

Supplementary Table 1. Wind tolerance-related traits of rice varieties bred at National institute of crop science (NICS) and Yeongdeok substation.

Group	Variety	Year	Eco-type ^z	Heading-type	Purpose-type ^y	WS ^x (%)	WP (%)	DG (1-9)	RRG_C (%)	RRG_T (%)	RRG_R (%)	Cluster
NICS (N)	Dongjin (DJ)	1981	<i>j</i>	mid-late	C	37.5	37.5	4	89.0	52.9	40.8	C4
	Sinseonchal (SSC)	1982	<i>j</i>	medium	S	55.0	52.8	5	81.1	27.0	66.3	C2
	Hwaseong (HS)	1985	<i>j</i>	medium	C	53.0	50.3	5	87.5	48.5	42.6	C4
	Ilpum (IP)	1990	<i>j</i>	mid-late	C	44.8	44.2	5	85.9	38.1	57.3	C4
	Hwayeong (HY)	1991	<i>j</i>	medium	C	21.3	20.1	2	88.0	60.5	32.1	C1
	Hyangnam (HaN)	1995	<i>j</i>	mid-late	S	42.0	34.4	4	92.0	44.3	51.7	C4
	Dasan (DS)	1995	<i>T</i>	medium	H	80.8	72.9	8	64.5	17.6	73.4	C3
	Dongan (DA)	1996	<i>j</i>	mid-late	C	61.0	53.5	6	90.7	48.3	45.7	C4
	Nampyeong (NP)	1997	<i>j</i>	mid-late	C	68.3	66.8	6	87.8	29.2	67.5	C2
	Heugnam (HN)	1997	<i>j</i>	mid-late	S	16.7	16.0	2	52.4	11.2	76.4	C5
	Sobi (SB)	1999	<i>j</i>	medium	C	32.7	29.2	4	87.5	42.5	52.9	C4
	Seolgaeng (SG)	2001	<i>j</i>	mid-late	S	24.2	20.2	2	87.3	45.2	48.3	C1
	Baegjinju (BJJ)	2001	<i>j</i>	mid-late	S	57.3	53.4	6	72.5	16.8	73.1	C2
	Keunnun (KN)	2005	<i>j</i>	mid-late	S	30.2	25.0	3	62.3	4.9	87.1	C5
	Nokyang (NY)	2006	<i>j</i>	mid-late	W	45.6	46.3	5	72.5	32.5	51.8	C2
	Boramchan (BRC)	2009	<i>j</i>	mid-late	H	14.4	9.9	1	78.2	43.8	41.3	C1
	Hanareum 2 (HAR2)	2010	<i>T</i>	medium	H	85.8	84.7	8	82.2	9.1	86.8	C3
	Yeongdeok (Y)	Yeongdeog (YD)	1985	<i>j</i>	medium	C	48.5	43.8	5	87.7	45.7	47.8
Donghae (DH)		1988	<i>j</i>	medium	C	22.6	20.0	2	95.7	63.0	34.0	C1
Naepung (NaP)		1995	<i>j</i>	medium	C	28.2	27.8	3	87.4	53.5	38.0	C1
Yeonghae (YH)		1997	<i>j</i>	medium	C	44.0	38.2	4	91.4	44.3	51.8	C4
Weonhwang (WH)		1998	<i>j</i>	medium	C	33.0	31.1	3	87.6	53.8	38.8	C1
Haepyeong (HP)		2000	<i>j</i>	medium	C	17.6	16.7	2	84.7	56.4	33.0	C1
Samdeog (SD)		2002	<i>j</i>	medium	C	26.2	19.6	2	92.6	57.1	38.6	C1
Pungmi (PM)		2004	<i>j</i>	medium	C	25.8	22.9	2	88.3	50.1	43.6	C1
Haepyeongchal (HPC)		2004	<i>j</i>	medium	C	37.6	36.8	4	85.0	47.8	45.5	C4
Donghaejinmi (DHJM)		2006	<i>j</i>	medium	C	45.5	43.1	5	93.2	37.9	60.0	C4
Chilbo (CB)		2007	<i>j</i>	mid-late	C	19.0	18.8	2	95.4	77.5	19.1	C6
Haeoreumi (HORM)		2008	<i>j</i>	medium	C	35.7	30.6	4	88.8	35.9	59.9	C4
Jinbo (JB)		2009	<i>j</i>	mid-late	C	40.4	36.7	4	91.4	45.8	49.9	C4
Dongbo (DoB)		2010	<i>j</i>	medium	C	44.7	43.1	4	92.2	43.0	53.8	C4
Daebo (DB)		2011	<i>j</i>	medium	C	42.5	35.8	4	86.2	47.2	45.9	C4
Dabo (DaB)		2012	<i>j</i>	medium	C	22.8	19.4	2	91.7	55.2	40.1	C1
Sinbo (SiB)		2013	<i>j</i>	medium	C	2.9	0.0	1	89.5	67.3	24.6	C6
Youngbo (YB)		2014	<i>j</i>	medium	C	52.5	50.0	5	88.1	38.3	58.2	C4
Sangbo (SaB)	2015	<i>j</i>	medium	C	60.7	55.6	8	90.3	32.6	63.6	C2	
Saechilbo (SCB)	2016	<i>j</i>	mid-late	C	37.3	36.8	4	92.4	40.1	56.2	C4	

^z*j*: japonica, *T*: Tongil type. ^yC: cooked rice, H: high-yielding rice, S: special rice, W: whole crop silage type. ^xWS: white spikelet, WP: white panicle, DG: degree of wind damage, RRG_C: ratio of ripened grain (RRG) at control, RRG_T: RRG at treatment, RRG_R: reduction rate of RRG between control and treatment

Supplementary Table 2. Performance of rice varieties bred at Yeongdeok substation in wind-prone areas 1 km and 2 km far from the east coast.

Variety	PH ^z (cm)	TN	HD (DAT)	CL (cm)	PN	NS	RRG (%)	Yield (kg/10a)
Yeongdeog (YD)	52bcde ^y	18bc	86bc	74ab	16bc	90ef	79.3a	503cdef
Donghae (DH)	57abc	16c	84bcde	72abcd	14fgh	93cdef	74.2a	516bcdef
Naepung (NaP)	48de	18bc	72h	64efg	15cdef	86fg	77.5a	484f
Yeonghae (YH)	56abcd	15c	81ef	68cdef	14fgh	97bcdef	77.2a	497def
Weonhwang (WH)	54bcde	17bc	84bcde	75ab	14efgh	107abc	81.5a	557abcde
Haepyeong (HP)	52bcde	18bc	79f	67cdef	15cde	92def	72.6a	539abcdef
Samdeog (SD)	58abc	16c	82def	72abc	14efgh	111a	80.4a	557abcde
Pungmi (PM)	52bcde	17bc	79f	67cdef	14defgh	89f	72.8a	488ef
Haepyeongchal (HPC)	64a	15c	76g	71abcd	14gh	98abcdef	81.8a	483f
Donghaejinmi (DHJM)	52bcde	16bc	86b	65efg	14efgh	104abcde	76.2a	570abc
Chilbo (CB)	50cde	22a	85bcd	70bcd	20a	76g	82.4a	564abcd
Haeoreumi (HORM)	55bcde	17bc	82def	67cdefg	16bcd	94cdef	78.5a	547abcdef
Jinbo (JB)	54bcde	17bc	83bcde	72abcd	15cde	95cdef	77.0a	543abcdef
Dongbo (DoB)	59ab	16c	82def	68cde	14efgh	95cdef	82.3a	519bcdef
Daebo (DB)	54bcde	16bc	84bcde	62g	14efgh	110ab	72.0a	569abc
Dabo (DaB)	53bcde	17bc	84bcde	63fg	15defg	105abcd	71.7a	569abc
Sinbo (SiB)	55bcde	17bc	86b	67defg	15cdef	105abcd	75.9a	580ab
Youngbo (YB)	55abcde	17bc	81ef	64efg	15defg	98abcdef	77.1a	555abcde
Sangbo (SaB)	59ab	16c	82cdef	76a	13h	100abcdef	81.8a	569abc
Saechilbo (SCB)	47e	19ab	89a	70bcd	17b	97bcdef	75.0a	598a
1 km mean	51 ^{**x}	15 ^{**}	83 ^{**}	69 ^{ns}	14 ^{**}	101 ^{**}	76.6 ^{ns}	542 ^{ns}
2 km mean	58	19	81	69	15	93	78.1	538
Total mean	54	17	82	69	15	97	77.4	540
C.V. (%)	16.1	19.0	5.7	8.7	12.5	15.9	14.4	13.2

^zPH and TN: plant height and number of tillers per hill at maximum tillering stage, HD: heading date, DAT: days after transplanting, CL: culm length, PN: number of panicles per hill, NS: number of spikelets per panicle, RRG: ratio of ripened grain at wind-prone area

^yMeans with same letters in a column are not significantly different at $p < 0.05$ (ANOVA followed by DMRT)

^xns and ** mean not significant and significant at $p < 0.01$ by t -test, respectively