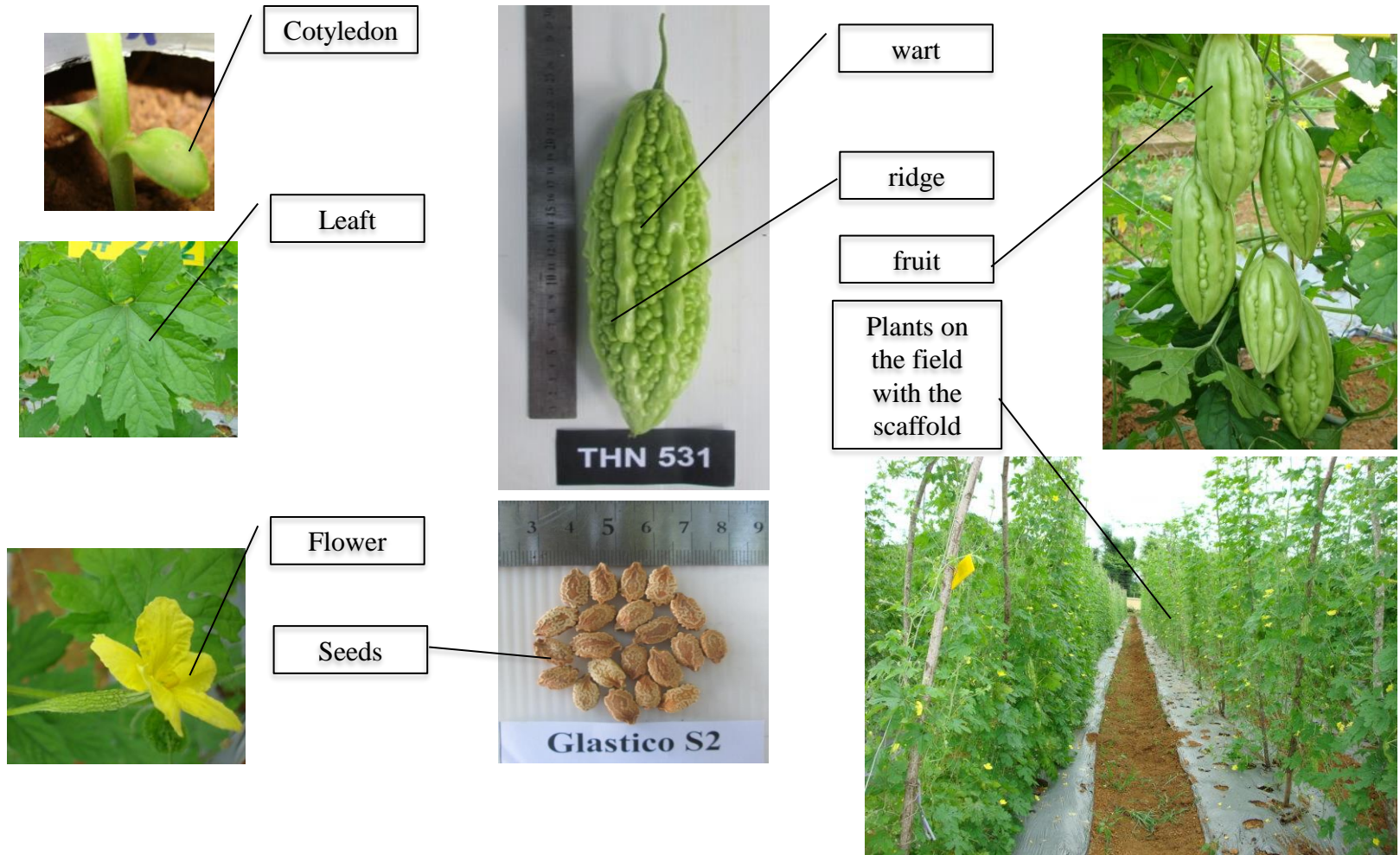


INTRODUCTION MANUAL OF DUS TEST FOR BITTER GOURD



MOPHOLOGY OF BITTER GOURD



CHARACTERISTIC TABLE

Code	Vietnamese	English	Note	Example Var.
1. VG QN	Lá mầm: Mức độ xanh	<i>Cotyledon: intensity of green color</i>		
	Nhạt	Light	3	
	Trung bình	Medium	5	
	Đậm	Dark	7	

1. Stage of evaluation: Should be observed just before the development of the first true leaf.
2. Position of evaluation: Cotyledon
3. Method of evaluation: Visible group



Code	Vietnamese	English	Note	Example Var.
2. (a) QN VG/ MS	Thân: Chiều dài của lóng trên thân chính (từ đốt thứ 15-20)	<i>Stem: length of internode of main stem (between 15th and 20th node)</i>		
	Ngắn	Sort	3	Sunny55 (8cm)
	Trung bình	Medium	5	
	Dài	Long	7	THN531 (17cm)

1. Stage of evaluation: should be observed when plant is fully developed.
2. Position of evaluation: main stem (between 15th and 20th node)
3. Method of evaluation: Measure single



Code	Vietnamese	English	Note	Example Var.
3. (a) QN VG/ MS	Thân: Độ dày của thân chính (từ đốt thứ 15-20).	<i>Stem: thickness of main stem (between 15th and 20th node)</i>		
	Mỏng	Thin	3	Sunny55 (3.7mm)
	Trung bình	Medium	5	
	Dày	Thick	7	Dragon86 (5.4mm)

1. Stage of evaluation: should be observed when plant is fully developed.
2. Position of evaluation: main stem (between 15th and 20th node)
3. Method of evaluation: Measure single



Code	Vietnamese	English	Note	Example Var.
4. (a) QN VG	Thân: Số chồi bên	<i>Stem: number of side shoots</i>		
	Ít	Few	3	TNP18 (8)
	Trung bình	Medium	5	
	Nhiều	Many	7	TLP1368 (15)

1. Stage of evaluation: should be observed when plant is fully developed.
2. Position of evaluation: main stem
3. Method of evaluation: Visible group






Code	Vietnamese	English	Note	Example Var.
5. (b) QN VG	Phiến lá: Kích cỡ	<i>Leaf blade: size</i>		
	Nhỏ	Small	3	Sunny55
	Trung bình	Medium	5	
	Lớn	Large	7	TN919

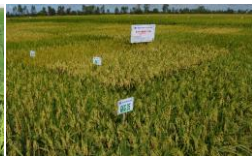
1. Stage of evaluation: All observations on the leaf should be made on fully developed leaves, from the 15th to 20th nodes.
2. Position of evaluation: leaves on main stem
3. Method of evaluation: Visible group







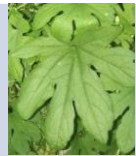
Code	Vietnamese	English	Note	Example Var.
6. (b) QN VG	Phiến lá: Mức độ xanh.	<i>Leaf blade: intensity of green color</i>		
	Nhạt	Light	3	Incan120
	Trung bình Đậm	Medium Dark	5 7	

3	5	7
		

1. Stage of evaluation: All observations on the leaf should be made on fully developed leaves, from the 15th to 20th nodes.
2. Position of evaluation: leaves on main stem
3. Method of evaluation: Visible group

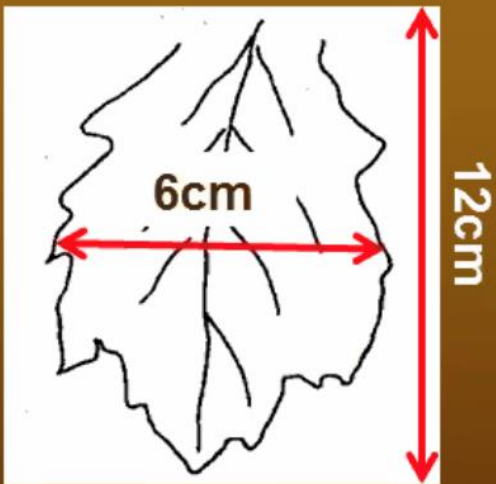


Code	Vietnamese	English	Note	Example Var.
7. (*) (+)	Phiến lá: Tỷ lệ chiều dài/chiều rộng thùy	<i>Leaf blade: ratio length/width lobe</i>		
(b)	Nhỏ	Small	1	Vino08 (1.23)
QN	Trung bình	Medium	2	
VG	Lớn	Large	3	Rio35 (2.08)

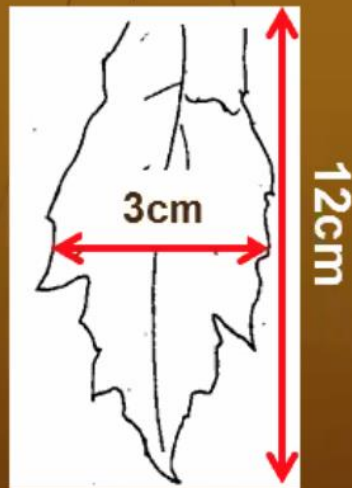
1	2	3
 		 

1. Stage of evaluation: All observations on the leaf should be made on fully developed leaves, from the 15th to 20th nodes.
2. Position of evaluation: leaves on main stem
3. Method of evaluation: Visible group

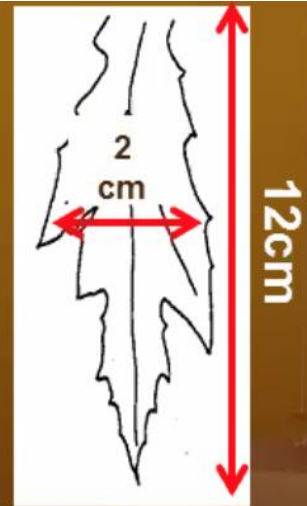




1 – Small
 $12/6=2$



2 – Medium
 $12/4=4$



3 – Large
 $12/2=6$

Source: Dr. Minh NT, PVPO, presentation



Code	Vietnamese	English	Note	Example Var.
8. (*)	Phiến lá: Số thùy	<i>Leaf blade: number of lobes</i>		
(b)	5 thùy	5 lobes	1	
QL	7 thùy	7 lobes	2	
MS	9 thùy	9 lobes	3	

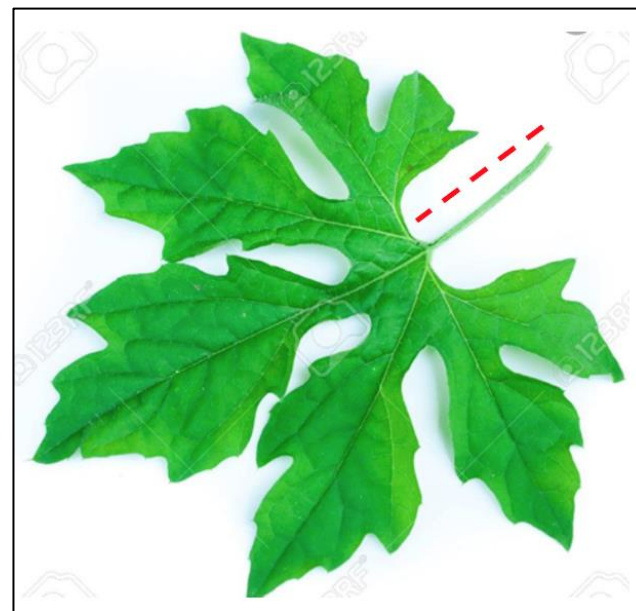
1	2	3
		

1. Stage of evaluation: All observations on the leaf should be made on fully developed leaves, from the 15th to 20th nodes.
2. Position of evaluation: leaves on main stem
3. Method of evaluation: Measure single



Code	Vietnamese	English	Note	Example Var.
10. (b)	Cuống lá: chiều dài	<i>Petiole: length</i>		
QN VG/ MS	Ngắn	Short	3	TLP18 (7.5cm)
	Trung bình	Medium	5	GlasticoS2
	Dài	Long	7	TN919 (14.4cm)

1. Stage of evaluation: All observations on the leaf should be made on fully developed leaves, from the 15th to 20th nodes.
2. Position of evaluation: leaves on main stem
3. Method of evaluation: Measure single



Code	Vietnamese	English	Note	Example Var.
11. (c) QN MS	Cây: Số lượng đốt từ gốc tới đốt có hoa cái thứ nhất	<i>Plant: number of nodes up to node with 1st female flower</i>		
	Ít	Few	3	TLP18 (15)
	Trung bình	Medium	5	Sukhoi29, Su35
	Nhiều	Many	7	TN919 (26)

1. The observations should be made when the plant is fully developed.
2. Position of evaluation: main stem
3. Method of evaluation: Measure single



Code	Vietnamese	English	Note	Example Var.
12. (c)	Bầu nhụy: Chiều dài	<i>Ovary: length</i>		
QN, VG/ MS	Ngắn Trung bình Dài	Sort	3	TLP911 (1,75cm)
		Medium	5	
		Long	7	TN919 (5,38cm)




1. The observations should be made when the plant is fully developed.
2. Position of evaluation: Flower
3. Method of evaluation: Measure single



Code	Vietnamese	English	Note	Example Var.
13. (c) QN VG	Đầu nhụy: Mức độ xanh	<i>Stigma: intensity of green color</i>		
	Nhạt	Light	3	
	Trung bình	Medium	5	
	Đậm	Dark	7	

1. The observations should be made when the plant is fully developed.
2. Position of evaluation: Flower
3. Method of evaluation: Measure single



Code	Vietnamese	English	Note	Example Var.
14. (*) (d) QN VG/ MS	Quả: chiều dài.	<i>Stigma: intensity of green color</i>		
	Ngắn	Sort	3	Rio35, GlasticoS2 (15cm)
	Trung bình	Medium	5	
	Dài	Long	7	Inda03 (28cm)
1		2		3
				





1. The observations should be made approximately 20 days after flowering (harvest maturity stage)
2. Position of evaluation: fruit
3. Method of evaluation: Measure single



Code	Vietnamese	English	Note	Example Var.
15. (*) (d) QN VG/ MS	Quả: Đường kính	<i>Fruit: diameter</i>		
	Nhỏ	Small	3	Dragon86 (5,10cm)
	Trung bình	Medium	5	
	To	Large	7	TLP1368 (6,30cm)

1. The observations should be made approximately 20 days after flowering (harvest maturity stage)
2. Position of evaluation: fruit
3. Method of evaluation: Measure single



Code	Vietnamese	English	Note	Example Var.
16. (*)	Quả: Hình dạng mặt cắt dọc.	<i>Fruit: shape in longitudinal section</i>		
(+)	Tam giác	<i>triangular</i>	1	Rio35 Sukhoi29
(d)	Hình trứng	<i>ovate</i>	2	
PQ	Hình trụ	<i>spindle-shaped</i>	3	
VG	Hình thuôn	<i>oblong</i>	4	
1		2	3	4
				

1. The observations should be made approximately 20 days after flowering (harvest maturity stage)
2. Position of evaluation: fruit
3. Method of evaluation: Visible group







Code	Vietnamese	English	Note	Example Var.
17. (*)	Quả: Màu vỏ (thương phẩm)	<i>Fruit: color of skin</i>		
(d)	Trắng	<i>White</i>	1	
PQ	Xanh nhạt	<i>Light green</i>	2	Vino606, 241
VG	Xanh	<i>Medium green</i>	3	Big 14
	Xanh đậm	<i>Dark green</i>	4	Inda03
1		2	3	4
				

1. The observations should be made approximately 20 days after flowering (harvest maturity stage)
2. Position of evaluation: fruit
3. Method of evaluation: Visible group


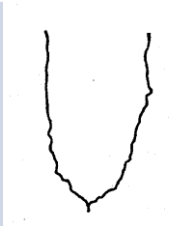
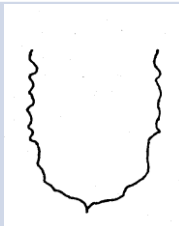
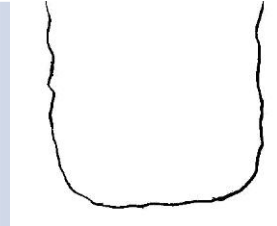




Code	Vietnamese	English	Note	Example Var.
18. (*)	Quả: Hình dạng phần gốc	<i>Fruit: shape of base</i>		
(+)	Nhọn	<i>Acute</i>	1	Sunny55 TLP119
PQ	Tù	<i>Obtuse</i>	2	
VG	Tròn	<i>Rounded</i>	3	
	Phẳng	<i>Flattened</i>	4	
1		2	3	4
				

1. The observations should be made approximately 20 days after flowering (harvest maturity stage)
2. Position of evaluation: fruit
3. Method of evaluation: Visible group



Code	Vietnamese	English	Note	Example Var.
19. (*)	Quả: Hình dạng đỉnh	<i>Fruit: shape of apex</i>		
(+)	Nhọn	<i>Acute</i>	1	Inda03
PQ	Tù	<i>Obtuse</i>	2	
VG	Tròn	<i>Rounded</i>	3	Vino05
	Phẳng	<i>Flattened</i>	4	
1		2	3	4
				

1. The observations should be made approximately 20 days after flowering (harvest maturity stage)
2. Position of evaluation: fruit
3. Method of evaluation: Visible group



Code	Vietnamese	English	Note	Example Var.
20. (+)	Quả: số lượng U vầu	<i>Fruit: number of warts</i>		
(d)	Ít	Few	3	TLP919
QN	Trung bình	Medium	5	
VG/ MS	Nhiều	Many	7	Dragon86

1. The observations should be made approximately 20 days after flowering (harvest maturity stage)
2. Position of evaluation: fruit
3. Method of evaluation: Measure single

TLP919



Dragon86



Code	Vietnamese	English	Note	Example Var.
21. (*)	U vấu: kích cỡ	<i>Wart: size</i>		
(+)	Nhỏ	Small	3	Inda03
(d)	Trung bình	Medium	5	Big14, Vino04
QN	Lớn	Large	7	
VG				

1. The observations should be made approximately 20 days after flowering (harvest maturity stage)
2. Position of evaluation: fruit
3. Method of evaluation: Visible group



Code	Vietnamese	English	Note	Example Var.
22. (*)	U vấu: Hình dạng của đỉnh	<i>Wart: shape of top</i>		
(+)	Nhọn - <i>acute</i>	Acute	3	Inda03
(d)	Tù - <i>obtuse</i>	Obtuse	5	
PQ	Tròn - <i>rounded</i>	Rounded	7	Vino05
VG				

1. The observations should be made approximately 20 days after flowering (harvest maturity stage)
2. Position of evaluation: fruit
3. Method of evaluation: Visible group



Code	Vietnamese	English	Note	Example Var.
22. (*)	U vấu: Sự xuất hiện gai	<i>Wart: presence of spines</i>		
(+)	Không	Absent	1	
(d)	Có	Present	9	
QL				
VG				

1. The observations should be made approximately 20 days after flowering (harvest maturity stage)

2. Position of evaluation: fruit

3. Method of evaluation: Visible group



Code	Vietnamese	English	Note	Example Var.
24. (*)	Quả: chiều dài vết gợn	<i>Fruit: length of ridge</i>		
(+)	Ngắn	<i>Sort</i>	3	Vn400
(d)	Trung bình	<i>Medium</i>	5	
QN, VG/ MS	Dài	<i>Long</i>	7	Glastico S2

1. The observations should be made approximately 20 days after flowering (harvest maturity stage)
2. Position of evaluation: fruit
3. Method of evaluation: Measure single



Code	Vietnamese	English	Note	Example Var.
25. (*)	Quả: Màu sắc vỏ quả khi chín	<i>Fruit: color of skin at ripe stage</i>		
(+)	Vàng	<i>Yellow</i>	1	
PQ	Da cam	<i>Orange</i>	2	
VG	Cam đỏ	<i>Reddish orange</i>	3	

1. Observations should be made when the fruit left on the plant has turned completely yellow, orange or reddish orange.

2. Position of evaluation: fruit

3. Method of evaluation: Visible group



Code	Vietnamese	English	Note	Example Var.
26. (+)	Quả: Vị đắng	<i>Fruit: bitterness</i>		
(d) QL MG	Không Có	Absent Present		

1. The assessments should be made approximately 20 days after flowering (harvest maturity stage).
2. Position of evaluation: fruit
3. Method of evaluation: Measure group. The bitterness of the fruit should be observed by tasting the flesh of the middle part of the fruit at harvest maturity



Code	Vietnamese	English	Note	Example Var.
27. (+)	Quả: Mức độ đắng	<i>Fruit: intensity of bitterness</i>		
(d)	Ít	Weak	3	
QN	Trung bình	Medium	5	Vino 606
MG	Nhiều	Strong	7	Incan 120

1. The assessments should be made approximately 20 days after flowering (harvest maturity stage).

2. Position of evaluation: fruit

3. Method of evaluation: Measure group. The bitterness of the fruit should be observed by tasting the flesh of the middle part of the fruit at harvest maturity



Code	Vietnamese	English	Note	Example Var.
28. (e) QN VG	Hạt: Kích cỡ	<i>Seed: size</i>		
	Nhỏ	Small	3	GlasticoS2
	Trung bình	Medium	5	
	To	Large	7	Su35

1. All observations on the seed should be made on fully developed and dry seed, after washing and drying in the shade
2. Position of evaluation: seed
3. Method of evaluation: Visible group.



Code	Vietnamese	English	Note	Example Var.
29 (e) PQ VG	Hạt: Hình dạng	<i>Seed: Shape</i>		
	Bầu dục - <i>Oval</i>	Oval	1	
	Tròn – <i>Circle</i>	Circle	2	
	Trứng - <i>Ovate</i>	Ovate	3	
	Tứ giác - <i>Tetragon</i>	Tetragon	4	

1. All observations on the seed should be made on fully developed and dry seed, after washing and drying in the shade
2. Position of evaluation: seed
3. Method of evaluation: Visible group.



Code	Vietnamese	English	Note	Example Var.
30 (e) QN VG	Hạt: Bề mặt	<i>Seed: Surface</i>		
	Nhẵn	Smooth	1	
	Ít sần sùi	Light lumpy	3	
	Sần sùi	Lumpy	5	
	Rất sần sùi	Strong lumpy	7	

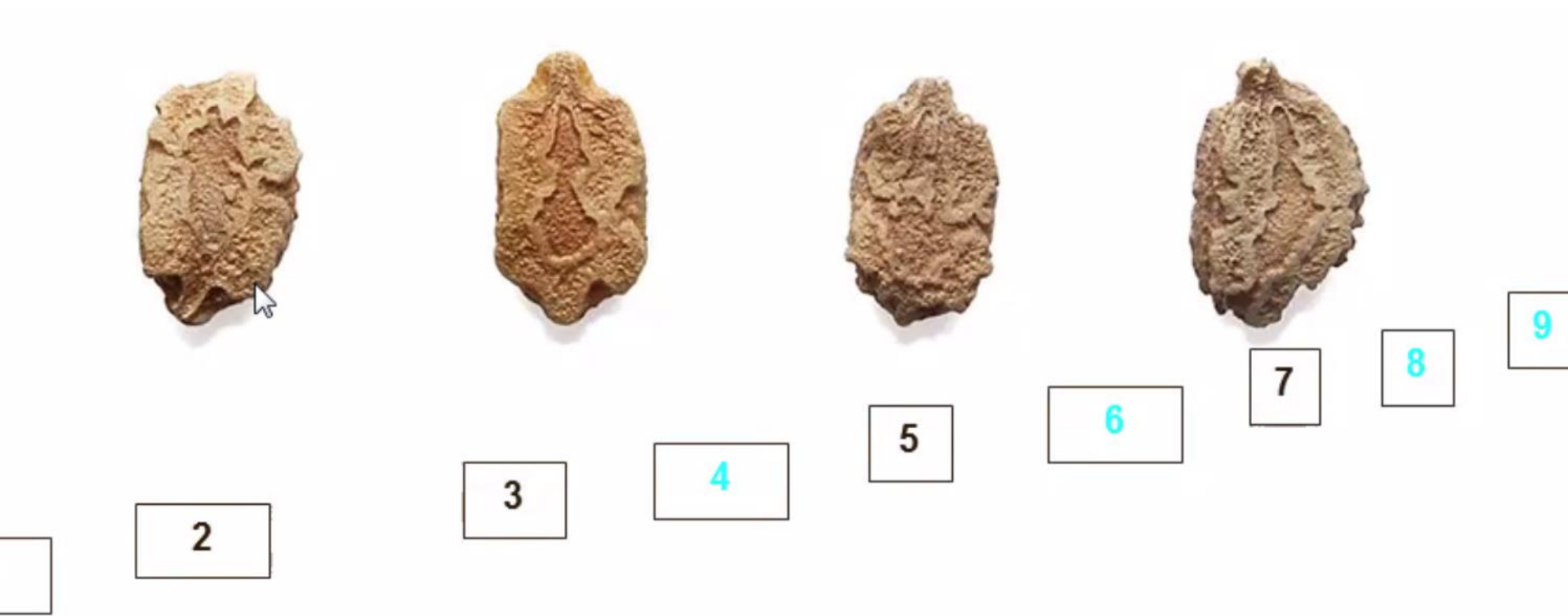
1. All observations on the seed should be made on fully developed and dry seed, after washing and drying in the shade
2. Position of evaluation: seed
3. Method of evaluation: Visible group.



Code	Vietnamese	English	Note	Example Var.
31. (e) QN VG	Hạt: Mức độ nâu của vỏ hạt	<i>Seed: intensity of brown color of testa</i>		
	Nhạt	Light	3	Vino 606 Inacan 120
	Trung bình Đậm	Medium Dark	5 7	

1. All observations on the seed should be made on fully developed and dry seed, after washing and drying in the shade
2. Position of evaluation: seed
3. Method of evaluation: Visible group.





Source: Dr. Minh NT, PVPO, presentation



Code	Vietnamese	English	Note	Example Var.
32. (+)	Hạt: Răng cưa ở rìa	<i>Seed: indentation of edge</i>		
(e)	Nhỏ	<i>Small</i>	3	
QN	Trung bình	<i>Medium</i>	5	
VG	To	<i>Large</i>	7	

1. All observations on the seed should be made on fully developed and dry seed, after washing and drying in the shade

2. Position of evaluation: seed

3. Method of evaluation: Visible group



3
small



5
medium



7
large



Code	Vietnamese	English	Note	Example Var.
33. (+) QN VG	Thời gian chín sinh lý	<i>Time of physiological maturity</i>		
	Sớm	Early	3	
	Trung bình	Medium	5	
	Muộn	Late	7	

1. All observations on the seed should be made on fully developed and dry seed, after washing and drying in the shade
2. Position of evaluation: seed
3. Method of evaluation: Visible group. The time of physiological maturity is when the fruit is fully developed.





**THANK YOU
FOR YOUR
ATTENTION**

