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**Inclusive composite-interval mapping reveals quantitative trait loci for plant architectural traits in sorghum (*Sorghum bicolor*)**

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## Supplementary materials

**Supplementary Table S1. Raw data**

Genotype No.	LA	LL	LOV	PH	LW	PL	PE
L-Tian	57.06	61.46	15.23	241.47	6.86	22.81	12.16
Shihong 137	29.27	56.08	39.13	102.57	6.83	21.69	6.34
1	47.33	57.52	24.29	136.92	6.12	24.12	12.91
2	31.02	63.86	13.68	272.54	6.73	21.60	11.68
3	45.69	56.95	25.64	143.92	6.32	20.41	9.19
4	37.28	58.55	18.07	136.91	6.40	21.48	5.53
5	46.55	58.98	26.62	205.39	5.65	23.25	10.89
6	49.90	62.48	29.48	213.44	6.20	17.77	8.49
7	49.19	59.12	28.16	226.33	7.40	20.56	10.07
8	47.26	52.27	25.63	199.53	6.57	19.69	16.27
9	51.95	60.51	36.14	213.23	5.82	22.04	12.36
10	39.97	54.43	20.69	152.42	5.02	22.96	6.64
11	37.42	54.06	20.70	143.43	4.87	23.86	7.18
12	35.26	51.12	13.87	177.81	5.41	23.82	9.58
13	50.73	61.21	32.37	235.43	6.11	21.27	10.36
14	44.52	65.64	23.59	202.57	5.74	24.63	12.54
15	37.00	59.02	19.96	202.11	6.78	21.75	6.07
16	45.42	58.19	24.02	190.25	5.40	24.07	11.02
17	36.91	56.93	16.73	156.25	5.12	19.67	8.51
18	53.32	64.38	30.94	159.57	7.06	23.41	6.03
19	47.71	57.19	21.70	156.90	6.05	21.10	18.14
20	43.84	63.67	22.40	232.65	6.19	30.34	5.64
21	36.48	55.67	19.00	140.29	5.47	21.32	9.39
22	34.55	63.92	17.47	172.34	6.77	25.99	5.43
23	42.40	66.31	21.11	192.81	5.99	19.72	4.90
24	49.93	64.92	29.29	174.07	5.39	24.41	12.49
25	53.67	55.58	32.17	128.11	6.51	23.76	13.52

26	20.61	55.22	10.80	218.57	6.12	22.70	5.58
27	34.81	57.26	16.43	212.35	6.05	23.98	13.18
28	36.47	61.68	17.47	181.14	6.68	22.81	11.83
29	46.76	55.42	26.09	133.95	6.89	24.22	7.64
30	53.12	54.30	31.74	105.33	7.12	25.43	7.09
31	49.90	58.61	33.88	130.57	6.63	25.85	17.25
32	49.11	55.83	25.66	207.19	5.48	21.54	9.85
33	24.58	57.46	10.52	231.90	6.87	22.49	13.03
34	42.80	61.89	24.20	197.01	5.85	23.83	6.55
35	35.07	68.11	19.63	212.57	6.93	24.13	12.99
36	49.90	57.76	27.42	243.59	7.56	17.81	16.01
37	40.30	57.13	20.17	203.71	6.59	24.42	8.39
38	39.56	58.09	21.80	181.45	6.81	25.55	10.65
39	49.43	57.29	28.28	129.85	6.84	24.30	12.85
40	44.38	56.80	24.02	135.73	6.16	18.56	12.15
41	50.84	58.74	29.25	200.89	6.37	17.88	5.43
42	29.34	59.25	15.38	158.54	5.33	17.95	8.19
43	50.40	58.29	28.36	115.07	7.34	22.15	5.01
44	36.66	64.12	19.10	139.54	6.08	22.04	6.60
45	40.39	57.93	18.38	164.19	5.70	21.43	8.78
46	43.83	55.93	19.66	166.51	6.80	24.17	4.29
47	40.66	58.35	21.56	174.28	5.25	20.43	7.30
48	39.14	57.92	18.20	158.75	7.23	20.63	7.48
49	40.38	56.74	20.27	167.06	6.77	20.10	8.01
50	37.66	56.73	18.20	146.98	6.76	20.00	6.45
51	36.77	56.10	17.70	206.56	7.01	19.63	7.96
52	43.23	58.75	22.93	178.59	6.39	22.98	6.44
53	42.22	59.37	25.54	168.22	5.90	15.75	7.96
54	42.08	58.38	21.62	158.67	6.24	22.18	11.61
55	35.29	57.39	17.19	254.32	6.11	19.10	21.49
56	44.06	61.07	24.15	203.06	7.13	16.92	6.76
57	46.72	68.69	23.51	275.77	6.51	22.58	10.47

58	48.73	66.16	25.83	215.13	6.93	23.32	8.36
59	48.21	64.86	23.98	192.40	6.01	22.46	7.49
60	42.54	62.89	24.80	222.18	6.75	17.42	9.25
61	48.89	59.00	29.18	190.36	6.77	25.20	18.71
62	38.86	58.78	21.72	155.87	6.16	21.42	7.99
63	37.71	57.70	18.01	214.59	6.48	17.95	7.67
64	47.50	60.74	27.40	174.72	6.38	15.93	8.73
65	35.64	58.68	18.17	147.76	4.95	19.64	6.08
66	42.49	57.81	22.90	168.26	5.86	20.86	10.31
67	46.63	56.55	22.51	156.27	8.13	24.93	18.78
68	37.23	57.02	17.77	202.74	6.19	18.02	7.36
69	35.41	60.38	16.08	290.42	6.46	26.71	17.68
70	57.54	57.05	33.01	146.40	6.35	22.04	10.03
71	33.13	62.84	16.27	146.43	5.10	23.81	9.60
72	42.52	63.09	24.10	191.78	7.36	21.21	6.46
73	40.75	64.61	21.80	173.28	6.07	19.88	5.89
74	38.13	59.38	20.63	191.90	6.24	26.45	11.54
75	54.65	64.93	28.29	112.68	6.72	24.70	11.77
76	26.86	59.84	13.15	225.92	6.59	23.00	9.63
77	45.68	58.88	25.67	185.29	5.86	22.08	7.93
78	41.61	57.01	24.93	134.63	6.00	20.21	9.08
79	59.94	61.07	39.26	156.95	7.86	20.80	6.70
80	53.31	57.97	29.03	189.76	8.07	23.78	7.89
81	42.78	55.44	23.82	178.33	6.52	16.80	6.71
82	42.82	67.41	20.42	255.89	6.47	28.52	16.30
83	37.50	62.83	15.19	263.64	6.18	27.41	15.08
84	48.70	60.84	26.39	255.39	7.42	21.62	7.64
85	48.62	63.32	24.63	225.12	8.30	26.76	15.83
86	45.32	58.91	24.73	147.53	5.79	20.69	5.17
87	44.81	60.16	24.43	188.77	5.48	24.17	10.06
88	36.86	57.66	18.49	137.71	6.18	21.65	9.58
89	38.01	63.43	16.88	191.77	5.21	22.81	14.39

90	38.09	60.55	17.15	201.14	5.23	21.53	6.78
91	44.53	56.48	22.50	255.78	6.00	16.37	8.09
92	42.36	54.73	20.30	241.27	5.96	20.84	8.01
93	33.02	54.23	16.64	208.10	6.23	19.65	6.75
94	29.85	53.53	17.24	207.25	6.27	19.05	7.38
95	40.13	55.95	20.71	151.39	4.85	18.26	8.92
96	35.28	52.28	18.95	166.17	5.95	16.47	7.02
97	50.83	63.88	30.09	193.48	6.29	24.23	6.09
98	51.43	53.03	27.13	150.09	4.48	22.73	6.55
99	30.68	57.55	14.41	237.41	7.09	22.34	16.17
100	51.06	46.77	30.01	152.22	5.61	21.55	16.95
101	51.85	56.57	27.71	160.35	7.08	23.68	8.49
102	41.12	56.63	22.95	134.43	6.40	25.67	8.16
103	35.56	64.26	19.11	232.73	5.08	22.54	12.21
104	47.56	59.43	29.70	188.44	5.66	18.99	11.39
105	40.80	64.46	20.74	167.74	6.84	22.77	8.31
106	45.16	64.22	23.82	247.41	6.48	28.62	15.99
107	37.21	63.61	19.45	235.38	5.82	20.67	13.59
108	59.29	62.20	37.69	135.34	7.26	20.78	7.58
109	42.95	60.45	24.24	169.26	6.66	24.90	7.72
110	46.25	57.62	28.49	132.61	6.73	21.11	7.97
111	28.19	56.05	13.82	207.05	6.16	21.29	11.35
112	49.23	51.81	27.72	110.16	5.54	24.39	10.37
113	56.12	56.97	35.66	114.86	5.70	24.66	7.96
114	43.00	54.50	21.45	117.18	4.73	22.38	7.02
115	45.48	62.32	27.34	286.55	6.63	22.84	6.35
116	42.55	55.28	24.10	176.65	5.24	21.95	8.96
117	39.49	61.90	17.31	228.61	7.97	22.68	9.58
118	41.28	62.12	22.04	145.68	6.16	19.02	5.31
119	38.32	56.56	18.52	227.35	6.01	20.79	8.44
120	49.97	58.31	31.42	153.24	5.29	17.37	6.76
121	39.09	55.43	22.04	204.79	6.09	20.88	13.09

122	42.33	50.66	23.53	170.39	5.58	16.92	10.38
123	37.31	58.32	17.87	179.02	6.61	17.31	6.30
124	46.39	56.25	26.20	165.50	7.81	24.46	7.62
125	47.19	65.74	24.91	194.58	6.91	24.93	10.80
126	42.91	57.12	24.12	174.83	5.92	22.58	14.18
127	46.53	60.36	24.66	176.06	5.09	21.43	10.05
128	39.30	60.03	22.17	236.23	6.03	20.45	5.73
129	42.53	62.16	21.24	182.70	5.67	19.06	6.76
130	27.89	55.63	13.20	201.54	5.61	20.39	24.44
131	33.36	59.02	16.60	227.42	6.11	20.70	6.24
132	40.76	60.96	25.77	210.13	6.78	26.60	14.03
133	45.81	59.89	25.59	215.19	6.57	22.64	17.48
134	46.12	60.91	27.95	225.30	6.00	23.39	8.20
135	30.19	60.38	13.97	198.69	4.93	21.45	9.61
136	47.34	62.58	23.71	228.99	6.15	20.93	8.41
137	45.75	64.09	23.66	292.32	7.00	21.96	8.13
138	51.71	55.29	33.19	169.86	6.68	18.68	13.90
139	41.41	57.44	19.66	250.01	6.75	24.07	7.98
140	35.10	59.08	18.29	179.36	6.75	23.37	7.57
141	40.32	56.35	22.13	205.96	6.10	24.17	9.03
142	24.50	59.57	12.27	218.31	6.15	23.51	7.90
143	44.89	64.40	23.71	212.07	6.38	20.28	8.76
144	24.97	58.67	12.92	225.69	6.48	22.29	9.21
145	26.34	53.56	13.78	177.44	5.31	19.79	7.72
146	39.13	57.51	20.57	153.97	6.87	22.17	7.13
147	38.00	59.90	18.86	261.67	6.50	19.90	20.65
148	51.04	58.73	30.77	178.83	7.58	21.55	13.95
149	39.30	54.46	22.04	218.46	7.70	20.47	7.33
150	46.81	63.26	28.03	200.47	6.00	19.55	6.96
151	41.38	60.94	19.88	218.87	6.89	23.27	8.85
152	46.14	57.65	29.22	152.56	5.79	19.29	11.00
153	53.41	51.78	33.61	96.15	5.36	20.46	10.49

154	50.57	57.75	30.06	133.54	6.30	21.44	9.82
155	38.52	60.99	19.55	191.03	6.83	18.28	6.60
156	48.69	59.98	25.19	255.28	7.82	20.31	13.67
157	43.31	59.36	19.41	142.99	6.18	22.69	7.13
158	38.99	64.95	18.11	161.50	6.54	19.98	6.48
159	52.69	55.16	31.02	111.99	7.61	22.39	8.12
160	39.94	58.14	17.87	259.10	6.05	16.89	5.94
161	41.94	64.30	23.91	170.25	6.22	22.23	7.74
162	39.26	57.79	21.83	200.17	5.90	23.64	9.19
163	38.83	58.44	24.86	154.28	6.31	18.58	10.66
164	33.02	62.47	15.73	228.38	7.60	20.04	12.38
165	43.67	49.98	23.77	94.49	5.86	20.81	10.20
166	56.28	54.99	36.00	110.11	6.98	19.50	8.05
167	32.61	59.04	17.71	192.42	6.38	22.97	6.83
168	50.68	54.41	28.51	113.75	6.97	26.28	11.43
169	56.12	61.92	35.16	117.85	7.56	24.83	6.09
170	38.06	65.15	18.79	257.27	6.01	26.41	7.48
171	54.55	55.15	34.13	157.45	6.77	19.50	16.19
172	50.80	62.14	27.76	203.88	6.56	23.13	12.59
173	46.70	60.03	25.44	174.69	6.93	22.51	6.70
174	49.26	59.27	29.74	155.39	5.70	19.70	6.91
175	50.65	59.53	28.72	142.71	5.49	16.27	7.46
176	33.07	61.30	17.28	181.53	5.81	25.61	7.08
177	58.90	58.54	38.47	206.97	4.67	16.01	9.04
178	48.17	59.27	25.02	148.43	5.55	20.31	12.79
179	46.71	64.31	25.45	204.25	7.03	23.86	23.75
180	47.72	61.45	23.29	199.45	7.12	21.53	23.17
181	40.73	59.92	21.24	238.28	6.96	18.78	6.76

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## Supplementary Table S2. Correlations among plant architectural traits

\*, \*\* and \*\*\* stand for significance of  $P \leq 0.05$ ,  $P \leq 0.01$  and  $P \leq 0.001$ , respectively;

ns, not significant

Traits	LL	LOV	PH	LW	PL	PE
LOV	-0.039 <sup>ns</sup>					
PH	0.397 <sup>***</sup>	-0.387 <sup>***</sup>				
LW	0.182 <sup>*</sup>	0.154 <sup>*</sup>	0.143 <sup>ns</sup>			
PL	0.233 <sup>**</sup>	-0.033 <sup>ns</sup>	0.036 <sup>ns</sup>	0.171 <sup>ns</sup>		
PE	-0.002 <sup>ns</sup>	0.003 <sup>ns</sup>	0.211 <sup>**</sup>	0.107 <sup>ns</sup>	0.194 <sup>**</sup>	
LA	-0.011 <sup>ns</sup>	-0.940 <sup>***</sup>	0.348 <sup>***</sup>	-0.193 <sup>**</sup>	-0.020 <sup>ns</sup>	-0.032 <sup>ns</sup>



**Supplementary Table S3. SSR markers distribution on linkage groups**

a, Centi-Morgan

Chromosome	Mapped length (cM <sup>a</sup> )	No. of markers	Average marker distance (cM <sup>a</sup> )
1	337.69	23	14.68
2	225.50	17	13.26
3	316.13	24	13.17
4	292.16	18	16.23
5	216.04	14	15.43
6	190.18	18	10.57
7	218.17	16	13.64
8	215.42	19	11.34
9	250.39	17	14.73
10	157.44	15	10.50
Total	2419.15	181	13.37

**Supplementary Table S4. Epistatic QTLs identified for plant architectural traits in multi-environment trials (MET)**

a, the position of the LOD peak.

b, the markers flanking the position of the LOD peak.

c, LOD or PVE caused by the main epistatic effect.

d, LOD or PVE caused by the effect of the epistasis and environment interaction.

e, positive values indicate alleles donated by L-Tian, whereas negative values indicate alleles donated by Shihong 137.

f, positive values suggest a larger parental effect than recombinant effect, whereas negative values suggest a larger recombinant effect than parental effect.

Markers in bold represent the intervals harboring QTLs identified in the QTL analysis.

Marker intervals in bold represent the QTLs recognized in the linkage analysis for each trait.

PH, LL, LW, LA, LOV, PL, and PE stand for plant height, leaf length, leaf width, leaf angle, leaf orientation value, panicle length, and panicle exertion, respectively.

Traits	Chr	Position	Left - right	Chr	Position	Left - right	LOD	LOD	LOD	PVE	PVE	PVE	Add	Add	AA <sup>f</sup>
	1	1 <sup>a</sup>	Marker 1 <sup>b</sup>	2	2 <sup>a</sup>	Marker 2 <sup>b</sup>		(AA) <sup>c</sup>	(AA×E) <sup>d</sup>		(AA) <sup>c</sup>	(AA×E) <sup>d</sup>	1 <sup>e</sup>	2 <sup>e</sup>	
	1	80	<b>UGSM199 - Xtxp43</b>	1	130	SB4418 - Xtxp32	12.80	12.37	0.42	5.86	5.74	0.12	-0.23	-0.30	-2.15
	1	305	Xtxp340 - Xtxp323	2	120	Xcup29 - Xtxp1	5.80	5.62	0.18	2.41	2.34	0.07	-0.62	0.65	1.30
	3	65	SB1774 - SB1776	3	145	<b>Sb5_236 - SB1983</b>	9.18	9.01	0.17	4.07	4.01	0.06	-0.63	-1.34	1.66
	1	45	SbAGF08 - Xcup25	3	240	<b>SB2216 - SB2241</b>	5.23	4.85	0.38	2.43	2.27	0.16	-0.42	0.38	1.39
	2	225	Xtxp8 - Xcup20	4	30	<b>Xcup48 - Xcup23</b>	8.56	8.26	0.30	3.88	3.73	0.15	0.32	0.19	1.69
	4	30	<b>Xcup48 - Xcup23</b>	4	160	Xtxp343 - SB2593	9.02	8.86	0.16	4.02	3.95	0.08	0.44	0.38	1.71
	3	0	SB1658 - SB1667	4	255	Xtxp212 - SB2769	5.23	5.01	0.22	2.30	2.19	0.11	-0.74	-0.57	-1.28
	1	310	Xtxp340 - Xtxp323	5	0	Xtxp65 - Xtxp221	6.71	6.58	0.13	3.01	2.93	0.08	-0.25	0.92	1.43
	3	0	SB1658 - SB1667	5	0	Xtxp65 - Xtxp221	5.60	5.39	0.21	2.37	2.27	0.10	-0.86	0.86	-1.31
LA	4	200	SB2663 - Sbl_10	5	40	Xtxp221 - Xtxp303	5.42	5.22	0.20	2.56	2.55	0.01	-0.23	0.15	1.38
	3	120	Ungnhs37 - UGSM9	6	25	Xtxp101 - SB3420	5.75	5.62	0.13	2.43	2.40	0.03	-1.11	0.11	1.30
	2	110	Xtxp19 - Xcup29	6	145	<b>SB3718 - Xtxp57</b>	5.46	5.22	0.24	2.62	2.52	0.10	0.52	-0.54	1.34
	4	75	Xtxp26 - SB2538	6	170	Xtxp57 - SB3789	5.99	5.78	0.20	2.84	2.80	0.04	0.24	-1.45	1.44
	1	215	<b>Xtxp85 - Sb6_57</b>	6	190	<b>SB3847 - SB3806</b>	5.41	5.15	0.27	2.34	2.26	0.09	-0.30	-1.08	1.31
	3	255	<b>SB2241 - Xtxp34</b>	7	60	SB4082 - SB4024	8.05	7.66	0.39	3.49	3.38	0.11	-0.59	0.69	-1.61
	7	60	SB4082 - SB4024	7	65	<b>SB4024 - SB4087</b>	5.59	5.52	0.07	2.13	2.13	0.00	0.73	-0.48	-2.50
	5	40	Xtxp221 - Xtxp303	7	150	SB4117 - SB4143	5.22	5.14	0.08	2.36	2.34	0.03	-0.08	-1.33	-1.39
	6	185	<b>SB3847 - SB3806</b>	8	95	Xtxp210 - Xtxp354	8.47	8.14	0.32	3.63	3.52	0.10	-0.99	0.73	1.59
	5	130	Xtxp23 - SBKAFGK1	8	175	SB4602 - Sb6_34	8.26	7.91	0.35	3.58	3.50	0.08	0.58	-0.99	-1.59

	2	20	<b>Xtxp197 - SbAGH04</b>	8	185	SB4602 - Sb6_34	6.62	6.11	0.51	3.27	3.05	0.22	0.69	-1.01	-1.47
	4	45	Xcup23 - Xcup05	8	185	SB4602 - Sb6_34	6.24	6.17	0.07	2.99	2.98	0.01	0.53	-1.04	-1.47
	3	260	Xtxp34 - SB2278	8	205	Sb6_34 - SB4660	5.05	4.79	0.26	2.27	2.18	0.09	-0.20	-0.31	-1.25
	8	85	Xtxp292 - Xtxp210	8	210	SB4660 - SB4654	5.86	5.75	0.11	2.67	2.62	0.04	1.09	-0.23	-1.38
	2	185	<b>Xcup26 - Xtxp8</b>	9	10	Ungnhs33 - Xtxp289	5.12	4.99	0.13	2.43	2.41	0.02	0.46	-0.68	1.40
	1	100	Xtxp88 - UGSM2	9	20	Xtxp289 - Sb6_42	5.02	4.77	0.26	2.26	2.14	0.11	-0.36	-0.37	-1.29
	4	290	Xtxp41 - Xtxp177	9	30	Xtxp289 - Sb6_42	5.34	5.04	0.30	2.46	2.34	0.11	0.16	0.14	1.30
	6	185	<b>SB3847 - SB3806</b>	9	35	Xtxp289 - Sb6_42	8.71	8.66	0.05	3.98	3.97	0.01	-0.76	-0.14	-1.67
	7	70	<b>SB4024 - SB4087</b>	9	50	Sb6_42 - Xtxp230	8.66	8.58	0.08	3.75	3.73	0.02	0.16	-0.22	1.66
	8	55	<b>SB4405 - SB4442</b>	9	55	Sb6_42 - Xtxp230	7.84	7.76	0.08	3.45	3.41	0.04	1.03	-0.46	-1.57
	3	15	SB1667 - Xcup11	9	230	<b>SB5069 - SEST87</b>	9.58	7.88	1.70	4.34	3.73	0.61	-1.55	-1.22	1.66
	2	80	Xtxp304 - Xcup74	10	10	SB5324 - SB5329	7.27	7.18	0.09	3.47	3.40	0.06	1.03	0.55	-1.55
	9	155	SB4963 - Sb4_32	10	25	Xtxp353 - Xtxp270	5.67	4.87	0.80	2.66	2.36	0.30	-0.98	0.43	1.27
	1	205	<b>Xtxp85 - Sb6_57</b>	10	50	Xtxp20 - Xcup67	5.41	5.12	0.29	2.46	2.33	0.13	-0.10	0.25	-1.30
	5	170	Kaf2e - Kaf3e	10	50	Xtxp20 - Xcup67	5.09	4.54	0.55	2.36	2.17	0.19	-0.18	0.01	-1.24
	6	165	Xtxp57 - SB3789	10	50	Xtxp20 - Xcup67	7.04	6.89	0.15	3.41	3.37	0.04	-1.50	0.09	-1.54
	3	315	SB2362 - Dsenhs10	10	95	<b>SB5462 - Xcup16</b>	8.03	7.96	0.07	3.72	3.72	0.00	-0.36	0.06	-1.63
	4	150	SB2565 - Xtxp343	10	120	Xcup16 - Sb6_325	6.55	4.29	2.26	2.82	1.88	0.95	-0.03	-0.87	1.16
	1	115	UGSM2 - SB4418	1	230	MCSA068 - Xtxp279	5.57	5.17	0.40	2.75	2.58	0.17	-0.16	-0.19	0.83
LL	2	50	Xtxp297 - Xtxp304	2	175	<b>Xcup26 - Xtxp8</b>	5.07	4.50	0.56	2.46	2.22	0.24	0.77	-0.03	-0.81
	3	80	<b>Xtxp9 - SB1811</b>	3	85	<b>Xtxp9 - SB1811</b>	5.38	4.75	0.63	2.44	1.88	0.56	0.36	-0.22	1.22

1	215	<b>Xtxp85 - Sb6_57</b>	3	260	Xtxp34 - SB2278	7.11	6.52	0.59	3.72	3.39	0.33	0.28	-0.22	0.94
1	235	MCSA068 - Xtxp279	4	95	Xtxp26 - SB2538	5.57	3.95	1.61	2.87	2.04	0.83	-0.26	-0.29	0.76
3	250	<b>SB2241 - Xtxp34</b>	4	100	SB2538 - SB2565	6.02	4.48	1.54	2.89	2.20	0.69	0.03	-0.02	-0.75
3	15	SB1667 - Xcup11	5	160	SBKAFGK1 - Kaf2e	7.85	5.93	1.92	4.01	3.14	0.87	-0.27	0.24	0.91
5	10	Xtxp65 - Xtxp221	5	160	SBKAFGK1 - Kaf2e	5.16	3.77	1.39	2.46	1.85	0.60	-0.13	0.11	0.69
1	230	MCSA068 - Xtxp279	6	80	<b>SB3562 - Xtxp274</b>	6.54	5.20	1.34	3.45	2.77	0.69	-0.12	0.01	-0.88
5	30	Xtxp221 - Xtxp303	6	80	<b>SB3562 - Xtxp274</b>	6.98	5.74	1.24	3.41	2.82	0.59	-0.09	-0.21	-0.85
3	280	Xtxp69 - SB2362	6	115	Xcup12 - SB3664	7.61	6.80	0.81	3.66	3.28	0.38	1.05	-0.15	0.92
6	175	<b>SB3789 - SB3816</b>	6	185	<b>SB3847 - SB3806</b>	7.78	6.11	1.67	3.78	2.90	0.88	-0.09	0.44	1.27
4	255	Xtxp212 - SB2769	7	50	BMRF - SB3996	7.23	5.61	1.61	3.71	2.82	0.88	0.21	0.24	-0.85
3	220	SB2106 - SB2223	7	70	<b>SB4024 - SB4087</b>	7.80	7.35	0.46	4.13	3.86	0.27	0.55	0.07	1.02
2	25	SbAGH04 - Xtxp25	7	150	SB4117 - SB4143	6.89	5.96	0.93	3.70	3.12	0.58	0.94	-0.16	0.97
1	0	Xtxp78 - SbAGF08	7	215	Xtxp295 - Xcup57	5.41	4.45	0.96	2.53	2.13	0.40	-0.20	-0.90	-0.86
7	105	<b>SB4122 - SbAGF06</b>	8	40	SB4394 - SB4399	9.48	7.81	1.67	4.86	4.01	0.85	-0.54	0.55	1.08
5	160	SBKAFGK1 - Kaf2e	8	80	SB4487 - Xtxp292	5.01	2.01	3.00	2.32	0.90	1.43	0.17	-0.28	-0.48
6	190	<b>SB3847 - SB3806</b>	8	80	SB4487 - Xtxp292	5.42	3.05	2.37	2.61	1.51	1.10	0.51	-0.21	-0.63
1	200	<b>Xtxp85 - Sb6_57</b>	8	210	SB4660 - SB4654	5.70	3.70	1.99	2.57	1.72	0.85	0.26	-0.27	0.67
2	0	UGSM1 - Xtxp96	8	215	SB4660 - SB4654	7.09	4.07	3.02	3.61	2.13	1.48	0.03	-0.03	0.74
3	135	UGSM9 - Sb5_236	8	215	SB4660 - SB4654	5.00	4.09	0.91	2.27	1.89	0.37	0.21	-0.15	0.69
3	15	SB1667 - Xcup11	9	70	<b>Xtxp230 - SB4794</b>	5.17	2.77	2.40	2.64	1.43	1.21	-0.43	-0.44	-0.61
1	215	<b>Xtxp85 - Sb6_57</b>	9	100	Xcup02 - SB4849	6.40	5.98	0.42	3.14	2.92	0.22	0.39	0.27	-0.90

	8	20	SB4336 - SB4379	9	115	SB4849 - Xtxp10	8.42	6.49	1.93	4.26	3.24	1.02	-0.36	-0.17	0.95
	7	65	<b>SB4024 - SB4087</b>	9	170	SB4963 - Sb4_32	5.76	5.16	0.60	2.72	2.46	0.25	0.13	0.39	0.80
	6	145	<b>SB3718 - Xtxp57</b>	9	185	<b>SB5032 - SbAGE03</b>	6.57	4.09	2.48	3.45	2.15	1.30	0.02	0.35	-0.74
	3	280	Xtxp69 - SB2362	10	25	Xtxp353 - Xtxp270	5.46	5.06	0.40	2.82	2.65	0.17	1.12	0.13	-0.81
	1	80	<b>UGSM199 - Xtxp43</b>	1	130	SB4418 - Xtxp32	8.94	8.71	0.23	3.72	3.62	0.10	0.05	0.41	1.37
	2	85	Xcup74 - Xtxp3	2	105	Xtxp19 - Xcup29	5.01	4.92	0.09	1.88	1.83	0.05	-0.69	0.05	-1.13
	1	85	<b>UGSM199 - Xtxp43</b>	2	125	Xcup29 - Xtxp1	5.12	4.38	0.74	2.21	1.93	0.28	0.52	-0.31	-0.94
	3	15	SB1667 - Xcup11	3	130	UGSM9 - Sb5_236	6.52	6.14	0.38	2.80	2.67	0.13	0.73	0.43	-1.11
	2	225	Xtxp8 - Xcup20	4	35	Xcup23 - Xcup05	8.16	8.13	0.03	3.50	3.48	0.01	-0.32	-0.09	-1.31
	4	30	<b>Xcup48 - Xcup23</b>	4	160	Xtxp343 - SB2593	9.12	9.08	0.04	4.10	4.08	0.02	-0.43	-0.26	-1.40
	3	0	SB1658 - SB1667	5	0	Xtxp65 - Xtxp221	5.64	4.71	0.93	2.45	2.09	0.36	0.39	-0.29	1.00
	1	235	MCSA068 - Xtxp279	5	80	Xtxp225 - Xtxp91	5.58	5.46	0.12	2.28	2.25	0.04	0.45	-0.03	-1.07
LOV	1	130	SB4418 - Xtxp32	6	105	Xtxp274 - Xcup12	5.35	4.75	0.60	2.40	2.13	0.27	0.20	-0.29	1.00
	3	195	SB2106 - SB2223	6	105	Xtxp274 - Xcup12	5.91	5.37	0.54	2.52	2.28	0.24	0.47	-0.24	-1.02
	2	110	Xtxp19 - Xcup29	6	145	<b>SB3718 - Xtxp57</b>	5.57	5.56	0.01	2.31	2.30	0.01	-0.44	0.39	-1.03
	4	275	SB2769 - Xtxp41	6	185	<b>SB3847 - SB3806</b>	6.75	6.58	0.17	2.94	2.87	0.07	0.35	0.23	1.15
	1	250	Sb6_36 - Xtxp284	7	30	BMRF - SB3996	5.45	3.28	2.17	2.07	1.34	0.73	0.56	0.20	0.79
	5	30	Xtxp221 - Xtxp303	7	75	SB4087 - SB4066	5.57	3.89	1.68	2.41	1.78	0.63	0.51	-0.11	0.92
	3	255	<b>SB2241 - Xtxp34</b>	7	105	<b>SB4122 - SbAGF06</b>	5.91	5.57	0.33	2.46	2.33	0.14	0.00	1.60	1.09
	4	75	Xtxp26 - SB2538	7	105	<b>SB4122 - SbAGF06</b>	5.07	4.29	0.78	2.14	1.82	0.32	0.18	1.88	0.99
	2	225	Xtxp8 - Xcup20	7	195	SB4177 - Xtxp295	6.38	5.05	1.33	2.44	1.94	0.50	-0.56	1.41	-1.09

	1	235	MCSA068 - Xtxp279	8	75	SB4487 - Xtxp292	5.23	4.46	0.77	2.28	1.93	0.35	0.59	-0.26	-0.98
	6	185	<b>SB3847 - SB3806</b>	8	95	Xtxp210 - Xtxp354	8.33	8.09	0.24	3.68	3.58	0.10	0.42	-0.25	-1.29
	4	75	Xtxp26 - SB2538	8	170	Xtxp250 - SB4602	6.04	5.93	0.11	2.47	2.45	0.02	-0.19	0.81	1.09
	5	90	Xtxp225 - Xtxp91	8	170	Xtxp250 - SB4602	6.81	6.06	0.75	3.02	2.70	0.32	-0.42	0.53	1.10
	2	120	Xcup29 - Xtxp1	8	190	SB4602 - Sb6_34	5.81	5.06	0.75	2.59	2.31	0.28	-0.34	-0.15	1.03
	3	260	Xtxp34 - SB2278	8	205	Sb6_34 - SB4660	5.39	4.88	0.51	2.38	2.14	0.24	-0.30	0.20	1.01
	8	85	Xtxp292 - Xtxp210	8	205	Sb6_34 - SB4660	5.01	4.65	0.36	2.21	2.09	0.13	-0.54	0.02	0.99
	4	290	Xtxp41 - Xtxp177	9	20	Xtxp289 - Sb6_42	5.54	5.02	0.52	2.15	2.00	0.15	0.23	-0.37	-0.98
	1	100	Xtxp88 - UGSM2	9	25	Xtxp289 - Sb6_42	7.96	7.66	0.30	3.14	3.04	0.10	0.34	0.13	1.24
	7	70	<b>SB4024 - SB4087</b>	9	50	Sb6_42 - Xtxp230	7.43	7.13	0.30	3.12	3.03	0.09	-0.33	-0.02	-1.20
	8	215	SB4660 - SB4654	9	150	<b>SB4932 - SB4963</b>	6.49	6.02	0.46	2.81	2.63	0.18	0.27	0.70	-1.10
	6	80	<b>SB3562 - Xtxp274</b>	9	200	<b>SbAGE03 - SB5058</b>	6.02	5.18	0.84	2.50	2.25	0.25	-0.78	0.55	1.03
	3	15	SB1667 - Xcup11	9	230	<b>SB5069 - SEST87</b>	6.23	5.90	0.32	2.91	2.79	0.12	1.01	0.87	-1.16
	2	80	Xtxp304 - Xcup74	10	10	SB5324 - SB5329	8.27	7.87	0.39	3.46	3.28	0.18	-0.78	-0.15	1.23
	9	225	<b>SB5069 - SEST87</b>	10	25	Xtxp353 - Xtxp270	5.29	4.99	0.31	2.28	2.15	0.13	1.24	0.10	-1.03
	1	205	<b>Xtxp85 - Sb6_57</b>	10	50	Xtxp20 - Xcup67	5.82	5.60	0.22	2.51	2.42	0.08	0.02	0.16	1.06
	6	170	Xtxp57 - SB3789	10	55	Xtxp20 - Xcup67	5.48	5.45	0.03	2.29	2.29	0.00	1.41	0.33	1.02
	3	315	SB2362 - Dsenhs10	10	90	Xcup67 - SB5462	10.32	10.05	0.27	4.34	4.25	0.09	0.31	0.20	1.39
	4	150	SB2565 - Xtxp343	10	125	Xcup16 - Sb6_325	6.60	4.52	2.08	2.66	1.90	0.77	0.05	0.80	-0.94
	2	20	<b>Xtxp197 - SbAGH04</b>	2	90	Xtxp3 - Xtxp19	5.94	3.86	2.08	3.05	2.13	0.92	0.12	0.00	0.14
LW	3	5	SB1658 - SB1667	3	225	SB2223 - SB2196	5.90	5.62	0.28	3.02	2.84	0.18	0.04	0.07	0.16

1	205	<b>Xtxp85 - Sb6_57</b>	3	290	SB2362 - Dsenhs10	5.96	5.70	0.26	3.11	2.97	0.14	-0.01	-0.02	0.16
3	90	SB1811 - SB1854	4	75	Xtxp26 - SB2538	6.87	6.75	0.12	3.34	3.31	0.03	0.11	-0.03	0.18
1	130	SB4418 - Xtxp32	4	165	SB2593 - Xtxp12	7.73	6.90	0.83	3.87	3.53	0.34	-0.02	-0.03	0.17
2	35	Xtxp25 - Xtxp297	4	185	Xtxp12 - SB2581	5.72	4.12	1.60	2.89	2.10	0.80	0.10	-0.05	0.14
2	80	Xtxp304 - Xcup74	5	75	SB3149 - Xtxp225	5.21	5.06	0.15	2.58	2.54	0.05	0.05	-0.02	-0.15
4	275	SB2769 - Xtxp41	5	190	SB3311 - SB3344	5.26	4.23	1.02	2.40	2.05	0.35	-0.10	-0.05	-0.13
3	120	Ungnhs37 - UGSM9	6	80	<b>SB3562 - Xtxp274</b>	5.11	4.47	0.64	2.59	2.27	0.32	0.09	-0.10	-0.14
4	0	<b>Xcup48 - Xcup23</b>	6	145	<b>SB3718 - Xtxp57</b>	7.85	7.01	0.84	3.64	3.31	0.33	-0.11	-0.06	-0.18
1	200	<b>Xtxp85 - Sb6_57</b>	6	165	Xtxp57 - SB3789	6.55	6.21	0.34	3.27	3.14	0.14	0.03	0.03	-0.16
5	30	Xtxp221 - Xtxp303	6	170	Xtxp57 - SB3789	5.12	4.42	0.70	2.52	2.21	0.31	0.08	0.06	-0.14
5	90	Xtxp225 - Xtxp91	7	120	SbAGF06 - SB4117	6.93	6.58	0.35	3.34	3.23	0.11	-0.11	0.11	-0.17
1	290	<b>Xtxp61 - Xtxp340</b>	7	125	SbAGF06 - SB4117	8.87	8.23	0.63	4.38	4.18	0.20	-0.08	0.02	0.20
4	95	Xtxp26 - SB2538	7	125	SbAGF06 - SB4117	5.19	5.01	0.18	2.72	2.65	0.07	0.07	0.05	0.16
7	30	BMRF - SB3996	7	190	SB4177 - Xtxp295	5.55	5.43	0.12	2.40	2.40	0.00	0.15	0.14	0.16
6	110	Xcup12 - SB3664	8	45	SB4399 - SB4405	6.33	5.32	1.02	3.15	2.70	0.45	-0.12	0.00	0.15
3	5	SB1658 - SB1667	8	80	SB4487 - Xtxp292	5.85	5.64	0.21	3.02	2.95	0.07	0.06	0.11	0.16
8	75	SB4487 - Xtxp292	8	95	Xtxp210 - Xtxp354	6.20	5.18	1.01	3.35	2.74	0.61	0.11	0.00	-0.18
7	80	SB4066 - SB4107	8	110	Xtxp354 - Xtxp18	5.25	5.00	0.24	2.64	2.51	0.13	0.07	0.04	0.15
2	175	<b>Xcup26 - Xtxp8</b>	8	175	SB4602 - Sb6_34	5.10	4.29	0.81	2.44	2.10	0.33	-0.03	0.05	-0.14
7	175	<b>Xcup19 - SB4177</b>	9	10	Ungnhs33 - Xtxp289	6.06	6.00	0.06	3.01	2.95	0.06	0.10	-0.05	-0.17
2	80	Xtxp304 - Xcup74	9	100	Xcup02 - SB4849	5.65	5.32	0.33	2.76	2.62	0.14	0.05	-0.05	0.15



	8	90	Xtxp292 - Xtxp210	9	160	SB4963 - Sb4_32	6.05	5.64	0.41	2.74	2.68	0.06	0.00	-0.13	0.15
	3	10	SB1667 - Xcup11	9	165	SB4963 - Sb4_32	5.18	4.75	0.43	2.17	2.00	0.17	0.11	-0.16	-0.14
	1	160	<b>Xtxp11 - Xtxp335</b>	9	170	SB4963 - Sb4_32	5.72	5.47	0.25	2.85	2.79	0.06	0.06	-0.13	-0.15
	6	75	SB3521 - SB3562	9	170	SB4963 - Sb4_32	6.41	5.63	0.78	2.91	2.63	0.28	-0.13	-0.14	0.15
	5	160	SBKAFGK1 - Kaf2e	9	175	<b>Sb4_32 - SB5032</b>	7.00	6.32	0.68	3.37	3.01	0.36	-0.04	-0.11	0.16
	9	150	<b>SB4932 - SB4963</b>	9	190	<b>SB5032 - SbAGE03</b>	5.15	4.79	0.37	2.74	2.56	0.18	-0.04	-0.13	-0.15
	3	250	<b>SB2241 - Xtxp34</b>	10	5	SB5304 - SB5324	6.30	4.94	1.36	2.98	2.45	0.53	0.20	0.06	-0.14
	4	290	Xtxp41 - Xtxp177	10	10	SB5324 - SB5329	7.64	7.36	0.28	3.66	3.58	0.08	-0.09	0.11	0.18
	6	125	SB3670 - SB3683	10	25	Xtxp353 - Xtxp270	5.08	4.87	0.21	2.41	2.31	0.10	-0.11	0.09	0.14
	1	130	SB4418 - Xtxp32	10	95	<b>SB5462 - Xcup16</b>	5.61	4.83	0.78	2.70	2.39	0.30	-0.01	0.03	-0.14
	7	110	<b>SB4122 - SbAGF06</b>	10	125	Xcup16 - Sb6_325	5.61	5.06	0.55	2.42	2.21	0.21	0.20	0.10	0.15
	9	195	<b>SB5032 - SbAGE03</b>	10	145	Sb6_325 - SB5563	8.09	7.52	0.56	3.85	3.60	0.25	-0.16	0.04	-0.18
	1	85	<b>UGSM199 - Xtxp43</b>	1	195	Xtxp335 - Xtxp85	8.88	8.32	0.56	4.52	4.27	0.25	5.31	8.97	9.23
	2	20	<b>Xtxp197 - SbAGH04</b>	2	135	Xtxp1 - Sb6_84	6.51	6.33	0.18	3.67	3.58	0.08	-1.87	-2.44	8.92
	1	305	Xtxp340 - Xtxp323	2	170	Xtxp7 - Xcup26	6.35	6.02	0.33	3.25	3.13	0.12	-6.44	-6.58	8.29
	1	235	MCSA068 - Xtxp279	3	85	<b>Xtxp9 - SB1811</b>	8.30	7.86	0.44	4.31	4.03	0.29	-5.97	1.70	-9.65
PH	3	10	SB1667 - Xcup11	3	160	<b>Sb5_236 - SB1983</b>	6.32	5.67	0.65	3.27	3.04	0.23	-3.63	5.36	8.25
	2	0	UGSM1 - Xtxp96	3	305	SB2362 - Dsenhs10	5.51	5.46	0.04	3.04	3.02	0.02	-1.02	-3.11	-7.85
	4	0	<b>Xcup48 - Xcup23</b>	4	90	Xtxp26 - SB2538	5.58	5.45	0.13	3.05	3.03	0.03	-2.64	-2.64	-7.94
	3	250	<b>SB2241 - Xtxp34</b>	4	105	SB2538 - SB2565	12.98	12.40	0.58	6.93	6.67	0.26	2.28	-0.17	-11.63
	2	90	Xtxp3 - Xtxp19	4	215	SbAGG02 - Xtxp212	7.06	6.88	0.18	3.55	3.48	0.07	-4.79	0.13	8.72

1	335	Xcup53 - Xtxp46	4	250	SbAGG02 - Xtxp212	7.60	6.74	0.86	3.94	3.52	0.42	-4.30	4.30	-8.39
3	230	SB2223 - SB2196	5	125	<b>SB3216 - Xtxp23</b>	5.42	5.19	0.22	3.01	2.93	0.07	2.67	-0.69	-7.81
2	85	Xcup74 - Xtxp3	5	130	Xtxp23 - SBKAFGK1	6.44	5.72	0.72	3.09	2.77	0.32	-3.60	-2.83	7.59
1	0	Xtxp78 - SbAGF08	5	170	Kaf2e - Kaf3e	11.09	10.71	0.38	5.68	5.50	0.18	-3.25	8.19	12.25
1	330	Xcup53 - Xtxp46	6	0	SB3503 - Xtxp101	13.22	12.53	0.69	6.46	6.17	0.28	-7.15	1.08	11.18
5	130	Xtxp23 - SBKAFGK1	6	5	SB3503 - Xtxp101	9.56	8.65	0.91	5.06	4.65	0.41	-0.59	1.76	-9.68
3	195	SB2106 - SB2223	6	40	<b>SB3420 - Xtxp127</b>	7.85	7.79	0.06	4.59	4.55	0.04	-3.47	0.28	9.61
2	90	Xtxp3 - Xtxp19	6	175	<b>SB3789 - SB3816</b>	6.49	6.27	0.22	3.40	3.28	0.12	-2.57	0.83	8.22
5	0	Xtxp65 - Xtxp221	7	25	SB3850 - BMRF	6.12	5.54	0.58	3.05	2.84	0.21	-0.74	6.16	-7.55
1	175	<b>Xtxp11 - Xtxp335</b>	7	60	SB4082 - SB4024	9.05	8.49	0.57	5.45	5.20	0.24	1.65	1.57	-10.30
3	290	SB2362 - Dsenhs10	7	90	SB4066 - SB4107	9.37	8.87	0.50	4.56	4.30	0.26	0.19	-3.80	9.78
2	130	Xtxp1 - Sb6_84	7	105	<b>SB4122 - SbAGF06</b>	10.90	10.19	0.72	5.32	5.03	0.29	-0.52	-15.53	10.92
7	90	SB4066 - SB4107	7	110	<b>SB4122 - SbAGF06</b>	6.22	6.08	0.15	5.23	5.14	0.09	-3.70	-11.00	-9.72
6	0	SB3503 - Xtxp101	7	135	SB4117 - SB4143	5.34	5.28	0.07	2.89	2.87	0.03	3.26	-5.60	8.00
4	270	Xtxp212 - SB2769	7	215	Xtxp295 - Xcup57	5.06	4.85	0.22	2.67	2.59	0.08	-5.46	0.32	-7.20
3	275	<b>SB2278 - Xtxp69</b>	8	0	SB4336 - SB4379	10.02	9.55	0.46	5.06	4.76	0.29	0.80	0.19	-9.94
6	145	<b>SB3718 - Xtxp57</b>	8	20	SB4336 - SB4379	11.15	9.59	1.57	5.30	4.55	0.75	-2.98	-1.06	9.70
7	105	<b>SB4122 - SbAGF06</b>	8	20	SB4336 - SB4379	10.82	10.73	0.09	5.14	5.11	0.03	-15.22	2.80	10.96
4	280	Xtxp41 - Xtxp177	8	50	SB4399 - SB4405	7.35	6.92	0.43	3.95	3.80	0.16	-2.23	-0.79	-8.84
2	110	Xtxp19 - Xcup29	8	60	<b>SB4405 - SB4442</b>	11.25	10.61	0.64	6.40	6.10	0.30	-0.90	0.36	-11.53
5	160	SBKAFGK1 - Kaf2e	8	65	SB4470 - SB4450	6.19	6.12	0.06	3.05	3.02	0.03	4.28	-3.33	-7.87

	1	300	Xtxp340 - Xtxp323	8	150	Xtxp250 - SB4602	5.89	5.74	0.16	3.20	3.14	0.07	-3.91	2.63	-7.89
	8	110	Xtxp354 - Xtxp18	8	170	Xtxp250 - SB4602	5.75	5.12	0.63	2.72	2.45	0.27	-3.71	1.82	-7.29
	4	215	SbAGG02 - Xtxp212	9	45	Sb6_42 - Xtxp230	8.88	8.68	0.20	4.37	4.28	0.10	1.53	-1.09	-9.54
	5	160	SBKAFGK1 - Kaf2e	9	60	<b>Xtxp230 - SB4794</b>	7.21	6.95	0.26	3.32	3.19	0.13	3.68	-6.58	8.14
	6	145	<b>SB3718 - Xtxp57</b>	9	75	SB4794 - Xcup02	11.48	11.07	0.42	5.73	5.53	0.20	-2.46	-6.14	-10.61
	1	335	Xcup53 - Xtxp46	9	95	Xcup02 - SB4849	5.94	5.68	0.26	3.36	3.19	0.17	-4.98	-2.45	-8.00
	9	50	Sb6_42 - Xtxp230	9	110	SB4849 - Xtxp10	8.75	8.09	0.65	4.62	4.32	0.30	-5.24	0.52	-9.74
	2	175	<b>Xcup26 - Xtxp8</b>	9	115	SB4849 - Xtxp10	6.18	5.56	0.62	2.78	2.54	0.24	-7.71	-5.56	7.89
	7	195	SB4177 - Xtxp295	9	190	<b>SB5032 - SbAGE03</b>	8.55	7.87	0.68	4.32	4.00	0.32	-3.86	-4.97	9.55
	8	215	SB4660 - SB4654	9	210	<b>SB5058 - SB5069</b>	7.31	6.43	0.88	3.44	3.00	0.44	4.62	-11.55	-8.03
	3	170	SB1983 - SB2106	9	230	<b>SB5069 - SEST87</b>	7.49	6.41	1.08	3.95	3.63	0.31	-1.69	-20.67	9.56
	3	185	SB1983 - SB2106	10	0	SB5304 - SB5324	7.36	6.91	0.45	4.10	3.99	0.11	-1.04	0.91	-8.99
	7	45	BMRf - SB3996	10	0	SB5304 - SB5324	5.23	5.05	0.18	2.93	2.84	0.09	2.82	-0.70	-7.58
	2	90	Xtxp3 - Xtxp19	10	10	SB5324 - SB5329	6.49	6.07	0.42	3.17	3.00	0.16	-2.43	-2.15	-7.86
	6	85	<b>SB3562 - Xtxp274</b>	10	40	Xtxp337 - Xtxp20	7.27	6.88	0.38	3.69	3.57	0.12	0.14	-0.97	8.55
	1	315	Xtxp323 - Xtxp248	10	70	Xcup67 - SB5462	10.45	9.90	0.55	6.15	5.96	0.19	-4.40	-3.28	-10.87
	9	130	<b>Xtxp10 - SB4932</b>	10	150	SB5563 - Xcup07	6.64	5.44	1.21	3.36	2.70	0.66	-4.84	2.31	-7.57
	10	35	Xtxp270 - Xtxp337	10	150	SB5563 - Xcup07	5.88	5.58	0.30	3.02	2.92	0.10	-1.30	0.09	-7.72
	1	200	<b>Xtxp85 - Sb6_57</b>	1	320	Xtxp248 - Xcup53	5.13	4.37	0.75	2.60	2.20	0.40	-0.12	0.04	-0.48
PL	1	95	Xtxp88 - UGSM2	2	15	Xtxp96 - Xtxp197	5.66	4.57	1.09	2.82	2.30	0.53	-0.25	0.34	0.51
	2	165	Sb6_84 - Xtxp7	2	225	Xtxp8 - Xcup20	5.64	5.32	0.32	2.68	2.55	0.13	0.05	0.42	-0.54

1	235	MCSA068 - Xtxp279	3	125	Ungnhs37 - UGSM9	5.69	5.50	0.19	2.79	2.72	0.07	-0.13	0.12	-0.56
2	15	Xtxp96 - Xtxp197	3	165	SB1983 - SB2106	9.22	9.16	0.06	4.79	4.74	0.04	0.10	0.24	0.73
3	5	SB1658 - SB1667	4	160	Xtxp343 - SB2593	7.04	6.68	0.36	3.58	3.37	0.21	-0.02	0.35	0.60
1	195	Xtxp335 - Xtxp85	4	185	Xtxp12 - SB2581	5.91	5.82	0.09	2.89	2.86	0.03	-0.29	0.22	0.58
3	90	SB1811 - SB1854	5	30	Xtxp221 - Xtxp303	6.03	5.22	0.80	2.99	2.64	0.35	0.16	0.00	-0.52
1	80	<b>UGSM199 - Xtxp43</b>	5	65	<b>Xtxp303 - SB3149</b>	5.78	4.98	0.80	2.80	2.48	0.33	-0.22	-0.41	-0.51
4	60	SB2485 - Xtxp26	5	180	Kaf3e - SB3311	6.68	6.29	0.39	3.29	3.14	0.15	-0.02	-0.16	-0.57
2	80	Xtxp304 - Xcup74	5	185	Kaf3e - SB3311	6.50	5.54	0.96	3.12	2.81	0.31	-0.01	0.04	-0.55
5	60	<b>Xtxp303 - SB3149</b>	5	185	Kaf3e - SB3311	8.08	7.74	0.35	3.94	3.82	0.12	-0.39	-0.02	-0.63
5	185	Kaf3e - SB3311	6	75	SB3521 - SB3562	7.36	6.79	0.57	3.90	3.65	0.25	0.02	-0.34	-0.62
4	50	Xcup05 - SB2485	6	105	Xtxp274 - Xcup12	5.92	5.67	0.26	2.96	2.87	0.09	-0.04	-0.14	-0.55
2	195	Xtxp8 - Xcup20	6	115	Xcup12 - SB3664	5.81	5.43	0.38	2.75	2.51	0.25	-0.24	-0.34	0.61
6	0	SB3503 - Xtxp101	6	130	SB3683 - SB3688	5.11	4.52	0.59	2.67	2.38	0.30	-0.19	-0.28	-0.49
3	220	SB2106 - SB2223	7	30	BMRF - SB3996	5.97	5.67	0.31	2.98	2.85	0.13	0.40	0.10	0.55
1	155	<b>Xtxp11 - Xtxp335</b>	7	125	SbAGF06 - SB4117	6.67	6.37	0.30	3.32	3.19	0.14	0.19	0.20	0.62
4	270	Xtxp212 - SB2769	7	125	SbAGF06 - SB4117	6.31	6.24	0.07	3.08	3.07	0.01	0.05	0.12	-0.59
2	95	Xtxp3 - Xtxp19	7	215	Xtxp295 - Xcup57	7.51	7.22	0.28	3.87	3.72	0.15	0.25	-0.38	0.64
5	0	Xtxp65 - Xtxp221	8	55	<b>SB4405 - SB4442</b>	5.58	5.44	0.14	2.81	2.75	0.07	0.01	-0.24	0.54
6	120	SB3664 - SB3670	8	110	Xtxp354 - Xtxp18	5.95	5.58	0.36	2.98	2.83	0.15	0.10	0.06	-0.54
7	5	SB3850 - BMRF	8	150	Xtxp250 - SB4602	5.03	4.95	0.07	2.54	2.52	0.03	0.04	-0.06	-0.51
2	130	Xtxp1 - Sb6_84	8	165	Xtxp250 - SB4602	6.98	6.84	0.14	3.50	3.43	0.07	0.06	-0.22	0.62

	3	265	Xtxp34 - SB2278	8	210	SB4660 - SB4654	5.08	4.24	0.85	2.46	2.12	0.34	0.14	0.18	0.47
	7	90	SB4066 - SB4107	9	0	Ungnhs33 - Xtxp289	5.03	4.47	0.56	2.57	2.32	0.24	0.27	0.18	0.50
	6	85	<b>SB3562 - Xtxp274</b>	9	60	<b>Xtxp230 - SB4794</b>	7.57	7.16	0.41	3.95	3.72	0.23	0.27	0.25	-0.62
	3	120	Ungnhs37 - UGSM9	9	120	<b>Xtxp10 - SB4932</b>	7.12	7.01	0.10	3.66	3.60	0.06	0.00	0.01	-0.61
	1	280	<b>Xtxp61 - Xtxp340</b>	9	145	<b>SB4932 - SB4963</b>	7.06	6.98	0.08	3.52	3.50	0.02	0.17	0.02	-0.60
	4	55	Xcup05 - SB2485	9	170	SB4963 - Sb4_32	7.10	7.00	0.10	3.54	3.51	0.03	-0.18	-0.10	0.61
	9	170	SB4963 - Sb4_32	9	250	<b>SEST87 - SB5094</b>	6.01	5.41	0.59	2.96	2.69	0.27	-0.04	0.12	-0.56
	5	185	Kaf3e - SB3311	10	40	Xtxp337 - Xtxp20	6.45	6.43	0.02	3.23	3.23	0.01	-0.01	0.12	0.58
	7	55	SB4082 - SB4024	10	90	Xcup67 - SB5462	5.35	4.84	0.51	2.84	2.63	0.22	0.44	-0.41	-0.52
	1	95	Xtxp88 - UGSM2	1	230	MCSA068 - Xtxp279	6.01	4.97	1.04	2.41	2.06	0.35	-0.34	-0.01	0.70
	1	220	Sb6_57 - MCSA068	3	15	SB1667 - Xcup11	5.38	4.85	0.53	2.23	2.03	0.20	0.34	0.33	0.68
	3	240	<b>SB2216 - SB2241</b>	3	315	SB2362 - Dsenhs10	5.15	4.54	0.62	2.10	1.93	0.17	0.90	0.33	0.64
	3	60	SB1774 - SB1776	4	30	<b>Xcup48 - Xcup23</b>	5.54	5.21	0.33	2.18	2.06	0.12	-0.01	-0.20	0.69
	1	240	Xtxp279 - Sb6_36	4	150	SB2565 - Xtxp343	8.15	7.89	0.25	3.07	2.95	0.12	-0.65	-0.29	0.86
	3	255	<b>SB2241 - Xtxp34</b>	6	80	<b>SB3562 - Xtxp274</b>	12.63	12.21	0.42	4.43	4.31	0.13	1.23	1.39	0.96
PE	4	30	<b>Xcup48 - Xcup23</b>	6	130	SB3683 - SB3688	5.79	5.06	0.73	2.34	2.08	0.26	-0.13	-0.41	-0.68
	2	10	UGSM1 - Xtxp96	6	145	<b>SB3718 - Xtxp57</b>	5.97	4.75	1.22	2.37	1.96	0.41	-0.29	-0.38	0.65
	1	240	Xtxp279 - Sb6_36	7	175	<b>Xcup19 - SB4177</b>	6.07	5.66	0.41	2.61	2.42	0.19	-0.16	0.18	0.80
	7	105	<b>SB4122 - SbAGF06</b>	8	20	SB4336 - SB4379	6.47	5.01	1.46	2.56	1.97	0.59	0.01	0.12	0.70
	1	245	Xtxp279 - Sb6_36	8	140	Xtxp18 - Xtxp250	5.22	5.20	0.01	2.06	2.05	0.02	-0.42	0.32	-0.67
	2	190	<b>Xcup26 - Xtxp8</b>	8	170	Xtxp250 - SB4602	6.17	5.94	0.24	2.15	2.10	0.06	-0.13	0.24	0.77

8	195	Sb6_34 - SB4660	9	15	Xtxp289 - Sb6_42	6.04	5.82	0.22	2.31	2.24	0.07	0.32	-0.02	0.70
4	210	Sbl_10 - SbAGG02	9	45	Sb6_42 - Xtxp230	10.51	10.18	0.33	4.03	3.93	0.10	0.07	-0.03	-0.93
2	5	UGSM1 - Xtxp96	9	85	SB4794 - Xcup02	5.58	5.05	0.53	2.17	2.00	0.17	-0.51	-0.08	-0.66
3	245	<b>SB2216 - SB2241</b>	9	190	<b>SB5032 - SbAGE03</b>	6.49	6.05	0.44	2.18	2.01	0.17	1.10	-0.84	-0.66
1	320	Xtxp248 - Xcup53	9	220	<b>SB5069 - SEST87</b>	8.68	7.89	0.79	3.64	3.28	0.36	-0.23	-0.30	0.86
1	315	Xtxp323 - Xtxp248	10	60	Xcup67 - SB5462	5.20	4.79	0.40	2.09	1.93	0.16	-0.10	0.05	-0.65
5	90	Xtxp225 - Xtxp91	10	115	<b>SB5462 - Xcup16</b>	7.08	5.85	1.23	2.50	2.09	0.41	-0.28	-0.56	0.67

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