specificity value | / |
| Diagnostic Specificity | |
| Proportion of uninfected/uninfested samples (true negatives) testing negative compared to results from a standard test | 100% |
| Specify the test(s) | / |
| Reproducibility | |
| Provide the calculated % of agreement for a given level of the pest (see PM 7/98) | 94% |
| Repeatability | |
| Provide the calculated % of agreement for a given level of the pest (see PM 7/98) | / |
| Test performance study | |

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| Test performance study? | yes |
| Brief details of the test performance study and its output. It available, link to published article/report | Preparation for test performance study organized in the framework of the Euphresco project 2022-A-394. |
| Other information | |
| Any other information considered useful | Test performance study organized in the framework of the Euphresco project 2022-A-394 involving 7 laboratories from 6 countries. The results of one laboratory were excluded from calculation of diagnostic parameters because of deviation from the protocol seems to have an impact on the sensitivity and specificity of the test. Full validation report is available: https://drop.euphresco.net/data/af730655-4022-4e87-a952-b94cfda3a971/ |

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