

**EUROPEAN AND MEDITERRANEAN PLANT PROTECTION ORGANIZATION**  
**ORGANISATION EUROPEENNE ET MEDITERRANEENNE POUR LA PROTECTION DES PLANTES**  
(11-17239)

**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.

<b>Target Organism</b>	Candidatus Liberibacter solanacearum	
<b>Short description</b>	Detection of 'Candidatus Liberibacter solanacearum' by means of the real-time PCR procedure	
<b>Laboratory contact details</b>	ILVO Institute for Agricultural and Fisheries Research Burg. Van Gansberghelaan 96, 9820 Merelbeke, Belgium	
<b>Date and reference of the validation report</b>	28/06/2016 - F16_V13	
<b>Validation process according to EPPO Standard PM 7/98:</b>	Yes	
<b>Reference of the test description</b>	0 DP21 (IPPC) Li et al. 2009 Li W., Abad J.A., French-Monar R.D., Rascoe J., Wen A., Gudmestad N.C., Secor G.A., Lee I-M., Duan Y., Levy L. Multiplex real-time PCR for detection, identification and quantification of 'Candidatus Liberibacter solanacearum' in potato plants with zebra chip. Journal of Microbiological Methods 78, 59-65 (2009).	
<b>Is the test the same as described in the EPPO DP?</b>	Yes	
<b>Is the lab accredited for this test?</b>	Yes	
<b>Plant species tested (if relevant)</b>	Solanum tuberosum (potato) and Daucus carota (carrot)	
<b>Matrices tested (if relevant)</b>	leaves, petioles, roots	
<b>List of methods used</b>		
<b>Method for extraction / isolation / baiting of target organism from matrix</b>	X	DNeasy (Qiagen)
<b>Molecular methods, e.g. hybridization, PCR and real time PCR</b>	X	DP21 (IPPC) Li et al. 2009
<b>Serological methods: IF, ELISA, Direct Tissue Blot Immuno Assay</b>		
<b>Plating methods: selective isolation</b>		
<b>Bioassay methods: selective enrichment in host plants, baiting, plant test and grafting.</b>		
<b>Pathogenicity test</b>		

<b>Fingerprint methods: protein profiling, fatty acid profiling &amp; DNA profiling</b>		
<b>Morphological and morphometrical methods intended for identification</b>		
<b>Biochemical methods: e.g. enzyme electrophoresis, protein profiling</b>		
<b>Other</b>		
<b>Analytical sensitivity (= limit of detection)</b>		
<b>What is smallest amount of target that can be detected reliably?</b>		
<b>Diagnostic sensitivity</b>		
<b>Proportion of infected/infested samples tested positive compared to results from the standard test , see appendix 2 of PM 7/98</b>		
<b>Specify the standard test</b>		
<b>Analytical specificity</b>		
<b>Specificity value</b>		
<b>Number of strains/populations of target organisms tested</b>	2 Ca. L. solanacearum Isolate potato (USDA, Venkat, Texas, USA) RefV_CaLso_01 Ca. L. solanacearum Isolate carrot (origin Marocco) RefV_CaLso_02	
<b>Number of non-target organisms tested</b>	20 Arabidopsis mosaic virus Cucumber mosaic virus Potato leaf roll virus Potato virus Y Potato virus X Potato spindle tuber viroid Strawberry latent ringspot virus Tobacco rattle virus Tomato black ring virus Tomato ringspot virus Clavibacter michiganensis subsp. sepedonicus Dickeya solani Ralstonia solanacearum Rhizoctonia solani Verticillium dahliae Candidatus Phytoplasma asteris (aster yellows phytoplasma) Candidatus Phytoplasma solani (stolbur phytoplasma) Candidatus Liberibacter asiaticus Candidatus Liberibacter africanus Candidatus Liberibacter americanus	
<b>Cross reacts with (specify the</b>	In some cases, late reaction (Cq >38) for Ca L americanus	

species)	observed
<b>Diagnostic Specificity</b>	
<b>Proportion of uninfected/uninfested samples (true negatives) testing negative compared to results from a standard test</b>	
<b>Specify the standard test</b>	
<b>Reproducibility</b>	
<b>Provide the calculated % of agreement for a given level of the pest (see PM 7/98)</b>	100%
<b>Repeatability</b>	
<b>Provide the calculated % of agreement for a given level of the pest (see PM 7/98)</b>	100%
<b>Test performance study</b>	
<b>Test performance study?</b>	Yes
<b>Include brief details of the test performance study and its output. It available, provide a link to published article/report</b>	2017 - ANSES (Test performance study, including two real-time PCR methods (Li et al 2009 and Teresani et al 2014) and three conventional PCR (Li et al 2009; Munyaneza et al 2009, Ravindran et al 2011)
<b>Other information</b>	
<b>Any other information considered useful e.g. robustness, ease of performing the test, etc.</b>	