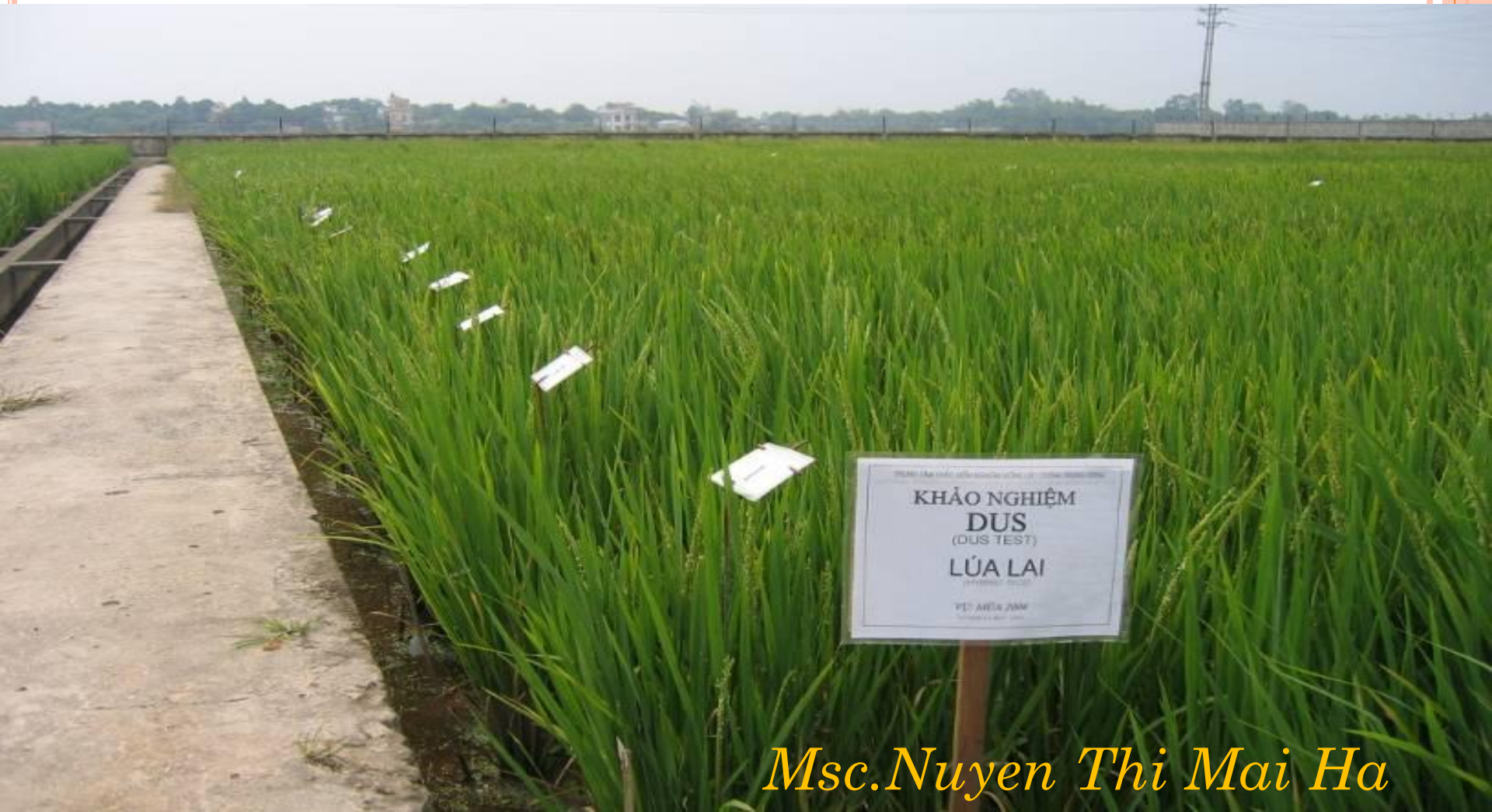


# INSTRUCTION MANUAL OF DUS TEST FOR RICE



*Msc. Nuyen Thi Mai Ha*

# THE PROCESS OF BUILDING MANUAL OF DUS TEST AND EXAMPLE VARIETIES FOR RICE

Data base (367 varieties)

Summer, 2011 (54 varieties)

Spring, 2012 (19 varieties)

Summer, 2012 (19 varieties)

Spring, 2013 (19 varieties)

Summer, 2013 (19 varieties)

13 example varieties

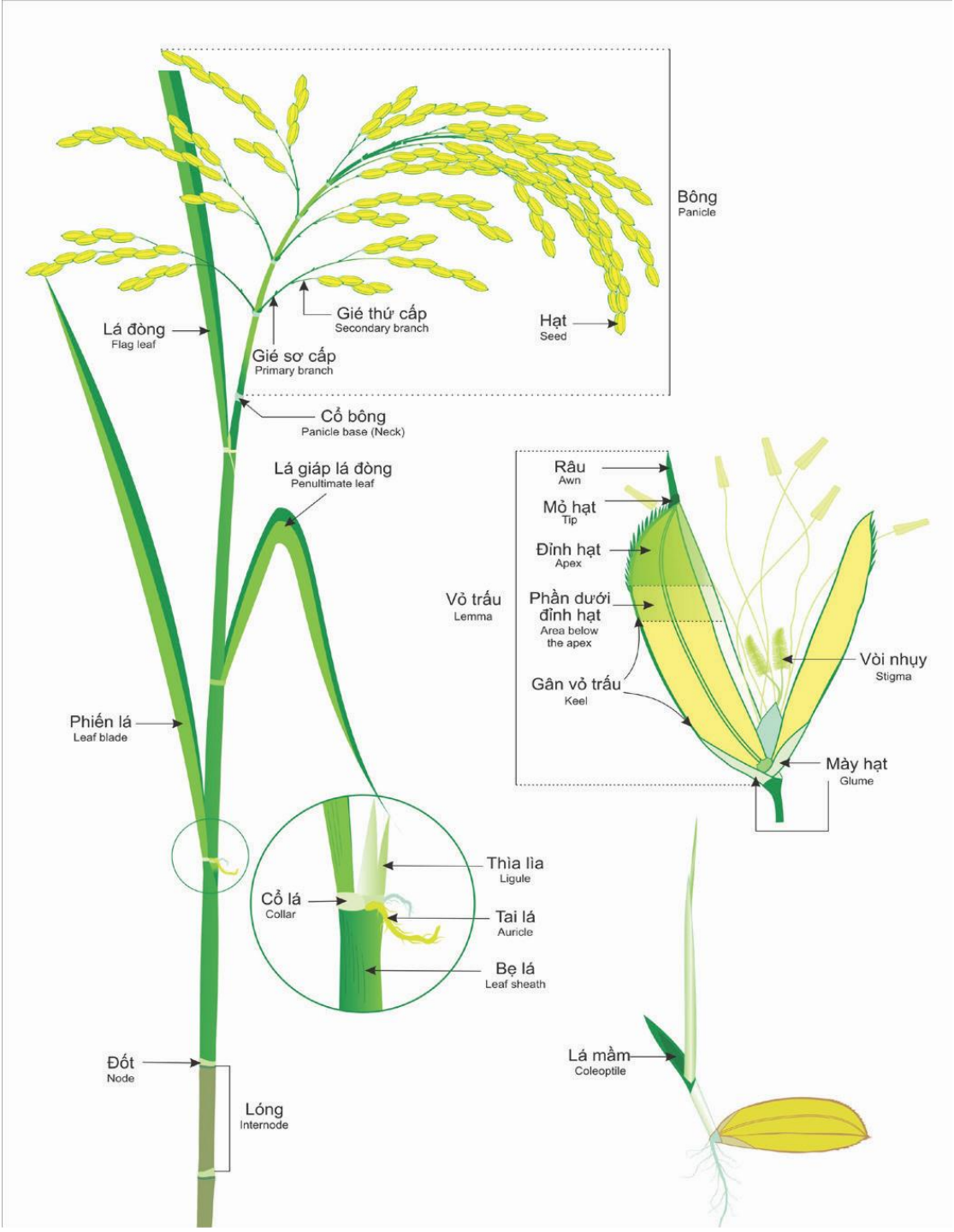


## Decimal Code for the Growth Stages of rice

- Stage 10 – Seedling growth
- Stage 20 – Germination
- Stage 30 – Stem elongation
- Stage 40 – Booting
- Stage 50 – Inflorescence emergence
- Stage 60 – Anthesis
- Stage 70 – Milk development
- Stage 80 – Dough development
- Stage 90 - Ripening



# Morphology of rice



	Vietnamese	English	Stage	Note	Example varieties
1	Lá mầm: Sắc tố antoxian	Coleoptile anthocyanin coloration	10		
QN	Không có hoặc rất ít	absent or very weak		1	Khang dân 18, Bắc thơm số 7
VS	Ít	weak		3	Trân châu lùn,
	Nhiều	Strong		5	

### 1. Stage of Evaluation:

Seedling growth

### 2. Position of Evaluation: Coleoptile

3. Method of Evaluation: Non-dormant grains are placed on moistened filter paper and covered with a petri-dish lid during germination under nature condition . When the first leaf appear to evaluate



1



3





	Vietnamese	English	Stage	Note	Example varieties
2	Lá gốc (lá dưới cùng): Màu bẹ lá	Basal leaf: Sheath color	40		
PQ	Xanh	green		1	Khang dân 18 Bắc thơm số 7
VS	Xanh có sọc tím	Green with purple		2	
	Tím nhạt	light purple		3	Trân châu lùn
	Tim	purple		4	Thảo dược Vĩnh Hòa 1

1. Stage of Evaluation :  
Booting
2. Position of Evaluation:  
Basal leaf sheath
3. Method of Evaluation: Visible Singer



1



3



4

	Vietnamese	English	Stage	Note	Example varieties
3	<b>Lá: Mức độ xanh</b>	<b>Leaf: intensity of green color</b>	40		
<b>QN</b>	Xanh nhạt	light		3	ĐTL2
<b>VG</b>	Xanh trung bình	medium		5	Bắc thơm số 7
	Xanh đậm	Dark		7	Q5

1. Stage of Evaluation :

Booting

2. Position of Evaluation:

Penultimate leaf

3. Method of Evaluation: Visible group



3



5



7

	Vietnamese	English	Stage	Note	Example varieties
<b>4</b>	<b>Lá: sắc tố antoxian</b>	<b>Leaf: anthocyanin coloration</b>	<b>40</b>		
<b>QL</b>	Không có	absent		1	Khang dân, Bắc thơm số 7
<b>VG</b>	Có	present		9	Trân châu lùn

1. Stage of Evaluation :  
Booting
2. Position of Evaluation:  
Penultimate leaf
3. Method of Evaluation: Visible group



1



9





	Vietnamese	English	Stage	Note	Example varieties
5	Lá: sự phân bố sắc tố của antoxian	Leaf: distribution of anthocyanin coloration	40		
PQ	Chỉ có ở đỉnh	on tips only		1	
VG	Chỉ có ở viền lá	on margins only		2	Trân châu lùn
	Chỉ có vệt	in blotches only		3	
	Đồng nhất	even		4	

1. Stage of Evaluation :  
Booting
2. Position of Evaluation:  
Penultimate leaf
3. Method of Evaluation: Visible group



2



4



	Vietnamese	English	Stage	Note	Example varieties
6	Bẹ lá: sắc tố antoxian	Leaf sheath: anthocyanin coloration	40		
QL	Không có	absent		1	Khang dân, Bắc thơm số 7
VG	Có	present		9	Thảo dược Vĩnh hoà 1

1. Stage of Evaluation :  
Booting

2. Position of Evaluation:  
Leaf sheath of middle plant

3. Method of Evaluation:  
Visible group



1



9

	Vietnamese	English	Stage	Note	Example varieties
7	<b>Bẹ lá: Mức độ sắc tố antoxian của bẹ lá</b>	<b>Leaf sheath: intensity of anthocyanin coloration</b>	<b>40</b>		
<b>QN</b>	Rất nhạt	very weak		1	
<b>VG</b>	Nhạt	weak		3	BM9962
	Trung bình	medium		5	Trân châu lùn
	Đậm	strong		7	Thảo dược Vĩnh hoà 1

11. Stage of Evaluation :

Booting

2. Position of Evaluation:

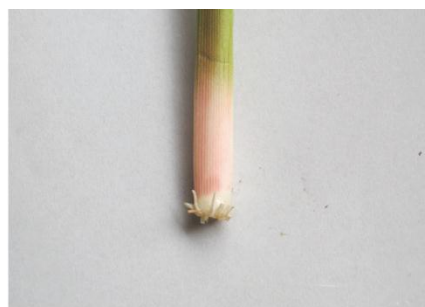
Leaf sheath of middle plant

3. Method of Evaluation:

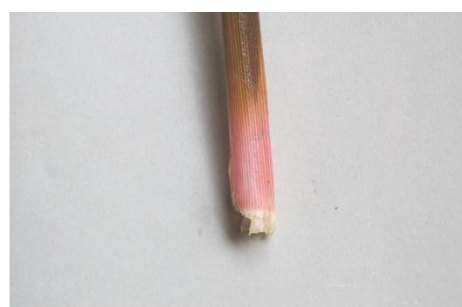
Visible group



1



3



5



7

	Vietnamese	English	Stage	Note	Example varieties
<b>8</b>	<b>Lá: Lông ở phiến lá</b>	<b>Leaf blade: pubescence of surface</b>	<b>40</b>		
<b>QN</b>	Không có hoặc có rất ít	absent or very weak		1	
<b>VS</b>	Ít	weak		3	Bắc thơm số 7
	Trung bình	medium		5	DT122
	Nhiều	strong		7	Khang dân 18
	Rất nhiều	Very strong		9	Q5

1. stage of Evaluation :  
Booting

2. Position of Evaluation:  
Leaf blade of penultimate

3. Method of Evaluation:  
Visible single



3



5



7

	Vietnamese	English	Stage	Note	Example varieties
<b>9</b>	<b>Sắc tố antoxian của tai lá</b>	<b>Leaf :anthocyanin coloration of auricles</b>	<b>40</b>		
<b>QL</b>	Không	absent		1	Khang dân, Bắc thơm số 7
<b>VS</b>	Có	Present		9	Trân châu lùn

11. Stage of Evaluation :  
Booting
2. Position of Evaluation:  
Auricle
3. Method of Evaluation:  
Visible single

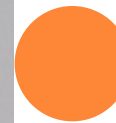


1

Tai  
lá



9





	Vietnamese	English	Stage	Note	Example varieties
<b>10</b>	<b>Lá: sắc tố antoxian của góì lá (cổ lá)</b>	<b>Leaf: anthocyanin coloration of collar</b>	<b>40</b>		
<b>QL</b>	Không	absent		1	Khang dân 18, Bắc thơm số 7
<b>VS</b>	có	Present		9	Trân châu lùn,

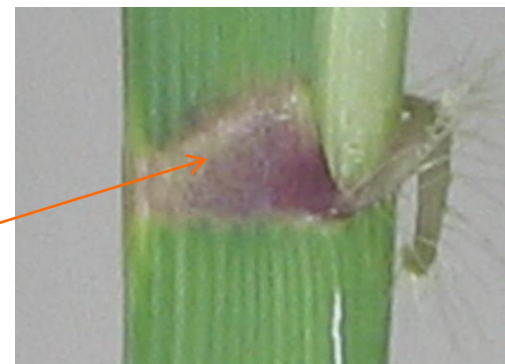
11. Stage of Evaluation :  
Booting

2. Position of Evaluation:  
Collar

3. Method of Evaluation: Visible single



1



9



	Vietnamese	English	Stage	Note	Example varieties
<b>11</b>	<b>Lá: hình dạng của thìa lià</b>	<b>Leaf: shape of ligule</b>	<b>40</b>		
<b>PQ</b>	Tù (chóp cụt)	Truncate		1	
<b>VS</b>	Nhọn	Acute		2	
	Xẻ	Cleft		3	Khang dân 18, Trần châu lùn

11. Stage of Evaluation :  
Booting
2. Position of Evaluation:  
Ligule
3. Method of Evaluation:  
Visible single



1



2



3



3

	Vietnamese	English	Stage	Note	Example varieties
12	Lá: màu sắc của thìa lìa	Leaf: Color of ligule	40		
PQ	Trắng	colorless		1	Khang dân 18 Bắc thơm số 7
VS	Xanh	green		2	
	Xanh có sọc tím	green with purple lines		3	
	Tím nhạt	light purple		4	Trân châu lùn
	Tím	purple		5	Thảo dược Vĩnh Hoà 1

1. Stage of Evaluation : Booting
2. Position of Evaluation: Ligule
3. Method of Evaluation: Visible single



1



4



5

	Vietnamese	English	Stage	Note	Example varieties
<b>13</b>	<b>Phiến lá: chiều dài</b>	<b>Leaf blade: Length</b>	<b>50-60</b>		
<b>QN</b>	Ngắn	short		3	
<b>MS</b>	Trung bình	medium		5	
	Dài	long		7	

1. Stage of Evaluation :

Inflorescence emergence to Anthesis

2. Position of Evaluation:

Leaf blade under leaf flag

3. Method of Evaluation:

To select plants in the middle of plot

To select highest tiller of the culm

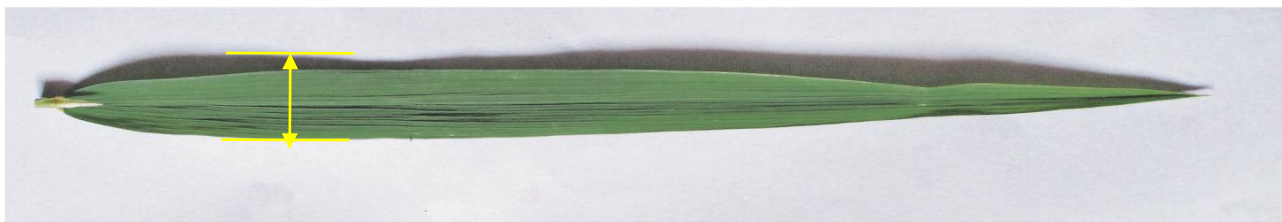
To measure from collar to top of leaf

To measure 20 leaf of 20 plant in the plot



	Vietnamese	English	Stage	Note	Example varieties
<b>14</b>	<b>Phiến lá: Chiều rộng</b>	<b>Leaf blade: width</b>	<b>50-60</b>		
<b>QN</b>	Hẹp	Narrow		3	P 6 đột biến
<b>MS</b>	Trung bình	medium		5	Hoa khô 4
	Rộng	broad		7	

1. Stage of Evaluation :  
Inflorescence emergence to Anthesis
2. Position of Evaluation:  
Leaf blade under leaf flag
3. Method of Evaluation:  
To select plants in the middle of plot  
To select highest tiller of the culm  
To measure largest leaf  
To measure 20 leaf of 20 plant in the plot





	Vietnamese	English	Stage	Note	Example varieties
15	Lá đòng: trạng thái phiến lá (quan sát sớm)	Flag leaf: attitude of blade (early observation)	60		
QN	Thẳng	erect		1	NTL1
VG	Nửa thẳng	semi-erect		3	Koshihikari kazusa 2 gou
	Ngang	horizontal		5	
	Gục xuống	recurved		7	

1. Stage of Evaluation : Anthesis (beginning of anthesis)
2. Position of Evaluation: Angle of flag leaf and main shoot
3. Method of Evaluation: Visible group



1



3

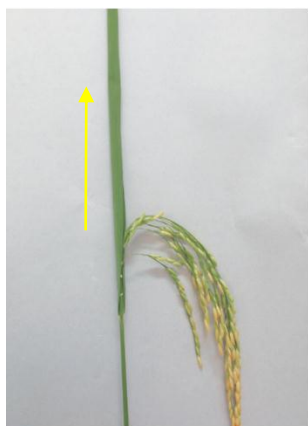


6



	Vietnamese	English	Stage	Note	Example varieties
<b>16</b>	<b>Lá đồng: trạng thái phiến lá (quan sát muện)</b>	<b>Flag leaf: attitude of blade (late bsevervation)</b>	<b>90</b>		
<b>QN</b>	Thẳng	erect		1	P6
<b>VG</b>	Nửa thẳng	semi-erect		3	Trân châu lùn
	Ngang	horizontal		5	
	Gục xuống	recurved		7	

1. Stage of Evaluation : Ripening
2. Position of Evaluation: Angle of flag leaf and main shoot
3. Method of Evaluation: Visible group



1



3



5



7

	Vietnamese	English	Stage	Note	Example varieties
17	<b>Khóm: thế cây (góc thân)</b>	<b>Culm: habit</b>	<b>40</b>		
<b>PQ</b>	Đứng	erect		1	NTL1
<b>VS</b>	Nửa đứng	semi-erect		3	Bắc thơm số 7 Trân trâu lùn
	Mở	open		5	
	Xòe	spreading		7	
	lan sát mặt đất	prostrate		9	

1. Stage of Evaluation :

Booting

2. Position of Evaluation:

Angle of main shoot and tillers

3. Method of Evaluation:

Visible single



1



3



5



	Vietnamese	English	Stage	Note	Example varieties
<b>18</b>	<b>Khóm: khả năng gấp khuỷu (chỉ với giống bò lan)</b>	<b>Culm: kneeling ability (protrate varieties only)</b>	<b>40</b>		
<b>QL</b>	Không có	absent		1	
<b>vs</b>	Có	present		9	

1. Stage of Evaluation :  
Booting
2. Position of Evaluation:  
Stem
3. Method of Evaluation:  
Visible single



	Vietnamese	English	Stage	Note	Example varieties
19	Thời gian trổ: thời gian trổ (khi 50% số cây có bông trổ)	Time of heading (50% of plants with heads)	55		
QN	Rất ngắn	very early		1	
VG	Ngắn	early		3	Koshihikari kazusa 2 gou
	Trung bình	medium		5	NTL1, Q5
	Dài	late		7	

1. Stage of Evaluation :  
 $\frac{1}{2}$  of inflorescence emerged
2. Position of Evaluation:  
panicle
3. Method of Evaluation:  
Visible group  
Number of day from seedling to  $\frac{1}{2}$  of inflorescence emerged





	Vietnamese	English	Stage	Note	Example varieties
<b>20</b>	<b>Bất dục đực</b>	<b>Male sterility</b>	<b>55</b>		
<b>PQ</b>	Không có	absent		1	Khang dân 18
<b>VS</b>	Bất dục từng phần	partially male sterile		2	
<b>MS</b>	Bất dục hoàn toàn	Male sterile		3	

1. Stage of Evaluation :  
 $\frac{1}{2}$  of inflorescence emerged
2. Position of Evaluation:  
Pollen
3. Method of Evaluation:  
Visible single



	Vietnamese	English	Stage	Note	Example varieties
<b>21</b>	<b>Vỏ trấu: Sắc tố antoxian của gân (quan sát sớm)</b>	<b>Lemma: anthocyanin coloration of keel (early observation)</b>	<b>65</b>		
<b>QN</b>	Không có hoặc rất nhạt	absent or very weak		1	Khang dân 18, BM 9962
<b>VS</b>	Nhạt	weak		3	
	Trung bình	medium		5	
	Đậm	strong		7	

1. Stage of Evaluation :  
Anthesis half-way
2. Position of Evaluation:  
Spikelet
3. Method of Evaluation:  
Visible single



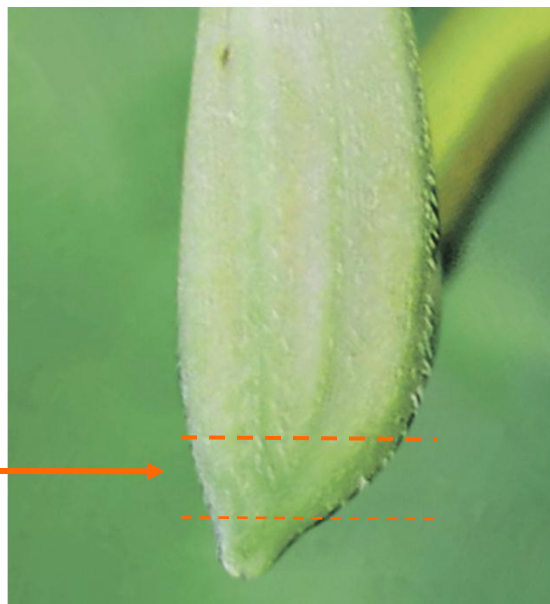
	Vietnamese	English	Stage	Note	Example varieties
22	<b>Vỏ trấu: Sắc tố antoxian của vùng dưới đỉnh (quan sát sớm)</b>	<b>Lemma: anthocyanin coloration of area below apex (early observation)</b>	65		
QN	Không có hoặc rất nhạt	absent or very weak		1	Khang dân 18, BM 9962
VS	Nhạt	weak		3	
	Trung bình	medium		5	
	Đậm	strong		7	

1. Stage of Evaluation :  
Anthesis half-way
2. Position of Evaluation:  
Spikelet
3. Method of Evaluation:  
Visible single



	Vietnamese	English	Stage	Note	Example varieties
23	<b>Vỏ trấu: Sắc tố antoxian của đỉnh (quan sát sớm)</b>	<b>Lemma: anthocyanin coloration of apex (early observation)</b>	65		
QN	Không có hoặc rất nhạt	absent or very weak		1	Khang dân 18
VS	Nhạt	weak		3	
	Trung bình	medium		5	
	Đậm	strong		7	

1. Stage of Evaluation :  
Anthesis half-way
2. Position of Evaluation:  
Spikelet
3. Method of Evaluation:  
Visible single



1



7

	Vietnamese	English	Stage	Note	Example varieties
<b>24</b>	<b>Hoa: màu sắc vòi nhụy</b>	<b>Spikelet: color of stigma</b>	<b>65</b>		
<b>PQ</b>	Trắng	white		1	Khang dân 18
<b>VS</b>	Xanh nhạt	light green		2	
	Vàng	yellow		3	
	Tím nhạt	light purple		4	Nàng thơm chợ Đào
	Tím	purple		5	Trân châu lùn

1. Stage of Evaluation : Anthesis half-way
2. Position of Evaluation: Spikelet
3. Method of Evaluation: Visible single



1



4



5

	Vietnamese	English	Stage	Note	Example varieties
<b>25</b>	<b>Thân: độ dày thân</b>	<b>Stem: thickness</b>	<b>70</b>		
<b>QN</b>	Mỏng	thin		3	Koshihikari kazusa 2 gou
<b>VS/ MS</b>	Trung bình	medium		5	Hương việt 3
	Dày	thick		7	

1. Stage of Evaluation : Milk development
2. Position of Evaluation: At the lowest internode
3. Method of Evaluation:

To Selecte plants in the middlle of plot

To Selecte highest tiller of the culm and cutting

To Measure 20 diameter of the lowest internode in the plot

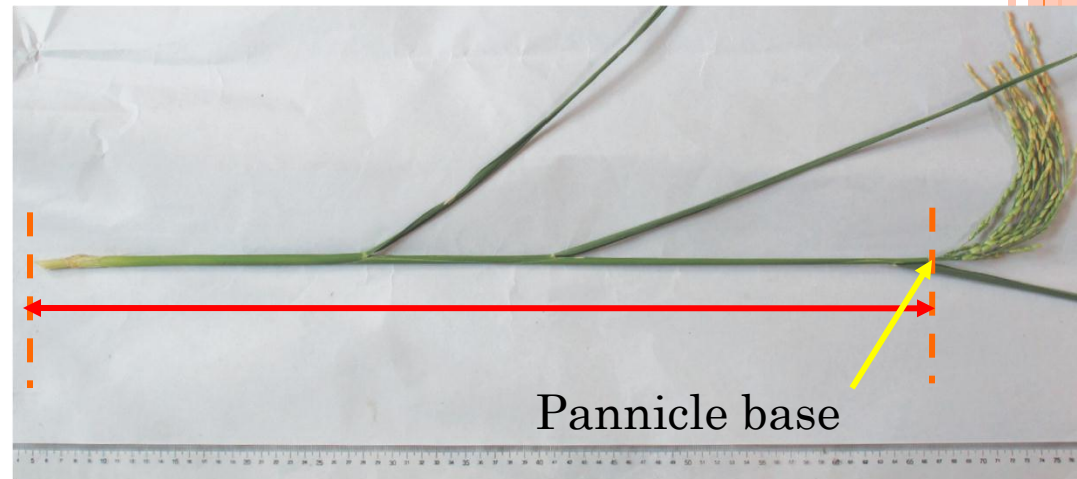


	Vietnamese	English	Stage	Note	Example varieties
26	<b>Thân: Chiều dài (trừ bông) Chỉ với giống không bò lan</b>	<b>Non-prostrate varieties only: Stem length (excluding panicle)</b>	70		
<b>QN VS/ MS</b>	Rất thấp	very short		1	
	Thấp	short		3	Koshihikari kazusa 2 gou
	Trung bình	medium		5	Bắc thơm số 7
	Cao	long		7	BM9962
	Rất cao	very long		9	

1. Stage of Evaluation :  
Milk development
2. Position of Evaluation:  
Stem
3. Method of Evaluation:

To Selecte plants in the middlle of plot  
To Selecte highest tiller of the culm and cutting

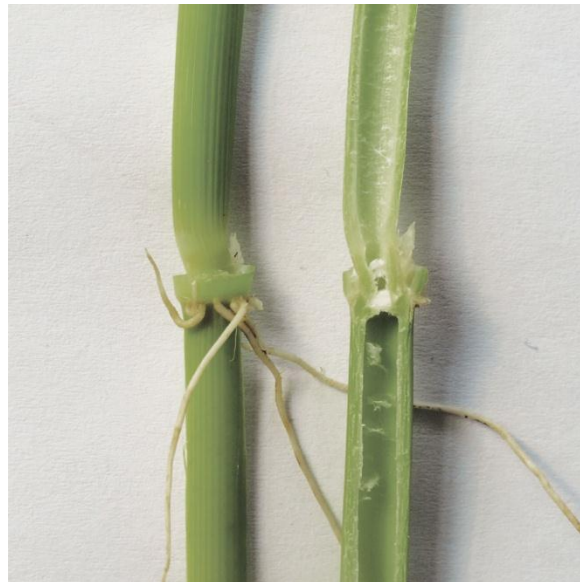
To Measure from lowest to panicle base of 20 stem in the plot





	Vietnamese	English	Stage	Note	Example varieties
<b>27</b>	<b>Thân: Sắc tố antoxian của đốt</b>	<b>Stem: anthocyanin coloration of nodes</b>	<b>70</b>		
<b>QN</b>	Không có	absent		1	Khang dân 18
<b>VS</b>	Có	present		9	

1. Stage of Evaluation :  
Milk development
2. Position of Evaluation:  
Nodes
3. Method of Evaluation:  
Visible single



1



9

	Vietnamese	English	Stage	Note	Example varieties
<b>28</b>	<b>Thân: mức độ sắc tố antoxian của đốt</b>	<b>Stem: intensity of anthocyanin coloration of nodes</b>	<b>70</b>		
<b>QL</b>	Nhạt	light		3	
<b>VS</b>	Trung bình	medium		5	
	Đậm	strong		7	

1. Stage of Evaluation :

Milk development

2. Position of Evaluation:

Nodes

3. Method of Evaluation:

Visible single



3



5



7



	Vietnamese	English	Stage	Note	Example varieties
<b>29</b>	<b>Thân: sắc tố antoxian của lóng</b>	<b>Stem: anthocyanin coloration of internodes</b>	<b>70</b>		
<b>QL</b>	Không có	absent		1	Khang dân 18
<b>VS</b>	Có	present		9	Tám xoan Hải Dương

1. Stage of Evaluation :  
Milk development
2. Position of Evaluatiion:  
Nodes
3. Method of Evaluation:  
Vissible single



1



9



	Vietnamese	English	Stage	Note	Example varieties
30	<b>Bông: Chiều dài trục chính</b>	<b>Panicle: length of main axis</b>	<b>72, 90</b>		
<b>QN</b>	Ngắn	short		3	Koshihikari kazusa 2 gou
<b>VS/ MS</b>	Trung bình	medium		5	
	Dài	long		7	BM 9962

1. Stage of Evaluation :

Milk development, Ripening

2. Position of Evaluation:

Panicle

3. Method of Evaluation:

To Selecte plants in the middle of the plot

To Selecte highest tiller of the culm and cutting

To Measure from panicle base to top of panicle of 20 panicle

In the plot



	Vietnamese	English	Stage	Note	Example varieties
<b>31</b>	<b>Bông: Số bông một cây</b>	<b>Panicle: number per plant</b>	<b>70</b>		
<b>QN</b>	Ít	few		3	ĐTL 2
<b>MS</b>	Trung bình	medium		5	Koshihikari Kazusa 2 gou
	Nhiều	many		7	

1. Stage of Evaluation :  
Milk development
2. Position of Evaluation:  
Panicle
3. Method of Evaluation:  
To select plants in the middle of plot  
To count panicle per plant  
To count 20 plants in the plot



	Vietnamese	English	Stage	Note	Example varieties
<b>32</b>	<b>Bông: Râu</b>	<b>Panicle: awns</b>	<b>60</b>		
<b>QN</b>	Không có	absent		1	Khang dân 18
<b>VS</b>	Có	present		9	NTL1

1. Stage of Evaluation : Anthesis
2. Position of Evaluation: Awns
3. Method of Evaluation: Visible single



1



9



	Vietnamese	English	Stage	Note	Example varieties
33	<b>Bông: Màu râu (quan sát sớm)</b>	<b>Panicle: color of awns (early observation)</b>	<b>60</b>		
PQ VS	Vàng nhạt	light gold		1	Bắc thơm số 7
	Vàng	gold		2	
	Nâu	brown		3	
	Nâu đỏ	reddish brown		4	Nàng thơm chợ Đào
	Đỏ nhạt	light red		5	Tám xoan Hải Dương
	Đỏ	red		6	
	Tím nhạt	light purple		7	Tám xoan Viện cây
	Tím	purple		8	
	Đen	black		9	Nếp Đền Hùng

1. Stage of Evaluation : Anthesis
2. Position of Evaluation: Awns
3. Method of Evaluation: Visible single



1



5



9



	Vietnamese	English	Stage	Note	Example varieties
<b>34</b>	<b>Bông: Màu râu (quan sát sớm)</b>	<b>Panicle: color of awns (early observation)</b>	<b>70-80</b>		
<b>PQ VS</b>	Có ít ở đỉnh bông	tip only		1	Bắc thơm số 7
	Có tới 1/4 bông	upper quarter only		2	
	Có tới giữa bông	upper half only		3	NTL1
	Có tới 3/4 bông	upper three quarter only		4	
	Có ở toàn bộ bông	whole length		5	

1. Stage of Evaluation : Milk development to dough development
2. Position of Evaluation: Awns
3. Method of Evaluation: Visible single



	Vietnamese	English	Stage	Note	Example varieties
35	<b>Bông: Chiều dài của râu dài nhất</b>	<b>Panicle: length of longest awns</b>	<b>70-80</b>		
QN VS	Rất ngắn	very short		1	Bắc thơm số 7
	Ngắn	short		3	
	TB	medium		5	NTL1
	Dài	long		7	(ST5)
	Rất dài	very long		9	Bắc thơm số 7

1. Stage of Evaluation : Milk development to dough development
2. Position of Evaluation: Awns
3. Method of Evaluation: Visible single



3



5



7

	Vietnamese	English	Stage	Note	Example varieties
36	Hạt: Lông của vỏ trấu	Spikelet: pubescence of lemma	60, 80		
QN	Không có hoặc rất ít	absent or very weak		1	LC93-1
VS	Ít	weak		3	
	TB	medium		5	Khang dân 18
	Nhiều	strong		7	
	Rất nhiều	very strong		9	

1. Stage of Evaluation : Anthesis, dough development
2. Position of Evaluation: Awns
3. Method of Evaluation: Visible single



1



7



	Vietnamese	English	Giai đoạn	Mã số	Tên giống điển hình
37	Hạt: Màu của vỏ hạt	Spikelet: color of tip of lemma	80, 90		
PQ	Trắng	white		1	Bắc thơm số 7
VS	Vàng	yellowish		2	
	Nâu	brown		3	Tám xoan Hải Dương
	Đỏ	red		4	Trân châu lùn
	Tím	purple		5	Nếp Đền Hùng
	Đen	black		6	Bắc thơm số 7

1. Stage of Evaluation :

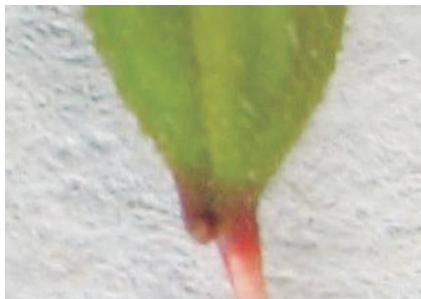
Dough development, ripening

2. Position of Evaluation:

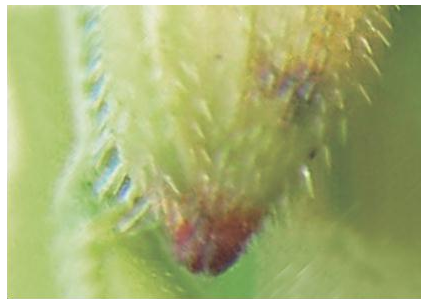
Awns

3. Method of Evaluation:

Visible single



4



5



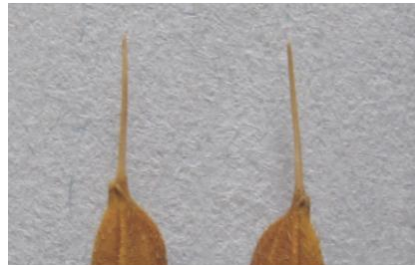
6

	Vietnamese	English	Stage	Note	Example varieties
38	<b>Bông: Màu râu (quan sát muện)</b>	<b>Panicle: color of awns (late observation)</b>	<b>90</b>		
<b>PQ</b>	Vàng nhạt	light gold		1	Hương việt 3, NTL1
<b>VS</b>	Vàng	gold		2	
	Nâu	brown		3	
	Nâu đỏ	reddish brown		4	
	Đỏ nhạt	ligh red		5	
	Đỏ	reddish brown		6	
	Tím nhạt	light purple		7	
	Tím	purple		8	
	Đen	black		9	

11. Stage of Evaluation : ripening
2. Position of Evaluatiion: Awns
3. Method of Evaluation: Vissible single



1



3



8

	Vietnamese	English	Stage	Note	Example varieties
39	<b>Bông:</b> Trạng thái liên quan với thân (Trạng thái trục chính)	<b>Panicle:</b> attitude in relation to stem	90		
<b>PQ</b>	Thẳng	upright		1	
<b>VG</b>	Nửa thẳng	semi-upright		2	
	Gục nhẹ	slightly drooping		3	Khang dân 18
	Gục	strongly drooping		4	Nếp hoa vàng Thụy Ninh

1. Stage of Evaluation : ripening
2. Position of Evaluation: panicle
3. Method of Evaluation: Visible single



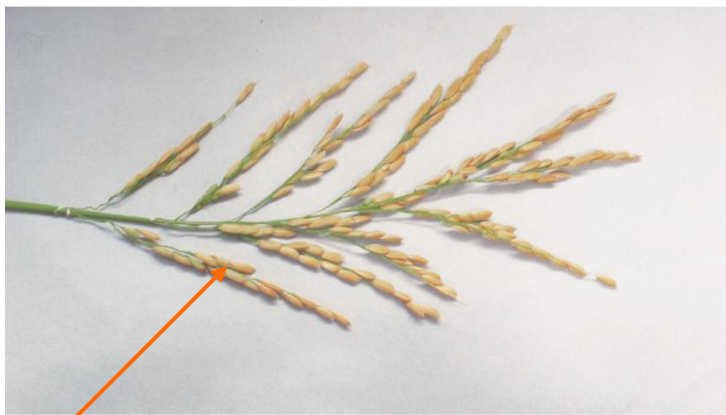
3



4

	Vietnamese	English	Stage	Note	Example varieties
<b>40</b>	<b>Bông: gié thứ cấp</b>	<b>Panicle: presence of secondary branching</b>	<b>90</b>		
<b>QL</b>	Không có	absent		1	
<b>VS</b>	Có	present		9	Khang dân 18

1. Stage of Evaluation : ripening
2. Position of Evaluation: panicle
3. Method of Evaluation: Visible single



9



1



9

Secondary branching





	Vietnamese	English	Stage	Note	Example varieties
<b>41</b>	<b>Bông: Dạng gié thứ cấp</b>	<b>Panicle: type of secondary branching</b>	<b>90</b>		
<b>PQ</b>	Dạng 1	type 1		1	
<b>VS</b>	Dạng 2	type 2		2	
	Dạng 3	type 3		3	

1. Stage of Evaluation :  
ripening

2. Position of Evaluation:  
panicle

3. Method of Evaluation:  
Visible single



	Vietnamese	English	Stage	Note	Example varieties
<b>42</b>	<b>Bông; Trạng thái của gié</b>	<b>Panicle: attitude of branches</b>	<b>90</b>		
<b>QN</b>	Đứng	erect		1	
<b>VS</b>	Nửa đứng	semi-erect		2	Khang dân 18
	Xoè	spreading		3	NV1

1. Stage of Evaluation :  
ripening
2. Position of Evaluation:  
panicle
3. Method of Evaluation:  
Visible single



	Vietnamese	English	Stage	Note	Example varieties
<b>43</b>	<b>Bông: Thoát cổ bông</b>	<b>Panicle: exsertion</b>	<b>90</b>		
<b>QN</b>	Không thoát	enclosed		1	
<b>VG</b>	Thoát một phần	partly exserted		3	(ĐH18)
	Thoát	just exserted		5	Hương việt 3
	Thoát nhiều	moderately-well exserted		7	Bắc thơm số 7
	Thoát hoàn toàn	well exserted		9	(Nếp Lang lâu)

1. Stage of Evaluation : ripening
2. Position of Evaluation: panicle
3. Method of Evaluation: Visible group



3



5



7



9



	Vietnamese	English	Stage	Note	Example varieties
<b>44</b>	<b>Thời gian chín</b>	<b>Time of maturity</b>	<b>90</b>		
<b>QN</b>	Rất sớm	very early		1	
<b>VG</b>	Sớm	early		3	Koshihikari Kazusa 2 gou
	Trung bình	intermediate		5	NTL1
	Muộn	late		7	
	Rất muộn	very late		9	

1. Stage of Evaluation :  
ripening
2. Position of Evaluation:  
panicle
3. Method of Evaluation:  
Visible group



	Vietnamese	English	Stage	Note	Example varieties
<b>45</b>	<b>Lá: sự tàn lá</b>	<b>Leaf: time of senescence</b>	<b>92</b>		
<b>QN</b>	Sớm	early		3	
<b>VG</b>	Trung bình	intermediate		5	Bắc thơm số 7
	Muộn	late		7	P6 đột biến

1. Stage of Evaluation :  
ripening

2. Position of Evaluation:  
Leaf

3. Method of Evaluation:

The leaves below the flag leaf are observed at the time of harvest for their retention of greenness. State (3), leaves are dead when the grains have become fully ripened; state (5), intermediate (there must be 1 leaf which retains its color); state (7), 2 or more leaves retain their color at maturity.



	Vietnamese	English	Giai đoạn	Mã số	Tên giống điển hình
<b>46</b>	<b>Vỏ trấu: MÀU SẮC</b>	<b>Lemma: color</b>	<b>92</b>		
<b>PQ</b>	Vàng nhạt	light gold		1	
<b>VS</b>	Vàng	Gold		2	Khang dân 18
	Nâu	Brown		3	Bắc thơm số 7
	Đỏ đến tím nhạt	reddish to light purple		4	
	Tím	Purple		5	ĐH6
	Đen	Bback		6	

1. Stage of Evaluation :

Caryopsis hard (can no longer be dented by thumbnail)

2. Position of Evaluation:

Lemma

3. Method of Evaluation:

Visible single



2



3



5

	Vietnamese	English	Stage	Note	Example varieties
<b>47</b>	<b>Vỏ trấu: Màu bỗ sung</b>	<b>Lemma: ornamentation</b>	<b>92</b>		
<b>PQ</b>	Không có	absent		1	Khang dân 18
<b>VS</b>	Có rãnh vàng	gold furrows		2	
	Có rãnh nâu	brown furrows		3	Nếp ruộng
	Có đốm tím	purple spots		4	
	Có rãnh tím	purple furrows		5	

1. Stage of Evaluation :

Caryopsis hard (can no longer be dented by thumbnail)

2. Position of Evaluation:

Lemma

3. Method of Evaluation:

Visible single



1



3



	Vietnamese	English	Stage	Note	Example varieties
<b>48</b>	<b>Vỏ trấu: Sắc tố antoxian của gân (quan sát muện)</b>	<b>Lemma: anthocyanin coloration of keel (late obseravtion)</b>	<b>92</b>		
<b>QN</b>	Không có hoặc rất nhạt	absent or very weak		1	Khang dân 18
<b>VS</b>	Nhạt	weak		3	
	Trung bình	medium		5	
	Đậm	strong		7	
	Rất đậm			9	

1. Stage of Evaluation :

Caryopsis hard (can no longer be dented by thumbnail)

2. Position of Evaluatiion:

Lemma

3. Method of Evaluation:

Vissible single



	Vietnamese	English	Stage	Note	Example varieties
49	Vỏ trấu: Sắc tố antoxian của vùng dưới mỏ (quan sát muộn)	Lemma: anthocyanin coloration of area below apex (late obseravtion)	92		
QN	Không có hoặc rất ít	absent or very weak		1	Khang dân 18
VS	Ít	weak		3	
	Trung bình	medium		5	
	Nhiều	strong		7	
	Rất nhiều	very strong		9	

. Stage of Evaluation :

Caryopsis hard (can no longer be dented by thumbnail)

2. Position of Evaluatiion:

Lemma

3. Method of Evaluation:

Vissible single



	Vietnamese	English	Stage	Note	Example varieties
<b>50</b>	<b>Vỏ trấu: Sắc tố antoxian của mủ (quan sát muộn)</b>	<b>Lemma: anthocyanin coloration of area apex (late obseravtion)</b>	<b>92</b>		
<b>QN</b>	Không có hoặc rất nhạt	absent or very weak		1	Khang dân 18
<b>VS</b>	Nhạt	weak		3	
	Trung bình	medium		5	
	Đậm	strong		7	
	Rất đậm	very strong		9	

1. Stage of Evaluation :

Caryopsis hard (can no longer be dented by thumbnail)

2. Position of Evaluatiion:

Areaapex of seed

3. Method of Evaluation:

Vissible single



	Vietnamese	English	Giai đoạn	Mã số	Tên giống điển hình
<b>51</b>	<b>Mày hạt : chiều dài</b>	<b>Glume: length</b>	<b>92</b>		
<b>QN</b>	Ngắn	short		3	
<b>MS /VS</b>	Trung bình	medium		5	
	Dài	long		7	

. Stage of Evaluation :

Caryopsis hard (can no longer be dented by thumbnail)

2. Position of Evaluation:

Glume

3. Method of Evaluation:

The measurement or observation is made on each of two glumes



	Vietnamese	English	Stage	Note	Example varieties
<b>52</b>	<b>Màu hạt: màu sắc</b>	<b>Glume: color</b>	<b>92</b>		
<b>PQ</b>	Vàng nhạt (vàng rơm)	straw		1	Khang dân 18
<b>MS</b>	Vàng	gold		2	
	Đỏ	red		3	
	Tím	purple		4	Nếp Đèn Hùng

1. Stage of Evaluation :

Caryopsis hard (can no longer be dented by thumbnail)

2. Position of Evaluation:

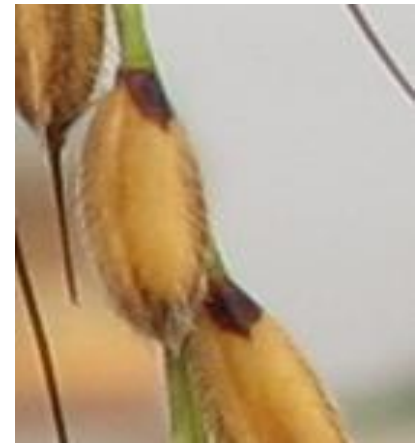
Glume

3. Method of Evaluation:

The observation is made each of two glumes



1



4



	Vietnamese	English	Stage	Note	Example varieties
<b>53</b>	<b>Hạt thóc (Khối lượng 1000 hạt)</b>	<b>Grain; weight of 1000 (fully developed grains)</b>	<b>92</b>		
<b>QN</b>	Thấp	low		3	Khang dân 18
<b>MS</b>	Trung bình	medium		5	
	Cao	high		7	NTL 1

1. Stage of Evaluation :

Caryopsis hard (can no longer be dented by thumbnail)

2. Position of Evaluation:

Grain

3. Method of Evaluation:

To be calculated at 14% moisture (fully developed grains)



	Vietnamese	English	Stage	Note	Example varieties
<b>54</b>	<b>Hạt thóc: chiều dài</b>	<b>Grain:length</b>	<b>92</b>		
<b>MS</b>	Ngắn	short		3	Koshihikari kazusa 2 gou
<b>QN</b>	Trung bình	medium		5	
	Dài	high		7	ST 7

1. Stage of Evaluation :

Caryopsis hard (can no longer be dented by thumbnail)

2. Position of Evaluation:

Grain

3. Method of Evaluation:

To measure length of 20 grains (from base to top of grain except awn)





	Vietnamese	English	Stage	Note	Example varieties
<b>55</b>	<b>Hạt thóc: chiều rộng</b>	<b>Grain: width</b>	<b>92</b>		
<b>MS</b>	Hẹp	narrow		3	Khang dân 18
<b>QN</b>	Trung bình	medium		5	
	Rộng	broad		7	

1. Stage of Evaluation :

Caryopsis hard (can no longer be dented by thumbnail)

2. Position of Evaluatiion:

Grain

3. Method of Evaluation:

To measure wide of 20 grains  
(at the widest of grain )



	Vietnamese	English	Stage	Note	Example varieties
<b>56</b>	<b>Hạt thóc: phản ứng với phenol của vỏ trấu</b>	<b>Lemma: phenol reaction</b>	<b>92</b>		
<b>QL</b>	Không có	absent		1	Koshihikari Kazusa 2 gou
<b>VG</b>	Có	present		9	Bắc thơm số 7

1. Stage of Evaluation :

Caryopsis hard (can no longer be dented by thumbnail)

2. Position of Evaluation:

Lemma

3. Method of Evaluation:

Place hulls from 10 grains into a petri dish of 5 cm diameter, and add 5 ml of 1.5% phenol solution; cover the petri dish, and keep at room temperature (not very cold) for one day.



	Vietnamese	English	Stage	Note	Example varieties
<b>57</b>	<b>Hạt thóc: mức độ phản ứng với phenol</b>	<b>Lemma: intensity of phenol reaction</b>	<b>92</b>		
<b>QN</b>	Nhạt	light		3	
<b>VS</b>	TB	medium		5	Khang dân 18
	Đậm	dark		7	Hoa khô 4

1. Stage of Evaluation :

Caryopsis hard (can no longer be dented by thumbnail)

2. Position of Evaluation:

Lemma

3. Method of Evaluation:

Place hulls from 10 grains into a petri dish of 5 cm diameter, and add 5 ml of 1.5% phenol solution; cover the petri dish, and keep at room temperature (not very cold) for one day.. And then observe intensity of phenol reaction



	Vietnamese	English	Giai đoạn	Mã số	Tên giống điển hình
<b>58</b>	<b>Hạt gạo lứt: Chiều dài</b>	<b>Decorticated grain: length</b>	<b>92</b>		
<b>QN</b>	Ngắn	short		3	Koshihikari kazusa 2 gou
<b>MS</b>	Trung bình	medium		5	MT 131
	Dài	long		7	DT 122

1. Stage of Evaluation :

Caryopsis hard (can no longer be dented by thumbnail)

2. Position of Evaluation:

Decorticated of grain

3. Method of Evaluation:

To measure wide of 20 grains

(from base to top of decorticated of grains)



	Vietnamese	English	Stage	Note	Example varieties
<b>59</b>	<b>Hạt gạo lặt: Chiều rộng</b>	<b>Decorticated grain: width</b>	<b>92</b>		
<b>QN</b>	Hẹp	narrow		3	Hương việt 3
<b>MS</b>	Trung bình	medium		5	Trân châu lùn
	Rộng	broad		7	Koshihikari kazusa 2 gou

1. Stage of Evaluation :

Caryopsis hard

(can no longer be dented by thumbnail)

2. Position of Evaluation:

Decorticated grain

3. Method of Evaluation:

To measure wide of 20 decorticated grains  
(at the widest of decorticated grain )



	Vietnamese	English	Stage	Note	Example varieties
<b>60</b>	<b>Hạt gạo lật : Dạng hạt (D/R)</b>	<b>Decorticated grain:shape (in lateral view)</b>	<b>92</b>		
<b>PQ</b>	Tròn	round		1	
<b>VS</b>	Bán tròn	semi-round		2	Koshihikari kazusa 2 gou
	Bán thon	half spindle shaped		3	Q 5
	Thon	spindle shaped		4	Khang dân 18
	Thon dài	long spindle shaped		5	

1. Stage of Evaluation : Caryopsis hard (can no longer be dented by thumbnail)

2. Position of Evaluation: Decorticated grain

3. Method of Evaluation:

Ratio of lengthwidth of 20 decorticated grains

		<u>legth/width</u>
round	1	< 1.50
semi-round	2	1.50-1.99
half spindle-shaped	3	2.00-2.49
spindle-shaped	4	2.50-2.99
long spindle-shaped	5	≥ 3.00



	Vietnamese	English	Stage	Note	Example varieties
<b>61</b>	<b>Hạt gạo lứt: màu sắc</b>	<b>Decorticated grain: color</b>	<b>92</b>		
<b>PQ</b>	Trắng	white		1	NTL1
<b>VS</b>	Nâu nhạt	light brown		2	
	Có đốm nâu	variegated brown		3	
	Nâu xẫm	dark brown		4	
	Hơi đỏ	light red		5	
	Đỏ	red		6	ĐTL2
	Có đốm tím	variegated purple		7	
	Tím	purple		8	
	Tím xẫm hoặc đen	dark purple/ black		9	

1. Stage of Evaluation : Caryopsis hard (can no longer be dented by thumbnail)
2. Position of Evaluation: Decorticated grain
3. Method of Evaluation:  
Visible single



1



6





	Vietnamese	English	Stage	Note	Example varieties
<b>62</b>	<b>Nội nhũ: dạng</b>	<b>Endosperm: type</b>	<b>92</b>		
<b>PQ</b>	Dính	glutinous		1	NTL1
<b>VS</b>	Trung bình	intermediate		2	
	Không dính	non-glutinous		3	Khang dân 18

1. Stage of Evaluation : Caryopsis hard (can no longer be dented by thumbnail)

2. Position of Evaluation: Grain

3. Method of Evaluation:

The three states of expression can be simply defined by reaction to KI-I solution; glutinous type endosperm is stained to reddish purple, non-glutinous type to dark blue purple, and intermediate type to reddish blue purple.

KI-I solution is prepared by mixing 0.1 % I<sub>2</sub> solution and 0.2 % KI solution

	Vietnamese	English	Stage	Note	Example varieties
<b>63</b>	<b>Nội nhũ: hàm lượng amylose</b>	<b>Endosperm:content of amylose</b>	<b>92</b>		
<b>PQ</b>	Trạng thái 1	state 1		1	NTL1
<b>MG</b>	Trạng thái 2	state 2		2	
	Trạng thái 3	state 3		3	Koshihikari Kazusa 2 gou
	Trạng thái 4	state 4		4	
	Trạng thái 5	state 5		5	
	Trạng thái 6	state 6		6	Khang daan 18
	Trạng thái 7	state 7		7	

1. Stage of Evaluation : Caryopsis hard (can no longer be dented by thumbnail)

2. Position of Evaluation: Rice grain

3. Method of Evaluation:

Method TCVN 5716-2:2008 is used.

This Method is the same Method ISO6647

State 1 <5%  
State 2 5-10%  
State 3 11-15%  
State 4 16-20%  
State 5 21-25%  
State 6 25-30%  
State 7 >30%



	Vietnamese	English	Stage	Note	Example varieties
<b>64</b>	<b>Sự hoà tan với kiềm</b>	<b>Alkali digestion</b>	<b>92</b>		
<b>QN</b>	Không hoà tan	not digested		1	
<b>MG</b>	Hoà tan ít	low digested		3	
	Hoà tan trung bình	intermediate		5	
	Hoà tan hoàn toàn	completely digested		7	

1. Stage of Evaluation : Caryopsis hard (can no longer be dented by thumbnail)

2. Position of Evaluation: Rice grain

3. Method of Evaluation:

Put 10 milled complete (unbroken) rice grains in a petri dish with 1.5% solution of KOH, and keep still under room temperature of around 25°C for about 24 hours.

Note 1 (not digested): rice grains are not affected.

Note 3 (low digested): only the margin of the grains are dissolved.

Note 5 (intermediate): shape of grains become unclear, but incompletely dissolved.

Note 7 (completely digested): no margin is identified between the core part and the outer skirt.

	Vietnamese	English	Stage	Note	Example varieties
<b>65</b>	<b>Hạt gạo lứt: Hương thơm</b>	<b>Decorticated grain: aroma</b>	<b>92</b>		
<b>QN</b>	Không có hoặc thơm rất nhẹ	absent or very weak		1	Khang dân 18
<b>MG</b>	Thơm nhẹ	weak		2	
	Thơm	strong		3	Bắc thơm số 7

1. Stage of Evaluation : Caryopsis hard (can no longer be dented by thumbnail)

2. Position of Evaluation: Rice grain

3. Method of Evaluation:

10 ml. of a 1.7 % solution of KOH should be added to 2 gr. of decorticated grains. The aroma, which is similar to that in pop-corn, is released within 10 minutes. The level of expression is determined by reference to the example varieties.



***THANK YOU  
FOR YOUR ATTENTION !***

