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 Instituite of Biology, Department of Biotechnology and Systems Biology Vecna pot 121, 1000 Ljubljana, Slovenia
Short description of the test	Detection of Xylella fastidiosa by real-time PCR (Schaad et al., 2002) in plant material
Date, reference of the validation report	2018-06-14 - 172 ; Dreo, Tanja, 2018. qPCR for detection of Xylella fastidiosa based on Schaad et al., Phytopathology, 2002, 92 (7): 721-728: Review of existing validation data, modification of test and in silico analysis. (No. D0008/18). National Institute of Biology, Department of Biotechnology and Systems Biology, Ljubljana.; Dreo, Tanja and Pirc, Manca, 2018. qPCR for detection of Xylella fastidiosa based on Schaad et al., Phytopathology, 2002, 92 (7): 721-728: Diagnostic specificity and sensitivity determined in spiked samples (PKIe) (No. D0009/18). National Institute of Biology, Department of Biotechnology and Systems Biology, Ljubljana.; Dreo, Tanja and Pirc, Manca, 2018. qPCR for detection of Xylella fastidiosa based on Schaad et al., Phytopathology, 2002, 92 (7): 721-728: Analytical sensitivity – standard curves (No. D0010/18). National Institute of Biology, Department of Biotechnology and Systems Biology, Ljubljana.; Dreo, Tanja and Pirc, Manca, 2018 qPCR for detection of Xylella fastidiosa based on Schaad et al. (2002), Francis et al. (2006), Harper et al., 2010, erratum 2013: Analytical specificity (No. D0027/18). National Institute of Biology, Department of Biotechnology and Systems Biology, Ljubljana.
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?	
Description of the test	
Organism(s)	Xylella fastidiosa (XYLEFA)
Detection / identification	detection
Matrix(ces) tested	Leaves, Shoots Plant material (leaf veins and petioles, vascular tissue [xylem] from shoots)

Plant species tested	Acacia sp., Acer sp., Asparagus sp., Callistemon sp., Citrus sp., Coffea sp., Cytisus sp., Ficus sp., Ginkgo sp., Grevillea sp., Hedera sp., Heliotropium sp., Hydrangea sp., Juglans sp., Laurus sp., Lavandula sp., Lonicera sp., Morus sp., Myrtus sp., Nerium sp., Olea sp., Origanum sp., Polygala sp., Prunus sp., Quercus sp., Rhamnus sp., Rosa sp., Rubus sp., Salvia, Spartium sp., Vinca sp., Vitis sp.
Method(s)	Molecular Extraction DNA RNA Molecular real time PCR
Method: Molecular Extraction DNA RNA	
Reference of the test description	
As or adapted from an EPPO diagnostic protocol	yes
EPPO Diagnostic Protocol name	PM 7/024 Xylella fastidiosa (version 3)
Kit	
Is a kit used	yes
Manufacturer name	BIONOBILE
Specify the kit used	QuickPick™ SML Plant DNA
Kit used following the manufacturer's instructions?	
Other information	
Method: Molecular real time 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?	no
As or adapted from an IPPC diagnostic protocol	no
Reference of the test	Schaad, N. W., Opgenorth, D., Gaush, P. 2002. Real-Time Polymerase Chain Reaction for One-Hour On-Site Diagnosis of Pierce's Disease of Grape in Early Season Asymptomatic Vines. Phytopathology 2002 92:7, 721-728.
Is the test modified compared to the reference test	yes
Other information	
Are the performance characteristics included in the EPPO diagnostic protocol?	**no**
Performance Criteria :	
Organism 1.:	**Xylella fastidiosa(XYLEFA)**
Analytical sensitivity	
What is the smallest amount of target that	DNA: In total 500 target copies per mL extracted

can be detected reliably?	DNA (log 2,1 cps/mL as determined with digital PCR) were reliably detected (minimum 2/3 parallel reactions) in several X. fastidiosa strains, NIB Z 1962 (X. fastidiosa subsp. multiplex, LMG 9063), NIB Z 1963 (X. fastidiosa subsp. fastidiosa from almond, LMG 15099) and CoDiRo strain. Concentration of 103 cps/mL was reliably detected in all three tested strains. Standard curves in plant material: Concentrations from 5x10^4 to down to 10^3 to (target cps/mL) can be reliably detected in samples of olives (10^4), oleander (10^3), rosemary (5x10^3) and lavender (5x10^4) plants tested for latent infection. Spiked PKIe controls: 100 % analytical sensitivity (111 different symptomatic samples of 27 different genera and 66 asymptomatic (latent) samples of 20 different genera were tested).
Diagnostic sensitivity	
Proportion of infected/infested samples tested positive compared to results from the standard test, see appendix 2 of PM 7/98	No data available.
Analytical specificity - inclusivity	
Number of strains/populations of target organisms tested	3
Specificity value	100
Analytical specificity - exclusivity	
Number of non-target organisms tested	90
Specificity value	Xanthomonas campestris pv. citri (even with high concentrations as tested there was only one reaction positive out of two tested (Cq 37.5))
Cross-reacts with	Xanthomonas campestris pv. citri
Diagnostic Specificity	
Proportion of uninfected/uninfested samples (true negatives) testing negative compared to results from a standard test	No data available.
Reproducibility	
Provide the calculated % of agreement for a given level of the pest (see PM 7/98)	100%
Repeatability	
Provide the calculated % of agreement for a given level of the pest (see PM 7/98)	100%
Test performance study	
Test performance study?	no
The following complementary files are available online:	• D0008_18_qPCR_Xyf_Schaad_2002_ModificationInSilico • D0009_18_qPCR_Xyf_Schaad_2002_Diagno

	sticSensitivityPKIe • D0010_18 _qPCR_Xyf_Schaad_2002_AnalyticalSensitivity_SCs • D0027_qPCR_Xyf_HarperSchaadFrancis_AnalyticalSpecificity

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