

ORIGINAL ARTICLE

Incidence and genetic diversity of raspberry bushy dwarf virus and raspberry leaf blotch virus isolates in red raspberry in Ukraine

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SUPPLEMENTARY MATERIAL

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PCR primers used for the detection of pathogens of *Rubus*

Pathogen	Primer name	Sequence (5'-3')	Fragment size [bp]	Annealing T [°C]	Reference
Black raspberry necrosis virus	Primer 1-F	ATGCTGAGCCACTTG	417	55	Halgren <i>et al.</i> (2007)
	Primer 1-R	TGA CAATGTCTTGGAAGCCAC			
Cucumber mosaic virus	CMV I F	GCCACCAAAAATAGACCG	593	52	Tzanetakis <i>et al.</i> (2004)
	CMV I R	ATCTGCTGGCGTGGATTCT			
	CMV II F	CTACGTTTATCTTCC	704		
	CMV II R	AACCGGTGATTTACCATCGC			
Rubus yellow net virus	RYN1 F	TCCAAAACCTCCCAGACCTAAAAC	350	55	Jones <i>et al.</i> (2002)
	RYN1 R	ATAATCGCAAAAGGCAAGCCAC			
Arabis mosaic virus	ArMV F	TTGGTTAGTGAATGGAACGG	504	56 - 61	Wei and Clover (2008)
	ArMV R	TCAACTCACCTCCAAATCCC			
Cherry leaf roll virus	CLRV 1	TGGCGACCGTGTAAACGGCA	416	50	Werner <i>et al.</i> (1997)
	CLRV 2	GTCGGAAGATTACGTAAAAGC			
Raspberry ringspot virus	RpRSV F1	TGTGTCTGGCTTTTGATGCT	385	61	Ochoa-Corona <i>et al.</i> (2005)
	RpRSV R1	GAGTGCATAGGGGGCTGTT			
Strawberry latent ring spot virus	SLRV F	CCTCTCCAACCTGCTAGACT	497	55	Tzanetakis <i>et al.</i> (2007)
	SLRV R	AAGCGCATGAAGGTGTAAC			
Tomato black ring virus	TBRV-CP-F	GGCAGACGGGGATTTTGC	1537	53	Digiario <i>et al.</i> (2007)
	TBRV-CP-R	CTATGCRGGAATAGTWARAGG			
Apple mosaic virus	ApMV-s	ATCCGAGTGAACAGTCTATCCTCTAA	262	62	Menzel <i>et al.</i> (2002)
	ApMV-as	GTAACCTCACTCGTTATCACGTACAA			
Raspberry bushy dwarf virus	U1F	GTCGTTCACCAATCGTTA	520	58	Kokko <i>et al.</i> (1996)
	L3 R	CGTCGACGGCACCAGCCACCACA			
Raspberry mottle virus	CPh F	CGAAACTTYTACGGGGAAC	452	55	Tzanetakis <i>et al.</i> (2007)
	CPh R	CCTTTGAAYTCTTTAACATCGT			
Raspberry vein chlorosis	1527 F	GGGAACTAAACCCACCCCT	499	60	McGavin <i>et al.</i> (2011)
	1528 R	AGGGTCCACCCTTTCTGTCT			
Raspberry leaf blotch virus	1287 F	ATCCAGTAGTGAACCTCC	570	56	McGavin <i>et al.</i> (2012)
	1095 R	CACCATCAGGAACCTGTAATGTTT			
Phytoplasma	P1	AAGAGTTTGATCCTGGCTCAGGATT	1800	55	Deng and Hiruki (1991)
	P7	CGTCCTTCATCGGCTCTT			
	R16F2	GAAACGACTGCTAAGACTGG	1200	53	Gundersen and Lee (1996)
	R16R2	GACGGGCGGTGTGTACAAACCCCG			

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