

Additional File 1. Details for microsatellite markers used to generate linkage maps for Hi-0 x Ob-0 and St-0 x Sf-2 RILs

Marker	Chromosome	Physical Position (bp)	HO		SS		Source	Forward primer	Reverse primer
			Map position (cM)	Significant SD	Map position (cM)	Significant SD			
M100008	1	8639	0	**			VAST	CCACGCATCTGTGTTCACTC	GCAAAAGTGGGCCTAACAAA
F19P19	1	1157727	2.598	***	0 ⁺	*****	VAST	CCACGTAGGTCAAGAAGAAGAAG	TGCTGCTGCGATAGAGAGAG
T1G11	1	1243352			0.424 ⁺	*****	VAST	GAAGACAAAGCTCTGCAGTAATG	AATTGCATAAGGCACTTGAAAG
F21M12	1	3212191	6.784	**	5.105	*****	VAST	GGCTTTCTCGAAATCTGTCC	TTACTTTTTGCCTTTGTCTATTG
ICE10	1	4015381	10.47	**			VAST	AACATCCACAAGTTTCTAAAACAATC	GACTCTTATGGGTAAGCTCCTTG
MS1-2538	1	6165662			13.956	*****	VAST	TGGGTTTTTAATGGCGTTTG	CCGCGACTTATGCTTACC
MSAT1.10	1	7296649	22.834	-			VAST	ATGGTGAGATACTGAGATTAT	CGAGAAGGTCTAAAGGTA
MSAT1.3	1	8322175	29.082	*****	28.392	****	VAST	GGAAGTGTGTCTGGGTAAG	CGATTGCACTAAAAGCTCTC
CIW12	1	9621344			36.254	*****	VAST	AGGTTTTATTGCTTTTCACA	CTTTCAAAAGCACATCACA
VMS1.10	1	10	40.157	-			This paper	ACCAACTCGGATTCGCTCG	TTTGCTGGCGATATGAGTCACTTG
MS1-5284	1	12511232	54.917	-			EuMicrosat	CCTGAAAACCCCGTTAAAG	CGGGACCTTTGTGTGATATTC
MSAT1.4	1	14160180	63.02 ⁺	-			VAST	CTAACTAGAACCAGGGGTAA	ACAAAATCGTGGTGATAATA
T27K12	1	15926702	64.389 ⁺	-	54.593	*****	VAST	GGAGGCTATACGAATCTTGACA	GGACAACGTCTCAAACGGTT
MSAT1.42	1	18153083	74.759	-	65.695	*****	VAST	TAACAAAATTGCACCC	ACAAATAAAATTGAATATCAG
NGA128	1	20633251	87.511	-	76.226	*****	VAST	GGTCTGTTGATGTCGTAAGTCG	ATCTTGAAACCTTTAGGGAGGG
F5I14	1	24374008			87.92	*****	VAST	CTGCCTGAAATTGTCGAAAC	GGCATCACAGTTCTGATTCC
MSAT1.12	1	25686587			93.066	*****	VAST	TTAGAGATTCCGCAACCTC	CGTGTGCCCAACCA
MSAT1.13	1	25827433			96.928	*****	VAST	CAACCACCAGGCTC	GTCAAACCAGTTCAATCA
MSAT1.1	1	26398711	106.553	-	98.67	*****	VAST	ATACGATAAGATTATTAGCA	CCCATGCTTTTTTGTGAAA
F22K20	1	28895040	116.332	-	104.549	*****	VAST	TTTTTGGTGAGATTTAAGCCC	ATATCTCCATCGCTGCAACC
MSAT1.5	1	29016886			104.557	*****	VAST	GCATCGCTCTTAAACAACCAT	CGTTGCAAACCGTATCAGAA
F5I6M	1	30192367			109.661	*****	VAST	GACCCTAGAGGCAAACCAATG	AGTGAGTAAATGGTGGGGAATCG
MSAT2.5	2	208178			0	*	VAST	TGAGAGGGACAGATAGGAA	ATCAAAGGGATACTGACAA
MSAT200897	2	897197	0	-	10.632	**	VAST	AAAAATTTAACCCTGTTGTAGCA	AGAAGTCGGTGGATGAGCAC
MSAT2.38	2	2457014			19.183 ⁺	****	VAST	TGTAACGCTAATTTAATTGG	CGCTCTTTCGCTCTG
MSAT2.18	2	2799644	8.528	-	19.819 ⁺	****	VAST	TAGTCTTTTTGGTGCGCATA	AGCCTCTCCAAGCTTAGGTCT
IND628	2	6280231			23.184 ⁺	****	VAST	AATTTAAGAAAGAACAATTTTGAG A	CCATTTCAAGCTCTTACACTTCTACA
MSAT2.28	2	6409845			24.096 ⁺	-	VAST	AATAGAAATGGAGTTCGACG	TGAACTTGTGTGAGCTTTG
MSAT2.11	2	8227826	24.945	*			VAST	GATTTAAAAGTCCGACCTA	CAAAGAGTTGTGCAA
PLS7	2	9813750	29.735	-			VAST	GATGAATCTTCTCGTCCAAAAT	GACAAACTAAACAACATCTTCTT

MSAT2.31	2	10778033	33.798	-			VAST	GCTCCTCTTTGCCGCTAG	GCGATTTCATCTTGTGCATC
MSAT2.41	2	11095452			42.648	**	VAST	GACTGTTTCATCGGATCCAT	ACAAACCATTGTTGGTCGTG
MSAT2.7	2	13192607	47.843	-			VAST	CTCAAATCAAGAACGCTGAC	CCCGATATAGACAACGACAA
MSAT2.4	2	13831870			54.808	*****	VAST	TGGGTTTTTGTGGGTC	GTATTATTGTGCTGCCTTTT
IND216199	2	16199330	55.207	-			VAST	TGGCTCATTTCACTCACAGG	GGCTATCTATGGCCGTTATGA
MSAT2.22	2	19632943	69.455	-	75.988	**	VAST	CGATCCAATCGGTCTCTCT	TGGTAACATCCCGAACTTC
MSAT3.99	3	1514825	0	-	0	*****	VAST	CCAACAAGAACAAGACATT	AGTGAAATCTGAAGCGATA
ATHCHIB2	3	3963391	11.193	-	3.039	*****	VAST	GGATCCAAGTGCTCATATATAC	CTTTCGTTTCTAAATATGAGAAGC
NT204	3	5570082	17.117	-			VAST	TGGAAGCTCTAGAAACGATCG	ACCACCTAAACCGAGAATTGG
MSAT305754	3	5754608			7.814	*****	VAST	AGAAGAAGCGCACATGTTTTT	AAAATTGTACGTTTGATTGTTGAA
MSAT3.4	3	7672410	23.793	-	17.718	**	VAST	TGTAACATTGCATTTTATG	CCTCTTCGGTCTATATGACT
MSAT3.6	3	8467190			25.118	***	VAST	CTACTTTACGCCTTTTATTG	TGAATTGTCCCGAGAC
MSAT3.19	3	8808167	36.21	-	29.328	-	VAST	TAATTCGATCCAATTGACAT	TGGCTTGGCACAAC
MSAT3.2	3	9055511			30.85	-	VAST	AAGGTACGGCGGTGGATATTG	CGGGGATTTCTTCTCTGTG
MSAT3.117	3	9860185	41.648	-	38.296	**	VAST	CCCGTTTAGAAATATGTGT	CGTCATACCATTTTATCAG
MSAT3.8	3	11002949	49.586	-			VAST	ATGTTAAAAACCCGTGTTGG	TTTAACCTTATCCGGGAAAG
MSAT3.31	3	11037360			48.772	**	VAST	CTCTTTTTCTTATGCCAA	AGAGTGGGTTGATACCAT
MSAT3.32	3	11208231			52.728	*****	VAST	GCACCTGCAGCTTAACTT	CGTGACTGTCAAACCG
MS3-5962	3	15392985	53.817	-			EuMicrosat	CACGTGCGAACGACTACAAC	GCTCCAAAACGGAACCTAC
VMS3.17	3	17	63.063	-			This paper	GCCGGGTACAAGCCAGAAAAG	ACCGGTGAGGAATGGCCAGC
MSAT3.65	3	19835420	86.335	-	74.988	-	VAST	CCAACTCTTCTTCAAACA	TCTCTTAGCAAACGAATGTC
CDC2BG	3	20070710			77.153	*	VAST	GGGAAAAACGAAGTGACGTG	ATTGAACTGTGTTGGTTTCTGG
MSAT3.13	3	21377089			84.888	-	VAST	TTGTGTGTTTGCATC	CATATCCGTTTTTATGTTTT
NGA6	3	23042025			90.284	**	VAST	TGGATTTCTTCTCTCTCAC	ATGGAGAAGCTTACTACTGATC
MSAT3.70	3	23449179			91.296	***	VAST	CACCCATAGACACACAACC	TCAAAACCTCCAACCATAC
MSAT4.41	4	42208	0	*****	0†	-	VAST	CCTACACTCATCAGATTCAG	TAATTAGGGTTTGATCATTC
MSAT4.39	4	89498			0.739†	-	VAST	GTTATCACATTAATAATCACC	CCAATTGTAATATATGAACA
MSAT4.43	4	2575724	11.23	*****	10.854	-	VAST	GCATTGGACCATAAGGG	TCAAGACGGTTTCAAGTTG
ATHDET1	4	6346349	19.741	*****	29.233	*****	VAST	TTCAAACACCAATATCAGGCC	GGTGAAATGGAGGAGACGA
MSAT4.35	4	7549254	28.94	****	33.361	*****	VAST	CCCATGTCTCCGATGA	GGCGTTTAATTTGCATTCT
MSAT4.15	4	9362588	41.419	-	40.877	****	VAST	TTTCTTGTCTTTCCCTGAA	GACGAAGAAGGAGACGAAAA
CIW7	4	11524362	55.634	*	56.022	**	VAST	AATTTGGAGATTAGCTGGAAT	CCATGTTGATGATAAGCACAA
MS4-5228	4	13421331			64.347	-	EuMicrosat	GCTCCTCGAGAAAAGAACG	TCTCACATCACGGGACAATC
MSAT4.14	4	15212515	72.547	**	70.668	**	VAST	GACCGTTTCTAGTGCTACA	ACGGAATAAGCGGAGGA
MSAT4.12	4	15960078	73.708	*			VAST	AAAGGAAGAAGAAGACTGTT	AGAAGAAGAAGCGAGATT

MSAT4.68	4	17261718	79.464	**	80.69	-	VAST	GGTCTCTTTTTCCCTAAC	CATTGTCCATCATCAGAAC
MSAT4.38	4	18412248	84.821	*	88.353	-	VAST	GCCTTATAGTACACCCAAA	CCACTCCACTCTCGAA
MSAT4.31	4	18573159			88.848	-	VAST	AGGGATATGGATTGAGA	GCCGTATAACTATTGGTT
MSAT500027	5	27394			0	*****	VAST	AAAAGGAAGACAAAGCTTGACG	AACCCACATGGCCTTATT
ATHCTR1A	5	979763	0	**			VAST	TATCAACAGAAACGCACCGAG	CCACTTGTTTCTCTCTAG
NGA225	5	1507104	1.475	***	8.504	*****	VAST	GAAATCCAAATCCCAGAGAGG	TCTCCCCACTAGTTTTGTGTCC
NGA151	5	4669932			16.457	*****	VAST	GTTTTGGGAAGTTTTGTCTGG	CAGTCTAAAAGCGAGAGTATGATG
NGA106	5	5397351	12.377	-			VAST	GTTATGGAGTTTCTAGGGCACG	TGCCCATTTTTGTTCTTCTC
MSAT5.14	5	7498509	25.871	-	23.619	*****	VAST	AACAACCTATCTTCTCTG	TGTGACCCCTACTCAATA
NGA139	5	8428136	31.946	-	27.093	*****	VAST	GGTTTCGTTTCACTATCCAGG	AGAGCTACCAGATCCGATGG
MS5-4717	5	10960119	54.19†	**			EuMicrosat	GCCAATCCGAGTAAATCGTG	GGTGGACCGTTCCATTTTG
MSAT512110	5	12109959	54.759†	**			VAST	GATCTGATATACCTCGATTTTC	TTTAATAAGCTTTTTCTCTACGC
MSAT5.1	5	13924203			31.696	*****	VAST	TCTAGCTTTATCCTTCTTTGA	GCCTATTCCGAGATTCA
MSAT5.22	5	13961058	60.913†	-	39.808	*****	VAST	AGAACAAGTTAGGTGGCT	GGGACAAGAATGGAGT
MSAT5.59	5	15461361			51.898	*****	VAST	CATAAGTCAGTTGATTCCA	GCTAAAAGTAGAGCGAGAG
MSAT5.7	5	17071433	79.241	*****			VAST	GCTTGATACATTACCGGACA	CCAAGCGTACTCGATCA
MSAT5.8	5	17163228			57.879	*****	VAST	GAAACATTTTCATGGGCTTT	GAGAGCAGAGGCAAGTCA
MSAT518662	5	18662765	86.687	*****	64.629	*****	VAST	GCTCCAAAACCAACAGGTA	TGGCCTCAAAGTACCCTTA
MSAT520037	5	20037472			71.238	*****	VAST	CTTTCGGTGGATAAATCATGTTA	CGCATACAAATTTTCTGCTATGT
JV6566	5	22027830			82.103	*****	VAST	TTTCTTTCACGGTTTCTAACTTTT	TCATCTTCCCTTAATTCTGATGA
JV6162	5	22527623	110.994	*****			VAST	CGCTTTCCTTGTGTCATTCC	AAATGCAAATATTGATGTGTGAAA
ICE4	5	23837141	115.024	*****			VAST	CACGAGGAATCTGGCATGGTCG	AGCGATTGCAAGCGGCTCAAG
JV7576	5	23879358			93.282	**	VAST	CACAATCAGAGGGGGTTGAT	AAATTTTGGGGGAAATGAAA
MSAT5.19	5	25924795	122.18	*****	98.609	-	VAST	AACGCATTGCTGTTCCCA	ATGGTTATCTCATCTGGTCT
K919	5	26983961			112.624	-	VAST	GATTCAGAGTTACGGTAACAG	CTATTGACAGTAAAGAGTCG

SD: Segregation distortion; Significance levels - >0.1 *<0.1 **<0.05 ***<0.01 ****<0.005 *****<0.001

† Indicates markers constrained to match physical positions

VAST database <http://www.inra.fr/internet/Produits/vast/msat.php>

Eumicrosat database <http://www.veenuash.info/>