

Supplemental Table 1. Mean value and standard errors (3 replications) of the grain length (mm), grain width (mm), and grain thickness (mm) of paddy rice of 22 fragrant rice landrace accessions, 2 advanced breeding lines, and 3 elite variety checks

Varieties	Grain length (mm)	Grain width (mm)	Grain thickness (mm)
BNM1	9.87±0.03	3.11±0.01	2.18±0.01
BNM2	10.20±0.06	3.03±0.01	2.10±0.01
BNM3	10.34±0.05	3.25±0.02	2.21±0.01
BNM4	10.41±0.14	3.12±0.02	2.15±0.02
BNM5	10.41±0.06	3.10±0.02	2.19±0.01
BNM6	10.29±0.08	3.29±0.02	2.21±0.01
BNM7	10.4±0.06	3.23±0.02	2.19±0.01
BNM8	11.08±0.26	3.28±0.02	2.18±0.01
BNM9	10.38±0.20	3.24±0.02	2.14±0.01
EL	11.08±0.11	3.50±0.03	2.22±0.03
HS	9.98±0.09	2.51±0.03	1.79±0.03
KH	11.25±0.12	3.91±0.04	2.45±0.04
NDLP	11.07±0.09	3.53±0.04	2.15±0.05
NU	10.65±0.07	2.62±0.04	1.94±0.02
PLD	11.22±0.09	4.04±0.07	2.51±0.02
PS	10.72±0.09	3.09±0.05	2.16±0.02
SKH	10.79±0.08	3.13±0.06	1.89±0.04
BH62	9.23±0.08	2.50±0.03	1.77±0.02
BH96	9.06±0.14	2.40±0.03	1.90±0.01
HB	9.08±0.06	2.12±0.02	1.70±0.01
HBK	9.91±0.09	2.48±0.03	1.75±0.05
HNK	9.86±0.27	2.64±0.02	1.94±0.02
BNM-CMU	10.83±0.08	2.96±0.04	2.12±0.01
JPD	10.05±0.07	3.05±0.03	2.09±0.01
KDML105	10.52±0.05	2.49±0.01	1.88±0.01
PTT1	10.56±0.08	2.49±0.02	1.94±0.01
SPR1	9.60±0.12	2.38±0.02	2.06±0.03

Supplemental Table 2. Seed morphology of 22 landraces fragrant rice varieties, 2 breeding line varieties, and 3 check varieties (n=100)

Varieties	Husk color			Awning		Pericarp traits	
	Straw (%)	Brown furrows on straw (%)	Black (%)	Absent (%)	Short and partly awned (%)	White (%)	Black (%)
BNM1	97	3	0	97	3	100	0
BNM2	98	2	0	94	6	100	0
BNM3	100	0	0	97	3	100	0
BNM4	100	0	0	96	4	100	0
BNM5	100	0	0	83	17	100	0
BNM6	98	2	0	100	0	100	0
BNM7	96	4	0	90	10	100	0
BNM8	100	0	0	85	15	100	0
BNM9	100	0	0	93	7	100	0
EL	100	0	0	100	0	100	0
HS	0	100	0	0	100	100	0
KH	100	0	0	100	0	100	0
NDLP	0	100	0	100	0	0	100
NU	100	0	0	100	0	100	0
PLD	100	0	0	100	0	100	0
PS	100	0	0	0	100	100	0
SKH	100	0	0	100	0	100	0
BH62	100	0	0	100	0	100	0
BH96	100	0	0	0	100	100	0
HB	60	33	0	57	43	100	0
HBK	33	67	0	100	0	100	0
HNK	60	40	0	29	71	100	0
BNM-CMU	100	0	0	97	3	100	0
JPD	0	0	100	100	0	100	0
KDML105	100	0	0	100	0	100	0
PTT1	100	0	0	95	5	100	0
SPR1	100	0	0	100	0	100	0

Supplemental Table 3. Alkali spreading test (%) at six levels of 22 landraces fragrant rice varieties, 2 breeding line varieties, and 3 check varieties (n=100) Level: (1) grain not affected, (2) grain swollen, (3) grain swollen, collar incomplete and narrow, (4) grain swollen, collar complete and wide, (5) grain split or segmented, collar complete and wide and (6) grain dispersed, merging with collar

Varieties	Level 1 (%)	Level 2 (%)	Level 3 (%)	Level 4 (%)	Level 5 (%)	Level 6 (%)
BNM1	0	0	24	17	16	44
BNM2	0	0	33	11	20	35
BNM3	0	0	48	22	26	4
BNM4	0	0	3	19	76	3
BNM5	0	0	29	25	46	0
BNM6	0	0	10	49	41	0
BNM7	0	0	38	7	39	17
BNM8	0	0	32	13	53	2
BNM9	0	0	26	26	48	0
EL	0	0	5	6	1	89
HS	0	0	85	15	0	0
KH	0	5	86	8	0	0
NDLP	0	82	14	4	0	0
NU	0	0	43	57	0	0
PLD	0	22	61	17	0	0
PS	0	40	54	4	2	0
SKH	0	7	87	7	0	0
BH62	20	34	45	1	0	0
BH96	24	0	76	0	0	0
HB	0	0	13	27	7	53
HBK	0	89	11	0	0	0
HNK	0	55	43	2	0	0
BNM-CMU	0	0	47	43	10	0
JPD	0	5	62	16	16	1
KDML105	0	0	9	7	27	56
PTT1	0	0	4	66	7	23
SPR1	0	2	53	30	11	3

Supplemental Table 4. Sensory scores by using 10 testers of 22 landraces fragrant rice varieties, 2 breeding line varieties, and 3 check varieties; Score 0 for non-aromatic, 1 for slightly aromatic, 2 for moderate aroma, and 3 for strongly aromatic.

Varieties	Sensory score										Non-aromatic	Slightly aromatic	Moderately aromatic	Strongly aromatic
	1	2	3	4	5	6	7	8	9	10				
BNM1	0	0	1	0	1	0	0	1	1	0	6	4	0	0
BNM2	1	0	1	0	0	0	0	0	0	0	8	2	0	0
BNM3	0	1	0	1	0	0	0	1	0	1	6	4	0	0
BNM4	2	2	2	3	2	1	3	2	1	2	0	2	6	2
BNM5	0	0	0	0	1	0	0	1	0	1	7	3	0	0
BNM6	0	1	1	0	0	0	0	0	1	0	7	3	0	0
BNM7	1	0	0	0	1	0	1	0	1	0	6	4	0	0
BNM8	0	1	0	1	0	1	0	0	0	1	6	4	0	0
BNM9	0	1	0	1	0	1	0	1	0	0	6	4	0	0
EL	0	1	0	0	0	0	0	0	0	0	9	1	0	0
HS	1	2	1	1	2	0	0	0	1	0	4	4	2	0
KH	3	3	1	2	3	3	3	3	2	3	0	1	2	7
NDLP	3	2	2	3	1	3	2	3	3	3	0	1	3	6
NU	0	1	0	0	1	1	0	0	1	0	6	4	0	0
PLD	3	3	2	2	3	2	2	2	3	2	0	0	6	4
PS	0	1	1	0	0	1	1	1	1	0	4	6	0	0
SKH	2	1	1	0	1	0	1	0	1	1	3	6	1	0
BH62	1	1	1	1	1	1	0	1	0	0	3	7	0	0
BH96	1	1	1	0	0	0	1	1	2	3	3	5	1	1
HB	1	0	0	0	0	0	1	1	1	1	5	5	0	0
HBK	0	0	0	0	0	1	1	0	1	2	6	3	1	0
HNK	0	0	0	0	0	1	1	0	2	1	6	3	1	0
BNM-CMU	2	3	2	2	2	2	3	1	2	3	0	1	6	3
JPD	1	1	1	1	0	0	1	2	0	0	4	5	1	0
KDML105	3	3	3	2	3	3	3	3	3	3	0	0	1	9
PTT1	2	2	2	2	1	2	2	2	3	1	0	2	7	1
SPR1	0	0	0	0	0	0	0	0	0	0	10	0	0	0

