भारतीय पौधा किस्म जरनल

PLANT VARIETY JOURNAL OF INDIA

खण्ड – 08, अंक – 04, अप्रैल 01, 2014
Vol. - 08, No. – 04, April 01, 2014

पौधा किस्म और कृषक अधिकार संरक्षण प्राधिकरण
एनएएससी काम्प्लैक्स, डीपीएस मार्ग, निकट टोडापुर गांव, नई दिल्ली–110012

PROTECTION OF PLANT VARIETIES & FARMERS' RIGHTS AUTHORITY
NASC COMPLEX, DPS MARG, Opp. Todapur Village, New Delhi-110012

भारतीय पौधा किस्म जरनल, खण्ड 08, अंक 04
अप्रैल 01, 2014 / चैत्र– शुक्ल 02 शक् 1935

Plant Variety Journal of India, Vol. 08, No. 04
April 01, 2014 / Chaitra- Shukla 02, Saka 1935

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'भारतीय पौधा किस्म जरनल पौधा किस्म और कृषक अधिकार संरक्षण प्राधिकरण (पौ.कि.कृ.अ.सं.प्रा.) का आधिकारिक जरनल है। पीपीवी और एफआर अधिनियम, 2001 तथा पीपीवी और एफआर नियमावली, 2003 के नियम 2 (जी) के अंतर्गत अध्यक्ष, पीपीवी और एफआरए, एस.2, ए ब्लाक, एनएएससी काम्प्लैक्स, डीपीएस मार्ग, निकट टोडापुर गांव, नई दिल्ली–110012 की ओर से प्राधिकरण के रजिस्ट्रार द्वारा प्रकाशित किया जा रहा है।

Plant Variety Journal of India is the Official Journal of the Protection of Plant Varieties and Farmers' Rights Authority (PPV & FRA) published by the Registrar on behalf of the Chairperson, PPV & FRA, S-2 A Block, NASC Complex, DPS Marg, Opp. Todapur Village, New Delhi-110012 under the PPV & FR Act, 2001 and Rule 2 (g) of the PPV & FR Rules, 2003.

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GUIDELINES

PASSPORT DATA OF FARMER VARIETIES

PASSPORT DATA OF (VCK) VARIETIES

PUBLIC NOTICE

Sub: Notice is given under Rule 29 (8 and 9) of the PPV & FR Rules, 2003.

As a requirement under Rule 29 (8 and 9) of the PPV & FR Rules, 2003, it is hereby informedthat the specific DUS test guideline for citrus three species namely ; **Mandarin (*Citrus reticulata* Blanco), Acid lime (*Citrus aurantifolia* Swingle), Sweet orange (*Citrus sinensis* (L.) Osbeck), BOUGAINVILLEA (*Bougainvillea* Comm. ex Juss.), Banana (*Musa* spp.) *and* Orchid (*Oncidium* Sw.)** is hereby published in 'Plant Variety Journal of India', Vol. 08, No. 04, april 01, 2014. Interested parties may read these guidelines and act accordingly.

Sd/-
MANOJ SRIVASTAVA
REGISTRAR

Mandarin (*Citrus reticulata* Blanco)

I Subject

These test guidelines shall apply to all the varieties of mandarin (*Citrus reticulata* **Blanco**)

II Materials required

1. The Protection of Plant Varieties and Farmers' Rights Authority (PPV & FRA) shall decide on the quantity and quality of the planting materials required for testing the varieties and where it is to be delivered for registration under the Protection of Plant Varieties and Farmers' Rights (PPV & FR) Act, 2001.
2. Applicants submitting such materials from a country other than India shall make sure that all customs and pre and post quarantine requirements stipulated under relevant national legislations and regulation are complied with.
3. The materials are to be raised by budding and a minimum of ten plants to be supplied by the applicants or his/her nominee during the month of June- July for each DUS Centre. Planting materials supplied shall be healthy and free from pests, diseases and mechanical injury. Age of the plants shall be above six months from the date of budding on region - specific standard rootstock (specify the rootstock) and raised in the black polythene bags 300 µ thickness UV stabilized (12cm x 7cm size) with potting mixture (soil, FYM and sand in 1 : 1: 1 ratio).
4. The plants should not have undergone any treatment which would affect the expression of the characters of the variety, unless the competent authority allows or requests for any such treatment.
5. The planting material shall not have undergone any chemical and bio-physical treatment unless the competent authority or applicant specifically request for such treatment. If it has been treated, full details of the treatment must be mentioned explicitly.

III Conduct of test

1. The minimum duration of the DUS tests shall normally be at least for two independent identical fruiting seasons in different years.
2. The test should be carried out under conditions ensuring satisfactory growth for the expression of the relevant characteristics of the variety and for the conduct of the examination. In particular, it is essential that the tree produces a satisfactory crop of fruit in each of the fruiting seasons in two consecutive years. In case of any climatic vagaries data from third fruiting season may also be considered.

3. **Test Design**
   The design of the tests should be such that plants or parts of the plant may be removed for measurement or counting without prejudice to the observations which may be made up to

the end of the vegetative /fruiting season as the case may be. Unless otherwise indicated, all observations are to be recorded on five plants**.**

Additional Tests

Additional tests, for examining special characteristics, may be established by the PPV&FR Authority.

4. **On- site testing :**

The guidelines developed by PPV&FR Authority for on- site testing will be followed with the specific requirement for mandarin.

- The age of the plants for on-site shall be minimum of five years from the date of planting in the field.
- A minimum of two budded plants must be made available for field gene bank. For inspection and examination even single tree could be considered only for farmers' varieties. The trees should be healthy, free from pests and diseases and raised under standard management practices.
- On-site examination shall be arranged during vegetative and fruiting seasons.

IV. Methods and observations

1. The characteristics described in the Table of Characteristics (see section VII) shall be used for the testing of candidate varieties.
2. For the assessment of DUS characters, observations shall be made on five plants.

Observations

(a) Leaf: Observations on the leaf should be made on the fully expanded leaves of spring flush.

(b) Fruit: Observations on the fruit should be made at the stage of harvest maturity. Fruits should be sampled from the periphery of the trees.

(c) Fruit rind: Observations on the fruit rind (epicarp) thickness(mm) should be made at the middle, between the base and apex of the fruit.

V. Grouping of varieties

1. The candidate varieties of DUS testing shall be divided into groups to facilitate the assessment of distinctiveness. Characteristics, which are known from experience not to vary, or to vary only slightly within a variety and in which their various states are fairly evenly distributed across all the varieties in the collection are suitable for grouping purpose.
2. Characteristics for grouping are those in which the documented states of expression, even when produced at different locations. These can be used, either individually or in combination with other such characteristics to (a) select varieties of common knowledge that can be excluded from the growing trials used for examination of distinctiveness; and (b) organize the growing trials so that similar varieties are grouped together.

The following characteristics are to be used for **grouping** of mandarin varieties :

(a) Tree growth habit (characteristic - 1)
(b) Fruit: diameter (characteristic - 5)
(c) Fruit: length (characteristic - 6)
(d) Fruit : rind (epicarp) colour (characteristic - 9)

VI. Characteristics and symbols

1. To assess Distinctiveness, Uniformity and Stability, the characteristics and their states as given in the Table of Characteristics (Section VII) shall be used.
2. Notes (1 to 9) shall be given for each state of expression for different characteristics for the purpose of electronic data processing.
3. Legend

(*) Characteristics that shall be observed during every growing season in all the varieties and shall always be included in the description of the variety. In exceptional cases wherein the state of expression of any of these characters is not recorded due to environmental vagaries, adequate explanation may be provided.

(+) See Explanation on the Table of characteristics in Section VIII. It is to be noted that for certain characteristics, the plant parts on which observations are to be taken are given in the explanation or figure (s) for clarity and not the colour variation.

4. A code number given in the sixth column of Table of Characteristics indicates the optimum stage for the observation of each characteristic during the growth and development of the plant. The relevant growth stages corresponding to these code numbers are described below:

Code for the growth stages :

Growth stage	**Code**
Full grown bearing tree	100
Fully expanded leaves of spring flush	30
Harvest maturity	95

(a) Observations on fully expanded leaf on the middle portion of the spring flush.
(b) The mature/ripe fruit refer to the fruit at the stage ready for consumption. This stage is reached when the segment is juicy and fruits have developed characteristic colour.
(c) The colour expression must be recorded using RHS colour chart

5. Type of assessment of characteristics indicated in column seven of Table of characteristics is 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 observation of individual plants or parts of plants

VII. Table of Characteristics

S. No	**Characteristics**	**States**	**Note**	**Example varieties**	**Stage of observation (code)**	**Type of assessment**
1	2	3	4	5	6	7
1 (+) (*)	Tree growth habit	Erect	1	Khasi Mandarin, Coorg Mandarin, Sikkim Mandarin	Full grown bearing tree (100)	VG
		Semi-erect	3	--		
		Spreading	5	Nagpur Mandarin, Darjeeling Mandarin, Mudkhed Seedless, Nagpur Seedless		
2 (*) (+)	Leaf length [mm]	Short (< 70)	3	-	Fully expanded leaves of spring flush (30)	MG
		Medium (70-80)	5	Sikkim Mandarin,		
		Long (>80)	7	Nagpur Mandarin, Khasi Mandarin, Coorg Mandarin, Darjeeling Mandarin, Mudkhed Seedless,		

				Nagpur Seedless		
3. (+)	Leaf width [mm]	Narrow (<30)	3	-	Fully expanded leaves of spring flush (30)	MG
		Medium (30 - 40)	5	Nagpur Mandarin, Khasi Mandarin, Coorg Mandarin, Darjeeling Mandarin, Sikkim Mandarin.		
		Broad(>40)	7	Darjeeling Mandarin		
4	Fruit weight (g)	Light (<110)	3	--	Harvest maturity (95)	MS
		Medium (110 – 140)	5	Khasi Mandarin, Sikkim Mandarin Coorg Mandarin, Darjeeling Mandarin,		
		Heavy (>140)	7	Nagpur Mandarin, Mudkhed Seedless, Nagpur Seedless		
5 (*) (+)	Fruit diameter (mm)	Small (<60)	3	--	Harvest maturity (95)	MS
		Medium(60 -70)	5	Khasi Mandarin, Sikkim Mandarin		

		Large(>70)	7	Nagpur Mandarin, Coorg Mandarin, Darjeeling Mandarin, Mudkhed Seedless, Nagpur Seedless		
6 (+)	Fruit length (mm)	Short (<55)	3	-	Harvest maturity (95)	MS
		Medium(55 -65)	5	Khasi Mandarin, Sikkim Mandarin, Coorg Mandarin,		
		Long(>65)	7	Nagpur Mandarin, Darjeeling Mandarin, Mudkhed Seedless, Nagpur Seedless		
7	Shape of fruit base	Truncate	3	Khasi Mandarin, Sikkim Mandarin,	Harvest maturity (95)	VG
		Concave	5	Coorg Mandarin, Darjeeling Mandarin, Mudkhed Seedless, Nagpur Seedless		
8 (+)	Shape of fruit apex	Truncate	3	Khasi Mandarin, Sikkim Mandarin,	Harvest maturity (95)	VG
		Depressed	5	Nagpur Mandarin, Coorg Mandarin, Darjeeling Mandarin, Mudkhed Seedless, Nagpur Seedless		
9 (*)	Fruit rind (epicarp) colour	Greenish Yellow	1	Nagpur Mandarin (Ambia crop), Mudkhed Seedless,	Harvest maturity (95)	VS

				Nagpur Seedless		
		Light Orange	3	Coorg Mandarin		
		Orange	5	Nagpur Mandarin (Mrig crop)		
		Dark Orange	7	Khasi Mandarin, Darjeeling Mandarin, Sikkim Mandarin		
10	Fruit rind - peelability	Easy	3	Nagpur Mandarin,Coorg Mandarin, Darjeeling Mandarin	Harvest maturity (95)	**VG**
		Moderate	5	Khasi Mandarin, Sikkim Mandarin		
11	Fruit rind thickness (mm)	Thin (< 2)	3	-	Harvest maturity (95)	MS
		Moderately thick(2-3)	5	Khasi Mandarin, Coorg Mandarin, Darjeeling Mandarin, Sikkim Mandarin,		
		Thick (>3)	7	Nagpur Mandarin, Mudkhed Seedless, Nagpur Seedless		
12	Fruit juiciness (%)	Low (<40)	3	-	Harvest maturity (95)	MS
		Medium(40 to 45)	5	Mudkhed Seedless, Nagpur Seedless		

		High(>45)	7	Nagpur Mandarin, Khasi Mandarin, Coorg Mandarin, Darjeeling Mandarin, Sikkim Mandarin		
13 (+)	Total Soluble Solids (^{0} Brix)	Low (< 8)	3	-	Harvest maturity (95)	MS
		Medium (8 to 11)	5	Nagpur Mandarin,Mudkhed Seedless, Nagpur Seedless		
		High(> 11)	7	Khasi Mandarin, Coorg Mandarin, Darjeeling Mandarin, Sikkim Mandarin,		
14 (+)	Titratable acidity (% citric acid)	Low (< 0.5)	3	-	Harvest maturity (95)	MS
		Medium (0.5 to 0.7%	5	Khasi Mandarin, Coorg Mandarin, Darjeeling Mandarin, Sikkim Mandarin, Mudkhed Seedless, Nagpur Seedless		
		High (>0.7)	7	-		
15 (*)	Number of seeds per fruit	**< 5**	1	Mudkhed Seedless, Nagpur Seedless	Harvest maturity (95)	MS

		>5	2	Nagpur Mandarin, Khasi Mandarin, Coorg Mandarin, Darjeeling Mandarin, Sikkim Mandarin		
16	Seed boldness (weight of 20 seeds in g)	**< 1.10**		Nagpur Mandarin, Mudkhed Seedless, Nagpur Seedless	Harvest maturity (95)	MS
		>1.10		Khasi Mandarin, Coorg Mandarin, Darjeeling Mandarin, Sikkim Mandarin		

VIII. Explanation on the Table of Characteristics :

Characteristic 1. Tree growth habit

Recorded on tree not less than 5 year of age in natural state just after fruit harvesting

1

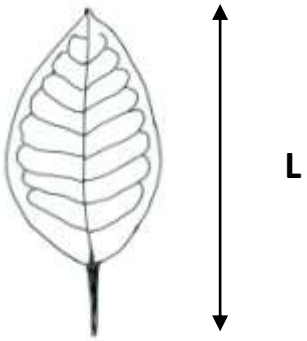
Erect

2

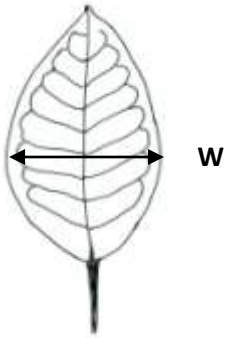
Spreading

Characteristic 2 : Leaf length [mm]

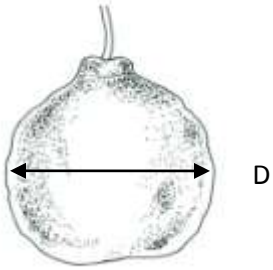
Recorded from petiole base to lamina tip



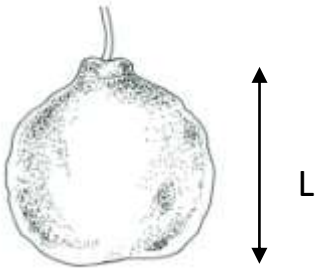
Characteristic 2 : Leaf width [mm]



Characteristic 5 : Fruit diameter [mm]



Characteristic 6 : Fruit length [mm]



Characteristic 8. Shape of fruit apex

3
Truncate

5

Depressed

Characteristic 13. Fruit juice total soluble solids **(^{0}Brix)**

The fruit samples were harvested as per maturity standard. The juice will be extracted by juicer or electronic juicer machine and total soluble solids **(**TSS) determined. The hand held/ digital refractometer should be used to measure the TSS ^{0}brix in juice sample. One or two drops of the juice should be placed on refractometer and per cent TSS on the scale should be recorded. The reading are to be taken at room temperatures.

Characteristic 14. Fruit juice acidity (citric acid **(%)**

The acid content in juice of the samples should be recorded by visual titration method as suggested by Ranganna (1986). The titration sample prepared with 5ml of juice mixed with 20 ml of distilled water put in volumetric flask to makeup the volume to 25 ml. Thereafter, 5 ml mixed sample should be taken for further titration using phenolphthalein as an indicator against 0.1 N sodium hydroxide. The titrated acidity is expressed as percentage citric acid as under.

$$\text{Acidity (\%)} = \frac{\text{Titre value x Normality of alkali x Volume made up x Equivalent weight of acid (i.e. 64 x100)}}{\text{Volume of aliquot taken for estimation x Weight or volume of sample taken x1000}}$$

Characteristic 16. Seed boldness (weight of 20 seeds in g) : Freshly extracted seeds after washing in water should be kept in shade for drying for one day and weight of the 20 seeds should be recorded next day.

X. Working Group details

Theese Test Guidelines developed by the NRC for Citrus, Nagpur, the Nodal Officer, DUS Center and finalized by the Task Force (1/2013) constituted by the PPV & FR Authority.

The Members of the Task Force (1/2013 **)**

Dr. V. A. Parthasarathy - Chairman

Dr B.M.C. Reddy -

Dr S. N. Pandey -

Dr H. Ravishankar -

Dr Umesh Srivastava -

Dr I. P. Singh -

Dr. Tejbir Singh - Member Secretary

Nodal Officer

Dr I.P. Singh, Principal Scientist (Hort.) and Nodal officer DUS project

National Research Centre for Citrus (NRCC), Amravati Road, Nagpur (Maharashtra)

Co-Nodal Officers

1. Dr R.K. Sonkar, Principal Scientist (Hort.)
National Research Centre for Citrus (NRCC), Amaravati Road, Nagpur

2. Dr. R. K. Patel, Scientist (Hort.)
Division of Horticulture, ICAR Research Complex
For NEH Region, Umiam, Barapani-793 103 (Meghalaya)

3. Dr. S. S. Roy, Scientist (Hort.)
Division of Horticulture, ICAR Research Complex
For NEH Region, Manipur Centre, Lamphelpat, Imphal, Manipur-795004

4. Nishant Deshmukh, Scientist (Hort.)
Division of Horticulture, ICAR Research Complex
For NEH Region, Umiam, Barapani-793 103 (Meghalaya)

IX. DUS testing centers

Nodal DUS Test Centre	**Other DUS Test Centres**
National Research Centre for Citrus (NRCC), Amravati Road, Nagpur (Maharashtra)-440010	Division of Horticulture, ICAR Research Complex For NEH Region, Umiam -793 103 (Meghalaya) Central Horticultural Expt. Station (IIHR), Chethalli- 571 258, Karnataka

Acid lime (*Citrus aurantifolia* Swingle)

I Subject

These test guidelines shall apply to all the varieties of acid lime (*Citrus aurantifolia* Swingle)

II. Materials required

1. The Protection of Plant Varieties and Farmers' Rights Authority (PPV & FRA) shall decide on the quantity and quality of the planting materials required for testing the varieties and where it is to be delivered for registration under the Protection of Plant Varieties and Farmers' Rights (PPV & FR) Act, 2001.
2. Applicants submitting such materials from a country other than India shall make sure that all customs and pre and post quarantine requirements stipulated under relevant national legislations and regulation are complied with.
3. The materials are to be raised as nucellar seedlings and a minimum of ten plants to be supplied by the applicants or his/her nominee during the month of June- July for each DUS Centre. Planting materials supplied shall be healthy and free from pests, diseases and mechanical injury. Age of the plants shall be above six months from the date of transplanting in secondary nursery and raised in the black polythene bags 300 µ thickness UV stabilized (12cm x 6cm size) with potting mixture (soil, FYM and sand in 1 : 1: 1 ratio).
4. The plants should not have undergone any treatment which would affect the expression of the characters of the variety, unless the competent authority allows or requests for any such treatment.
5. The planting material shall not have undergone any chemical and bio-physical treatment unless the competent authority or applicant specifically request for such treatment. If it has been treated, full details of the treatment must be mentioned explicitly.

III. Conduct of test

1. The minimum duration of the DUS tests shall normally be at least for two independent identical fruiting seasons in different years.
2. The test should be carried out under conditions ensuring satisfactory growth for the expression of the relevant characteristics of the variety and for the conduct of the examination. In particular, it is essential that the tree produces a satisfactory crop of fruit in each of the fruiting seasons in two consecutive years. In case of any climatic vagaries data from third fruiting season may also be considered.

3. Test Design

The design of the tests should be such that plants or parts of the plant may be removed for measurement or counting without prejudice to the observations which may be made up to the end of the vegetative /fruiting season as the case maybe. Unless otherwise indicated, all observations are to be recorded on five plants**.**

Additional Tests

Additional tests, for examining special characteristics, may be established by the PPV&FR Authority.

4. On- site testing :

The guidelines developed by PPV&FR Authority for on- site testing will be followed with the specific requirement for acid lime.

- The age of the plants for on-site shall be minimum of five years from the date of planting in the field.
- A minimum of two plants must be made available for field gene bank. For inspection and examination even single tree could be considered only for farmers' varieties. The trees should be healthy, free from pests and diseases and raised under standard management practices.
- On-site examination shall be arranged during vegetative and fruiting seasons.

IV. Methods and observations

1. The characteristics described in the Table of Characteristics (see section VII) shall be used for the testing of candidate varieties.
2. For the assessment of DUS characters, observations shall be made on five plants.

Observations

(a)Leaf: Observations on the leaf should be made on the fully expended leaves of spring flush.

(b) Fruit: Observations on the fruit should be made at the stage of harvest maturity. Fruits should be sampled from the periphery of the tree

(c) Fruit rind: Observations on the fruit rind should be made at the middle, between the base and apex of the fruit.

(d) Number of spines per 30 cm length from basal bud on one year old shoot.

V. Grouping of varieties

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

2. Characteristics for grouping are those in which the documented states of expression, even when produced at different locations. These can be used, either individually or in combination with other such characteristics to (a) select varieties of common knowledge that can be excluded from the growing trials used for examination of distinctiveness; and (b) organize the growing trials so that similar varieties are grouped together.

The following characteristics are to be used for **grouping** of acid lime varieties :

(a) Tree growth habit (characteristic - 1)
(b) Spine density (characteristic - 2)
(c) Fruit diameter (characteristic - 8)

VI. Characteristics and symbols

1 To assess Distinctiveness, Uniformity and Stability, the characteristics and their states as given in the Table of Characteristics (Section VII) shall be used.

2 Notes (1 to 9) shall be given for each state of expression for different characteristics for the purpose of electronic data processing.

3. Legend

(*) Characteristics that shall be observed during every growing season in all the varieties and shall always be included in the description of the variety. In exceptional cases wherein the state of expression of any of these characters is not recorded due to environmental vagaries, adequate explanation may be provided.

(+) See Explanation on the Table of characteristics in Section VIII. It is to be noted that for certain characteristics, the plant parts on which observations are to be taken are given in the explanation or figure (s) for clarity and not the colour variation.

4. A code number given in the sixth column of Table of characteristics indicates the optimum stage for the observation of each characteristics during the growth and development of the plant. The relevant growth stages corresponding to these code numbers are described below:

Decimal Code for the growth stages :

Growth stage	**Code**
Full grown bearing tree	100
One year old spring flush shoots	30
Fully expanded leaves of spring flush shoots	30
Harvest maturity	95

4. Observations on fully expanded leaf on the middle portion of the spring flush.

5. The mature/ripe fruit is the fruit at the stage ready for consumption. This stage is reached when the segment is juicy and fruits developed characteristic colour.

6. The colour expression must be recorded using RHS colour chart

5. Type of assessment of characteristics indicated in column seven of Table of Characteristics is as follows:

MG : Measurement by a single observation of a group of plants or parts of plant
MS : Measurement of a number of individual plants or parts of plant
VG : Visual assessment by a single observation of a group of plants or parts of plant
VS : Visual assessment by observation of individual plants or parts of plant

VII. Table of Characteristics

S. No	Characteristics	States	Note	Example varieties	Stage of observation (Code)	Type of assessment
1	2	3	4	5	6	7
1 (*) (+)	Tree growth habit	Erect	1	Chakradhar	Full grown bearing tree (100)	VG
		Spreading	2	Sai Sharbati, Vikram, Pramalini, Balaji, Phule Sharbati.		
		Drooping	3	-		
2. (*)	Spine density on the adult tree (No. of spines on one year old spring shoot, 30cm length)	Low (< 10)	3	Chakradhar	Full grown bearing tree (100)	MG
		Medium (10-15)	5	Sai Sharbati, Vikram, Pramalini, Balaji, Phule Sharbati		
		High (>15)	7	--		

3.	Spine length (mm)	<5	1	Chakradhar	One year old spring flush shoots (30)	MS
		5 -15	2	Sai Sharbati, Vikram, Pramalini, Balaji, Phule Sharbati		
		>15	3	--		
4 (+)	Leaf lamina length [mm]	Short(<60)	3	Chakradhar	Fully expanded spring flush leaves (30)	MG
		Medium(60-70)	5	Sai Sharbati, Vikram, Pramalini, Balaji, Phule Sharbati,		
		Long(>70)	7	--		
5. (+)	Leaf lamina width [mm]	Narrow(<35)	3	Chakradhar	Fully expanded spring flush leaves (30)	MG
		Medium(35 -40)	5	Sai Sharbati, Vikram, Pramalini, Balaji, Phule Sharbati,		
		Broad(>40)	7	--		
6. (+)	Petiole wings	Absent	1	Chakradhar	Fully expanded spring flush leaves (30)	VG
		Present	9	Sai Sharbati, Vikram, Pramalini, Balaji, Phule Sharbati		
7.	Fruit weight (g)	Light (<40)	1	Vikram, Pramalini, Chakradhar	Harvest maturity (95)	MG
		Heavy (> 41)	2	Sai Sharbati, Balaji, Phule Sharbati		
8 (*) (+)	Fruit diameter (mm)	Small (<40)	3	Chakradhar,	Harvest maturity (95)	MG
		Medium (41 -45)	5	Vikram, Pramalini, Balaji		
		Large(>45)	7	Sai Sharbati, Balaji, Phule Sharbati		
9	Fruit length	Short (<40)	3	Chakradhar	Harvest	MG

(+)	(mm)	Medium (40 -45)	5	Vikram, Pramalini, Balaji	maturity (95)	
		Long(>45)	7	Sai Sharbati, Phule Sharbati		
10	Albedo colour	Greenish	1	--	Harvest maturity (95)	VS
		White	2	Sai Sharbati, Vikram, Pramalini, Balaji,Chakradhar, Phule Sharbati		
		Yellow	3	---		
11	Fruit axis	Solid	1	Sai Sharbati, Vikram, Pramalini, Balaji, Phule Sharbati	Harvest maturity (95)	VS
		Hollow	2	Chakradhar		
12	Number of segments per fruit	8-10	1	Sai Sharbai, Vikram, Pramalini, Balaji,Chakradhar, Phule Sharbati	Harvest maturity (95)	VS
		>10	2	--		
13	Fruit rind (epicarp) thickness (mm)	Thin (<2)	3	Sai Sharbati, Vikram, Pramalini, , Balaji,Chakradhar, Phule Sharbati	Harvest maturity (95)	MS
		Thick(>2)	5	--		
14	Fruit juiciness (%)	Low (<40)	3	--	Harvest maturity (95)	MS
		Medium (40 to 50)	5	Vikram, Pramalini, Chakradhar		
		High (>50)	7	Sai Sharbati, , Balaji, ,Phule Sharbati,		
15 (+)	Total Soluble Solids	Low (<6)	3	-	Harvest maturity (95)	MS
		Medium (6 to7)	5	--		

	(TSS, ^{0}Brix)	High (>7)	7	Sai Sharbati, Vikram, Pramalini, Balaji,Chakradhar ,Phule Sharbati		
16 (+)	Titratable acidity (% citric acid)	Low (<5)	3	--	Harvest maturity (95)	MS
		Medium (5 to 6)	5	Chakradhar		
		High (>6)	7	Sai Sharbati, Vikram, Pramalini, Balaji, Phule Sharbati		
17	Seediness (Number of seeds/ fruit)	<4	1	Chakradhar	Harvest maturity (95)	MS
		4-10	2	Sai Sharbati, Vikram, Pramalini, Balaji, Phule Sharbati, Niboo		
		>10	3	--		

VIII. Explanation on the Table of Characteristics :

Characteristic 1. Tree growth habit

Recorded on the tree not less than 5years age in natural state just after fruit harvesting

1

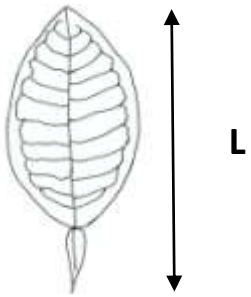
Erect

2

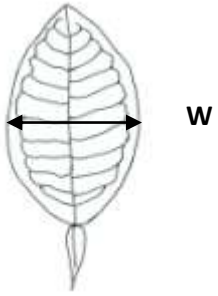
Spreading

Characteristic 4. Leaf lamina length [mm]

Recorded from petiole base to lamina tip



Characteristic 5. Leaf lamina width [mm]



Characteristic 6. Absence/presence of petiole wings

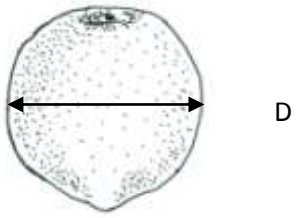
1

Absent

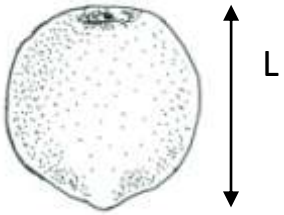
2

Present

Characteristic 8. Fruit diameter



Characteristic 9. Fruit length



Characteristic 16. Fruit juice TSS **(^{0}Brix)**

The fruit samples were harvested as per maturity standard. The juice will be extracted by juicer or electronic juicer machine and total soluble solids **(**TSS) determined. The hand held/ digital refractometer should be used to measure the TSS ^{0}brix in juice sample. One or two drops of the juice should be placed on refractometer and per cent TSS on the scale should be recorded. The reading are to be taken at room temperatures.

Characteristic 17. Titratable acidity (% Citric acid)

The juice acid content of the samples should be recorded by visual titration method as suggested by Ranganna(1986). The titration sample prepared with 5ml of juice mixed with 20 ml of distilled water put in volumetric flask to makeup the volume to 25 ml. Thereafter 5 ml mixed sample should be taken for further titration using phenolphthalein as an indicator against 0.1 N sodium hydroxide. The titrated acidity expressed as percentage citric acid.

$$\text{Acidity (\%)} = \frac{\text{Titre value x Normality of alkali x Volume made up x Equivalent weight of acid (i.e. 64 x100)}}{\text{Volume of aliquot taken for estimation x Weight or volume of sample taken x1000}}$$

X. Working Group details

Theese Test Guidelines developed by the NRC for Citrus, Nagpur, the Nodal Officer, DUS Center and finalized by the Task Force (1/2013) constituted by the PPV & FR Authority.

The Members of the Task Force (1/2013)

Dr. V. A. Parthasarathy - Chairman

Dr B.M.C. Reddy -

Dr S. N. Pandey -

Dr H. Ravishankar –

Dr Umesh Srivastava -

Dr I. P. Singh -

Dr. Tejbir Singh - Member Secretary

Nodal Officer

Dr I.P. Singh, Principal Scientist (Hort.) and Nodal officer DUS project

National Research Centre for Citrus (NRCC), Amravati Road, Nagpur

Co-Nodal Officer

Dr R.K. Sonkar, Principal Scientist (Hort.)

National Research Centre for Citrus (NRCC), Amaravati Road, Nagpur

IX. DUS testing centers

Nodal DUS Test Centre	**Other DUS Test Centres**
National Research Centre for Citrus (NRCC), Amravati Road, Nagpur (Maharashtra)- 440010	Horticultural Experiment Station, Indi /Bijapur, Karnataka.

Sweet orange (*Citrus sinensis* (L.) Osbeck)

I Subject

These test guidelines shall apply to all the varieties of sweet orange (*Citrus sinensis* (L.) Osbeck)

II Materials required

1 The Protection of Plant Varieties and Farmers' Rights Authority (PPV & FRA) shall decide on the quantity and quality of the planting materials required for testing the varieties and where it is to be delivered for registration under the Protection of Plant Varieties and Farmers' Rights (PPV & FR) Act, 2001.

2 Applicants submitting such materials from a country other than India shall make sure that all customs and pre and post quarantine requirements stipulated under relevant national legislations and regulation are complied with.

3 The materials are to be raised by budding and a minimum of ten plants to be supplied by the applicants or his/her nominee during the month of June-July for each DUS Centre. Planting materials supplied shall be healthy and free from pests, diseases and mechanical injury. Age of the plants shall be above six months from the date of budding on region - specific standard rootstock (specify the rootstock) and raised in the black polythene bags 300 µ thickness UV stabilized (12cm x 7cm size) with potting mixture (soil, FYM and sand in 1 : 1: 1 ratio).

4 The plants should not have undergone any treatment which would affect the expression of the characters of the variety, unless the competent authority allows or requests for any such treatment.

5 The planting material shall not have undergone any chemical and bio-physical treatment unless the competent authority or applicant specifically requests for such treatment. If it has been treated, full details of the treatment must be mentioned explicitly.

III Conduct of test

1 The minimum duration of the DUS tests shall normally be at least for two independent identical fruiting seasons in different years.

2 The test should be carried out under conditions ensuring satisfactory growth for the expression of the relevant characteristics of the variety and for the conduct of the examination. In particular, it is essential that the tree produces a satisfactory crop of fruit in

each of the fruiting seasons in two consecutive years. In case of any climatic vagaries data from third fruiting season may also be considered.

3 Test Design

The design of the tests should be such that plants or parts of the plant may be removed for measurement or counting without prejudice to the observations which may be made up to the end of the vegetative /fruiting season as the case maybe. Unless otherwise indicated, all observations are to be recorded on five plants**.**

Additional Tests

Additional tests, for examining special characteristics, may be established by the PPV&FR Authority.

4 On- site testing :

The guidelines developed by PPV&FR Authority for on- site testing will be followed with the specific requirement for sweet orange.

- The age of the plants for on-site shall be minimum of five years from the date of planting in the field.
- A minimum of two budded plants must be made available for field gene bank. For inspection and examination even single tree could be considered only for farmers' varieties. The trees should be healthy, free from pests and diseases and raised under standard management practices.
- On-site examination shall be arranged during vegetative and fruiting seasons.

IV. Methods and observations

1. The characteristics described in the Table of Characteristics (see section VII) shall be used for the testing of candidate varieties.
2. For the assessment of DUS characters, observations shall be made on five plants.

Observations

(a)Leaf: Observations on the leaf should be made on the fully expanded leaves of spring flush.

(b) Fruit: Observations on the fruit should be made at the stage of harvest maturity. Fruits should be sampled from the periphery of the trees.

(c) Fruit rind: Observations on the fruit rind (epicarp) thickness(mm) should be made at the middle, between the base and apex of the fruit.

V. Grouping of varieties

1. The candidate varieties of DUS testing shall be divided into groups to facilitate the assessment of distinctiveness. Characteristics, which are known from experience not to vary, or to vary

only slightly within a variety and in which their various states are fairly evenly distributed across all the varieties in the collection are suitable for grouping purpose.

2. Characteristics for grouping are those in which the documented states of expression, even when produced at different locations. These can be used, either individually or in combination with other such characteristics to (a) select varieties of common knowledge that can be excluded from the growing trials used for examination of distinctiveness; and (b) organize the growing trials so that similar varieties are grouped together.

   The following characteristics are to be used for **grouping** of sweet orange varieties :

   (a) Tree growth habit (characteristic - 1)
   (b) Fruit: diameter (characteristic - 5)
   (c) Fruit: length (characteristic - 6)
   (d) Fruit : rind (epicarp) colour (characteristic - 9)

VI. Characteristics and symbols

1. To assess Distinctiveness, Uniformity and Stability, the characteristics and their states as given in the Table of Characteristics (Section VII) shall be used.
2. Notes (1 to 9) shall be given for each state of expression for different characteristics for the purpose of electronic data processing.
3. Legend

(*) Characteristics that shall be observed during every growing season in all the varieties and shall always be included in the description of the variety. In exceptional cases wherein the state of expression of any of these characters is not recorded due to environmental vagaries, adequate explanation may be provided.

(+) See Explanation on the Table of Characteristics in Section VIII. It is to be noted that for certain characteristics, the plant parts on which observations are to be taken are given in the explanation or figure (s) for clarity and not the colour variation.

4. A code number given in the sixth column of Table of Characteristics indicates the optimum stage for the observation of each characteristic during the growth and development of the plant. The relevant growth stages corresponding to these code numbers are described below:

Decimal Code for the growth stages :

Growth stage	**Code**
Full grown bearing tree	100
Fully expanded leaves of spring flush	30
Harvest maturity	95

5. Observations on fully expanded leaf on the middle portion of the spring flush.
6. The mature/ripe fruit is the fruit at the stage ready for consumption. This stage is reached when the segment is juicy and fruits developed characteristic colour.
7 The colour expression must be recorded using RHS colour chart
5. Type of assessment of characteristics indicated in column seven of Table of Characteristics is as follows:

MG : Measurement by a single observation of a group of plants or parts of plant
MS : Measurement of a number of individual plants or parts of plant
VG : Visual assessment by a single observation of a group of plants or parts of plant
VS : Visual assessment by observation of individual plants or parts of plant

VII. Table of Characteristics

S. No	Characteristics	States	Note	Example varieties	Stage of observation (code)	Type of assessment
1	2	3	4	5	6	7
1 (+) (*)	Tree growth habit	Erect	1	--	Full grown bearing tree **(100)**	VG
		Semi-spreading	2	Malta, Valencia, Blood Red Malta		
		Spreading	3	Sathgudi, Mosambi, Phule Mosambi, Queen Sweet Orange, Parson Brown		
2 (+)	Leaf length [mm]	Short (< 70)	3	Cadenarafine, Enterprise 8718	Fully expanded leaves of spring flush **(30)**	MG
		Medium (70 - 90)	5	Malta, Blood Red Malta,Sathgudi, Mosambi, Phule Mosambi,		
		Long (>90)	7	Parson Brown, Queen Sweet Orange		
3.	Leaf width	Narrow (<40)	3	Malta, Cadenarafine	Fully	MG

(+)	[mm]	Medium(40 - 50)	5	Sathgudi, Mosambi, Phule Mosambi,	expanded leaves of spring flush **(30)**	
		Broad(>50)	7	Parson Brown		
4	Fruit Weight (g)	Light (<150)	3	Malta, Blood Red Malta, Egypt, Parson Brown, Cadenarafine, Enterprise 8718	Harvest maturity **(95)**	MG
		Medium (150 – 200)	5	Sathgudi, Mosambi, Excelsor Malta, Queen Sweet Orange		
		Heavy (>200)	7	Phule Mosambi, Valencia, Pineapple		
5 (*) (+)	Fruit diameter (mm)	Small (<60)	3	Parson Brown, Cadenarafine	Harvest maturity **(95)**	MS
		Medium(60 - 70)	5	Malta, Blood Red Malta, Egypt, Queen Sweet Orange,		
		Large(>70)	7	Sathgudi, Mosambi, Phule Mosambi, Valencia, Excelsor Malta, Pineapple		
6 (*) (+)	Fruit length (mm)	Short (<60)	3	Parson Brown, Cadenarafine	Harvest maturity **(95)**	MS
		Medium (60 -70)	5	Malta, Blood Red Malta, Egypt, Queen Sweet Orange		
		Long(>70)	7	Sathgudi, Mosambi, Phule Mosambi, Valencia, Excelsor Malta, Pineapple		
7	Shape of	Convex	1	Valencia,Cadenarafine	Harvest maturity	VG

	fruit base	Truncate	2	Sathgudi and Mosambi	**(95)**	
		Concave	3	Enterprise 8718, Queen Sweet		
8	Shape of fruit apex	Rounded	1	Malta and Sathgudi	Harvest maturity **(95)**	VG
		Truncate	2	Enterprise 8718, Queen Sweet and Mosambi		
9 (*)	Fruit rind (epicarp) colour	Green-yellow	1	Valencia and Mosambi	Harvest maturity **(95)**	VS
		Yellow	2	Sathgudi		
		Dark Yellow	3	Phule Mosambi		
		Orange	4	Blood Red Malta		
		Dark Orange	5	Pineapple		
10	Number of segments per fruit	<11	1	Sathgudi, Mosambi, Malta, Phule Mosambi, Valencia, Excelsor Malta, Blood Red Malta, Jaffa, Egypt, Pineapple, Queen Sweet Orange, Parson Brown,	Harvest maturity **(95)**	VS
		> 11	2	Cadenarafine,Enterprise 8718		
11	Fruit rind thickness (mm)	Thin (< 4)	3	Phule Mosambi, Malta, Blood Red Malta	Harvest maturity **(95)**	MS
		Moderately thick (4-5)	5	Sathgudi, Mosambi, Valencia, Jaffa, Egypt, Pineapple.		
		Thick (>5)	7	Cadenarafine,Enterprise 8718, Queen Sweet Orange, Parson Brown.		
12	Fruit	Low (<35)	3	Parson Brown	Harvest	MS

	juiciness (%)	Medium(35 to 45)	5	Blood Red Malta, Egypt, Cadenarafine,Enterprise 8718, Queen Sweet Orange, Excelsor Malta	maturity **(95)**	
		High(>45)	7	Malta, Phule Mosambi, Sathgudi, Mosambi, Pineapple, Valencia		
13 (+)	TSS - Total Soluble Solids (^{0} Brix)	Low (< 10)	3	-	Harvest maturity **(95)**	MS
		Medium (10 to 12)	5	Sathgudi, Mosambi, Malta, Phule Mosambi, Valencia, Excelsor Malta, Blood Red Malta, Enterprise 8718, Queen Sweet Orange, Parson Brown		
		High(> 12)	7	Egypt, Pineapple, Cadenarafine		
14 (+)	Titratable acidity (% citric acid)	Low (< 0.5)	3	Egypt, Mosambi, Phule Mosambi, Cadenarafine	Harvest maturity **(95)**	MS
		Medium (0.5 to 0.8%)	5	Excelsor Malta, Pineapple, Parson Brown, Enterprise 8718		
		High (>0.8)	7	Queen Sweet Orange, Sathgudi, Valencia, Malta, Blood Red Malta		
15	Number of seeds Per fruit	<5	1	Egypt	Harvest maturity **(95)**	MS
		5-10	3	Cadenarafine, Blood Red Malta, Enterprise 8718, Malta, Parson Brown, Pineapple, Valencia, Excelsor Malta		

		>11	5	Queen Sweet Orange, Sathgudi Mosambi, Phule Mosambi		

VIII. Explanation on the Table of Characteristics :

Characteristic 1. Tree growth habit

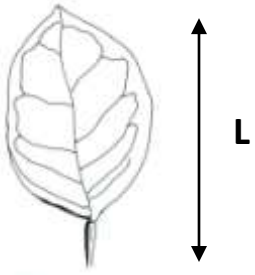
Recorded in natural state just after fruit harvesting not less than 5 years age

2
Semi spreading

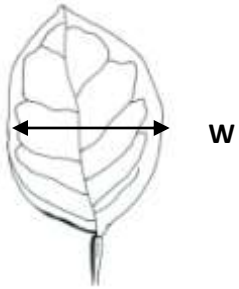
3
Spreading

Characteristic 2 : Leaf l length [mm]

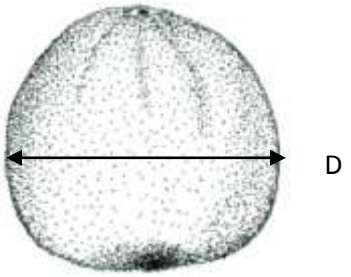
Recorded from petiole base to lamina tip



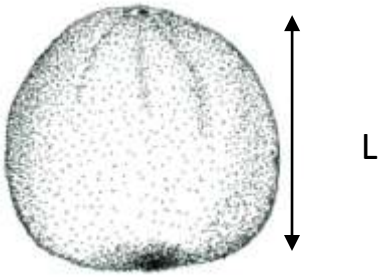
Characteristic 2 : Leaf width [mm]



Characteristic 5 : Fruit diameter [mm]



Characteristic 6 : Fruit length [mm]



Characteristic 13. Fruit juice total soluble solids **(^{0}Brix)**

The fruit samples were harvested as per maturity standard. The juice will be extracted by juicer or electronic juicer machine and total soluble solids **(**TSS) determined. The hand held/ digital refractometer should be used to measure the TSS ^{0}brix in juice sample. One or two drops of the juice should be placed on refractometer and per cent TSS on the scale should be recorded. The reading should be taken at room temperature.

Characteristic 14. Fruit juice acidity **(% c**itric acid)

The juice acid content of the samples should be recorded by visual titration method as suggested by Ranganna (1986). The titration sample prepared with 5ml of juice mixed with 20 ml of distilled water put in volumetric flask to make up the volume to 25 ml. Thereafter, 5 ml mixed sample should be taken for further titration using phenolphthalein as an indicator against 0.1 N sodium hydroxide. The titrated acidity is expressed as percentage citric acid as under.

$$\text{Acidity (\%)} = \frac{\text{Titre value x Normality of alkali x Volume made up x Equivalent weight of acid (i.e. 64 x100)}}{\text{Volume of aliquot taken for estimation x Weight or volume of sample taken x1000}}$$

X. Working Group details

The Test Guidelines developed by the NRC for Citrus, Nagpur was finalized by the Task Force (1/2013) constituted by the PPV & FR Authority.

The Members of the Task Force (1/2013)

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Dr B.M.C. Reddy - Member

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Dr H. Ravishankar - Member

Dr Umesh Srivastava - Member

Dr I. P. Singh - Member

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Nodal Officer

Dr I.P. Singh, Principal Scientist (Hort.) and Nodal officer DUS project

National Research Centre for Citrus (NRCC), Amravati Road, Nagpur (Maharashtra)

Co-Nodal Officers

1. Dr R.K. Sonkar, Principal Scientist (Hort.)
National Research Centre for Citrus (NRCC), Amravati Road, Nagpur (Maharashtra)

IX. DUS testing centers

Nodal DUS Test Centre	**Other DUS Test Centres**
National Research Centre for Citrus (NRCC), Amravati Road, Nagpur (Maharashtra)	AICRP on Fruits (Citrus), Andhra Pradesh Horticultural University, S.V. Agricultural College Campus, Tirupati - 517 502, Andhra Pradesh Department of Horticulture Mahatma Phule Krishi Vidyapeeth (MPKV) Rahuri 413 722, Dist : Ahmednagar Maharashtra

बौगेंनविलिया *(बौगेंनविलिया कॉम.* एक्स ज़स.), *कुल : निक्टैजिनेसी*

बौगेंनविलिया दुनिया के उष्णकटिबंधीय और उप–उष्णकटिबंधीय क्षेत्रों में उगाया जाने वाला एक लोकप्रिय सजावटी पौधा है। इसे पहली बार कौमरसन, एक फ्रांसीसी वनस्पति शास्त्री द्वारा रियो डी जिनेरियो, ब्राजील में खोजा गया था। यहॉ से इसे यूरोप ले जाया गया और बाद में सन् 1860 के दौरान यह भारत में लाया गया। बौगेंनिविलिया की केवल चार प्रजातियों अर्थात् बौगेंनविलिया ग्लैब्रा, बौगेंनविलिया स्पेक्टैबिलिस, बौगेंविलिया पेरूविआना और एक प्राकृतिक संकर प्रजाति बौगेंनिविलिया x ब्यूटिआना ही बागवानी महत्व की है।

वर्तमान समय में, नवीन किस्मों के विकास कार्य तथा प्रशिक्षण कार्यक्रमों के माध्यम से एशिया (भारत, थाइलैंड, मलेशिया, चीन तथा जापान) में बोगेनविलिया पर शोध एवं विकास का कार्य किया गया है | कुछ स्थानो पर मुख्यत: उत्तरी भारत मे कुछ पर परागण हुआ है किन्तु इससे संकर बीज प्राप्त नहीं हुआ है

1. **विषय :**

   परीक्षण के ये दिशा निर्देश बौगेंनविलिया ग्लैब्रा कोज़ी, बौगेंनविलिया स्पेक्टैबिलिस विल्ल्डनो, बौगेंनविलिया पेरूविआना हैमबोट और बोनप्लैंड, बौगेंनविलिया x ब्यूटिआना हौलटम और स्टैंड्ले की सभी क़िस्मों, पैतृक वंशक्रमों और उनके बीच की संकर प्रजातियों पर लागू होंगे।

2. **अपेक्षित सामग्री :**

   2.1. पौधा क़िस्म एवं कृषक अधिकार संरक्षण अधिनियम (पी पी वी एफ आर अधिनियम) 2001 के अंतर्गत पंजीकरण के लिए नवीन विकसित क़िस्म का नाम रखने संबंधी परीक्षण में अनुप्रयोग के लिये ज़रूरी रोपण सामग्री की मात्रा और गुणवत्ता कितनी, कहॉ और कब होगी इसका निर्णय पौधा क़िस्म और कृषक अधिकार संरक्षण प्राधिकरण (पी पी वी एवं एफ आर) द्वारा किया जायेगा। आवेदक द्वारा भारत के अलावा किसी भी अन्य देश की इस प्रकार की बीज सामग्री को प्रस्तुत करते समय यह सुनिश्चित किया जायेगा कि संबंधित देश के क़ानून एवं विनियमों के अंतर्गत सीमा शुल्क और संगरोधी संबंधी निर्धारित आवश्यकताओं का पालन किया गया है।

   2.2 सभी क़िस्मों के लिए दो – गॉठ की अक्षीय जड़दार 10 कलमें जो मादा पौधे से ली गई हों, की डी यू एस परीक्षण के लिए आवश्यकता होगी। संयंत्र सामग्री की न्यूनतम मात्रा, आवेदक द्वारा प्रदान की जायेगी। तथापि, यदि गुणों की अभिव्यक्ति हेतु डी यू एस परीक्षण में किसी विशिष्ट सामग्री की आवश्यकता पड़ती है तो वह आवेदक द्वारा विशिष्टीकृत की जाएगी।

2.3 डी यू एस परीक्षण के लिए उपलब्ध कराई गई सामग्री पूर्ण रूप से स्वस्थ होनी चाहिए, उसमें पुष्टता की कमी नहीं होनी चाहिए तथा वह किसी महत्वपूर्ण नाशक जीव या रोग से मुक्त होना चाहिए।

2.4 पौध सामग्री का किसी भी रसायन और जैव भौतिक विधि से उपचार न किया जाए, जब तक की सक्षम प्राधिकारी ऐसे उपचार की अनुमति न दे या अनुरोध न करें। यदि अगर उपचार किया गया है तो उस उपचार का पूरा विवरण दिया जाना चाहिए।

2.5 आवेदक को पौधा सामग्री के साथ अंकुरण/प्रस्फुटन पर प्रमाणित आंकड़े प्रस्तुत करने होंगे और ये आंकड़े प्रस्तुतिकरण की एक माह से अधिक अवधि के नहीं होंगें। सामग्री में सर्वोच्च आनुवंशिकता, शुद्धता, समरूपता, स्वच्छता तथा पादप–स्वच्छता संबंधी समस्त मानक शामिल भी होने चाहिए।

3. परीक्षण का संचालन :

3.1 परीक्षण की न्यूनतम अवधि एक पूरा वृद्धि काल (कम से कम एक वर्ष) होगा। यदि प्रस्तुत की गई सामग्री एक या अधिक गुणों के मामले में डी यू एस के मानदंडो को पूरा नहीं करती हैं तो परीक्षण को अगले वर्ष तक बढ़ाया जा सकता है।

3.2 परीक्षण एक स्थान पर किया जाएगा। संबंधित किस्में इन स्थानों पर जरूरी विशिष्ट लक्षण दिखाई न देने पर दूसरे उचित स्थान पर परीक्षण के लिए विचार किया जायेगा या आवेदक के अनुरोध पर इन्हें विशिष्ट जॉच प्रोटोकॉल के अन्तर्गत लाया जाएगा।

3.3 क्षेत्र परीक्षण फसल की सामान्य बढ़ वृद्धि संबंधी अनुकूल स्थितियों और सभी परीक्षण विशेषताओं की अभिव्यक्ति के अंतर्गत किए जाएं। उचित वनस्पति और पुष्प के विकास हेतु 2m x 2m पंक्तियों के प्लॉट में पौधों को समायोजित किया जाना चाहिए।

3.4 विशेषकर, वृद्धि नियामकों का प्रयोग नहीं किया जाना चाहिए।

3.5 गमले में क़िस्मों का परीक्षण निर्धारिती आकार के बर्तन में ही किया जाना चाहिए।

3.6 किसी भी विसंगति के मामले में, विशेष उद्देश्य के लिए अतिरिक्त परीक्षण प्रोटोकॉल पी पी वी एवं एफ आर प्राधिकरण द्वारा सिफारिश किया जाएगा।

4. विधियां और पर्यवेक्षण :

4.1 गुणों की तालिका (अनुभाग 7) में वर्णित विशेषताओं का उपयोग क़िस्मों के डी यू एस परीक्षण के लिए किया जाना चाहिए।

4.2 जब तक अन्यथा इंगित न किया जाए, गुणों के मूल्यांकन हेतु इष्टतम अवस्था पूर्ण पुष्पन होगी और वानस्पतिक अंगो सहित सभी पर्यवेक्षण तने के मध्य तीसरे भाग में फूलों की पहली

बहार के समय किया जाएगा। पौधों के रंग का आंकलन, जो पौधा अधिकतम प्रकाश के संपर्क में हो, पर किया जाएगा।

4.3 रंग संबंधी गुणों के मूल्यांकन के लिए नवीनतम रॉयल हॉर्टीकल्चरल सोसायटी (आरएचएस) रंग चार्ट का इस्तेमाल किया जाना चाहिए। चूंकि दिन का प्रकाश अलग–अलग होता है, अतः रंग चार्ट के अनुसार किया गया रंग का निर्धारण या तो कृत्रिम दिवस प्रकाश उपलब्ध करने वाली उपयुक्त कैबिनेट में किया जाना चाहिए। कृत्रिम दिवस प्रकाश के लिए प्रदीप्ति का विशेष वितरण प्रश्रयित दिवस प्रकाश डी 6500 के सी आई ई मानक के अनुरूप होना चाहिए और ब्रिटिश मानक 950 भाग में निर्धारित सहिष्णुता के भीतर होना चाहिए। ये सभी निर्धारण सफेद पृष्ठभूमि में रखे गए पौधों के भागों के संबंध में किये जाने चाहिए।

4.4 एकल पौधो संबंधी सभी पर्यवेक्षण पांच पौधों या उनके भागों पर किये जाने चाहिए।

4.5 एकरूपता के मूल्यांकन के लिए कम से कम 95% की स्वीकृति संभाव्यता के साथ 1% जनसंख्या मानक लागू होगा। 10 पौधों के नमूना आकार के मामले में, 1 आफ–टाइप की अनुमति होगी।

4.6 विशिष्टता और स्थिरता के मूल्यांकन के लिए, एकल पौधों पर सभी पर्यवेक्षण 9 पौधों या उनके भागों पर किया जाना चाहिए और अन्य पर्यवेक्षण सभी पौधों पर बिना किसी भी ऑफ– टाइप पौधे को संज्ञान में लेते हुये किये जाने चाहिए।

4.7 वास्तव में स्थिरता का ऐसा परीक्षण करना जो कि स्पष्टता और एकरूपता के परीक्षण की तरह स्पष्ट रूप में परिणाम दे, नहीं किया जा सकता। हालॉकि, अनुभव ने दिखाया है कि, अनेकों क़िस्मों के लिए, जब कोई क़िस्म एक समान होती है तो वह स्थिर भी मानी जा सकती है। जहां उपयुक्त हो, या संदेह के मामलों में, अगली पीढ़ी उगाकर स्थिरता परीक्षण किया जा सकता है, या एक नए संयंत्र स्टॉक के परीक्षण से सुनिश्चित किया जा सकता कि यह पिछली आपूर्ति की सामग्री द्वारा दिखाई गयी विशेषताओं को समान रूप से दर्शाती है या नहीं।

5. क़िस्मों का समूहीकरण :

5.1 विशिष्टताओं के मूल्यांकन में सुविधा के लिए डी यू एस परीक्षण हेतु प्रत्याशी क़िस्मों को समूहों में बांटा जाएगा। वे गुण जो अनुभव से ज्ञात किए गये होंगे और भिन्न होंगे या एक क़िस्म में बहुम कम भिन्न होंगे तथा जो सम्पूर्ण क़िस्मों में विभिन्न अवस्थाओं में समान रूप से व्याप्त होंगें, समूहीकरण के उद्देश्य से उपयुक्त माने जाएंगे।

5.2 किस्मों के समूहीकरण के लिए निम्नलिखित गुणों का उपयोग किया जाएगा :

a) पौधा प्रकार : सीधा, अर्द्ध सीधा, फैलावदार, लटकती हुई और लतादार

b) पत्ती : द्वितीय रंग (16 गुण)/विविध, विविध नहीं

c) पुष्पक्रम : सहपत्र के प्रकार (31 गुण)/एकल, बहु ब्रैक्टैड , दुहरा

d) युवा सहपत्र : सहपत्र के आंतरिक पक्ष के मुख्य रंग (बाहदलपालि/स्टार खुला)

निम्नलिखित समूहों के साथ (50 गुण) :

समूह 1 : श्वेत

समूह 2 : पीला

समूह 3 : नारंगी

समूह 4 : नील-लोहित

समूह 5 : गुलाबी

समूह 6 : लाल

समूह 7 : चटक लाल रंग

समूह 8 : बैगनी

समूह 9 : अन्य

6. **गुण और चिन्ह** :

6.1 विशिष्टता, एकरूपता और स्थायित्व का आंकलन करने के लिए गुण तालिका (अनुभाग 7) में दिए गए गुणों और उनकी अवस्थाओं का प्रयोग किया जाएगा।

6.2 डिजिटल डाटा प्रोसेसिंग के उद्देश्य के लिए विभिन्न गुणों की अभिव्यक्ति की प्रत्येक अवस्था हेतु टिप्पणियॉ 0–9 (फूल रंग समूह को छोड़कर) का प्रयोग किया जाएगा।

6.3 शीर्षक :

(*) प्रत्येक वृद्धि काल में सभी परीक्षणाधीन क़िस्मो के पर्यवेक्षित गुणों का उपयोग क़िस्मों के विवरण में शामिल किया जाना चाहिए। इसका अपवाद तभी हो जब पूर्व गुणों की अभिव्यक्ति, परीक्षण क्षेत्र की पर्यावरणीय स्थितियों या पूर्ववर्ती समांगी गुणों द्वारा संभव न हो। अपवाद की ऐसी स्थिति में पर्याप्त विवरण दिया जाना चाहिए।

(+) अनुभाग 7 मे दिए गये गुणों का स्पष्टीकरण देखें।

6.4 गुणों के तालिका के चौथे कॉलम में QL, QN और PQ चिन्हों से व्यक्त गुण निम्नानुसार अभिव्यक्ति देते है :

QL : गुणात्मक गुण

QN : मात्रात्मक गुण

PQ : छद्म – गुणात्मक गुण

6.5 **(a) - (c):** विवरण के लिए अनुभाग 7 देखें।

6.6 गुणों के तालिका के छठे कॉलम में दिये गए गुणों के मूल्यांकन का प्रकार निम्नानुसार है :

MG : पौधे के समूह या पौधे के किसी भाग की एकल पर्यवेक्षण द्वारा माप

MS : अनेक एकल पौधे या पौधे के किसी भाग माप

VG : पौधे के समूह या पौधे के किसी भाग की एकल पर्यवेक्षण द्वारा दृष्टिगत मूल्यांकन।

VS : एकल पौधे या पौधे के किसी भाग का पर्यावेक्षण द्वारा दृष्टिकत मूल्यांकन

7. गुणों की तालिका :

क्रम सं.	गुण	अवस्थाएं	परीक्षण प्रकार	उदाहरण क़िस्में	मूल्यांकन का प्रकार	नोट
1.	**पौधा : विकास का प्रकार**	सीधा अर्द्ध सीधा फैलावदार लटकती हुए लतादार **अन्य**	**PQ**	पिक्सी वैरिगेटा चित्रा अरूणा, महारा डॉ. एच.बी. सिंह, पालेकर रायल डौपलिन, शुभ्रा	**VG**	1 2 3 4 5 6
2.	**युवा तना : रंग**	हल्का हरा मध्यम हरा लाल हरा लाल **अन्य**	**PQ (a)**	अर्जुना, लिलियेक पफ श्वेता, मैरी पालमर प्रेसिडेन्ट फ्लेम, ग्लैडी हैप्बर्न	**VG**	1 2 3 4 5
3.	**पौधा : पर्व संधि की लंबाई**	कम मध्यम लंबे	**(*) QN (b)**	पिक्सी वैरिगेटा जिन्ना बरात, ब्लोंडी चित्रा, स्प्रिंग फेस्टिवल	**VG/ MS**	3 5 7
4.	**तना : कांटे**	अनुपस्थित उपस्थित	**QL (b)**	मिसेज ऐलिस चित्रा	**VG**	1 9
5.	**स्तम्भ : शूल**	**विरल** **मध्यम** **सघन**		**विशाखा**, सोआ, कैस्केड **स्प्लेंडेन्स** **पिक्सी वेरिगेटा**		3 5 7
6.	**कांटा : लंबाई**	छोटा मध्यम लंबा	**(*) (+) QN(b)**	पिक्सी वैरिगेटा, पल्लवी जिन्ना बरात, मार्गेरी लायेड चित्रा, रेफलजेंस	**VG**	1 2 3
7.	**कांटा : वक्रता**	सीधा कुछ वक्र	**(*) QN (b)**	ऐलिजाबेथ स्पलैन्डैंस, डॉ. पी.वी. साने,	**VG**	1 3

		पूर्ण वक्र		ऐडा वैरिगेटा प्रधान प्रोफ्युजन		5
8.	**कांटा : मजबूती**	कमज़ोर मझोला मजबूत	**(*)** **QN** **(b)**	सोवा, जुबली एनिड लैंकैस्टर, बेगम सिकंदर स्पलैन्डैंस, प्रधान प्रोफ्युजन	**VG / MS**	1 2 3
9.	**पत्ती : लंबाई**	छोटी मध्यम लंबी	**(*)** **QN** **(c)**	सोआ, स्टैंज़ा, लैटेरिटिया पारथासारथी, फिलिप टर्लेज स्पेशल, रोजिया फुस्चेसिया	**MG/ MS**	3 5 7
10.	**पत्ती : चौड़ाई**	संकीर्ण मध्यम व्यापक	**(*)** **QN** **(c)**	गोलडेन ग्लोरी, फैंद्री फैंटसी ग्लेडी हैप्बर्न, हैपिनेस मैरी पालमर, लोस बनोस वैरिगेटा	**MG/ MS**	3 5 7
11.	**पत्ती : आकार**	कोणीय मध्यम गोल व्यापक गोल अण्डाकार परिपत्र **अन्य**	**(*)** **PQ** **(c)** **(+)**	जिन्ना बरात, मिसेज ऐलिस शुभ्रा, थिमा मिसेज बट, लोस बनोस वैरिगेटा पालेकर, ड्रीम अर्चना मोरिलियो फिएस्टा	**VG**	1 2 3 4 5 6
12.	**पत्ती : नोक का आकार**	एक्युमिनेट कोणीय कुंठित **अन्य**	**(+)** **PQ** **(c)**	लिलिएक परफेक्शन, स्कार्लेट क्वीन वैरिगेटा अर्चना, ब्लोंडी मरीटा	**VG**	1 2 3 4
13.	**पत्ती : आधार का आकार**	एटियुनेट कोणीय कुंठित **अन्य**	**(+)** **PQ** **(c)**	ड्रीम मरीटा, जिन्ना बरात थिमा, स्कार्लेट क्वीन वैरिगेटा	**VG**	1 2 3 4
14.	**नई पत्ती : वर्ण** **नवीन पत्र**	हल्का हरा मध्यम हरा लाल हरा लाल **अन्य**	PQ (a)	**शुभ्रा** **ग्लैब्रा** **जाकिरियाना** **मनोहर चन्द्र वेरिगेटा** **डा. पी. वी. साने**	**VG**	1 2 3 4 5
15.	**पत्ती : मुख्य रंग**	पीला–सफेद पीला पीला–हरा	**(+)** **PQ** **(c)**	स्कार्लेट क्वीन वैरिगेटा मरीटा, एडा	**VG**	1 2

		हल्का हरा मध्यम हरा गहरा हरा बहुत गहरा हरा सलेटी हरा **अन्य**		निर्मल, पल्लवी सुरेखा, ड्रीम लिलिएक क्वीन डॉ. एच.बी. सिंह चित्रा जुलु क्वीन		3 4 5 6 7 8 9
16.	**पत्ती : द्वितीयक रंग**	कोई नहीं सफ़ेद पीला सफेद पीला हल्का हरा मध्यम हरा गहरा हरा बहुत गहरा हरा सलेटी हरा **अन्य**	**(*)** **(+)** **PQ** **(c)**	एशिया, एडा, ड्रीम सिल्वर लाइन अर्जुना, अभिमन्यु पिक्सी वैरिगेटा थिमा निर्मल पल्लवी लुइस वाथेन रायल डौपलिन	**VG**	1 2 3 4 5 6 7 8 9 0
17.	**पत्ती : द्वितीयक रंग का वितरण**	अनुपस्थित सीमांत संकीर्ण सीमांत व्यापक मध्य शिरा के आस पास धब्बेदार अनियमित **अन्य**	**(+)** **(c)**	चित्रा, मिसेज ऐलिस सिल्वर लाइन, अभिमन्यु रायल डौपलिन स्कार्लेट क्वीन वैरिगेटा अर्चना पार्थसारथी जैकिरिआना वैरिगेटा	**VG**	1 2 3 4 5 6 7
18.	**पत्ती : तृतीयक रंग**	कोई नहीं सफ़ेद पीला सफेद पीला हल्का हरा मध्यम हरा गहरा हरा बहुत गहरा हरा सिलेटी हरा **अन्य**	**(+)** **PQ** **(c)**	सिल्वरलाइन हवाईयन व्हाइट पिक्सी वैरिगेटा ज़ैकिरिआना वैरिगेटा एडा वैरिगेटा मनोहर चन्द्र वैरीगेटा अर्चना स्कार्लेट क्वीन वैरिगेटा लोस बनोस वैरिगेटा	**VG**	1 2 3 4 5 6 7 8 9 0
19.	**पत्ती : किनारे की हलचल**	अनुपस्थित या कमजोर मझोला	**QN** **(c)**	चित्रा, मिसेज ऐलिस अरूणा, किली कैम्पबेल	**VG**	1 2

		मजबूत **अन्य**		किस्पा, डॉ. आर.आर. पाल		3 4
20.	**बनावट**	अलोम थोड़ा बालदार बालदार कंबल की तरह रोऐदार **अन्य**	**QL**	किस्पा स्पलैन्डैंस, रेड ट्रायंगल मिसेज ऐलिस रेड ग्लोरी	**VG**	1 2 3 4 5
21.	**पत्ती की संख्या / प्राथमिक शाखा**	दूर मझोला घने	**QN (c)**	चित्रा जिन्ना बरात पिक्सी वैरिगेटा	**MG/MS**	3 5 7
22.	**पत्ती : दृढ़ता**	नियमित अनियमित	**QL**	मिसेज ऐलिस जिन्ना बरात	**VG**	1 2
23.	**पर्णवृंत : लंबाई**	छोटी मध्यम लंबी	**(*) (+) QN (c)**	ग्लैबरा मैग्नीफीसा जिन्ना बरात मैरी पालमर	**MG/MS**	1 2 3
24.	**पर्णवृंत : प्रवृत्ति**	उर्ध्व क्षैतिज नीचे की ओर	**(*) (+) QN (c)**	फैंटसी पालेकर महारा	**MG/MS**	1 2 3
25.	**पुष्पक्रम : लंबाई**	छोटी मध्यम लंबी	**(+) QN**	एडा पारथासारथी, पारथा श्वेता, शुभ्रा, ड्रीम	**MG/MS**	3 5 7
26.	**पुष्पवृंत : लंबाई**	छोटी मध्यम लंबी	**(+) QN**	पिक्सी वैरिगेटा जुलू क्वीन इसाबेल ग्रीन स्मिथ, पालेकर	**MG/MS**	3 5 7
27.	**पुष्पक्रम : सहपत्र समूहों की व्यवस्था**	शीर्ष कक्षा शीर्ष एवं कक्षा	**(+) QL**	ऐडा, महारा पारथासारथी, पिक्सी श्वेता, डॉ. हर भजन सिंह	**VG**	1 2 3
28.	**पुष्पक्रम : सहपत्र समूहों की संख्या**	निम्न मध्यम अनेक	**(+) QN**	फैंटसी चित्रा श्वेता	**VG/ MG**	3 5 7
29.	**पुष्पक्रम : सहपत्र समूहों का घनत्व**	विरल मध्यम घने **अन्य**	**(+) QN**	मिसेज ऐलिस टेटरा मिसेज मैक्लीन शुभ्रा	**VG**	3 5 7 9
30.	**पुष्पक्रम : फूलों की उपस्थिति**	अनुपस्थित उपस्थित	**(+) QL**	चेरी ब्लासम, श्वेता, टेटरा मिसेज मैक्लीन	**VG**	1 9

31.	**पुष्पक्रम : सहपत्र के प्रकार**	एकल अनेक दुहरा अन्य	(*) (+) QL	श्वेता, प्रेसीडेन्ट महारा, पल्लवी	VG	1 3 5 7
32.	**सहपत्र : लंबाई**	छोटी मध्यम लंबी	QN	पिक्सी, चेरी ब्लासम सुवर्णा मिसेज ऐलिस	MG/MS	3 5 7
33.	**सहपत्र : चौड़ाई**	संकीर्ण मध्यम व्यापक	QN	फैदरी फैंटसी महारा चित्रा	MG/MS	3 5 7
34.	**सहपत्र : आकार**	संकीर्ण गोल मध्यम गोल व्यापक गोल परिपत्र अन्य	(*) (+) PQ	इसाबेल ग्रीन स्मिथ, ड्रीम अर्चना, डॉ. हर भजन सिंह जूलू क्वीन टैटरा मिसेज मैक्लीन	VG	1 2 3 4 5
35.	**सहपत्र : परावर्तन**	प्रतिवर्तित सामान्य / सीधे अन्य	(+) PQ	मिसेज ऐलिस फैदरी फैंटसी	VG	1 9 0
36.	**सहपत्र : नोक का आकार**	कोणीय कुंठित अन्य	(*) (+) PQ	फेदरी फैंटसी, महारा मैरी पामर स्पेशल	VG	1 2 3
37.	**सहपत्र : आधार का आकार**	कोणीय कुंठित हृदयाकार अन्य	(*) (+) PQ	फेदरी फैंटसी, जिन्ना बरात, चेरी ब्लासम एडा, लेडी मैरी बैरिंग	VG	1 2 3 4
38.	**सहपत्र : चिरलग्न**	चिरलग्न / अपाती आशुपाती	फस्	महाराए जिन्ना बरात अरुणाए डा. पी. वी. साने	VG	1 2
39.	**पुष्पक्रम प्रकार के सहपत्र वाली किस्मों : एकल : वाह्यदलपुजः ऊपरी ओर के रंग**	श्वेत क्रीम वर्ण हरा रंग लिए हुये पीताभ पीताभ लाल नारंगी गुलाबी	(+) PQ (c)	थिम्मा लेडी रिचर्ड ड्रीम सुवर्णा पार्था, एलीज़ाबेथ एग्नस	VG	1 2 3 4 5 6 7 8

		अन्य				
40.	**पुष्प: रंग**	लघु मध्यम चौडा	**QN**	ग्लैडी हेपबर्न ड्वार्फ जेम रोज़ क्वीन, रॉयल डौप्लीने	**VG**	1 2 3
41.	**पुष्प**	प्रधान सामान्य	**QN**	मिसेस बट सुरेखा, डा. राव	**VG**	1 9
42.	**पुष्प नलिका: रंग**	हरा नारंगी नील-लोहित लाल बैगनी अन्य	**(+) PQ (c)**	स्वेता अरुणा विशाखा पालेकर जुलु क्वीन	**VG**	1 2 3 4 5 6
43.	**पुष्प नलिका: आकार**	पतला/दुर्बल मध्य में हल्का सा संकीर्णन आधार पर फूला हुआ	**(+) PQ**	ग्लैब्रा पालेकर	**VG**	1 2
44.	**पराग-केसर (पुँ-केसर)**	अन्तर्स्थापित बाहर्स्थापित	**QN**	मिसेस बट इनिड लंकास्टर, सुरेखा,	**VG**	1 9
45.	लघु युवा सहपत्रः बाहरी पक्ष के मुख्य रंग	श्वेत हरा पीला नारंगी नील-लोहित गुलाबी लाल चटक लाल रंग बैगनी अन्य	**(*) (+) PQ**	 स्वेता सुवर्णा कारमिलियों फीस्टा	**VG**	1 2 3 4 5 6 7 8 9 0
46.	लघु युवा सहपत्रः आन्तरिक पक्ष के मुख्य रंग (बंद वाह्य दल पुंज)	श्वेत पीला नारंगी नील-लोहित	**(*) (+) PQ**	शुभ्रा सुवर्णा अरुणा एशिया	**VG**	1 2 3 4 5

		गुलाबी लाल चटक लाल रंग बैगनी अन्य		महात्मा गांधी कारमिलियों फीस्टा ड्रीम जुलु क्वीन		6 7 8 9
47.	युवा सहपत्र : आन्तरिक पक्ष के मुख्य रंग	श्वेत पीला नारंगी नील-लोहित गुलाबी लाल चटक लाल रंग बैगनी अन्य	(*) (+) PQ	सोवा इनिड लंकास्टर जाकिरियाना गोपाल पॉलटोनी स्पेशल फ्लेम डॉ॰ हरभजन सिंह स्प्लेंडेन्स	VG	1 2 3 4 5 6 7 8 9
48.	पुष्पक्रम प्रकार के सहपत्र वाली किस्मों : डबलः बाहरी युवा सहपत्रः भीतर की ओर के मुख्य रंग	श्वेत पीला नारंगी नील-लोहित गुलाबी लाल चटक लाल रंग बैगनी अन्य	(*) (+) PQ	महरा व्हाइट रोजविलीस डिलाइट महरा लॉसबनास ब्युटी	VG	1 2 3 4 5 6 7 8 9
49.	पुष्पक्रम प्रकार के सहपत्र वाली किस्मोः डबलः भीतरी युवा सहपत्रः भीतर की ओर के मुख्य रंग	श्वेत पीला नारंगी नील-लोहित गुलाबी लाल चटक लाल रंग बैगनी अन्य	PQ	महारा व्हाइट अर्चना महारा लॉसबनास ब्युटी वेरिगेटा	VG	1 2 3 4 5 6 7 8 9
50.	युवा सहपत्रः आंतरिक पक्ष के द्वितीयक रंग	श्वेत पीला	PQ	मेरी पामर स्पेशल	VG	1 2 3

	(वाह्यदल पुंज खुला)	नारंगी नील-लोहित गुलाबी लाल चटक लाल रंग बैगनी अन्य		चित्रा मेरी पामर स्पेशल		4 5 6 7 8 9
51.	युवा सहपत्र : आंतरिक पक्ष के तृतीयक रंग (वाह्य दल पुंज खुला)	श्वेत पीला नारंगी नील-लोहित गुलाबी लाल चटक लाल रंग बैगनी अन्य	(+) PQ		VG	1 2 3 4 5 6 7 8 9
52.	सहपत्रः आंतरिक पक्ष के मुख्य रंग (वाह्य दल पुंज मुरझाया हुआ)	श्वेत पीला नारंगी नील-लोहित गुलाबी लाल चटक लाल रंग बैगनी अन्य	(+) PQ	स्वेता लेडी मेरी बरिंग लाउस बाथन रानी कैसकेड डॉ आर॰ आर॰ पाल पेनांग ग्लैब्रा सेंडेरियाना	VG	1 2 3 4 5 6 7 8 9

8. डाटा शब्दकोश :

क्रम सं0	लक्षण	विवरण
1	अनुपस्थित	उपस्थित नहीं
2	नोकीला कोण	एक तेज बिन्दु तक क्रमशः लम्बा और पतला होना
3	न्यूनकोण	सीधे मार्जिन से एक उत्तल टर्मिनल 45–90 कोण बनाने के लिए।
4	पतला करना	लंबा, एक संकुचित बिन्दु के लिए क्रमशः लम्बा और पतला होना, आमतौर पर सतह के लिए लागू होता है।
5	कक्षा कोण	शाखा और तने के बीच का कोण।

6	चौड़ा	पक्ष की ओर से या सीमाओं के बीच पर्याप्त हद के बाद।
7	गोलाकार	एक चक्र के रूप में गोला।
8	चढ़ते हुए पौधे	लता–तन्तु, पर्णवृन्त, या आकस्मिक जड़ों के माध्यम से ऊपर की ओर बढ़ने वाले पौधे
9	हृदयाकार	पत्तियों का आधार हृदय के आकार का
10	वक्र	बंका या एक वक्र में गठित किया
11	गहरा हरा	रंग प्रकार
12	घना	अपेक्षाकृत उच्च घनत्व वाले
13	नीचे की ओर	एक दिशा में उपर से नीचे
14	लटकना	पौधे जिनकी शाखाएं नीचे की ओर लटकी या झुकी हुई हो
15	अण्डाकार	विस्तृत केन्द्र जो कि अन्त की ओर समान रूप से सिकुड़ी हो।
16	थोड़े से	संख्या में एक से अधिक हो
17	बिना बालों का	बाल का अभाव, चिकनी सतह
18	सिलेटी हरा	रंग प्रकार
19	रोऐदार	रोए से ढका हुआ
20	आड़ा	क्षितिज के समानान्तर
21	अनियमित/टेढ़ा	आकृति और आकार में भिन्न
22	भालाकार	लंबी और पतली और मध्यम नीचे विस्तृत, एक लांस तरह एक बिन्दु पर गावदुम, लांस के आकार का
23	हल्का हरा	रंग प्रकार
24	लम्बा	पौधे की लंबाई का एक भाग या क्षेत्र
25	अनेक	बड़ी संख्या में अथवा कई
26	किनारे का	सीमा या किनारे से सम्बन्धित
27	मध्यम	मध्यम लम्बाई के तने का एक वर्ग या क्षेत्र
28	मध्यम हरा	रंग प्रकार
29	अनेक	एक से अधिक
30	संकरा	विस्तृत नहीं
31	लगातार नहीं	जारी रखने से नहीं
32	अधिक कोण	टर्मिनल का कोण 90^0 से अधिक हो, सीधे मध्योन्नत तक मार्जिन
33	अण्डाकार	पत्ती का आकार अंडे की तरह, व्यापक हिस्सा मध्य के नीचे हैं।
34	लगातार	पत्तियां या फूलों की पंखुड़ियो को छोड़ने के बजाय संयंत्र से जुड़े रहना।
35	लाल	रंग प्रकार
36	लाल हरा	रंग प्रकार

37	प्रतिवर्तित	नीचे या पीछे मुड़ा हुआ, ब्रैक्ट्स, पंखुड़ी, पत्ती नसों आदि के लिए लागू
38	अर्द्ध सीधा	जो पौधे आंशिक रूप से सीधे है
39	छोटा	छोटी लंबाई के पौधे का एक वर्ग या क्षेत्र
40	एक	अकेला, दूसरो के साथ नहीं है।
41	कम घना	घना नहीं
42	धब्बेदार	बिंदीदार या विशेष रूप से विषम रंग के छोटे–छोटे धब्बो का आवरण किया हुआ।
43	फैलाव	पौधे जिसकी शाखाएं क्षैतिज दिशा में बढ़ी हुयी हो
44	सीधा	घटता, झुकता, कोण या अनियमितताओं से मुक्त।
45	मजबूत	ताकत या औसत या उम्मीद से अधिक शक्ति।
46	अन्तिम	एक शाखा या स्टेम की नोक पर बढ़ता हुआ, प्रायः एक कली, थाली, या फूल के लिए लागू
47	कंबल की तरह का रोऐंदार	घने, ऊनी बाल के साथ आवरित किया हुआ।
48	खड़ा	सीधे पौधे जिनकी क्षैतिज शाखाएं खड़ी शाखाओ की लंबाई से अधिक हो
49	ऊपरी	नीचे से ऊपर की दिशा में
50	बहुत गहरा हरा	रंग प्रकार
51	कम़जोर	अधिक वजन, दबाव या तनाव को बनाए रखने या लागू करने में असक्षम अथवा शक्ति की कमी
52	सफेद	रंग प्रकार
53	पीला	रंग प्रकार
54	पीला हरा	रंग प्रकार
55	पीला सफेद	रंग प्रकार

9. गुणों की तालिका की व्याख्याएं :

9.1 अनेक गुणों से संबंधित व्याख्याए :

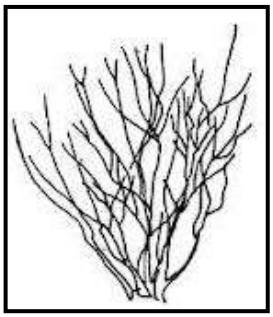
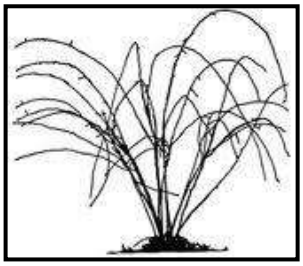
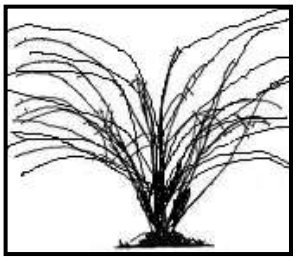
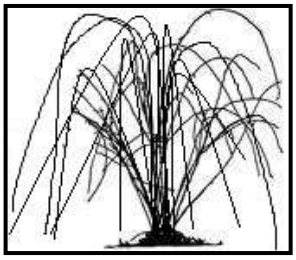
व्यक्तिगत गुणों के आकलन के लिए विकास का इष्टतम चरण तीन पुष्पक्रम में एक फूल के खुलने का समय है। द्वि–सहपत्र क़िस्मों के मामले में जब एक तिहाई सहपत्र पूरी तरह से विकसित और खुले हो तब अवलोकन किया जाना चाहिए। गोणों के साथ दिये गये संकेत (a), (b) और (c) गुणों की तालिका के पहले स्तंभ, में नीचे इंगित टिप्पणियों के रूप में जांच की जानी चाहिए :

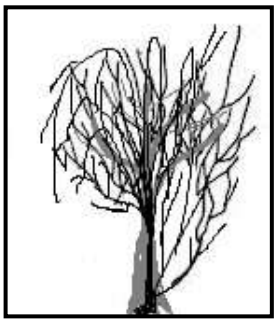
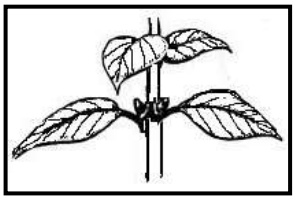
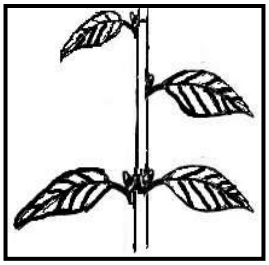
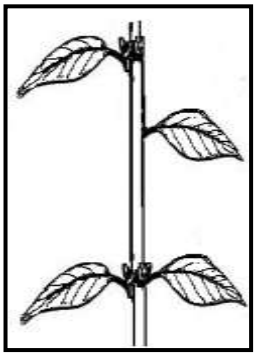
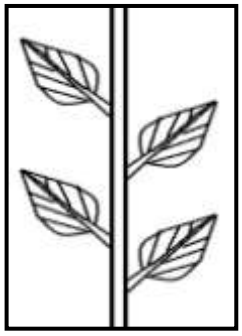
(a) पर्यवेक्षण मुख्य तने के ऊपरी तिहाई भाग पर किया जाना चाहिए।

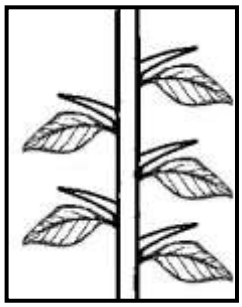
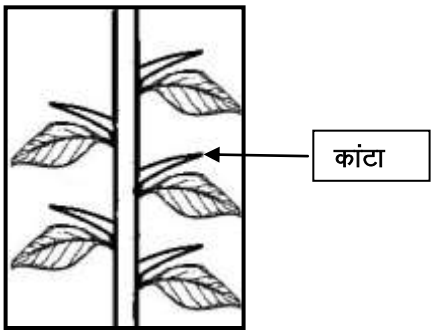
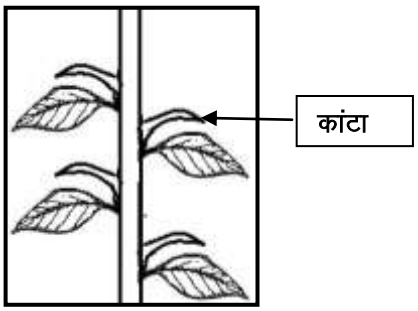
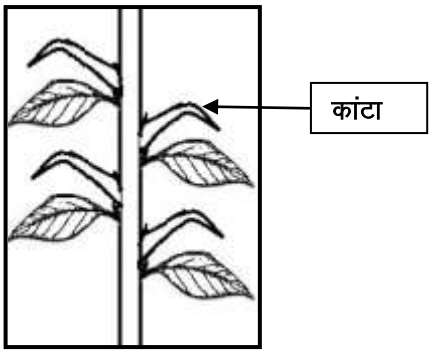
(b) पर्यवेक्षण मुख्य तने के बीच के तिहाई भाग पर किया जाना चाहिए।

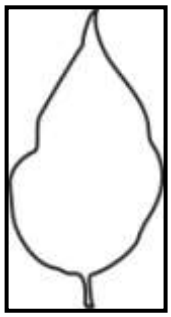
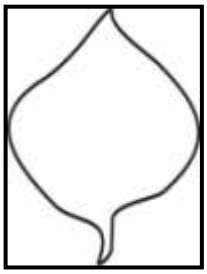
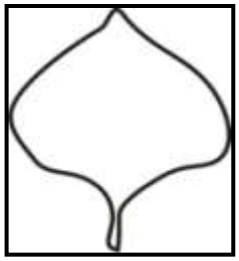
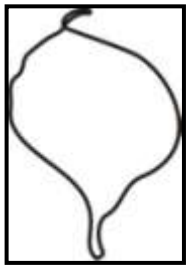
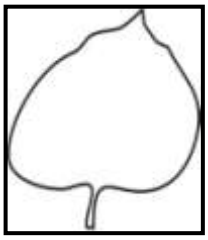
(c) पर्यवेक्षण मुख्य तने के बीच के तिहाई भाग से एक विकसित पत्ते पर किया जाना चाहिए।

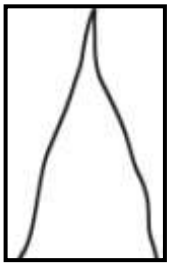
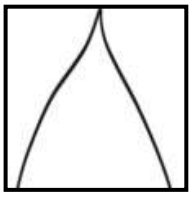
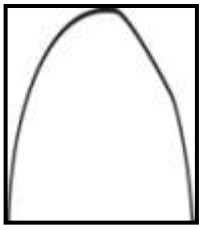
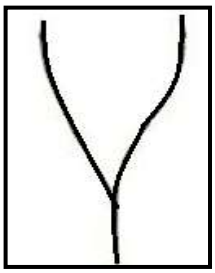
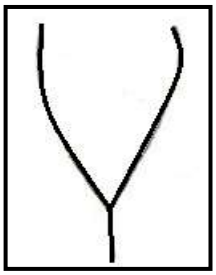
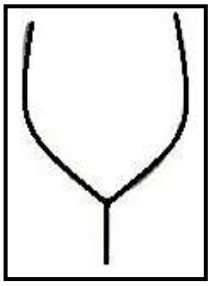
9.2 **व्यक्तिगत गुणों के लिए व्याख्याएं :**

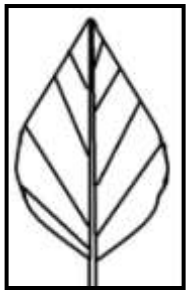
	गुण – 1	**पौधा : विकास का प्रकार**
विकास का प्रकार	सीधा	
	अर्द्ध सीधा	
	फैलावदार	
	लटकती हुई	

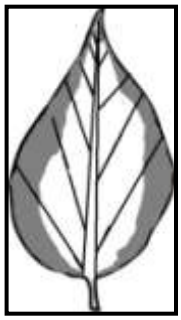
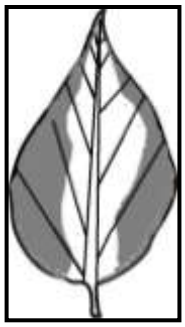
	लतादार	
	गुण – 3	**पौधा : पर्व संधि की लंबाई**
पौधा : पर्व संधि की लंबाई	कम	
	मध्यम	
	लंबे	
	गुण – 4	**तना : कांटे**
तना : कांटे	अनुपस्थित	

	उपस्थित	
	गुण – 6	**कांटा : लंबाई** कांटे की प्राकृतिक लंबाई ली जानी चाहिए।
	गुण – 7	**कांटा : वक्रता**
कांटा : वक्रता	सीधा	
	कुछ वक्र	
	पूर्ण वक्र	
	गुण – 11	**पत्ती : आकार**

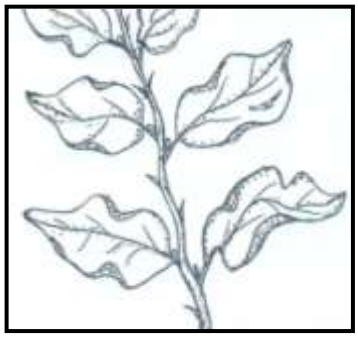
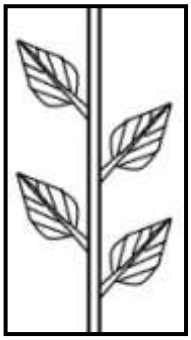
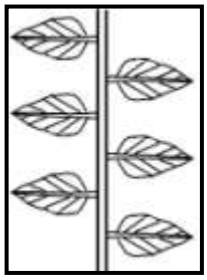
पत्ती : आकार	कोणीय मध्य के नीचे	
	मध्यम गोल चौड़ा भाग	
	व्यापक गोल मध्य में	
	अण्डाकार	
	परिपत्र	
	गुण – 12	**पत्ती : नोक का आकार**

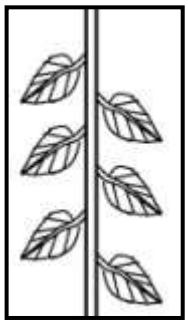
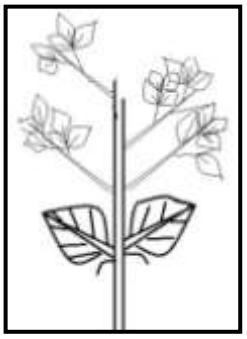
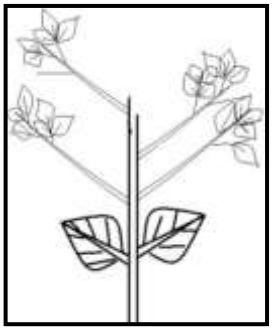
पत्ती : नोक का आकार	एक्युमिनेट	
	कोणीय	
	कुंठित	
	गुण – 13	**पत्ती : आधार के आकार**
पत्ती : आधार के आकार	एटियुनेट	
	तीव्र	
	कुंठित	

	गुण – 15	**पत्ती : मुख्य रंग**
पत्ती : मुख्य रंग	पीला सफेद पीला पीला – हरा हलका हरा मध्यम हरा गहरा हरा बहुत गहरा हरा सिलेटी हरा अन्य	मुख्य रंग पत्ती की सतह में सबसे ज्यादा क्षेत्र में फैला रंग है। यदि कोई रंग पत्ते के क्षेत्र में लगभग आधे–आधे है, तो गहरा रंग मुख्य रंग है।
	गुण – 16	**पत्ती : द्वितीयक रंग**
पत्ती : द्वितीयक रंग	कोई नहीं सफेद पीला सफेद पीला हलका हरा मध्यम हरा गहरा हरा बहुत गहरा हरा सिलेटी हरा अन्य	द्वितीयक रंग पत्ती की सतह में दूसरा सबसे ज्यादा क्षेत्र में फैला रंग है।
	गुण – 17	**पत्ती : द्वितीयक रंग का वितरण**
पत्ती : द्वितीयक रंग का वितरण	अनुपस्थित	

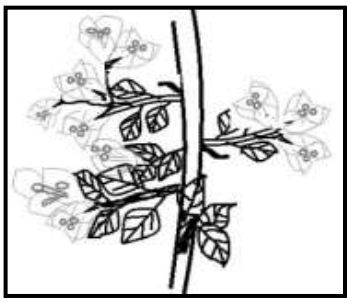
	सीमांत संकीर्ण	
	सीमांत व्यापक	
	मध्य शिरा के आस पास	
	धब्बेदार	

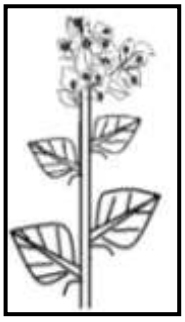
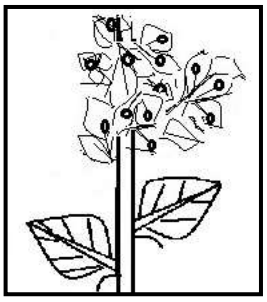
	अनियमित	
	अन्य	
	गुण – 18	**पत्ती : तृतीयक रंग**
पत्ती : तृतीयक रंग	कोई नहीं सफेद पीला सफेद पीला हलका हरा मध्यम हरा गहरा हरा बहुत गहरा हरा सिलेटी हरा अन्य	तृतीयक रंग पत्ती की सतह में तीसरा सबसे ज्यादा क्षेत्र में फैला रंग है। मुख्य रंग ही केवल पत्ते की सतह में सबसे ज्यादा हो सकता है।
	गुण – 19	**पत्ती : किनारे की घुमावट**
पत्ती : किनारे की घुमावट	अनुपस्थित या कमज़ोर	

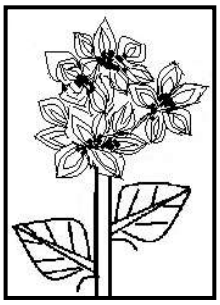
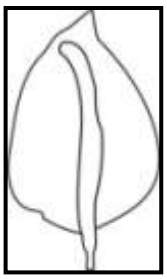
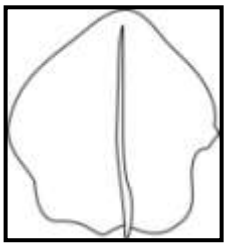
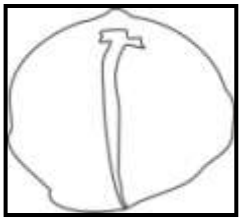
	मझोला	
	मजबूत	
	गुण – 22	**पत्ती : दृढ़ता**
पत्ती : दृढ़ता	नियमित	पत्तियों का नियमित अथवा अनियमित एक साथ झड़ना
	अनियमित	
	गुण – 24	**पर्णवृंत : प्रवृत्ति**
पर्णवृंत : प्रवृत्ति	ऊर्ध्व	
	क्षैतिज	

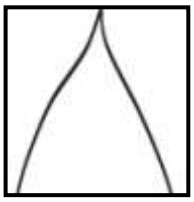
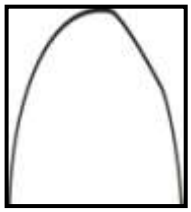
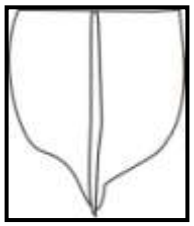
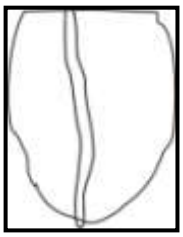
	नीचे की ओर	
	गुण – 25	**पुष्पक्रम : लंबाई**
पुष्पक्रम : लंबाई	छोटी मध्यम लंबी	तने का वह भाग जो रंगीन सहपत्र से आच्छादित होता है वह पुष्पक्रम होता हैं चाहे उसमें फूल हो या नहीं।
	गुण – 26	**पुष्पवृंत : लंबाई**
पुष्पवृंत : लंबाई	छोटी	
	मध्यम	
	लंबी	

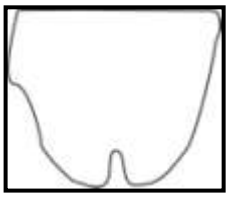
	गुण – 27	**पुष्पक्रम : सहपत्र समूहो की व्यवस्था**
पुष्पक्रम : सहपत्र समूहो की व्यवस्था	शीर्ष	
	कक्षा	
	शीर्ष व कक्षा	
	गुण – 28	**पुष्पक्रम : सहपत्र समूहो की संख्या**

पुष्पक्रम : सहपत्र समूहो की संख्या	निम्न	
	मध्यम	
	अनेक	
	गुण – 29	**पुष्पक्रम : हरित दल समूहो का घनत्व**
पुष्पक्रम : हरित दल समूहो का घनत्व	विरल	
	मध्यम	

	घना	
	गुण – 30	**पुष्पक्रम : फूलों की उपस्थिति**
पुष्पक्रम : फूलों की उपस्थिति	अनुपस्थित	
	उपस्थित	
	गुण – 31	**पुष्पक्रम : सहपत्र के प्रकार**
पुष्पक्रम : सहपत्र के प्रकार	एकल	

	अनेक	
	गुण – 34	**सहपत्र : आकार**
सहपत्र : आकार	संकीर्ण गोल	
	मध्यम गोल	
	व्यापक गोल	
	परिपत्र	
	गुण – 35	**सहपत्र : परावर्तन**

सहपत्र : परावर्तन	प्रतिवर्तित	
	सामान्य / सीधा	
	गुण – 36	**सहपत्र : नोक का आकार**
सहपत्र : नोक का आकार	कोणीय	
	कुंठित	
	गुण – 37	**सहपत्र : आधार का आकार**
सहपत्र : आधार का आकार	कोणीय	
	कुंठित	

	हृदयाकार	
	गुण – 45	**लघु युवा सहपत्र : बाहरी पक्ष के मुख्य रंग**
लघु युवा सहपत्र : बाहरी पक्ष के मुख्य रंग	श्वेत हरा पीला नारंगी नील-लोहित गुलाबी लाल चटक लाल रंग बैगनी अन्य	मुख्य रंग पत्ते की सतह में सबसे ज्यादा क्षेत्र में फैला रंग है। यदि कोई रंग पत्ते के क्षेत्र में लगभग आधा–आधा है, तो गहरा रंग मुख्य रंग है।
	गुण – 46	**लघु युवा सहपत्र : आंतरिक पक्ष के मुख्य रंग (बंद वाह्य दल पुंज)**
लघु युवा सहपत्र : आंतरिक पक्ष के मुख्य रंग (बंद वाह्य दल पुंज)	श्वेत हरा पीला नारंगी नील-लोहित गुलाबी लाल चटक लाल रंग बैगनी अन्य	मुख्य रंग पत्ते की सतह में सबसे ज्यादा क्षेत्र में फैला रंग है। यदि कोई रंग पत्ते के क्षेत्र में लगभग आधा–आधा है, तो गहरा रंग मुख्य रंग है।
	गुण – 47	**युवा सहपत्र : आंतरिक पक्ष के मुख्य रंग**
युवा सहपत्र : आंतरिक पक्ष के मुख्य रंग	श्वेत हरा पीला नारंगी नील-लोहित	मुख्य रंग पत्ते की सतह में सबसे ज्यादा क्षेत्र में फैला रंग है। यदि कोई रंग पत्ते के क्षेत्र में लगभग आधा–आधा है, तो गहरा रंग मुख्य रंग है।

	गुलाबी	
	लाल	
	चटक लाल रंग	
	बैगनी	
	अन्य	
	गुण – 50	**युवा सहपत्र : आंतरिक पक्ष के द्वितीयक रंग (वाह्य दल पुंज खुला)**
युवा सहपत्र : आंतरिक पक्ष के द्वितीयक रंग (वाह्य दल पुंज खुला)	श्वेत	द्वितीयक रंग पत्ते की सतह में दूसरा सबसे ज्यादा क्षेत्र में फैला रंग है।
	हरा	
	पीला	
	नारंगी	
	नील-लोहित	
	गुलाबी	
	लाल	
	चटक लाल रंग	
	बैगनी	
	अन्य	
	गुण – 51	**युवा सहपत्र : आंतरिक पक्ष के तृतीयक रंग (वाह्य दल पुंज खुला)**
युवा सहपत्र : आंतरिक पक्ष के तृतीयक रंग (वाह्य दल पुंज खुला)	श्वेत	तृतीयक रंग पत्ते की सतह में तीसरा सबसे ज्यादा क्षेत्र में फैला रंग है।
	हरा	
	पीला	
	नारंगी	
	नील-लोहित	
	गुलाबी	
	लाल	
	चटक लाल रंग	
	बैगनी	
	अन्य	
	गुण – 52	**सहपत्र : आंतरिक पक्ष के मुख्य रंग (वाह्यदल पुंज मुरझाया हुआ)**
सहपत्र : आंतरिक पक्ष के मुख्य रंग	श्वेत	
	हरा	
	पीला	

(वाह्यदल पुंज मुरझाया हुआ)	नारंगी	
	नील-लोहित	
	गुलाबी	
	लाल	
	चटक लाल रंग	
	बैगनी	
	अन्य	

11. **कार्यरत समूह का विवरण** :

इस परीक्षण के दिशा निर्देश वैज्ञानिकों के एक समूह और तकनीकी स्टाफ के सदस्यो के साथ परामर्श द्वारा एवं इस क्षेत्र के अन्य विशेषज्ञ मुख्यतः यू.पी.पी.ओ.वी. के अन्तर्राष्ट्रीय दिशा निर्देशों के अनुरूप विकसित किये गये है।

वैज्ञानिक टीम :

वैज्ञानिक दल में डॉ. आर. के. राय, वरिष्ठ प्रधान वैज्ञानिक, डॉ. ए. के. गोयल, मुख्य वैज्ञानिक, डॉ. एस. कुमार, प्रधान वैज्ञानिक एवं डॉ. सी. एस. नौटियाल, निदेशक, सीएसआईआर–राष्ट्रीय वनस्पति अनुसंधान संस्थान, लखनऊ शामिल थे।

सर्पोटिंग स्टाफ :

टीम में कु. शिल्पी सिंह, परियोजना सहायक, डॉ. रंजना, परियोजना सहायक, श्री रामेश्वर प्रसाद, परियोजना सहायक एवं डॉ. सतीश कुमार, तकनीकी सहायक, श्री गिरधारी शर्मा, तकनीकी अधिकारी, श्री दया शंकर, तकनीकी अधिकारी, श्री शंकर वर्मा, वरिष्ठ उद्यान अधिकारी शामिल थे।

12. **डी.यू.एस. परीक्षण केन्द्र का नाम :**

नोडल डी.यू.एस. केन्द्र	अन्य परीक्षण केन्द्र
सीएसआईआर–राष्ट्रीय वनस्पति अनुसंधान संस्थान, लखनऊ। वेबसाइट : www.nbri.res.in	भारतीय कृषि अनुसंधान संस्थान, नई दिल्ली।

BOUGAINVILLEA (*Bougainvillea* Comm. ex Juss.) Family: Nyctaginaceae

Bougainvillea is a popular ornamental plant grown throughout the tropics and subtropics of the world. It was first reported from Rio-De-Janerio, Brazil by Commerson, a French Botanist. Later, it was taken to Europe and subsequently introduced in India during 1860. Only Four *Bougainvillea* species *viz., B. glabra, B. spectabilis, B. peruviana and a natural* hybrid *B.* x *buttiana,* are of horticultural importance.

At present, lot of R&D work on Bougainvillea is being carried out in Asia (India, Thailand, Malaysia, China and Japan) by way of development of new varieties and training methods. However, there is few natural cross pollination takes place particularly in Northern India and as such there is no hybrid seed is produced for development of new varieties.

1. Subject:

These Test Guidelines will apply to all varieties, especially under the species *Bougainvillea glabra* Choisy*, B. spectabilis* Willd*., B. peruviana* Humboldt & Bonpl*., B.* x *buttiana* **Holttum** & Standl. etc*.,* besides their hybrids and mutants.

2. Planting Material Required for Testing:

2.1 The Protection of Plant Varieties and Farmers' Rights Authority (PPV&FRA) shall decide when, where and in what quantity and quality of plant material is required for testing of the new variety denomination for registration under Protection of Plant Varieties and Farmers' Rights (PPV&FR) Act, 2001.

Applicant submitting such plant material from country other than India shall make sure that all customs and quarantine requirements stipulated under relevant national legislations and regulations are fulfilled and complied with.

2.2 For all varieties, the minimum quantity of plant material, to be provided by the applicant, should be: 10 well rooted and established plants. Any specific requirement for the expression of characters pertaining to DUS test shall have to be specified by the applicant.

2.3 The plant material provided for DUS test should be healthy, vigorous and free from pests or diseases.

2.4 The plant material should **NOT** be treated with any chemicals and bio-physical agents. If it has been treated, full details of the treatment must be provided along with the application.

2.5 The applicant should submit plant material having genetic purity and uniformity besides data on method of propagation / multiplication for raising population.

3. Procedure for Conducting Test:

3.1 The minimum duration of the DUS test should be one complete growing cycle (minimum one year). However, in case of any inconsistency of some characters, the test is to be extended further for another complete growing cycles.

3.2 The test should be conducted at one test location with one replication planted at field and other in pots for better expression of the phenotypic characters. In case of non-expression of any diagnostic character at that specific location, the test is to be shifted to other suitable location for further visual examination. Otherwise, the applicant must provide details about the specific requirement of the character.

3.3 The field test should be carried out at a sunny location for expression of all test characteristics. The experimental site should be large enough to accommodate plants in rows having spacing 2x2 sqm. for proper vegetative growth and flowering.

3.4 Any kind of growth promoting hormones should **NOT** be used throughout the vegetative growth period and flowering.

3.5 In case of pot-varieties, testing shall be done only in pots of prescribed size.

3.6 In case of any discrepancy, additional test protocols for special purpose shall be recommended by the PPV&FR Authority.

4. Methods and Observations:

4.1 The morphological characteristics described in the Table of characteristics should be used for the DUS testing of varieties (Section-7).

4.2 Unless otherwise indicated, all observations of vegetative characteristics shall be made during the first flush of growth and bracts / flower arising in the central third of a flowering shoot. Colour of vegetative organs / bracts / flower shall be observed on plants exposed to maximum light.

4.3 For the assessment of colour characteristics, the latest Royal Horticultural Society (RHS) colour chart shall be used. Because daylight varies, colour determinations made against colour chart shall be made either in a suitable cabinet providing artificial daylight or in the middle of the day in a room without direct sunlight. The special distribution of illuminant for artificial daylight shall conform to the CIE Standard of Preferred daylight D 6500 and should fall within the tolerance set out in the British Standard 950, Part 1. These determinations shall be made with the plant part placed against a white background. The colour chart and version used should be specified in the variety description.

4.4 All observations on single character should be made on the three randomly selected plants.

4.5 For the assessment of uniformity, a population standard of 1% and an acceptance probability of at least 95% should be applied. In the case of a sample size of 10 plants, 1 off-type is allowed.

4.6 For the assessment of Distinctiveness and Stability, all observations on single plants should be made on 9 plants or parts taken from each of 9 plants and any other observations made on all plants in the test, disregarding any off-type plants.

4.7 In practice, it is not usual to perform tests of stability that produce results as certain as those of the testing of distinctness and uniformity. However, experience has demonstrated that, for many types of varieties, when a variety has been shown to be uniform, it can also be considered to be stable. Where appropriate, or in cases of doubt, stability may be tested, either by growing a further generation, or by testing a new plant stock to ensure that it exhibits the same characteristics as those shown by the previous material supplied.

5. Grouping of Varieties:

5.1 The candidate varieties for DUS testing shall be divided into groups to facilitate the assessment of Distinctiveness. Characteristics which are known from experience usually do not vary or to vary slightly with in a variety and which in their various states are fairly evenly distributed across all varieties in the collection are suitable for grouping purpose.

5.2 The following characteristics shall be used for grouping of Bougainvillea varieties:

(a)	Plant Habit	:	Erect, Semi-erect, Drooping, Spreading and Climbing
(b)	Leaf Blade	:	Secondary colour (Characteristic 16)/ Variegated- Non variegated
(c)	Inflorescence	:	Types of bract (characteristic 31) Single / Multi / Double / Others
(d)	Young Bract	:	Main colour of inner side (Calyx lobe/ Star open) (Characteristic 50) with the following groups:
	Group 1:	White	
	Group 2:	Yellow	

Group 3: Orange
Group 4: Magenta
Group 5: Pink
Group 6: Red
Group 7: Mauve
Group 8: Purple
Group 9: Others

6. Characteristics and Symbols

6.1 To assess Distinctiveness, Uniformity and Stability, the characteristics and their states as given in the Table of characteristics (Section 7) shall be used.

6.2 Notes 0-9 (except bract / flower colour group) shall be used to describe the state of each character for the purpose of digital data processing.

6.3 Legend :

(*) Characteristics that shall be observed during every growing season on all varieties and shall always be included in the description of the variety, except when the state of expression of any of these characters is rendered impossible by a preceding phenological characteristic or by the environmental conditions of the testing region. Under such exceptional situation, adequate explanation shall be provided.

(+) See explanations on the Table of characteristics

6.4 Characteristics containing the following key in the fourth column of the Table of characteristics shall be examined as indicated below:

QL **:** Qualitative characteristic

QN **:** Quantitative characteristic

PQ **:** Pseudo-qualitative characteristic

6.5 **(a) - (c)** **:** See section 8 for explanation

6.6 Type of assessment of characteristics indicated in column six of the Table of characteristics is 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

7. Table of Characteristics:

S. No.	Characteristics	States	Examination Type	Example Varieties	Type of assessment	Note
1.	**Plant: Growth Habit**	Upright	**PQ**	Pixie Variegata	**VG**	1
		Semi-upright		Chitra		2
		Spreading		Aruna, Mahara		3
		Drooping		Dr. H.B.Singh, Palekar		4
		Climbing		Royal Daupline, Shubhra		5
		Others				6

2.	**Young Shoot: Colour**	Light green Medium green Reddish green Reddish Others	**PQ (a)**	Arjuna, Lilac Puff Shweta, Mary Palmer President Flame, Glady's Heburn	**VG**	1 2 3 4 5
3.	**Plant: Length of internodes**	Short Medium Long	**(*) QN (b)**	Pixie Variegata Zinna Barat, Blondie Chitra, Spring Festival	**VG/ MS**	3 5 7
4.	**Stem: Thorns**	Absent Present	**QL (b)**	Mrs. Alice Sova, Cascade Chitra	**VG**	1 5 9
5.	**Stem: Density of Thorns**	Sparse Medium Dense	**QN (c)**	Vishakha Splendens Pixie variegata	**VG/ MG**	3 5 7
6.	**Thorn: Length**	Short Medium Long	**(*) (+) QN (b)**	Pixie Variegata, Pallavi Zinna Barat, Margery Lloyed Chitra, Refulgens	**VG**	1 2 3
7.	**Thorn: Curvature**	Straight Slightly curved Fully curved	**(*) QN (b)**	Elizabeth Splendens, Dr.P.V.Sane,Aida Variegata Pradhan Profusion	**VG**	1 3 5
8.	**Thorn: Strength**	Weak Medium Strong	**QN (c)**	Sova, Jubilee Enid Lancaster, Begum Sikander Splendens, Pradhan Profusion	**VG**	1 2 3
9.	**Leaf Blade: Length**	Short Medium Long	**(*) QN (c)**	Sova, Stanza, Laiteritia Parthasarthy, Philip Turley's Special, Rosea Fuchsia	**MG/ MS**	3 5 7
10.	**Leaf Blade: Width**	Narrow Medium Broad	**(*) QN (c)**	Golden Glory, Feathery Fantasy Glady's Heburn, Happiness Mary Palmer, Los BanosVariegata	**MG/ MS**	3 5 7
11.	**Leaf Blade: Shape**	Lanceolate Medium ovate Broad ovate Elliptic Circular Others	**(*) PQ (c) (+)**	Zinna Barat, Mrs. Alice Shubhra, Thimma Mrs. But, Los Banos Variegata Palekar, Dream Archana, Camarillo Fiesta	**VG**	1 2 3 4 5 6
12.	**Leaf Blade: Shape of Apex**	Acuminate	**(+) PQ**	Liliac Perfection, Scarlet Queen Variegata	**VG**	1

		Acute Obtuse Others	**(c)**	Archana, Blondie Marietta		2 3 4
13.	**Leaf Blade: Shape of Base**	Attenuate Acute Obtuse Others	**(+)** **PQ** **(c)**	Dream Marietta, Zinna Barat Thimma, Scarlet Queen Variegata	**VG**	1 2 3 4
14.	**Young Leaf: Colour**	Light green Medium green Reddish green Reddish Others	**PQ** **(a)**	Shubhra Glabra Zakiriana Manohar Chandra Variegata Dr. P.V. Sane	**VG**	1 2 3 4 5
15.	**Leaf Blade: Main Colour**	Yellowish white Yellow Yellowish green Light green Medium green Dark green Very dark green Grey green Others	**(+)** **PQ** **(c)**	Scarlet Queen Variegata Marietta, Aida Nirmal, Pallavi Surekha, Dream, Liliac Queen Dr.H.B.Singh Chitra Zulu Queen	**VG**	1 2 3 4 5 6 7 8 9
16.	**Leaf Blade: Secondary colour**	None White Yellowish white Yellow Light green Medium green Dark green Very dark green Grey green Others	**(*)** **(+)** **PQ** **(c)**	Asia, Aida, Dream Silverline Arjuna , Abhimanyu Pixie Variegata Thimma Nirmal Pallavi Louise Wathen Royal Daupline	**VG**	1 2 3 4 5 6 7 8 9 0
17.	**Leaf Blade: Distribution of Secondary Colour**	Absent Narrow-marginal Broad -marginal Around midrib Speckled Irregular Others	**(+)** **(c)**	Chitra, Mrs. Alice Silverline, Abimanyu Royal Daupline Scarlet Queen Variegata Archna Parthasarthy ZakirianaVariegata	**VG**	1 2 3 4 5 6 7
18.	**Leaf Blade: Tertiary Colour**	None White Yellowish white Yellow Light green	**(+)** **PQ** **(c)**	Silverline Hawaiian white Pixie Variegata ZakirianaVariegata Aida Variegata	**VG**	1 2 3 4 5

		Medium green Dark green Very dark green Grey green Others		Manohar Chandra Variegated Archana Scarlet Queen Variegata Los Banos Variegata		6 7 8 9 0
19.	**Leaf Blade: Undulation of Margin**	Absent or weak Medium Strong Others	**QN (c)**	Chitra, Mrs. Alice Aruna, Killie Campbell Crispa, Dr.R.R.Pal	**VG**	1 2 3 4
20.	**Leaf Blade: Texture**	Glabrous Hairy Slightly Hairy Tomentose Others	**QL**	Crispa Splendens, Red Triangle Mrs. Alice Red Glory	**VG**	1 2 3 4 5
21.	**Number of Leafs on Primary Branch**	Sparse Medium Dense	**QN (c)**	Chitra Zinna Barat Pixie Variegata	**MG/MS**	3 5 7
22.	**Leaf Blade: Persistence**	Persistent Non Persistent	**QL**	Mrs. Alice Zinna Barat	**VG**	1 2
23.	**Petiole: Length**	Short Medium Long	**(*)** **(+)** **QN (c)**	Glabra Magnifica Zinna Barat Mary Palmer	**MG/MS**	1 2 3
24.	**Petiole: Attitude**	Upward Horizontal Downwards	**(*)** **(+)** **QN (c)**	Fantasy Palekar Mahara	**MG/MS**	1 2 3
25.	**Inflorescence: Length**	Short Medium Long	**(+)** **QN**	Aida Parthasarthy, Partha Shweta, Shubhra, Dream	**MG/MS**	3 5 7
26.	**Inflorescence: Peduncle Length**	Short Medium Long	**(+)** **QN**	Pixie Variegata Zulu Queen Isabell Green Smith, Palekar	**MG/MS**	3 5 7
27.	**Inflorescence: Arrangement of Bract Clusters**	Terminal Axillary Axillary and Terminal	**(+)** **QL**	Aida, Mahara Parthasarthy, Pixie Shweta, Dr. Har Bhajan Singh	**VG**	1 2 3
28.	**Inflorescence: Number of Bract Clusters**	Few Medium Many	**(+)** **QN**	Fantasy Chitra Shweta	**VG/ MG**	3 5 7
29.	**Inflorescence:**	Sparse	**(+)**	Mrs. Alice	**VG**	3

	Density of Bract Clusters	Medium Dense Others	**QN**	Tetra Mrs. Maclean Shubhra		5 7 9
30.	**Inflorescence: Presence of Flowers**	Absent Present	**(+) QL**	Cherry Blossom Shweta, Tetra Mrs. Mc Clean	**VG**	1 9
31.	**Inflorescence: Type of Bract**	Single Multiple Double Others	**(*)** **(+) QL**	Shweta, President Mahara, Pallavi	**VG**	1 3 5 7
32.	**Bract: Length**	Short Medium Long	**QN**	Pixie, Cherry Blossom Suvarna Mrs. Alice	**MG/MS**	3 5 7
33.	**Bract: Width**	Narrow Medium Broad	**QN**	Feathery Fantasy Mahara Chitra	**MG/MS**	3 5 7
34.	**Bract: Shape**	Narrowly Ovate Medium Ovate Broadly Ovate Circular Others	**(*)** **(+)** **PQ**	IsabellGreensmith, Dream Archana, Dr. H.B. Singh Zulu queen Tetra Mrs. Mc Clean	**VG**	1 2 3 4 5
35.	**Bract: Reflection**	Reflexed Normal/ Straight Others	**(+)** **PQ**	Mrs. Alice Feathery Fantasy	**VG**	1 9 0
36.	**Bract: Shape at Tip**	Acute Obtuse Others	**(*)** **(+)** **PQ**	Feathery Fantasy, Mahara Mary Palmer Special	**VG**	1 2 3
37.	**Bract: Shape at Base**	Acute Obtuse Cordate Others	**(*)** **(+)** **PQ**	Feathery Fantasy Zinna Barat, Cherry Blossom Aida, Lady Mary Baring	**VG**	1 2 3 4
38.	**Bract: Persistence**	Persistent Non Persistent	**QL**	Mahara, Zinna Barat Aruna, Dr. P.V. Sane	**VG**	1 2
39.	**Only varieties with inflorescence type of Bract: Single: Calyx Lobes/ Star: Colour of**	White Creamy Greenish yellow Yellow Red Pink Orange	**(+) PQ (c)**	Thimma Lady Richard Dream Suverna Partha, Elizabeth Agnus Isabell Greensmith	**VG**	1 2 3 4 5 6 7

	upper side	Others				8
40.	**Star: Diameter**	Short Medium Broad	**QN**	Glady Hepburn Dwarf Gem Rose Queen, Royal Daupline	**VG**	1 2 3
41.	**Star:**	Prominent Non-Prominent	**QN**	Mrs. Butt Enid Lancaster, Surekha, Dr. Rao	**VG**	1 9
42.	**Floral tube: Colour**	Green Orange Magenta Red Purple Others	**(+) PQ (c)**	Shweta Aruna Vishakha Palekar Zulu Queen	**VG**	1 2 3 4 5 6
43.	**Floral tube: Shape**	Slenderwith little constriction in the middle Swollen at base	**(+) PQ**	Glabra Palekar	**VG**	1 2
44.	**Stamen**	Inserted Exerted	**QN**	Lady Mary Baring, Mrs. Butt Dr. Rao, Enid Lancaster, Surekha	**VG**	1 9
45.	**Small young Bract: Main solour of outer side**	White Greenish-White Yellow Orange Magenta Pink Red Mauve Purple Others	**(*)** **(+) PQ**	 Shweta Suverna Partha Carmilio Fiesta Dr. H.B. Singh	**VG**	1 2 3 4 5 6 7 8 9 0
46.	**Young Bract: Main colour of inner side (Calyx lobe/ Star not open)**	White Yellow Orange Magenta Pink Red Mauve	**(*)** **(+) PQ**	Shubhra Suverna Aruna Asia Mahatma Gandhi Carmillio Feista Dream	**VG**	1 2 3 4 5 6 7

		Purple		Zulu Queen		8
		Others				9
47.	**Young Bract: Main colour of inner side**	White	**(*)**	Sova	**VG**	1
		Yellow	**(+)**	Enid Lancaster		2
		Orange	**PQ**	Zakiriana		3
		Magenta		Gopal		4
		Pink		Poultoni Special		5
		Red		Flame		6
		Mauve		Dr. Harbhajan Singh		7
		Purple		Splendens		8
		Others				9
48.	**Only varieties with inflorescence type of Bract: Double: Young outer Bract: Main colour of inner side**	White	**PQ**	Mahara White	**VG**	1
		Yellow				2
		Orange		Roseville's Delight		3
		Magenta		Mahara		4
		Pink		Los Banos Beauty		5
		Red				6
		Mauve				7
		Purple				8
		Others				9
49.	**Only varieties with inflorescence type of Bract: Double: Young inner Bract: Main colour of inner side**	White	**PQ**	Mahara White	**VG**	1
		Yellow				2
		Orange		Archana		3
		Magenta		Mahara		4
		Pink		Los Banos Beauty Variegata		5
		Red				6
		Mauve				7
		Purple				8
		Others				9
50.	**Young Bract: Secondary colour of inner side (Calyx lobe/ Star open)**	White	**(+)**	Mary Palmer Special	**VG**	1
		Yellow	**PQ**			2
		Orange				3
		Magenta		Chitra		4
		Pink		Mary Palmer Special		5
		Red				6
		Mauve				7
		Purple				8
		Others				9

51.	**Young Bract: Tertiary colour of inner side (Calyx lobe/ Star open)**	White Yellow Orange Magenta Pink Red Mauve Purple Others	**(+) PQ**		**VG**	1 2 3 4 5 6 7 8 9
52.	**Bract: Main colour (Calyx lobe/ Star wilted / fading)**	White Yellow Orange Magenta Pink Red Mauve Purple Others	**(+) PQ**	Shweta Lady Mary Baring Louise Wathen Ranee Cascade Dr. R.R. Pal Penang Glabra Sanderiana	**VG**	1 2 3 4 5 6 7 8 9

8. Data Dictionary:

S. No.	Characteristics	Description
1	Absent	Not present.
2	Acuminate	Tapering gradually to a sharp point
3	Acute	Margins straight to convex forming a terminal angle 45-90.
4	Attenuate	Elongate, tapering gradually to a narrow point, usually applied to base.
5	Axillary	Pertaining to or growing from the axil of plants; produced in the axil.
6	Broad	Having ample extent from side to side or between limits.
7	Circular	Having the form of a circle : round
8	Climbing	Plants which grow upward by means of tendrils, petioles, or adventitious roots.
9	Cordate	Heart-shaped (leaf base).
10	Curved	Bent or formed into a curve.
11	Dark green	Colour type
12	Dense	Having relatively high density.
13	Downwards	In a direction from higher to lower.
14	Drooping	Plants whose branches hang or incline downward.

15	Elliptic	Broadening at or about the center and narrowing equally toward each end.
16	Few	Being more than one but indefinitely small in number.
17	Glabrous	Lacking hairs, smooth surface, without pubescence of any kind.
18	Grey green	Colour type
19	Hairy	Covered with hair or hairlike projections.
20	Horizontal	Parallel to, in the plane of, or operating in a plane parallel to the horizon or to a baseline.
21	Irregular	Dissimilar in shape and/ or size.
22	Lanceolate	Long and thin and broadest below the middle, tapering to a point like a lance; lance-shaped.
23	Light green	Colour type
24	Long	A section or region of plant of longer length.
25	Many	Being one of a large indefinite number; numerous.
26	Marginal	Pertaining to the border or edge.
27	Medium	A section or region of stem of medium length.
28	Medium green	Colour type
29	Multiple	Having or involving more than one part, individual, etc.
30	Narrow	Not wide.
31	Non Persistent	Decomposed rapidly by environmental action.
32	Obtuse	Margins straight to convex, forming a terminal angle more than 90.
33	Ovate	The leaf is egg-shaped; the broadest part is below the middle.
34	Persistent	Leaves or flower petals that remain attached to the plant instead of dropping off.
35	Reddish	Colour type
36	Reddish green	Colour type
37	Reflexed	Bent or recurved downward or backward; applied to bracts, petals, leaf-veins, etc.
38	Semi-upright	Plants which are partially errect.
39	Short	A section or region of plant of small length.
40	Single	Not accompanied by another or others; solitary.
41	Sparse	Not thickly grown or settled.
42	Speckled	Dotted or covered with speckles, especially flecked with small spots of contrasting colour.
43	Spreading	Plants whose branches grow in a more or less horizontal direction.
44	Straight	Free from curves, bends, angles, or irregularities.
45	Strong	Having strength or power greater than average or expected.

46	Terminal	Growing at the tip of a branch or stem, often applied to a bud, rosette, or flower.
47	Tomentose	Covered with thickly matted, woolly hairs.
48	Upright	Upright plants produce vertical branching which exceeds the length of their horizontal branching.
49	Upward	In a direction from lower to higher.
50	Very dark green	Colour type
51	Weak	Lacking strength, not able to sustain or exert much weight, pressure, or strain.
52	White	Colour type
53	Yellow	Colour type
54	Yellowish green	Colour type
55	Yellowish white	Colour type

9. Explanations for the Table of Characteristics:

9.1 Explanation Covering Several Characters

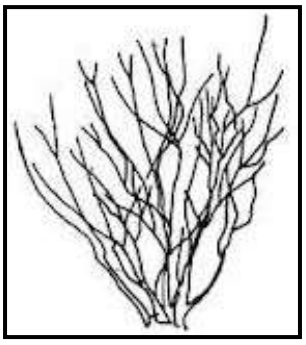
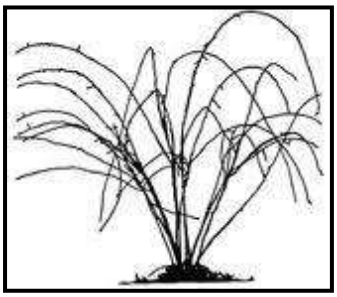
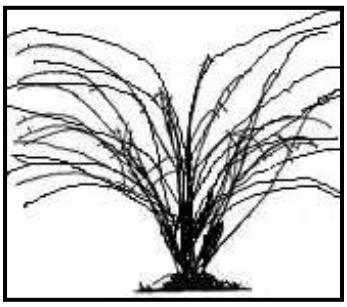
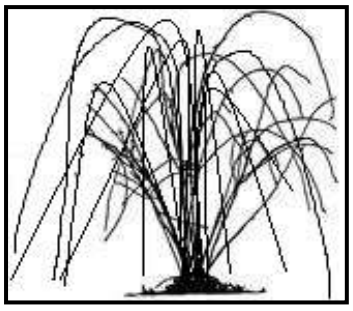
The right stage of development for the assessment / evaluation of the characteristics is at the time of opening of one flower per bract in three inflorescences. In the case of double bracted varieties, observations should be made when one third of the bracts are fully developed and open. Characteristics indicated with (a), (b) and (c) in the first column of the Table of characteristics should be examined as indicated below:

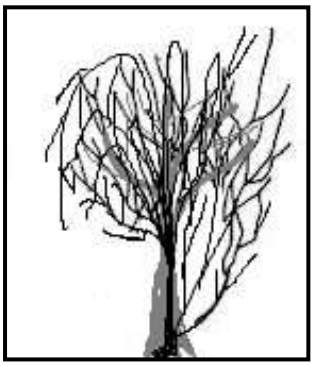
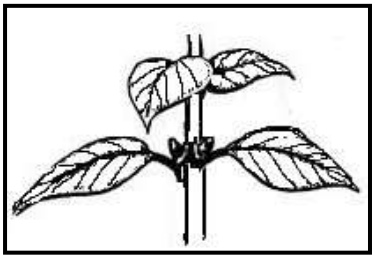
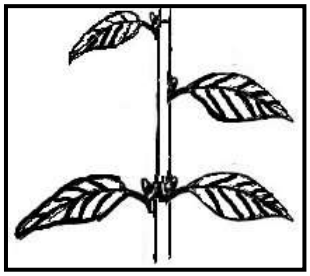
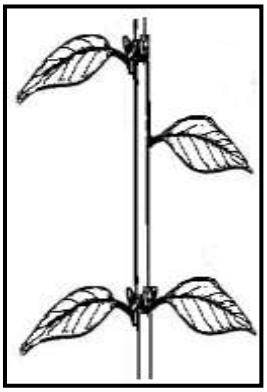
(a) Observations should be made on the upper third of the main shoot.

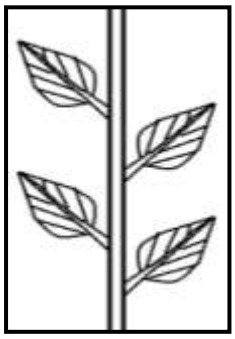
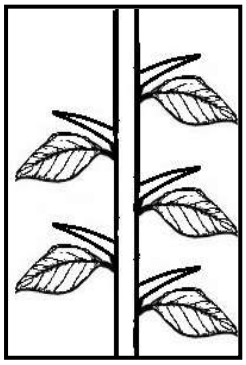
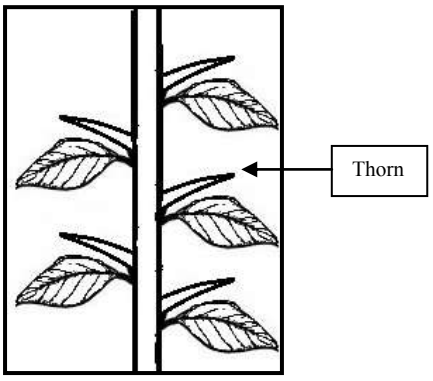
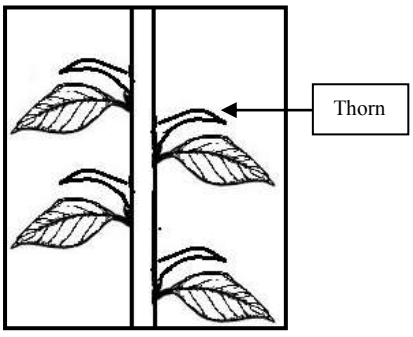
(b) Observations should be made on the middle third of the main shoot.

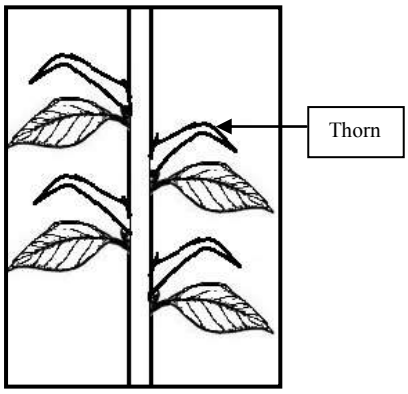
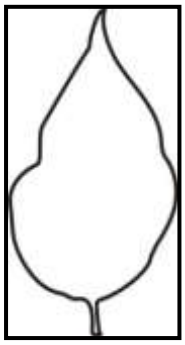
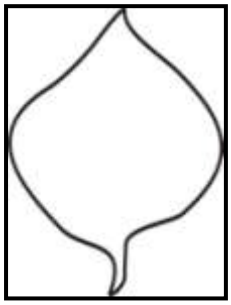
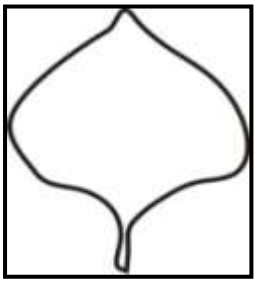
(c) Observations should be made on a developed leaf from the middle third of the main shoot.

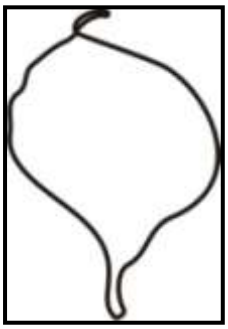
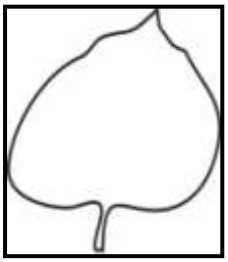
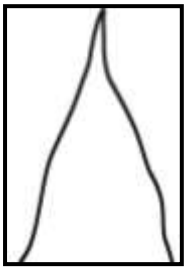
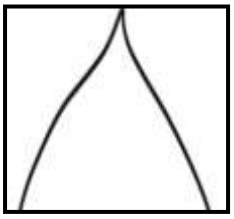
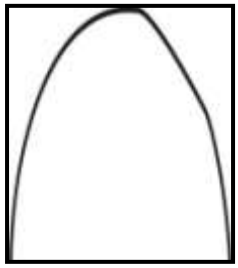
9.2 Explanations for Individual Characteristics

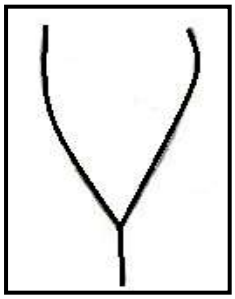
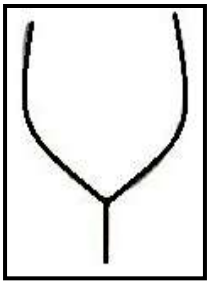
	Characteristic - 1	Plant: Growth Habit
Plant: Growth Habit	**Upright**	
	Semi-upright	
	Spreading	
	Drooping	

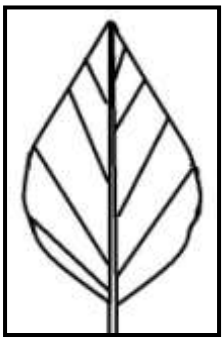
	Climbing	
	Characteristics - 3	**Plant: Length of Internodes**
Plant: Length of Internodes	**Short**	
	Medium	
	Long	
	Characteristic - 4	**Stem: Thorns**

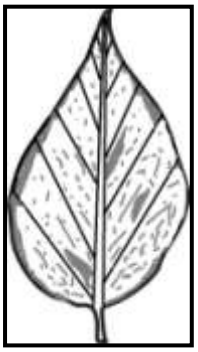
Stem: Thorns	**Absent**	
	Present	
	Characteristic - 6	**Thorn: Length** The natural length of thorn should be observed
	Characteristic - 7	**Thorn: Curvature**
Thorn: Curvature	**Straight**	
	Slightly Curved	

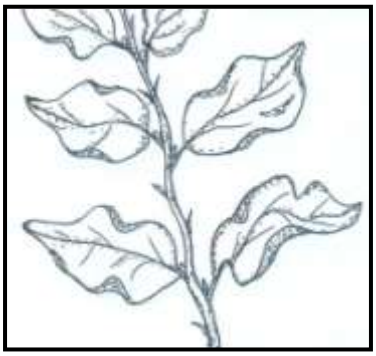
	Fully Curved	
	Characteristic - 11	**Leaf Blade: Shape**
Leaf Blade: Shape	**Lanceolate**	
	Medium Ovate	
	Broad Ovate	

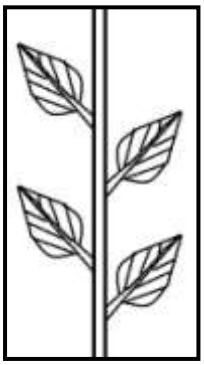
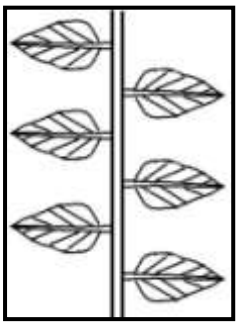
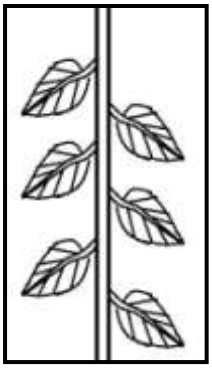
	Elliptic	
	Circular	
	Characteristic - 12	**Leaf Blade: Shape of Apex**
Leaf Blade: Shape of Apex	**Acuminate**	
	Acute	
	Obtuse	
	Characteristic - 13	**Leaf Blade: Shape of Base**

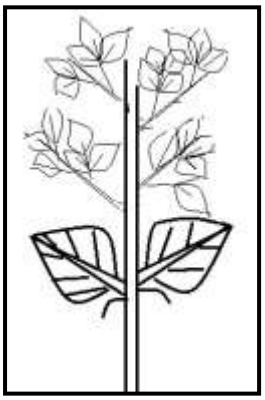
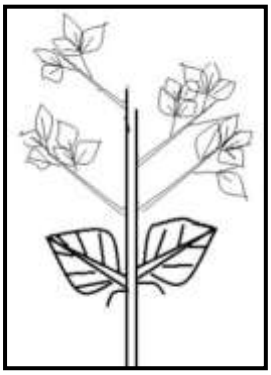
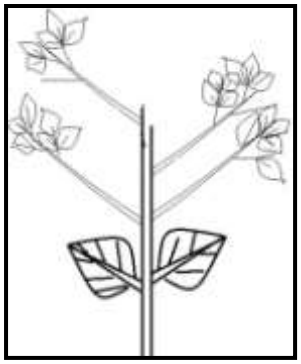
Leaf Blade: Shape of Base	**Attenuate**	
	Acute	
	Obtuse	
	Characteristic - 15	**Leaf Blade: Main Colour**
Leaf Blade: Main Colour	**Yellowish white**	The main colour is the colour with the largest surface area. If the area of the colours is nearly half and half, the darker colour is the main colour.
	Yellow	
	Yellowish green	
	Light green	
	Medium green	
	Dark green	
	Very dark green	
	Grey green	
	Others	
	Characteristic - 16	**Leaf Blade: Secondary Colour**
Leaf Blade: Secondary Colour	**None**	The secondary colour is the colour with the second largest surface area.
	White	
	Yellowish white	
	Yellow	

	Light green	
	Medium green	
	Dark green	
	Very dark green	
	Grey green	
	Others	
	Characteristic - 17	**Leaf Blade: Distribution of Secondary Colour**
Leaf Blade: Distribution of Secondary Colour	**Absent**	
	Narrow Marginal	
	Broad Marginal	

	Around Midrib	
	Speckled	
	Irregular	
	Others	
	Characteristic - 18	**Leaf Blade: Tertiary Colour**
Leaf Blade: Tertiary Colour	**None**	The tertiary colour is the colour with the third largest surface area.
	White	
	Yellowish white	
	Yellow	
	Light green	
	Medium green	
	Dark green	
	Very dark green	
	Grey green	

	Others	
	Characteristic - 19	**Leaf Blade: Undulation of Margin**
Leaf Blade: Undulation of Margin	**Absent or Weak**	
	Medium	
	Strong	
	Characteristic - 22	**Leaf Blade: Persistence**
Leaf Blade: Persistence	**Persistent**	Tendency of leafs to fall together or one by one.
	Non Persistent	
	Characteristic - 24	**Petiole: Attitude**

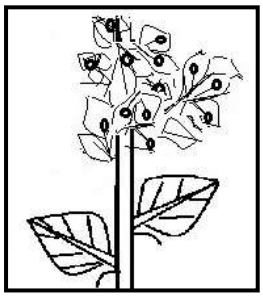
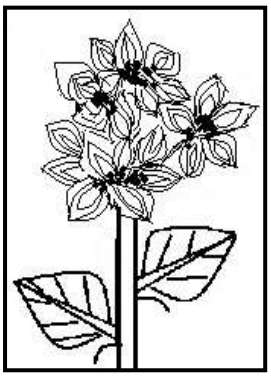
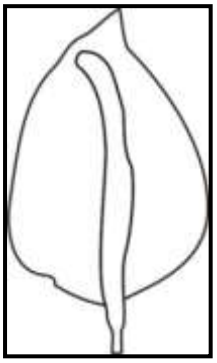
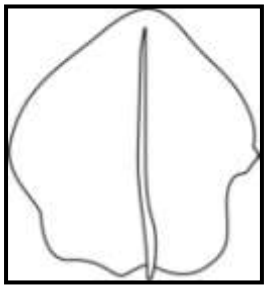
Petiole: Attitude	**Upward**	
	Horizontal	
	Downwards	
	Characteristic - 25	**Inflorescence: Length**
Inflorescence: Length	**Short**	The part of the shoot with coloured bracts is considered to be an inflorescence, irrespective of whether flowers are present or not.
	Medium	
	Long	
	Characteristic - 26	**Inflorescence: Peduncle Length**

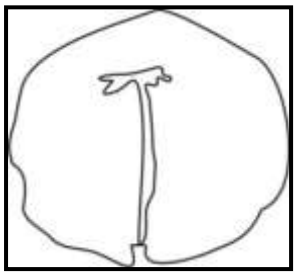
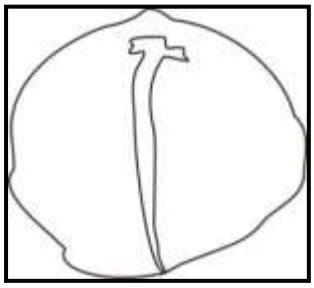
Inflorescence: Peduncle Length	**Short**	
	Medium	
	Long	
	Characteristic - 27	**Inflorescence: Arrangement of Bract Clusters**

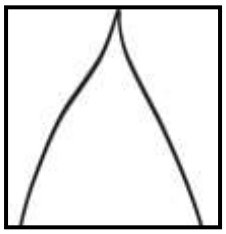
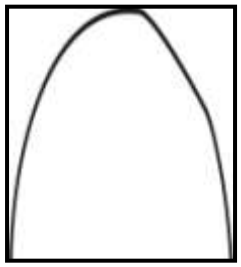
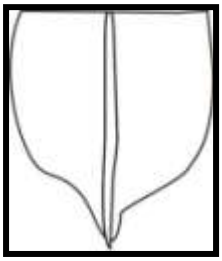
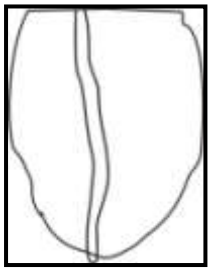
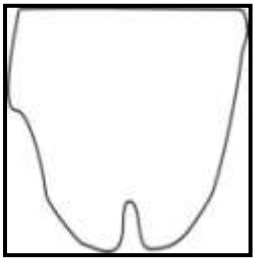
Inflorescence: Arrangement of Bract Clusters	**Terminal**	
	Axillary	
	Axillary and Terminal	
	Characteristic - 28	**Inflorescence: Number of Bract Clusters**

Inflorescence: Number of Bract Clusters	**Few**	
	Medium	
	Many	
	Characteristic - 29	**Inflorescence: Density of Bract clusters**
Inflorescence: Density of Bract Clusters	**Sparse**	

	Medium	
	Dense	
	Characteristic - 30	**Inflorescence: Presence of Flowers**
Inflorescence: Presence of Flowers	**Absent**	
	Present	
	Characteristic - 31	**Inflorescence: Type of Bract**

Inflorescence: Type of Bract	**Single**	
	Multiple	
	Characteristic - 34	**Bract: Shape**
Bract: Shape	**Narrowly Ovate**	
	Medium Ovate	

	Broadly Ovate	
	Circular	
	Characteristic - 35	**Bract: Reflection**
Bract: Reflection	**Reflexed**	
	Normal/ Straight	
	Characteristic - 36	**Bract: Shape at Tip**

Bract: Shape at Tip	**Acute**	
	Obtuse	
	Characteristic - 37	**Bract: Shape at Base**
Bract: Shape at Base	**Acute**	
	Obtuse	
	Cordate	
	Characteristic - 45	**Small Young Bract: Main colour of outer side**
Small young	**White**	The main colour is the colour with the largest surface area. If the area of the colours is
	Greenish-White	

Bract: Main colour of outer side	**Yellow**	nearly half and half, the darker colour is the main colour.
	Orange	
	Magenta	
	Pink	
	Red	
	Mauve	
	Purple	
	Others	
	Characteristic - 46	**Young Bract: Main colour of inner side (Calyx lobe/ Star not open)**
Young Bract: Main colour of inner side (Calyx lobe/ Star not open)	**White**	The main colour is the colour with the largest surface area. If the area of the colours is nearly half and half, the darker colour is the main colour.
	Yellow	
	Orange	
	Magenta	
	Pink	
	Red	
	Mauve	
	Purple	
	Others	
	Characteristic - 47	**Young Bract: Main colour of inner side**
Young Bract: Main colour of inner side	**White**	The main colour is the colour with the largest surface area. If the area of the colours is nearly half and half, the darker colour is the main colour
	Yellow	
	Orange	
	Magenta	
	Pink	
	Red	
	Mauve	
	Purple	
	Others	
	Characteristic - 50	**Young Bract: Secondary colour of inner side (Calyx lobe/ Star open)**

Young Bract: Secondary colour of inner side (Calyx lobe/ Star open)	**White**	The secondary colour is the colour with the second largest surface area.
	Yellow	
	Orange	
	Magenta	
	Pink	
	Red	
	Mauve	
	Purple	
	Others	
	Characteristic - 51	**Young Bract: Tertiary colour of inner side (Calyx lobe/ Star open)**
Young Bract: Tertiary colour of inner side (Calyx lobe/ Star open)	**White**	The tertiary colour is the colour with the third largest surface area.
	Yellow	
	Orange	
	Magenta	
	Pink	
	Red	
	Mauve	
	Purple	
	Others	
	Characteristic - 52	**Bract: Main colour of inner side (Calyx lobe/ Star wilted)**
Bract: Main colour of inner side (Calyx lobe/ Star wilted)	**White**	
	Yellow	
	Orange	
	Magenta	
	Pink	
	Red	
	Mauve	
	Purple	
	Others	

11. Working Group Details:

These test guidelines have been developed by the Director, CSIR-NBRI as a Coordinator of the DUS test Centers at CSIR-NBRI, Lucknow and with the consultation of group of Scientists and technical staff members in consultation with other experts in the field and in commensurate with the international guidelines specially UPOV and finalized by the task force ( ) constituted by the PPV&FR Authority .

12. Name of DUS test centre:

Nodal DUS Centre	**Other Test Centre**
CSIR-National Botanical Research Institute, Lucknow website:www.nbri.res.in	Indian Agricultural Research Institute, New Delhi

Banana (*Musa* spp.)

I. Subject

These test guidelines shall apply to all cultivars, varieties, hybrids, transgenic plants and parental lines of Banana (*Musa* spp.) restricted to the section Eumusa. All cultivated bananas are derived mainly from two wild species, *M.acuminata* and *M.balbisiana* (contributing A and B genomes respectively) either alone or in various genomic combinations. All natural varieties and hybrids of edible bananas exhibit diverse genomic combinations like AA, BB, AB, AAA, AAB, ABB, AAAA, AAAB, AABB and ABBB.

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 of planting material are required for testing a variety applied for registration under the Protection of Plant Varieties and Farmers' Right Act (PPV & FR Act), 2001. Applicants submitting such planting 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. The minimum quantity of plant material to be supplied by the applicant shall be 40 uniform tissue cultured plants in one submission per location.
2. The tissue culture plants shall be healthy, vigorous, without nutrient deficiency and free from pests and diseases. The age shall be 3 months from the date of start of hardening in shade house. The plant material should possess highest genetic purity and freeness from major pests like rhizome weevil, pseudostem borer, aphids, nematodes and root mealy bugs; diseases like Fusarium wilt, leaf spot diseases. Plants should carry the certificate for its freeness from viruses like Cucumber Mosaic Virus, Banana Bunchy Top Virus, Banana Bract Mosaic Virus and Banana Streak Virus. It should comply with all phytosanitary standards.
3. The planting material must not have undergone any treatment unless the PPV&FR Authority allows or requests for such treatment. If it has been treated, full details of the treatment must be given.

III. Conduct of Tests

1. DUS testing is conducted at atleast two locations. Plant materials from South and west shall be tested at NRCB, Trichy and BRS, Kannara, KAU, Thrissur and materials from north and east shall be tested at HRC, Nagicherra, Agartala, Tripura and Bidan Chandra Krishi Vishwa Vidyalaya (BCKV), Mohanpur, West Bengal.
2. Minimum duration of tests shall normally be one main and one ratoon crop or two independent similar growing seasons depending on the variety submitted for DUS test.
3. The test shall normally be conducted at identified DUS test location.
4. The field tests shall be carried out under conditions favouring normal growth and expression of all test characteristics.
5. Test plot design:

   Spacing : depending on the stature, the spacing is

   1.8 m x 1.8 m – for short types

2.0 m x 2.0 m – for medium types

2.1 m x 2.1 m – for tall types

No. of plants /replication : 10 plants

Number of replications : 3

Total No. of plants : 30 (10 x 3)

The reference DUS variety (variety of common knowledge) should be raised along with the candidate variety to facilitate the assessment of Distinctness. A separate block of 10 plants of DUS reference variety should be raised along with the candidate variety. Cultivation and management practices has been annexed (Annexure I).

IV Methods and observations

1. The traits described in the table of characteristics shall be used for the DUS testing of varieties.
2. All observations for the assessment of Distinctiveness and Stability shall be made on at least 5 plants or parts of 5 plants per replication.
3. For the assessment of Uniformity of characteristics on the plot as a whole, a population standard of 1% with an acceptance probability of at least 95% shall be applied. In case of sample size of 30 plants, the number of off types allowed would not be more than 1.
4. All the leaf characters shall be made on 3rd fully opened leaf from the top.
5. For the assessment of all colour characteristics the latest characteristics developed by INIBAP/IPGRI (BIOVERSITY) /CIRAD (1996) shall be referred.

V. Grouping of the varieties

1. The candidate varieties for DUS testing shall be divided into five groups to facilitate the assessment of distinctiveness. Characteristics suitable for grouping purposes, are known from experience within a variety and which in their various states are evenly distributed across all varieties in the collection, are suitable for grouping and sub grouping purposes. But in case of bananas, the internationally accepted grouping and refined by the International *Musa* Taxonomy Group shall be considered.

2. The following characteristics shall be used for grouping the varieties:

Sl.No	Main traits	Traits grouped
1	Plant general appearance	Pseudostem appearance (Characteristic 1 and 2)
2	Leaf habit	Leaf orientation (Characteristic 5), Leaf blade - shape of base (Characteristic 8)

3	Inflorescence	Peduncle length (Characteristic 9), Peduncle colour (Characteristic 10)
4	Bunch	Bunch shape (Characteristic 12), Rachis (Characteristics 15, 16 and 17), Male bud (Characteristic 18,19, 20 and 21)
5	Fruit	Fruit orientation (Characteristic 26), Fruit shape (Characteristic 28), Pedicel (Characteristic 32, 33 and 34) Peel (Characteristic 35,36 and 38), Pulp (Characteristic 39).

VI Characteristics and symbols

1. To assess Distinctiveness, Uniformity and Stability, the characteristics and their states as given in the table of characteristics shall be used.
2. Notes (1-9) shall be used to describe the state of each character for the purpose of digital / data processing and these notes shall be given against the states of each characteristic.

3. Legend

(*) is mentioned for those traits which are always taken into consideration independent of variety, group, subgroup, location, season etc.

(+) is mentioned wherever sketches are given.

3. Type of assessment of characteristics indicated in column seven for Table of Characteristics is as follows:

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

VS : Visual assessment by observation of individual plants or parts of plants

QL : Qualitative characteristics are those that are expressed in discontinuous states (e.g. colour of the flower, rachis appearance, persistence of floral relicts etc.). These states are self-explanatory and independently meaningful. All states are necessary to describe the full range of the characteristic

and every form of expression can be described by a single state. The order of states is not important. As a rule, the characteristics are not influenced by environment.

QN :Quantitative characteristics are those where the expression covers the full range of variation from one extreme to the other. The expression can be recorded on a one-dimensional, continuous or discrete, linear scale. The range of expression is divided into a number of states for the purpose of description (e.g. length of pseudostem: very short (1), short (3), medium (5), long (7), very long (9)). The Test Guidelines do not specify the difference needed for distinctness. The states of expression should, however, be meaningful for DUS assessment.

PQ : Pseudo-qualitative characteristics, the range of expression is at least partly continuous, but varies in more than one dimension (e.g. shape: lanceolate (1), Ovoid (3), round (5) etc. cannot be adequately described by just defining two ends of a linear range similar to qualitative (discontinuous) characteristics. Hence the term "pseudo-qualitative" where each individual state of expression needs to be identified to adequately describe the range of the characteristic.

AH : At the time of bunch harvest

BH : Before bunch harvest

AS : At the time of shooting / flowering

BS : Before shooting / flowering

VII Table of characteristics (descriptors and descriptor states)

Plant General Appearance

Sl. No.	Characteristics	States	Note	Example Varieties	Stage of observation	Type of Assessment
1	2	3	4	5	6	7
1. (*) QN	Pseudostem length (m)	Very short (< 2) Short (2 - 2.5) Medium (2.6 - 3) Long (3.1 - 4) Very Long (> 4)	1 2 3 4 5	Dwarf Cavendish Namarai Poovan Karpuravalli Athiakol	AS	MG

2. QL	Pseudostem colour	Green yellow Green Red Others	1 3 5 9	Nendran Attikol Red Banana -	AS	VG

Leaf habit

3. (+) QL	Purple blotches on younger leaves	Without blotches With blotches	1 9	Monthan Grand Naine	BS (On three months old side sucker)	VG
4. PQ	Colour of the under surface of cigar leaf	Green Red purple Others	1 2 3	Monthan Nendran -	BS (On three months old side sucker)	VS
5. (+) QL	Leaf orientation	Upright Spreading Drooping	1 2 3	Kunnan Rasthali Bhat Manohar	AS	VG
6. (+) QL	Petiole canal	Open with margins spreading Wide with erect margins Straight with erect margins Margins curved inwards Margins overlapping	1 2 3 4 5	Dwarf cavendish Rasthali Monthan Athiakol Bhimkol	BS	VG
7. (+) QN	Petiole length (cm)	Short (30 - 40) Medium (41 - 69) Long (> 70)	2 4 6	Grand Naine Poovan Karpuravalli	AS	MS
8. (*) (+) PQ	Leaf blade- shape of base	Both sides rounded One side rounded and one side acute Both sides acute	1 2 3	Monthan Rasthali Grand Naine	BS	VG

Inflorescence

Peduncle

9. QN	Peduncle length (cm)	Short (30 – 40) Medium (41 – 69) Long (> 70)	2 4 6	Kunnan Poovan Karpuravalli	AS	MG

10. QL	Peduncle colour	Light green Green Dark green Red or Pink purple	1 2 3 4	Rasthali Monthan Poovan Red banana	AS	VG
11. (*) QL	Peduncle pubescence	Absent Present	1 9	Kunnan Grand Naine	AS	VS

Bunch

12. (*) (+) PQ	Bunch Shape	Cylindrical Irregular Conical	1 2 3	Robusta Amritsagar Monthan	AH	VG
13. (*) (+) QL	Bunch position	Hanging vertically Hanging at an angle Horizontal	1 2 3	Robusta Rasthali Ladan	AH	VS
14. PQ	Bunch - Compactness	Loose/lax Medium Compact	1 2 3	Monthan Karpuravalli Poovan	AH	VG

Rachis/Male phase

15. (+) QL	Rachis - orientation of male phase	Hanging Vertically Inclined at an angle Curved with vertical end Horizontal with inclined end	1 2 3 4	Grand Naine Rasthali Gros Michel Poovan	BH	VS
16. (*) QL	Rachis appearance	Bare Male flowers / bracts above the male bud (but the stalk is bare above flowers / bracts)	1 2	Monthan Robusta	AH	VS

		Neutral/male flowers and presence of withered bracts (on the whole stalk) Rachis absent	3 4	Kullan Poovilla Chundan, Horn plantain		
17. (*) (+) QL	Rachis - Prominence of bract scars	Weak Moderate Strong	1 2 3	Bhimkol Rasthali Anaikomban	AH	VG

Male flower bud:

All characteristics should be studied 3-7 days after the emergence of last fruit hand

18. (*) (+) QL	Male bud	Absent Degenerative Present	1 2 3	Poovilla Chundan False Horn Plantain Monthan	BH	VS
19. (*) QL	Male bud colour	Yellow Green Purple Red Others	1 2 5 7 9	*Musa swarnaphalya* *M.ac.ssp.banksii* Pisang Lilin Sanna Chenkadali -	BH	VG
20. (*) (+) PQ	Male bud shape	Lanceolate Ovoid Rounded	1 3 5	Ney Poovan Poovan *M. balbisiana*	BH	VG

21. (*) QL	Male flower colour	Whitish Orange yellow Pink shaded Others	1 3 5 6	Rasthali Nendran Monthan -	BH	VG
22. QL	Stigma colour	Creamy dull white Cream Orange Others	1 3 5 6	Robusta Monthan Malaikali -	BH	VG
23. (+) QL	Style shape	Straight Curved under stigma Curved under the base	1 3 5	Anaikomban Rasthali Kothia	BH	VG
24. (*) (+) QL	Bract behavior - Curling	Not Revolute Revolute	1 2	Athiakol Robusta	BH	VG
25. (*) PQ	Persistence of male bracts	Absent or weak Strong	1 3	Rasthali Dwarf Cavendish	BH	VG

Fruit

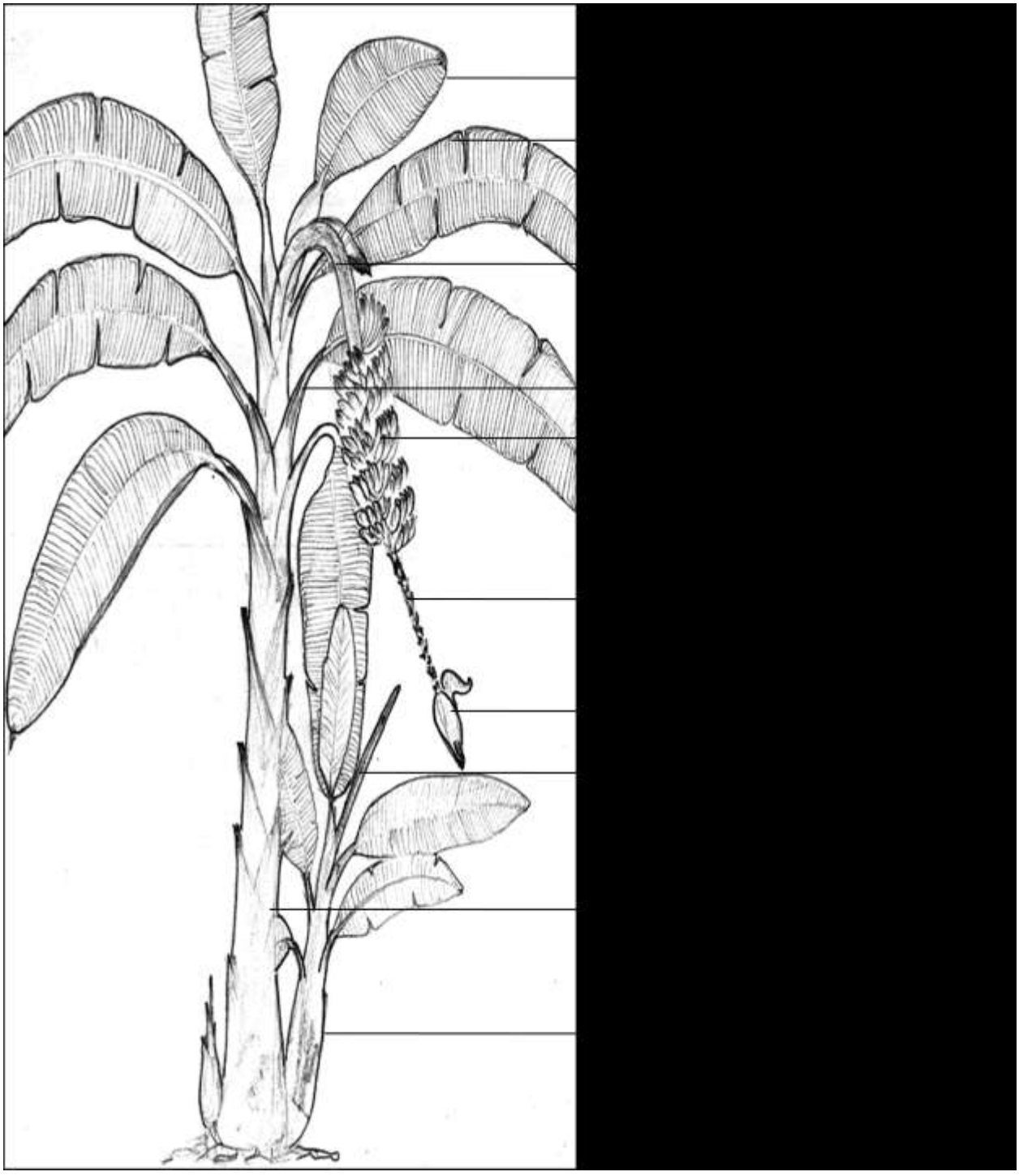
26. (*) QL	Fruit orientation	Perpendicular to the axis Curved upward Curved towards stalk / peduncle	1 2 3	Virupakshi Monthan Robusta	AH	VS
27. (*) QN	Fruit length (cm)	Short (< 6) Medium (6.1 – 15) Long (> 15)	1 3 5	Namarai Poovan Nendran	AH	MS

28. (*) (+) PQ	Fruit shape	Straight Slightly curved Straight at the distal part	1 2 3	Poovan Nendra Padathi Bangrier, Nendran	AH	VG
29. (*) (+) PQ	Transverse section of fruit	Rounded Slight ridges Pronounced ridges	1 2 3	Poovan Robusta Ladan	AH	VS
30. (*) (+) QL	Fruit apex	Pointed Blunt tipped Bottle necked Truncate Rounded	1 2 3 4 5	Nendran Rasthali Poovan Dwarf Cavendish Motta Poovan, Popoulu	AH	VG
31. (+) QL	Persistence of floral organs	Absent Present	1 9	Poovan Anaikomban	AH	VG
32. QL	Fruit pedicel attachment at ripeness	Weak Medium Strong	1 2 3	Rasthali Poovan Monthan	AH	VG
33. (*) QN	Pedicel surface	Glabrous Pubuscent	1 2	Monthan Robusta	AH	VS
34. (*) QN	Pedicel length (cm)	Very short (< 0.6) Short (0.6 – 1) Medium (1.1 – 1.5) Long (> 1.5)	1 2 3 4	Thella Chakkarakeli Robusta Rasthali Monthan	AH	MG
35. QL	Peel colour before ripening	Pale green Green Dark green Red / purple Others	1 2 3 4 9	Rasthali Monthan Poovan Red Banana -	AH	VG

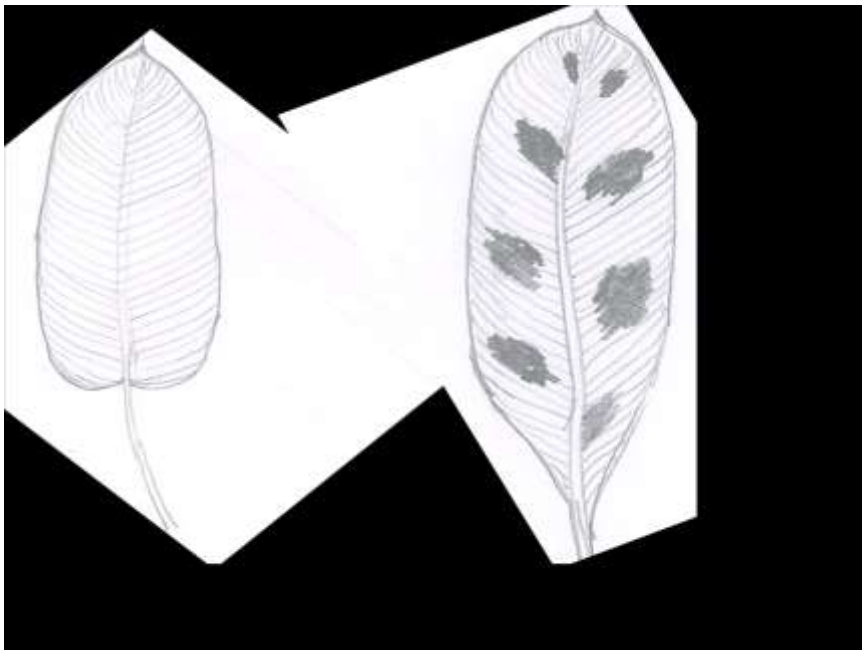
36. QL	Adherence of peel	Weak Medium Strong	1 2 3	Rasthali Poovan Monthan	AH	VS
37. QL	Waxiness of the fruit	Not waxy Waxy	1 2	Rasthali Karpuravalli, Ash Monthan	AH	VG
38. (*) QL	Peel colour at full ripeness	Pale yellow Golden yellow Ashy yellow Green Red orange Others	1 2 3 4 5 6	Rasthali Poovan Ash Monthan Robusta Red Banana -	AH	VG
39. (*) QL	Fruit pulp colour at ripeness	White Cream Yellow Orange yellow	1 2 3 4	Rasthali Malaivazhai Pisang Mas Nendran	AH	VG
40. (*) QN	No. of hands per bunch	Few (5 - 6) Medium (7 - 8) Many (> 8)	1 2 3	Amirtsagar Rasthali Grand Naine	AH	MS
41. (*) QN	No. of fingers per hand	Few (< 9) Medium (9 - 13) Many (> 13)	1 2 3	Moongil, Horn plantain Nendran Grand Naine	AH	MS

VIII. Explanation and pictorial representation of the table of characteristics

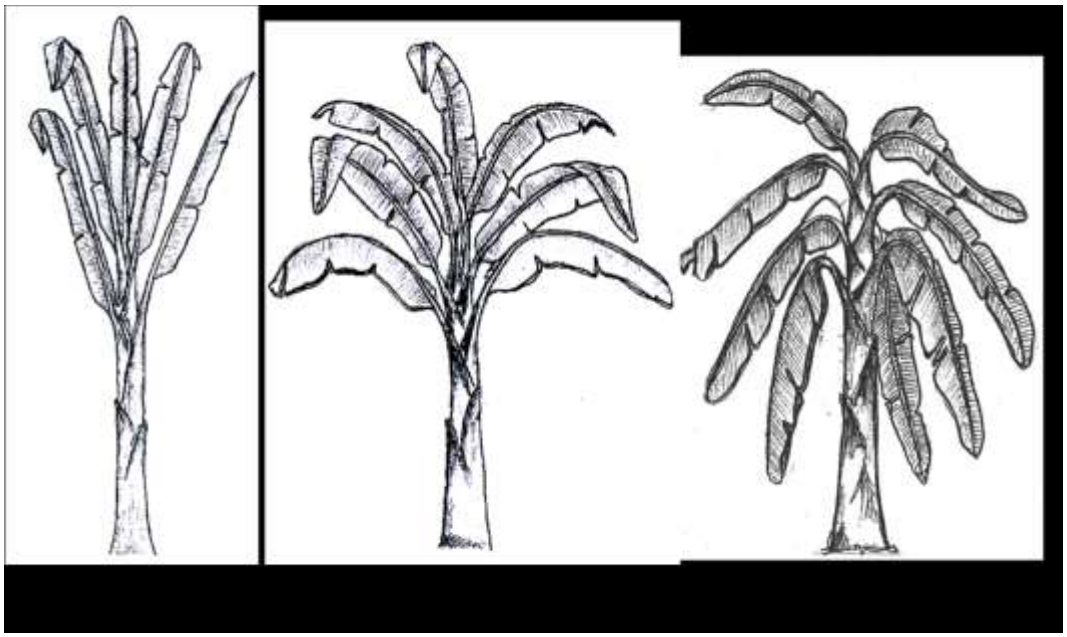
Pictorial representation of the plant



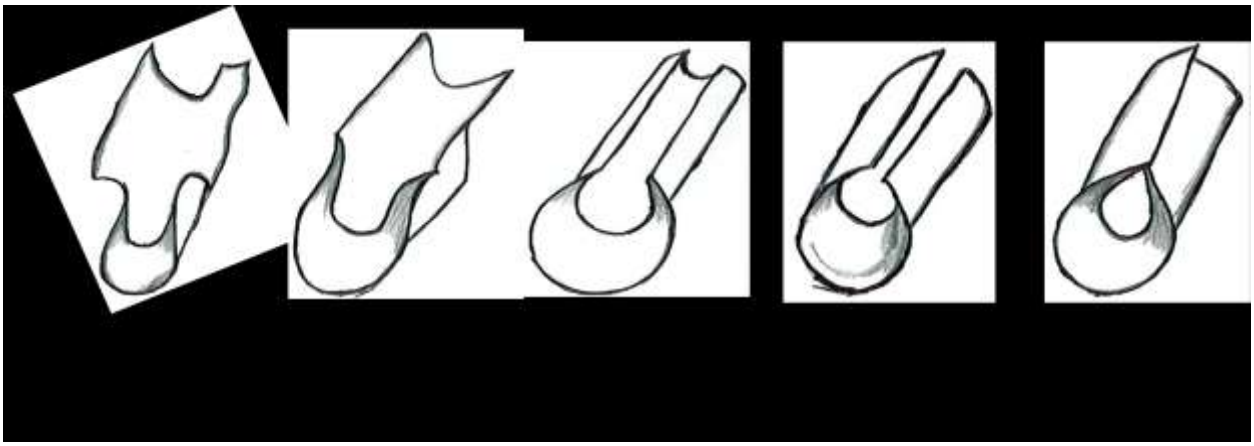
Characteristic VII: 1. Pseudostem length
Recorded from the base of the pseudostem to emerging point of the peduncle
Characteristic VII: 3. Purple blotches on younger leaves



Characteristic VII: 5. Leaf orientation

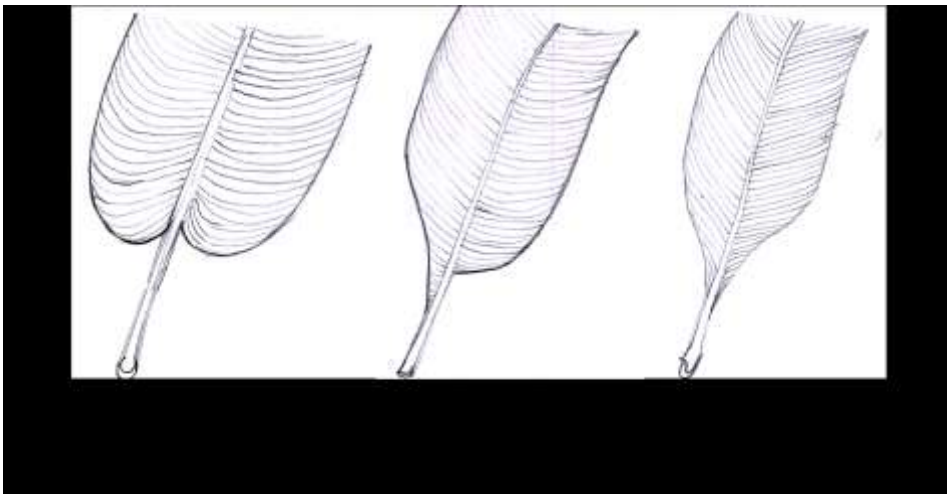


Characteristic VII: 6. Petiole canal



Characteristic VII: 7. Petiole length

Characteristic VII: 8. Leaf blade - shape of base



Characteristic VII: 9. Peduncle length (cm)

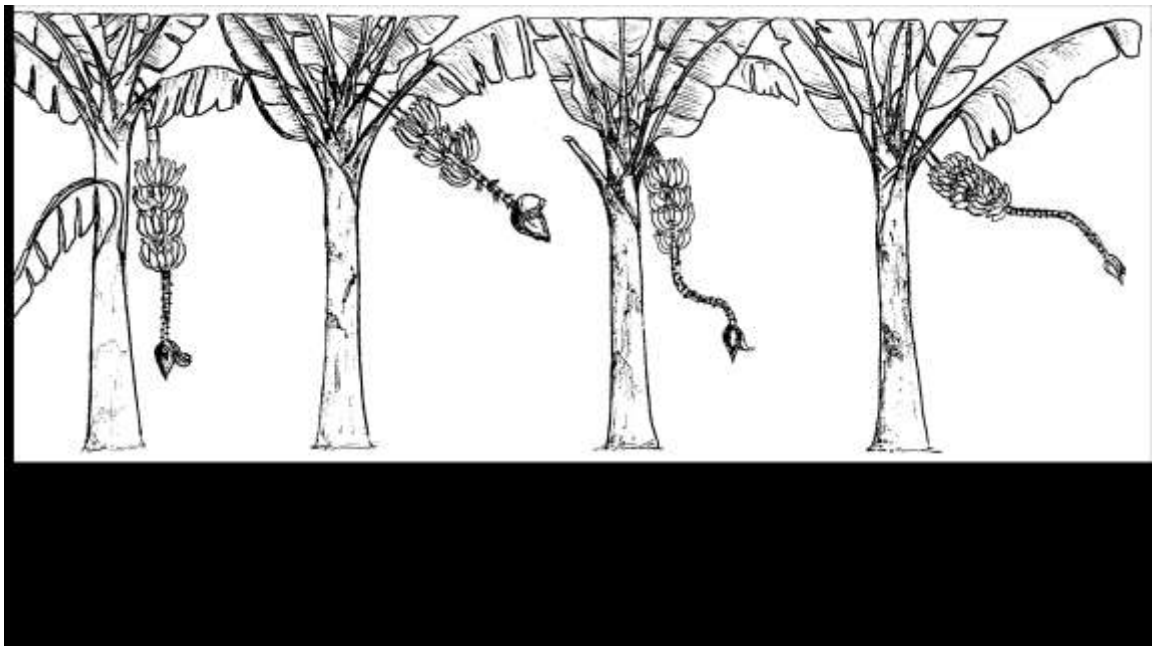
Measured from the leaf crown to the first hand of fruit

Angle between the pseudostem and general axis of the bunch

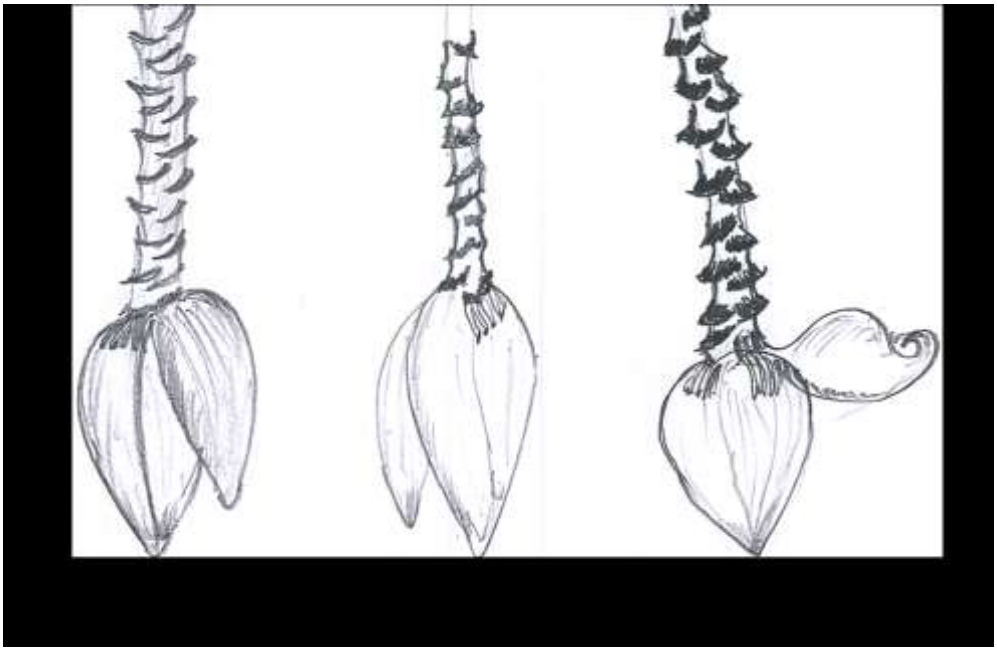
Characteristic VII: 12. Bunch shape

Characteristic VII: 13. Bunch Position

Characteristic VII: 15. Rachis - orientation of male phase



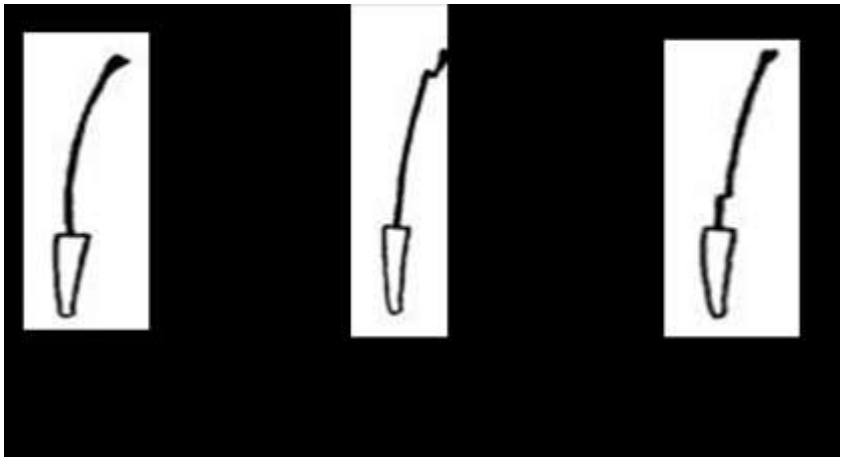
Characteristic VII: 17. Rachis - prominence of bract scars



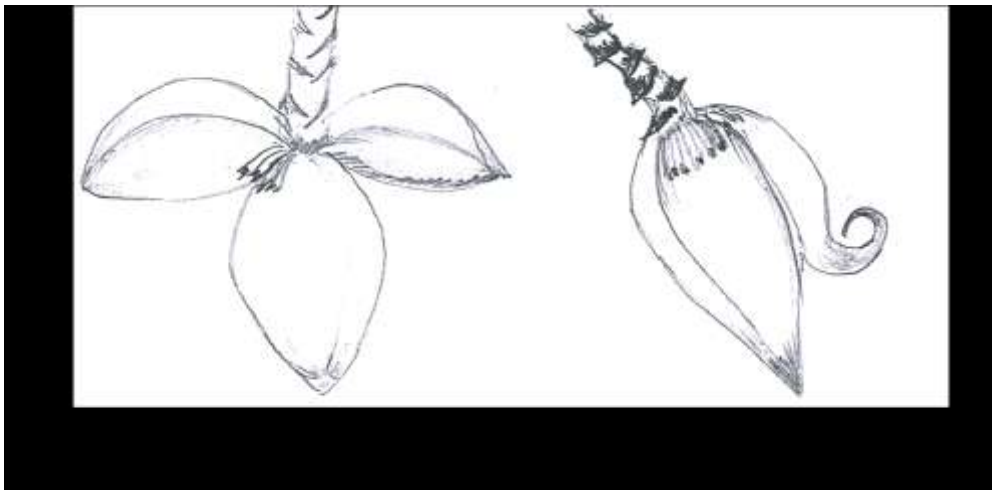
Characteristic VII: 18. Male bud

Characteristic VII: 20. Male bud shape

Characteristic VII: 23. Style Shape



Characteristic VII: 24. Bract behavior - curling



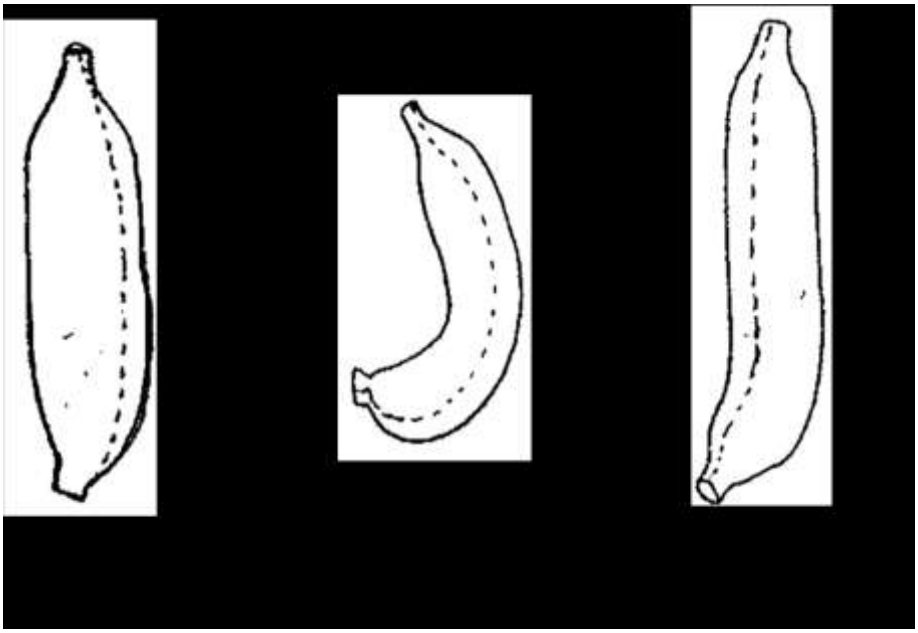
Characteristic VII: 26. Fruit orientation

Angle between the central rachis to the fruit

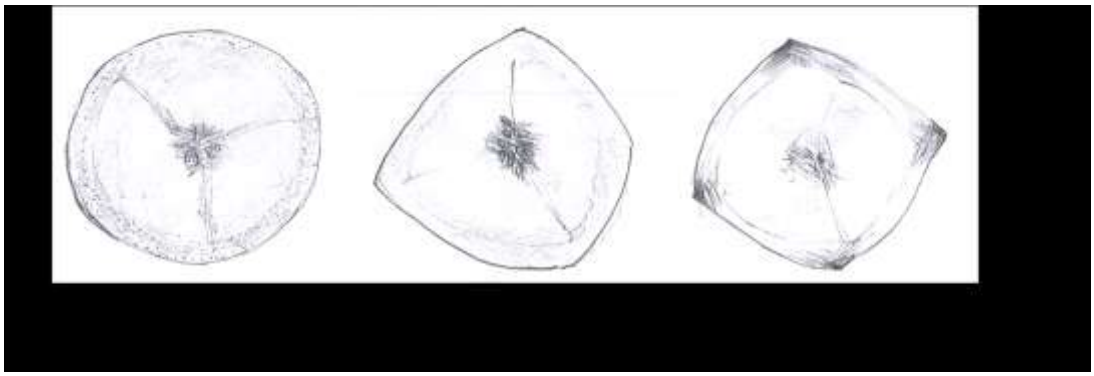
Characteristic VII: 27. Fruit length

Measured from the pedicel to the tip of the fruit

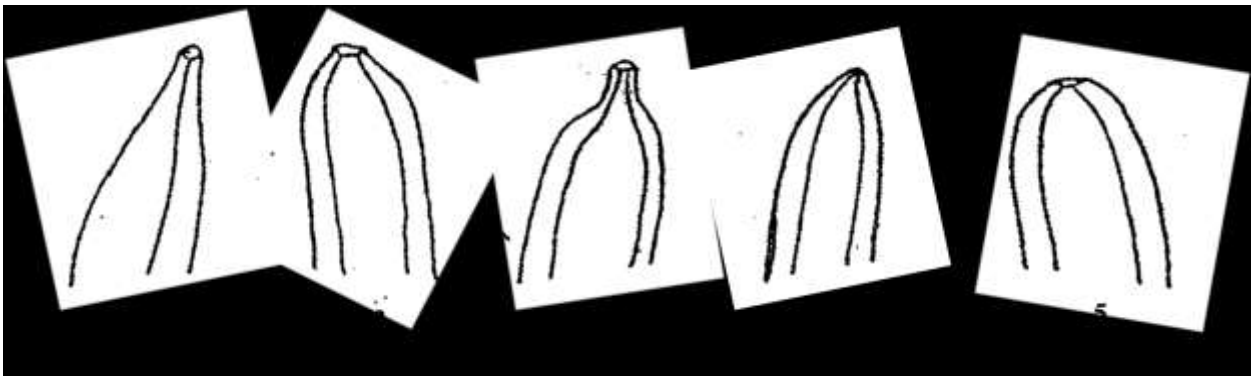
Characteristic VII: 28. Fruit Shape



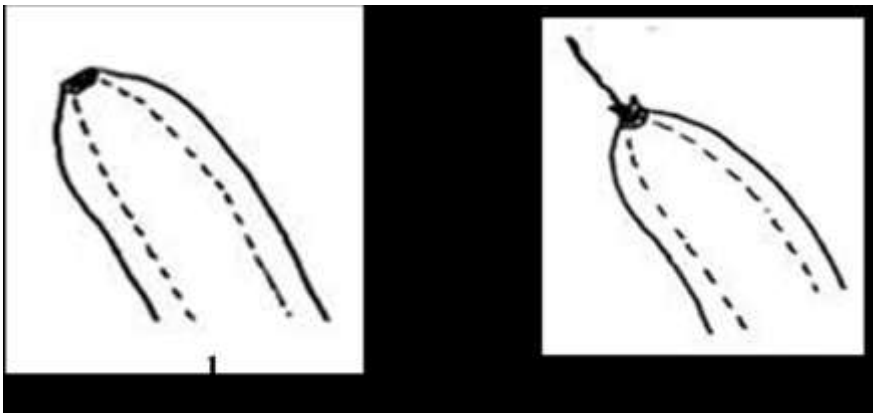
Characteristic VII: 29. Transverse section of fruit



Characteristic VII: 30. Fruit apex



Characteristic VII: 31.Persistence of floral organs



X. Working Group details

The test guidelines developed by the Task Force constituted by the PPV & FR Authority.

Constitution of the Task Force

Dr. S. Sathiamoorthy	Ex-Director. National Research Centre for Banana, H. No. 337, Maruthamalai Road, P.N. Pudur, Coimbatore, Tamil Nadu - 641 041	Chairman
Dr. S.Uma	Principal Scientist, Crop Improvement Division, National Research Centre for Banana (NRCB), Thogamalai Main Road, Thayanur (P.O), Trichy, Tamil Nadu - 620 102	Member
Dr. Rema Menon	Professor and Head (Hort), BRS, Kannara, Kerala Agriculture University, Thrissur Kerala - 680 654	Member
Dr.Anuradha Agrawal	Principal Scientist, Conservation Division, NBPGR, National Bureau of Plant Genetic Resources, New Delhi-110012	Member
Dr. Umesh Srivastava	Ex- ADG (Hort.) ICAR, C-503, NASC Complex, DPS Marg, Opp. Todapur Village, New Delhi-110012	Member
Dr. Tejbir Singh	Registrar, PPV & FR Authority, New Delhi-110012	Member Secretary

Nodal Officers

1. PI : Dr. S. Uma, Principal Scientist, NRCB, Trichy.
2. Co-PI : Dr. S. Backiyarani, Senior Scientist, NRCB, Trichy.
3. Co-PI : Dr. M.S. Saraswathi, Senior Scientist, NRCB, Trichy.

Co-Nodal Officers

1. Dr. S. Das, Senior Horticulturist, Horticulture Research Complex, Nagicherra, Agartala, Tripura.
2. Mr. Khokan Roy, Assistant Director, Horticulture Research Complex, Nagicherra, Agartala, Tripura.
3. Mr. Pulak Chaudhuri, Deputy Director, Horticulture Research Complex, Nagicherra, Agartala, Tripura.

XI. DUS test centres

Nodal DUS centre	Co-Nodal DUS centre
National Research Centre for Banana, Thogamalai Road, Thayanur P.O. Trichy, TamilNadu-620102	Horticulture Research Centre (HRC) Nagicherra, Agartala, Tripura.

Orchid (*Oncidium* Sw.)

I. Subject

These test guidelines apply to all vegetatively propagated varieties of *Oncidium* Sw. and alliance 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, two to three years old 20 plants (10 for each Centre) with at least two pseudobulbs/shoots shall be required for DUS testing.
3. The plant material supplied should be visibly healthy, not lacking in vigour nor 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 Test

1. The minimum duration of test should normally be two similar flowering seasons.
2. Test shall normally be conducted at two places. If any essential characteristic of the variety is 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 request of the applicant.
3. The test should be carried out under greenhouse conditions ensuring satisfactory growth for the expression of the relevant characteristics of the variety and for the conduct of the examination.
4. The design of the test should be such that the plants or parts of the plants may be removed for measurement and counting without prejudice to the observations which must be made up to the end of the flowering period. Each test should be designed to a result in total of at least 10 plants.
5. Unless otherwise indicated, all observations determined by measuring or counting should be made on 10 plants or parts taken from each of 10 plants.
6. Additional tests for special purposes may be established.
7. Normally, growth regulators shall 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 shoot shall be made on the flowering shoot.
5. All observations on the leaf shall be made on the longest leaf of a flowering shoot.
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 position.
8. All observations on the colour of sepal, petal, lip and column shall be made on the inner side.
9. For the assessment of colour characteristics, the Royal Horticultural Society (RHS) colour chart shall be used.

V. Grouping of Varieties

1. The selection of varieties of common knowledge to be grown in the trial with the candidate varieties and the way in which these varieties are divided into groups to facilitate the assessment of distinctness is aided by the use of grouping characteristics.

2. Grouping characteristics are those in which the documented states of expression, even where produced at different locations, can be used, either individually or in combination with other such characteristics: (a) to select varieties of common knowledge that can be excluded from the growing trial used for examination of distinctness; and (b) to organize the growing trial so that similar varieties are grouped together.
3. The following have been agreed as useful grouping characteristics:
   a) Plant: type (Characteristic 1)
   b) Leaf: number per basal leaves /pseudobulb (Characteristic 7)
   c) Flower size: width in front view (Characteristic 18)
   d) Petal: main colour (Characteristic 42)
   e) Petal: colour pattern (Characteristic 43)
   f) Lip: main colour (Characteristic 51)
   g) Lip: colour pattern (Characteristic 52)

VI. Characteristics and Symbols

1. To assess Distinctiveness, Uniformity and Stability, the characteristics and their states as given in the Table of Characteristics shall be used.
2. Notes 1-9 (numbers) shall be used to describe the state of each character for the purpose of electronic data processing.
3. Legend

   (*) Characteristics that shall be observed during every growing season for varieties and hybrids and 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

4. 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

5. **(a)-(e)** see Section VIII for explanation
6. 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 plant

VII. Table of Characteristics

Sl. No.	Characteristics	States	Notes	Example Varieties /hybrids	Type of Assessment
1. QN	Plant type	without pseudobulb	1	Tolu. Jairak Firm Ruddy, Tolu. Jairak Firm 'Fuscous', Tolu. Jairak Firm' Deep Red', Ianopsis Utriculariodes, Tolu. Jairak Firm 'Butterfly', Tolu. Jairak Firm 'Chocolate Drop', Tolu. Jairak Rainbow 'Coral', Tolu. Jairak Rainbow 'Rosy', Tolu. Popoki, ONC. Baipai, Tolu. Jairak Rainbow 'Charming', Tolu. Jairak Firm 'Strawberry', ONC. Popki Red	VG
		with pseudobulb	9	ONC. Sharry Baby Sweet Fragrance, ONC. Sweet Sugar, Colm. Wildcat Carmera, Colm. Wildcat Bobcat, ONC. Taka Yellow	
2. (*) QN	Plant: size (cm)	small (<15)	3	ONC. Popki Red,	MS
		medium (15-30)	5	ONC. Sharry Baby Sweet Fragrance, ONC. Sweet Sugar, Colm. Wild Cat Carmera, Colm. Wildcat Bobcat, ONC. Taka Yellow	
		large (>30)	7	ONC. Hawai Yellow, ONC. Karukera Beauty, ONC. Heaven Scent Redolence, ONC. Shower of Gold (Hughes), ONC. Sunday Best, ONC. Lucky Goldstar, ONC. Sharry Baby 'Sweet Fragrance', ONC. Gower Ramsey, ONC. Royal	

				Robe, ONC. Ramsey Orange, Wilsonara Imperial, ONC. Sharry Baby 'Sphacelatum', ONC. Sphacelatum	
3. (*) QN (a)	Pseudobulb: length (cm)	short (<5)	3	ONC. Twinkle	MS
		medium (5-10)	5	ONC. Sweet Sugar, ONC. Kampangsean Snow, ONC. Taka, ONC. Gold Singer, ONC. Heaven Scent Redolence, Hwra. Lava Burst, ONC. Lucky Goldstar, ONC. Royal Robe, Colm. Wildcat Yellow, ONC. Shower of Gold (Hughes), ONC. Gower Ramsey, ONC. Sharry Baby'Sweet Fragrance', ONC. Ramsey Orange, ONC. Goodaleara, Wilsonara Imperial, ONC. Red Mini Little Cherry	
		long (>10)	7	ONC. Hawai Yellow, ONC. Karukera Beauty, ONC. Sunday Best, ONC. Sharry Baby 'Sphacelatum', ONC. Sphacelatum	
4. QN	Pseudobulb width (cm)	Narrow (<3)	3	ONC. Kampangsean Snow, ONC.Gold Singer, Hwra. Lava Burst, ONC. Shower of Gold (Hughes), ONC. Lucky Goldstar, Wilsonara Imperial, ONC. Twinkle, ONC. Red Mini Little Cherry	MS
		Medium (3-6)	5	ONC. Hawai Yellow, ONC. Sweet Sugar, Colm. Wildcat Yellow, ONC. Taka, ONC. Karukera Beauty, ONC. Heaven Scent Redolence, ONC. Gower Ramsey, ONC. Royal Robe ONC. Sunday Best, ONC. Sharry Baby 'Sweet Fragrance', ONC.Ramsey Orange, ONC.Goodaleara, ONC. Sharry Baby 'Sphacelatum', ONC. Sphacelatum	
		Broad (>6)	7		
5. (*) (+) PQ (a)	Pseudobulb: shape	oblong	1		VG
		elliptic	3	Colm. Wild Cat Carmera, Colm. Wildcat Bobcat,	
		circular	5		
		ovate	7	ONC. Hawai Yellow, ONC. Ramsey Orange, Colm. Wildcat Yellow, ONC. Sweet Sugar, Brassidium Butterfly, ONC. Kampangsean	

				Snow, ONC. Big White, ONC. Blue, ONC. Red, ONC. Pink Small Flower, ONC. Pink/Yellow, ONC. Red Mini Little Cherry, ONC. Taka, ONC. Sharry Baby Sweet Fragrance	
6. (*) QL (a)	Pseudobulb: groove	absent	1	Colm. Wild Cat Carmera	VG
		present	9	ONC. Hawai Yellow, ONC. Ramsey Orange, Colm. Wildcat Yellow, ONC. Sweet Sugar, Brassidium Butterfly, ONC. Kampangsean Snow, ONC. Big White, ONC. Blue, ONC. Red, ONC. Pink Small Flower, ONC. Pink/Yellow, ONC. Red Mini Little Cherry, ONC. Taka, ONC. Sharry Baby Sweet Fragrance, Colm. Wildcat Bobcat	
7. (*) (+)QN	Number of basal leaves/ pseudobulb	very few (< 2	3	ONC. Sweet Sugar, ONC. Pink/Yellow, ONC. Sharry Baby Sweet Fragrance	VG
		few (2 to 4)	5	ONC. Ramsey Orange, Colm. Wildcat Yellow, ONC. Kampangsean Snow, ONC. Big White, ONC. Blue, ONC. Red, ONC. Pink Small Flower, ONC. Red Mini Little Cherry, ONC. Taka, Colm. Wild Cat Carmera, Colm. Wildcat Bobcat	
		many (More than 4)	7	ONC. Hawai Yellow, Brassidium Butterfly	
8. (*) QN (b)	Leaf: length (cm)	short (< 15)	3	Ianopsis Utriculariodes, Colm. Wildcat Bobcat, ONC. Popki Red	MS
		medium (15-30)	5	ONC. Ramsey Orange, ONC. Sweet Sugar, ONC. Kampangsean Snow, ONC. Red, ONC. Pink/Yellow, ONC. Red Mini Little Cherry, ONC. Taka, ONC. Sharry Baby Sweet Fragrance, Colm. Wild Cat Carmera	
		long (> 30)	7	ONC. Hawai Yellow, Colm. Wildcat Yellow, Brassidium Butterfly, ONC. Big White, ONC. Blue, ONC. Pink Small Flower.	
9. (*) QN (b)	Leaf: width (cm)	narrow (<2)	3	Ianopsis Utriculariodes, ONC. Popki Red	MS
		medium (2-4)	5	ONC. Ramsey Orange, Colm. Wildcat Yellow, ONC. Sweet Sugar, ONC. Kampangsean Snow, ONC. Blue, ONC. Pink/Yellow, ONC. Red Mini Little Cherry, ONC. Taka, ONC.	

				Sharry Baby Sweet Fragrance, Colm. Wild Cat Carmera, Colm. Wildcat Bobcat	
		broad (>4)	7	ONC. Hawai Yellow, Brassidium Butterfly, ONC. Big White, ONC. Red, ONC. Pink Small Flower	
10. (*) (+) PQ (a)	Leaf: shape	narrow lanceolate	1	Colm. Wildcat Bobcat, ONC. Popki Red	VG
		linear	3	ONC. Hawai Yellow, ONC. Ramsey Orange, Colm. Wildcat Yellow, ONC. Sweet Sugar, Brassidium Butterfly, ONC. Kampangsean Snow, ONC. Big White, ONC. Blue, ONC. Red, ONC. Pink Small Flower, ONC. Pink/Yellow, Ianopsis Utriculariodes, ONC. Red Mini Little Cherry, ONC. Taka	
		narrow elliptic	5	ONC. Sharry Baby Sweet Fragrance	
		elliptic	7	Colm. Wild Cat Carmera	
11. PQ (a)	Leaf: orientation	erect	1	ONC. Hawaii Yellow, Colm.Wildcat Yellow, ONC. Sweet Sugar, ONC. Kampangsean Snow, ONC Taka, ONC.Gold Singer, ONC. Karukera Beauty, ONC. Heaven Scent Redolence, Tolu. Jairak Firm Ruddy, Tolu. Jairak Firm' Fuscous', Tolu. Jairak Firm Deep Red, Hwra. Lava Burst, ONC. Shower of Gold (Hughes), ONC. Sunday Best, Tolu. Jairak Firm 'Butterfly', Tolu. Jairak Firm 'Chocolate Drop', ONC. Lucky Goldstar, ONC. Sharry Baby 'Sweet Fragrance', ONC. Gower Ramsey, ONC. Royal Robe, Tolu. Jairak Rainbow 'Coral', ONC. Goodaleara, Wilsonara Imperial, Tolu. Jairak Rainbow 'Rosy', Tolu. Popoki, ONC. Sharry Baby 'Sphacelatum', ONC. Baipai, Tolu. Jairak Rainbow 'Charming', ONC. Twinkle, ONC. Sphacelatum, ONC. Red Mini Little Cherry, Tolu. Jairak Firm 'Strawberry'	VG
		semi-erect	3	ONC. Hawai Yellow, ONC. Ramsey Orange, ONC. Sweet Sugar, Brassidium Butterfly, ONC. Kampangsean Snow, ONC. Big White, ONC. Blue, ONC. Red, ONC. Pink Small	

				Flower, ONC. Pink/Yellow, Ianopsis Utriculariodes, ONC. Red Mini Little Cherry, ONC. Taka, Colm. Wild Cat Carmera, Colm. Wildcat Bobcat	
		horizontal	5		
		pendulous	7		
12. (*) QL (a)	Leaf: attitude / nature	normal	1	ONC. Hawai Yellow, ONC. Ramsey Orange, Colm. Wildcat Yellow, ONC. Sweet Sugar, Brassidium Butterfly, ONC. Kampangsean Snow, ONC. Big White, ONC. Blue, ONC. Red, ONC. Pink Small Flower, ONC. Pink/Yellow, Ianopsis Utriculariodes, ONC. Red Mini Little Cherry, ONC. Taka, ONC. Popki Red	VG
		twisting	9	ONC. Sharry Baby Sweet Fragrance, Colm. Wild Cat Carmera, Colm. Wildcat Bobcat	
13. (*) (+) QL (b)	Inflorescence: type	simple raceme	3	Colm. Wildcat Yellow, ONC. Big White, ONC. Blue, ONC. Red, ONC. Pink Small Flower, ONC. Pink/Yellow, Ianopsis Utriculariodes, ONC. Sharry Baby Sweet Fragrance, Colm. Wild Cat Carmera, Colm. Wildcat Bobcat, ONC. Popki Red	VG
		panicle	5	Tolu. Jairak Firm Deep Red, Tolu. Jairak Firm 'Chocolate Drop', ONC. Twinkle, ONC. Sphacelatum, Tolu. Jairak Firm 'Strawberry'	
		compound panicle	7	ONC. Hawai Yellow, ONC. Ramsey Orange, ONC. Sweet Sugar, Brassidium Butterfly, ONC. Kampangsean Snow, ONC. Red Mini Little Cherry, ONC. Taka.	
14. QN (b)	Inflorescence: length (cm) (Peduncle + rachis length)	very short (< 15)	1	Colm. Wildcat Yellow, ONC. Big White, ONC. Blue, ONC. Pink Small Flower, Ianopsis Utriculariodes, ONC. Red Mini Little Cherry	MS
		short (15 – 30)	3	ONC. Sweet Sugar, ONC. Kampangsean Snow, ONC. Red, ONC. Pink/Yellow, ONC. Taka, Colm. Wild Cat Carmera, Colm. Wildcat Bobcat, ONC. Popki Red	
		medium (>30 – 60)	5	ONC. Ramsey Orange, Brassidium Butterfly, ONC. Sharry Baby Sweet Fragrance	

		long (>60-90)	7	ONC. Sharry Baby 'Sphacelatum', ONC. Sphacelatum	
		extra long (> 90)	9	ONC. Hawai Yellow, ONC. Sharry Baby 'Sweet Fragrance', ONC. Ramsey Orange	
15. (*) QN (b)	Inflorescence: number of flowers	very few (< 10)	3	Colm. Wildcat Yellow, ONC. Big White, ONC. Blue, ONC. Red, ONC. Pink Small Flower, ONC. Pink/Yellow, Ianopsis Utricullariodes, ONC. Red Mini Little Cherry, Colm. Wild Cat Carmera, Colm. Wildcat Bobcat, ONC. Popki Red	VG
		few (10 – 30)	5	ONC. Sweet Sugar, Brassidium Butterfly, ONC. Kampangsean Snow, ONC. Taka, ONC. Sharry Baby Sweet Fragrance	
		many (>30)	7	ONC. Ramsey Orange, ONC. Sharry Baby 'Sweet Fragrance', ONC. Gower Ramsey, ONC. Sharry Baby 'Sphacelatum', ONC. Hawai Yellow	
16. (*) QL	Peduncle: anthocyanin colouration	absent	1	ONC. Ramsey Orange, Colm. Wildcat Yellow, ONC. Sweet Sugar, Brassidium Butterfly, ONC. Kampangsean Snow, ONC. Big White, ONC. Red, ONC. Pink Small Flower, ONC. Pink/Yellow, Colm. Wild Cat Carmera	VG
		present	9	ONC. Hawai Yellow, ONC. Blue, Ianopsis Utricullariodes, ONC. Red Mini Little Cherry, ONC. Taka, ONC. Sharry Baby Sweet Fragrance, Colm. Wildcat Bobcat, ONC. Popki Red	
17. (*) (+) QN (c)	Flower: length in front view (cm)	short (<3)	1	Tolu. Jairak Firm Ruddy, Tolu.Jairak Firm 'Fuscous', Tolu. Jairak Firm Deep Red, Ianopsis Utricullariodes	MS
		medium (3-6)	3	ONC. Hawai Yellow, ONC. Ramsey Orange, ONC. Sweet Sugar, ONC. Kampangsean Snow, ONC. Pink Small Flower, ONC. Pink/Yellow, ONC. Red Mini Little Cherry, ONC. Taka, ONC. Sharry Baby Sweet Fragrance, Colm. Wild Cat Carmera, ONC. Popki Red ONC. Popki Red	
		long (>6-9)	5	Colm. Wildcat Yellow, ONC. Red, Colm. Wildcat Bobcat	

		very long (>9)	7	Brassidium Butterfly, ONC. Big White, ONC. Blue.	
18. (*) (+) QN (c)	Flower: width in front view (cm)	narrow (<3)	1	ONC. Hawai Yellow, ONC. Ramsey Orange, ONC. Kampangsean Snow, ONC. Red Mini Little Cherry, ONC. Taka, ONC. Popki Red	MS
		medium (3-6)	3	Colm. Wildcat Yellow, ONC. Sweet Sugar, ONC. Red, ONC. Pink Small Flower, ONC. Pink/Yellow, Ianopsis Utricullariodes, ONC. Sharry Baby Sweet Fragrance, Colm. Wild Cat Carmera, Colm. Wildcat Bobcat	
		broad (>6-9)	5	ONC. Lucky Goldstar, Brassidium Butterfly	
		very board (>9)	7	ONC. Big White, ONC. Blue, ONC. Royal Robe	
19. QL (c)	Flower: fragrance	absent	1	ONC. Hawai Yellow, ONC. Ramsey Orange, Colm. Wildcat Yellow, ONC. Sweet Sugar, Brassidium Butterfly, ONC. Kampangsean Snow, ONC. Big White, ONC. Blue, ONC. Red, ONC. Pink Small Flower, ONC. Pink/Yellow, Ianopsis Utricullariodes, ONC. Red Mini Little Cherry, ONC. Taka, Colm. Wild Cat Carmera, Colm. Wildcat Bobcat, ONC. Popki Red	
		present	9	ONC. Karukera Beauty, ONC. Heaven Scent Redolence, ONC. Sharry Baby 'Sweet Fragrance', ONC. Sharry Baby 'Sphacelatum', ONC. Twinkle	
20. (*)QN (c)	Dorsal sepal: length (cm)	short (<2)	3	ONC. Hawai Yellow, ONC. Ramsey Orange, ONC. Sweet Sugar, ONC. Kampangsean Snow, ONC. Pink Small Flower, ONC. Pink/Yellow, Ianopsis Utricullariodes, ONC. Red Mini Little Cherry, ONC. Taka, ONC. Sharry Baby Sweet Fragrance, ONC. Popki Red	MS
		Medium (2-4)	5	ONC. Red, Colm. Wild Cat Carmera, Colm. Wildcat Bobcat	
		long (>4)	7	Colm. Wildcat Yellow, Brassidium Butterfly, ONC. Big White, ONC. Blue.	
21.	Dorsal sepal:	narrow (<1)	3	ONC. Hawai Yellow, ONC. Ramsey Orange, Colm. Wildcat Yellow, ONC. Sweet Sugar,	MS

(*)QN (c)	width (cm)			ONC. Kampangsean Snow, ONC. Pink Small Flower, ONC. Pink/Yellow, Ianopsis Utriculariodes, ONC. Red Mini Little Cherry, ONC. Taka, ONC. Sharry Baby Sweet Fragrance, ONC. Popki Red	
		medium (1-2)	5	Brassidium Butterfly, ONC. Big White, ONC. Blue, Colm. Wild Cat Carmera	
		broad (>2)	7	ONC. Red, Colm. Wildcat Bobcat	
22. (*) (+) PQ (c)	Dorsal sepal: shape	lanceolate	1	ONC. Hawai Yellow, ONC. Ramsey Orange, Colm. Wildcat Yellow, ONC. Kampangsean Snow, ONC. Big White, ONC. Red, ONC. Pink Small Flower, ONC. Pink/Yellow, Ianopsis Utriculariodes, ONC. Taka, Colm. Wildcat Bobcat	VG
		linear	2	ONC. Sweet Sugar, Brassidium Butterfly, ONC. Blue, ONC. Red Mini Little Cherry.	
		oblong	3		
		elliptic	4	ONC. Sharry Baby Sweet Fragrance	
		ovate	5	Tolu. Jairak Firm Ruddy, Tolu. Jairak Firm' Fuscous, Tolu. Jairak Firm 'Deep Red', Tolu. Jairak Firm 'Butterfly', Hwra. Lava Burst, Tolu. Jairak Firm 'Chocolate Drop', ONC. Sharry Baby 'Sweet Fragrance', Tolu. Jairak Rainbow 'Coral', ONC. Goodaleara, Tolu. Jairak Rainbow 'Rosy', Tolu. Popoki	
		obovate	6	Colm. Wild Cat Carmera, ONC. Baipai, ONC. Twinkle, ONC. Red Mini Little Cherry, Tolu. Jairak Firm 'Strawberry'	
23. (*)QN (c)	Dorsal sepal: curvature of longitudinal axis	strongly incurving	1		VG
		moderately incurving	3	ONC. Hawai Yellow, ONC. Ramsey Orange, Brassidium Butterfly, ONC. Blue, Ianopsis Utriculariodes, ONC. Red Mini Little Cherry, Colm. Wild Cat Carmera	
		straight	5	Colm. Wildcat Bobcat	
		moderately recurving	7	Colm. Wildcat Yellow, ONC. Sweet Sugar, ONC. Kampangsean Snow, ONC. Red, ONC. Pink Small Flower, ONC. Pink/Yellow, ONC. Taka, ONC. Sharry Baby Sweet Fragrance	

		strongly recurving	9	ONC. Big White, ONC. Popki Red, ONC. Sharry Baby 'Sphacelatum'	
24. QL (c)	Dorsal sepal: twisting	absent	1	ONC. Hawai Yellow, ONC. Ramsey Orange, Colm. Wildcat Yellow, ONC. Sweet Sugar, Brassidium Butterfly, ONC. Kampangsean Snow, ONC. Big White, ONC. Blue, ONC. Red, ONC. Pink Small Flower, ONC. Pink/Yellow, Ianopsis Utricullariodes, ONC. Red Mini Little Cherry, ONC. Taka, ONC. Sharry Baby Sweet Fragrance, Colm. Wild Cat Carmera, Colm. Wildcat Bobcat, ONC. Popki Red	VG
		present	9		
25. (*) QL (c)	Dorsal sepal: undulation of margin	absent	1	ONC. Hawai Yellow, ONC. Ramsey Orange, Colm. Wildcat Yellow, Brassidium Butterfly, ONC. Kampangsean Snow, ONC. Big White, ONC. Blue, ONC. Red, ONC. Pink/Yellow, Ianopsis Utricullariodes, ONC. Red Mini Little Cherry, ONC. Taka, Colm. Wild Cat Carmera, Colm. Wildcat Bobcat, ONC. Popki Red	VG
		present	9	ONC. Sweet Sugar, ONC. Pink Small Flower, ONC. Sharry Baby Sweet Fragrance	
26. (*) QL (c) (d)	Dorsal sepal: main colour RHS Colour Chart	green	1	ONC. Sweet Sugar	VG
		white	2		
		pink	3		
		yellow	4	Colm. Wild Cat Carmera, ONC. Taka Yellow	
		red	5	ONC. Popki Red	
		purple	6	ONC. Sharry Baby Sweet Fragrance, Colm. Wildcat Bobcat,	
		blue	7		
		violet	8		
27. (*) (+)QL (c)	Dorsal sepal: colour pattern	uniform	1	ONC. Hawai Yellow, ONC. Ramsey Orange, Colm. Wildcat Yellow, ONC. Sweet Sugar, Brassidium Butterfly, ONC. Big White, ONC. Pink Small Flower, ONC. Pink/Yellow,	VG

(d)				Ianopsis Utricullariodes, ONC. Taka.	
		shaded	2	ONC. Kampangsean Snow, ONC. Blue, ONC. Red, ONC. Red Mini Little Cherry, ONC. Sharry Baby Sweet Fragrance, ONC. Popki Red	
		blotched	3	ONC. Big White, ONC. Blue	
		brindled	4	ONC. Hawai Yellow, ONC. Ramsey Orange, ONC. Sweet Sugar, Brassidium Butterfly, ONC. Taka, Colm. Wild Cat Carmera	
		striped	5	ONC. Pink Small Flower, Ianopsis Utricullariodes	
		edged	6	Colm. Wildcat Bobcat, Tolu. Jairak Firm 'Strawberry'	
28. (*)QN (c)	Lateral sepal: length (cm)	short (<2)	3	ONC. Hawai Yellow, ONC. Ramsey Orange, ONC. Sweet Sugar, ONC. Kampangsean Snow, ONC. Pink Small Flower, ONC. Pink/Yellow, Ianopsis Utricullariodes, ONC. Red Mini Little Cherry, ONC. Taka, ONC. Sharry Baby Sweet Fragrance, ONC. Popki Red	MS
		medium (2-4)	5	ONC. Red, Colm. Wild Cat Carmera, ONC. Karukera Beauty	
		long (>4)	7	Colm. Wildcat Yellow, Brassidium Butterfly, ONC. Big White, ONC. Blue	
29. (*)QN (c)	Lateral sepal: width (cm)	narrow (<1)	3	ONC. Hawai Yellow, ONC. Ramsey Orange, Colm. Wildcat Yellow, ONC. Sweet Sugar, ONC. Kampangsean Snow, ONC. Pink Small Flower, ONC. Pink/Yellow, Ianopsis Utricullariodes, ONC. Red Mini Little Cherry, ONC. Taka, ONC. Sharry Baby Sweet Fragrance, ONC. Popki Red	MS
		medium (1-2)	5	Brassidium Butterfly, ONC. Big White, ONC. Blue, ONC. Red, Colm. Wild Cat Carmera, Colm. Wildcat Bobcat	
		broad (>2)	7		
30.	Lateral sepal:	lanceolate	1	ONC. Hawai Yellow, ONC. Ramsey Orange, Colm. Wildcat Yellow, ONC. Sweet Sugar,	VG

(*) (+) PQ (c)	shape			Brassidium Butterfly, ONC. Kampangsean Snow, ONC. Big White, ONC. Blue, ONC. Red, ONC. Pink Small Flower, ONC. Pink/Yellow, Ianopsis Utricullariodes, ONC. Red Mini Little Cherry, ONC. Taka, ONC. Sharry Baby Sweet Fragrance, Colm. Wildcat Bobcat, ONC. Popki Red	
		ovate	3	Miltassia Royal Robe,	
		curving obovate	5	ONC. Kampangsean Snow, ONC. Taka, ONC. Sweet Sugar, ONC. Gold Singer, ONC. Karukera Beauty, Tolu. Jairak Firm 'Fuscous', Tolu. Jairak Firm 'Butterfly', Tolu. Jairak Firm Ruddy, Tolu. Jairak Firm 'Deep Red', Tolu. Jairak Firm 'Chocolate Drop', Hwra. Lava Burst, ONC. Shower of Gold (Hughes), ONC. Sharry Baby 'Sweet Fragrance', Tolu. Jairak Rainbow 'Coral', Wilsonara Imperial, Tolu. Jairak Rainbow 'Rosy', Tolu. Popoki, ONC. Sharry Baby 'Sphacelatum', Tolu. Jairak Rainbow 'Charming', ONC. Sphacelatum, ONC. Red Mini Little Cherry, Tolu. Jairak Firm 'Strawberry'	
		obovate	7	Colm. Wild Cat Carmera, ONC. Baipai, ONC. Twinkle	
		broad obovate	9		
31. (*)QN (c)	Lateral sepal: curvature of longitudinal axis	strongly incurving	1		VG
		moderately incurving	3	ONC. Hawai Yellow, ONC. Ramsey Orange, Brassidium Butterfly, ONC. Blue, Ianopsis Utricullariodes, ONC. Red Mini Little Cherry, Colm. Wild Cat Carmera, ONC. Popki Red	
		straight	5	Colm. Wildcat Bobcat	
		moderately recurving	7	Colm. Wildcat Yellow, ONC. Sweet Sugar, ONC. Kampangsean Snow, ONC. Red, ONC. Pink Small Flower, ONC. Pink/Yellow, ONC. Taka, ONC. Sharry Baby Sweet Fragrance	
		Deflexed	9	ONC. Big White	
32.	Lateral sepal:	absent	1	ONC. Hawai Yellow, ONC. Ramsey Orange,	VG

QL (c)	twisting			Colm. Wildcat Yellow, Brassidium Butterfly, ONC. Big White, ONC. Blue, ONC. Red, ONC. Pink Small Flower, ONC. Pink/Yellow, ONC. Sharry Baby Sweet Fragrance, ONC. Popki Red	
		present	9	ONC. Sweet Sugar, ONC. Kampangsean Snow, Ianopsis Utricullariodes, ONC. Red Mini Little Cherry, ONC. Taka, Colm. Wild Cat Carmera, Colm. Wildcat Bobcat	
33. (*)QL (c)	Lateral sepal: undulation of margin	absent	1	ONC. Hawai Yellow, ONC. Ramsey Orange, Colm. Wildcat Yellow, Brassidium Butterfly, ONC. Kampangsean Snow, ONC. Big White, ONC. Blue, ONC. Red, ONC. Pink/Yellow, Ianopsis Utricullariodes, ONC. Red Mini Little Cherry, ONC. Taka, ONC. Popki Red	VG
		present	9	ONC. Sweet Sugar, ONC. Pink Small Flower, ONC. Sharry Baby Sweet Fragrance, Colm. Wild Cat Carmera, Colm. Wildcat Bobcat	
34. (*) PQ (d)	Lateral sepal: main colour as per RHS Colour Chart	green	1	ONC. Sweet Sugar, Colm. Wild Cat Carmera	VG
		white	2		
		pink	3		
		yellow	4	ONC. Taka Yellow	
		red	5	ONC. Popki Red	
		purple	6	ONC. Sharry Baby Sweet Fragrance, Colm. Wildcat Bobcat,	
		blue	7		
		violet	8		
35. (*) (+)QL (d)	Lateral sepal: colour pattern as per RHS Colour Chart to be indicated in brackets	uniform	1	ONC. Hawai Yellow, ONC. Ramsey Orange, Colm. Wildcat Yellow, ONC. Sweet Sugar, Brassidium Butterfly, ONC. Big White, ONC. Pink Small Flower, ONC. Pink/Yellow, Ianopsis Utricullariodes, ONC. Taka.	VG
		shaded	2	ONC. Kampangsean Snow, ONC. Blue, ONC. Red, ONC. Red Mini Little Cherry, ONC. Sharry Baby Sweet Fragrance, Colm. Wildcat	

				Bobcat, ONC. Popki Red	
		blotched	3	ONC. Big White, ONC. Blue	
		brindled	4	ONC. Ramsey Orange, ONC. Sweet Sugar, Brassidium Butterfly, ONC. Taka, Colm. Wild Cat Carmera	
		striped		Ianopsis Utricullariodes	
		edged		Colm. Wildcat Bobcat, Tolu. Jairak Firm Ruddy, Tolu. Jairak Firm 'Deep Red', Tolu. Jairak Firm 'Chocolate Drop'	
36. (*)QN (c)	Petal: length (cm)	short (<2)	3	ONC. Hawai Yellow, ONC. Ramsey Orange, ONC. Sweet Sugar, ONC. Kampangsean Snow, ONC. Pink Small Flower, ONC. Pink/Yellow, Ianopsis Utricullariodes, ONC. Red Mini Little Cherry, ONC. Taka, ONC. Sharry Baby Sweet Fragrance, ONC. Popki Red	MS
		medium (2-4)	5	Colm. Wildcat Yellow, ONC. Red, Colm. Wild Cat Carmera, Colm. Wildcat Bobcat	
		long (>4)	7	Brassidium Butterfly, ONC. Big White, ONC. Blue, ONC. Royal Robe	
37. (*)QN (c)	Petal: width (cm)	Narrow (<1)	3	ONC. Hawai Yellow ONC. Ramsey Orange, Colm. Wildcat Yellow, ONC. Sweet Sugar, ONC. Kampangsean Snow, ONC. Pink Small Flower, ONC. Pink/Yellow, Ianopsis Utricullariodes, ONC. Red Mini Little Cherry, ONC. Taka, ONC. Sharry Baby Sweet Fragrance, ONC. Popki Red	MS
		Medium (1-2)	5	Brassidium Butterfly, ONC. Big White, ONC. Blue, ONC. Red, Colm. Wild Cat Carmera, Colm. Wildcat Bobcat	
		Broad (>2)	7		
38. (*) (+) PQ (c)	Petal: shape	linear	1	Colm. Wildcat Yellow, Brassidium Butterfly, ONC. Big White, ONC. Pink/Yellow	VG
		elliptic	3	ONC. Hawai Yellow, ONC. Ramsey Orange, ONC. Sweet Sugar, ONC. Kampangsean Snow, ONC. Blue, ONC. Red, ONC. Pink Small Flower, ONC. Taka, ONC. Sharry Baby Sweet	

				Fragrance, Colm. Wildcat Bobcat	
		narrow obovate	5	Ianopsis Utricullariodes, ONC. Red Mini Little Cherry, Colm. Wild Cat Carmera, ONC. Popki Red	
		obovate	7	ONC. Sweet Sugar, ONC.Gold Singer, Tolu. Jairak Firm Ruddy, Tolu. Jairak Firm 'Deep Red', Tolu. Jairak Firm' Fuscous', Tolu. Jairak Firm 'Chocolate Drop', Tolu. Jairak Firm 'Butterfly', Ianopsis Utricullariodes, ONC. Shower of Gold (Hughes), ONC. Gower Ramsey, ONC.Ramsey Orange, Tolu. Jairak Rainbow 'Coral', Tolu. Popoki, ONC. Baipai, Tolu. Jairak Rainbow 'Charming', ONC. Twinkle, ONC. Red Mini Little Cherry, Tolu. Jairak Firm 'Strawberry'	
		rectangular	9		
39. (*)QN (c)	Petal: curvature of longitudinal axis	strongly incurving	1		VG
		moderately incurving	3	ONC. Hawai Yellow, Brassidium Butterfly, Ianopsis Utricullariodes, ONC. Red Mini Little Cherry, ONC. Taka, ONC. Sharry Baby Sweet Fragrance	
		straight	5	Colm. Wild Cat Carmera, Colm. Wildcat Bobcat, ONC. Popki Red	
		moderately recurving	7	Colm. Wildcat Yellow, ONC. Kampangsean Snow, ONC. Big White, ONC. Blue, ONC. Red, ONC. Pink Small Flower, ONC. Pink/Yellow.	
		strongly recurving	9	ONC. Ramsey Orange, ONC. Sweet Sugar	
40. QL (c)	Petal: twisting	absent	1	ONC. Hawai Yellow, ONC. Ramsey Orange, Colm. Wildcat Yellow, ONC. Sweet Sugar, Brassidium Butterfly, ONC. Kampangsean Snow, ONC. Big White, ONC. Blue, ONC. Red, ONC. Pink Small Flower, ONC. Pink/Yellow, Ianopsis Utricullariodes, ONC. Red Mini Little Cherry, ONC. Taka, ONC. Sharry Baby Sweet Fragrance, Colm. Wild Cat Carmera, Colm. Wildcat Bobcat, ONC. Popki Red	VG
		present	9	Ianopsis Utricullariodes	
41.	Petal: undulation	absent	1	ONC. Hawai Yellow, ONC. Pink/Yellow,	VG

(*) QL (c)	of margin			Ianopsis Utricullariodes, Colm. Wildcat Bobcat	
		present	9	ONC. Ramsey Orange, Colm. Wildcat Yellow, ONC. Sweet Sugar, Brassidium Butterfly, ONC. Kampangsean Snow, ONC. Big White, ONC. Blue, ONC. Red, ONC. Pink Small Flower, ONC. Taka, ONC. Sharry Baby Sweet Fragrance, Colm. Wild Cat Carmera, ONC. Popki Red	
42. (*) PQ (d)	Petal: main colour as per RHS Colour Chart	green	1	ONC. Sweet Sugar	VG
		white	2		
		pink	3		
		yellow	4	Colm. Wild Cat Carmera, ONC. Taka Yellow	
		red	5	ONC. Popki Red	
		purple	6	ONC. Sharry Baby Sweet Fragrance, Colm. Wildcat Bobcat	
		blue	7		
		violet	8		
43. (*) (+)QL (d)	Petal: colour pattern as per RHS Colour Chart to be indicated in brackets	uniform	1	ONC. Hawai Yellow, Colm. Wildcat Yellow, ONC. Sweet Sugar, Brassidium Butterfly, ONC. Big White, ONC. Pink Small Flower, ONC. Pink/Yellow	VG
		shaded	2	ONC. Kampangsean Snow, ONC. Blue, ONC. Red, Ianopsis Utricullariodes, ONC. Red Mini Little Cherry, ONC. Sharry Baby Sweet Fragrajnce, ONC. Popki Red	
		blotched	3	ONC. Big White, ONC. Blue, ONC. Lucky Goldstar, ONC. Baipai	
		brindled	4	ONC. Hawai Yellow, ONC. Ramsey Orange, Colm. Wildcat Yellow ONC. Sweet Sugar, Brassidium Butterfly, Colm. Wild Cat Carmera	

		striped	5	ONC. Pink Small Flower, Ianopsis Utriculariodes, ONC. Red Mini Little Cherry	
		edged	6	ONC. Red Mini Little Cherry, Colm. Wildcat Bobcat	
44. (*)	Lip: curvature of longitudinal axis	incurving	3	ONC. Hawai Yellow, ONC. Ramsey Orange, Colm. Wildcat Yellow, Ianopsis Utriculariodes, ONC. Red Mini Little Cherry, ONC. Taka, ONC. Sharry Baby Sweet Fragrance	VG
		straight	5	Colm. Wild Cat Carmera, Colm. Wildcat Bobcat, ONC. Popki Red	
		recurving	7	ONC. Sweet Sugar, Brassidium Butterfly, ONC. Kampangsean Snow, ONC. Big White, ONC. Blue ONC. Red, ONC. Pink Small Flower, ONC. Pink/Yellow.	
45. (*)QN (c)	Lip: length (cm)	short (<2)	3	ONC. Hawai Yellow	MS
		medium (2-4)	5	ONC. Ramsey Orange, Colm. Wildcat Yellow, ONC. Sweet Sugar, ONC. Kampangsean Snow, ONC. Red, ONC. Pink Small Flower, ONC. Pink/Yellow, Ianopsis Utriculariodes, ONC. Red Mini Little Cherry, ONC. Taka, ONC. Sharry Baby Sweet Fragrance, Colm. Wild Cat Carmera, Colm. Wildcat Bobcat, ONC. Popki Red	
		long (>4)	7	Brassidium Butterfly, ONC. Big White, ONC. Blue, ONC. Sunday Best, ONC. Royal Robe	
46. (*)QN (c)	Lip: width (cm)	narrow (<2)	3	ONC. Hawai Yellow, ONC. Pink Small Flower, ONC. Pink/Yellow, Ianopsis Utriculariodes, ONC. Sharry Baby Sweet Fragrance	MS
		medium (2-4)	5	ONC. Ramsey Orange, Colm. Wildcat Yellow, ONC. Sweet Sugar, ONC. Kampangsean Snow, ONC. Blue, ONC. Red, ONC. Red Mini Little Cherry, ONC. Taka, Colm. Wild Cat Carmera, Colm. Wildcat Bobcat, ONC. Popki Red	
		broad (>4)	7	Brassidium Butterfly, ONC. Big White	
47.	Lip: shape of	ovate	1	ONC. Kampangsean Snow, ONC. Taka,	VG

(*) (+) PQ (c)	apical lobe			Ianopsis Utriculariodes, ONC. Sweet Sugar, ONC.Gold Singer, Hwra. Lava Burst, Tolu. Jairak Firm 'Chocolate Drop', ONC. Shower of Gold (Hughes), ONC. Sunday Best, ONC. Lucky Goldstar, ONC.Ramsey Orange, Tolu. Jairak Rainbow 'Coral', Tolu. Popoki, ONC. Twinkle, ONC. Sphacelatum	
		elliptic	2	ONC. Royal Robe	
		obovate	3	ONC. Goodaleara	
		orbicular	4	ONC. Baipai , Brassidium Butterfly, ONC. Blue, ONC. Red.	
		semi-circular	5	ONC. Hawai Yellow, ONC. Ramsey Orange, Colm. Wildcat Yellow, ONC. Sweet Sugar, ONC. Kampangsean Snow, ONC. Big White, ONC. Pink Small Flower, ONC. Pink/Yellow, Ianopsis Utriculariodes, ONC. Red Mini Little Cherry, ONC. Taka, Colm. Wildcat Bobcat	
		deltoid	6		
		obdeltoid	7		
48. (*) (+)QN (c)	Lip: emargination	absent or very shallow	1	ONC. Sunday Best, ONC. Lucky Goldstar, ONC. Royal Robe	VG
		shallow	3	ONC. Ramsey Orange, ONC. Big White, ONC. Blue, ONC. Red, Colm. Wild Cat Carmera, Colm. Wildcat Bobcat	
		medium	5	ONC. Hawai Yellow, Colm. Wildcat Yellow, ONC. Sweet Sugar, Brassidium Butterfly, ONC. Kampangsean Snow, ONC. Pink Small Flower, ONC. Pink/Yellow, Ianopsis Utriculariodes, ONC. Red Mini Little Cherry, ONC. Taka.	
		deep	7	ONC. Sharry Baby Sweet Fragrance, ONC. Popki Red	
49. (*) (c)	Lip: size of lateral lobe in relation to apical lobe	smaller	3	ONC. Sharry Baby Sweet Fragrance, Colm. Wild Cat Carmera, Colm. Wildcat Bobcat, ONC. Popki Red	VG
		equal	5	ONC. Hawai Yellow, ONC. Ramsey Orange, Colm. Wildcat Yellow, ONC. Sweet Sugar, Brassidium Butterfly, ONC. Kampangsean	

				Snow, ONC. Big White, ONC. Blue, ONC. Red, ONC. Pink Small Flower, ONC. Pink/Yellow, Ianopsis Utricullariodes, ONC. Red Mini Little Cherry, ONC. Taka.	
		larger	7		
50. (*) (c) QL	Lip: undulation of margin	absent	1	ONC. Heaven Scent Redolence, Ianopsis Utricullariodes, ONC. Royal Robe, ONC. Twinkle	VG
		present	9	ONC. Hawai Yellow, Colm. Wildcat Yellow, ONC. Sweet Sugar, Brassidium Butterfly, ONC. Kampangsean Snow, ONC. Big White, ONC. Blue, ONC. Red, ONC. Pink Small Flower, ONC. Pink/Yellow, Ianopsis Utricullariodes, ONC. Red Mini Little Cherry, ONC. Taka, Colm. Wild Cat Carmera, Colm. Wildcat Bobcat, ONC. Popki Red	
51. (*) PQ (d)	Lip: main colour as per RHS Colour Chart	green	1		VG
		white	2	ONC. Sharry Baby Sweet Fragrance	
		pink	3		
		yellow	4	ONC. Sweet Sugar, Colm. Wild Cat Carmera, ONC. Taka Yellow	
		red	5	ONC. Popki Red	
		purple	6	Colm. Wildcat Bobcat	
		blue	7		
		violet	8		
52. (*) (+)QL (d)	Lip: colour pattern as per RHS Colour Chart to be indicated in brackets	uniform	1	ONC. Hawai Yellow, ONC. Ramsey Orange, Colm. Wildcat Yellow, ONC. Red Mini Little Cherry, Colm. Wildcat Bobcat	VG
		shaded	2	ONC. Sweet Sugar, ONC. Kampangsean Snow, ONC. Big White, ONC. Blue, ONC. Red, ONC. Pink Small Flower, ONC. Pink/Yellow, Ianopsis Utricullariodes, ONC. Taka, ONC. Sharry Baby Sweet Fragrance, ONC. Popki	

				Red	
		blotched	3	ONC. Hawai Yellow, ONC. Ramsey Orange, Colm. Wildcat Yellow, ONC. Big White, ONC. Blue, ONC. Red, ONC. Pink Small Flower, Colm. Wild Cat Carmera	
		brindled	4	ONC. Big White	
		edged	5		
53. (*) QL (d)	Callus: colour of middle part	white	1	ONC. Hawai Yellow, Colm. Wildcat Yellow, ONC. Blue, Ianopsis Utriculariodes	VG
		yellow	2	ONC. Kampangsean Snow, ONC. Big White, ONC. Pink/Yellow, ONC. Red Mini Little Cherry, ONC. Taka, Colm. Wildcat Bobcat	
		orange	3	ONC. Sweet Sugar, ONC. Pink Small Flower, ONC. Popki Red, ONC. Ramsey Orange	
		red	4	ONC. Baipai	
		brown	5	Brassidium Butterfly, ONC. Red, Tolu. Jairak Rainbow 'Rosy', ONC. Sharry Baby 'Sphacelatum'	
54. (*) PQ (d)	Callus: colour of margin part	white	1	Colm. Wildcat Yellow, Ianopsis Utriculariodes, ONC. Sharry Baby Sweet Fragrance	VG
		yellow	2	ONC. Ramsey Orange, ONC. Pink/Yellow, ONC. Taka, Colm. Wild Cat Carmera	
		orange	3	ONC. Sweet Sugar, ONC. Pink Small Flower	
		pink	4	ONC. Royal Robe, ONC. Baipai	
		red	5	ONC. Popki Red	
		yellow-brown	6	Brassidium Butterfly, ONC. Kampangsean Snow, ONC. Big White, ONC. Red Mini Little Cherry	
		brown	7	ONC. Hawai Yellow, ONC. Blue, ONC. Red	
55. QN	Column length (cm)	short (< 1)	3	ONC. Sharry Baby Sweet Fragrance, ONC. Sweet Sugar, ONC. Taka Yellow, ONC. Popki Red	MS

		medium (1-2)	5	Colm. Wild Cat Carmera, Colm. Wildcat Bobcat, ONC. Sunday Best, ONC. Lucky Goldstar	
		long (> 2)	7		
56. QN	Column width (cm)	narrow (< 0.3)	3	Tolu. Jairak Firm Ruddy, Tolu. Jairak Firm' Fuscous', Ianopsis Utriculariodes.	MS
		medium (0.3-0.6)	5	ONC. Sharry Baby Sweet Fragrance, ONC. Taka Yellow, ONC. Popki Red	
		broad (> 0.6)	7	ONC. Sweet Sugar, Colm. Wild Cat Carmera, Colm. Wildcat Bobcat, ONC. Baipai	
57. PQ	Column orientation	erect	1	ONC. Sharry Baby Sweet Fragrance, Colm. Wild Cat Carmera, Colm. Wildcat Bobcat, ONC. Taka Yellow, ONC. Popki Red	VG
		curved	9	ONC. Hawai Yellow, Colm. Wildcat Yellow, ONC. Taka, ONC.Gold Singer, ONC. Karukera Beauty, Tolu. Jairak Firm Ruddy, Tolu. Jairak Firm 'Deep Red', Tolu. Jairak Firm 'Chocolate Drop', ONC. Royal Robe, Tolu. Jairak Rainbow 'Coral', ONC. Goodaleara, Wilsonara Imperial, Tolu. Jairak Rainbow 'Rosy', Tolu. Popoki, ONC. Baipai, Tolu. Jairak Rainbow 'Charming', ONC. Sphacelatum, Tolu. Jairak Firm 'Strawberry'	
58. QL (e)	Column main colour as per RHS colour Chart	green	1		VG
		white	2	Colm. Wild Cat Carmera	
		pink	3		
		yellow	4	ONC. Sweet Sugar, ONC. Taka Yellow	
		red	5		
		purple	6	ONC. Sharry Baby Sweet Fragrance, Colm. Wildcat Bobcat, ONC. Popki Red	
		blue	7		
		violet	8		
59.	Pedicellate ovary	small (< 2)	3	Tolu. Jairak Firm Ruddy, Tolu. Jairak Firm 'Deep Red', Ianopsis Utriculariodes, Tolu.	MS

QN	length (cm)			Jairak Firm 'Butterfly', Tolu. Popki, Tolu. Jairak Rainbow 'Charming', ONC. Twinkle	
		medium (2-3)	5	ONC. Sharry Baby Sweet Fragrance, ONC. Sweet Sugar, Colm. Wild Cat Carmera, Colm. Wildcat Bobcat, ONC. Taka Yellow, ONC. Popki Red	
		long (> 3)	7	Colm. Wildcat Yellow, ONC. Sweet Sugar, ONC. Shower of Gold (Hughes), ONC. Sunday Best, ONC. Lucky Goldstar, ONC. Royal Robe, ONC. Goodaleara, ONC. Sharry Baby 'Sphacelatum', ONC. Baipai, ONC. Sphacelatum	
60. QN	Longevity of flower on plant	short (< 10 days)	3		VS
		medium (10-20 days)	5	Colm. Wildcat Yellow, ONC. Lucky Goldstar, ONC. Royal Robe, ONC. Red Mini Little Cherry, Tolu. Jairak Firm 'Strawberry'	
		long (> 20 days)	7	ONC. Sharry Baby Sweet Fragrance, ONC. Sweet Sugar, Colm. Wild Cat Carmera, Colm. Wildcat Bobcat, ONC. Taka Yellow, ONC. Popki Red	

VIII. Explanation on the Table of Characteristics

8.1 Guidelines for recording the observations of vegetative and flowering characteristics

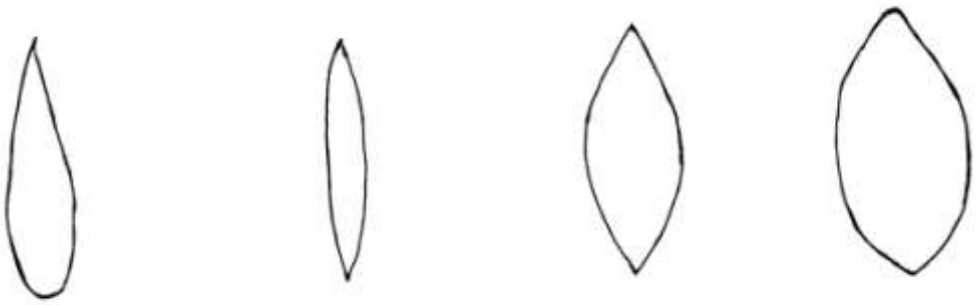
Characteristics indicated with (a), (b), (c), (d) and (e) in the first column of the Table of Characteristics should be examined as indicated below:

(a) Observations shall be made on the pseudobulb and the longest leaf of flowering plant.
(b) Observations on the inflorescence and the flower shall be made at the time when 50% of the flowers on the inflorescence have opened and the most recently fully opened flower on the inflorescence before the color 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 color of the sepal, the petal and the lip shall be made on inner side at apex, mid and base portion.
(e) Observations on the colour of column shall be made on inner side at apex, mid and basal region.

8.2 Explanation for individual characteristics

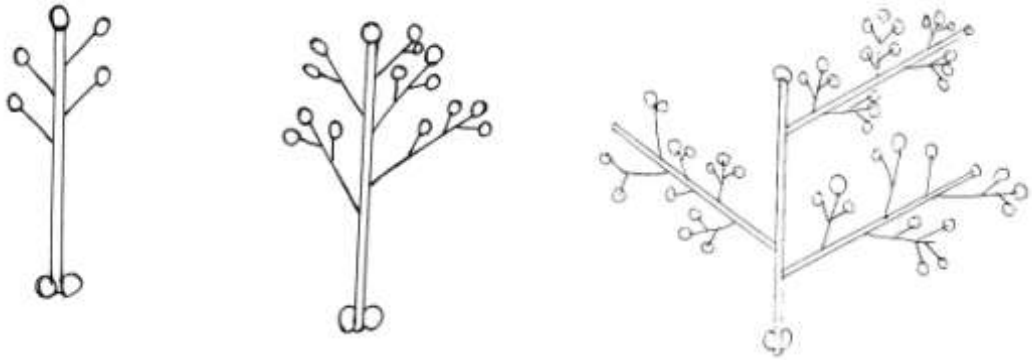
Characteristic 7: Number of basal leaves / pseudobulb

Characteristic 10: Leaf shape



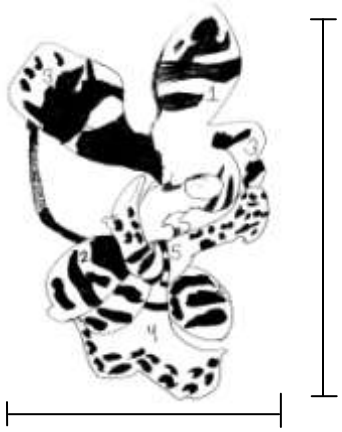
narrow lanceolate (1) | linear (3) | narrow elliptic (5) | elliptic (7)

Characteristics 13: Inflorescence type



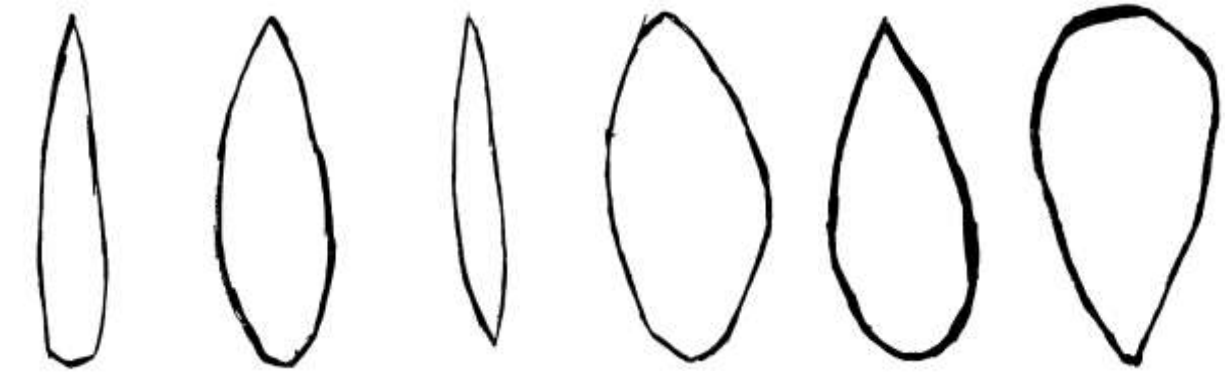
simple raceme (3) | panicle (5) | compound panicle (7)

Characteristics 17 & 18: Flower: length and width in front view



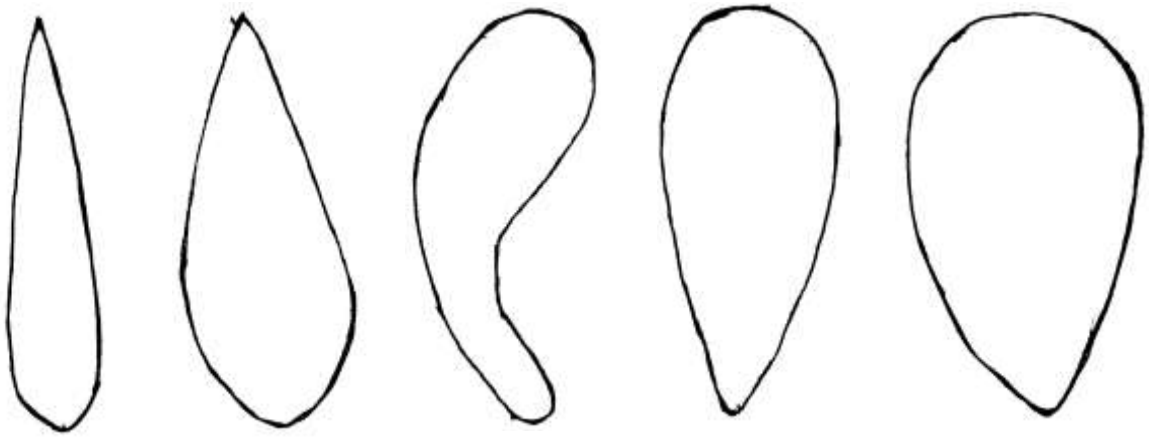
1. Dorsal sepal
2. Lateral sepal
3. Petal
4. Lip
5. Callus

Characteristics 22: Dorsal sepal: shape



lanceolate (1) | linear (2) | oblong (3) | elliptic (4) | ovate (5) | obovate (6)

Characteristics 30: Lateral sepal: shape



lanceolate (1) | ovate (3) | curving obovate (5) | obovate (7) | broad obovate (9)

Characteristics 27 & 35: Dorsal sepal and lateral sepal: colour pattern

uniform (1) | shaded (2) | blotched (3) | brindled (4) | striped (5) | edged (6)

Characteristics 38: Petal shape

linear (1) | elliptic (3) | narrow obovate (5) | obovate (7) | rectangular (9)

Characteristics 43: Petal: colour pattern

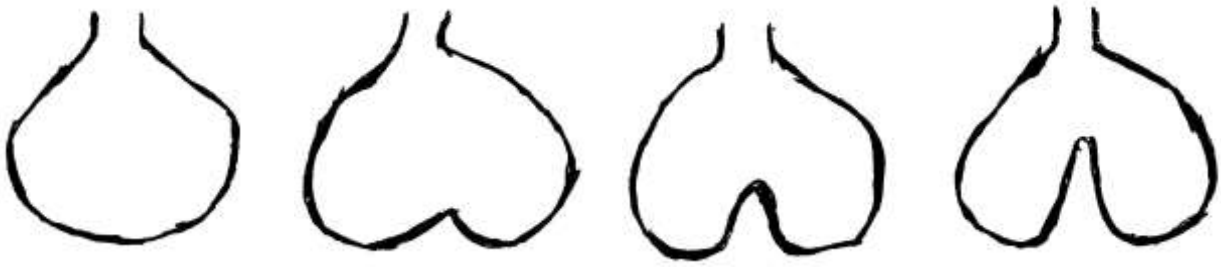
uniform (1) | shaded (2) | blotched (3) | brindled (4) | striped (5) | edged (6)

Characteristics 47: Lip: shape of apical lobe

ovate (1) | elliptic (2) | obovate (3) | orbicular (4)

semi-circular (5) | deltoid (6) | obdeltoid (7)

Characteristics 48: Lip: emargination



Very shallow (1) | shallow (3) | medium (5) | deep (7)

Characteristics 52: Lip: colour pattern

uniform (1) | shaded (2) | blotched (3) | brindled (4) | striped (5) | edged (6)

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 (3/2012) constituted by the PPV & FR Authority.

Members of the Task Force (3/2012)

Dr. A.N. Rao	Director (R&D), Centre for Orchid Gene Conservation of Eastern Himalayan Region Hengbung, Senapati Distt., Manipur -	Chairman
Dr. Ramesh Kumar	Director, Directorate of Floriculture Research, Pusa, New Delhi-110012	Member
Dr. P. K. Rajeevan	Ex- Professor and Head Department of Pomology and Floriculture, College of Horticulture, Kerala Agricultural University, Trichur – 680656, Kerala	Member
Dr. Sita Ram Dhiman	Floriculturist, Department of Floriculture and Landscaping Dr. Y.S. Parmar University of Horticulture and Forestry, Nauni-Solan – 173230 (HP)	Member
Dr. Manoj Srivastava	Registrar, Protection of Plant Varieties and Farmers' Rights Authority New Delhi - 110012	Member
Dr. L.C. De	Principal Scientist, National Research Centre for Orchids Pakyong-737106, Sikkim	Member Secretary

IX. Name of DUS Test Centres

Nodal DUS Test Centre	Other Test Centre
National Research Centre for Orchids, Pakyong-737106, Sikkim	Department of Pomology and Floriculture, College of Horticulture, Kerala Agricultural University, Trichur

PUBLIC NOTICE

Sub: Advertisement is given under sub-section (2) and (3) of Section 21 of the Protection of Plant Varieties and Farmers' Rights Act, 2001 for registration of farmers' variety [Section 2(j)(ii)] read with Rules 30 and 31 of PPV & FR Rules, 2003

It is hereby advertised that the application (s) for registration of farmers' varieties (falling within the definition of extant variety) listed herein have been accepted by the Registrar, Protection of Plant Varieties & Farmers' Rights Authority. The passport data of each variety furnished by the applicant are herewith advertised as specified for calling objections from the interested persons in the matter.

The place or places where the specimen of the variety may be inspected can be obtained in writing from the Registrar of the PPV & FR Authority.

Any person may, within three months from the date of advertisement of the application(s) give notice of opposition in writing to the registration of variety (as per Form PV-3 of the First Schedule of PPV&FR Rules, 2003). Oppositions, if any, to the registration must be submitted, in triplicate, to the Registrar, PPV&FRA, NASC Complex, DPS Marg, New Delhi -110 012 accompanied with the fee of Rs.1,500/- (Rupees One Thousand and Five Hundred Only) by way of Demand Draft drawn in favour of "The Registrar, PPV & FR Authority" payable at New Delhi.

FORM O - 1
(See Rule 30)
Government of India, Plant Varieties Registry
Advertisement of accepted application for registration

01. Application No. | F83 | **OS85** | 11 | 1174 | filed on 27.09.2011 by Director Agriculture and food production, Govt of Odisha, Bhubaneswar, 751001 on behalf of **Bhima Udurkulia, At- Mirdhapali, Block- Balangir, Dist- Balangir, State-Odisha** a Farmers' variety of crop **Rice [*Oryza sativa* L.]** having denomination **DHALA SHREE-B** the specification includes its drawing and or photograph (s) of which are given below, has been accepted and given registration number ---------NA ----------on ---------- NA --------.

The convention application no. -----NA-----, in respect of the said variety has been filed on -----NA------, in ---NA----.

Appropriate office for the opposition of proceeding under Rule 29, of the Protection of Plant Varieties and Farmers' Rights Rules, 2003 is Office of the Registrar, PPV & FR Authority, New Delhi – 110 012.

Passport data of the variety **: DHALA SHREE-B**
Applicant : Bhima Udurkulia
Address of the Applicant At- Mirdhapali, Block- Balangir, Dist- Balangir, State-Odisha
Nationality of Applicant : Indian
Application details
a. Number | **F83** | **OS85** | **11** | 1174 |

b. Date of receipt : 27.09.2011
C. Date of acceptance : 29.11.2011
Crop (Taxonomical Lineage) : Rice [*Oryza sativa* L.]
Denomination : **DHALA SHREE-B**
Type of Variety : Farmers' variety
Classification of Variety : Typical
Previously proposed Denomination : Not applicable
Name of Parental Material : NA
Name of Reference Varieties : **VL Dhan 81**

Variety Description:

A. Group Characteristics	**Remarks measured values, example varieties, etc.**
Basal leaf: Sheath colour	Green
Time of heading (50% of plants with panicles)	Early
Stem: Length (excluding panicles; excluding floating rice)	Short
Decorticated grain: Length	Long
Decorticated grain: Shape (in lateral view)	Long bold
Decorticated grain: Colour	Red
Endosperm: Content of amylose	Medium
Decorticated grain: Aroma	Absent
B. Distinct Characteristics: **DHALA SHREE-B** has distinguishing characters like anthocyanin present in stem nodes, attitude of flag leaf blade (late observation) is erect and red decorticated grain.	

C. Reference varieties: **VL Dhan 81** has distinguishing characters like anthocyanin absent in stem nodes, attitude of flag leaf blade (late observation) is horizontal and white decorticated grain.

D. Date of commercialization of the variety	---

02. Application No. | **F83** | **OS85** | **11** | 1167 | filed on 26.09.2011 by Director Agriculture and food production, Govt of Odisha, Bhubaneswar, 751001 on behalf of **Sura sen Naik and others, At- Rampur, Block- Agalpur, Dist- Balangir, State-Odisha** a Farmers' variety of crop **Rice [*Oryza sativa* L.]** having denomination **Blngr-KALAKRUSHNA** the specification includes its drawing and or photograph (s) of which are given below, has been accepted and given registration number ---------NA ----------on ---------- NA --------.

The convention application no. -----NA-----, in respect of the said variety has been filed on -----NA------, in ---NA----.

Appropriate office for the opposition of proceeding under Rule 29, of the Protection of Plant Varieties and Farmers' Rights Rules, 2003 is Office of the Registrar, PPV & FR Authority, New Delhi – 110 012.

Passport data of the variety **: Blngr-KALAKRUSHNA**
Applicant : Sura sen Naik and others
Address of the Applicant At- Rampur, Block- Agalpur, Dist- Balangir, State-Odisha
Nationality of Applicant : Indian

Application details
a. Number : | **F830** | **OS850** | **11** | 1167 |
b. Date of receipt : 26.09.2011
C. Date of acceptance : 29.11.2011
Crop (Taxonomical Lineage) : Rice [*Oryza sativa* L.]
Denomination : **Blngr-KALAKRUSHNA**
Type of Variety : Farmers' variety
Classification of Variety : Typical
Previously proposed Denomination : Not applicable
Name of Parental Material : NA
Name of Reference Varieties : **Narendra 359**

Variety Description:

A. Group Characteristics	**Remarks measured values, example varieties, etc.**
Basal leaf: Sheath colour	Green
Time of heading (50% of plants with panicles)	Medium to very late
Stem: Length (excluding panicles; excluding floating rice)	Medium to very long
Decorticated grain: Length	Medium
Decorticated grain: Shape (in lateral view)	Long bold
Decorticated grain: Colour	Light brown to white
Endosperm: Content of amylose	Medium to low
Decorticated grain: Aroma	Present
B. Distinct Characteristics: **Blngr-KALAKRUSHNA** has distinguishing characters like anthocyanin colour is very strong in lemma apex, black colour of lemma tip and aromatic decorticated grain.	

C. Reference varieties: **Narendra 359** has distinguishing characters like anthocyanin colour absent in lemma apex, yellowish colour of lemma tip and non- aromatic decorticated grain.

D. Date of commercialization of the variety	---

03. Application No. | F23 | OS25 | 11 | 567 | filed on 07.09.2011 by Director Agriculture and food production, Govt of Odisha, Bhubaneswar, 751001 on behalf of **Nand Kishore Pradhan and others, At- Barkote, Block- Barkote, Dist- Deoghar, State-Odisha** a Farmers' variety of crop **Rice [*Oryza sativa* L.]** having denomination **GANJEIKALI** the specification includes its drawing and or photograph (s) of which are given below, has been accepted and given registration number ---------NA ----------on ---------- NA --------.

The convention application no. -----NA-----, in respect of the said variety has been filed on -----NA------, in ---NA----.

Appropriate office for the opposition of proceeding under Rule 29, of the Protection of Plant Varieties and Farmers' Rights Rules, 2003 is Office of the Registrar, PPV & FR Authority, New Delhi – 110 012.

Passport data of the variety **: GANJEIKALI**
Applicant : Nand Kishore Pradhan and others
Address of the Applicant At- Barkote, Block- Barkote, Dist- Deoghar, State-Odisha
Nationality of Applicant : Indian
Application details | F23 | OS25 | 11 | 567 |
a. Number :
b. Date of receipt : 07.09.2011
C. Date of acceptance : 29.11.2011
Crop (Taxonomical Lineage) : Rice [*Oryza sativa* L.]
Denomination : **GANJEIKALI**
Type of Variety : Farmers' variety
Classification of Variety : Typical
Previously proposed Denomination : Not applicable

Name of Parental Material : NA
Name of Reference Varieties : **Vivekdhan 62**

Variety Description:

A. Group Characteristics	**Remarks measured values, example varieties, etc.**
Basal leaf: Sheath colour	Green
Time of heading (50% of plants with panicles)	Medium to very late
Stem: Length (excluding panicles; excluding floating rice)	Short to medium
Decorticated grain: Length	Short
Decorticated grain: Shape (in lateral view)	Short bold
Decorticated grain: Colour	Light red
Endosperm: Content of amylose	Medium
Decorticated grain: Aroma	Absent
B. Distinct Characteristics: **GANJEIKALI** has distinguishing characters like light red colour of decorticated grain.	

C. Reference varieties:
Vivekdhan 62 has distinguishing characters like light brown colour of decorticated grain.

D. Date of commercialization of the variety	---

04. Application No. | **F831** | **OS851** | **11** | 1168 | filed on 26.09.2011 by Director Agriculture and food production, Govt of Odisha, Bhubaneswar, 751001 on behalf of **Bibhuti Pradhan and others, At- Pardesara, Block- Agalpur, Dist- Balangir, State-Odisha** a Farmers' variety of crop **Rice [*Oryza sativa* L.]** having denomination **MALLIFULJHULI** the specification includes its drawing and or photograph (s) of which are given below, has been accepted and given registration number ---------NA ----------on ---------- NA --------.

The convention application no. -----NA-----, in respect of the said variety has been filed on -----NA------, in ---NA----.

Appropriate office for the opposition of proceeding under Rule 29, of the Protection of Plant Varieties and Farmers' Rights Rules, 2003 is Office of the Registrar, PPV & FR Authority, New Delhi – 110 012.

Passport data of the variety **: MALLIFULJHULI**
Applicant : Bibhuti Pradhan and others
Address of the Applicant At- Pardesara, Block- Agalpur, Dist- Balangir, State-Odisha
Nationality of Applicant : Indian
Application details
a. Number | **F831** | **OS851** | **11** | 1168 |

b. Date of receipt : 26.09.2011
C. Date of acceptance : 29.11.2011
Crop (Taxonomical Lineage) : Rice [*Oryza sativa* L.]
Denomination : **MALLIFULJHULI**
Type of Variety : Farmers' variety
Classification of Variety : Typical
Previously proposed Denomination : Not applicable
Name of Parental Material : NA
Name of Reference Varieties : **Sabita (NC492)**
Variety Description:

A. Group Characteristics	**Remarks measured values, example varieties, etc.**
Basal leaf: Sheath colour	Green
Time of heading (50% of plants with panicles)	Late
Stem: Length (excluding panicles; excluding floating rice)	Short to long
Decorticated grain: Length	Long
Decorticated grain: Shape (in lateral view)	Long slender
Decorticated grain: Colour	Light brown to white
Endosperm: Content of amylose	Medium
Decorticated grain: Aroma	Absent
B. Distinct Characteristics: **MALLIFULJHULI** has distinguishing characters like panicle awns present.	

C. Reference varieties:
Sabita (NC492) has distinguishing characters like panicle awns absent.

D. Date of commercialization of the variety	---

PUBLIC NOTICE

Sub: Advertisement is given under sub-section (2) and (3) of Section 21 of the Protection of Plant Varieties and Farmers' Rights Act, 2001 and Rules 30 and 31 of PPV & FR Rules, 2003

It is hereby advertised that the application (s) for registration of varieties listed herein have been accepted subject to the condition of fulfillment of provisions under section 19 of the Act read with Rule 29 of PPV&FR Rules, 2003. The passport data of each variety furnished by the applicant are herewith advertised as specified for calling objections from the interested persons in the matter.

The place or places where the specimen of the variety may be inspected can be obtained in writing from the Registrar of the PPV & FR Authority.

Any person may, within three months from the date of advertisement of the application(s) give notice of opposition in writing to the registration of variety (as per Form PV-3 of the First Schedule of PPV&FR Rules, 2003). Oppositions, if any, to the registration must be submitted, in triplicate, to the Registrar, PPV&FRA, NASC Complex, DPS Marg, New Delhi -110 012 accompanied with the fee of Rs.1,500/- (Rupees One Thousand and Five Hundred Only) by way of Demand Draft drawn in favour of "The Registrar, PPV & FR Authority" payable at New Delhi.

FORM O - 1
(See Rule 30)
Government of India, Plant Varieties Registry
Advertisement of accepted application for registration

01. Application No. | E53 | SB16 | 08 | 62 | filed on **03.01.2008** by **The Director & Project Coordinator, National Research Centre for Sorghum (NRCS), Rajendranagar, Hyderabad-500030 (AP)** on behalf of **Indian Council of Agricultural Research (ICAR), Krishi Bhawan, Dr. Rajendra Prasad Road, New Delhi-110001** for a **Extant** (Variety of Common Knowledge) of crop **Sorghum** [*Sorghum bicolor* (L.) Moench] having denomination **27A,** the specification includes its drawing and or photograph(s) of which are given below, has been accepted and given registration number ---------NA ----------on ---------- NA --------.

The convention application no. -----NA-----, in respect of the said variety has been filed on -----NA------, in ---NA----.

Appropriate office for the opposition of proceeding under Rule 29, of the Protection of Plant Varieties and Farmers' Rights Rules, 2003 is **Office of the Registrar, PPV & FR Authority, New Delhi – 110 012.**

Passport data of the variety : **27A**
Applicant : Indian Council of Agricultural Research (ICAR)
Address of the Applicant : Krishi Bhawan, Dr. Rajendra Prasad Road, New Delhi-110001

Nationality of Applicant : Indian
Application details
a. Number : E53 | SB16 | 08 | 62
b. Date of receipt : 03.01.2008
c. Date of acceptance : --
Crop (Taxonomical Lineage) : Sorghum [*Sorghum bicolor* (L.) Moench]
Denomination : 27A
Type of Variety : Extant (Variety of Common Knowledge)
Classification of Variety : Typical Variety
Previously proposed Denomination : Not applicable

Name of Parental Material : **83B** (CS 3687 x CS 3922) X **199B** (2219B x CS 3922)
Name of Reference Variety : 296A

Variety Description:

A. Group Characteristics	**Remarks measured values, example varieties, etc.**
Plant: Time of panicle emergence (50% of the plants with 50% anthesis)	Medium
Plant: total height	Medium
Panicle: shape	Symmetric
Caryopsis : color after threshing	Grayed Orange

B. Distinct Characteristics: 27A has distinguishing character as semi loose panicle density at maturity (ear head compactness).	
C. Reference variety: 296A has distinguishing character as semi compact panicle density at maturity (ear head compactness).	
D. Date of commercialization of the variety	09/09/1997

02. Application No. | **E63** | **SB27** | **08** | **73** | filed on **03.01.2008** by **The Director & Project Coordinator, National Research Centre for Sorghum (NRCS), Rajendranagar, Hyderabad-500030 (AP)** on behalf of **Indian Council of Agricultural Research (ICAR), Krishi Bhawan, Dr. Rajendra Prasad Road, New Delhi-110001** for a **Extant** (Variety of Common Knowledge) of crop **Sorghum** [*Sorghum bicolor* (L.) Moench] having denomination **104A,** the specification includes its drawing and or photograph(s) of which are given below, has been accepted and given registration number ---------NA ----------on ---------- ------- NA --------.

The convention application no. -----NA-----, in respect of the said variety has been filed on -----NA------, in ---NA----.

Appropriate office for the opposition of proceeding under Rule 29, of the Protection of Plant Varieties and Farmers' Rights Rules, 2003 is **Office of the Registrar, PPV & FR Authority, New Delhi – 110 012.**

Passport data of the variety : **104A**
Applicant : Indian Council of Agricultural Research (ICAR)
Address of the Applicant : Krishi Bhawan, Dr. Rajendra Prasad Road, New Delhi-110001

Nationality of Applicant : Indian
Application details
a. Number : | **E63** | **SB27** | **08** | **73** |
b. Date of receipt : 03.01.2008
c. Date of acceptance : --
Crop (Taxonomical Lineage) : Sorghum [*Sorghum bicolor* (L.) Moench]
Denomination : 104A
Type of Variety : Extant (Variety of Common Knowledge)
Classification of Variety : Typical Variety
Previously proposed Denomination : Not applicable

Name of Parental Material : **296 B**(IS 3922 x Karad local) X **Swati** (SPV86 xM 35-1)
Name of Reference Variety :IMS 9A

Variety Description:

A. Group Characteristics	**Remarks measured values, example varieties, etc.**
Plant: Time of panicle emergence (50% of the plants with 50% anthesis)	Medium
Plant: total height	Medium
Panicle: shape	Symmetric
B. Distinct Characteristics: 104A has distinguishing character as semi compact panicle density at maturity (ear head compactness)	
C. Reference variety: IMS 9A has distinguishing character as semi loose panicle density at maturity (ear head compactness)	
D. Date of commercialization of the variety	13/09/2000

03. Application No. | **E45** | **SB7** | **08** | **53** | filed on **03.01.2008** by **The Director & Project Coordinator, National Research Centre for Sorghum (NRCS), Rajendranagar, Hyderabad-500030 (AP)** on behalf of **Indian Council of Agricultural Research (ICAR), Krishi Bhawan, Dr. Rajendra Prasad Road, New Delhi-110001** for a **Extant** (Variety of Common Knowledge) of crop **Sorghum** [*Sorghum bicolor* (L.) Moench] having denomination **RS 585,** the specification includes its drawing and or photograph(s) of which are given below, has been accepted and given registration number ---------NA ----------on ---------- ------- NA --------.

The convention application no. -----NA-----, in respect of the said variety has been filed on -----NA------, in ---NA----.

Appropriate office for the opposition of proceeding under Rule 29, of the Protection of Plant Varieties and Farmers' Rights Rules, 2003 is **Office of the Registrar, PPV & FR Authority, New Delhi – 110 012.**

Passport data of the variety : **RS 585**
Applicant : Indian Council of Agricultural Research (ICAR)
Address of the Applicant : Krishi Bhawan, Dr. Rajendra Prasad Road,
New Delhi-110001

Nationality of Applicant : Indian

Application details

a. Number	:	**E45**	**SB7**	**08**	**53**

b. Date of receipt : 03.01.2008

c. Date of acceptance : --

Crop (Taxonomical Lineage) : Sorghum [*Sorghum bicolor* (L.) Moench]

Denomination : RS 585

Type of Variety : Extant (Variety of Common Knowledge)

Classification of Variety : Typical Variety

Previously proposed Denomination : Not applicable

Name of Parental Material : **(**CS 3541 X M 35-1) X Nandyal rabi local

Name of Reference Variety : RS 29

Variety Description:

A. Group Characteristics	**Remarks measured values, example varieties, etc.**
Plant: Time of panicle emergence (50% of the plants with 50% anthesis)	Medium
Plant: total height	Medium
Panicle: shape	Panicle border in lower part
Caryopsis : color after threshing	Yellow Orange

B. Distinct Characteristics: RS 585 has distinguishing character as present lemma arista formation, absent stigma yellow colouration, semi loose panicle density at maturity (ear head compactness) and yellow orange caryopsis colour after threshing.

C. Reference variety: RS 29 has distinguishing character as absent lemma arista formation, present stigma yellow colouration, semi compact panicle density at maturity (ear head compactness), and yellow white caryopsis colour after threshing.

D. Date of commercialization of the variety	01/01/1996