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Genomic sequence characterization of Begomovirus infecting soybean and molecular evolutionary genomics of Legume yellow mosaic viruses (LYMVs)

Shunmugiah V. Ramesh*, Bhagat S Chouhan, Girish K. Gupta Syed M. Husain, Suresh Chand

Supplementary Table 1. Accession numbers, host, country and year of report of all known complete DNA A genome sequences of LYMVs obtained from GenBank.

S. No.	Accession No.	Legume Host	Begomovirus	Country	Year of Report
1.	EU523045.1	*Glycine max*	MYMIV	India	2008
2.	DQ389154.1	*Vigna unguiculata*	MYMIV	India	2006
3.	DQ389153.1	*Vigna unguiculata*	MYMIV	India	2006
4.	AY547317.1	Dolichos	MYMIV	India	2005
5.	KP313758.1	*Vigna radiata*	MYMIV	India	2014
6.	JN543395.1	*Phaseolus vulgaris*	MYMIV	Nepal	2011
7.	DQ400847.1	*Vigna mungo*	MYMIV	India	2006
8.	KC911720.1	*Vigna mungo*	MYMIV	India	2013
9.	KC911719.1	*Vigna mungo*	MYMIV	India	2013
10.	AM950268.1	*Vigna radiata*	MYMIV	Pakistan	2008
11.	FM208846.1	*Vigna radiata*	MYMIV	Pakistan	2008
12.	FM208845.1	*Vigna mungo*	MYMIV	Pakistan	2008
13.	FM208844.1	*Vigna mungo*	MYMIV	Pakistan	2008
14.	FM208843.1	*Vigna radiata*	MYMIV	Pakistan	2008
15.	FM208842.1	*Vigna radiata*	MYMIV	Pakistan	2008
16.	FM208841.1	*Vigna mungo*	MYMIV	Pakistan	2008
17.	FM208840.1	*Vigna unguiculata*	MYMIV	Pakistan	2008
18.	FM208839.1	*Vigna radiata*	MYMIV	Pakistan	2008
19.	FM208838.1	*Vigna radiata*	MYMIV	Pakistan	2008
20.	FM208837.1	*Vigna radiata*	MYMIV	Pakistan	2008
21.	FM208836.1	*Vigna radiata*	MYMIV	Pakistan	2008
22.	FM208835.1	*Vigna mungo*	MYMIV	Pakistan	2008
23.	FM208834.1	*Glycine max*	MYMIV	Pakistan	2008
24.	FM208833.1	*Glycine max*	MYMIV	Pakistan	2008
25.	KC019304.1	*Phaseolus vulgaris*	MYMIV	India	2012
26.	KC019303.1	*Phaseolus vulgaris*	MYMIV	India	2012
27.	JX110618.1	*Vigna mungo*	MYMIV	India	2012

28.	FN794200.1	*Phaseolus vulgaris*	MYMIV	India	2010
29.	AY269992.1	*Vigna radiata*	MYMIV	Pakistan	2003
30.	AY049772.1	*Glycine max*	MYMIV	India	2001
31.	AF416742.1	*Vigna radiata*	MYMIV	India	2001
32.	JN368439.1	*Glycine max*	MYMIV	Indonesia	2011
33.	JN368438.1	*Glycine max*	MYMIV	Indonesia	2011
34.	JN368437.1	*Vigna unguiculata*	MYMIV	Indonesia	2011
35.	JN368436.1	*Vigna unguiculata*	MYMIV	Indonesia	2011
36.	JN368435.1	*Vigna unguiculata*	MYMIV	Indonesia	2011
37.	JN368434.1	*Vigna unguiculata*	MYMIV	Indonesia	2011
38.	JN368433.1	*Vigna unguiculata*	MYMIV	Indonesia	2011
39.	JN368432.1	*Vigna unguiculata*	MYMIV	Indonesia	2011
40.	AF314145.1	*Vigna radiata*	MYMIV	Bangladesh	2001
41.	AF126406.1	*Vigna radiata*	MYMIV	India	1999
42.	AF481865.2	*Vigna unguiculata*	MYMIV	India	2002
43.	AM950268.1	*Vigna radiata*	MYMIV	Pakistan	2008
44.	AM992618.1	*Glycine max*	MYMIV	Pakistan	2008
45.	FM955600.1	*Vigna radiata*	MYMIV	Pakistan	2008
46.	FM955599.1	*Vigna radiata*	MYMIV	Pakistan	2008
47.	FM955598.1	*Vigna radiata*	MYMIV	Pakistan	2008
48.	AY271893.1	*Vigna radiata*	MYMIV	India	2003
49.	FR837935.1	*Vigna unguiculata*	MYMIV	Pakistan	2011
50.	AY269990.1	*Vigna unguiculata*	MYMIV	Pakistan	2003
51.	AJ512497.1	*Vigna radiata*	MYMIV	Pakistan	2002
52.	AJ512498.1	*Vigna radiata*	MYMIV	Pakistan	2002
53.	AJ512495.1	*Vigna radiata*	MYMIV	Pakistan	2002
54.	AJ512496.1	*Vigna radiata*	MYMIV	Pakistan	2002
55.	HF922628.1	*Glycine max*	MYMIV	India	2013
56.	AJ416349.1	*Glycine max*	MYMIV	India	2001
57.	KC852204.1	*Glycine max*	MYMIV	India	2003
58.	DQ400848.1	*Vigna mungo*	MYMV	India	2006
59.	FM242701.1	*Rhynchosia capitata*	MYMV	Pakistan	2008
60.	JX244176.1	*Vigna radiata*	MYMV	Viet Nam	2012
61.	JX244175.1	*Vigna radiata*	MYMV	Viet Nam	2012
62.	JX244174.1	*Vigna radiata*	MYMV	Viet Nam	2012
63.	JX244173.1	*Vigna radiata*	MYMV	Viet Nam	2012
64.	DQ865201.1	*Rhynchosia capitata*	MYMV	India	2006
65.	KC911723.1	*Vigna mungo*	MYMV	India	2013
66.	KC911722.1	*Vigna mungo*	MYMV	India	2013

67.	KC911721.1	*Vigna mungo*	MYMV	India	2013
68.	KC911718.1	*Vigna mungo*	MYMV	India	2013
69.	KC911717.1	*Vigna mungo*	MYMV	India	2013
70.	AJ421642.1	*Glycine max*	MYMV	India	2001
71.	AJ132575.1	*Vigna mungo*	MYMV	India	1999
72.	JX244172.1	*Vigna radiata*	MYMV	Viet Nam	2012
73.	AY271896.1	*Vigna radiata*	MYMV	India	2003
74.	AY269991.1	*Glycine max*	MYMV	Pakistan	2003
75.	AY271892.1	*Vigna radiata*	MYMV	Cambodia	2003
76.	D14703.1	*Phaseolus vulgaris*	MYMV	Japan	1993
77.	AF314530.1	*Glycine max*	MYMV	India	2000
78.	KP455992.1	*Vigna mungo*	MYMV	India	2015
79.	JQ398669.1	*Vigna mungo*	MYMV	India	2012
80.	AY309241.1	*Dolichos*	DoYMV	India	2003
81.	KJ481204.1	*Dolichos purpureus*	DoYMV	India	2014
82.	AM157413.1	*Dolichos*	DoYMV	India	2005
83.	AM157412.1	*Dolichos*	DoYMV	India	2005
84.	AJ968370.1	*Dolichos*	DoYMV	India	2005
85.	JX315325.1	*Dolichos*	DoYMV	India	2012
86.	AY271891.1	*Dolichos*	DoYMV	Bangladesh	2003
87.	GU323321.1	*Phaseolus vulgaris*	HgYMV	Sri Lanka	2009
88.	AM932425.1	*Phaseolus vulgaris*	HgYMV	India	2008
89.	KC019306.1	*Phaseolus vulgaris*	HgYMV	India	2012
90.	AM932429.1	*Phaseolus lunatus*	HgYMV	India	2008
91.	AM932427.1	*Vigna unguiculata*	HgYMV	India	2008
92.	AJ627904.1	*Macrotyloma uniflorum*	HgYMV	India	2004
93.	FJ539014.1	*Kudzu*	KuMV	China	2008
94.	HQ162271.1	*Glycine_max*	KuMV	Vietnam	2010
95.	DQ641690.1	*Kudzu*	KuMV	Vietnam	2006
96.	HM777508.1	*Rhynchosia*	RhYMIV	India	2010
97.	HM777509.1	*Rhynchosia*	RhYMIV	India	2010
98.	FM208847.1	*Rhynchosia minima*	RhYMV	India	2008
99.	AM999981.1	*Rhynchosia minima*	RhYMV	Pakistan	2008
100.	KP752090.1	*Phaseolus vulgaris*	RhYMV	India	2015
101.	EF016486.1	*Glycine max*	SbBMV	Argentina	2006
102.	JX122965.1	*Glycine max*	SoCSV	Brazil	2012
103.	KJ939918.1	*Macroptilium lathyroides*	SoCSV	Brazil	2014
104.	KJ939917.1	*Macroptilium lathyroides*	SoCSV	Brazil	2014
105.	KJ939916.1	*Macroptilium lathyroides*	SoCSV	Brazil	2014

106.	DQ347950.1	*Glycine max*	RhGMV	Mexico	2006
107.	EU339936.1	*Glycine max*	RhGMV	Mexico	2007
108.	EU339938.1	*Rhynchosia minima*	RhGMV	Mexico	2007

Supplementary Table 2. Accession numbers, host, country and year of report of all the known complete DNA B genome sequences of LYMVs obtained from GenBank

S. No.	Accession No.	Legume Host	Begomovirus	Country	Year of Report
1	KJ481206.1	*Dolichos purpureus*	DoYMV	India	2014
2	KJ481205.1	*Dolichos purpureus*	DoYMV	India	2014
3	GU323322.1	*Phaseolus vulgaris*	HgYMV	Sri Lanka	2009
4	AJ627905.1	*Macrotyloma uniflorum (Lam.) Verdc*	HgYMV	India	2004
5	AM932426.1	*Phaseolus vulgaris*	HgYMV	India	2008
6	KC019307.1	*Phaseolus vulgaris*	HgYMV	India	2012
7	AM932430.1	*Phaseolus lunatus*	HgYMV	India	2012
8	AM932428.1	*Vigna unguiculata*	HgYMV	India	2008
9	EU523046.1	*Glycine max*	MYMIV	India	2008
10	KP828155.1	*Glycine max*	MYMIV	India	2015
11	JN543396.1	*Phaseolus vulgaris*	MYMIV	Nepal	2011
12	FR714861.1	*Phaseolus vulgaris*	MYMIV	India	2010
13	AF142440.1	*Vigna mungo*	MYMIV	India	1999
14	AM992617.1	*Vigna radiata*	MYMIV	Pakistan	2008
15	FM958506.1	*Vigna radiata*	MYMIV	Pakistan	2009
16	FM955609.1	*Vigna radiata*	MYMIV	Pakistan	2008
17	FM955606.1	*Vigna radiata*	MYMIV	Pakistan	2008
18	FM955605.1	*Vigna radiata*	MYMIV	Pakistan	2008
19	FM955604.1	*Vigna radiata*	MYMIV	Pakistan	2008
20	FM955603.1	*Vigna radiata*	MYMIV	Pakistan	2008
21	FM161881.1	*Glycine max*	MYMIV	Pakistan	2008
22	KC019305.1	*Phaseolus vulgaris*	MYMIV	India	2012
23	AY271894.1	*Vigna radiata*	MYMIV	India	2003
24	AJ420331.1	*Glycine max*	MYMIV	India	2001
25	DQ061273.1	*Lablab purpureus*	MYMIV	India	2005
26	AY049771.1	*Glycine max*	MYMIV	India	2001
27	AF416741.1	*Vigna radiata*	MYMIV	India	2001
28	AY939925.1	*Vigna unguiculata*	MYMIV	India	2005
29	JN368447.1	*Glycine max*	MYMIV	Indonesia	2011
30	JN368446.1	*Glycine max*	MYMIV	Indonesia	2011

31	JN368445.1	*Vigna unguiculata*	MYMIV	Indonesia	2011
32	JN368444.1	*Vigna unguiculata*	MYMIV	Indonesia	2011
33	JN368443.1	*Vigna unguiculata*	MYMIV	Indonesia	2011
34	JN368442.1	*Vigna unguiculata*	MYMIV	Indonesia	2011
35	JN368441.1	*Vigna unguiculata*	MYMIV	Indonesia	2011
36	JN368440.1	*Vigna unguiculata*	MYMIV	Indonesia	2011
37	AF503580.1	*Vigna unguiculata*	MYMIV	India	2002
38	FM202447.1	*Vigna mungo*	MYMIV	Pakistan	2008
39	FM202446.1	*Vigna unguiculata*	MYMIV	Pakistan	2008
40	FM202445.1	*Glycine max*	MYMIV	Pakistan	2008
41	FM202444.1	*Vigna radiata*	MYMIV	Pakistan	2008
42	FM202443.1	*Vigna radiata*	MYMIV	Pakistan	2008
43	FM202442.1	*Vigna radiata*	MYMIV	Pakistan	2008
44	FM202441.1	*Vigna radiata*	MYMIV	Pakistan	2008
45	FM202440.1	*Vigna radiata*	MYMIV	Pakistan	2008
46	FM202439.1	*Vigna radiata*	MYMIV	Pakistan	2008
47	DQ400849.1	*Vigna mungo*	MYMV	India	2006
48	AJ439059.1	*Vigna mungo*	MYMV	India	2002
49	AJ439058.1	*Vigna mungo*	MYMV	India	2002
50	AJ439057.1	*Vigna mungo*	MYMV	India	2002
51	FM242702.1	*Rhynchosia capitata*	MYMV	Pakistan	2008
52	KP319017.1	*Vigna radiata*	MYMV	India	2014
53	KP319016.1	*Vigna radiata*	MYMV	India	2014
54	AF262064.1	*Vigna mungo*	MYMV	India	2000
55	JX244181.1	*Vigna radiata*	MYMV	India	2012
56	JX244180.1	*Vigna radiata*	MYMV	Vietnam	2012
57	JX244179.1	*Vigna radiata*	MYMV	Vietnam	2012
58	JX244178.1	*Vigna radiata*	MYMV	Vietnam	2012
59	JX244177.1	*Vigna radiata*	MYMV	Vietnam	2012
60	AJ132574.1	*Vigna mungo*	MYMV	India	1999
61	KF947526.1	*Vigna mungo*	MYMV	India	2013
62	KF928962.1	*Vigna mungo*	MYMV	India	2013
63	KC911731.1	*Vigna mungo*	MYMV	India	2013
64	KC911730.1	*Vigna mungo*	MYMV	India	2013
65	KC911729.1	*Vigna mungo*	MYMV	India	2013
66	KC911728.1	*Vigna mungo*	MYMV	India	2013

67	KC911727.1	*Vigna mungo*	MYMV	India	2013
68	KC911726.1	*Vigna mungo*	MYMV	India	2013
69	KC911725.1	*Vigna mungo*	MYMV	India	2013
70	KC911724.11	*Vigna mungo*	MYMV	India	2013
71	FM955607.1	*Rhynchosia capitata*	MYMV	Pakistan	2008
72	DQ865203.1	*Vigna aconitifolia*	MYMV	India	2006
73	AJ867554.1	*Glycine max*	MYMV	India	2004
74	D14704.1	*Phaseolus vulgaris*	MYMV	Japan	1993
75	DQ865202.1	*Vigna aconitifolia*	MYMV	India	2006
76	JQ398670.1	*Vigna mungo*	MYMV	India	2012
77	FJ539015.1	*Kudzu*	KuMV	China	2008
78	HQ162272.1	*Glycine max*	KuMV	Vietnam	2010
79	DQ641691.1	*Kudzu*	KuMV	Vietnam	2006
80	HM777512.1	*Rhynchosia minima*	RhYMIV	India	2010
81	HM777511.1	*Rhynchosia minima*	RhYMIV	India	2010
82	HM777510.1	*Rhynchosia minima*	RhYMIV	India	2010
83	HQ141675.1	*Rhynchosia minima*	RhYMIV	India	2010
84	KP752091.1	*Phaseolus vulgaris*	RhYMV	India	2015
85	FM208848.1	*Rhynchosia minima*	RhYMV	Pakistan	2008
86	AM999982.1	*Rhynchosia minima*	RhYMV	Pakistan	2008
87	DQ356429.1	*Glycine max*	RhGMV	Mexico	2006
88	EU339937.1	*Glycine max*	RhGMV	Mexico	2007
89	JX122966.1	*Glycine max*	SoCSV	Brazil	2013

Supplementary Table 3: Results of Recombination detection analysis in complete DNA A genomic segments of legume yellow mosaic viruses (LYMVs) using RDP 4 Beta 4.27.

Event	Recombinant	Major parent	Minor parent	Start break point	End break point	Algorithms detecting the event and respective P-values
17	AY309241.1_DoYMV_Dolichos_Ind_2003	KJ481204.1_DoYMV_Dolichos_purpureus_Ind_2014	AM157412.1_DoYMV_Dolichos_Ind_2005	461	890	GENECONV (8.869 E-4), Chimaera (1.042 E-2), SisScan (6.010 E-7) 3 Seq (1.419E-2)
3	EU523045.1_MYMIV_Glycine_max_Ind_2008	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	557	1074	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2)
3	DQ389154.1_MYMIV_Vigna_unguiculata_Ind_2006	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	557	1074	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2)
3	DQ389153.1_MYMIV_Vigna_unguiculata_Ind_2006	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	557	1074	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9)

						SisScan (1.120E-2)
3	AY547317.1_MYMIV_Dolichos_Ind_2005	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	557	1074	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2)
3	KP313758.1_MYMIV_Vigna_radiata_Ind_2014	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	557	1074	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2)
3	JN543395.1_MYMIV_Phaseolus_vulgaris_Nep_2011	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	557	1074	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2)
3	DQ400847.1_MYMIV_Vigna_mungo_Ind_2006	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	567	1074	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2)

3	KC911720.1_MYMIV_Vigna_mungo_Ind_2013	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	567	1074	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2)
3	AM950268.1_MYMIV_Vigna_radiata_Pak_2008	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	557	1074	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2)
3	FM208846.1_MYMIV_Vigna_radiata_Pak_2008	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	557	1074	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2)
3	FM208845.1_MYMIV_Vigna_mungo_Pak_200	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	557	1074	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2)

3	FM208843.1_MYMIV_Vigna_radiata_Pak_2008	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	557	1074	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2)
3	FM208842.1_MYMIV_Vigna_radiata_Pak_2008	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	557	1074	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2)
3	FM208841.1_MYMIV_Vigna_mungo_Pak_2008	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	557	1074	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2)
3	FM208840.1_MYMIV_Vigna_unguiculata_Pak_2008	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	557	1074	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2)
3	FM208839.1_MYMIV_V	JX244176.1_MYMV_Vigna_r	HM777508.1_RhYMIV_Rhyn	557	1074	RDP (4.359E-7)

	igna_radiata_Pak_2008	adiata_Viet_2012	chosia_minima_Ind_2010			BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2)
3	FM208838.1_MYMIV_Vigna_radiata_Pak_2008	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	557	1074	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2)
3	FM208837.1_MYMIV_Vigna_radiata_Pak_2008	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	557	1074	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2)
3	FM208836.1_MYMIV_Vigna_radiata_Pak_2008	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	557	1074	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2)
3	FM208834.1_MYMIV_Glycine_max_Pak_2008	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	594	1074	RDP (4.359E-7) BootScan (2.915E-7)

						MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2)
3	KC019304.1_MYMIV_Phaseolus_vulgaris_Ind_2012	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	557	1074	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2)
3	JX110618.1_MYMIV_Vigna_mungo_Ind_2012	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	567	1074	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2
3	FN794200.1_MYMIV_Phaseolus_vulgaris_Ind_2010	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	557	1074	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2
3	AY269992.1_MYMIV_Vigna_radiata_Pak_2003	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	557	1074	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2

3	AY049772.1_MYMIV_Glycin_max_Ind_2001	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	615	848	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2
3	AF416742.1_MYMIV_Vigna_radiata_Ind_2001	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	557	1086	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2
3	JN368437.1_MYMIV_Vigna_unguiculata_Indo_2011	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	564	1074	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2
3	JN368435.1_MYMIV_Vigna_unguiculata_Indo_2011	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	564	1074	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2
3	JN368433.1_MYMIV_Vigna_unguiculata_Indo_2011	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	564	1073	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2

3	JN368432.1_MYMIV_Vigna_unguiculata_Indo_2011	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	564	1074	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2
3	AF314145.1_MYMIV_Vigna_radiata_Ban_2001	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	557	1074	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2
3	AF481865.2_MYMIV_Vigna_unguiculata_Ind_2002	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	557	1074	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2
3	AM992618.1_MYMIV_Gycine_max_Pak_2008	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	564	1082	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2
3	FM955600.1_MYMIV_Vigna_radiata_Pak_2008	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	557	1074	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2

3	FM955599.1_MYMIV_Vigna_radiata_Pak_2008	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	555	1074	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2
3	FM955598.1_MYMIV_Vigna_radiata_Pak_2008	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	557	1074	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2
3	AY271895.1_MYMIV_Vigna_radiata_Nep_2003	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	557	1074	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2
3	AY271893.1_MYMIV_Vigna_radiata_Ind_2003	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	567	1074	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2
3	FR837935.1_MYMIV_Vigna unguiculata_Pak_2011	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	557	1074	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2

3	AY269990.1_MYMIV_Vigna_unguiculata_Pak_2003	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	557	1073	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2
3	AJ512497.1_MYMIV_Vigna_radiata_Pak_2002	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	557	1074	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2
3	AJ512498.1_MYMIV_Vigna_radiata_Pak_2002	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	557	1074	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2
3	AJ512495.1_MYMIV_Vigna_radiata_Pak_2002	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	557	1096	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2
3	AJ512496.1_MYMIV_Vigna_radiata_Pak_2002	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	557	1074	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2

3	HF922628.1_MYMIV_Glycine_max_Ind_2013	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	554	1074	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2
3	AJ416349.1_MYMIV_Glycine_max_Ind_2001	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	557	1074	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2
3	AF126406.1_MYMIV_Vigna_radiata_Ind_1999	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	567	1074	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2
3	KC852204.1_MYMIV_Glycine_max _Ind_2013	JX244176.1_MYMV_Vigna_radiata_Viet_2012	HM777508.1_RhYMIV_Rhynchosia_minima_Ind_2010	557	1074	RDP (4.359E-7) BootScan (2.915E-7) MaxChi (1.718 E-7), Chimaera (1.428E-9) SisScan (1.120E-2
2	KC911723.1_MYMV_Vigna_mungo_Ind_2013	KC911718.1_MYMV_Vigna_mungo_Ind_2013	AJ421642.1_MYMV_Glycine_max_Ind_2001	646	1199	RDP (1.934E-8) GENECONV (3.628E-10) BootScan (7.165E-8) MaxChi (3.703 E-7), Chimaera (4.946E-8)

						SisScan (3.477E-5) 3Seq (1.257E-15)
1	JQ398669.1_MYMV_Vigna_mungo_Ind_2012	JX244176.1_MYMV_Vigna_radiata_Viet_2012	AY269992.1_MYMIV_Vigna_radiata_Pak_2003	516	1142	RDP (7.842E-46) GENECONV (2.360E-43) BootScan (4.021E-25) MaxChi (1.447E-12), Chimaera (1.101E-10) SisScan (5.321E-24) 3Seq (2.630E-60)

Supplementary Table 4. Results of Recombination detection analysis in complete DNA B genomic segments of legume yellow mosaic viruses (LYMVs) using RDP 4 Beta 4.27.

Event	Recombinant	Major parent	Minor parent	Start break point	End break point	Algorithms detecting the event and respective P-values
3	KP828155.1_MYMIV_Glycine_max_Ind_2015	FM202444.1_MYMIV_Vigna_radiata_Pak_2008	EU523046.1_MYMIV_Glycine_max_Ind_2008	159	2101	RDP (1.107E-10) GENECONV (2.512E-7), BootScan (2.939E-13) MaxChi (1.975E-2)
1	KF947526.1_MYMV_Vigna_mungo_Ind_2013	AJ627905.1_HgYMV_Macrotyloma_uniflorum (Lam.) Verdc._Ind_2004	KP319016.1_MYMV_Vigna_radiata_Ind_2014	404	1734	RDP (4.425E-114) GENECONV (3.539E-114), BootScan (1.290E-115) MaxChi (5.749E-43) Chimaera (1.650 E-45), SisScan (6.214 E-57) 3 Seq (5.397 E-185)
13	KC911729.1_MYMV_Vigna_mungo_Ind_2013	AJ439059.1_MYMV_Vigna_mungo_Ind_2002	FM955609.1_MYMIV_Vigna_radiata_Pak_2008	36	224	RDP (2.468E-7) GENECONV (1.122E-4), BootScan (6.879E-8) MaxChi (1.836E-5) Chimaera (5.007E-5), SisScan (9.865 E-4) 3 Seq (3.897 E-6)

8	KC911725.1_MYMV_Vigna_mungo_Ind_2013	KC911730.1_MYMV_Vigna_mungo_Ind_2013	KC911729.1_MYMV_Vigna_mungo_Ind_2013	2073	2228	RDP (4.708E-5) GENECONV (2.031E-3), BootScan (6.929E-7) SisScan (4.692 E-9) 3 Seq (1.136E-3)

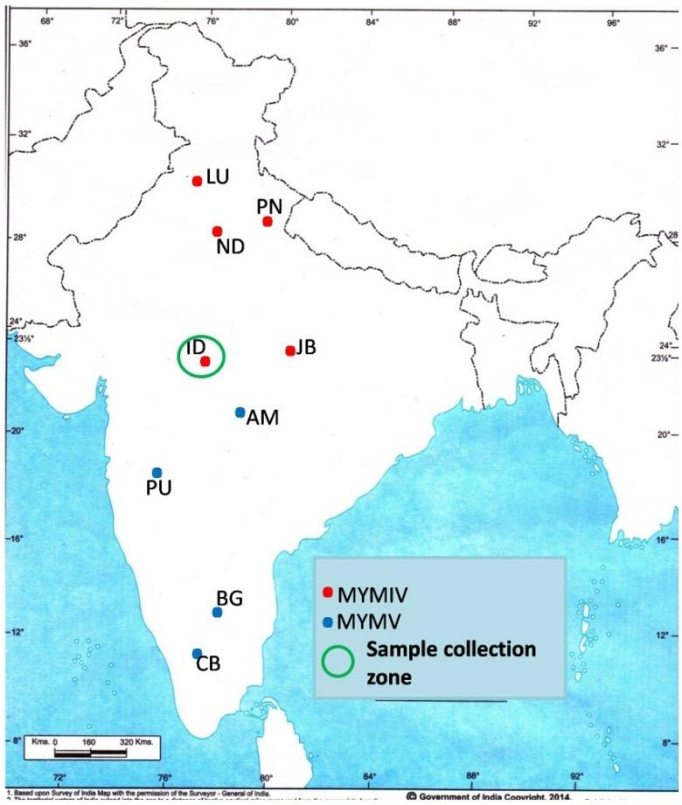

Fig S1. The figure depicts species of yellow mosaic viruses (YMVs) infecting soybean in various regions of the country (LU: Ludhiana; PN: Pantnagar; ND: New Delhi; ID: Indore; JB: Jabalpur; AM: Amravati, PU: Pune; BG: Bengaluru; CB: Coimbatore) and area of sample collection for whole virus genome characterisation. MYMIV and MYMV are major begomoviruses that infect soybean in different parts of the country (Usharani et al., 2004; Ramesh et al., 2016).