Supplemental Materials

Supplemental Table S1 QTLs associated with resistance to BPH in Samgang/Nagdong double haploid lines.

Characteristics	Year	QTLs	Chr.	Interval Markers [a]	LOD	Additive Effect [b]	r^{2c}	Increasing Effects [d]
Resistant score	2018	*qBs6*	6	RM584-RM225	3.12	1.28	0.29	Samgang
		qBs8	8	S8020-S8024	4.18	2.34	0.20	Samgang
	2019	*qBs2*	2	RM492-RM424	2.74	2.23	0.20	Samgang
		qBs6-1	6	RM584-S6008	3.35	2.12	0.19	Samgang
		qBs8-1	8	S8017-S8026	5.25	2.25	0.22	Samgang

[a] Interval markers are those within the significance threshold on each border of the QTL range.

[b] The proportion of the evaluated phenotype variation attributable to a particular QTL was estimated using the coefficient of determination (r^2).

[c] Positive values of the additive effect indicate that alleles from Samgang are in the direction of increasing the traits.

[d] The increase allele is the source of the allele that leads to an increase in the measured trait.

Supplemental Table S2 Fifty candidate genes identified between the RM584 and RM225 markers on chromosome 6, RM331-S8024 on chromosome 8 and their ORFs, which include various proteins related to brown plant hopper resistance.

Function	Chr.	Gene locus	Description
Kinase	6	*LOC_Os06g30130*	Similar to S-locus receptor kinase precursor.
	6	*LOC_Os06g31220*	Protein kinase domain containing protein.
	8	*LOC_Os08g34640*	Similar to Receptor-like protein kinase precursor (EC 2.7.1.37). Splice isoform INRPK1a.
	8	*LOC_Os08g34950*	Phosphatidylinositol-4-phosphate 5-kinase family protein.
	8	*LOC_Os08g35220*	Protein kinase-like domain containing protein.
	8	*LOC_Os08g41790*	Similar to Uridine kinase-like protein.
	8	*LOC_Os08g42580*	Similar to LysM domain-containing receptor-like kinase 3.
	8	*LOC_Os08g42750*	Similar to Calcium-dependent protein kinase.
Hormone	6	*LOC_Os06g30179*	Cytochrome P450 family protein.
	6	*LOC_Os06g30440*	Similar to Indole-3-acetic acid-amido synthetase (Auxin- responsive GH3-like protein 17) .
	6	*LOC_Os06g30500*	Cytochrome P450 family protein.
	6	*LOC_Os06g30640*	Auxin responsive SAUR protein family protein.
	8	*LOC_Os08g35110*	Similar to Elicitor-inducible cytochrome P450.
	8	*LOC_Os08g43390*	Similar to Cytochrome P450 78A1 (EC 1.14.-.-) (CYPLXXVIII).

Signaling	6	*LOC_Os06g30380*	GTP-binding protein, HSR1-related domain containing protein.
	6	*LOC_Os06g30700*	p53-like transcription factor, DNA-binding domain containing protein.
	6	*LOC_Os06g33360*	Disease resistance protein family protein.
	8	*LOC_Os08g34650*	Leucine rich repeat, N-terminal domain containing protein.
	8	*LOC_Os08g35440*	Similar to Serine/threonine protein phosphatase PP1-alpha catalytic subunit (EC 3.1.3.16). Splice isoform 1.
	8	*LOC_Os08g35700*	Leucine-rich repeat, cysteine-containing containing protein.
	8	*LOC_Os08g35870*	Leucine-rich repeat 2 containing protein.
	8	*LOC_Os08g35910*	Leucine-rich repeat 2 containing protein.
Secondary metabolite	6	*LOC_Os06g30940*	Protein prenyltransferase domain containing protein.
	6	*LOC_Os06g31800*	Similar to Thionin Osthi1.
	6	*LOC_Os06g32160*	Similar to Thionin Osthi1.
	6	*LOC_Os06g31890*	Thionin Osthi1.
	6	*LOC_Os06g32550*	Thionin family protein.
	6	*LOC_Os06g32600*	Similar to Thionin Osthi1.
	6	*LOC_Os06g34020*	Glycoside hydrolase, family 17 protein.
	8	*LOC_Os08g34280*	Similar to Cinnamoyl-CoA reductase.

	8	*LOC_Os08g34290*	Similar to Chorismate mutase CM2 (EC 5.4.99.5) (Chorimate mutase).
	8	*LOC_Os08g41100*	Glycoside hydrolase, family 19 protein.
	8	*LOC_Os08g42410*	Similar to Pyruvate dehydrogenase E1 beta subunit isoform 1 (EC 1.2.4.1).
Transcription factor	6	*LOC_Os06g32720*	Zinc finger, CCCH-type domain containing protein.
	6	*LOC_Os06g32860*	Similar to Zinc finger CCCH type domain containing protein ZFN-like 1.
	6	*LOC_Os06g33040*	Zinc finger, SWIM-type domain containing protein.
	6	*LOC_Os06g33810*	Zinc finger, N-recognin domain containing protein.
	6	*LOC_Os06g33940*	OsNAC7 protein.
	6	*LOC_Os06g34430*	Zinc finger, RING-type domain containing protein.
	6	*LOC_Os06g34650*	Zinc finger, RING-type domain containing protein.
	8	*LOC_Os08g34340*	Similar to Calcineurin-like protein.
	8	*LOC_Os08g35060*	Zinc finger, RING-type domain containing protein.
	8	*LOC_Os08g35070*	Zinc finger, RING-type domain containing protein.
	8	*LOC_Os08g42370*	Zinc finger, DHHC-type domain containing protein.
	8	*LOC_Os08g42380*	Zinc finger, Tim10/DDP-type family protein.
	8	*LOC_Os08g42620*	Zinc finger, DHHC-type domain containing protein.
	8	*LOC_Os08g42640*	Zinc finger, RING-type domain containing protein.

8	*LOC_Os08g42700*	Disease resistance protein family protein.
8	*LOC_Os08g42740*	Zinc finger, RING-type domain containing protein.
8	*LOC_Os08g43190*	Alcohol dehydrogenase superfamily, zinc-containing protein.