

**Table S1.** Genetic variation among BS-F<sub>2</sub> and BC-F<sub>2</sub> populations evaluated for the chlorophyll content via SPAD meter.

Population	Traits	Mean $\pm$ SE	Range (Max-Min)	CV (%)	h <sup>2</sup> (Broad Sense) (%)	Expected genetic advancement
BS-F <sub>2</sub>	Chlorophyll	46.31 $\pm$ 3.42	34.1-57.4	12.77	43.9	25.4
BC-F <sub>2</sub>	Chlorophyll	45.95 $\pm$ 4.10	20.9-62.3	15.45	55.44	26.4

**Table S2.** Summary of the bins and genetic linkage map for the BC-F<sub>2</sub> population.

LG	No of bin markers	Length (cM)	Bin density/cM
LG1-1a	33	23.9	0.7
LG1-1b	2	0.3	0.2
LG1-2	54	173.5	3.2
LG1-3	100	153.3	1.5
LG1-4a	59	228.7	3.9
LG1-4b	3	1.3	0.4
LG2-1a	64	124.4	1.9
LG2-1b	12	18.7	1.6
LG2-1c	4	1.6	0.4
LG2-2a	31	106	3.4
LG2-2b	16	17.3	1.1
LG2-2c	8	3.8	0.5
LG2-3a	54	154.7	2.9
LG2-3b	22	44.6	2.0
LG2-3c	22	44.6	2.0
LG3-1a	69	107.8	1.6
LG3-1b	2	0.3	0.2
LG3-2	33	105.2	3.2
LG3-3a	20	61.6	3.1
LG3-3b	60	75.8	1.3
LG3-3c	12	35.5	3.0
LG3-4	51	106.5	2.1
LG4-1	54	102.5	1.9
LG4-2a	58	101.1	1.7
LG4-2b	5	1.5	0.3
LG4-2c	6	6.7	1.1
LG4-3a	46	147.2	3.2
LG4-3b	13	42.5	3.3
LG4-4a	22	23.8	1.1
LG4-4b	2	0.3	0.2
LG5-1a	17	14	0.8
LG5-1b	47	99.2	2.1
LG5-2	47	79.3	1.7
LG5-3a	57	128.6	2.3
LG5-3b	46	112.8	2.5
LG5-4a	51	122.7	2.4
LG5-4b	18	14.1	0.8
LG6-1a	55	107.7	2.0
LG6-1b	15	56.6	3.8
LG6-1c	3	1.9	0.6
LG6-2a	59	127.9	2.2

LG6-2b	6	3.7	0.6
LG6-3a	50	141.9	2.8
LG6-3b	22	79.6	3.6
LG6-3c	6	9	1.5
LG6-3d	5	12.1	2.4
LG6-4a	22	37.5	1.7
LG6-4b	22	46.5	2.1
LG7-1a	19	37.2	2.0
LG7-1b	27	48.1	1.8
LG7-1c	9	4.6	0.5
LG7-2a	17	56.6	3.3
LG7-2b	47	142.7	3.0
LG7-3a	26	123.7	4.8
LG7-3b	8	7.6	1.0
LG7-4	33	90.7	2.7
56	1671	3721.3	1.9