

**Guidelines**  
**for the Conduct of Test for**  
**Distinctiveness, Uniformity and Stability**

**on**

**Orchid**  
*Cymbidium*

**Protection of Plant Varieties and Farmers' Rights Authority**

**(PPV & FRA)**

**Government of India**

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## **I. Subject**

These Test Guidelines apply to all vegetatively propagated varieties of *Cymbidium* Sw. of the family Orchidaceae.

## **II. Plant material required**

1. The Protection of Plant Varieties and Farmers' Rights Authority (PPV & FRA) shall decide when, where and in what quantity and quality the plant material are required for testing of a variety denomination for registration under the Protection of Plant Varieties and Farmers' Rights (PPV & FR) Act, 2001. Applicants submitting such plant material from a country other than India shall make sure that all customs and quarantine requirements stipulated under relevant national legislations and regulations are complied with.
2. For all varieties, only 3 to 4 years old 20 plants (10 for each Centre) with at least two pseudobulbs and one back-bulb shall be required for DUS testing.
3. The plant material supplied should be visibly healthy, not lacking in vigour or affected by any pests or diseases or mechanical damage.
4. Plant material shall not have undergone any chemical or bio-physical treatment unless the competent authority allow or request such treatment. If it has been treated, details of the treatment must be given.

## **III. Conduct of tests**

1. A test should normally be conducted for two growing seasons.
2. Tests should normally be conducted at two places. If any essential characteristics of the variety are not expressed for visual observations at these places, the variety shall be considered for further examination at another appropriate test site or under special test protocol on expressed request of the applicant.
3. The tests should be carried out in the greenhouse under conditions ensuring normal growth for the plant concerned. The size of the pots/ containers should be such that plants or parts of plants may be removed for measurement and counting without prejudice to the observations which must be made up to the end of the growing period. Each test should include a total of 10 plants.

4. Test should be done only in pots of prescribed size. The pots should be kept at a standard spacing recommended for each type or at the spacing specified by the applicant.
5. Additional tests for special purposes may be established.
6. Normally growth regulators should not be used.

#### **IV. Methods and observations**

1. The characteristics described in the Table of characteristics (section VII) shall be used for the testing of varieties for their DUS.
2. For the assessment of Distinctiveness and Stability, all observations shall be made on 10 plants or parts taken from each of 10 plants.
3. For the assessment of Uniformity, a population standard of 1% and an acceptance probability of at least 95% shall be applied. In the case of a sample size of 10 plants, the maximum number of off-types allowed would be 1.
4. All observations on the pseudobulbs shall be made on the flowering pseudobulb.
5. All observations on the leaf shall be made on the longest leaf of a flowering pseudobulb.
6. All observations on the inflorescence and the flower shall be made at the time when 50% of the flowers on the inflorescence have opened and on the most recently fully opened flower on the inflorescence before fading of colour.
7. All observations on the length and width of the flower and parts of the flower shall be made in the spread out positions.
8. All observations on the colour of sepal, petal, lip and column shall be made both on the inner and outer sides.
9. For the assessment of colour characteristics, the Royal Horticultural Society (RHS) colour chart shall be used.

#### **V. Grouping of varieties**

1. The candidate varieties for DUS test shall be divided into groups to facilitate the assessment of Distinctiveness. Characteristics which are known from experience not to vary or to vary slightly within a variety and which in their various states are fairly evenly distributed across all varieties in the collection, are suitable for grouping purpose.
2. The following characteristics shall be used for grouping of Cymbidium varieties:

a) Pseudobulb: shape	(Characteristic 2)
b) Inflorescence: length	(Characteristic 12 or 13)
c) Inflorescence: number of flowers	(Characteristic 16)
d) Flower: length	(Characteristic 20 or 21)
e) Flower: width	(Characteristic 22 or 23)
f) Flower: predominant colour	(Characteristic 27)
g) Lip: colour pattern inside	(Characteristic 56)
h) Flowering: season	(Characteristic 62)

## VI. Characteristics and Symbols

- To assess Distinctiveness, Uniformity and Stability, the characteristics and their states as given in the Table of characteristics shall be used.
- Notes (1-9) shall be used to describe the state of each character for the purpose of electronic data processing.
- Legend
  - (\*): Characteristics that shall be observed during every growing season for all varieties and hybrids shall always be included in the description of the varieties and hybrids, except when the state of expression of any of these characters is rendered impossible by a preceding phenological characteristic or by the environment conditions of the testing region. Under such exceptional situation, adequate explanation shall be provided.
  - (+): See explanations on the Table of characteristics
- Characteristics denoted with symbols QL, QN and PQ in the first column of the Table of characteristics shall be indicated as :
  - QL:** Qualitative characteristic
  - QN:** Quantitative characteristic
  - PQ:** Pseudo-qualitative characteristic
- (a)-(e):** see Section VIII for explanation
- Type of assessment of characteristics indicated in column six of the Table of characteristics are as follows:

**MG:** Measurement by a single observation of a group of plants or parts of plants

**MS:** Measurement of a number of individual plants or parts of plants

**VG:** Visual assessment by a single observation of a group of plants or parts of plants

**VS:** Visual assessment by observations of individual plants or parts of plants

## VII. Table of characteristics

S. No.	Characteristics	States	Notes	Example Varieties /hybrids	Type of Assessment
1. * QN (a)	Pseudobulb size (length x breadth)	Small (<30 cm <sup>2</sup> )	1	Cym. 'Velvet Green', Cym. 'Red Star', Cym. 'Show Girl', Cym. Bob Marlin 'Lucky', Cym. 'W.W. Wondrous', Cym. 'Sleeping Nymph'	MS
		Medium (30-60 cm <sup>2</sup> )	3	Cym. 'Red Beauty', Cym. 'Fire Storm', Cym. 'Winter Beach Sea Green', Cym. 'Madrid Forest King'	
		Large (>60 cm <sup>2</sup> )	5	Cym. 'Penneshow Winter Flush', Cym. San Francisco 'Monalisa', Cym. 'Miss Sanders'	
2. * PQ (a) (+)	Pseudobulb shape in longitudinal section	Narrow cylindrical	1	-	VG
		Round	3	Cym. 'Lucky Rainbow',	
		Ovoid	5	Cym. 'Soul Hunt', Cym. 'Fire Storm', Cym. Bob Marlin 'Lucky', Cym. 'Winter Beach Sea Green', Cym. 'Madrid Forest King', Cym. 'Show Girl', Cym. 'Sleeping Nymph'	
		Conical	7	Cymb. 'Luna Pink',	
3. * QN (a)	Number of leaves on flowering pseudobulb	Few (<3)	1	-	VS
		Medium (3-6)	3	-	
		Many (>6)	5	Cym. 'Fire Storm', Cym. Bob Marlin 'Lucky', Cym. 'Winter Beach Sea Green', Cym. 'Madrid Forest King', Cym. 'W.W. Wondrous', Cym. 'Red Star', Cym. 'Show Girl', Cym. 'Sleeping Nymph'	
4. * QN	Leaf length	Short (<40 cm)	1	-	VS
		Medium	3	Cym. 'Tracey Reddaway',	

(a)		(40-80 cm)		Cym. 'Soul Hunt', Cym. 'Fire Storm', Cym. Bob Marlin 'Lucky', Cym. 'W.W. Wondrous', Cym. 'Sleeping Nymph'	
		Long (>80 cm)	5	Cym. 'H.C. Aurora', Cym. 'Angelica December Gold', Cym. San Francisco 'Monalisa', Cym. 'Winter Beach Sea Green', Cym. 'Madrid Forest King'	
5. QN (a)	Leaf width	Narrow (<1.5 cm)	1		VS
		Medium (1.5-3.0 cm)	3	Cym. 'Soul Hunt', Cym. 'Amesbury', Cym. 'H.C. Aurora', Cym. 'Tracey Reddaway', Cym. 'Hawtscens', Cym. Bob Marlin 'Lucky', Cym. 'Winter Beach Sea Green', Cym. 'W.W. Wondrous', Cym. 'Show Girl',	
		Broad (>3.0 cm)	5	Cym. 'Fire Storm', Cym. 'Madrid Forest King', Cym. 'Sleeping Nymph'	
6.* (+) PQ (a)	Leaf shape	Linear	1	Cym. 'Yankilla', Cym. 'Soul Hunt', Cym. 'Fire Storm', Cym. Bob Marlin 'Lucky', Cym. 'Winter Beach Sea Green', Cym. 'Madrid Forest King', Cym. 'W.W. Wondrous', Cym. 'Sleeping Nymph'	VG
		Linear-oblong	3	Cym. 'Lucky Rain Bow', Cym. 'Sainte Lapine'	
		Lanceolate	5	Cym. 'Stanley Fouraker White Magic',	
7. PQ (a)	Leaf petiole	Absent	1	Cym. 'Yankilla', Cym. 'Soul Hunt', Cym. 'Fire Storm'	VG
		Present	9	-----	
8. (+) PQ (a)	Leaf apex shape	Acute	1	Cym. 'Amesbury', Cym. 'H.C. Aurora', Cym. 'Tracey Reddaway', Cym. 'Hawtscens', Cym. 'Fire Storm', Cym. Bob Marlin 'Lucky', Cym. 'Winter Beach Sea Green', Cym. 'Madrid Forest King', Cym. 'W.W. Wondrous',	VG
		Obtuse	3		

		Bi-lobed	5	Cym. 'Soul Hunt'	
9. QN (b)	No. of flower spike / pseudobulb	One	1	Cym. 'Tracey Reddaway', Cym. 'Canon Color', Cym. 'Hawtescens', Cym. 'Jungfrau Snow Queen', Cym. 'Fire Storm', Cym. Bob Marlin 'Lucky', Cym. 'Winter Beach Sea Green', Cym. 'W.W. Wondrous',	MS
		Two	3	Cym. 'Sleeping Nymph'	
		> Two	5	Cym. 'H.C. Aurora'	
10. PQ (b)	Inflorescence orientation	Erect	1	Cym. 'H.C. Aurora', Cym. 'Ammesbury', Cym. 'Red Imperial Red Tower', Cym. 'Hawtescens', Cym. 'Jungfrau Snow Queen', Cym. 'Sleeping Nymph'	VG
		Horizontal Arching /	3	Cym. 'Yankilla', Cym. 'Fire Storm', Cym. Bob Marlin 'Lucky', Cym. 'Winter Beach Sea Green', Cym. 'Madrid Forest King', Cym. 'W.W. Wondrous'	
		Drooping Pendulus /	5		
11. PQ (b)	Inflorescence type	Dense	1	Cym. 'Winter Beach Sea Green', Cym. 'Sleeping Nymph'	VG
		Lax (Sparsely arranged)	3	Cym. 'Hawtescens', Cym. 'Fire Storm', Cym. Bob Marlin 'Lucky', Cym. 'Madrid Forest King', Cym. 'W.W. Wondrous', Cym. 'Red Star'	
12. * QN (b)	Inflorescence length of Standard type	Short (<75 cm)	1	Cym. 'Soul Hunt', Cym. 'Stanley Fouraker White Magic', Cym. 'Yankilla', Cym. 'Ammesbury', Cym. 'Fire Storm', Cym. Bob Marlin 'Lucky', Cym. 'W.W. Wondrous', Cym. 'Sleeping Nymph'	MS
		Medium (75-90 cm)	3	Cym. 'Hawtescens', Cym. 'Winter Beach Sea Green'	
		Long (>90cm)	5	Cym. 'Red Star', Cym. 'Madrid Forest King'	
13. QN (b)	Inflorescence length of Miniature type	Short (<30 cm)	1		MS
		Medium	3	Cym. 'Sun Gold'	

		(30-60 cm)			
		Long (>60 cm)	5		
14. QN (b)	Peduncle length	Short (<30 cm)	1	Cym. 'Yankilla', Cym. 'Pine Clash Moon Venus', Cym. Bob Marlin 'Lucky', Cym. 'Winter Beach Sea Green', Cym. 'Sleeping Nymph'	MS
		Medium (30-60 cm)		Cym. 'Soul Hunt', Cym. 'H.C. Aurora', Cym. 'Fire Storm', Cym. 'W.W. Wondrous'	
		Long (>60 cm)	3	Cym. 'Madrid Forest King', Cym. 'Baltic Glaciers Mint Ice'	
15. QN (b)	Peduncle diameter	Thin (<0.5 cm)	1	Cym. Bob Marlin 'Lucky'	MS
		Medium (0.5-0.8 cm)	3	Cym. 'Soul Hunt', Cym. 'Show Girl', Cym. Tracey Reddaway', Cym. 'Fire Storm', Cym. 'Winter Beach Sea Green',	
		Thick (>0.8 cm)	5	Cym. 'Yankilla', Cym. 'Red Star', Cym. 'H.C. Aurora', Cym. 'Madrid Forest King', Cym. 'W.W. Wondrous', Cym. 'Sleeping Nymph'	
16. * QN (b)	Number of flowers per inflorescence	<12	1	Cym. 'Fire Storm', Cym. Bob Marlin 'Lucky', Cym. 'Winter Beach Sea Green', Cym. 'W.W. Wondrous', Cym. 'Sleeping Nymph'	VS
		12-20	3	Cym. 'Madrid Forest King', Cym. 'Red Star'	
		>20	5		
17. QL (b)	Anthocyanin colouration in peduncle	Absent	1	Cym. 'Yankilla', Cym. 'Amesbury', Cym. Bob Marlin 'Lucky', Cym. 'Winter Beach Sea Green', Cym. 'Madrid Forest King', Cym. 'W.W. Wondrous',	VG
		Present	9	Cym 'Soul Hunt', Cym. 'H.C. Aurora', Cym. 'Red Imperial Red Tower', Cym. 'Tracey Reddaway', Cym. 'Fire Storm', Cym. 'Sleeping Nymph'	
18. PQ	Peduncle bract	Absent	1		VG
		Present	9	Cym 'Soul Hunt',	

(b)				Cym. 'H.C. Aurora', Cym. 'Fire Storm', Cym. Bob Marlin 'Lucky', Cym. 'Winter Beach Sea Green', Cym. 'Madrid Forest King', Cym. 'W.W. Wondrous', Cym. 'Sleeping Nymph'	
19. QN (b)	No. of inflorescences / plant	Few (<5)	1	Cym. 'W.W. Wondrous', Cym. 'Ensikhan', Cym. 'Soul Hunt', Cym. 'Pine Clash Moon Venus', Cym. 'Sleeping Nymph'	VS
		Medium (5-10)	3	Cym. 'H.C. Aurora', Cym. 'Forest King', Cym. 'Yankilla', Cym. 'Hawtescens', Cym. 'Margaret Thatcher'	
		Many (>10)	5	Cym. 'Sungold', Cym. 'Baltic Glaciers Mint Ice'	
20. * QN (c)	Flower length of Standard type (Tip of dorsal sepal to tip of lip)	Short (<4.0cm)	1	Cym. 'Show Girl', Cym. 'Canon Color',	MS
		Medium (4.0-8.0cm)	3	Cym. 'Soul Hunt', Cym. 'Yankilla', Cym. 'Hawtescens', Cym. 'Takarjoke', Cym. 'Fire Storm', Cym. Bob Marlin 'Lucky', Cym. 'Madrid Forest King', Cym. 'Sleeping Nymph'	
		Long (>8.0cm)	5	Cym. 'H.C. Aurora', Cym. 'Winter Beach Sea Green', Cym. 'W.W. Wondrous'	
21. * QN (c)	Flower length of miniature type (Tip of dorsal sepal to tip of lip)	Short (<2 cm)	1		MS
		Medium (2 cm - 4 cm)	3		
		Long (>4 cm)	5	Cym. 'Sun Gold'	
22. * QN (c)	Flower width of standard type (Tip distance of two lateral petals) Standard	Narrow (<4 cm)	1		MS
		Medium (4-8 cm)	3	Cym. 'Soul Hunt', Cym. 'Yankilla', Cym. 'Show Girl', Cym. 'Amesbury', Cym. 'Velvet Green', Cym. 'Takarjoke', Cym. 'Sleeping Nymph'	
		Broad (>8 cm)	5	Cym. 'H.C. Aurora', Cym. Tracey Reddaway',	

				Cym. 'Fire Storm', Cym. Bob Marlin 'Lucky', Cym. 'Winter Beach Sea Green', Cym. 'Madrid Forest King', Cym. 'W.W. Wondrous',	
23. * QN (c)	Flower width of miniature type (Tip distance of two lateral petals)	Narrow (<2 cm)	1		MS
		Medium (2 cm - 4 cm)	3		
		Broad (>4 cm)	5	Cym. 'Sun Gold'	
24. QL (b)	Flower fragrance	Absent	1	Cym. 'Yankilla', Cym. 'Fire Storm', Cym. Bob Marlin 'Lucky', Cym. 'Winter Beach Sea Green', Cym. 'W.W. Wondrous'	MG
		Present	9	Cym. 'Ammesbury', Cym. 'H.C. Aurora', Cym. 'Madrid Forest King', Cym. 'Sleeping Nymph'	
25. * QN (b)	Flower longevity on the plant	Short (<20 days)	1		VG
		Medium (20-40 days)	3	Cym. 'Red Star'	
		Long (> 40 days)	5	Cym. 'H.C. Aurora', Cym. 'Yankilla', Cym. 'Amesbury', Cym. 'Fire Storm', Cym. Bob Marlin 'Lucky', Cym. 'Winter Beach Sea Green', Cym. 'Madrid Forest King', Cym. 'W.W. Wondrous', Cym. 'Sleeping Nymph'	
26. PQ (b)	Flower orientation on inflorescence	Facing one side	1	Cym. 'Fire Storm', Cym. 'W.W. Wonders', Cym. 'Madrid Forest King', Cym. 'Winter Beach Sea Green'	VG
		Facing all directions	3	Cym. 'H.C. Aurora', Cym. 'Jungfrau Dos Pueblos', Cym. Bob Marlin 'Lucky', Cym. 'Madrid Forest King', Cym. 'W.W. Wondrous', Cym. 'Red Star', Cym. 'Sleeping Nymph'	
27. QL (b)	Flower predominant colour	White	1	Cym. 'Takarjoke', Cym. 'W.W. Wondrous'	VG
		Pink	2		
		Yellow	3	Cym. 'Angelica December Gold', Cym. 'Hawtescens',	

		Green	4	Cym. 'Yankilla', Cym. 'Winter Beach Sea Green', Cym. 'Madrid Forest King'	
		Red	5	Cym. 'Soul Hunt', Cym. 'Miss Sanders', Cym. 'Fire Storm', Cym. Bob Marlin 'Lucky',	
		Brown	6	Cym. 'Tracey Reddaway',	
		Maroon	7	Cym. 'Show Girl', Cym. 'Ammesbury',	
28. QN (c)	Dorsal sepal size (length x breadth)	Small (<6 cm <sup>2</sup> )	1		MG
		Medium (6 cm <sup>2</sup> – 24cm <sup>2</sup> )	3	Cym. 'Soul Hunt', Cym. 'Yankilla', Cym. 'Fire Storm', Cym. Bob Marlin 'Lucky', Cym. 'Red Star'	
		Large (>24 cm <sup>2</sup> )	5	Cym. 'H.C. Aurora', Cym. Jungfrau Dos Pueblos', Cym. 'Winter Beach Sea Green', Cym. 'Madrid Forest King', Cym. 'W.W. Wondrous', Cym. 'Sleeping Nymph'	
29. (+) PQ (c)	Dorsal sepal shape	Linear	1	Cym. 'Yankilla',	VG
		Oblong	3	Cym. 'Ammesbury', Cym. 'Winter Beach Sea Green', Cym. 'Madrid Forest King', Cym. 'Sleeping Nymph'	
		Elliptic	5	Cym. 'Red Star', Cym. 'H.C. Aurora', Cym. Bob Marlin 'Lucky'	
		Obovate	7	Cym. 'Soul Hunt', Cym. 'Miss Sanders', Cym. 'W.W. Wondrous'	
30. (+) PQ (c)	Dorsal sepal curvature	Incurved with deflexed apex	1	Cym. 'Madrid Forest King', Cym. 'W.W. Wondrous'	VG
		Incurved with straight apex	3	Cym. 'Soul Hunt', Cym. 'Yankilla', Cym. 'Ammesbury', Cym. H.C. Aurora, Cym. 'Fire Storm', Cym. Bob Marlin 'Lucky', Cym. 'Winter Beach Sea Green', Cym. 'Sleeping Nymph'	
		Straight	5	Cym. 'Miss Sanders'	
		Deflexed	7		
31. (+) PQ	Dorsal sepal apex	Acute	1	Cym. 'Fire Storm', Cym. Bob Marlin 'Lucky', Cym. 'Winter Beach Sea Green',	VG

(c)				Cym. 'Madrid Forest King', Cym. 'W.W. Wondrous', Cym. 'Sleeping Nymph'	
		Obtuse	3	Cym. 'H.C. Aurora', Cym. 'Ammesbury'	
		Premorse	5		
		Bilobed	7	Cym. 'Show Girl',	
32. QN (c)	Lateral sepal size (length x breadth)	Small (<6 cm <sup>2</sup> )	1	Cym. 'Yankilla'	MG
		Medium (6 – 24 cm <sup>2</sup> )	3	Cym. 'Red Star', Cym. 'Angelica December Gold', Cym. 'Fire Storm', Cym. 'Winter Beach Sea Green'	
		Large (>24 cm <sup>2</sup> )	5	Cym. Bob Marlin 'Lucky', Cym. 'Madrid Forest King', Cym. 'W.W. Wondrous', Cym. 'Sleeping Nymph'	
33. (+) PQ (c)	Lateral sepal shape	Linear	1	Cym. 'Yankilla'	VG
		Oblong	3	Cym. 'Ammesbury', Cym. 'Winter Beach Sea Green', Cym. 'Madrid Forest King', Cym. 'Sleeping Nymph'	
		Elliptic	5	Cym. 'Nonina Pale Face', Cym. 'Fire Storm', Cym. Bob Marlin 'Lucky', Cym. 'Show Girl',	
		Obovate	7	Cym. 'Soul Hunt', Cym. 'W.W. Wondrous'	
34. (+) PQ (c)	Lateral sepal curvature	Incurved with deflexed apex	1	Cym. 'Fire Storm', Cym. 'Red Star'	VG
		Incurved with straight apex	3	Cym. 'Ammesbury', Cym. Bob Marlin 'Lucky', Cym. 'Winter Beach Sea Green', Cym. 'Madrid Forest King', Cym. 'W.W. Wondrous', Cym. 'Sleeping Nymph'	
		Straight	5	Cym 'Yankilla', Cym. 'Miss Sanders'	
		Deflexed	7	Cym. 'Soul Hunt', Cym. 'H.C. Aurora',	
35. (+) PQ (c)	Lateral sepal apex	Acute	1	Cym. 'Tracey Reddaway', Cym. 'Fire Storm', Cym. 'Winter Beach Sea Green', Cym. 'W.W. Wondrous', Cym. 'Sleeping Nymph'	VG

		Obtuse	3	Cym. 'Yankilla', Cym. 'Show Girl', Cym. 'Ammesbury', Cym. 'H.C. Aurora', Cym. 'Hawtescens',			
		Premorse	5				
		Bilobed	7				
36. QL (d)	Sepals colour pattern	Uniform	1	Cym. 'Sparkle Late Green (Green)', Cym. 'Madrid Forest King'(Green), Cym. 'Levis Duke Bella Vista (Green), Cym. 'Yankilla'(Green)	VG		
				Cym. Jungfrau 'Dos Pueblos'(White), Cym. 'Jungfrau Show Queen', (White)			
				Cym. Tracey Reddaway', (Yellow)			
				Cym. 'Red Imperial Red Tower'(Red), Cym. 'Soul Hunt'(Red), Cym. 'Miss Sanders'(Red)			
				Cym. 'Ammesbury'(Brown)			
				Cym. 'Canon Color'(Purple), Cym. 'Norelia Jennifer '(Purple), Cym. 'Bob Marlin Lucky'(Purple)			
				Cym. 'H.C. Aurora', (Green)			
		Spotted	3	Cym. 'W.W. Wondrous'(White)			
				Cym. 'Soul Hunt'(Red), Cym. 'Red Star'(Red), Cym. 'Red Imperial Red Tower'(Red), Cym. 'Miss Sanders'(Red), Cym. 'Show Girl'(Red)			
				Cym. 'Show Girl'(Maroon), Cym. 'Ammesbury'(Maroon), Cym. 'Jungfrau Snow Queen'(Maroon), Cym. 'Angelica December Gold'(Maroon), Cym. 'Hawtescens'(Maroon)			
				Cym. Penneshaw Winter Flush'(Pink), Cym. 'Bob Marlin 'Lucky'(Purple), Cym. 'Winter Beach Sea Green'(Purple)			
				Blotched		5	
				Streak/striped		7	Cym 'Soul Hunt', (Red brown)
Cym. 'Red Star'(Red), Cym. Miss Sanders'(Red), Cym. 'Madrid Forest King'(Red)							
Cym. 'Ammesbury'(Maroon), Cym. 'H.C. Aurora'(Maroon), Cym. 'Velvet Green'(Maroon)							
Cym. 'Fire Storm'(Purple), Cym. Bob Marlin 'Lucky'(Purple), Cym. 'Firestorm'(Purple), Cym. 'Madrid Forest King'(Purple), Cym. 'Sleeping Nymph' (Purple)							

				Cym. 'Penneshaw Winter Flush'(Pink)	
				Cym. 'Takarjoke'(Yellow)	
				Cym. 'Winter Beach Sea Green'(Green)	
		Mottled	9		
37. QN (c)	Petal size (length x breadth)	Small (<6cm <sup>2</sup> )	1	Cym. 'Canon Color',	MG
		Medium (6-24cm <sup>2</sup> )	3	Cym. 'Yankilla', Cym. 'H.C. Aurora', Cym. 'Fire Storm', Cym. 'Winter Beach Sea Green', Cym. 'Madrid Forest King', Cym. 'Red Star', Cym. 'Show Girl'	
		Large (>24cm <sup>2</sup> )	5	Cym. 'Jungfrau Dos Pueblos', Cym. Bob Marlin 'Lucky', Cym. 'W.W. Wondrous', Cym. 'Sleeping Nymph'	
38. (+) * PQ (c)	Petal shape	Linear	1	Cym. 'Yankilla', Cym. 'Red Star'	VG
		Oblong	3		
		Elliptic	5	Cym. 'Ammesbury', Cym. 'Tracey Reddaway', Cym. 'Fire Storm'	
		Lanceolate	7	Cym. 'Madrid Forest King', Cym. 'Red Star'	
		Obovate	9	Cym. 'Soul Hunt', Cym. 'H. C. Aurora', Cym. Bob Marlin 'Lucky', Cym. 'Winter Beach Sea Green', Cym. 'W.W. Wondrous', Cym. 'Sleeping Nymph'	
39. (+) PQ (c)	Petal curvature	Incurved with deflexed apex	1		VG
		Incurved with straight apex	3	Cym. 'Ammesbury', Cym. 'Yankilla', Cym. 'Sleeping Nymph'	
		Straight	5	Cym. 'Red Beauty', Cym. 'H.C. Aurora', Cym. 'Hawtescens',	
		Deflexed	7	Cym. 'Yankilla', Cym. 'Soul Hunt', Cym. 'Fire Storm', Cym. Bob Marlin 'Lucky', Cym. 'Madrid Forest King', Cym. 'W.W. Wondrous',	
		Deflexed with incurved apex	9	Cym. 'Winter Beach Sea Green'	
40. (+) PQ	Petal apex	Acute	1	Cym. 'Ammesbury', Cym. 'Tracey Reddaway', Cym. 'Fire Storm',	VG

(c)				Cym. 'Winter Beach Sea Green', Cym. 'Madrid Forest King', Cym. 'W.W. Wondrous', Cym. 'Sleeping Nymph'	
		Obtuse	3	Cym. 'Yankilla', Cym. 'Soul Hunt', Cym. 'H.C. Aurora', Cym. 'Velvet Green', Cym. Bob Marlin 'Lucky', Cym. 'Show Girl'	
		Premorse	5	Cym. Stanley Fouraker White Magic',	
		Bilobed	7		
41. (+) PQ (c)	Petal margin	Entire	1	Cym. 'Fire Storm', Cym. 'Sleeping Nymph'	VG
		undulate	3	Cym. 'Soul Hunt', Cym. 'H. C. Aurora', Cym. Bob Marlin 'Lucky', Cym. 'Winter Beach Sea Green', Cym. 'Madrid Forest King', Cym. 'W.W. Wondrous', Cym. 'Red Star',	
		Erose	5		
42. QL (d)	Petal colour (No.) inside	Single	1	Cym. 'Pine Clash Moon Venus' (yellow), Cym. 'Sun Gold' (yellow), Cym. 'Winter Beach Sea Green' (yellow green), Cym. 'Madrid Forest King' (yellow green), Cym. 'Yankilla (yellow green), Cym. 'Sleeping Nymph' (grey yellow)	VG
		Double	3	Cym. 'W.W. Wondrous' (white, red purple), Cym. 'H.C. Aurora' (yellow, red purple),	
		Triple or more	5	Cym. 'Fire Storm' (red purple, yellow & white), Cym. Bob Marlin 'Lucky' (red purple, red & white),	
43. QL (d)	Petal colour (No.) outside	Single	1	Cym. 'Pine Clash Moon Venus' (yellow), Cym. 'Sun Gold' (yellow), Cym. 'Winter Beach Sea Green' (yellow green), Cym. 'Madrid Forest King' (yellow green), Cym. 'Yankilla (yellow green), Cym. 'Sleeping Nymph' (grey yellow)	VG
		Double	3	Cym. 'W.W. Wondrous' (white, red purple), Cym. 'H.C. Aurora' (yellow, red purple),	
		Triple or more	5	Cym. 'Fire Storm' (red purple, yellow & white), Cym. Bob Marlin 'Lucky' (red purple, red & white),	
44. QL (d)	Petal colour pattern inside	Absent	1	Cym. 'Sun Gold'	VG
		Spotted	3	Cym. 'Jungfrau Dos Pueblos' (red purple), Cym. 'Winter Beach Sea Green' (yellow green),	

				Cym. 'W.W. Wondrous' (red purple), Cym. 'Red Star'(red purple), Cym. 'Show Girl' (red purple), Cym. 'H.C. Aurora'(red purple)	
		Blotched	5		
		Streaked/Striped	7	Cym. 'Takarjoke'(yellow green), Cym. 'Winter Beach Sea Green'(yellow green), Cym. 'Madrid Forest King' (red purple), Cym. 'Yankilla' (green), Cym. 'Sleeping Nymph'(grey purple)	
45. QL (d)	Petal colour pattern outside	Absent	1	Cym. 'Jungfrau Dos Pueblos', Cym. 'Show Girl'	VG
		Spotted	3	Cym. 'W.W. Wondrous'(red purple)	
		Blotched	5		
		Streaked/Striped	7	Cym. 'Takarjoke' (yellow green), Cym. 'Fire Storm', Cym. Bob Marlin 'Lucky', Cym. 'Winter Beach Sea Green' (yellow green), Cym. 'Madrid Forest King'(red purple), Cym. 'H.C. Aurora'(red purple), Cym. 'Yankilla'(green), Cym. 'Sleeping Nymph'(grey purple)	
46. QN (c)	Lip length (Spread out)	Short (< 3cm)	1	-	MG
		Medium (3cm-5cm)	3	Cym. 'Soul Hunt', Cym. 'Sungold', Cym. 'Fire Storm', Cym. Bob Marlin 'Lucky', Cym. 'Winter Beach Sea Green', Cym. 'Madrid Forest King', Cym. 'W.W. Wondrous'	
		Long (>5cm)	5	Cym. 'Baltic Glaciers Mint Ice', Cym. 'H.C. Aurora', Cym. 'Pine Clash Moon Venus', Cym. 'Sleeping Nymph'	
47. QN (c)	Lip width (spread out)	Narrow (<3cm)	1		MG
		Medium (3cm-5cm)	3	Cym. 'Yankilla', Cym. 'Baltic Glaciers Mint Ice', Cym. 'Soul Hunt', Cym. 'Madrid Forest King', Cym. 'W.W. Wondrous',	
		Broad (>5cm)	5	Cym. 'H.C. Aurora', Cym. 'Pine Clash Moon Venus', Cym. 'Fire Storm', Cym. Bob Marlin 'Lucky', Cym. 'Winter Beach Sea Green', Cym. 'Sleeping Nymph'	
48. (+) *	Lip shape (Spread out)	Oblanceolate	1	-	VG
		Ovate	3	Cym. 'Jungfrau Dos Pueblos', Cym. 'W.W. Wondrous'	

PQ (c)		Obovate	5	-	
		Orbicular	7	-	
49. (+) PQ (c)	Lip apex	Acute	1	Cym. 'Red Star', Cym. 'Sleeping Nymph'	VG
		Obtuse	3	Cym. 'Takarjoke', Cym. 'Fire Storm', Cym. Bob Marlin 'Lucky', Cym. 'Madrid Forest King', Cym. 'W.W. Wondrous'	
		Notched	5	Cym. 'Winter Beach Sea Green',	
50. (+) PQ (c)	Lip curvature	Straight	1		VS
		Reflexed with straight apex	3	Cym. 'Fire Storm'	
		Reflexed with incurved apex	5	Cym. Bob Marlin 'Lucky', Cym. 'Winter Beach Sea Green', Cym. 'Madrid Forest King', Cym. 'W.W. Wondrous', Cym. 'Sleeping Nymph'	
51. PQ (c)	Lip lobation	Absent	1		VS
		Present	9	Cym. 'Fire Storm', Cym. Bob Marlin 'Lucky', Cym. 'Winter Beach Sea Green', Cym. 'Madrid Forest King', Cym. 'W.W. Wondrous', Cym. 'Sleeping Nymph'	
52. * QN (c)	Lip: No. of keels	Absent	1		VS
		Two	3	Cym. 'Takarjoke', Cym. 'Fire Storm', Cym. Bob Marlin 'Lucky', Cym. 'Winter Beach Sea Green', Cym. 'Madrid Forest King', Cym. 'W.W. Wondrous', Cym. 'Sleeping Nymph'	
		Three	5		
		Four	7		
53. PQ (c)	Lip surface texture	Glabrous (Smooth)	1		VG
		Pubescence (Hairy)	9	Cym. 'Takarjoke', Cym. Bob Marlin 'Lucky', Cym. 'Winter Beach Sea Green', Cym. 'Madrid Forest King', Cym. 'W.W. Wondrous', Cym. 'Red Star', Cym. 'Show Girl', Cym. 'Sleeping Nymph'	
54.	Lip colour	Single	1	Cym. 'Sun Gold'(yellow),	VG

(+) QL (d)	(No.) inside	Double	3	Cym. 'Pine Clash Moon Venus' (yellow, orange), Cym. 'H.C. Aurora' (yellow, orange), Cym. 'Fire Storm' (yellow & red purple), Cym. 'Bob Marlin Lucky' (yellow-white, red purple)	
		Triple or more	5	Cym. 'Takarjoke' (red purple, white & yellow orange), Cym. 'Winter Beach Sea Green' (red purple, yellow green & yellow orange), Cym. 'Madrid Forest King' (red purple, yellow green & yellow orange)	
55. QL (d)	Lip colour (No.) outside	Single	1	Cym. 'Pine Clash Moon Venus' (yellow), Cym. 'H.C. Aurora' (yellow), Cym. 'Red Star' (yellow), Cym. 'Sleeping Nymph' (yellow)	VG
		Double	3	Cym. 'Jungfrau Dos Pueblos' (white, red purple), Cym. 'Takarjoke' (yellow orange, red purple), Cym. 'W.W. Wondrous' (white, red purple), Cym. 'Fire Storm' (red purple, grey yellow)	
		Triple or more	5	Cym. 'Winter Beach Sea Green' (yellow, orange & white), Cym. Bob Marlin 'Lucky' (grey yellow, yellow white & orange white), Cym. 'Madrid Forest King' (yellow, green & white),	
56. QL (d)	Inside lip colour pattern	Absent	1		VG
		Spotted	3	Cym. 'Jungfrau Dos Pueblos' (red purple), Cym. 'Takarjoke' (red purple), Cym. 'Fire Storm' (red purple), Cym. Bob Marlin 'Lucky' (red purple), Cym. 'W.W. Wondrous' (red purple), Cym. 'Winter Beach Sea Green' (red purple), Cym. 'Madrid Forest King' (red purple),	
		Blotched	5	Cym. 'Pine Clash Moon Venus' (red purple), Cym. 'H.C. Aurora', (red purple), Cym. 'Sun Gold' (yellow orange), Cym. 'Jungfrau Dos Pueblos' (red purple), Cym. Bob Marlin 'Lucky', Cym. 'Madrid Forest King' (red purple), Cym. 'Sleeping Nymph' (red purple)	
		Streaked/Striped	7	Cym. 'Winter Beach Sea Green' (red purple), Cym. 'Red Star' (red purple)	
57. QL (d)	Outside lip colour pattern	Absent	1	Cym. 'Jungfrau Dos Pueblos', Cym. 'Madrid Forest King', Cym. 'Sleeping Nymph'	VG
		Spotted	3	Cym. 'H.C. Aurora' (red purple), Cym. 'Takarjoke' (red purple), Cym. 'Fire Storm' (red purple), Cym. Bob Marlin 'Lucky' (red purple),	

				Cym. 'Winter Beach Sea Green'(red purple), Cym. 'W.W. Wondrous'(red purple), Cym. 'Show Girl'(red purple),	
		Blotched	5	Cym. 'Fire Storm' (red purple), Cym. Bob Marlin 'Lucky'(red purple), Cym. 'Sun Gold'(yellow orange)	
		Streaked/Striped	7	Cym. 'Fire Storm' (red purple)	
58. QN (c)	Column length	Short (<2cm)	1		MS
		Medium (2cm-4cm)	3	Cym. 'Yankilla', Cym. 'Pine Clash Moon Venus', Cym. 'Soul Hunt', Cym. 'Sun Gold', Cym. 'Takarjoke', Cym. 'Fire Storm', Cym. 'W.W. Wondrous', Cym. 'Red Star'	
		Long (>4cm)	5	Cym. 'H. C. Aurora', Cym. 'Hawtescens', Cym. 'H.C. Aurora', Cym. Bob Marlin 'Lucky', Cym. 'Winter Beach Sea Green', Cym. 'Madrid Forest King', Cym. 'Sleeping Nymph'	
59. (+) QL (e)	Column colour (Nos.) inside	Single	1	Cym. 'Pine Clash Moon Venus'(yellow), Cym. 'Sun Gold'(yellow), Cym. 'H.C. Aurora'(yellow)	VG
		double	3	Cym. 'Takarjoke'(yellow & red purple), Cym. 'Fire Storm'(red purple & yellow), Cym. 'Bob Marlin Lucky'(red purple & yellow), Cym. 'Winter Beach Sea Green'(yellow green, & yellow orange),	
		Triple or more	5	Cym. 'Jungfrau Dos Pueblos' (orange, white & yellow),	
60. QL (e)	Column: colour pattern inside	Absent	1		VG
		Spotted	3	Cym. 'Pine Clash Moon Venus'(red purple), Cym 'H.C. Aurora'(red purple), Cym. 'Jungfrau Dos Pueblos' (red purple), Cym. 'Madrid Forest King'(red purple), Cym. 'Show Girl' (red purple), Cym. 'Sleeping Nymph'(red purple)	
		Blotched	5	Cym. 'Winter Beach Sea Green'(red purple),	
		Streaked /Striped	7	Cym. 'Fire Storm', Cym. Bob Marlin 'Lucky'(red purple), Cym. 'Winter Beach Sea Green'(red purple),	

		Spotted	3	Cym. 'Winter Beach Sea Green'(red purple), Cym. 'Pine Clash Moon Venus'(red purple), Cym. 'Fire Storm', Cym. Bob Marlin 'Lucky'(red purple), Cym. 'W.W. Wondrous', Cym. 'Madrid Forest King'(red purple), Cym. 'Sleeping Nymph'(red purple)	
		Blotch	5	Cym. 'W.W. Wondrous'	
		Streaked/striped	7	Cym. 'Fire Storm', Cym. Bob Marlin 'Lucky'(red purple)	
61. * QN (c)	Pedicel length	Short (<4cm)	1	Cym. 'Yankilla', Cym. 'Amesbury',	MS
		Medium (4cm-8cm)	3	Cym. 'H.C. Aurora', Cym. 'Takarjoke', Cym. 'Fire Storm', Cym. Bob Marlin 'Lucky', Cym. 'Winter Beach Sea Green', Cym. 'Madrid Forest King', Cym. 'W.W. Wondrous', Cym. 'Sleeping Nymph'	
		Long (>8cm)	5	Cym. 'Penneshaw Winter Flush'	
62. (+) PQ	Flowering season	Winter	1	Cym. 'Fire Storm', Cym. Bob Marlin 'Lucky', Cym. 'Red Star', Cym. 'Soul Hunt', Cym. 'Yankilla', Cym. 'Sleeping Nymph'	VG
		Spring	3	Cym. 'Amesbury', Cym. 'H.C. Aurora', Cym. 'Red Imperial Red Tower', Cym. 'Hawtescens', Cym. 'Fire Storm', Cym. 'Bob Marlin Lucky', Cym. 'Winter Beach Sea Green', Cym. 'W.W. Wondrous',	
		Summer	5	-	
		Rainy	7	-	

## **VIII. Explanation on the Table of characteristics**

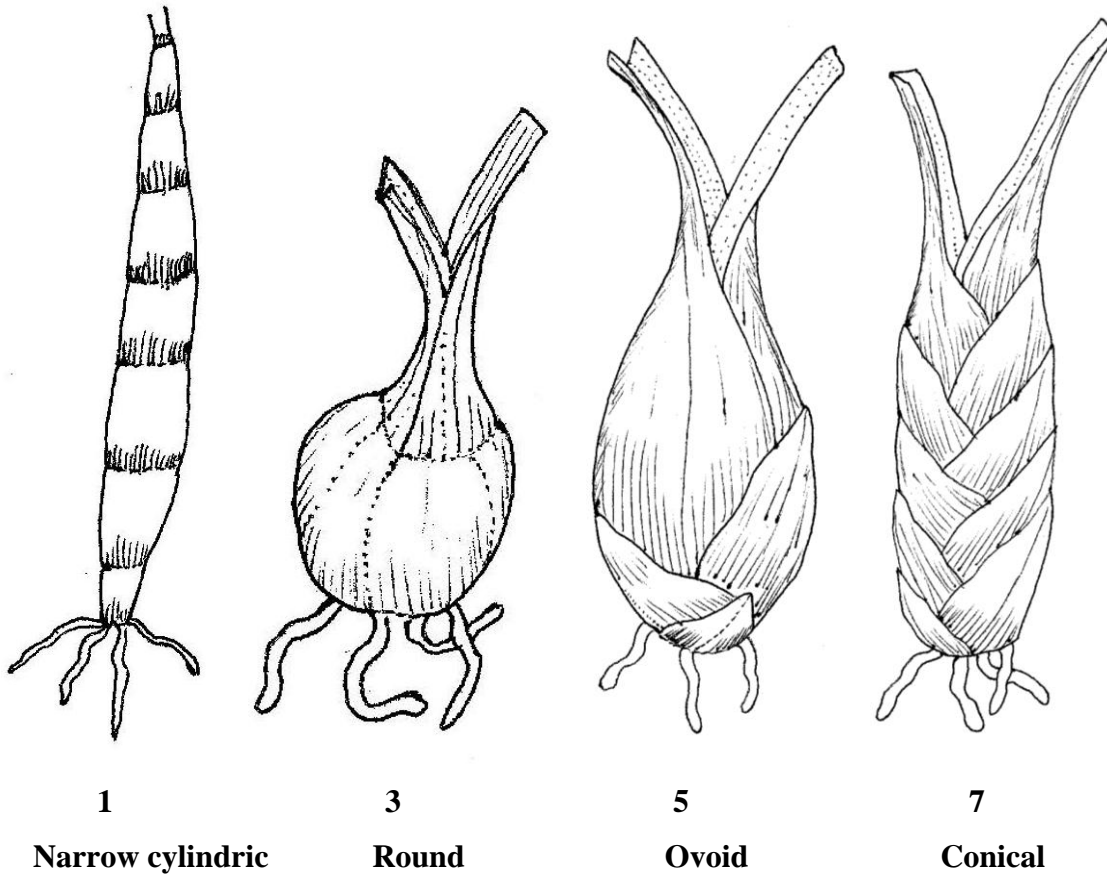
### **8.1 Guidelines for recording the observations of vegetative and flowering characteristics**

Characteristics indicated with (a), (b), (c), (d) and (e) in the first coloumn of the Table of characteristics shall be examined as indicated below:

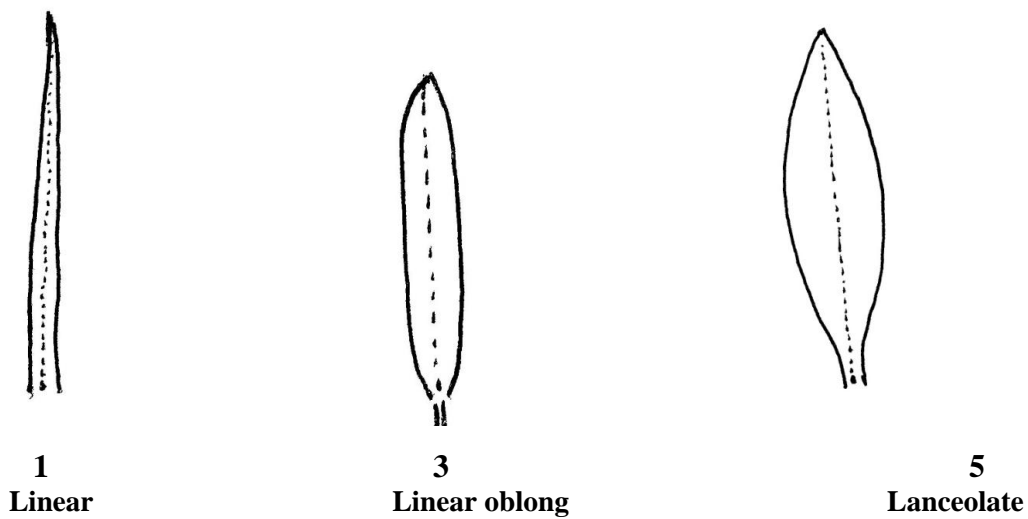
- (a) Observations on the leaf, pseudobulb and internode length shall be made on the flowering pseudobulb.
- (b) Observations on inflorescence and flower shall be made at the time when 50% of the flowers on the inflorescence have opened and on the most recently fully opened flower on the inflorescence before the colour starts to fade.
- (c) Observations on the length and width of the flower and parts of the flower shall be made on the spread out positions.
- (d) Observations on the colour of sepal, petal and lip shall be made on the outer side and inner side at apex, mid and base portion.
- (e) Observations on the colour of column shall be made on the inner side at apex, mid and basal region.

## 8.2 Explanations for individual characteristics

### Characteristic 2 : Pseudobulb shape



### Characteristics 6: Leaf shape



**Characteristics 8: Apex (Tip) of leaf**



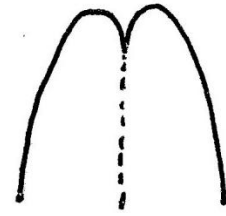
**1**

**Acute**



**3**

**Obtuse**



**5**

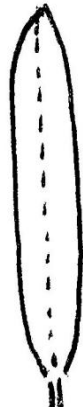
**Bilobed**

**Characteristics 29 & 33: Dorsal and lateral sepal shape**



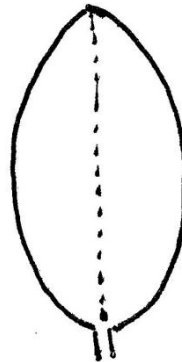
**1**

**Linear**



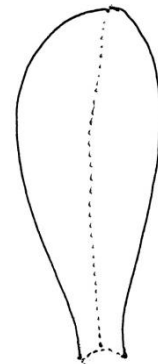
**3**

**Oblong**



**5**

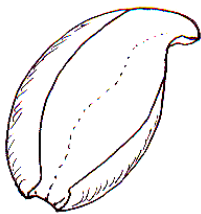
**Elliptic**



**7**

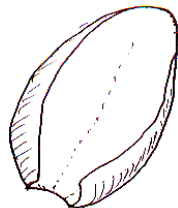
**Obovate**

**Characteristics 30 & 34: Dorsal sepal and lateral sepal curvature**



**1**

**Incurved with  
deflexed apex**



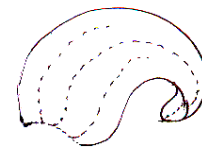
**3**

**Incurved with  
straight apex**



**5**

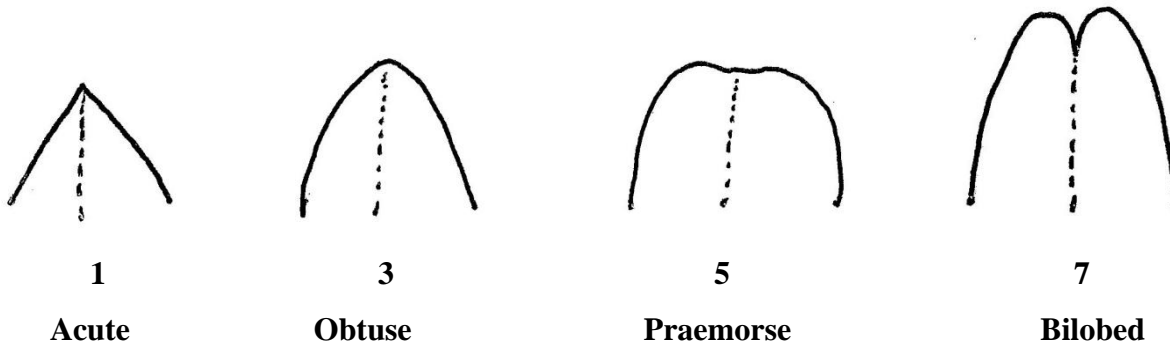
**Straight**



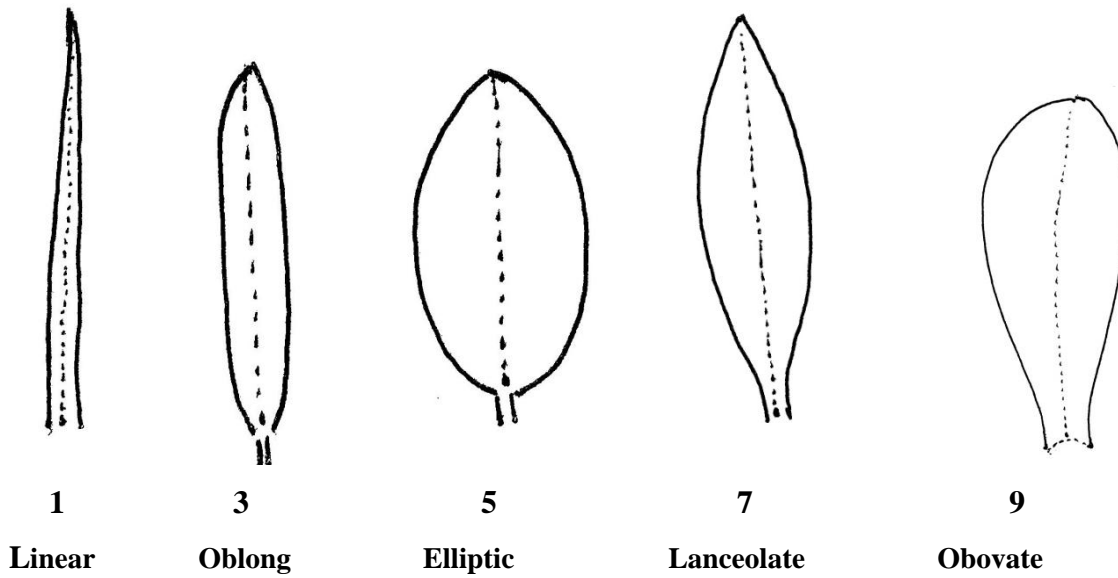
**7**

**Deflexed**

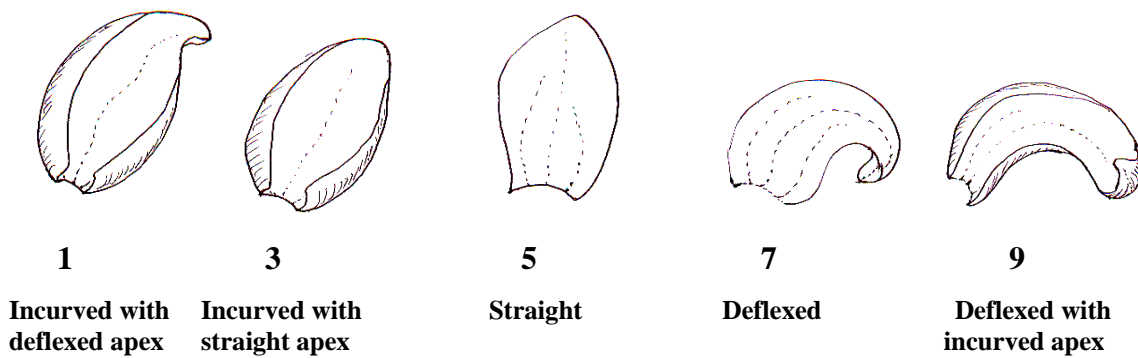
**Characteristics 31, 35, 40: Apex of dorsal sepal, lateral sepal and petal**



**Characteristics 38: Petal shape**



**Characteristics 39 : Petal curvature**



**Characteristics 41: Petal margin**



1

Entire



3

Undulate



5

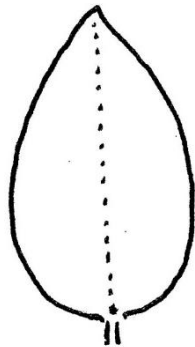
Erose

**Characteristics 48: Lip shape**



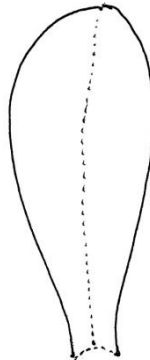
1

Oblanceolate



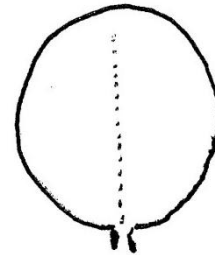
3

Ovate



5

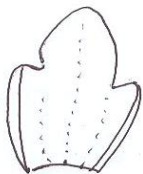
Obovate



7

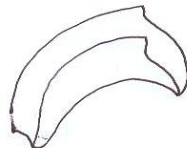
Orbicular

**Characteristics 50: Lip curvature**



1

Straight



3

Deflexed with straight apex



5

Deflexed with incurved apex

## IX. Literature:

Greatwood, J., Hunt, P.F., Gribb, P.J. and Steward, J. (eds.), 1993: (4<sup>th</sup> Edition): *The handbook on orchid nomenclature and registration*. The International Orchid Commission, London, United Kingdom

Henke de Greef, 2008: *Details about D.U.S. Testing for Plant Breeders Rights in Orchids in Europe*. Abstracted in Taiwan International Orchid Symposium.

Karasawa, K. "*Orchid Atlas*", Vol. 6 *Cymbidium and Lycaste*, Orchid Atlas Publishing Society, c/o Yasaka Syobo, Inc. Tokyo, Japan

## X. Working Group details:

These test guidelines developed by the National Core Committee in consultation with the Nodal Officer, DUS test centre, NRC for orchids and Task Force (8/2009) constituted by the PPV & FR Authority.

Members of the Task Force (8/2009)

Dr. A.N. Rao	-	Chairman
Dr. P. K. Rajeevan	-	Member
Prof. S.K. Sood	-	Member
Dr. G.S. Rawat	-	Member
Dr. L.C. De	-	Member Secretary

Nodal Officer

Dr. L.C. De, Principal Scientist, National Research Centre for Orchids, Pakyong, Sikkim

## XI. Name of DUS Test Centre

Nodal DUS Centre	Other Test Centre
National Research Centre for Orchids, Pakyong-737106, Sikkim	State Forest Research Institute, Chimpu, Itanagar, Arunachal Pradesh