



Supplementary Figure 1. A scheme to develop recombinant-inbred line (RIL) mapping populations and near-isogenic lines (NILs) for *qSW_Gm06* and *qSW_Gm10*.

Supplementary Table 1. Recombinant-inbred lines selected for yield test.

Entry	Line	Population	Wilting score	Plant height (cm)	Lodging score	Maturity (day)
1	RIL005	Pana × PI 567690	3.0	94.6	2.0	104
2	RIL026	Pana × PI 567690	4.0	72.4	1.0	108
3	RIL047	Pana × PI 567690	3.0	91.4	1.0	105
4	RIL091	Pana × PI 567690	3.5	78.1	2.5	107
5	RIL136	Pana × PI 567690	3.0	91.8	1.0	104
6	RIL148	Pana × PI 567690	3.5	85.7	1.0	103
7	RIL168	Pana × PI 567690	3.0	109.2	2.0	108
8	RIL201	Pana × PI 567690	3.0	106.7	2.0	105
9	RIL211	Pana × PI 567690	3.5	95.3	1.0	107
10	RIL223	Pana × PI 567690	3.5	67.3	1.0	103
11	RIL227	Pana × PI 567690	3.5	54.6	2.0	106
12	RIL290	Pana × PI 567690	3.0	96.5	1.8	108
13	RIL311	Pana × PI 567690	3.0	78.7	1.0	103
14	RIL374	Pana × PI 567690	2.5	92.1	1.5	108
15	RIL246	Pana × PI 567690	1.0	82.6	2.5	108
16	RIL009	Pana × PI 567690	1.0	88.9	1.0	115
17	RIL027	Pana × PI 567690	1.0	76.2	1.5	108
18	RIL055	Pana × PI 567690	1.0	82.6	1.0	113
19	RIL123	Pana × PI 567690	1.5	90.2	2.0	109
20	RIL142	Pana × PI 567690	1.0	68.6	1.0	102
21	RIL214	Pana × PI 567690	1.0	87.0	1.8	114
22	RIL224	Pana × PI 567690	1.0	67.3	1.0	105
23	RIL277	Pana × PI 567690	1.0	88.9	1.5	108
24	RIL317	Pana × PI 567690	1.0	61.0	2.0	107
25	RIL364	Pana × PI 567690	1.0	85.1	1.0	107
26	RIL372	Pana × PI 567690	1.3	79.4	1.5	106
27	RIL200	Pana × PI 567690	1.8	95.9	2.0	107
28	RIL328	Pana × PI 567690	1.0	106.7	1.0	114
29	RIL017	Magellan × PI 567731	1.5	48.3	1.5	104
30	RIL039	Magellan × PI 567731	1.5	76.8	1.0	105
31	RIL145	Magellan × PI 567731	1.0	81.3	1.5	107
32	RIL040	Magellan × PI 567731	1.0	83.8	2.3	109
33	RIL097	Magellan × PI 567731	1.5	88.3	1.0	105
34	RIL122	Magellan × PI 567731	1.5	78.7	2.0	105
35	RIL099	Magellan × PI 567731	1.0	48.3	1.0	102
36	RIL080	Magellan × PI 567731	1.5	63.5	2.0	113
37	RIL042	Magellan × PI 567731	1.0	78.7	2.0	108
38	RIL124	Magellan × PI 567731	3.0	67.3	2.5	113
39	RIL116	Magellan × PI 567731	3.8	83.8	1.0	105
40	RIL147	Magellan × PI 567731	3.6	109.2	3.0	115
41	RIL050	Magellan × PI 567731	3.0	50.8	1.0	112
42	RIL078	Magellan × PI 567731	3.0	116.8	2.5	115
43	RIL035	Magellan × PI 567731	4.0	47.0	1.0	117
44	RIL112	Magellan × PI 567731	3.8	86.4	2.0	119
45	RIL151	Magellan × PI 567731	3.0	94.0	2.0	118
46	RIL114	Magellan × PI 567731	3.0	86.4	1.0	118

Supplementary Table 2. Yield of the selected contrasting recombinant-inbred lines from Pana × PI 567690 population at irrigated and rain-fed conditions.

Population	Pana × PI 567690							
Location	Salina				Delta center			
Wilting type	Fast wilting type		Slow wilting		Fast wilting type		Slow wilting	
Conditions	Irrigation	Rain-fed	Irrigation	Rain-fed	Irrigation	Rain-fed	Irrigation	Rain-fed
Mean of yield (t/ha)	2.52	1.31	2.33	1.52	2.35	1.58	2.25	1.64
Std of yield (t/ha)	0.16	0.15	0.13	0.11	0.12	0.16	0.27	0.18

Supplementary Table 3. Yield of the selected contrasting recombinant-inbred lines from Magellan × PI 567731 population at irrigated and rain-fed conditions.

Population	Magellan × PI 567731							
Location	Salina				Delta center			
Wilting type	Fast wilting type		Slow wilting		Fast wilting type		Slow wilting	
Conditions	Irrigation	Rain-fed	Irrigation	Rain-fed	Irrigation	Rain-fed	Irrigation	Rain-fed
Mean of yield (t/ha)	2.71	1.51	2.48	1.69	2.27	1.37	2.08	1.79
Std of yield (t/ha)	0.23	0.12	0.18	0.14	0.19	0.22	0.18	0.13