

Appendix A Rice accession used in the study, their genotyping using *badh2* gene, and their agro-ecologies and special traits

No. ^a	Name	<i>badh2</i>	Agro-ecologies and special trait ^b	No. ^a	Name	<i>badh2</i>	Agro-ecologies and special trait ^b
1	Lueang Noi	N	Upland rice, Colored rice	27	Nang Khiaw	N	Upland rice, Colored rice
2	E-GO	N	Upland rice, Colored rice	28	Nang Khiaw	N	Upland rice, Colored rice
3	Khao Niaw Dam	P	Upland rice, Colored rice, Fragrance	29	Leuang Thong	N	Upland rice, Colored rice
4	OIC 27 III	N	Upland rice, Colored rice	30	Niaw Lan Tan	N	Upland rice, Colored rice
5	Daw Muey	N	Upland rice, Colored rice	31	Hae	N	Upland rice, Colored rice
6	Niaw Gan Yah	N	Upland rice, Colored rice	32	Niaw Lan Tan	N	Upland rice, Colored rice
7	Gam	P	Upland rice, Colored rice	33	Bue Lom	N	Upland rice, Colored rice
8	Glam	N	Upland rice, Colored rice	34	Ja Pah Gaw	N	Upland rice, Colored rice
9	Khao Niaw Dam	N	Upland rice, Colored rice	35	Graw Saw	N	Upland rice, South, Colored rice
10	Khao Daeng	N	Upland rice, Colored rice	36	Chaw Mai	N	Upland rice, South, Colored rice
11	Mae Look Awn	N	Upland rice, Colored rice	37	Dam Rai	N	Upland rice, South, Colored rice
12	Chom Plee	N	Upland rice, Colored rice	38	Khao Niaw Dam	N	Upland rice, Colored rice
13	Khao Daeng	N	Upland rice, Colored rice	39	Lang Gai	N	Upland rice, Colored rice
14	Dawk La Mud	N	Upland rice, Colored rice	40	Gam Doi Sa Ked	N	Upland rice, Colored rice
15	Niaw Ga-Am-Mah-Ka	N	Upland rice, Colored rice	41	Gam Pe	N	Colored rice
16	Lueang Noi	N	Upland rice, Colored rice	42	Gam Ka	N	Colored rice
17	Khao Gam	N	Upland rice, Colored rice	43	Gam Noi	P	Landrace rice in Northeast, Colored rice
18	GP 33 CAC 155	N	Upland rice, Colored rice	44	Gam Ton Khiaw	N	Colored rice
19	Daw Dam	N	Upland rice, Colored rice	45	Hawm Nin-Plueak Muang	P	Lowland rice, Colored rice
20	Niaw Dam	N	Upland rice, Colored rice	46	Hawm Nin-Plueak Khao Ton Khiao	P	Lowland rice, Colored rice
21	Niaw Dam	N	Upland rice, Colored rice	47	Hawm Nin-caps	P	Lowland rice, Colored rice
22	Niaw Dam	N	Upland rice, Colored rice	48	Hawm Nin-132	P	Lowland rice, Colored rice
23	Dawk Do	N	Upland rice, Colored rice	49	Sang Yod Thung Ku La	N	Lowland rice, Colored rice
24	Niaw Pang Pah	N	Upland rice, Colored rice	50	Khao Niao Luam Pua	P	Landrace rice, Colored rice
25	Lai Mahk	N	Upland rice, Colored rice	51	Sang Yod	N	Lowland rice, Colored rice
26	Niaw Di Tah Ke	P	Upland rice, Colored rice	52	Cho Mai Pai Pattani	N	Landrace rice, Colored rice

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53	Hawm Nin	N	Lowland rice, Colored rice	79	Khao Puang	N	Upland rice
54	Daw Dawk Phrao	N	Upland rice	80	Khao Sa Ahd	N	Upland rice
55	Jam Pah-133	N	Upland rice	81	Khao Khun Mae	N	Upland rice
56	Jao Je Wah	N	Upland rice, South	82	Khao Tah Klueb	N	Upland rice
57	Jek Chuey	N	Upland rice, Crumbly rice	83	Khao Loi	N	and rice
58	Ma Li Awng	N	Upland rice	84	Puang Tawng	N	Upland rice
59	Dawk Makh	N	Upland rice, North east	85	Leuang	N	Upland rice
60	Pong Tia	N	Upland rice	86	Jao Hawm	N	Upland rice, North
61	Khao Gra Bi	N	Upland rice	87	Leuang Tawng	N	Upland rice
62	Khiaw Nok Gra Ling-2072	N	Upland rice, Crumbly rice	88	Chao Kao	P	Upland rice, North east
63	Ruang Diaw	P	Upland rice	89	Tah Pib	N	Upland rice
64	Khiaw Nok Gra Ling-3578	N	Upland rice, Crumbly rice	90	Bueng Choo Bang Puey	P	Upland rice, Central
65	Nahng Ngahm	N	Upland rice	91	Toh Tia	N	Upland rice, Central
66	Non Rai	P	Upland rice, Central	92	Bue Gi	N	Upland rice, Central
67	Bahn Daeng	N	Upland rice	93	Pan Maw Wan	N	Upland rice, Central
68	Khao Ma Led Lek	N	Upland rice	94	Mee	N	Upland rice, Central
69	Khao Klah	N	Upland rice	95	Ton Tia Guay Nu	N	Upland rice, Central
70	Khao Ruang Yao	P	Upland rice, Fragrance	96	Pan Aung Jerng	N	Upland rice, Central
71	Khao Hawm	N	Upland rice	97	Gra Bawk	N	Upland rice, North
72	Ma Li Leuay	N	Upland rice	98	Khao Niaw	N	Upland rice
73	Tawng Mah Eng	N	Upland rice, Deepwater rice	99	Niaw Look Pueng	N	Upland rice
74	Jam Pah Tawng Noi	N	Upland rice	100	Pra Plenrg	N	Upland rice, Central
75	Khao Set Ti	N	Upland rice	101	Jaek	N	Upland rice, South
76	Plah Lai	N	Upland rice	102	Sue Rah	N	Upland rice, South
77	Khao Piang	N	Upland rice	103	Tah Gua Pah	N	Upland rice, North east
78	Gahb Dam	N	Upland rice	104	Huay Muang	N	Upland rice, Central

No. ^a	Name	<i>badh2</i>	Agro-ecologies and special trait ^b	No. ^a	Name	<i>badh2</i>	Agro-ecologies and special trait ^b
105	Lep Moo	N	Upland rice, Central	131	Sew Mae Chan	N	Upland rice, North, Good eating quality
106	Sai Rai	P	Upland rice, South	132	Dawk Pah Yawm	P	Upland rice, South, Resistance to Blast, Good cooking quality
107	Dawk Pud Rai	P	Upland rice, South	133	Num Ru	N	Upland rice, South
108	Jae San	N	Upland rice, South	134	4806	N	Upland rice
109	Jee Mah Lee	N	Upland rice, South	135	PSL60-2	N	Upland rice, Breeding line
110	Toh Mai	N	Upland rice, South	136	258	P	Upland rice, Irrigated
111	Ja Ge Wah	N	Upland rice, North	137	Rice berry	N	Lowland rice, Breeding line
112	Ngaw Pin	N	Upland rice, North	138	Kai Noi Wiang Jan	N	Lowland rice
113	Gra Thing	N	Upland rice, Central	139	Nahm Sa Gui	P	Lowland rice, Rainfed for North and North East
114	Bueng Bawng Wo	N	Upland rice, Central	140	Khao Ngah Chang	N	Lowland rice, Resistance to salt
115	Bue Kha Nong	N	Upland rice, Central	141	Khao Luang	N	Lowland rice
116	Jao Tah Hin Ngom	P	Upland rice, North east	142	Kam Pai 15	N	Lowland rice, Good milling quality
117	E-Daeng	N	Upland rice, North east	143	Khao Koo Deaw 35	N	Lowland rice, Rainfed for North, Good milling quality
118	E-Phae	N	Upland rice, North east	144	Khem Thong Phat Tha Lung	N	Lowland rice, Strong rice stem
119	Jao Tep Pah Rat	P	Upland rice, North east	145	Khai Mod Rin	N	Lowland rice, High-quality seed
120	Dam Lung	P	Upland rice, South	146	Chum Phae 60	N	Lowland rice, Breeding line
121	Dawk Mud	N	Upland rice, South	147	Chaw Lung 97	N	Lowland rice, South, Good eating quality
122	Kahp Yao	P	Upland rice	148	Nang Pa ya 132	N	Lowland rice, South, Resistance to Brown spot
123	Gam Piak Khahw	P	Upland rice	149	Pat Ta Lung 60	N	Lowland rice, South, Strong rice stem
124	Khao Gon	N	Upland rice	150	Leb Nok Pattani	N	Lowland rice, and Rainfed for South
125	Khao Thua Dam	N	Upland rice	151	KDML 105	P	Lowland rice, Breeding line, Good eating quality
126	Khao Thua Dam	N	Upland rice	152	Chiang Phat Tha Lung	N	Lowland rice, Rainfed for South, Good milling quality
127	Jao Khahw	P	Upland rice, North	153	PTT 1	P	Lowland rice, Improved line, Irrigated, High yielding
128	Goo Mueang Luang	N	Upland rice, South, Resistance to Drought	154	Suphan Buri 1	N	Lowland rice, Breeding line
129	Khao Luang San Pa Tong	P	Upland rice, North, Good eating quality	155	RD7	N	Irrigated lowland Rice, Breeding line
130	Jao Li Saw San Pah Tong	N	Upland rice, North, Good milling quality	156	RD29	N	Irrigated lowland Rice, Breeding line

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157	RD31	N	Irrigated lowland Rice, Breeding line	174	Lueang Pa Tiw 123	N	Landrace rice, South
158	RD39	P	Lowland rice, Good cooking quality	175	Plai ngam Pra Gen Bu ree	N	Landrace rice, Resistance to Drought
159	RD41	N	Irrigated lowland Rice, Breeding line	176	Leb Mea nang	N	Landrace rice, Central
160	RD47	N	Irrigated lowland Rice, Breeding line	177	Khao' Yipun DOA	N	<i>Japonica</i>
161	Phitsanulok 2	N	Irrigated lowland Rice, Breeding line	178	Hang Yee 71	N	Resistance to Brown spot
162	Chai Nat 1	P	Lowland rice, Breeding line, High-yielding	179	Niao U Bon 2	N	Northeast, Breeding line
163	Suphan Buri 60	N	Lowland rice, Breeding line	180	Pin Ka sat3	P	Breeding line
164	Suphan Buri 90	P	Lowland rice, Central, Breeding line	181	SPR91062-5-PTT-1-2-1 (B11)	N	Breeding line, <i>Indica</i>
165	RD23	N	Irrigated lowland Rice, Breeding line	182	Nipponbare (NB)	N	Temperate <i>japonica</i>
166	Hawm Chon La sit	P	Lowland rice, South ,Flash-flood tolerant	183	Azucena	P	Tropical <i>japonica</i> , Resistance to Drought
167	Khao Jow Hawm Suphan Buri	P	Irrigated lowland Rice, Breeding line	184	Koshihikari	N	Temperate <i>japonica</i> , High eating quality
168	Rathu Heenati	N	Resistance to Brown planthopper	185	IR14632-2-3	N	Tropical <i>japonica</i>
169	Gaen Jan	N	Landrace rice in South, Crumbly rice	186	Taichung Native 1 (TN)	N	High-yielding, semi-dwarf rice
170	Lok Daeng Pat Ta nee	P	Landrace rice in South	187	IR42015-83-3-2-2	N	Breeding line, <i>Indica</i>
171	Pin Kaew 56	N	Landrace rice, Deepwater rice	188	IR3941-14-2-2-3	N	Breeding line, <i>Indica</i>
172	Khao Ta Heang	N	Landrace rice in North				
173	Jek Chuey Kahp Khiao	N	Landrace rice in Central, Crumbly rice				

^a Number 1-181, Thai rice lines; 182-188, Exotic rice with desirable special traits

^b Sources: Number 1-181 <http://www.ricethailand.go.th/Rkb/> and http://ptt-rrc.ricethailand.go.th/index.php?option=com_content&view=article&id=23, Number 182-188 <http://iris.irri.org/>

Appendix B Yield and yield components of the F₇ recombinant inbred lines planted for phenotypic and yield observation at Klong Luang rice research center

No.	Parents	Height (cm)	50% DTF (days)	No. of Panicles/plant	Spikelets/panicles	SF (%)	1000-GW (g)	Grain weight/plant (g)
1	Koshihikari x Hawm Nin-132	124	96	26	225	69.6	28.0	58.0
2	Koshihikari x Hawm Nin-132	127	97	23	175	76.3	27.4	49.0
3	Koshihikari x Hawm Nin-132	122	93	8	157	76.8	25.9	24.0
4	Koshihikari x Hawm Nin-132	130	90	12	165	61.7	28.6	29.6
5	Koshihikari x Hawm Nin-132	142	97	10	165	72.6	25.6	26.3
6	Koshihikari x Hawm Nin-132	140	97	13	163	58.8	25.4	26.0
7	Koshihikari x Hawm Nin-132	135	95	14	176	52.6	26.2	28.3
8	Koshihikari x Hawm Nin-132	100	92	6	157	58.9	25.4	18.6
9	Koshihikari x Hawm Nin-132	102	89	17	149	87.4	24.5	39.0
10	Koshihikari x Hawm Nin-132	105	89	16	127	73.6	24.6	26.3
11	Koshihikari x Hawm Nin-132	100	89	16	148	67.3	24.5	30.1
12	Koshihikari x Hawm Nin-132	103	87	18	190	76.5	23.5	46.0
13	Koshihikari x Hawm Nin-132	101	87	13	145	83.6	23.6	26.8
14	Koshihikari x Hawm Nin-132	103	87	14	188	72.6	23.0	38.3
15	Koshihikari x Hawm Nin-132	105	93	10	162	71.3	25.5	23.5
16	Koshihikari x Hawm Nin-132	132	93	13	165	80.9	25.8	31.0
17	Koshihikari x Hawm Nin-132	129	93	12	172	73.3	32.0	42.0
18	Koshihikari x Hawm Nin-132	137	93	13	181	65.5	31.0	41.6
19	Nipponbare x Hawm Nin-132	105	84	17	179	85.0	26.2	52.0
20	Nipponbare x Hawm Nin-132	105	84	13	170	75.2	26.8	46.0
21	Nipponbare x Hawm Nin-132	106	85	16	173	76.5	26.5	50.0
22	Nipponbare x Hawm Nin-132	110	85	11	166	75.7	27.1	41.0
23	Nipponbare x Hawm Nin-132	103	85	10	158	82.3	26.0	32.0
24	Nipponbare x Hawm Nin-132	110	82	13	201	72.3	26.1	34.0
25	Nipponbare x Hawm Nin-132	106	82	10	193	71.1	26.4	35.0

No.	Parents	Height (cm)	50% DTF (days)	No. of Panicles/plant	Spikelets/panicles	SF (%)	1000-GW (g)	Grain weight/plant (g)
26	Nipponbare x Hawm Nin-132	105	82	10	181	65.4	26.7	31.0
27	Nipponbare x Hawm Nin-132	107	83	9	192	76.3	26.2	39.0
28	Nipponbare x Hawm Nin-132	106	83	13	183	78.5	27.4	43.0
29	Nipponbare x Hawm Nin-132	108	83	14	180	76.8	27.2	45.0
30	Nipponbare x Hawm Nin-132	107	83	13	175	77.9	27.5	42.0
31	Nipponbare x Hawm Nin-132	105	83	10	168	80.1	26.4	40.0
32	Nipponbare x Hawm Nin-132	108	83	12	195	72.1	26.8	41.0
33	PTT1 x Pin Ka sat3	112	90	11	164	64.1	25.3	27.0
34	PTT1 x Pin Ka sat3	115	90	10	155	74.3	27.6	31.0
35	PTT1 x Pin Ka sat3	105	89	19	128	71.7	27.1	31.0
36	PTT1 x Pin Ka sat3	101	89	16	144	78.2	26.5	46.0
37	PTT1 x Pin Ka sat3	115	90	17	162	77.1	26.4	39.0
38	PTT1 x Pin Ka sat3	113	88	15	167	79.8	26.7	36.0
39	PTT1 x Pin Ka sat3	107	93	13	163	78.1	26.3	29.0
40	PTT1 x Pin Ka sat3	100	97	11	207	75.8	26.8	37.0
41	PTT1 x Pin Ka sat3	104	88	9	167	71.2	26.2	35.0
42	PTT1 x Pin Ka sat3	100	88	10	144	74.1	25.6	30.0
43	PTT1 x Pin Ka sat3	103	87	11	167	62.3	25.5	26.9
44	PTT1 x Pin Ka sat3	105	97	15	197	87.0	26.8	50.2
45	PTT1 x Pin Ka sat3	106	97	13	177	85.6	28.6	51.1
46	PTT1 x Pin Ka sat3	102	97	12	166	82.0	27.9	36.5
47	PTT1 x Pin Ka sat3	105	88	11	168	74.4	25.8	29.3
48	PTT1 x Pin Ka sat3	107	88	12	163	76.7	24.8	29.7
49	PTT1 x Pin Ka sat3	103	88	16	191	68.7	24.0	41.1
50	PTT1 x Pin Ka sat3	105	88	10	160	58.6	24.0	23.0

No.	Parents	Height (cm)	50% DTF (days)	No. of Panicles/plant	Spikelets/panicles	SF (%)	1000-GW (g)	Grain weight/plant (g)
51	PTT1 x Pin Ka sat3	104	88	8	153	71.9	25.7	23.6
52	PTT1 x Pin Ka sat3	106	88	17	204	73.9	26.3	49.1
53	PTT1 x Pin Ka sat3	103	88	14	181	66.8	24.2	36.0
54	PTT1 x Pin Ka sat3	101	88	11	195	74.5	24.3	29.6
55	PTT1 x Pin Ka sat3	100	88	17	149	79.1	25.3	38.1
56	PTT1 x Pin Ka sat3	101	88	14	177	67.6	24.0	34.1
57	PTT1 x Pin Ka sat3	100	88	14	160	81.3	24.2	33.1
58	PTT1 x Pin Ka sat3	101	89	15	149	75.2	27.4	39.6
59	PTT1 x Pin Ka sat3	98	89	13	141	72.5	26.4	35.0
60	PTT1 x Pin Ka sat3	103	87	14	162	75.0	25.1	33.6
61	PTT1 x Pin Ka sat3	97	86	12	141	75.0	21.8	27.1
62	PTT1 x Pin Ka sat3	100	87	9	193	78.4	25.4	29.1
63	PTT1 x Pin Ka sat3	101	87	12	178	67.0	26.2	34.0
64	PTT1 x Pin Ka sat3	97	87	12	169	75.5	25.6	31.1
65	PTT1 x Pin Ka sat3	100	87	13	156	84.8	26.7	34.0
66	PTT1 x Pin Ka sat3	103	87	11	134	78.0	26.0	27.1
67	PTT1 x Pin Ka sat3	105	87	13	151	78.4	25.3	27.1
68	PTT1 x Pin Ka sat3	105	87	11	155	69.5	24.1	26.3
69	PTT1 x Pin Ka sat3	106	88	13	161	71.2	28.7	33.7
70	PTT1 x Pin Ka sat3	111	92	10	147	77.0	27.4	29.2
71	PTT1 x Pin Ka sat3	111	92	15	160	67.3	27.4	36.1
72	PTT1 x Pin Ka sat3	115	90	13	175	73.7	25.8	35.1
73	PTT1 x Pin Ka sat3	112	90	8	182	73.9	27.8	30.2
74	PTT1 x Pin Ka sat3	104	89	10	170	78.6	26.1	32.0
75	PTT1 x Pin Ka sat3	100	89	13	188	64.4	25.2	36.1

No.	Parents	Height (cm)	50% DTF (days)	No. of Panicles/plant	Spikelets/panicles	SF (%)	1000-GW (g)	Grain weight/plant (g)
76	PTT1 x Pin Ka sat3	103	89	11	159	66.2	25.3	27.1
77	PTT1 x Pin Ka sat3	102	89	12	146	73.8	26.3	27.1
78	PTT1 x Pin Ka sat3	112	88	12	137	80.5	26.5	26.6
79	PTT1 x Pin Ka sat3	115	89	11	152	80.1	26.8	28.1
80	PTT1 x Pin Ka sat3	113	92	12	169	68.2	27.1	33.1
81	PTT1 x Pin Ka sat3	114	93	12	204	55.4	26.4	30.9
82	PTT1 x Pin Ka sat3	116	90	10	173	59.3	26.0	25.1
83	PTT1 x Pin Ka sat3	114	90	9	162	72.5	26.2	23.8
84	PTT1 x Pin Ka sat3	115	88	10	151	80.3	26.2	28.9
85	PTT1 x Pin Ka sat3	100	91	12	174	68.0	26.8	29.7
86	PTT1 x Pin Ka sat3	102	91	9	130	76.0	26.3	23.6
87	PTT1 x Pin Ka sat3	109	92	7	202	58.6	25.6	22.9
88	PTT1 x Pin Ka sat3	100	89	10	173	70.5	25.4	29.3
89	PTT1 x Pin Ka sat3	104	90	9	153	78.3	26.3	27.0
90	PTT1 x Pin Ka sat3	116	87	14	151	77.8	29.3	33.6
91	PTT1 x Pin Ka sat3	110	87	16	173	73.0	30.0	46.3
92	PTT1 x Pin Ka sat3	111	88	12	175	68.5	29.0	36.5
93	PTT1 x Pin Ka sat3	118	88	12	138	71.9	28.9	30.0
94	PTT1 x Pin Ka sat3	116	88	11	154	88.5	26.9	29.3
95	PTT1 x Pin Ka sat3	110	90	12	157	76.7	27.5	30.0
96	PTT1 x Pin Ka sat3	114	88	8	168	86.4	27.9	26.0
97	PTT1 x Pin Ka sat3	103	89	16	136	82.7	25.4	31.3
98	PTT1 x Pin Ka sat3	107	89	12	144	77.1	26.2	28.1
99	PTT1 x Pin Ka sat3	100	89	19	167	70.8	25.1	41.3
100	PTT1 x Pin Ka sat3	102	87	13	147	82.2	27.0	33.7

No.	Parents	Height (cm)	50% DTF (days)	No. of Panicles/plant	Spikelets/panicles	SF (%)	1000-GW (g)	Grain weight/plant (g)
101	PTT1 x Pin Ka sat3	105	87	7	165	81.4	27.2	26.3
102	PTT1 x Pin Ka sat3	103	87	8	166	66.7	27.1	26.7
103	PTT1 x Pin Ka sat3	99	87	13	178	72.1	27.3	38.1
104	PTT1 x Pin Ka sat3	103	87	9	166	84.2	27.2	28.6
105	PTT1 x Pin Ka sat3	105	87	11	151	72.4	26.8	27.9
106	PTT1 x Pin Ka sat3	100	90	10	205	74.7	26.6	39.6
107	PTT1 x Pin Ka sat3	100	87	12	182	71.5	26.1	31.0
108	PTT1 x Pin Ka sat3	103	87	12	138	87.3	26.4	29.7
109	PTT1 x Pin Ka sat3	103	87	10	189	87.3	26.2	38.6
110	PTT1 x Pin Ka sat3	105	87	8	167	79.1	25.1	25.1
111	PTT1 x Pin Ka sat3	100	87	8	167	70.4	25.0	24.6
112	PTT1 x Pin Ka sat3	100	87	10	131	76.4	26.0	25.1
113	PTT1 x Pin Ka sat3	107	90	11	155	68.4	24.0	24.6
114	PTT1 x Pin Ka sat3	105	90	13	141	76.0	24.1	29.3
115	PTT1 x Pin Ka sat3	105	92	14	154	79.0	24.2	33.2
116	PTT1 x Pin Ka sat3	109	87	13	149	79.3	26.0	36.0
117	PTT1 x Pin Ka sat3	107	88	8	201	84.3	25.3	30.1
118	PTT1 x Pin Ka sat3	110	88	9	156	59.8	22.3	18.9
119	PTT1 x Pin Ka sat3	113	88	11	126	75.6	22.2	21.3
120	PTT1 x Pin Ka sat3	117	91	10	148	74.8	24.9	23.9
121	PTT1 x Pin Ka sat3	111	91	7	126	72.8	23.4	20.0
122	PTT1 x Pin Ka sat3	113	88	11	145	70.1	24.2	21.3
123	PTT1 x Pin Ka sat3	112	89	15	153	69.8	24.4	31.1
124	PTT1 x Pin Ka sat3	110	89	15	185	60.7	27.5	35.0
125	PTT1 x Pin Ka sat3	114	89	11	149	72.7	26.1	29.6

No.	Parents	Height (cm)	50% DTF (days)	No. of Panicles/plant	Spikelets/panicles	SF (%)	1000-GW (g)	Grain weight/plant (g)
126	PTT1 x Pin Ka sat3	113	89	13	139	71.7	27.5	30.1
127	B11 x Azucena	114	93	15	140	83.6	25.9	34.2
128	B11 x Azucena	115	91	12	157	66.5	24.8	33.6
129	Azucena x Pin Ka sat3	112	89	13	136	69.9	27.4	30.0
130	Azucena x Pin Ka sat3	110	86	14	141	72.1	29.4	40.1
131	Azucena x Pin Ka sat3	108	86	12	138	66.9	31.4	30.1
132	Azucena x Pin Ka sat3	111	89	12	162	84.9	26.1	35.9
133	Azucena x Pin Ka sat3	110	89	10	190	83.2	26.4	41.8
134	Azucena x Pin Ka sat3	107	93	10	157	55.4	26.9	22.3
135	Azucena x Pin Ka sat3	103	91	11	161	82.5	28.3	30.2
136	Azucena x Pin Ka sat3	101	91	9	187	76.4	27.5	29.1
137	Azucena x Pin Ka sat3	110	95	8	138	80.3	25.0	22.0
138	Azucena x Pin Ka sat3	113	95	8	177	72.7	25.2	23.4
139	Azucena x Pin Ka sat3	107	88	10	167	70.8	27.4	31.9
140	Azucena x Pin Ka sat3	113	89	12	158	70.9	26.3	29.3
141	Azucena x Pin Ka sat3	100	90	13	134	68.4	27.8	26.4
142	Azucena x Pin Ka sat3	103	90	10	167	70.9	25.1	21.9
143	Azucena x Pin Ka sat3	100	90	12	134	70.2	26.1	24.0
144	Azucena x Pin Ka sat3	103	89	11	167	75.6	27.4	30.0
145	Azucena x Pin Ka sat3	103	89	11	142	63.6	27.2	24.1
146	Azucena x Pin Ka sat3	115	89	10	138	66.9	29.4	26.0
147	Azucena x Pin Ka sat3	116	89	11	138	60.8	29.2	27.9
148	Azucena x Pin Ka sat3	107	87	9	160	79.1	23.8	23.0
149	Azucena x Pin Ka sat3	109	87	10	170	74.7	24.4	25.3
150	Azucena x Pin Ka sat3	111	87	9	162	76.4	24.4	24.9

No.	Parents	Height (cm)	50% DTF (days)	No. of Panicles/plant	Spikelets/panicles	SF (%)	1000-GW (g)	Grain weight/plant (g)
151	Azucena x Pin Ka sat3	121	90	11	151	67.5	27.4	29.0
152	Azucena x Pin Ka sat3	113	90	12	121	61.3	29.4	26.8
153	Azucena x Pin Ka sat3	113	90	9	170	85.3	28.3	28.0
154	Azucena x Pin Ka sat3	111	90	10	180	86.1	26.1	33.9
155	Azucena x Pin Ka sat3	115	90	9	127	70.4	26.2	23.1
156	Azucena x Pin Ka sat3	118	90	8	140	74.1	25.1	33.2
157	Azucena x Pin Ka sat3	116	90	7	167	70.7	26.0	22.3
158	Azucena x Pin Ka sat3	105	90	9	195	80.6	25.2	32.7
159	RD31	116	105	11	163	75.4	27.3	31.9
160	PTT1	105	107	13	161	73.5	28.6	30.5

Appendix C Functional markers used in this study

Gene	Trait	Primer	Sequence(5'-3')	DNA Polymorphism	Sources
<i>Badh2</i>	Fragrance	External Sense Primer (ESP)	TTGTTTGGAGCTTGCTGATG	8-bp deletion Positive 257 bp Negative 355 bp	Bradbury <i>et al.</i> , 2005
		Internal Fragrant Antisense Primer (IFAP)	CATAGGAGCAGCTGAAATATATACC		
		Internal Non-fragrant Sense Primer (INSP)	CTGGTAAAAAGATTATGGCTTCA		
		External Antisense Primer (EAP)	AGTGCTTTACAAAGTCCCGC		
<i>waxy</i>	Apparent amylose content	WxF	AGAGGGGGGAGAGAGAGAAcG	G/T SNP Positive 228/425 bp Negative 425 bp	Gao <i>et al.</i> , 2012
		WxT	CAGGAAGAACATCTGCgAGT		
		WxR	CCTAACCAAACATAACGAACG		
<i>SSIIa</i>	Gelatinization temperature	NF1	CGAGGCGCAGCACAAACAG	GC/TT SNP Positive 341/843 bp Negative 540/843 bp	Jin <i>et al.</i> , 2010 Bao <i>et al.</i> , 2006
		F22	CAAGGAGAGCTGGAGGGGGC		
		NR1	GGCCGTGCAGATCTTAACCAT		
		R21	ACATGCCGCGCACCTGGAAA		