Supplementary Table 1

Accessions

Name	SD 6 h	SD 8 h	SD 10 h	LD 12 h	LD 14 h	LD 16 h	Location	Country	Collection site	Latitude
Aa-0	89.4	70.1	66.1	49.1	23.4	16.7	Aua/Rhon	Germany	field border	N51
Ak-1	49.9	42.7	43.6	28.6	27.5	18.9	Achkarren	Germany	vineyard	N48
An-2	52	50.3	46.6	38.4	24.6	21.2	Antwerpen	Belgium	Botanic Garden	N51
Ang-0	98.7	65.1	64	54.6	32.7	19.4	Angleur	Belgium	-	N50
Ang-1	-	62.8	62.5	58.4	32.1	21.4	Angleur	Belgium	-	N50
Ba-1	103	72.8	63.6	63.8	57.5	40.3	Blackmount	UK	roadside 300m	N52
Bay-0	64.3	51.9	46.9	27.2	16.1	12.9	Bayreuth	Germany	fallow land	N49
Bch-1	48.4	41.3	37.3	23.3	14.6	12.4	Buchen	Germany	deposited sand	N53
Bd-0	55.2	48.2	45.2	25.9	17.7	13.8	Berlin/Dahlem	Germany	Botanic Garden	N52
Be-0	43	43.6	35.7	30.8	28.2	25.2	Bensheim	Germany	-	N49
Be-1	53	49.9	44.7	29.4	16.6	12.9	Bensheim	Germany	-	N49
Bl-1	72.8	70.6	62	55	57.1	46.2	Bologna	Italy	Botanic Garden	N44
Bla-1	84.6	63.5	59.7	66	57.1	43.6	Blanes	Spain	-	N41
Bla-3	74.2	68.4	59.3	49.1	38.9	27.8	Blanes	Spain	-	N41
Br-0	141	99.8	94.8	86.8	81	-	Brunn	Czech Rep.	-	N49
Bs-1	88.7	66.5	62.1	37.5	29.8	15.3	Basel	Switzerland	Botanic Garden	N47
Bs-2	70	63	51	34	29	25	Basel	Switzerland	Botanic Garden	N47
Bs-5	54	48	41	28	22	17	Basel	Switzerland	Botanic Garden	N47
Bsch-0	56	43	-	29	24	16	Buchschlag	Germany	horticultural nursery	N50
Bsch-2	57.9	43.5	43.1	26.7	19.1	14	Buchschlag	Germany	near a rail line	N50
Bu-0	86.3	66.2	55.2	34.5	20.9	12.8	Burghaun	Germany	-	N50
Bu-2	66	58.5	53.4	40.8	28.2	21.3	Burghaun	Germany	-	N50
Bur-0	81	64		53	45	31	Burren	Ireland	wall by roadside	N52
Cen-0	92	76.4	79.1	60.5	39.2	18.2	Caen	France	Botanic Gardens	N49
Chi-0	91.2	79.7	66.4	54	56.5	-	Chisdra	Russia	river slope	N54
Cl-0	46.3	48.4	46.9	22.7	17.5	14.6	Cl	-	-	-
Co	54.4	51.8	47.1	41.9	35.4	32.4	Coimbra	Portugal	Botanical Garden	N40
Co-2	88.1	77.8	75.6	63.6	54.9	40.4	Coimbra	Portugal	Botanic Garden	N40
Col-0	71.2	63.1	61.2	33.7	18.7	15.4	Columbia	USA	-	N38
Col-2	-	67	68.5	36.2	22.2	15.1	Columbia	USA	-	-
Col-3	84	64.4	62.4	32.1	17	15.3	Columbia	USA	-	-
Ct-1	44.2	48.6	43.2	21.8	18.1	14.3	Catania	Italy	-	N37
Cvi	31.2	24.7	22.9	24.1	20.8	17.7	Cape Verdi	Cape Verdi	rocky wall with moss	N15
Da-0	61.4	44.9	42.3	24.4	15.9	14.7	Darmstadt	Germany	-	N50
Db-0	61	49	45.4	26.8	16.2	15.5	Dombachtal	Germany	stony, sunny road	N50
Dijon-G	-	48.1	39.3	24.7	14.1	13.3	Dijon	France	-	-
Dijon-M	49.6	43.4	35.1	19.1	16.2	14.1	Dijon	Russia	-	-
Dr-0	57	46.4	45.4	25.1	15.4	12.6	Dresden	Germany	Botanic Garden	N51
Dra-0	43.9	38.8	34.3	17.1	14.2	10.3	Drahonin	Czech Rep.	-	-
Edi-0	83.7	75.2	57.6	46.4	29.7	18.9	Edinburgh	UK	Botanic Garden	N56
Edi1-1	-	9.4	-	18.2	10.9	9.7	Edinburgh	UK	Botanic Garden	N56
Ei	86.2	78.9	64.9	-	58.9	48	Eifel	Germany	-	N50
Eil-0	55.4	39.2	37.4	20.3	18.7	14.7	Eilenburg	Germany	-	N51
El-0	71.8	66.6	47.5	23.7	15.3	13.4	Ellershausen	Germany	limestone, south side	N51
En-2	66.6	55.3	58.9	32.3	20.9	15.8	Enkheim	Germany	field border	N50

Enkheim-D	53	50	44	20	19	15	Enkheim	Ukraine	-	-
Enkheim-T	83.9	57.6	60	30.9	23.8	16.4	Enkheim	Tadjikistan	-	-
Ep-0	71.4	66.2	52.2	23	17.9	13.3	Eppenheim	Germany	-	N50
Er-0	135.7	94.5	86.6	73.6	58.1	28.5	Erlangen	Germany	dry, sandy way	N49
Est	58	45	-	21	16	13	Estland	Germany	-	-
Et-0	135.9	92	86	63.4	45.3	34.2	-	-	-	-
Fi-0	80.2	78.6	75.3	60.9	48.4	33.8	Frickhofen	Germany	-	N50
Fr-4	106.6	72	71	37.4	20.4	19.8	Frankfurt	Germany	Botanic Garden	N50
Gr	50.7	41.6	45.1	33.9	32.3	23.2	Graz	Austria	-	N47
Hi	64.7	64	48.9	25.1	15.4	12	Hilversum	Netherlands	-	N52
H-O-G	73.2	64.3	58.4	41.9	35.4	20.1	Hodja-Obi-Garm	Tadjikistan	-	-
Je54	101	86.7	75.7	56.8	37.8	21.5	-	Czech Rep.	-	-
Ler	44.3	34.9	35.3	17.8	10.7	10.5	Landsberg erecta	Germany	-	-
Ler-1	49.9	45.4	44.2	19.3	13.4	11	Landsberg erecta	Germany	-	-
Lip-0	64.4	49.5	52.2	32.7	29.3	19.2	Lipowiec	Poland	loamy soil/limestone	N50
Lm	60.2	54.6	46.8	21.3	14.9	13.8	Le Mans	France	wheat field	N48
Nd	45.6	42.9	39.9	23.4	15.2	13.6	Niederzenz	Germany	-	-
RLD1	47.1	33.1	29.6	11.7	10.4	9.1	-	-	-	-
Rsch	68	64.9	60.3	36.9	23.7	18.5	Rschew	Russia	-	N56
Rubenz	-	63.4	58.1	52.3	52.9	47	Rubezhnoe	Ukraine	near lake	-
Sha	34.1	31.9	33	21.7	17.7	12.4	Shakdara	Tadjikistan	mountains	-
Sn(5)-1	50.1	44	41.7	27	21.3	16.5	-	Czech Rep.	-	-
Ta	47.8	43.4	45.5	36.9	30.8	25.1	Tabor	Czech Rep.	-	N49
Wil	63.6	53.6	50.2	30.1	21.4	18.1	-	-	-	-
Ws	43.1	38.9	34.7	16.1	13.3	10.3	Wassilewskija	Russia	-	N52
Yo	69.6	58.4	61.1	47	37.8	30	Yosemite Nat.Park	USA	granite sand valley	-
Ze-0	51.8	45.3	45.3	36.2	33.5	25.8	-	-	-	-

Supplementary Table 2

Mutants and trangenic lines

Genotype	SD 6 h	SD 8 h	SD 10 h	LD 12 h	LD 14 h	LD 16 h	Background	Reference
35S:CO cry1cry2	-	7.9	7.2	6.8	10	8.9	Ler	(Valverde et al., 2004)
35S:GI	-	20.3	14	11.9	10.1	-	Col-0	(Mizoguchi et al., 2005)
35S:GI	-	14.7	11.9	10.2	-	-	Ler	(Mizoguchi et al., 2005)
ado1-1	-	53.6	31.1	16.5	15.6	14.2	Col-0	(Jarillo et al., 2001)
ado3-1	88	66.9	63.6	61.1	44.1	26.9	Col-0	(Jarillo et al., 2001)
CCA1-ox (*35S:CO*)	72.4	67.3	66.9	42.4	12.1	13.4	Col-0	(Wang and Tobin, 1998)
cca1-1	-	57.8	59.7	39.8	48.1	46.2	Ler	(Green and Tobin, 1999; Mizoguchi et al., 2002)
co-2	-	37.7	35.4	33.1	32.7	33.1	Ler	(Robson et al., 2001)
co-3	-	41.4	38.7	35.2	33.6	22.8	Ler	(Robson et al., 2001)
co-7	-	34.3	36.2	30.8	30.8	31	Ler	(Robson et al., 2001)
cop1-4	10.2	10.3	-	9.8	9.6	7.9	Col-0	(Mcnellis et al., 1994)
cry1-1	56	44.6	40.7	22.1	13.6	10.7	Ler	(Ahmad and Cashmore, 1993)
cry2-1	-	44.6	37.7	23.2	16.4	11.4	Ler	(Koornneef et al., 1998; Lin et al., 1998)
edi1-1	10	9.3	9.8	9.2	9.4	8.5	Ler	(El-Assal et al., 2001)
elf3-1	-	9.9	8.2	8.2	8.6	10.1	Ler	(Hicks et al., 1996)
fca-1	79.3	59.6		48.9	32.3	29.7	Ler	(Koornneef et al., 1998)
fca-1 co-2	62.7	48.9	48.5	44.8	39.9	35.8	Ler	(Koornneef et al., 1998)
fca-1 co-3	66.6	58.8	52.9	49.1	43.2	37.5	Ler	(Koornneef et al., 1998)
fca-1 lhy-1	72.8	62.9	56.3	56.9	52	48.9	Ler	This study
ft-7	-	43.3	42.9	40.1	32.6	27.6	Ler	(Onouchi et al., 2000)
lhy-11	51.2	50.8	33.1	18.1	11.1	9.8	Ler	(Mizoguchi et al., 2002)
lhy-1	-	79.9	75.3	47.9	48.2	44.9	Ler	(Schaffer et al., 1998)
lhy-1CCA1-ox	-	59.7	58.3	54.7	50.6	50.8	Ler	This study
phyA -201	42.9	43	34.4	24.2	12.3	10.8	Ler	(Quail et al., 1994)
phyB-1 (hy3-B064)	33.2	28.1	28.8	18.2	10.3	7.8	Ler	(Quail et al., 1994)
soc1-1	-	65.5	64.3	37	22.5	20.4	Ler	(Onouchi et al., 2000)
suc2:CO co-2	-	14.2	14.1	13.3	11.6	15.2	Ler	(An et al., 2004)
suc2:SOC1 soc1-1	-	53.2	48.2	27.2	22.3	16.6	Ler	(Searle et al., 2006)
gi-3	46	43	42	42	34	27	Ler	(Koornneef et al., 1998)
lhy-11 cca1-1	42	15	10	9	8	7	Ler	(Mizoguchi et al., 2002)
lhy-11 cca1-1 gi-3	44	34	24	25	17	14	Ler	(Mizoguchi et al., 2005)

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Supplementary table 3 : Markers used for genotyping of the three mapping populations								
Bs-1 x Ler			Cen-0 x Ler			Dijon-G x Ler		
SNP_ID	Chromosome number	Chromosomal position	SNP_ID	Chromosome number	Chromosomal position	SNP_ID	Chromosome number	Chromosomal position
AtMSQT_NW_5_R	1	1149280	AtMSQT_NW_3	1	642815	21606928	1	21080340
AtMSQT_NW_7	1	2211034	AtMSQT_NW_6	1	1602136	21607148	5	9448354
AtMSQT_NW_9_R	1	3229814	AtMSQT_NW_10	1	3607807	21607157	2	14697188
AtMSQT_NW_12	1	4142539	AtMSQT_NW_13	1	4396087	21607175	3	5140894
AtMSQT_NW_13	1	4396087	AtMSQT_NW_14	1	4569730	21607242	1	9059270
AtMSQT_NW_15_R	1	5206767	AtMSQT_NW_15	1	5206767	AtClark20_NW_10	1	21081021
AtMSQT_NW_16	1	5482011	AtMSQT_NW_17	1	5923042	AtClark20_NW_15	2	4628353
AtMSQT_NW_17	1	5923042	AtMSQT_NW_19	1	6941169	AtClark20_NW_17	2	18998581
AtMSQT_NW_20	1	7198043	AtMSQT_NW_20	1	7198043	AtClark20_NW_21	3	647798
AtMSQT_NW_21	1	7449602	AtMSQT_NW_23	1	8015097	AtClark20_NW_22	3	937647
21607242	1	9059270	AtMSQT_NW_25	1	9343320	AtClark20_NW_23	3	1346929
AtMSQT_NW_25	1	9343320	AtMSQT_NW_28	1	10720273	AtClark20_NW_24_R	3	1633882
AtMSQT_NW_26	1	9973609	AtMSQT_NW_29	1	11466166	AtClark20_NW_25	3	1824539
AtMSQT_NW_27	1	10290940	AtMSQT_NW_30	1	11655519	AtClark20_NW_26_R	3	2051855
AtMSQT_NW_28	1	10720273	AtMSQT_NW_33	1	13712241	AtClark20_NW_27	3	5300020
AtMSQT_NW_30	1	11655519	AtClark20_NW_4	1	16158741	AtClark20_NW_29	3	5917328
AtClark20_NW_3_R	1	15626001	AtMSQT_NW_36	1	17355740	AtClark20_NW_30	3	6144175
AtClark20_NW_4	1	16158741	AtMSQT_NW_39	1	18340160	AtClark20_NW_31_R	3	6337903
AtMSQT_NW_39_R	1	18340160	AtMSQT_NW_41	1	19864724	AtClark20_NW_32	3	11673340
AtMSQT_NW_41_R	1	19864724	AtMSQT_NW_42	1	20175347	AtClark20_NW_33	3	12098257
21606928	1	21080340	AtClark20_NW_8	1	20338753	AtClark20_NW_35	3	12598501
AtClark20_NW_10	1	21081021	AtClark20_NW_10	1	21081021	AtClark20_NW_39	3	15219901
AtClark20_NW_11	1	21521616	AtClark20_NW_11	1	21521616	AtClark20_NW_4	1	16158741
AtMSQT_NW_45	1	22388154	AtMSQT_NW_43	1	21669254	AtClark20_NW_41	4	351884
AtMSQT_NW_47_R	1	23155781	AtMSQT_NW_46	1	22695276	AtClark20_NW_42	4	750390
AtMSQT_NW_52	1	24292774	AtMSQT_NW_61	1	28190334	AtClark20_NW_43_R	4	814588
AtMSQT_NW_53_R	1	24598466	AtMSQT_NW_63	1	28981116	AtClark20_NW_44	4	2662322
AtMSQT_NW_54	1	24893649	AtMSQT_NW_67	1	30214313	AtClark20_NW_45_R	4	2818035
AtMSQT_NW_57_R	1	26278413	AtMSQT_NW_68	2	285851	AtClark20_NW_47	4	3664481
AtMSQT_NW_58	1	26794838	AtMSQT_NW_69	2	347703	AtClark20_NW_48	4	3882432
AtMSQT_NW_61	1	28190334	AtMSQT_NW_70	2	764549	AtClark20_NW_51	4	12794669
AtMSQT_NW_69_R	2	347703	AtMSQT_NW_71	2	1283334	AtClark20_NW_53	4	13487895
AtMSQT_NW_70	2	764549	AtMSQT_NW_73	2	2270819	AtClark20_NW_54	5	10452144
AtMSQT_NW_71_R	2	1283334	AtClark20_NW_12	2	3053456	AtClark20_NW_55	5	10552533
AtMSQT_NW_72_R	2	1798445	AtClark20_NW_15	2	4628353	AtClark20_NW_56_R	5	10942291
AtMSQT_NW_74_R	2	2477756	AtMSQT_NW_78	2	5804076	AtClark20_NW_58	5	12566845
AtClark20_NW_12	2	3053456	AtMSQT_NW_79	2	6499679	AtClark20_NW_6	1	16785975

AtClark20_NW_14	2	4324304	AtMSQT_NW_81	2	7551659	AtClark20_NW_60	5	20967895
AtMSQT_NW_80	2	7072958	AtMSQT_NW_93	2	12657150	AtClark20_NW_61	5	21168091
AtMSQT_NW_81	2	7551659	AtMSQT_NW_95	2	13265124	AtClark20_NW_64_R	5	21903379
AtMSQT_NW_82_R	2	7650228	AtMSQT_NW_98	2	14003409	AtClark20_NW_67	5	25759662
AtMSQT_NW_85_R	2	9256095	AtMSQT_NW_104	2	16908190	AtClark20_NW_69	5	23995556
AtMSQT_NW_86	2	9428987	AtMSQT_NW_107	2	17899534	AtClark20_NW_7	1	20228532
AtMSQT_NW_90_R	2	11389427	AtClark20_NW_17	2	18998581	AtClark20_NW_70	5	24197344
AtMSQT_NW_92_R	2	12296907	AtClark20_NW_20	2	19573918	AtClark20_NW_71	5	24292468
AtMSQT_NW_97	2	13756416	AtClark20_NW_21	3	647798	AtClark20_NW_8_R	1	20338753
AtMSQT_NW_98	2	14003409	AtClark20_NW_23	3	1346929	AtMSQT_NW_104_R	2	16908190
21607157	2	14697188	AtClark20_NW_25	3	1824539	AtMSQT_NW_107	2	17899534
AtMSQT_NW_99	2	14801460	AtClark20_NW_26	3	2051855	AtMSQT_NW_108_R	2	18143139
AtMSQT_NW_102_R	2	15986355	AtMSQT_NW_115	3	2236458	AtMSQT_NW_109	2	18701292
AtMSQT_NW_103	2	16683968	AtMSQT_NW_116	3	2236798	AtMSQT_NW_110	2	18752840
AtMSQT_NW_109	2	18701292	AtMSQT_NW_118	3	3679541	AtMSQT_NW_111	2	18986103
AtMSQT_NW_111	2	18986103	AtMSQT_NW_121	3	5235571	AtMSQT_NW_113	3	580470
AtClark20_NW_25	3	1824539	AtClark20_NW_27	3	5300020	AtMSQT_NW_114	3	2072780
AtClark20_NW_26_R	3	2051855	AtClark20_NW_29	3	5917328	AtMSQT_NW_115	3	2236458
AtMSQT_NW_115	3	2236458	AtClark20_NW_30	3	6144175	AtMSQT_NW_116	3	2236798
AtMSQT_NW_116	3	2236798	AtClark20_NW_31	3	6337903	AtMSQT_NW_118_R	3	3679541
AtMSQT_NW_119	3	4141103	AtMSQT_NW_122	3	6501848	AtMSQT_NW_12	1	4142539
21607175	3	5140894	AtMSQT_NW_125	3	7842636	AtMSQT_NW_121	3	5235571
AtMSQT_NW_121	3	5235571	AtMSQT_NW_126	3	8118136	AtMSQT_NW_122	3	6501848
AtClark20_NW_27	3	5300020	AtMSQT_NW_128	3	9342357	AtMSQT_NW_123	3	6631361
AtClark20_NW_30	3	6144175	AtMSQT_NW_130	3	10142640	AtMSQT_NW_126	3	8118136
AtMSQT_NW_122	3	6501848	AtMSQT_NW_131	3	10382414	AtMSQT_NW_128	3	9342357
AtMSQT_NW_123	3	6631361	AtMSQT_NW_132	3	10790489	AtMSQT_NW_13	1	4396087
AtMSQT_NW_126	3	8118136	AtClark20_NW_32	3	11673340	AtMSQT_NW_130	3	10142640
AtMSQT_NW_129	3	9747261	AtClark20_NW_38	3	14952576	AtMSQT_NW_135	3	15880430
AtMSQT_NW_130	3	10142640	AtMSQT_NW_134	3	15233489	AtMSQT_NW_139	3	17166542
AtMSQT_NW_131	3	10382414	AtMSQT_NW_135	3	15880430	AtMSQT_NW_144_R	3	19930624
AtClark20_NW_38	3	14952576	AtMSQT_NW_139	3	17166542	AtMSQT_NW_145_R	3	20028381
AtClark20_NW_39	3	15219901	AtMSQT_NW_140	3	17766901	AtMSQT_NW_149	3	21632608
AtMSQT_NW_134_R	3	15233489	AtMSQT_NW_143	3	19077245	AtMSQT_NW_152_R	3	23411981
AtMSQT_NW_135	3	15880430	AtMSQT_NW_144	3	19930624	AtMSQT_NW_153	4	1055234
AtMSQT_NW_136	3	16489590	AtMSQT_NW_146	3	20483289	AtMSQT_NW_154	4	1442579
AtMSQT_NW_137_R	3	16677052	AtMSQT_NW_149	3	21632608	AtMSQT_NW_162_R	4	5775707
AtMSQT_NW_138	3	16883460	AtMSQT_NW_150	3	22146494	AtMSQT_NW_163_R	4	6272810
AtMSQT_NW_142	3	18980664	AtMSQT_NW_151	3	23053878	AtMSQT_NW_165	4	7077926
AtMSQT_NW_143	3	19077245	AtMSQT_NW_154	4	1442579	AtMSQT_NW_166_R	4	7177337
21607369	3	19628061	AtClark20_NW_45	4	2818035	AtMSQT_NW_167	4	7858288

AtMSQT_NW_144_R	3	19930624	AtMSQT_NW_158	4	3006915	AtMSQT_NW_169_R	4	8297963
AtMSQT_NW_146	3	20483289	AtClark20_NW_46	4	3317152	AtMSQT_NW_17	1	5923042
AtMSQT_NW_148	3	21230242	AtClark20_NW_49	4	4197278	AtMSQT_NW_172	4	9213312
AtMSQT_NW_150	3	22146494	AtMSQT_NW_160	4	4197278	AtMSQT_NW_173	4	9580050
AtMSQT_NW_151	3	23053878	AtMSQT_NW_161	4	4933870	AtMSQT_NW_174	4	9676920
AtClark20_NW_40	4	195281	AtMSQT_NW_162	4	5775707	AtMSQT_NW_175	4	10482199
AtMSQT_NW_153	4	1055234	AtMSQT_NW_169	4	8297963	AtMSQT_NW_176	4	10659464
AtMSQT_NW_154	4	1442579	AtMSQT_NW_171	4	9058157	AtMSQT_NW_179	4	11984772
AtClark20_NW_44	4	2662322	AtMSQT_NW_173	4	9580050	AtMSQT_NW_181_R	4	12404112
AtClark20_NW_46	4	3317152	AtMSQT_NW_174	4	9676920	AtMSQT_NW_182	4	13576590
AtMSQT_NW_163_R	4	6272810	AtMSQT_NW_175	4	10482199	AtMSQT_NW_183	4	14379747
AtMSQT_NW_164	4	6924081	AtMSQT_NW_179	4	11984772	AtMSQT_NW_187_R	4	16272521
AtMSQT_NW_168	4	8078504	AtMSQT_NW_180	4	12195813	AtMSQT_NW_188	4	16383147
AtMSQT_NW_169_R	4	8297963	AtMSQT_NW_181	4	12404112	AtMSQT_NW_190	4	17258247
AtMSQT_NW_171	4	9058157	AtClark20_NW_50	4	12422864	AtMSQT_NW_193	4	18187887
AtMSQT_NW_172	4	9213312	AtMSQT_NW_185	4	15329511	AtMSQT_NW_196_R	5	428961
AtMSQT_NW_174	4	9676920	AtMSQT_NW_186	4	15765120	AtMSQT_NW_20	1	7198043
AtMSQT_NW_175	4	10482199	AtMSQT_NW_188	4	16383147	AtMSQT_NW_200	5	1214057
AtMSQT_NW_176	4	10659464	AtMSQT_NW_189	4	16742072	AtMSQT_NW_203	5	1931167
AtMSQT_NW_178	4	11580143	AtMSQT_NW_197	5	625679	AtMSQT_NW_204	5	2192805
AtMSQT_NW_179	4	11984772	AtMSQT_NW_198	5	658085	AtMSQT_NW_207	5	3227635
AtMSQT_NW_180	4	12195813	AtMSQT_NW_199	5	872350	AtMSQT_NW_212	5	5726339
21607140	4	12326091	AtMSQT_NW_202	5	1792936	AtMSQT_NW_216	5	7279057
AtMSQT_NW_181_R	4	12404112	AtMSQT_NW_203	5	1931167	AtMSQT_NW_217	5	7881430
AtClark20_NW_53	4	13487895	AtMSQT_NW_205	5	2244739	AtMSQT_NW_218	5	8821968
AtMSQT_NW_184_R	4	14732262	AtMSQT_NW_208	5	3606967	AtMSQT_NW_219	5	9448109
AtMSQT_NW_186_R	4	15765120	AtMSQT_NW_209	5	4428863	AtMSQT_NW_22_R	1	7842523
AtMSQT_NW_189	4	16742072	AtMSQT_NW_210	5	4721335	AtMSQT_NW_220	5	9723221
AtMSQT_NW_191_R	4	17608924	AtMSQT_NW_212	5	5726339	AtMSQT_NW_222	5	13272366
AtMSQT_NW_193	4	18187887	AtMSQT_NW_213	5	6022607	AtMSQT_NW_223	5	13614363
AtMSQT_NW_194	4	18560346	AtMSQT_NW_214	5	6620982	AtMSQT_NW_226	5	14952567
AtMSQT_NW_197	5	625679	AtMSQT_NW_215	5	6621045	AtMSQT_NW_229_R	5	15767945
AtMSQT_NW_199_R	5	872350	AtMSQT_NW_216	5	7279057	AtMSQT_NW_230	5	16368333
AtMSQT_NW_201	5	1446247	AtClark20_NW_54	5	10452144	AtMSQT_NW_231	5	16964744
AtMSQT_NW_202	5	1792936	AtClark20_NW_58	5	12566845	AtMSQT_NW_232_R	5	17171679
AtMSQT_NW_203	5	1931167	AtMSQT_NW_223	5	13614363	AtMSQT_NW_233	5	17569667
AtMSQT_NW_208_R	5	3606967	AtMSQT_NW_225	5	14216131	AtMSQT_NW_234	5	17692746
AtMSQT_NW_212	5	5726339	AtMSQT_NW_226	5	14952567	AtMSQT_NW_239_R	5	19503408
AtMSQT_NW_214	5	6620982	AtMSQT_NW_230	5	16368333	AtMSQT_NW_24	1	8535432
AtMSQT_NW_215	5	6621045	AtMSQT_NW_232	5	17171679	AtMSQT_NW_240_R	5	20215473
AtMSQT_NW_216	5	7279057	AtMSQT_NW_235	5	18258766	AtMSQT_NW_243	5	20915321

AtMSQT_NW_219	5	9448109	AtMSQT_NW_238	5	19124207	AtMSQT_NW_245	5	22040877
21607148	5	9448354	AtMSQT_NW_239	5	19503408	AtMSQT_NW_246	5	22116737
AtMSQT_NW_221	5	10427855	AtMSQT_NW_240	5	20215473	AtMSQT_NW_25	1	9343320
AtClark20_NW_55	5	10552533	AtMSQT_NW_241	5	20408817	AtMSQT_NW_250_R	5	23815848
AtClark20_NW_57	5	12094924	AtMSQT_NW_242	5	20518330	AtMSQT_NW_251_R	5	23920892
AtClark20_NW_58	5	12566845	AtMSQT_NW_243	5	20915321	AtMSQT_NW_255	5	26029439
AtClark20_NW_59	5	13124715	AtClark20_NW_60	5	20967895	AtMSQT_NW_257	5	26437896
AtMSQT_NW_225_R	5	14216131	AtMSQT_NW_244	5	21415762	AtMSQT_NW_258	5	26708459
AtMSQT_NW_226	5	14952567	AtClark20_NW_64	5	21903379	AtMSQT_NW_27	1	10290940
AtMSQT_NW_230	5	16368333	AtMSQT_NW_245	5	22040877	AtMSQT_NW_29	1	11466166
AtMSQT_NW_234	5	17692746	AtMSQT_NW_248	5	22714753	AtMSQT_NW_3	1	642815
AtMSQT_NW_235	5	18258766	AtMSQT_NW_249	5	23270994	AtMSQT_NW_30	1	11655519
AtMSQT_NW_239_R	5	19503408	AtMSQT_NW_250	5	23815848	AtMSQT_NW_33	1	13712241
AtMSQT_NW_242	5	20518330	AtClark20_NW_69	5	23995556	AtMSQT_NW_36	1	17355740
AtClark20_NW_60	5	20967895	AtClark20_NW_71	5	24292468	AtMSQT_NW_37	1	17572149
AtMSQT_NW_244	5	21415762	AtMSQT_NW_253	5	25301234	AtMSQT_NW_38_R	1	17682693
AtClark20_NW_64_R	5	21903379	AtMSQT_NW_254	5	25301371	AtMSQT_NW_42_R	1	20175347
AtMSQT_NW_245	5	22040877	AtClark20_NW_65	5	25332478	AtMSQT_NW_43	1	21669254
AtMSQT_NW_246	5	22116737	AtClark20_NW_66	5	25610434	AtMSQT_NW_45	1	22388154
AtMSQT_NW_248	5	22714753	AtMSQT_NW_257	5	26437896	AtMSQT_NW_46_R	1	22695276
AtMSQT_NW_249	5	23270994	AtClark20_NW_68	5	26591867	AtMSQT_NW_48	1	23381850
AtMSQT_NW_250_R	5	23815848	AtMSQT_NW_258	5	26708459	AtMSQT_NW_49_R	1	23395015
AtMSQT_NW_251_R	5	23920892				AtMSQT_NW_5_R	1	1149280
AtClark20_NW_69	5	23995556				AtMSQT_NW_50	1	23774007
AtMSQT_NW_253	5	25301234				AtMSQT_NW_51_R	1	24071690
AtMSQT_NW_254	5	25301371				AtMSQT_NW_56	1	25717894
AtClark20_NW_66	5	25610434				AtMSQT_NW_63_R	1	28981116
AtClark20_NW_67	5	25759662				AtMSQT_NW_64	1	29200001
AtMSQT_NW_257	5	26437896				AtMSQT_NW_69_R	2	347703
						AtMSQT_NW_73	2	2270819
						AtMSQT_NW_78	2	5804076
						AtMSQT_NW_82_R	2	7650228
						AtMSQT_NW_87	2	9819476
						AtMSQT_NW_9_R	1	3229814
						AtMSQT_NW_91	2	11564803
						AtMSQT_NW_94	2	12821777
						AtMSQT_NW_95	2	13265124
						AtMSQT_NW_98	2	14003409

Supplementary table 4 : QTL summary table						
Name	***Population***	***Chrom***	***Position (bp)***	***Condition***	***% explained variability***	***LOD score***
**** AFT1**	Bs-1 x Ler	I	23155781-26278413	LD 14 h	5	5
AFT2	Bs-1 x Ler	V	6621045-7485588	LD 14 h	35	18
AFT3	Cen-0 x Ler	IV	1442579-3006915	LD 14 h	6	8
AFT4	Cen-0 x Ler	IV	9058157-11984772	LD 14 h	3	4
AFT5	Cen-0 x Ler	IV	1242864-15765120	LD 14 h	2	2
AFT6	Cen-0 x Ler	V	3606967-5726339	LD 14 h	20	11
AFT7	Cen-0 x Ler	V	13614363-16368333	LD 14 h	7	4
AFT8	Dijon-G x Sha	I	11655519-13712241	SD 8 and 10 h	4	4
AFT9	Dijon-G x Sha	III	5917328-8118136	SD 10 h	5	5
AFT10	Dijon-G x Sha	III	17166542-23411981	SD 10 h	9	5
AFT11	Dijon-G x Sha	IV	351884-814588	SD 8 and 10 h	45	26
AFT12	Dijon-G x Sha	IV	8297963-9580050	SD 8 and 10 h	4	4
AFT13	Dijon-G x Sha	V	7279057-7881430	SD 8 and 10 h	6	7
AFT14	Dijon-G x Sha	V	24292468-26029439	SD 8 and 10 h	9	7

*** AFT : A**LTERED **F**LOWERING **T**IME

****** Putative QTL

Supplementary Table 5

Statistical data for QTL validation shown in Figures 5 and 6

Supplementary table 5a : Tests of Between-Subjects Effects-(Figure 5B left panel)					
Source	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Corrected Model	6628.729(a)	17.00	389.93	52.37	0.000
Intercept	160016.28	1.00	160016.28	21492.79	0.000
V_77.9	1257.25	2.00	628.63	84.44	0.000
F3	2324.27	15.00	154.95	20.81	0.000
Error	4169.26	560.00	7.45		
Total	241918.00	578.00			
Corrected Total	10797.99	577.00			
a R Squared = .614 (Adjusted R Squared = .602)					

Supplementary table 5b : Tests of Between-Subjects Effects-(Figure 5B right panel)					
Source	**Type III Sum of Squares**	**df**	**Mean square**	**F**	**Sig**
I_24	6	1	5.527	1.891	0.173
V_77.9	15.321	2	7.661	2.621	0.079
I_24 * V_77.9	2.448	2	1.224	0.419	0.659
Error	216.254	74	2.922		
Total	241.388	79	3		

Supplementary table 5c : Tests of Between-Subjects Effects (Figure 6A)						
Source	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**	**Partial Eta Squared**
Corrected Model	12489.795(a)	3	4163.265069	49.1409988	0.0000	0.290532746
Intercept	268812.2321	1	268812.2321	3172.91869	0.0000	0.89810125
F2 * DL	12489.79521	3	4163.265069	49.1409988	0.0000	0.290532746
Error	30499.49051	360	84.72080696			
Total	312574	364				
Corrected Total	42989.28571	363				
a. R Squared = .291 (Adjusted R Squared = .285)						

Supplementary table 5d : Tests of Between-Subjects Effects (Figure 6A))						
Source	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**	**Partial Eta Squared**
Corrected Model	11541.514(a)	2	5770.756788	66.24454	0.0000	0.268474188
Intercept	267925.9689	1	267925.9689	3075.61612	0.0000	0.894954808
DL	10474.60721	1	10474.60721	120.241688	0.0000	0.249857173
F2	1379.631364	1	1379.631364	15.837272	0.0001	0.04202682
Error	31447.77214	361	87.11294221			
Total	312574	364				
Corrected Total	42989.28571	363				
a. R Squared = .268 (Adjusted R Squared = .264)						

Supplementary table 5e : Tests of Between-Subjects Effects (Figure 6C)						
CL 20						
Source	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**	**Partial Eta Squared**
Corrected Model	8126.365(a)	12	677.1971034	7.16107705	0.0000	0.339745902
Intercept	6855.55169	1	6855.55169	72.4946011	0.0000	0.302698269
@4_2.885679	1622.16782	3	540.7226066	5.71791614	0.0009	0.093149059
@5_3.606967	2229.509333	3	743.1697776	7.85871057	0.0001	0.123709782
@5_7.279057	1363.491918	3	454.4973061	4.80611953	0.0031	0.079475742
Error	15792.58476	167	94.56637581			
Total	140811	180				
Corrected Total	23918.95	179				
CL 97						
Source	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**	**Partial Eta Squared**
Corrected Model	943.628(b)	3	314.5425958	3.31877643	0.0211	0.05241378
Intercept	52265.44621	1	52265.44621	551.458954	0.0000	0.753916472
@4_9.580049	943.6277875	3	314.5425958	3.31877643	0.0211	0.05241378
Error	17059.80156	180	94.77667533			
Total	171763	184				
Corrected Total	18003.42935	183				
a. R Squared = .340 (Adjusted R Squared = .292)						
b. R Squared = .052 (Adjusted R Squared = .037)						

Supplementary table 5f : Tests of Between-Subjects Effects (Figure 6D)						
Source	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**	**Partial Eta Squared**
Corrected Model	8902.965(a)	19	468.5771292	4.9928355	0.0000	0.372213891
Intercept	33456.71026	1	33456.71026	356.491686	0.0000	0.690217666
@4_0.288567 * @5_7.279057	2898.473655	9	322.0526284	3.43157123	0.0007	0.161795217
@4_2.885679 * @5_3.606967	1909.584656	7	272.797808	2.90674575	0.0069	0.112822478
Error	15015.98454	160	93.8499034			
Total	140811	180				
Corrected Total	23918.95	179				
a. R Squared = .372 (Adjusted R Squared = .298)						

Supplementary table 5g : Tests of Between-Subjects Effects CL 20 (Figure 6B)						
CL 20						
Source	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**	**Partial Eta Squared**
Corrected Model	13432.063(a)	23	584.0027374	8.68746147	0.0000	0.561565744
Intercept	9710.367943	1	9710.367943	144.448719	0.0000	0.480776618
@4_2.885679 * DL	1244.583327	5	248.9166654	3.70281473	0.0034	0.106089287
@5_3.606967 * DL	1680.245235	5	336.049047	4.99897168	0.0003	0.138097063
@5_7.279057 * DL	1233.032592	5	246.6065183	3.66844963	0.0036	0.10520828
@5_7.842993 * DL	1322.560003	6	220.4266672	3.27900548	0.0046	0.111991696
Error	10486.88704	156	67.22363486			
Total	140811	180				
Corrected Total	23918.95	179				

CL 97						
Source	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**	**Partial Eta Squared**
Corrected Model	10747.037(b)	12	895.5863816	21.1048762	0.0000	0.596943858
Intercept	40622.74616	1	40622.74616	957.292392	0.0000	0.848443541
@4_2.885679 * DL	832.8005086	6	138.8000848	3.27088338	0.0045	0.102952233
@4_9.580049 * DL	860.3014657	5	172.0602931	4.05467442	0.0017	0.105991607
Error	7256.392769	171	42.43504543			
Total	171763	184				
Corrected Total	18003.42935	183				
a. R Squared = .562 (Adjusted R Squared = .497)						
b. R Squared = .597 (Adjusted R Squared = .569)						