

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	Council for Agricultural Research and Economics- Research Centre for Plant Protection and Certification Via Carlo Giuseppe Bertero, 22, 00156 Rome, Italy
Short description of the test	detection of <i>Xanthomonas euvesicatoria</i> pv. <i>euvesicatoria</i> , <i>Xanthomonas hortorum</i> pv. <i>gardneri</i> , <i>Xanthomonas euvesicatoria</i> pv. <i>perforans</i> , <i>Xanthomonas vesicatoria</i> <i>Xanthomonas vesicatoria</i> by Molecular Conventional PCR in Seeds
Date, reference of the validation report	2022-01-22 - Validation_ASPROPI_2017_pp143-166
Link to other validation data	- Validation_ASPROPI_2017_pp143-166
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?	Other_project
If yes, please specify	ASPROPI (Founded by MIPAAF_Italy)
Description of the test	
Organism(s)	<i>Xanthomonas euvesicatoria</i> pv. <i>euvesicatoria</i> (XANTEU) <i>Xanthomonas hortorum</i> pv. <i>gardneri</i> (XANTGA) <i>Xanthomonas euvesicatoria</i> pv. <i>perforans</i> (XANTPF) <i>Xanthomonas vesicatoria</i> (XANTVE)
Detection / identification	detection
Matrix(ces) tested	Seeds
Plant species tested	<i>Solanum lycopersicum</i>
Method(s)	Molecular Conventional PCR
Method: Molecular Conventional PCR	
Reference of the test description	
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 7/110 <i>Xanthomonas</i> spp. (<i>Xanthomonas euvesicatoria</i> , <i>Xanthomonas</i>

	gardneri, Xanthomonas perforans, Xanthomonas vesicatoria</i>) causing bacterial spot of tomato and sweet pepper (version 1)
Name of the test	Conventional PCR (according to Koenraadt et al., 2009)
As or adapted from an IPPC diagnostic protocol	no
Is the test modified compared to the reference test	no
Kit	
Is a kit used	no
Other information	
Reaction type	Duplex
Other details on the test	
Are the performance characteristics included in the EPPO diagnostic protocol?	
Performance Criteria :	
Organism 1.:	Xanthomonas euvesicatoria pv. euvesicatoria(XANTEU)
Analytical sensitivity	
What is smallest amount of target that can be detected reliably?	10 ⁴ CFU/mL
Diagnostic sensitivity	
Proportion of infected/infested samples tested positive compared to results from the standard test, see appendix 2 of PM 7/98	95%
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	Among 26 non-target strains false positive occurred on: Xanthomonas arboricola pv. celebensis (NCPBP 1832), Pseudomonas fluorescens (NCPBP 1964), one bacterial unknown saprophyte from tomato seeds (CREA-DC 1495).
Specificity value	88,4%
Cross reacts with	
Diagnostic Specificity	
Proportion of uninfected/uninfested samples (true negatives) testing negative compared to results from a standard test	74%

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)	74%
<u>Repeatability</u>	
Provide the calculated % of agreement for a given level of the pest (see PM 7/98)	79%
Organism 2.:	Xanthomonas hortorum pv. gardneri(XANTGA)
<u>Analytical sensitivity</u>	
What is smallest amount of target that can be detected reliably?	10 ⁴ CFU/mL
<u>Diagnostic sensitivity</u>	
Proportion of infected/infested samples tested positive compared to results from the standard test, see appendix 2 of PM 7/98	92%
Standard test(s)	Comparison of samples with known status
<u>Analytical specificity - inclusivity</u>	
Number of strains/populations of target organisms tested	
Specificity value	
<u>Analytical specificity - exclusivity</u>	
Number of non-target organisms tested	Among 26 non-target strains false positive occurred on: Xanthomonas arboricola pv. celebensis (NCPBP 1832), Pseudomonas fluorescens (NCPBP 1964), one bacterial unknown saprophyte from tomato seeds (CREA-DC 1495).
Specificity value	88,4%
Cross reacts with	
<u>Diagnostic Specificity</u>	
Proportion of uninfected/uninfested samples (true negatives) testing negative compared to results from a standard test	82%
Specify the test(s)	Comparison of samples with known status
<u>Reproducibility</u>	
Provide the calculated % of agreement for a given level of the pest (see PM 7/98)	78%
<u>Repeatability</u>	
Provide the calculated % of agreement for a given level of the pest (see PM 7/98)	81%
Organism 3.:	Xanthomonas euvesicatoria pv. perforans(XANTPF)
<u>Analytical sensitivity</u>	

What is smallest amount of target that can be detected reliably?	10 ⁴ CFU/mL
<u>Diagnostic sensitivity</u>	
Proportion of infected/infested samples tested positive compared to results from the standard test, see appendix 2 of PM 7/98	92%
Standard test(s)	Comparison with samples of known status
<u>Analytical specificity - inclusivity</u>	
Number of strains/populations of target organisms tested	
Specificity value	
<u>Analytical specificity - exclusivity</u>	
Number of non-target organisms tested	Among 26 non-target strains false positive occurred on: Xanthomonas arboricola pv. celebensis (NCPBP 1832), Pseudomonas fluorescens (NCPBP 1964), one bacterial unknown saprophyte from tomato seeds (CREA-DC 1495).
Specificity value	88,4%
Cross reacts with	
<u>Diagnostic Specificity</u>	
Proportion of uninfected/uninfested samples (true negatives) testing negative compared to results from a standard test	82%
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)	78%
<u>Repeatability</u>	
Provide the calculated % of agreement for a given level of the pest (see PM 7/98)	81%
Organism 4.:	Xanthomonas vesicatoria(XANTVE)
<u>Analytical sensitivity</u>	
What is smallest amount of target that can be detected reliably?	10 ⁴ CFU/mL
<u>Diagnostic sensitivity</u>	
Proportion of infected/infested samples tested positive compared to results from the standard test, see appendix 2 of PM 7/98	95%
Standard test(s)	Comparison with samples of known status
<u>Analytical specificity - inclusivity</u>	
Number of strains/populations of target organisms tested	
Specificity value	

Analytical specificity - exclusivity	
Number of non-target organisms tested	Among 26 non-target strains false positive occurred on: Xanthomonas arboricola pv. celebensis (NCPBP 1832), Pseudomonas fluorescens (NCPBP 1964), one bacterial unknown saprophyte from tomato seeds (CREA-DC 1495).
Specificity value	88,4%
Cross reacts with	
Diagnostic Specificity	
Proportion of uninfected/uninfested samples (true negatives) testing negative compared to results from a standard test	74%
Specify the test(s)	Comparison with samples of known status
Reproducibility	
Provide the calculated % of agreement for a given level of the pest (see PM 7/98)	74%
Repeatability	
Provide the calculated % of agreement for a given level of the pest (see PM 7/98)	79%
Test performance study	
Test performance study?	no
Brief details of the test performance study and its output. It available, link to published article/report	Test performance study organized in the frame of a National Project (ASPROPI) involving 7 Italian laboratories
Other information	
Any other information considered useful	
The following complementary files are available online:	<ul style="list-style-type: none"> • VALIDATION_Xanthomonas_spp_ASPROPI_2017

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