

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.

Laboratory contact details	National Reference Centre, National Plant Protection Organization P.O. Box 9102, 6700 HC Wageningen, Netherlands
Short description of the test	Detection of Tomato brown rugose fruit virus by LAMP (Agdia AmplifyRP) in seeds of tomato and pepper
Date, reference of the validation report	2021-12-01 - Euphresco 2019-A-327 project report
Link to other validation data	<ul style="list-style-type: none"> - Euphresco 2019-A-327 project report Detection of Tomato brown rugose fruit virus by real time RT PCR (Menzel and Winter, 2021) in seeds of tomato and pepper - Euphresco 2019-A-327 project report Detection of Tomato brown rugose fruit virus by real time RT PCR (Abiopep) in seeds of tomato and pepper. - Euphresco 2019-A-327 project report Detection of Tomato brown rugose fruit virus by conventional RT PCR (Loewe kit) in seeds of tomato and pepper - Euphresco 2019-A-327 project report Detection of Tomato brown rugose fruit virus by conventional RT PCR (Alkowni et al., 2019) in seeds of tomato and pepper - Euphresco 2019-A-327 project report Detection of Tomato brown rugose fruit virus by LAMP (Sarkes et al., 2020) in seeds of tomato and pepper - Euphresco 2019-A-327 project report Detection of Tomato brown rugose fruit virus by real time RT PCR (ISHI-Veg test) in seeds of tomato and pepper
Validation process according to EPPO Standard PM7/98?	yes
Is the lab accredited for this test?	yes
Was the validated data generated in the framework of a project?	Euphresco
If yes, please specify	Euphresco 2019-A-327
Description of the test	
Organism(s)	Tomato brown rugose fruit virus(TOBRFV)
Detection / identification	detection
Matrix(ces) tested	Seeds Seed samples consisted of tomato (sample set 1) and pepper (sample set 2). Sample types consisting of samples with different levels of ToBRFV (high, medium) and ToBRFV-negative

	samples were prepared
Plant species tested	Capsicum, Solanum lycopersicum
Method(s)	Extraction Molecular Extraction DNA RNA Molecular LAMP
Method: Extraction	
<i>Reference of the test description</i>	
As or adapted from an EPPO diagnostic protocol	yes
New test being considered for inclusion in the next version of the EPPO diagnostic protocol?	
EPPO Diagnostic Protocol name	PM 7/146 Tomato brown rugose fruit virus (version 1)
Name of the test	
As or adapted from an IPPC diagnostic protocol	no
Is the test modified compared to the reference test	no
<i>Other information</i>	
Other details on the test	GH+ buffer
Method: Molecular Extraction DNA RNA	
<i>Reference of the test description</i>	
As or adapted from an EPPO diagnostic protocol	yes
New test being considered for inclusion in the next version of the EPPO diagnostic protocol?	
EPPO Diagnostic Protocol name	PM 7/146 Tomato brown rugose fruit virus (version 1)
Name of the test	
As or adapted from an IPPC diagnostic protocol	no
Is the test modified compared to the reference test	yes Centrifugation at 4°C
<i>Kit</i>	
Is a kit used	yes
Manufacturer name	QIAGEN
Specify the kit used	RNeasy Plant Mini Kit
Kit used following the manufacturer's instructions?	no Centrifugation at 4°C
<i>Other information</i>	
Other details on the test	
Method: Molecular LAMP	

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?	
As or adapted from an IPPC diagnostic protocol	no
Reference of the test	Agdia kit
Is the test modified compared to the reference test	
Kit	
Is a kit used	yes
Manufacturer name	AGDIA
Specify the kit used	AmplifyRP® XRT for ToBRFV (XCS 66800/0048)
Kit used following the manufacturer's instructions?	no minor modifications (see report)
Other information	
Reaction type	
Other details on the test	
Are the performance characteristics included in the EPPO diagnostic protocol?	
Performance Criteria :	
Organism 1.:	Tomato brown rugose fruit virus(TOBRFV)
Analytical sensitivity	
What is smallest amount of target that can be detected reliably?	Preliminary study on tomato seeds spiked with ToBRFV: 10 ⁻⁴ with GH+ buffer for extraction and 1uL RNA 10 ⁻⁴ with phosphate buffer for extraction and 1 uL RNA 10 ⁻¹ with phosphate buffer for extraction and 10uL of raw extract. Did not work with GH+ buffer for extraction and 10uL of raw extract.
Diagnostic sensitivity	
Proportion of infected/infested samples tested positive compared to results from the standard test, see appendix 2 of PM 7/98	Based on the results of 3 laboratories Tomato: 81.4% Pepper: 42.9%
Standard test(s)	Comparison with samples of known status
Analytical specificity - inclusivity	
Number of strains/populations of target organisms tested	
Specificity value	
Analytical specificity - exclusivity	
Number of non-target organisms tested	
Specificity value	

Cross reacts with	
<u>Diagnostic Specificity</u>	
Proportion of uninfected/uninfested samples (true negatives) testing negative compared to results from a standard test	Based on the results of 3 laboratories Tomato: 100% Pepper: 100%
Specify the test(s)	Comparison with samples of known status
<u>Reproducibility</u>	
Provide the calculated % of agreement for a given level of the pest (see PM 7/98)	
<u>Repeatability</u>	
Provide the calculated % of agreement for a given level of the pest (see PM 7/98)	
Test performance study	
Test performance study?	yes
Brief details of the test performance study and its output. It available, link to published article/report	Test performance study organized in the framework of the Euphresco project 2019-A-327 involving 26 laboratories from 16 countries. The performance of this test is based on data from 3 laboratories.
Other information	
Any other information considered useful	
The following complementary files are available online:	<ul style="list-style-type: none"> • Report_2019-A-327_Euphresco

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