

Additional file 11: Table S9 - Detailed features of all QTLs for seven seed and berry-related traits in four grapevine mapping populations (parental maps), derived with the CIM method.

Trait	LG	Population	Map	Year	QTL position (cM)		QTL effect		
					LOD peak	CI	LOD	LOD threshold	%var
MBW	1	SG	M	2006	16.6	12.11 - 22.61	4.3	3.7	6.4
MBW	8	SG	F	2005	17.1	6.01 - 27.11	7.7	3.8	16.5
MBW	8	SG	F	2006	23.1	17.11 - 33.41	9.4	3.6	20.3
MBW	8	SG	F	2006	29.4	15.11 - 37.41	8.6	3.6	17.1
MBW	8	SG	F	2007	8.0	2.01 - 27.11	5.3	3.6	12.5
MBW	8	SG	F	2007	19.1	0.01 - 27.11	5.0	3.6	11.4
MBW	8	MTP3346	F	2005	14.6	11.61 - 14.61	2.7	2.6	11.7
MBW	12	SG	F	2005	6.0	0.01 - 14.01	4.9	3.8	14.7
MBW	13	SG	F	B	0.0	0.01 - 12.01	5.9	3.6	16.5
MBW	13	SG	F	2005	4.0	0.01 - 13.31	4.4	3.8	10.8
MBW	13	SG	F	2006	0.0	0.01 - 12.01	4.9	3.6	12.8
MBW	17	SG	M	B	15.7	10.91 - 18.31	15.0	3.8	25.4
MBW	17	SG	M	2005	14.7	9.91 - 18.31	10.8	3.7	19.1
MBW	17	SG	M	2006	13.7	9.91 - 18.31	8.9	3.7	14.1
MBW	17	SG	M	2007	16.7	10.91 - 18.31	14.2	3.8	24.0
MBW	18	MTP3140	F	B	55.0	50.99 - 56.59	16.3	3.9	37.4
MBW	18	MTP3140	M	B	108.0	101.99 - 110.69	12.3	4.0	28.4
MBW	18	SG	M	B	38.2	24.21 - 49.71	4.5	3.8	7.1
MBW	18	SG	M	B	43.4	24.21 - 49.71	4.5	3.8	7.1
MBW	18	SG	M	2006	38.2	25.21 - 48.41	4.9	3.7	8.3
MBW	18	SG	M	2006	42.4	26.21 - 48.41	4.9	3.7	7.9
MBW	18	MTP3140	F	1994	55.0	50.99 - 56.59	13.7	4.2	34.2
MBW	18	MTP3140	F	1995	55.0	50.99 - 56.59	11.1	4.2	27.9
MBW	18	MTP3140	F	1996	55.0	50.99 - 58.19	8.8	4.1	25.5
MBW	18	MTP3140	F	1998	55.0	50.99 - 56.59	11.7	4.1	31.0
MBW	18	MTP3140	F	1999	55.0	50.99 - 56.59	11.9	4.2	29.6
MBW	18	MTP3140	M	1994	108.0	103.99 - 110.69	12.7	4.1	32.2
MBW	18	MTP3140	M	1995	115.3	113.49 - 115.29	9.7	4.0	23.6
MBW	18	MTP3140	M	1996	106.0	101.49 - 110.69	7.7	4.3	24.6
MBW	18	MTP3140	M	1998	115.3	113.49 - 115.29	10.4	4.4	28.5
MBW	18	MTP3140	M	1999	106.0	101.49 - 110.69	10.4	4.2	27.0
RESFW	5	MTP3346	F	B	3.0	0.01 - 7.21	4.0	2.4	5.7
RESFW	5	MTP3346	F	2003	3.0	0.01 - 12.21	2.6	2.5	3.8
RESFW	8	SG	F	B	8.0	2.01 - 27.11	8.4	3.6	17.2
RESFW	8	SG	F	B	19.1	2.01 - 27.11	8.4	3.6	16.7
RESFW	8	SG	F	2005	17.1	12.01 - 33.41	6.6	3.8	14.0
RESFW	8	SG	F	2006	21.1	15.11 - 27.11	8.3	3.7	19.6
RESFW	8	SG	F	2007	8.0	2.01 - 25.11	6.2	3.6	13.5
RESFW	8	SG	F	2007	17.1	0.01 - 27.11	5.7	3.6	11.6
RESFW	8	MTP3346	F	2005	14.6	11.61 - 14.61	2.8	2.6	12.0
RESFW	11	MTP3140	M	1998	20.2	8.19 - 27.49	4.3	4.1	11.2
RESFW	11	MTP3346	M	B	2.0	0.01 - 7.01	3.0	2.5	5.4
RESFW	11	MTP3346	M	2003	0.0	0.01 - 7.01	2.8	2.4	3.8
RESFW	13	SG	F	B	0.0	0.01 - 8.01	5.5	3.6	13.6
RESFW	13	SG	F	2005	0.0	0.01 - 12.01	4.2	3.8	11.8

RESFW	13	SG	F	2007	0.0	0.01 - 8.01	4.2	3.6	11.8
RESFW	17	SG	M	B	15.7	9.91 - 18.31	15.3	3.7	23.5
RESFW	17	SG	M	2005	16.7	10.91 - 18.31	10.6	3.9	20.0
RESFW	17	SG	M	2006	13.7	9.91 - 18.31	9.4	3.6	14.8
RESFW	17	SG	M	2007	15.7	9.91 - 18.31	15.0	3.8	24.2
RESFW	17	MTP3140	M	B	23.1	17.51 - 25.21	5.7	4.1	14.6
RESFW	17	MTP3140	M	1994	25.1	19.51 - 29.21	5.0	4.3	14.5
RESFW	17	MTP3140	M	1995	25.2	19.51 - 31.21	4.8	4.1	14.0
RESFW	17	MTP3140	M	1998	23.1	17.51 - 25.21	4.4	4.1	12.1
RESFW	17	MTP3140	M	1999	23.1	16.61 - 25.21	4.5	4.5	13.1
RESFW	18	SG	M	B	36.2	24.21 - 49.41	5.6	3.7	8.7
RESFW	18	SG	M	B	43.4	24.21 - 49.41	5.7	3.7	8.2
RESFW	18	SG	M	2005	39.2	26.21 - 49.71	4.6	3.9	8.6
RESFW	18	SG	M	2005	43.4	27.21 - 49.71	4.6	3.9	8.4
RESFW	18	SG	M	2006	36.2	25.21 - 49.41	5.6	3.6	9.9
RESFW	18	SG	M	2006	43.4	25.21 - 49.41	5.6	3.6	9.2
RESFW	18	SG	M	2007	44.4	29.21 - 49.71	5.4	3.8	8.3
RESFW	19	MTP3234	F	B	44.0	24.01 - 50.91	3.8	3.6	9.3
RESFW	19	MTP3234	F	2003	50.9	44.01 - 56.91	6.1	3.7	18.4
RESN	1	SG	M	B	16.6	12.11 - 22.91	4.4	3.7	5.9
RESN	1	SG	M	2005	25.9	16.61 - 41.91	4.3	3.6	7.1
RESN	1	SG	M	2005	31.1	21.61 - 39.21	4.9	3.6	8.6
RESN	1	SG	M	2006	16.6	12.11 - 22.61	4.1	3.7	6.1
RESN	4	MTP3140	F	1994	33.0	28.79 - 38.79	4.2	4.1	11.1
RESN	5	MTP3346	F	B	3.0	0.01 - 7.21	3.3	2.4	4.7
RESN	7	MTP3234	F	2003	13.7	11.71 - 19.71	4.3	3.7	14.9
RESN	8	SG	F	B	10.0	2.01 - 27.11	8.7	3.8	18.0
RESN	8	SG	F	B	19.1	4.01 - 27.11	8.8	3.8	18.3
RESN	8	SG	F	2005	10.0	2.01 - 25.11	7.1	3.6	15.4
RESN	8	SG	F	2005	15.1	2.01 - 27.11	6.8	3.6	14.1
RESN	8	SG	F	2005	29.4	0.01 - 39.41	5.5	3.6	11.8
RESN	8	SG	F	2006	23.1	15.11 - 35.41	8.7	3.7	19.5
RESN	8	SG	F	2006	29.4	15.11 - 37.41	8.0	3.7	16.7
RESN	8	SG	F	2007	8.0	0.01 - 27.41	4.7	3.5	11.0
RESN	8	SG	F	2007	19.1	0.01 - 27.41	4.7	3.5	10.7
RESN	8	MTP3346	F	2005	14.6	11.61 - 14.61	2.8	2.6	12.0
RESN	11	MTP3234	F	B	12.0	2.01 - 24.11	5.5	3.6	16.5
RESN	11	MTP3234	F	2004	14.0	4.01 - 24.11	5.2	3.6	16.2
RESN	11	MTP3140	F	B	14.9	10.09 - 22.89	5.1	3.9	12.9
RESN	11	MTP3140	F	1994	14.9	10.09 - 22.89	4.8	4.1	12.8
RESN	11	MTP3140	F	1994	11.4	10.09 - 22.89	5.0	4.1	13.6
RESN	11	MTP3140	F	1996	16.9	11.39 - 22.89	6.0	4.1	19.8
RESN	11	MTP3346	M	B	2.0	0.01 - 8.01	2.8	2.5	5.0
RESN	11	MTP3346	M	2003	1.0	0.01 - 7.01	2.8	2.5	4.4
RESN	13	SG	F	B	0.0	0.01 - 10.01	4.3	3.8	11.3
RESN	13	SG	F	2006	0.0	0.01 - 12.01	4.2	3.7	11.9
RESN	17	SG	M	B	14.7	9.91 - 18.31	14.3	3.7	22.6
RESN	17	SG	M	2005	12.9	8.01 - 18.31	9.4	3.6	18.9

RESN	17	SG	M	2005	15.7	8.01 - 18.31	9.5	3.6	19.4
RESN	17	SG	M	2006	13.7	9.91 - 18.31	8.6	3.7	13.7
RESN	17	SG	M	2007	15.7	9.91 - 18.31	13.9	3.6	23.2
RESN	17	MTP3140	M	B	25.1	19.51 - 31.21	6.2	4.1	14.0
RESN	17	MTP3140	M	1994	25.2	21.11 - 31.21	5.1	4.1	13.6
RESN	17	MTP3140	M	1995	25.2	21.11 - 31.21	6.0	4.1	14.8
RESN	17	MTP3140	M	1998	23.1	17.51 - 25.21	5.7	4.3	15.5
RESN	18	SG	M	B	32.2	20.21 - 47.41	5.0	3.7	8.9
RESN	18	SG	M	2006	37.2	25.21 - 47.41	5.2	3.7	9.1
RESN	18	SG	M	2006	42.4	24.21 - 48.41	5.2	3.7	8.3
RESN	18	MTP3140	F	B	55.0	50.99 - 56.59	5.3	3.9	12.4
RESN	18	MTP3140	F	1995	70.9	60.89 - 76.89	4.4	4.1	14.4
RESN	18	MTP3140	F	1998	55.0	50.99 - 56.59	4.6	4.1	11.8
RESN	18	MTP3140	F	1999	55.0	50.99 - 58.19	8.2	4.1	22.4
RESN	18	MTP3140	M	B	106.0	101.49 - 111.49	8.1	4.1	19.0
RESN	18	MTP3140	M	1994	106.0	101.49 - 111.49	5.1	4.1	13.8
RESN	18	MTP3140	M	1995	102.0	101.49 - 110.69	7.0	4.1	16.9
RESN	18	MTP3140	M	1998	108.7	101.99 - 111.49	7.2	4.3	19.5
RESN	18	MTP3140	M	1999	111.5	96.89 - 115.29	7.6	4.2	19.2
RESN	18	MTP3140	M	1999	106.0	97.89 - 110.69	8.7	4.2	22.4
RESN	18	MTP3140	M	1999	99.9	96.89 - 115.29	8.2	4.2	20.3
RESN	18	MTP3140	M	1999	94.9	89.89 - 115.29	6.6	4.2	18.2
RESN	19	MTP3234	F	2003	44.9	30.01 - 50.91	6.1	3.7	17.6
MSN	2	SG	F	B	16.0	6.01 - 25.71	5.2	3.6	12.4
MSN	2	SG	F	2007	12.0	4.01 - 21.71	10.1	3.7	22.6
MSN	2	SG	M	B	11.0	4.01 - 18.01	6.9	3.7	19.4
MSN	2	SG	M	2005	17.0	9.01 - 24.91	4.7	3.6	15.3
MSN	2	SG	M	2005	20.9	8.01 - 25.91	4.5	3.6	10.1
MSN	2	SG	M	2007	12.0	5.01 - 20.01	7.8	3.7	20.0
MSN	4	SG	F	B	48.3	40.31 - 48.31	13.6	3.6	25.7
MSN	4	SG	F	2005	48.3	42.31 - 48.31	8.5	3.7	18.9
MSN	4	SG	F	2006	48.3	44.31 - 48.31	6.5	3.7	11.4
MSN	4	SG	F	2007	46.3	40.31 - 48.31	9.1	3.7	17.8
MSN	5	MTP3140	M	1994	39.3	35.49 - 46.09	4.7	4.1	12.1
MSN	8	MTP3234	M	2004	64.4	54.71 - 80.31	4.2	3.6	11.2
MSN	8	MTP3234	M	2004	68.3	54.71 - 80.31	4.2	3.6	11.3
MSN	13	SG	M	B	21.6	12.61 - 30.41	3.9	3.7	9.7
MSN	14	MTP3234	F	B	25.5	16.01 - 27.11	3.7	3.5	9.2
MSN	14	MTP3346	M	B	28.0	16.01 - 31.01	3.8	2.5	5.4
MSN	14	MTP3346	M	2003	26.0	13.01 - 31.01	3.2	2.5	4.8
MSN	18	MTP3140	F	B	53.0	50.99 - 58.19	11.5	3.9	27.9
MSN	18	MTP3140	F	1994	55.0	50.99 - 58.19	11.4	4.0	28.8
MSN	18	MTP3140	F	1995	53.0	50.99 - 58.19	9.9	4.0	26.9
MSN	18	MTP3140	F	1996	64.9	40.79 - 72.89	7.6	4.1	26.0
MSN	18	MTP3140	F	1996	55.0	50.99 - 58.19	10.0	4.1	26.4
MSN	18	MTP3140	F	1996	46.7	42.69 - 60.59	8.3	4.1	26.5
MSN	18	MTP3140	F	1998	53.0	50.69 - 58.19	4.0	4.0	11.8
MSN	18	MTP3140	M	B	115.3	113.49 - 115.29	4.9	4.2	11.7

MSN	18	MTP3140	M	1994	115.3	113.49 - 115.29	6.5	4.1	17.5
MSN	18	MTP3140	M	1996	115.3	113.49 - 115.29	4.4	4.2	13.0
MSN	18	MTP3140	M	1998	115.3	113.49 - 115.29	4.7	4.1	12.5
MSN	18	MTP3346	F	B	22.0	13.01 - 25.01	2.7	2.5	4.5
TFSW	1	SG	F	B	39.8	36.81 - 47.81	4.4	3.7	7.1
TFSW	1	SG	F	2006	38.6	31.21 - 39.81	4.0	3.7	6.6
TFSW	2	SG	F	2007	21.7	12.01 - 27.71	4.3	3.7	7.1
TFSW	4	SG	F	B	48.3	44.31 - 48.31	16.5	3.7	31.7
TFSW	4	SG	F	2005	48.3	42.31 - 48.31	5.0	3.6	12.1
TFSW	4	SG	F	2006	48.3	44.31 - 48.31	12.0	3.7	22.6
TFSW	4	SG	F	2007	48.3	44.31 - 48.31	12.4	3.7	24.0
TFSW	5	MTP3346	F	B	7.0	0.01 - 10.21	4.0	2.4	5.5
TFSW	5	MTP3346	F	B	17.2	14.21 - 18.11	3.0	2.4	4.8
TFSW	5	MTP3346	F	2003	7.2	1.01 - 10.21	5.7	2.4	8.0
TFSW	5	MTP3346	F	2003	17.2	15.21 - 18.11	3.3	2.4	5.3
TFSW	8	MTP3234	M	B	92.1	84.11 - 92.11	4.0	3.7	9.4
TFSW	13	SG	M	2005	34.4	30.21 - 46.41	4.7	3.7	11.3
TFSW	13	SG	M	2007	27.2	13.61 - 30.41	4.1	3.7	8.7
TFSW	14	MTP3234	F	B	29.1	22.01 - 37.11	4.8	3.6	12.1
TFSW	14	MTP3234	F	2004	25.5	22.01 - 37.11	5.5	3.6	14.7
TFSW	14	MTP3234	F	2004	31.1	22.01 - 37.11	5.6	3.6	16.4
TFSW	16	MTP3234	F	B	20.6	4.79 - 34.59	5.1	3.6	19.8
TFSW	16	MTP3234	F	2003	10.8	4.79 - 32.59	4.4	3.8	13.1
TFSW	18	MTP3140	F	B	55.0	50.99 - 56.59	20.3	4.2	43.7
TFSW	18	MTP3140	F	1994	55.0	50.99 - 56.59	18.4	4.2	42.2
TFSW	18	MTP3140	F	1995	55.0	50.99 - 56.59	5.7	4.2	10.2
TFSW	18	MTP3140	F	1996	55.0	50.99 - 58.19	13.3	4.1	34.9
TFSW	18	MTP3140	F	1998	55.0	50.99 - 56.59	14.5	4.1	36.9
TFSW	18	MTP3140	F	1999	53.0	50.99 - 56.59	17.2	4.0	44.3
TFSW	18	MTP3140	M	B	115.3	113.49 - 115.29	15.4	4.0	35.8
TFSW	18	MTP3140	M	1994	115.3	113.49 - 115.29	11.9	4.3	31.2
TFSW	18	MTP3140	M	1995	115.3	113.49 - 115.29	10.3	4.2	27.2
TFSW	18	MTP3140	M	1996	115.3	113.49 - 115.29	12.3	4.3	34.4
TFSW	18	MTP3140	M	1998	115.3	113.49 - 115.29	16.5	4.1	40.4
TFSW	19	SG	M	2007	38.8	31.51 - 46.21	4.1	3.7	8.7
MSFW	1	SG	F	B	23.6	19.61 - 24.41	4.9	3.7	10.3
MSFW	1	SG	F	B	25.2	18.01 - 31.21	3.8	3.7	8.0
MSFW	1	SG	F	2007	27.2	21.61 - 32.81	4.3	3.7	8.6
MSFW	1	SG	M	2006	29.1	22.61 - 34.21	5.0	3.6	10.5
MSFW	2	SG	F	B	12.0	0.01 - 27.71	4.7	3.7	12.2
MSFW	2	SG	F	2007	6.0	0.01 - 16.01	5.2	3.7	13.3
MSFW	2	SG	M	B	4.0	0.01 - 13.01	6.3	3.7	15.5
MSFW	2	SG	M	2005	8.0	0.01 - 17.01	5.5	3.7	14.8
MSFW	2	SG	M	2007	7.0	0.01 - 15.01	9.1	3.7	22.9
MSFW	5	MTP3346	F	B	5.0	0.01 - 10.21	5.3	2.5	7.3
MSFW	5	MTP3346	F	B	17.2	15.21 - 18.11	3.3	2.5	5.1
MSFW	5	MTP3346	F	2003	6.0	0.01 - 10.21	6.4	2.6	9.0

MSFW	5	MTP3346	F	2003	17.2	15.21 - 18.11	3.5	2.6	5.5
MSFW	5	MTP3346	M	2005	2.0	0.01 - 4.01	3.3	2.6	26.9
MSFW	11	MTP3234	F	2004	12.0	2.01 - 28.11	5.1	3.6	15.8
MSFW	12	MTP3346	M	B	27.8	20.81 - 32.81	2.7	2.6	5.1
MSFW	12	MTP3346	M	2003	28.8	20.81 - 32.81	2.6	2.6	4.7
MSFW	14	MTP3234	F	B	25.5	22.01 - 35.11	3.5	3.5	9.0
MSFW	18	MTP3140	F	B	55.0	50.99 - 56.59	19.3	4.2	42.5
MSFW	18	MTP3140	F	1995	55.0	50.99 - 56.59	8.2	4.5	25.8
MSFW	18	MTP3140	F	1998	55.0	50.99 - 56.59	14.2	4.2	39.5
MSFW	18	MTP3140	F	1999	55.0	50.99 - 56.59	17.0	4.1	43.1
MSFW	18	MTP3140	M	1994	106.0	101.99 - 110.69	5.6	4.4	17.4
MSFW	18	MTP3140	M	1995	111.5	110.69 - 115.29	5.7	4.3	20.6
MSFW	18	MTP3140	M	1996	104.0	101.49 - 108.69	7.0	4.5	22.0
MSFW	18	MTP3140	M	1998	108.0	101.99 - 111.49	12.4	4.2	35.2
%SDM	4	MTP3346	M	B	1.0	0.01 - 2.01	2.7	2.5	11.3
%SDM	5	MTP3346	F	B	1.0	0.01 - 7.01	6.0	2.5	7.5
%SDM	5	MTP3346	F	2003	2.0	0.01 - 7.21	4.4	2.5	5.9
%SDM	5	MTP3346	F	2005	0.0	0.01 - 6.01	4.8	2.6	14.1
%SDM	5	MTP3346	M	B	0.0	0.01 - 3.01	5.3	2.5	6.0
%SDM	5	MTP3346	M	2003	0.0	0.01 - 3.01	4.9	2.4	5.7
%SDM	14	MTP3234	M	B	27.5	16.01 - 35.51	6.1	3.7	18.0
%SDM	14	MTP3234	M	2004	18.0	14.01 - 37.51	4.0	3.7	9.9
%SDM	14	MTP3234	M	2004	27.5	14.01 - 37.51	4.1	3.7	11.9
%SDM	17	MTP3140	F	1996	31.0	17.39 - 43.09	4.6	4.4	15.7
%SDM	18	MTP3140	F	B	55.0	50.69 - 58.19	17.8	4.2	41.2
%SDM	18	MTP3140	F	1994	55.0	50.69 - 58.19	6.4	4.4	22.9
%SDM	18	MTP3140	F	1995	53.0	46.69 - 56.59	8.0	4.3	27.5
%SDM	18	MTP3140	F	1996	55.0	50.99 - 58.19	5.7	4.4	25.1
%SDM	18	MTP3140	F	1998	55.0	50.99 - 56.59	13.3	4.1	37.9
%SDM	18	MTP3140	F	1999	55.0	50.69 - 56.59	13.7	4.1	37.2
%SDM	18	MTP3140	M	1994	115.3	113.49 - 115.29	9.9	4.4	33.8
%SDM	18	MTP3140	M	1995	111.5	107.99 - 115.29	8.2	4.8	29.1
%SDM	18	MTP3140	M	1996	108.0	101.49 - 111.49	5.0	4.5	20.6
%SDM	18	MTP3140	M	1999	115.3	113.49 - 115.29	13.6	4.3	36.7

QTLs present in at least two years are shown in bold.

M: male; F: female

CI: confidence interval

MBW: mean berry weight; MSN: mean seed number; TSWF: total seed fresh weight; MSFW: mean seed fresh weight; %SDM: seed dry matter percentage; RESN: residual berry weight unexplained by seed number; RESFW: residual berry weight unexplained by total seed fresh weight