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GOVERNMENT OF INDIA

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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

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भारतीय पौधा किस्म जरनल, खण्ड 07, अंक 03
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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.

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 informed that the specific DUS test guideline for three species of vegetables namely Bitter Gourd (*Momordica charantia* L.), Bottle Gourd (*Lagenaria siceraria* (Mol.) Standl.), Cucumber (*Cucumis sativus* L.) and Pumpkin (*Cucurbita moschata* Duch. ex Poir.) is hereby published in 'Plant Variety Journal of India', Vol. 07, No. 03, March 01, 2013. Interested parties may read these guidelines and act accordingly.

Sd/-
MANOJ SRIVASTAVA
REGISTRAR

Bitter Gourd (*Momordica charantia* L.)

I. Subject

These test guidelines apply to all varieties, hybrids and parental lines of bitter gourd (*Momordicacharantia*L.)

II. Seed 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 seed material required for testing the variety is to be delivered. Applicants submitting material from a country other than India must make sure that all customs formalities are complied with.
2. The minimum quantity of seed to be supplied by the applicant should be:

   Varieties, hybrids and parental lines

   - For open field cultivation: 300g or 1500 seeds (in one submission only)

3. The seed should meet the minimum requirements for germination capacity (80%), moisture content (<8%) and physical purity (98%) prescribed for certified seed in India. Especially for storage, which requires a higher standard, the applicant should state the actual germination capacity, which should be as high as possible. The seed supplied should be visibly healthy, not lacking in vigour or affected by any important pest or disease.
4. The seed material must not have undergone any treatment unless the competent authorities allow or request such treatment. If it has been treated, full details of the treatment must be given.

III. Conduct of tests

1. The minimum duration of tests should normally be two independent but similar growing seasons with reference to the eco-system of the variety submitted for DUS test.
2. The test should normally be conducted at two different locations. If any essential characteristics of the variety can not be observed at these places, the variety may be tested at an additional place.
3. The test should be carried out under conditions ensuring normal growth. The size of the plot should be such that plants or parts of plant may be removed for measuring and counting without prejudice to the observations which must be made up to the end of the growing period. Each test shall include 120 plants for open field cultivation, which should be divided among 3

replications. Separate plots for observations and for measuring can only be used if they have been subjected to similar environmental conditions.

4. Test plot design

Number of rows	5
Row length	6.0 m
Plant to plant distance	0.75m
Row to Row distance	2.0 m
Number of replications	3

5. Observations should not be recorded on plants in border rows.
6. Additional tests for special purpose may be established by the Authority.

IV. Methods and observations

1. The characteristics described in the table of characteristics (section VII) should be used for the testing of varieties for DUS.
2. For the assessment of distinctiveness and stability, observations should be made on 30 plants or parts of plants selected randomly, which should be divided among 3 replications (10 plants in each replication).
3. For the assessment of uniformity of characteristics on the plot as a whole (visual assessment by a single observation of a group of plants or parts of plants), a population standard of 0.5% with an acceptance probability of at least 95% should be applied. In the case of a sample size of 120 plants, the number of off-types should not exceed 3.
4. For the assessment of colour characteristics, it is recommended that Royal Horticultural Society (RHS) colour chart be used.
5. Observations of leaf will be recorded on one leaf above the first fruit set nodes.
6. Observations on the leaf blade should be made on a fully developed leaf blade, from the 15^{th} node upwards to 20^{th} node.
7. All observations on the flowers should be made on flowers between the 10th and the 20th node.

8. All observations on the fruit should be made on fruits around 8-14 days after anthesis, between the 10th and 20th node.
9. All observations on the seed should be made on fully developed and dry seedafter washing and drying in the shade.
10. Intensity of green colour of cotyledon should be observed just before the development of the first true leaf.
11. The bitterness of the fruit should be observed by tasting the flesh of the middle part of the fruit at marketable maturity.
12. Colour of fruit skin at ripe stage should be observed when the fruit left on the plant has turned completely yellow, orange or reddish orange.
13. Stage of recording of different observation will be as follows:

	Description	**Code**
a.	Cotyledons completely unfolded	10
b.	Active vegetative phase	20
c.	50% of the flowering stage (first pistillate flower appears in 50% plant)	30
d.	Fruits attaining marketable maturity	40
e.	Full maturity (ripening stage)	50

V. Grouping of varieties

1. The collection of varieties to be grown in the trial should be divided into groups to facilitate the assessment of distinctiveness. Characteristics, which are suitable for grouping purpose, are those which are known from experience not to vary, or to vary only to lesser extent, within a variety. Their various states of expression should be fairly evenly distributed throughout the collection.
2. It is recommended that the competent authorities use the following characteristics for grouping varieties.
   a. Fruit : Length (characteristic-15)
   b. Fruit : Diameter (characteristic-16)

c. Fruit : Color of skin (characteristic-18)

d. Fruit : Shape in longitudinal section (characteristic-21)

e. Fruit : Tubercles (characteristic-22)

f. Fruit : Ridge (characteristic-24)

VI. Characteristics and symbols

1. To assess distinctiveness, uniformity and stability, the characteristics and their states as given in the Table of Characteristics should be used.

2. Notes (1-9) should be used for the purposes of recording and electronic processing of data. Each state of expression is allotted a corresponding numerical note (1-9) for the different characteristics.

3. Legend

(*) Characteristics that should be used in every growing season on all varieties and shall always be included in the description of the variety, except when the states of expression of any of these characters is rendered impossible by a preceding 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 in section-VIII.

4. Type of assessment of characteristics indicated in column-7 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 observations of individual plants or parts of plants

VII. Table of characteristics

S. No.	Characteristics	States	Note	Example varieties	Stage of observation	Type of assessment
1	**2**	**3**	**4**	**5**	**6**	**7**
1.	Cotyledon: intensity of green color	Light	3	-	10	VS
		Medium (GG-137d)	5	Pusa Vishesh, Sel-5, Arka Harit		
		Dark (GG-137a)	7	Pant Karela-1, KashiUrvashi		
2. (*)	Plant: main vine length	short viny (<2.0m)	3	ArkaHarit, PusaVishesh, Punjab-14	50	MS
		medium viny (2 - 2.75m)	5	Pusa Do Mausami, CO-1, PhuleUjwala		
		long viny (>2.75m)	7	Preethi, HABG-22, KalyanpurBaramasi		
3. (*)	Stem: shape	Rounded	1	-	20	VS
		Angular	2	Pusa Do Mausami, CO-1, PhuleUjwala		
4.	Stem: length of internodes of main stem (between 15th -20th node)	Short (<5cm)	3	Pusa Do Mausami, Arka Harit, Punjab -14	20	MS
		Medium (5-8cm)	5	Preethi, NDBT-7, KashiUrvashi, PusaVishesh		
		Long (>8cm)	7	Hirkani, HABG-22		
5.	Stem: number of primary branches	Less (<10)	3	NDBT-7, PhuleUjwala	20	MS
		Medium (10-20)	5	Preethi, PusaVishesh		
		Many (>20)	7	Hirkani, ArkaHarit		
6.	Leaf blade: length	Short (<6cm)	3	PusaVishesh	20	MS
		Medium (>6-9cm)	5	Arka Harit, Pusa Do Mausami		
		Long (>9cm)	7	Preethi, Hirkani		
7.	Leaf blade: width	Narrow (<6cm)	3	Pusa Do Mausami, Arka Harit	20	MS
		Medium (6-10cm)	5	PusaVishesh, NDBT-7		
		Broad (>10cm)	7	Preethi, Hirkani, KalyanpurBaramasi		
8. (*) (+)	Leaf blade: margin	Entire	1	-	20	VS
		Serrate	3	-		
		Multifid	5	PusaVishesh, Preethi, Hirkani, KalyanpurBaramasi		
9. (+)	Leaf blade: shape	Obovate	1	-	20	VS
		Cordate	2	Kashi Urvashi, Arka Harit, Pusa Vishesh, Preethi, Hirkani, KalyanpurBaramasi		
		Oblong	3	-		

		Reniform	4	-		
10. (*) (+)	Leaf blade: number of lobes	5 lobes	3	Kashi Urvashi, Arka Harit, Pusa Vishesh, Preethi, Hirkani, KalyanpurBaramasi	20	MS
		7 lobes	5	-		
11.	Leaf blade: depth of lobing	Shallow	3	ArkaHarit, Sel-5	20	VS
		Medium	5	PusaVishesh, NDBT-7, HABG-22		
		Deep	7	Preethi, CO-1		
12.	Petiole: length	Short (<5cm)	3	NDBT-7, Sel-5	20	MS
		Medium (5-8cm)	5	PusaVishesh, ArkaHarit		
		Long (>8cm)	7	Pant Karela-1, Preethi, Punjab-14		
13. (*)	Flower colour	Light yellow (YG-3a & 3b)	3	Preethi, KalyanpurBaramasi, NDBT-9	30	VG
		Yellow (YG-7d)	5	ArkaHarit, HABG-22, Pusa Do Mausami		
		Deep yellow	7	-		
14.	Ovary: length (at the day of anthesis)	Short (<1.5cm)	3	Arka Harit, Kashi Urvashi, Pusa vishesh	30	MS
		Medium (1.5-2.5cm)	5	Pusa Do Mausami, Phule Green Gold		
		Long (>2.5cm)	7	KalyanpurBaramasi		
15. (*)	Fruit : length	Very short (<5cm)	1	-	40	MS
		Short (5-10cm)	3	Punjab-14		
		Medium (10.1-15cm)	5	Pusa Do Mausami, Arka Harit, Pant Karela-1		
		Long (15.1-20cm)	7	Phule Green Gold		
		Extra long (>20cm)	9	KalyanpurBaramasi		
16. (*)	Fruit: diameter	Thin (<3cm)	3	KalyanpurBaramasi	40	MS
		Medium (3-4.5cm)	5	PhuleUjwala, ArkaHarit		
		Thick (>4.5cm)	7	-		
17.	Peduncle: length	Short <5.0 cm	3	PusaVishesh, Preethi	40	MS
		Medium (5.0-10.0 cm)	5	NDBT-7, Meghana-2, KashiUrvashi		
		Long (>10 cm)	7	Hirkani, CO-1		
18. (*)	Fruit: colour of skin	White	1	-	40	VG
		Creamy white (142B)	2	Preethi		
		Light green (141C)	3	ArkaHarit		
		Green (137A)	4	Hirkani, Pusa Do Maushami, Sel-5		

		Dark green (147C)	5	Phule Green Gold, KalyanpurBaramasi		
		Glossy green (143C)	6	PusaVishesh		
19. (*) (+)	Fruit: shape of base at peduncle end	Acute	1	HABG-22, Hirkani, Phule Green Gold	40	VS
		Obtuse	2	Preethi, ArkaHarit		
		Rounded	3	-		
		Flattened	4	-		
20. (*) (+)	Fruit: shape of apex at blossom end	Acute	1	KalyanpurBaramasi, Preethi	40	VS
		Obtuse	2	ArkaHarit, PusaVishesh		
		Rounded	3	-		
		Flattened	4	-		
21. (*) (+)	Fruit: shape in longitudinal section	Oblong	1	Hirkani	40	VS
		Ovate	2	ArkaHarit		
		Spindle shaped	3	Preethi, HABG-1, KalyanpurBaramasi		
		Club shape	4	-		
		Triangular	5	-		
22. (*) (+)	Fruit: tubercles	Absent	1	Sel-1	40	VS
		Few	3	HABG-1, Pusa Do Mausami		
		Medium	5	KalyanpurBaramasi, PhuleUjwala, Phule Green Gold		
		Many	7	NDBT-9, Preethi, NDBT-7		
23.	Fruit: tubercles prominence	Conspicuous	1	Pusa Do Mausami, Arka Harit, Pusa Vishesh	40	VG
		Non-conspicuous	2	NDBT-7, NDBT-9, Preethi		
24. (*) (+)	Fruit: ridge	Discontinuous	1	Preethi, NDBT-7, NDBT-9	40	VG
		Continuous	2	Pusa Do Mausami, Arka Harit, Pusa Vishesh		
25.	Fruit: bitterness	Mild	3	Pusa Do Mausami	40	VG (sensory)
		Strong	5	NDBT-9, Preethi		
26. (*)	Fruit: color of skin at ripe stage	Yellow (YG-9C)	1	KalyanpurBaramasi	50	VG
		Orange (OG-24a)	2	Pusa Vishesh, NDBT-7, Arka Harit		
		Reddish orange (OG-N25a)	3	KashiUrvashi		
27.	Seediness (no. of seeds/fruit)	Very less (<10)	1	-	50	MS
		Less (10-20)	3	Punjab-14		
		Medium (21-30)	5	HABG-21, Kashi Urvashi, Arka Harit		
		Many (>30)	7	HABG-22, Hirkani, Pusa Do Maushami		

28.	Seed: length	Short (<1.4cm)	3	PusaVishesh, NDBT-7, Sel-1	50	MS
		Long (>1.4cm)	5	ArkaHarit		
29.	Seed: colour	Light brown (GY-161A,B,C & GO-164B)	1	ArkaHarit, Preethi	50	VG
		Brown (GO-164A & GO-167C)	2	KalyanpurBaramasi, KashiUrvashi, Punjab-14		
		Dark brown (GO-165B)	3	HABG-22, Phule Green Gold, Kalyanpur Baramasi		
		Yellow	4	-		
		Black	5	-		
30. (+)	Seed: indentation of margin	Small	3	PusaVishesh	50	VS
		Medium	5	Hirkani, Phule Green Gold, Pusa Do Mausami		
		Large	7	ArkaHarit, Preethi, Meghana-2		
31.	Seed surface	Smooth	3	-	50	VG
		Rough	5	HABG-1, Preethi, Phule Green Gold		

VIII. Explanation of table of characteristics

Ch.8: Leaf blade: margin

Entire (1)

Serrate (2)

Multifid(3)

Ch.9: Leaf blade: shape

Obovate (1)

Cordate (2)

Oblong (3)

Reniform (4)

Ch.10: Leaf blade: number of lobes

5 lobes (1)

7 lobes (3)

Ch.19: Fruit: shape of base at peduncle end

Acute (1)

Obtuse (2)

Rounded (3)

Flattened (4)

Ch.20: Fruit: shape of apex at blossom end

Acute (1)

Obtuse (2)

Rounded (3)

Flattened (4)

Ch.21: Fruit: shape in longitudinal section

Oblong (1)

Ovate (2)

Spindle

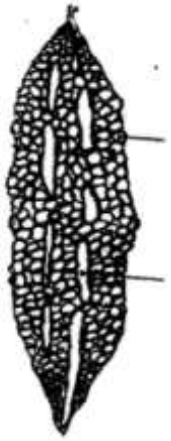
Club shape (4)

Triangular 95)

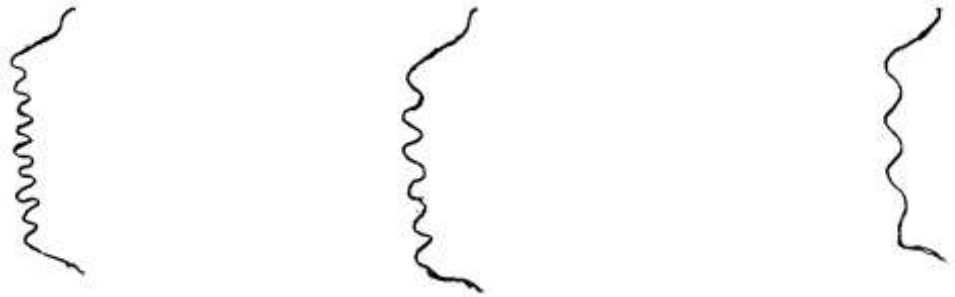
shaped (3)

Ch.22: Fruit: tubercles

Ch.24: Fruit: ridge



Ch. 30: Seed: indentation of margin



Small (3) Medium (5) Large (7)

IX. DUS test centres

Nodal Centre	**Other Centre**
Indian Institute of Vegetable Research, P.B. No.- 01, P.O. -Jakhini (Shahanshahpur), Varanasi-221 305 (U.P.)	1. Indian Institute of Horticultural Research, Hessarghatta, Lake Post, Bengaluru-560089 (Karnataka). 2. Indian Agricultural Research Institute, Pusa, New Delhi-110012

Bottle Gourd (*Lagenaria siceraria* (Mol.) Standl.)

I. Subject

These test guidelines apply to all varieties, hybrids and parental lines of bottle gourd (*Lagenariasiceraria* (Mol.) Standl.)

II. Seed 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 seed material required for testing the variety is to be delivered. Applicants submitting material from a country other than India must make sure that all customs formalities are complied with.
2. The minimum quantity of seed to be supplied by the applicant should be:

   Varieties, Hybrids and parental lines

   - For open field cultivation: 250g or 1500 seeds (in one submission only)
3. The seed should meet the minimum requirements for germination capacity (80%), moisture content (<8%) and physical purity (98%) prescribed for certified seed in India. Especially for storage, which requires a higher standard, the applicant should state the actual germination capacity, which should be as high as possible. The seed supplied should be visibly healthy, not lacking in vigour or affected by any important pest or disease.
4. The seed material must not have undergone any treatment unless the competent authorities allow or request such treatment. If it has been treated, full details of the treatment must be given.

III. Conduct of tests

1. The minimum duration of tests should normally be two independent but similar growing seasons (summer) with reference to the eco-system of the variety submitted for DUS test.
2. The test should normally be conducted at two different locations. If any essential characteristic of the variety can not be observed at these places, the variety may be tested at an additional place.
3. The test should be carried out under conditions ensuring normal growth. The size of the plot should be such that plants or parts of plant may be removed for measuring and counting without prejudice to the observations which must be made upto the end of the growing period. Each test shall include 120 plants for open field cultivation, which should be divided among 3 replications. Separate plots for observations and for measuring can only be used if they have been subjected to similar environmental conditions.

4. Test plot design

Number of rows	:	5
Row length	:	6.4 m
Row to row distance	:	4.0 m
Plant to plant distance	:	0.80 m
Number of replications	:	3

5. Observations should not be recorded on plants in border rows.

6. Additional tests for special purpose may be established by the Authority.

IV. Methods and observations

1. The characteristics described in the Table of characteristics (Section VII) should be used for the testing of varieties for DUS.

2. For the assessment of distinctiveness and stability, observations should be made on 30 plants or parts of plants selected randomly, which should be divided among 3 replications (10 plants in each replication).

3. For the assessment of uniformity of characteristics on the plot as a whole (visual assessment by a single observation of a group of plants or parts of plants), a population standard of 0.5% with an acceptance probability of at least 95% should be applied. In the case of a sample size of 120 plants, the number of off-types should not exceed 2.

4. For the assessment of colour characteristics, it is recommended that Royal Horticultural Society (RHS) colour chart be used.

5. Observations of leaf will be recorded on one leaf above the first fruit set nodes.

6. Observations on the leaf blade should be made on a fully developed leaf blade, from the 15^{th} node upwards to 20^{th} node.

7. All observations on the flowers should be made on flowers between the 10th and the 20th node.

8. All observations on the fruit should be made on fruits around 8-14 days after anthesis, between the 10th and 20th node.

9. All observations on the seeds except seed texture at marketable stage should be made on fully developed and dry seed, after washing and drying in the shade.

10. Stage of recording of different observations will be as follows:

	Description	Code
a	Active vegetative growth	20
b	50 % flowering stage (first pistillate flower appears in 50% plant)	30
c	Fruit attaining marketable maturity	40
d	Full maturity (seed harvest maturity)	50

V. Grouping of varieties

1. The collection of varieties to be grown should be divided into groups to facilitate the assessment of distinctiveness. Characteristics, which are suitable for grouping purposes, are those, which are known from experience not to vary, or to vary only slightly, within a variety. Their various states of expression should be fairly evenly distributed throughout the collection.
2. It is recommended that the competent authorities use the following characteristics for grouping varieties:

a. Leaf : Leaf blade: number of lobes (characteristic 11)

b. Fruit : Length (characteristic 16)

c. Fruit : Diameter (characteristic 17)

d. Fruit : Shape in longitudinal section (characteristic 18)

e. Fruit : Skincolour (characteristic 20)

VI. Characteristics and symbols

1. To assess distinctiveness, uniformity and stability, the characteristics and their states as given in the Table of Characteristics should be used.
2. Notes (1-9) should be used for the purposes of recording and electronic processing of data. Each state of expression is allotted a corresponding numerical note (1-9) for the different characteristics.
3. Legend

(*) Characteristics that should be used in every growing season on all varieties and shall always be included in the description of the variety, except when the states of expression of any of these

characters is rendered impossible by a preceding 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 in section-VIII.

4. Type of assessment of characteristics indicated in column-7 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 observations of individual plants or parts of plants

VII.Table of characteristics

S. No.	Characteristics	States	Note	Example varieties	Stage of observation	Type of assessment
1	**2**	**3**	**4**	**5**	**6**	**7**
1. (*)	Plant: growth habit	Short viny (<3.5m)	3	Punjab Komal, Punjab Long	50	MS
		Medium viny (3.5 – 5.5m)	5	Pusa Naveen, Pusa Samridhi		
		Long viny (> 5.5m)	7	KBGR-12, Arka Bahar, Kashi Ganga		
2. (*)	Stem: shape	Rounded	1	-	20	VG
		Angular	2	PusaNaveen, PusaSamridhi, Punjab Komal, Punjab Long		
3.	Stem: pubescence	Absent	1	-	30	VG
		Present	9	PusaNaveen, PusaSamridhi, Punjab Komal, Punjab Long		
4.	Stem: length of internodes of main stem (between 15th - 20th node)	Short (<10cm)	3	Kashi Ganga, Punjab Long	30	MS
		Medium (10-14cm)	5	Pant Lauki-1, PusaSamridhi		
		Long (>14cm)	7	Kalyanpur Long Green, ArkaBahar		
5.	Stem: number of primary branches	Less (<6)	3	NarendraJyoti, PusaSamridhi	40	MS
		Medium (6-12)	5	Kashi Ganga, Narendra Rashmi, Pant Lauki-1		
		Many (>12)	7	Kalyanpur Long Green		
6. (*) (+)	Leaf blade: margin	Entire	1	Kalyanpur Long Green, Arka Bahar, Kashi Ganga, Pant Lauki-1, Pusa Samridhi	30	VS

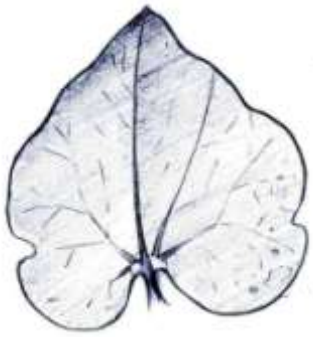
		Serrate	2	NarendraRashmi, ABG-1		
		Multifid	3	-		
7. (*) (+)	Leaf: shape	Cordate	1	Kalyanpur Long Green, Arka Bahar, Kashi Ganga, Pant Lauki-1, Pusa Samridhi	30	VS
		Oblong	2	-		
		Ovate	3	-		
		Obovate	4	-		
		Orbicular	5	-		
		Reniform	6	-		
8.	Leaf : length (between 15th-20th nodes)	Small (<15cm)	3	Kashi Ganga, Pusa Naveen	30	MS
		Medium (15-20cm)	5	Narendra Jyoti, Arka Bahar, Punjab Komal		
		Large (>20cm)	7	KBGR-12, PusaSantusthi		
9.	Leaf : width (between 15th-20th nodes)	Narrow (<15cm)	3	PunjabKomal	30	MS
		Medium (15-20cm)	5	NDBG-619, Pusa Naveen, Kashi Ganga		
		Broad (>20cm)	7	Pusa Santusthi, Arka Bahar, Pusa Sandesh		
10.	Leaf: pubescence nature (between 15th-20th nodes)	Soft	1	ArkaBahar, Kashi Ganga	30	VS
		Hard	2	Pusa Naveen, ABG-1, PunjabKomal		
11. (*) (+)	Leaf blade: number of lobes	3 lobes	3	Kashi Ganga, Pusa Santusthi, Arka Bahar, Pusa Sandesh	30	VS
		5 lobes	5	Pant Lauki-3, JBG-51		
		7 lobes	7	-		
12.	Tendril: branching	Un-branched	1	-	30	VS
		Branched	2	Pant Lauki-3, Kashi Ganga, Pusa Santusthi, Arka Bahar		
13.	Petiole: length (between 15th-20th nodes)	Short (<10cm)	3	Punjab Long, PusaSantusthi, NarendraRashmi	30	MS
		Medium (10-15cm)	5	Kalyanpur Long Green, PusaSamridhi, KBGR-12		
		Long (>15cm)	7	NDBG-132, NDBG-619		
14. (*)	Ovary: length (on the day of anthesis)	Short (<2.5cm)	3	PusaSandesh, PunjabKomal	30	MS
		Medium (2.5-5.0cm)	5	Pusa Naveen, Kashi Ganga, Narendra Rashmi		
		Long (>5.0cm)	7	Kalyanpur Long Green, Pusa Summer Prolific Long, NDBG-619		
15.	Peduncle: length	Short (<10cm)	3	Kashi Ganga	30	MS
		Medium (10-15cm)	5	ArkaBahar, NarendraRashmi, NarendraDharidar		
		Long (>15cm)	7	PusaSamridhi, PusaSandesh, Punjab Long		
16. (*)	Fruit : length	Short (<20cm)	3	PusaSandesh, PunjabKomal	40	MS
		Medium (20-	5	Kashi Ganga, ArkaBahar,		

		45cm)		NDBG-132		
		Long (>45cm)	7	Kalyanpur Long Green, Pusa Summer Prolific Long, VRBG-136		
17. (*)	Fruit: diameter	Small (<8cm)	3	NDBG-619, NarendraJyoti, NDBG-132	40	MS
		Medium (8-12cm)	5	Kashi Ganga, Pusa Santushti, Pant Lauki-1, Arka Bahar		
		Large (>12cm)	7	PusaSandesh, PunjabKomal		
18. (*) (+)	Fruit: shape in longitudinal section	Elongate- straight	1	NarendraRashmi, NarendraJyoti	40	VS
		Elongate- curved	2	Kalyanpur Long Green, Pusa Summer Prolific Long		
		Cylindrical	3	Pusa Naveen		
		Oval	4	-		
		Club	5	PusaSamridhi, NarendraDharidar		
		Pyriform	6	PusaSantusthi, KBGR-12		
		Round	7	PanjabKomal		
		Any other	9	-		
19 (+)	Fruit: neck	Straight	1	Kashi Ganga, ArkaBahar	40	VS
		Crooked	2	Pusa Summer Prolific Long		
20. (*)	Fruit: skin color	Light green (YG-145B)	1	Kashi Ganga, Punjab Komal, Arka Bahar	40	VG
		Green (YG-145C)	2	PusaSantusthi		
		Dark green	3	-		
		Mottle green	4	-		
		Striped green (YG-145A)	5	NarendraDharidar		
21. (+)	Fruit: shape of base at blossom end	Acute	1	NarendraRashmi	40	VS
		Semi blunt	2	Kalyanpur Long Green		
		Blunt	3	KBGR-12, PusaSantusthi, Punjab Long		
		Depressed	4	IIHR-19-1 (genotype)		
22. (+)	Fruit: shape of apexat peduncle end	Raised	1	Kashi Ganga, ArkaBahar	40	VG
		Flat	2	Pusa Naveen		
		Depressed	3	-		
23. (*)	Fruit: pubescence	Absent	1	-	40	VG
		Present	9	Kashi Ganga, PusaNaveen, PusaSamridhi, Punjab Long		
24. (*)	Flesh: texture	Soft	3	Kashi Ganga, NarendraRashmi	40	VG
		Medium	5	PunjabKomal		
		Hard	7	-		
25.	Fruit: Gelatinous flesh	Absent	1	Kashi Ganga, PusaNaveen, Punjab Komal	40	VG
		Present	9	-		
26.	Seed: texture at marketable stage	Soft	3	PusaSantusthi,	50	VS
		Medium	5	Pusa Naveen		

		Hard	7	-		
27.	Seediness (no. of seeds/fruit at the time of seed extraction)	Low (<200)	3	NarendraRashmi, Pusa Summer Prolific Long	50	VG
		Medium (200-400)	5	PusaSamridhi, Kashi Ganga		
		High (>400)	7	NarendraJyoti, NDBG-619, ArkaBahar		
28.	Seed: length	Small (<1.0cm)	3	NDBG-619, NDBG-132, Pant Lauki-3	50	MS
		Medium (1.0-1.5cm)	5	Kashi Ganga, PusaNaveen, VRBG-7 (genotype)		
		Large (>1.5cm)	7	ArkaBahar, PusaSantusthi, PusaSamridhi		
29.	Seed: width	Small (<0.4cm)	3	Pusa Sandesh, Pusa Samridhi, Kalyanpur Long Green	50	MS
		Medium (0.4-0.6cm)	5	ArkaBahar, PusaSantusthi		
		Large (>0.6cm)	7	NDBG-619		
30. (*)	Seed: shape	Triangular	1	NDBG-619	50	MS
		Rectangular	2	Kashi Ganga, Arka Bahar, Pusa Naveen		
31.	Seed: intensity of brown color of testa	Light (165D, 159D)	3	PusaSantusthi, Pusa Naveen	50	VS
		Medium (158C, 159A)	5	Kashi Ganga, ArkaBahar, Kalyanpur Long Green		
		Dark (158A)	7	NarendraJyoti, ABG-1, PusaSandesh		

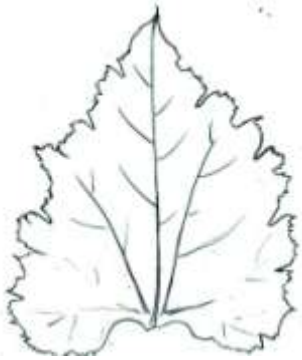
VIII. Explanation of table of characteristics

Ch.6: Leaf blade margin



Entire (1)

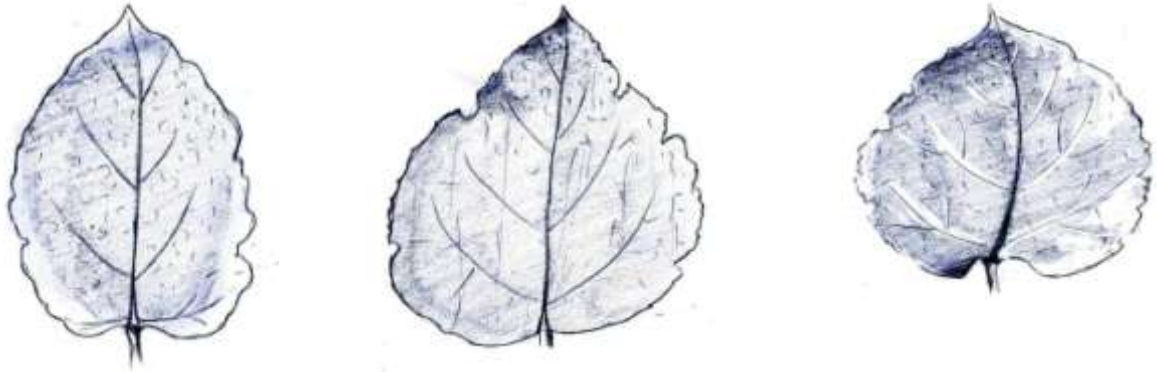
Serrate (2)



Multifid (3)

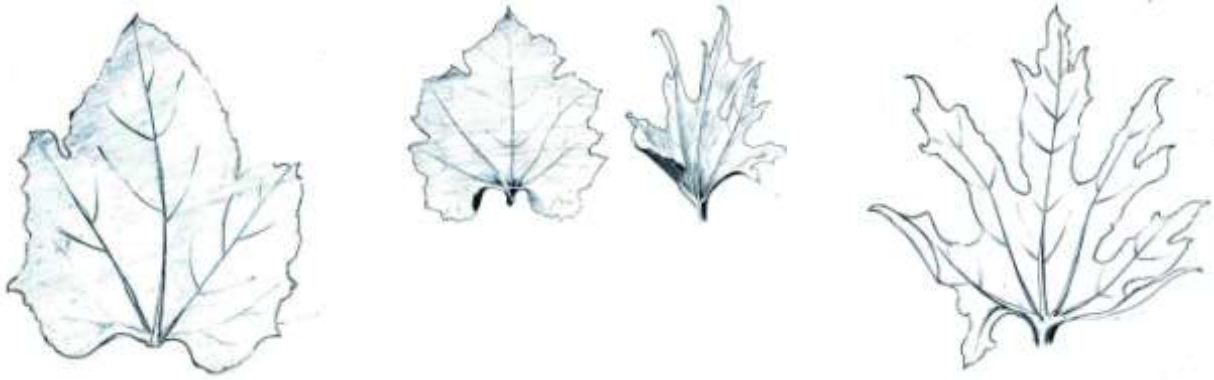
Ch.7: Leaf:shape

Cordate (1) Oblong (2) Ovate (3)



Obovate (4) Orbicular (5) Reniform(6)

Ch.11: Leaf blade: number of lobes



3 lobes (3) 5 lobes (5) 7 lobes (7)

Ch. 18: Fruit: shape in longitudinal section

Elongate Straight (1) Elongate curved (2) Cylindrical (3)

Oval (4)

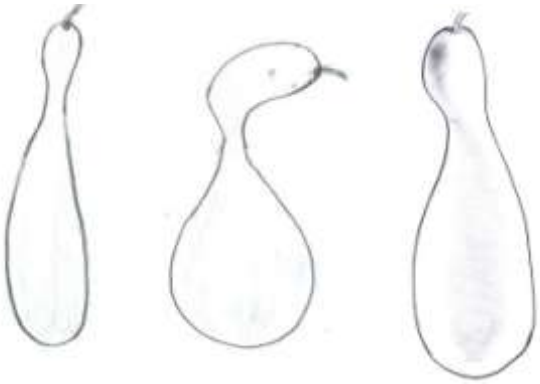
Club (5)

Pyriform (6)

Round (7)

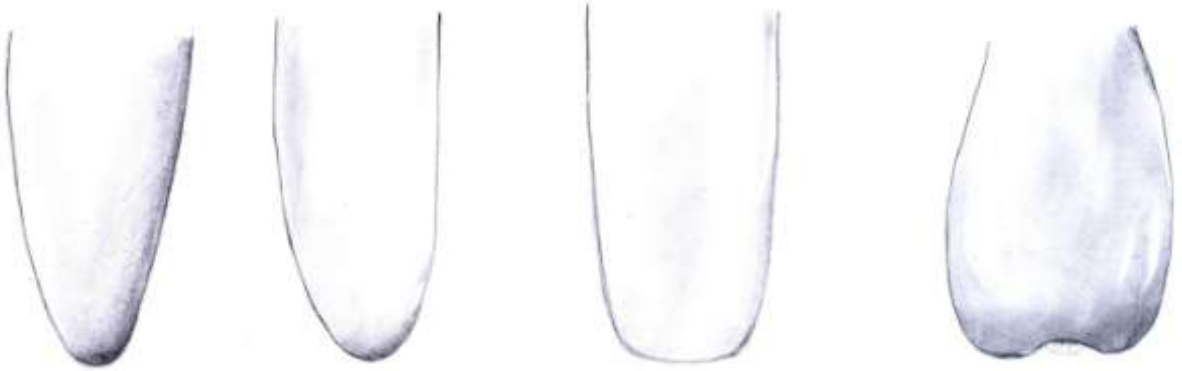
Ch. 19: Fruit: neck

Straight (1)



Crooked (2)

Ch.21: Fruit: shape of base at blossom end



Acute (1) Semi Blunt (2) Blunt (3) Depressed (4)

Ch.22: Fruit: shape of fruit apex at peduncle end

Raised (1)

Flat (2)

Depressed (3)

IX. DUS test centres

Nodal Centre	**Other Centre**
Indian Institute of Vegetable Research, P.B. No.- 01, P.O. -Jakhini (Shahanshahpur), Varanasi-221 305 (U.P.)	1. Indian Institute of Horticultural Research, Hessarghatta, Lake Post, Bengaluru-560089 (Karnataka). 2. Indian Agricultural Research Institute, Pusa, New Delhi-110012

Cucumber (*Cucumis sativus* L.)

I. Subject

These test guidelines apply to all varieties, hybrids and parental lines of cucumber (*Cucumissativus*L.).

II. Seed 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 seed material required for testing the variety is to be delivered. Applicants submitting material from a country other than India must make sure that all customs formalities are complied with.
2. The minimum quantity of seed to be supplied by the applicant should be:

   Varieties, hybrids and parental lines

   - For open field cultivation: 50g or 1500 seeds (in one submission only)

3. The seed should meet the minimum requirements for germination capacity (80%), moisture content (<8%) and physical purity (98%) prescribed for certified seed in India. Especially for storage, which requires a higher standard, the applicant should state the actual germination capacity, which should be as high as possible. The seed supplied should be visibly healthy, not lacking in vigour or affected by any important pest or disease.
4. The seed material must not have undergone any treatment unless the competent authorities allow or request such treatment. If it has been treated, full details of the treatment must be given.

III. Conduct of tests

1. The minimum duration of tests should normally be two independent but similar growing seasons (summer) with reference to the eco-system of the variety submitted for DUS test.
2. The test should normally be conducted at two different locations. If any essential characteristics of the variety can not be observed at these places, the variety may be tested at an additional place.
3. The test should be carried out under conditions ensuring normal growth. The size of the plot should be such that plants or parts of plant may be removed for measuring and counting without prejudice to the observations which must be made upto the end of the growing period. Each test shall include 120 plants for open field cultivation, which should be divided among 3 replications. Separate plots for observations and for measuring can only be used if they have been subjected to similar environmental conditions.

4. Test plot design

No. of rows	:	5
Row length	:	6 m
Row to row distance	:	2.5 m
Plant to plant distance	:	0.75 m
Number of replications	:	3

5. Observations should not be recorded on plants in border rows.

6. Additional tests for special purpose should be established by the Authority.

IV. Methods and observations

1. The characteristics described in the table of characteristics (section-VII) should be used for the testing of varieties for DUS.
2. For the assessment of distinctiveness and stability, observations should be made on 30 plants or parts of plants selected randomly, which should be divided among 3 replications (10 plants in each replication).
3. For the assessment of uniformity of characteristics on the plot as a whole (visual assessment by a single observation of a group of plants or parts of plants), a population standard of 0.5% with an acceptance probability of at least 95% should be applied. In the case of a sample size of 120 plants, the number of off-types should not exceed 3.
4. For the assessment of colour characteristics, it is recommended that Royal Horticultural Society (RHS) colour chart be used.
5. Observation of leaf will be recorded on one leaf above the first fruit set nodes.
6. Observations on the leaf blade should be made on a fully developed leaf blade, from the 15^{th} node upwards to 20^{th} node.
7. All observations on the flowers should be made on flowers between the 10th and the 20th node.
8. All observations on the fruit should be made on immature fruits around 2 weeks after anthesis, between the 10th and 20th node.
9. All observations on the seed should be made on fully developed and dry seed, after washing and drying in the shade.

10. Plant: Sex expression

    Monoecious - All the nodes on the plant have both male and pistillate flowers, with more male than female flowers on each node.

    Gynoecious - All the nodes have only pistillate flowers. Under certain conditions (darkness, cold, chemical treatment), a few male flowers will develop.

11. Where there are more than 50% of nodes with one pistillate flower, the state of expression is solitary. When there are more than 50% of nodes with two or more than two pistillate flowers, the state of expression is multipistilate.
12. Ovary: Colour of vestiture should be observed before flower drop.
13. Parthenocarpy: The development of the fruit without pollination should be observed under circumstances where pollination by insects (bees, bumblebees, etc.) is not possible; for example, in an insect-free greenhouse or at a time of the year when insects are not active.
14. Colour of fruit skin at market stage is considered to be the stage when the fruits have reached their desired length in relation to the salad use of the fruit.
15. Colour of fruit skin at maturity stage (ripeness) should be taken when fruit is fully developed and mature and there are no further changes to the colour of the skin, before the fruit starts to rot.
16. Stage of recording of different observation will be as follows:

	Description	**Code**
a.	50 % flowering stage (first pistillate flower appears in 50% plant)	30
b.	Commercial harvest stage (first to third green fruit harvest)	40
c.	Full fruit maturity stage (seed harvest maturity)	50

V. Grouping of varieties

1. The collection of varieties to be grown should be divided into groups to facilitate the assessment of distinctiveness. Characteristics, which are suitable for grouping purposes, are those, which are known from experience not to vary, or to vary only slightly, within a variety. Their various states of expression should be fairly evenly distributed throughout the collection.
2. It is recommended that the competent authorities use the following characteristics for grouping varieties:

    f. Plant habit **:** Plant growth habit (characteristic-1)

g. Plant **:** Sex expression (characteristic-14)

h. Fruit **:** Parthenocarpy (characteristic-17)

i. Fruit **:** Length (characteristic-18)

j. Fruit **:** Colour at commercial maturity (marketable stage) (characteristic-23)

VI. Characteristics and symbols

1. To assess distinctiveness, uniformity and stability, the characteristics and their states as given in the table of characteristics should be used.
2. Notes (1-9) should be used for the purposes of recording and electronic processing of data. Each state of expression is allotted a corresponding numerical note (1-9) for the different characteristics.
3. Legend

   (*) Characteristics that should be used in every growing season on all varieties and shall always be included in the description of the variety, except when the states of expression of any of these characters is rendered impossible by a preceding 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 in section-VIII.

4. Type of assessment of characteristics indicated in column 7 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 observations of individual plants or parts of plants

VII. Table of characteristics

S.No.	Characteristics	States	Note	Example varieties	Stage of observation	Type of assessment
1	2	3	4	5	6	7
1. (*)	Plant: growth habit	Determinate	1	-	30	VG
		Intermediate	2			
		Indeterminate	3	Kalyanpur Green, SwarnaAgeti, Punjab Naveen,		
2.	Plant: main vine length	Short (<1.25m)	3	SwarnaSheetal	40	MS
		Intermediate (1.25-2.0m)	5	SwarnaAgeti, Punjab Naveen		
		Long (>2.0m)	7	PhuleShubhangi		
3. (+)	Leaf blade: orientation	Erect	1	-	30	VG
		Horizontal	2	SwarnaPoorna		
		Drooping	3	PhuleShubhangi		
4.	Leaf blade: length	Short (<14cm)	3	-	30	MS
		Medium (14-20cm)	5	Japanese Long Green		
		Long (>20cm)	7	Kalyanpur Green		
5. (+)	Leaf blade: shape of apex of terminal lobe	Acute	1	Himangi	30	VG
		Obtuse	2	Punjab Naveen		
		Rounded	3	SwarnaPoorna, Dharwad Local		
6.	Leaf blade: intensity of green colour	Low	3	PhuleShubhangi	30	VG
		Medium	5	SwarnaAgeti, SwarnaSheetal		
		High	7	Punjab Naveen		
7.	Leaf blade: blistering	Absent	1	Kalyanpur Green, Punjab Naveen	30	VG
		Present	9	-		
8.	Leaf blade: undulation of margin	Absent	1	SwarnaSheetal, Dharwad Local	30	VG
		Present	9	SwarnaAgeti, Japanese Long Green		
9.	Leaf blade: dentation of margin	Weak	3	SwarnaAgeti	30	VG
		Medium	5	Japanese Long Green		
		Strong	7	-		
10.	Stem: pubescence	Absent	1	-	30	VG
		Present	9	SwarnaAgeti, SwarnaSheetal, SwarnaPoorna		
11.	Stem: shape	Angular	1	SwarnaSheetal	30	VG
		Rounded	2	Belgum Local (genotype)		
12.	Tendril	Single	1	Japanese Long	30	VG

				Green, SwarnaPoorna		
		Branched	3	-		
13.	Appearance of first pistillate flower in 50% plant	Early <40 days	3	-	30	MG
		Medium 40-55 days	5	Japanese Long Green, Himangi, Punjab Naveen		
		Late >55 days	7	SwarnaSheetal		
14. (*)	Plant: sex expression	Monoecious	1	SwarnaAgeti, SwarnaSheetal,	30	VG
		Gynoecious	2	-		
15.	Plant: number of pistillate flowers per node	Solitary	1	SwarnaAgeti, SwarnaSheetal, Japanese Long Green	30	VG
		Multipistillate	3	-		
16. (*)	Ovary: colour of vestiture	White	1	SwarnaSheetal, SwarnaPoorna, Japanese Long Green	30	VG
		Black	2	SwarnaAgeti		
17. (*)	Parthenocarpy	Absent	1	SwarnaAgeti, SwarnaSheetal, SwarnaPoorna, Japanese Long Green	40	VG
		Present	9	-		
18. (*)	Fruit: length	Short (<15cm)	3	Punjab Naveen	40	MS
		Medium (15-25cm)	5	Himangi, Phule Shubhangi, Swarna Poorna		
		Long (>25cm)	7	Japanese Long Green		
19.	Fruit: diameter	Small (<3cm)	3		40	MS
		Medium (3-5 cm)	5	SwarnaPoorna, Japanese Long Green		
		Large (>5)	7	Himangi, PhuleShubhangi		
20. (+)	Fruit: shape	Elongate	1	Japanese Long Green	40	VG
		Oblong	2	SwarnaAgeti, SwarnaSheetal, Kalyanpur Green,		
		Cylindrical	3	Himangi		
		Oval	4			
21. (*)	Fruit: shape at peduncle end	Flat	1		40	VG
		Acute	2	-		

(+)		Obtuse	3	Pant Khira-1, Himangi, SwarnaSheetal, Kalyanpur Green		
22. (+)	Fruit: shape at blossom end	Acute	1	Japanese Long Green	40	VG
		Obtuse	2	Kalyanpur Green		
		Rounded	3	SwarnaAgeti, Himangi, PhuleShubhangi		
		Flattened	4	-		
23. (*)	Fruit: colour of skin at market stage	Creamy white	1	-	40	VG
		Yellow (YWG-158B)	2	Himangi		
		Light green (GG-142C)	3	Pant Khira-1		
		Dark green (YGG-146A)	4	Japanese Long Green, Kalyanpur Green		
24.	Pulp texture	Crispy	1	Japanese Long Green	40	VG
		Mealy	3	Himangi		
25. (*) (+)	Fruit: ribs	Absent	1	Himangi, SwarnaSheetal, Kalyanpur Green	40	VG
		Present	9	-		
26. (*) (+)	Fruit: sutures	Absent	1	Punjab Naveen	40	VG
		Present	9	Himangi		
27. (*) (+)	Fruit: creasing	Absent	1	Himangi	40	VG
		Present	9	Japanese Long Green		
28. (*) (+)	Fruit: type of vestiture hair	Hairy	3	-	40	VG
		Non-hairy	5	-		
		Prickles	7	Punjab Naveen		
29. (*)	Fruit: density of vestiture	Sparse	3	Japanese Long Green	40	VG
		Medium	5	Punjab Naveen		
		Dense	7	-		
30.	Fruit: warts	Absent	1	SwarnaSheetal, Kalyanpur Green, SwarnaAgeti	40	VG
		Present	9	SwarnaPoorna		
31.	Fruit: stripes	Absent	1	Himangi, SwarnaPoorna, Pant Khira-1	40	VG
		Present	9	SwarnaAgeti, SwarnaSheetal, Kalyanpur Green		

32.	Fruit: length of peduncle	Short (<2cm)	3	SwarnaAgeti, SwarnaSheetal	40	MS
		Medium (2-3.0cm)	5	Himangi, PhuleShubhangi		
		Long (>3.0cm)	7	Kalyanpur Green		
33.	Fruit: colour of skin at ripening stage	White	1	-	50	VG
		Yellow (160-A)	2	Himangi		
		Orange	3	-		
		Brown (175-B)	4	SwarnaAgeti, Japanese Long Green, SwarnaPoorna		
34.	Seed: size	Small (<1.00cm)	3	VR-101(genotype)	50	VG
		Medium (1.00-1.20cm)	5	PhuleShubhangi		
		Large (>1.20cm)	7	SwarnaPoorna, Punjab Naveen		
35.	Seediness (no. of seeds/fruit)	Low (75-100)	3	VR-101(genotype)	50	VG
		Medium (100-150)	5	SwarnaSheetal		
		High (>150)	7	SwarnaAgeti		

VIII Explanation on the table of characteristics

Ch.3. Leaf blade orientation: To be observed only for staked, vertically grown varieties

Erect (1)

Horizontal (2)

Drooping (3)

Ch.5: Leaf blade:Shape of apex of terminal lobe

Acute (1)

Obtuse (2)

Rounded 93)

Ch. 20: Fruit: shape

Elongate (1)

Oblong (2)

Cylindrical (3)

Oval (4)

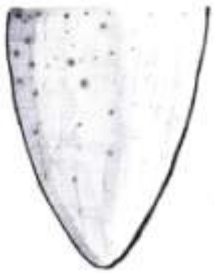
Ch 21: Fruit: shape at peduncle end

Flat (1)

Acute (2)

Obtuse (3)

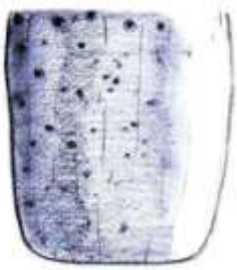
Ch.22: Fruit: shape at blossom end



Acute (1)

Obtuse (2)

Rounded (3)



Truncate (4)

Ch. 25: Fruit: ribs

Absent (1)

Present (9)

Ch. 26: Fruit: sutures (Sutures are slightly depressed in relation to the fruit surface)

Absent (1)

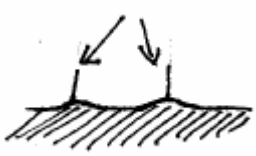
Present (9)

Ch. 27: Fruit: creasing

Absent (1)

Present (9)

Ch.28: Fruit: type of vestiture



Hairy (3)

Prickles (7)

IX. DUS test centres

Nodal Centre	**Other Centre**
Indian Institute of Vegetable Research, P.B. No.- 01, P.O. -Jakhini (Shahanshahpur), Varanasi-221 305 (U.P.)	3. Indian Institute of Horticultural Research, Hessarghatta, Lake Post, Bengaluru-560089 (Karnataka). 4. Indian Agricultural Research Institute, Pusa, New Delhi-110012

Pumpkin (*Cucurbita moschata* Duch. ex Poir.)

I. Subject

These test guidelines apply to all varieties, hybrids and parental lines of pumpkin (*Cucurbitamoschata*Duch. ex Poir.)

II. Seed 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 seed material required for testing the variety is to be delivered. Applicants submitting material from a country other than India must make sure that all customs formalities are complied with.

2. The minimum quantity of seed to be supplied by the applicant should be:

   Varieties, Hybrids and parental lines

   - For open field cultivation: 200g or 1500 seeds (in one submission only)

3. The seed should meet the minimum requirements for germination capacity (80%), moisture content (<8%) and physical purity (98%) prescribed for certified seed in India. Especially for storage, which requires a higher standard, the applicant should state the actual germination capacity, which should be as high as possible. The seed supplied should be visibly healthy, not lacking in vigour or affected by any important pest or disease.

4. The seed material must not have undergone any treatment unless the competent authorities allow or request such treatment. If it has been treated, full details of the treatment must be given.

III. Conduct of tests

1. The minimum duration of tests should normally be two independent but similar growing seasons with reference to the eco-system of the variety submitted for DUS test.

2. The test should normally be conducted at two different locations. If any essential characteristics of the variety can not be observed at these places, the variety may be tested at an additional place.

3. The test should be carried out under conditions ensuring normal growth. The size of the plot should be such that plants or parts of plant may be removed for measuring and counting without prejudice to the observations which must be made upto the end of the growing period. Each test shall include 120 plants for open field cultivation, which should be divided among 3 replications.

Separate plots for observation and for measuring can only be used if they have been subjected to similar environmental conditions.

4. Test plot design

Number of rows	:	5
Row length	:	6.4 m
Row to row distance	:	4.5 m
Plant to plant distance	:	0.80 m
Number of replications	:	3

5. Observations should not be recorded on plants in border rows.
6. Additional tests for special purpose may be established by the Authority.

IV. Methods and observations

1. The characteristics described in the table of characteristics (Section VII) should be used for the testing of varieties for DUS.
2. For the assessment of distinctiveness and stability, observations should be made on 30 plants or parts of plants selected randomly, which should be divided among 3 replications (10 plants in each replication).
3. For the assessment of uniformity of characteristics on the plot as a whole (visual assessment by a single observation of a group of plants or parts of plants), a population standard of 0.5% with an acceptance probability of at least 95% should be applied. In the case of a sample size of 120 plants, the number of off-types should not exceed 3.
4. For the assessment of colour characteristics, it is recommended that Royal Horticultural Society (RHS) colour chart be used.
5. Observation of leaf will be recorded on one leaf above the first fruit set nodes.
6. Observations on the leaf blade should be made on a fully developed leaf blade, from the 15^{th} node upwards to 20^{th} node.
7. All observations on the flowers should be made on flowers between the 10th and the 20th node.
8. All observations on the seed should be made on fully developed and dry seed, after washing and drying in the shade.

9. All observations on the immature fruit should be made on fruits around 8-14 days after anthesis, between the 10th and 20th node.

10. Main vine length to be observed at the time of mature fruit stage.

11. The main skin colour of fruit is the colour with the largest area over the whole fruit excluding the scar area.

12. The fruit diameter should be observed at the broadest part.

13. Stage of recording of different observation will be as follows:

	Description	**Code**
a	Cotyledons completely unfolded	10
b	Active vegetative growth	20
c	50 % flowering stage (first pistillate flower appears in 50% plant)	30
d	Immature fruit harvest stage (first to third green fruit harvest)	40
e	Full fruit maturity stage (seed harvest maturity)	50

V. Grouping of varieties

1. The collection of varieties to be grown should be divided into groups to facilitate the assessment of distinctiveness. Characteristics, which are suitable for grouping purposes, are those, which are known from experience not to vary, or to vary only slightly, within a variety. Their various states of expression should be fairly evenly distributed throughout the collection.

2. It is recommended that the competent authorities use the following characteristics for grouping varieties:

k. Fruit : Main color of skin at immature harvest stage (characteristic 14)

l. Fruit : Surface grooves (characteristic 18)

m. Fruit : Length (characteristic 20)

n. Fruit : Diameter (characteristic 21)

o. Fruit : Shape (characteristic 22)

VI. Characteristics and symbols

3. To assess distinctiveness, uniformity and stability, the characteristics and their states as given in the table of characteristics should be used.

4. Notes (1-9) should be used for the purposes of recording the data and electronic processing of data. Each state of expression is allotted a corresponding numerical note (1-9) for the different characteristics.

5. Legend

(*) Characteristics that should be used in every growing season on all varieties and shall always be included in the description of the variety, except when the states of expression of any of these characters is rendered impossible by a preceding 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 in section-VIII.

6. Type of assessment of characteristics indicated in column 7 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 observations of individual plants or parts of plants

VII Table of characterstics						
S. No	**Characteristics**	**States**	**Note**	**Example varieties**	**Stage of observation**	**Type of assessment**
1	**2**	**3**	**4**	**5**	**6**	**7**
1.	Cotyledon: length	Short (<4.5cm)	3	NarendraAgrim	10	MS
		Medium (4.5-5.5cm)	5	Arka Chandan, Kashi Harit, Narendra Amrit		
		Long (>5.5cm)	7	KPS-1, PusaVishwas		
2.	Cotyledon: width	Narrow (<2.5cm)	3	ArkaChandan	10	MS
		Medium (2.5-3.5cm)	5	NarendraAgrim, KashiHarit		
		Broad (>3.5cm)	7	NarendraAmrit, Sooraj		
3. (*)	Plant: length of main vine	Short (<3m)	3	KashiHarit, NarendraAgrim	50	MS
		Medium (3-4.5m)	5	Pusa Vikas, Narendra Amrit, Punjab Samrat		
		Long (>4.5m)	7	CO-2, Arka Chandan		
4.	Plant: stem shape	Angular	1	Kashi Harit, Arka Chandan, Pusa Vikas	20	VG
		Round	2	-		
5.	Leaf blade: length	Short (<15cm)	3	VRPK-222-2-1 (genotype)	20	MS
		Medium (15-20cm)	5	Kashi Harit, Arka Chandan, CO-2 Narendra Agrim, Narendra Amrit, Punjab Samrat		
		Long (>20cm)	7	Sooraj, PusaVishwas		
6.	Leaf blade: width	Narrow (<15cm)	3	VRPK-222-2-1 (genotype)	20	MS
		Medium (15-20cm)	5	Kashi Harit, Arka Chandan, Narendra Agrim, KPS-1		
		Broad (>20cm)	7	Narendra Amrit, Pusa Vishwas, Sooraj		

7. (+)	Leaf blade: margin	Entire or very weakly incised	1	PusaVikas	20	VG
		Weakly incised	2	Sooraj, KashiHarit		
		Moderately incised	3	ArkaChandan		
8. (*)	Leaf blade: intensity of green colour of upper side	Light (137a)	3	PusaVikas	20	VG
		Medium (137b)	5	CO-2, Arka Chandan, Punjab Samrat		
		Dark (139a)	7	KashiHarit, NarendraAgrim, Sooraj		
9.	Leaf blade: silver patches	Absent	1	PusaVikas	20	VG
		Present	9	Kashi Harit, Arka Chandan, Narendra Agrim, Narendra Amrit		
10.	Petiole: length	Short (<12cm)	3	NarendraAmrit	20	MS
		Medium (12-18cm)	5	Pusa Vikas, KPS-1, Punjab Samrat		
		Long (>18cm)	7	CO-2, Arka Chandan, Pusa Vikas		
11.	Peduncle: length	Short (<5cm)	3	ArkaChandan, PusaVishwas	40	MS
		Medium (5-10cm)	5	Narendra Agrim, Pusa Vikas, Narendra Amrit		
		Long (>10cm)	7	Sooraj, PusaVikas		
12.	Peduncle: diameter (point of attachment at immature stage)	Small (<1cm)	3	NarendraAgrim	40	MS
		Medium (1-1.4cm)	5	Pusa Vishwas, Kashi Harit, Arka Chandan		
		Large (>1.4cm)	7	CO-2		
13.	Peduncle: pubescence (at immature fruit stage)	Absent	1	-	40	VG
		Present	9	Sooraj, PusaVishwas		

14. (*)	Fruit: main colour of skin (at immature fruit stage)	Cream	1	NarendraAmrit	40	VG
		Light green	2	Arka Chandan, Pusa Vikas, Narendra Agrim		
		Medium green	3	KashiHarit		
		Dark green	4	NarendraAgrim		
15. (*)	Fruit: skin colour pattern	Uniform	3	NarendraAgrim	40	VG
		Mottled	5	KashiHarit		
		Striped	7	PusaVishwas		
16. (*) (+)	Fruit: shape at peduncle end	Raised	1	PusaVishwas	50	VG
		Flat	2	Punjab Samrat		
		Moderately Depressed	3	Narendra Agrim, KPS-1, Kashi Harit, Arka Chandan, Narendra Amrit, Sooraj, CO-2		
		Strongly depressed	4	-		
17. (*) (+)	Fruit: shape at blossom end	Depressed	1	Narendra Amrit, Kashi Harit, Arka Chandan, Sooraj	50	VG
		Flat	2	-		
		Raised	3	PusaVishwas		
18. (*)	Fruit: surface grooves	Absent	1	-	50	VG
		Present	9	Narendra Amrit, CO-2, Sooraj, Kashi Harit, KPS-1		
19.	Fruit: marbling (immature stage)	Absent	1	Narendra Amrit,Narendra Agrim,	50	VG
		Weak	3	PusaVishwas, PusaVikas		
		Medium	5	KashiHarit, Punjab Samrat		
		Strong	7	-		
20. (*)	Fruit: length (mature stage)	Short (<12cm)	3	NarendraAgrim	50	MS
		Medium (12-20cm)	5	Kashi Harit, Pusa Vikas, Sooraj		
		Long (21-30cm)	7	PusaVishwas		
		Very long (>30cm)	9	-		

21. (*)	Fruit: diameter (mature stage)	Small (<15cm)	3	ArkaChandan	50	MS
		Medium (15-30cm)	5	KashiHarit, Sooraj, Pusa Vishwas,CO-2		
		Large (>30cm)	7	KPS-1, NarendraAmrit		
22. (*) (+)	Fruit: shape	Heart shaped	1	CO-2	50	VG
		Round flat	2	NarendraAmrit		
		Oval or oblong	3	PusaVishwas		
		Rectangular	4	-		
		Spherical	5	NarendraAgrim		
		Pear shaped	6	-		
		Club shaped	7	-		
		Cylindrical	8	-		
23.	Fruit: main colour of skin (mature stage)	Cream (GYG-161C)	1	NarendraAmrit, CO-2	50	VG
		Green with creamy patches (GYG-162C)	2	Kashi Harit, Pusa Vishwas		
		Orange (OG-24D)	3	ArkaChandan		
24.	Fruit: waxiness of skin (at mature fruit stage)	Absent	1	-	50	VG
		Present	9	ArkaChandan, CO-2, PusaVishwas		
25.	Fruit: main colour of flesh	Creamy white (YG-11D)	1	NarendraAmrit	50	VG
		Yellowish orange (YOG-13C)	2	Pusa Vikas,Kashi Harit, Punjab Samrat		
		Greenish orange (GYG-1C)	3	Sooraj,CO-2		
		Orange	4	-		
		Dark orange (YOG-17C)	5	ArkaChandan, PusaVishwas		
26.	Fruit: thickness	Thin	3	Sooraj, Kashi Harit	50	MS

(*)	of flesh	(<2.5cm)				
		Medium (2.5-4.5cm)	5	Narendra Agrim, Sooraj, Pusa Vishwas		
		Thick (>4.5cm)	7	Narendra Amrit,CO-2		
27.	Fruit: diameter of scar (blossom end)	Small (<1cm)	3	NarendraAgrim	50	MS
		Medium (1-2cm)	5	Kashi Harit, KPS-1, Pusa Vishwas		
		Large (>2cm)	7	ArkaChandan, Sooraj		
28.	Seed: length	Short (<1.2cm)	3	Arka Chandan, Narendra Agrim, Sooraj	50	MS
		Medium (1.2-1.6cm)	5	Kashi Harit, KPS-1, Narendra Amrit, Punjab Samrat		
		Long (>1.6cm)	7	CO-2, PusaVikas		
29.	Seed: width	small (<0.6cm)	3	ArkaChandan	50	MS
		medium (0.6-0.9cm)	5	Sooraj, KashiHarit		
		large (>0.9 cm)	7	CO-2, PusaVishwas		
30.	Seed: colour of coat	cream (YW-158a, OW-159b)	1	NarendraAgrim, CO-2, KashiHarit	50	VG
		yellow (GY-162c)	2	Pusa Vikas, Narendra Amrit, Sooraj		
		White	3	-		
		Brown	4	-		

VIII. Explanation of table of characteristics

Ch.7: Leaf blade: margin

Entire or very weakly incised (1) Weakly incised (2) Moderately incised (3)

Ch. 16: Fruit: shape at peduncle end

Raised (1) Flat (2) Moderately depressed (3) Strongly depressed (4)

Ch. 17: Fruit: shape of blossom end (flower scar included)

Depressed (1) Flat (2) Raised (3)

Ch. 22: Fruit: shape

Heart Shaped (1) Flat round (2) Oval (3)

Rectangular (4)

Spherical (5)

Pear shaped (6)

Club shaped (7)

Cylindrical (8)

IX. DUS test centres

Nodal Centre	**Other Centre**
Indian Institute of Vegetable Research, P.B. No.- 01, P.O. -Jakhini (Shahanshahpur), Varanasi-221 305 (U.P.)	5. Indian Institute of Horticultural Research, Hessarghatta, Lake Post, Bengaluru-560089 (Karnataka). 6. Indian Agricultural Research Institute, Pusa, New Delhi-110012

PUBLIC NOTICE

Details of registration certificate for inviting claims of benefit sharing under sub section 1 of section 26 of PPV&FR Act, 2001 read with Rule 40 of PPV&FR Rules, 2003.

The details of 24 registration certificates which have been issued under section 24 (2) of PPV &FR Act, 2001 are published herein for invitation of claims for benefit sharing.

Any person or group of persons, being citizen(s) of India or firm or governmental or non-governmental organization formed or established in India shall submit their claims for benefit sharing (under Section 26 (2) of PPV&FR Act, 2001 read with Rule 41 of PPV&FR Rules, 2003) in Form PV 7 of the First schedule (in triplicate) within a period of six months from the date of publication. Claims for benefit sharing if any shall be submitted to the Deputy Registrar, PPV&FR Authority, NASC Complex, DPS Marg, New Delhi-110012 accompanied with the fee of Rs. 5000/- (Rupees Five Thousand Only) by way of Demand Draft drawn in favour of the "Registrar, PPV&FR Authority" payable at New Delhi.

Certificate of Registration No. 188 of 2012

(1) Registration Number and date of grant:- **188 of 2012 & 09/11/2012**

(2) Name and address of applicant or breeder in whose name the certificate has been issued or registered:-

Indian Council of Agricultural Research (ICAR),
Krishi Bhawan, New Delhi-110114

(3) Denomination of the variety:- **CBW-38**

(4) Name of:

Family: **Poaceae**
Genus: *Triticum*
Species: *aestivum*

Variety and common name: **Extant/typical**

(5) Parentage and geographical location of the variety:-

1. **CNDO 2. R 143 3.ENTE 4. MEXI-2 5. TAUS 6. WEAVER 7.PASTOR**

(6) Details of the distinguishing features or the characteristics:-

Intermediate habit of growth, early time of ear emergence, tapering shape of ear.

(7) In case of 'essentially derived variety', the details of the 'initial variety' from which the 'essentially derived variety' is claimed to have been derived:- **NA**

(8) Name and address of the contributor, nature and amount of the contribution or the community knowledge used in the development of the plant variety:- **NA**

(9) Terms and conditions of the agreement, if any, entered into between the breeder and contributor:- **NA**

(10) If the variety is sold or otherwise disposed of, details thereof.

CBW-38 has been commercialized since 2009.

Certificate of Registration No. 189 of 2012

(1) Registration Number and date of grant:- **189 of 2012 & 09/11/2012**

(2) Name and address of applicant or breeder in whose name the certificate has been issued or registered:-

Indian Council of Agricultural Research (ICAR),
Krishi Bhawan, New Delhi-110114

(3) Denomination of the variety:- **VL Gehun 907 (VL 907)**

(4) Name of:

Family: **Poaceae**
Genus: *Triticum*
Species: *aestivum*

Variety and common name: **Extant/typical**

(5) Parentage and geographical location of the variety:-

1. **DUBR1982-83/842ABVD50 2. VW9365 3.PBW343**

(6) Details of the distinguishing features or the characteristics:-

Large size of seed, long length of peduncle, straight attitude of peduncle, absence of ear waxiness.

(7) In case of 'essentially derived variety', the details of the 'initial variety' from which the 'essentially derived variety' is claimed to have been derived:- **NA**

(8) Name and address of the contributor, nature and amount of the contribution or the community knowledge used in the development of the plant variety:- **NA**

(9) Terms and conditions of the agreement, if any, entered into between the breeder and contributor:- **NA**

(10) If the variety is sold or otherwise disposed of, details thereof.

VL Gehun 907 (VL 907) has been commercialized since 2001.

Certificate of Registration No. 190 of 2012

(1) Registration Number and date of grant:- **190 of 2012 & 09/11/2012**

(2) Name and address of applicant or breeder in whose name the certificate has been issued or registered:-

Indian Council of Agricultural Research (ICAR),
Krishi Bhawan, New Delhi-110114

(3) Denomination of the variety:- **VL Gehun-892**

(4) Name of:

Family: **Poaceae**
Genus: *Triticum*
Species: *aestivum*

Variety and common name: **Extant/typical**

(5) Parentage and geographical location of the variety:-

WH 542 x PBW 226

(6) Details of the distinguishing features or the characteristics:-

Absence of flag leaf hairs on auricle, medium plant length, short awns length and straight shape of lower glume shoulder.

(7) In case of 'essentially derived variety', the details of the 'initial variety' from which the 'essentially derived variety' is claimed to have been derived:- **NA**

(8) Name and address of the contributor, nature and amount of the contribution or the community knowledge used in the development of the plant variety:- **NA**

(9) Terms and conditions of the agreement, if any, entered into between the breeder and contributor:- **NA**

(10) If the variety is sold or otherwise disposed of, details thereof.

VL Gehun-892 has been commercialized since 2008.

Certificate of Registration No. 191 of 2012

(1) Registration Number and date of grant:- **191 of 2012 & 09/11/2012**

(2) Name and address of applicant or breeder in whose name the certificate has been issued or registered:-

Indian Council of Agricultural Research (ICAR),
Krishi Bhawan, New Delhi-110114

(3) Denomination of the variety:- **HPW 251**

(4) Name of:

Family: **Poaceae**
Genus: *Triticum*
Species: *aestivum*

Variety and common name: **Extant/typical**

(5) Parentage and geographical location of the variety:-

WW24/LEHMI

(6) Details of the distinguishing features or the characteristics:-

Erect growth habit, very strong colouration of auricle, spring seasonal type and parallel sided shape of ear profile.

(7) In case of 'essentially derived variety', the details of the 'initial variety' from which the 'essentially derived variety' is claimed to have been derived:- **NA**

(8) Name and address of the contributor, nature and amount of the contribution or the community knowledge used in the development of the plant variety:- **NA**

(9) Terms and conditions of the agreement, if any, entered into between the breeder and contributor:- **NA**

(10) If the variety is sold or otherwise disposed of, details thereof.

HPW 251 has been commercialized since 2008.

Certificate of Registration No. 192 of 2012

(1) Registration Number and date of grant:- **192 of 2012 & 09/11/2012**

(2) Name and address of applicant or breeder in whose name the certificate has been issued or registered:-

Indian Council of Agricultural Research (ICAR),
Krishi Bhawan, New Delhi-110114

(3) Denomination of the variety:- **MACS 6222**

(4) Name of:

Family: **Poaceae**
Genus: *Triticum*
Species: *aestivum*

Variety and common name: **Extant/typical**

(5) Parentage and geographical location of the variety:-

HD 2189 /MACS 2496

(6) Details of the distinguishing features or the characteristics:-

Strong waxiness of ear, parallel shape of ear and semi hard grain.

(7) In case of 'essentially derived variety', the details of the 'initial variety' from which the 'essentially derived variety' is claimed to have been derived:- **NA**

(8) Name and address of the contributor, nature and amount of the contribution or the community knowledge used in the development of the plant variety:- **NA**

(9) Terms and conditions of the agreement, if any, entered into between the breeder and contributor:- **NA**

(10) If the variety is sold or otherwise disposed of, details thereof.

MACS 6222 has been commercialized since 2010.

Certificate of Registration No. 193 of 2012

(1) Registration Number and date of grant:- **193 of 2012 & 09/11/2012**

(2) Name and address of applicant or breeder in whose name the certificate has been issued or registered:-

Indian Council of Agricultural Research (ICAR),
Krishi Bhawan, New Delhi-110114

(3) Denomination of the variety:- **Pusa Kabuli Gram-128 (Pusa Shubra) (BG-128)**

(4) Name of:

Family: **Leguminoceae**
Genus: *Cicer*
Species: *arietinum*

Variety and common name: **Extant/typical**

(5) Parentage and geographical location of the variety:-

ICCV 2 X ICCV 5

(6) Details of the distinguishing features or the characteristics:-

Early time of flowering, semi-erect plant growth habit and medium seed size.

(7) In case of 'essentially derived variety', the details of the 'initial variety' from which the 'essentially derived variety' is claimed to have been derived:- **NA**

(8) Name and address of the contributor, nature and amount of the contribution or the community knowledge used in the development of the plant variety:- **NA**

(9) Terms and conditions of the agreement, if any, entered into between the breeder and contributor:- **NA**

(10) If the variety is sold or otherwise disposed of, details thereof.

Variety has been commercialized since 2006.

Certificate of Registration No. 194 of 2012

(1) Registration Number and date of grant:- **194 of 2012 & 09/11/2012**

(2) Name and address of applicant or breeder in whose name the certificate has been issued or registered:-

Indian Council of Agricultural Research (ICAR),
Krishi Bhawan, New Delhi-110114

(3) Denomination of the variety:- **: Dharwad Pragatee (DGD-72)**

(4) Name of:

Family: **Leguminoceae**
Genus: *Cicer*
Species: *arietinum*

Variety and common name: **Extant/typical**

(5) Parentage and geographical location of the variety:-

Pusa 2561 E 100 YM

(6) Details of the distinguishing features or the characteristics:-

Short plant height, high stem height at initiation of first flower, medium green intensity of foliage, medium leaflet size, long peduncle length, medium pod size, small seed size and angular seed shape.

(7) In case of 'essentially derived variety', the details of the 'initial variety' from which the 'essentially derived variety' is claimed to have been derived:- **NA**

(8) Name and address of the contributor, nature and amount of the contribution or the community knowledge used in the development of the plant variety:- **NA**

(9) Terms and conditions of the agreement, if any, entered into between the breeder and contributor:- **NA**

(10) If the variety is sold or otherwise disposed of, details thereof.

Dharwad Pragatee (DGD-72) has been commercialized since 2008.

Certificate of Registration No. 195 of 2012

(1) Registration Number and date of grant:- **195 of 2012 & 09/11/2012**

(2) Name and address of applicant or breeder in whose name the certificate has been issued or registered:-

Indian Council of Agricultural Research (ICAR),
Krishi Bhawan, New Delhi-110114

(3) Denomination of the variety:- **Pusa 605 (MH 564)**

(4) Name of:

Family: **Poaceae**
Genus: *Penuisetum*
Species: *glaucum*

Variety and common name: **Extant/hybrid**

(5) Parentage and geographical location of the variety:-

MS 841A X PPMI 69

(6) Details of the distinguishing features or the characteristics:-

Medium plant height, medium time of spike emergence, cylindrical spike shape, compact spike density and yellow anther colour.

(7) In case of 'essentially derived variety', the details of the 'initial variety' from which the 'essentially derived variety' is claimed to have been derived:- **NA**

(8) Name and address of the contributor, nature and amount of the contribution or the community knowledge used in the development of the plant variety:- **NA**

(9) Terms and conditions of the agreement, if any, entered into between the breeder and contributor:- **NA**

(10) If the variety is sold or otherwise disposed of, details thereof.

Pusa 605 (MH 564) has been commercialized since 1999.

Certificate of Registration No. 196 of 2012

(1) Registration Number and date of grant:- **196 of 2012 & 09/11/2012**

(2) Name and address of applicant or breeder in whose name the certificate has been issued or registered:-

Indian Council of Agricultural Research (ICAR),
Krishi Bhawan, New Delhi-110114

(3) Denomination of the variety:- **Pusa Composite 334 (MP-334)**

(4) Name of:

Family: **Poaceae**
Genus: *Penuisetum*
Species: *glaucum*

Variety and common name: **Extant/typical**

(5) Parentage and geographical location of the variety:-

It is a composite obtained by mixing of 3 lines, highly resistant for downy mildew and 8 elite inbreds

(6) Details of the distinguishing features or the characteristics:-

Long spike length, absence of plant node pigmentation, presence of spike anthocyanin pigmentation of glume, cylindrical spike shape, grew brown seed colour, medium seed weight of 1000 grains.

(7) In case of 'essentially derived variety', the details of the 'initial variety' from which the 'essentially derived variety' is claimed to have been derived:- **NA**

(8) Name and address of the contributor, nature and amount of the contribution or the community knowledge used in the development of the plant variety:- **NA**

(9) Terms and conditions of the agreement, if any, entered into between the breeder and contributor:- **NA**

(10) If the variety is sold or otherwise disposed of, details thereof.

Pusa Composite 334 (MP-334) has been commercialized since 1999.

Certificate of Registration No. 197 of 2012

(1) Registration Number and date of grant:- **197 of 2012 & 09/11/2012**

(2) Name and address of applicant or breeder in whose name the certificate has been issued or registered:-

Indian Council of Agricultural Research (ICAR),
Krishi Bhawan, New Delhi-110114

(3) Denomination of the variety:- **Pusa-415 (MP-739)**

Name of:
Family: **Poaceae**
Genus: *Pennisetum*
Species: *glaucum*
Variety and common name: **Extant/hybrid**

(4) Parentage and geographical location of the variety:-
Ms 576 A X PPMI 85

(5) Details of the distinguishing features or the characteristics:-

Medium plant height, medium maturity, compact, lanceolate shaped panicles with brown colour anthers and grey obvate medium size of seed.

(6) In case of 'essentially derived variety', the details of the 'initial variety' from which the 'essentially derived variety' is claimed to have been derived:- **NA**

(7) Name and address of the contributor, nature and amount of the contribution or the community knowledge used in the development of the plant variety:- **NA**

(8) Terms and conditions of the agreement, if any, entered into between the breeder and contributor:- **NA**

(9) If the variety is sold or otherwise disposed of, details thereof.
Pusa-415 (MP-739) has been commercialized since 1999.

Certificate of Registration No. 198 of 2012

(1) Registration Number and date of grant:- **198 of 2012 & 09/11/2012**

(2) Name and address of applicant or breeder in whose name the certificate has been issued or registered:-

Indian Council of Agricultural Research (ICAR),
Krishi Bhawan, New Delhi-110114

(3) Denomination of the variety:- **DWR-17**

(4) Name of:

Family: **Poaceae**
Genus: *Triticum*
Species: *aestivum*

Variety and common name: **Extant/typical**

(5) Parentage and geographical location of the variety:-
CMH 79A.95/3 CNO 79 Raj 3777

(6) Details of the distinguishing features or the characteristics:-

Parallel ear shape in profile, medium ear length, medium seed size, very dark grain colouration with phenol and bent peduncle attitude.

(7) In case of 'essentially derived variety', the details of the 'initial variety' from which the 'essentially derived variety' is claimed to have been derived:- **NA**

(8) Name and address of the contributor, nature and amount of the contribution or the community knowledge used in the development of the plant variety:- **NA**

(9) Terms and conditions of the agreement, if any, entered into between the breeder and contributor:- **NA**

(10) If the variety is sold or otherwise disposed of, details thereof.
DWR-17 has been commercialized since 2007.

Certificate of Registration No. 199 of 2012

(1) Registration Number and date of grant:- **199 of 2012 & 09/11/2012**

(2) Name and address of applicant or breeder in whose name the certificate has been issued or registered:-

Indian Council of Agricultural Research (ICAR),
Krishi Bhawan, New Delhi-110114

(3) Denomination of the variety:- **Pusa 1103**

(4) Name of:

Family: **Papilionaceae**
Genus: *Cicer*
Species: *arietinum*

Variety and common name: **Extant/typical**

(5) Parentage and geographical location of the variety:-
(BG 256 X cicer reticulatum) X BG 362

(6) Details of the distinguishing features or the characteristics:-

Erect plant growth habit, stem anthocyanin colouration absent, medium stem height at initiation of first flower, smooth seed testa texture and angular seed shape.

(7) In case of 'essentially derived variety', the details of the 'initial variety' from which the 'essentially derived variety' is claimed to have been derived:- **NA**

(8) Name and address of the contributor, nature and amount of the contribution or the community knowledge used in the development of the plant variety:- **NA**

(9) Terms and conditions of the agreement, if any, entered into between the breeder and contributor:- **NA**

(10) If the variety is sold or otherwise disposed of, details thereof.
Pusa 1103 has been commercialized since 2005.

Certificate of Registration No. 200 of 2012

(1) Registration Number and date of grant:- **200 of 2012 & 09/11/2012**

(2) Name and address of applicant or breeder in whose name the certificate has been issued or registered:-

Indian Council of Agricultural Research (ICAR),
Krishi Bhawan, New Delhi-110114

(3) Denomination of the variety:- **Pusa 1108**

(4) Name of:

Family: **Papilionaceae**
Genus: *Cicer*
Species: *arietinum*

Variety and common name: **Extant/typical**

(5) Parentage and geographical location of the variety:-

(BG 315 X ILC 72) X (ICCV 13 X FLIP 85-11) X (ICCV32 X Surutoto 77)

(6) Details of the distinguishing features or the characteristics:-

Semi erect plant growth habit, medium stem height initiation of first flower medium time of flowering, large leaflet size, present flower striperson standard, smooth seed testa texture, beige seed colour and medium seed size.

(7) In case of 'essentially derived variety', the details of the 'initial variety' from which the 'essentially derived variety' is claimed to have been derived:- **NA**

(8) Name and address of the contributor, nature and amount of the contribution or the community knowledge used in the development of the plant variety:- **NA**

(9) Terms and conditions of the agreement, if any, entered into between the breeder and contributor:- **NA**

(10) If the variety is sold or otherwise disposed of, details thereof.

Pusa 1108 has been commercialized since 2006.

Certificate of Registration No. 201 of 2012

(1) Registration Number and date of grant:- **201 of 2012 & 09/11/2012**

(2) Name and address of applicant or breeder in whose name the certificate has been issued or registered:-

Indian Council of Agricultural Research (ICAR),
Krishi Bhawan, New Delhi-110114

(3) Denomination of the variety:- **Karnal Chana-1(CSG-8962)**

(4) Name of:

Family: **Papilionaceae**
Genus: *Cicer*
Species: *arietinum*

Variety and common name: **Extant/typical**

(5) Parentage and geographical location of the variety:-
Selection from germplasm line-GF-7035

(6) Details of the distinguishing features or the characteristics:-

Short plant height, medium stem height at initiation of first flower, medium green intensity of foliage, large pod size and very small seed size.

(7) In case of 'essentially derived variety', the details of the 'initial variety' from which the 'essentially derived variety' is claimed to have been derived:- **NA**

(8) Name and address of the contributor, nature and amount of the contribution or the community knowledge used in the development of the plant variety:- **NA**

(9) Terms and conditions of the agreement, if any, entered into between the breeder and contributor:- **NA**

(10) If the variety is sold or otherwise disposed of, details thereof.
Karnal Chana-1(CSG-8962) has been commercialized since 1998.

Certificate of Registration No. 202 of 2012

(1) Registration Number and date of grant:- **202 of 2012 & 09/11/2012**

(2) Name and address of applicant or breeder in whose name the certificate has been issued or registered:-

Indian Council of Agricultural Research (ICAR),
Krishi Bhawan, New Delhi-110114

(3) Denomination of the variety:- **Pusa-1088**

(4) Name of:

Family: **Papilionaceae**
Genus: *Cicer*
Species: *arietinum*

Variety and common name: **Extant/typical**

(5) Parentage and geographical location of the variety:-
(Pusa 256 X ICCV 32) X ICCV 32

(6) Details of the distinguishing features or the characteristics:-

Medium stem height at initiation of flower, medium time of flowering, semi-erect plant growth habit, medium leaflet size, medium peduncle length, more than one pod no. of seed, beige seed colour and medium seed size.

(7) In case of 'essentially derived variety', the details of the 'initial variety' from which the 'essentially derived variety' is claimed to have been derived:- **NA**

(8) Name and address of the contributor, nature and amount of the contribution or the community knowledge used in the development of the plant variety:- **NA**

(9) Terms and conditions of the agreement, if any, entered into between the breeder and contributor:- **NA**

(10) If the variety is sold or otherwise disposed of, details thereof.
Pusa-1088 has been commercialized since 2005.

Certificate of Registration No. 203 of 2012

(1) Registration Number and date of grant:- **197 of 2012 & 09/11/2012**

(2) Name and address of applicant or breeder in whose name the certificate has been issued or registered:-

Indian Council of Agricultural Research (ICAR),
Krishi Bhawan, New Delhi-110114

(3) Denomination of the variety:- **G.G.1**

(4) Name of:

Family: **Papilionaceae**
Genus: *Cicer*
Species: *arietinum*

Variety and common name: **Extant/typical**

(5) Parentage and geographical location of the variety:-

GCP2 and IICV 2

(6) Details of the distinguishing features or the characteristics:-

Medium stem height, dark green plant colour of foliage, medium leaflet size, long peduncle length, short plant height, very small seed size, pea-shaped seed and rough seed testa texture.

(7) In case of 'essentially derived variety', the details of the 'initial variety' from which the 'essentially derived variety' is claimed to have been derived:- **NA**

(8) Name and address of the contributor, nature and amount of the contribution or the community knowledge used in the development of the plant variety:- **NA**

(9) Terms and conditions of the agreement, if any, entered into between the breeder and contributor:- **NA**

(10) If the variety is sold or otherwise disposed of, details thereof.

G.G.1 has been commercialized since 1999.

Certificate of Registration No. 204 of 2012

(1) Registration Number and date of grant:- **204 of 2012 & 21/11/2012**

(2) Name and address of applicant or breeder in whose name the certificate has been issued or registered:-

Syngenta India Ltd., Seeds Division, 1170/27, Revenue Colony, Shivaji Nagar, Pune-411005 Maharashtra

(3) Denomination of the variety:- **SYN-CO-SWC 75**

(4) Name of:

Family: **Poaceae**
Genus: *Zea*
Species: *mays*

Variety and common name: **Extant(VCK)/hybrid**

(5) Parentage and geographical location of the variety:-

hb9077 X hb9035

(6) Details of the distinguishing features or the characteristics:-

Absence of anthocyanin colouration of silks, yellow ear colour of top of grain along with low ear placement.

(7) In case of 'essentially derived variety', the details of the 'initial variety' from which the 'essentially derived variety' is claimed to have been derived:- **NA**

(8) Name and address of the contributor, nature and amount of the contribution or the community knowledge used in the development of the plant variety:- **NA**

(9) Terms and conditions of the agreement, if any, entered into between the breeder and contributor:- **NA**

(10) If the variety is sold or otherwise disposed of, details thereof. **NA**

Certificate of Registration No. 205 of 2012

(1) Registration Number and date of grant:- **205 of 2012 & 21/11/2012**

(2) Name and address of applicant or breeder in whose name the certificate has been issued or registered:-

Syngenta India Ltd., Seeds Division, 1170/27, Revenue Colony, Shivaji Nagar, Pune-411005 Maharashtra

(3) Denomination of the variety:- **SYN-CO-GS 5592**

(4) Name of:

Family: **Poaceae**
Genus: *Zea*
Species: *mays*

Variety and common name: **New/hybrid**

(5) Parentage and geographical location of the variety:-

hb 9077 X R680 B

(6) Details of the distinguishing features or the characteristics:-

Wide angle between main axis and laternal branches of tassel along with absence of anthocyanin colouration of silk.

(7) In case of 'essentially derived variety', the details of the 'initial variety' from which the 'essentially derived variety' is claimed to have been derived:- **NA**

(8) Name and address of the contributor, nature and amount of the contribution or the community knowledge used in the development of the plant variety:- **NA**

(9) Terms and conditions of the agreement, if any, entered into between the breeder and contributor:- **NA**

(10) If the variety is sold or otherwise disposed of, details thereof. **NA**

Certificate of Registration No. 206 of 2012

(1) Registration Number and date of grant:- **206 of 2012 & 21/11/2012**

(2) Name and address of applicant or breeder in whose name the certificate has been issued or registered:-

Nuziveedu Seeds Private Limited, NSL ICON, No. 8-2-684/2/A, Plot No. 1 to 9, 4th floor, opp. ICICI Bank, Road No. 12, Banjara Hills, Hyderabad-500034

(3) Denomination of the variety:- **NM 74 B**

(4) Name of:

Family: **Poaceae**
Genus: *Zea*
Species: *mays*

Variety and common name: **Extant (VCK)/typical**

(5) Parentage and geographical location of the variety:-

From Population 35 by continuous selfing

(6) Details of the distinguishing features or the characteristics:-

Presence of anthocyanin colouration of silks alongwith drooping attitude of blade and broad width of blade.

(7) In case of 'essentially derived variety', the details of the 'initial variety' from which the 'essentially derived variety' is claimed to have been derived:- **NA**

(8) Name and address of the contributor, nature and amount of the contribution or the community knowledge used in the development of the plant variety:- **NA**

(9) Terms and conditions of the agreement, if any, entered into between the breeder and contributor:- **NA**

(10) If the variety is sold or otherwise disposed of, details thereof. **NA.**

Certificate of Registration No. 207 of 2012

(1) Registration Number and date of grant:- **207 of 2012 & 21/11/2012**

(2) Name and address of applicant or breeder in whose name the certificate has been issued or registered:-

Nuziveedu Seeds Private Limited, NSL ICON, No. 8-2-684/2/A, Plot No. 1 to 9, 4th floor, opp. ICICI Bank, Road No. 12, Banjara Hills, Hyderabad-500034

(3) Denomination of the variety:- **NM 74 A**

(4) Name of:

Family: **Poaceae**
Genus: *Zea*
Species: *mays*

Variety and common name: **Extant (VCK)/typical**

(5) Parentage and geographical location of the variety:-

from Population 34 by continuous selfing

(6) Details of the distinguishing features or the characteristics:-

Absence of anthocyanin colouration of silks.

(7) In case of 'essentially derived variety', the details of the 'initial variety' from which the 'essentially derived variety' is claimed to have been derived:- **NA**

(8) Name and address of the contributor, nature and amount of the contribution or the community knowledge used in the development of the plant variety:- **NA**

(9) Terms and conditions of the agreement, if any, entered into between the breeder and contributor:- **NA**

(10) If the variety is sold or otherwise disposed of, details thereof. **NA.**

Certificate of Registration No. 208 of 2012

(1) Registration Number and date of grant:- **208 of 2012 & 21/11/2012**

(2) Name and address of applicant or breeder in whose name the certificate has been issued or registered:-

Monsanto India Limited, 5th floor, Ahura Centre, 96, Mahakali caves road, Andheri (East)

(3) Denomination of the variety:- **MIM 001**

(4) Name of:

Family: **Poaceae**
Genus: *Zea*
Species: *mays*

Variety and common name: **Extant (VCK)/hybrid**

(5) Parentage and geographical location of the variety:-

Inbred lines PA2121, PA2122 and 31499 were used to develop the hybrid

(6) Details of the distinguishing features or the characteristics:-

Yellow with cap ear colour on tip of grain.

(7) In case of 'essentially derived variety', the details of the 'initial variety' from which the 'essentially derived variety' is claimed to have been derived:- **NA**

(8) Name and address of the contributor, nature and amount of the contribution or the community knowledge used in the development of the plant variety:- **NA**

(9) Terms and conditions of the agreement, if any, entered into between the breeder and contributor:- **NA**

(10) If the variety is sold or otherwise disposed of, details thereof. **NA.**

Certificate of Registration No. 209 of 2012

(1) Registration Number and date of grant:- **209 of 2012 & 21/11/2012**

(2) Name and address of applicant or breeder in whose name the certificate has been issued or registered:-

JK Agri Genetics Ltd., 1-10-177, 4th floor, Varun Towers, Begumpet, Hyderabad-500016

(3) Denomination of the variety:- **JK Surabhi**

(4) Name of:

Family: **Poaceae**
Genus: *Zea*
Species: *mays*

Variety and common name: **Extant (VCK)/hybrid**

(5) Parentage and geographical location of the variety:-

(M 32 X M 34) X M15-1

(6) Details of the distinguishing features or the characteristics:-

Curved attitude of lateral branches, presence of anthocyanin colouration of glumes excluding base of tasel and (middle third of main axis on fresh anthers), presence of anthocyanin colouration of anthers.

(7) In case of 'essentially derived variety', the details of the 'initial variety' from which the 'essentially derived variety' is claimed to have been derived:- **NA**

(8) Name and address of the contributor, nature and amount of the contribution or the community knowledge used in the development of the plant variety:- **NA**

(9) Terms and conditions of the agreement, if any, entered into between the breeder and contributor:- **NA**

(10) If the variety is sold or otherwise disposed of, details thereof. **NA**

Certificate of Registration No. 210 of 2012

(1) Registration Number and date of grant:- **210 of 2012 & 21/11/2012**

(2) Name and address of applicant or breeder in whose name the certificate has been issued or registered:-

Krishidhan Seeds Private Ltd., 7th floor, Tower-15, Cyber city, Magarpatto city, Hadapsar, Pune-411013, Maharashtra

(3) Denomination of the variety:- **MAHARAJA-999**

(4) Name of:

Family: **Poaceae**
Genus: *Zea*
Species: *mays*

Variety and common name: **Extant(VCK)/hybrid**

(5) Parentage and geographical location of the variety:-

4005 X 4006

(6) Details of the distinguishing features or the characteristics:-

Yellow with cap of grain alongwith large diameter without husk.

(7) In case of 'essentially derived variety', the details of the 'initial variety' from which the 'essentially derived variety' is claimed to have been derived:- **NA**

(8) Name and address of the contributor, nature and amount of the contribution or the community knowledge used in the development of the plant variety:- **NA**

(9) Terms and conditions of the agreement, if any, entered into between the breeder and contributor:- **NA**

(10) If the variety is sold or otherwise disposed of, details thereof. **NA**

Certificate of Registration No. 211 of 2012

(1) Registration Number and date of grant:- **211 of 2012 & 21/11/2012**

(2) Name and address of applicant or breeder in whose name the certificate has been issued or registered:-

Nusun Genetic Research Ltd., 501, suhan sirisourpada, Raj Bhawan Road, Somajiguda, Hyderabad-500082

(3) Denomination of the variety:- **LEGEND**

(4) Name of:

Family: **Poaceae**
Genus: *Zea*
Species: *mays*

Variety and common name: **New/hybrid**

(5) Parentage and geographical location of the variety:-

(VBMIB 0004 X VBMIB 0794) X VBMIB 040

(6) Details of the distinguishing features or the characteristics:-

Late time of anthusis (on middle third of main axis, 50% of plants), semi flint type of ear of grain.

(7) In case of 'essentially derived variety', the details of the 'initial variety' from which the 'essentially derived variety' is claimed to have been derived:- **NA**

(8) Name and address of the contributor, nature and amount of the contribution or the community knowledge used in the development of the plant variety:- **NA**

(9) Terms and conditions of the agreement, if any, entered into between the breeder and contributor:- **NA**

(10) If the variety is sold or otherwise disposed of, details thereof. **NA**