



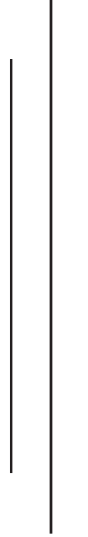
# DISTINCTNESS, UNIFORMITY AND STABILITY (DUS) TEST CHARACTERISTICS OF NOTIFIED CROP VARIETIES OF BANGLADESH



**SEED CERTIFICATION AGENCY**  
Gazipur, 1701  
[www.sca.gov.bd](http://www.sca.gov.bd)  
**MINISTRY OF AGRICULTURE**



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## **Father of the Nation Bangabandhu Sheikh Mujibur Rahman**



**“I couldn’t purchase rice anywhere from the world despite putting all my efforts. If we want to live on with rice, we have to produce rice”**

**Convocation Speech in 1973  
Bangladesh Agricultural University, Mymensingh**



## **DISTINCTNESS, UNIFORMITY AND STABILITY (DUS) TEST CHARACTERISTICS OF NOTIFIED CROP VARIETIES OF BANGLADESH**

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## PREFACE

In Bangladesh, during the last decades considerable efforts have been made to improve seed production and supply. There is also growing awareness of the value of quality seeds in increasing agricultural production. More attention would need to be given in the preparation and implementation on evaluation and release of new varieties, and hence, quality control and distribution of seeds are ensured. In Seed Certification Agency, proposed varieties are being tested for their uniqueness and agronomical merit such as yield through DUS and VCU test. This publication of **“Distinctness, Uniformity and Stability (DUS) Test Characteristics of Notified Crop Varieties of Bangladesh”** followed by UPOV (The International Union for the Protection of New Varieties of Plants) guidelines will definitely help authorities who are directly related to conduct DUS test in SCA to meet up the technical standards to examine the DUS of new varieties of plants and ensure Plant Breeders’ Rights.

This manuscript has got published due to active participation and coordination of Variety Testing personnel of SCA. I would like to express my deepest gratitude to all the personnel who directly or indirectly help us to publish this book. I expect it would serve as an important document to provide necessary information to SCA personnel, researchers and other stakeholders.

I would like to give my special thanks to Mohammad Enayet-e-Rabbi, DD(QC); Rebeka Parveen, ADD (SRQC); Hafsha Khatun, SCO; Sefat-E-Jamal, SCO; and Popy Rani Roy, SCO for their valuable contribution for compilation and proof reading of the book.

Ahmed Shafi  
Director  
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Gazipur-1701

## **Introduction**

The International Union for the Protection of New Varieties of Plants (UPOV) is an intergovernmental organization based in Geneva, Switzerland. UPOV was established in 1961 by the International Convention for the Protection of New Varieties of Plants (the “UPOV Convention”).

The mission of UPOV is to provide and promote an effective system of plant variety protection, with the aim of encouraging the development of new varieties of plants, for the benefit of society. The UPOV Convention provides the basis for members to encourage plant breeding by granting breeders of new plant varieties an intellectual property right; the breeder’s right.

According to Article 7 of the 1961/1972 and 1978 Acts and Article 12 of the 1991 Act of the UPOV Convention, protection can only be granted in respect of a new plant variety after examination of the variety has shown that it complies with the requirements for protection laid down in those Acts and, in particular, that the variety is distinct (D) from other variety whose existence is a matter of common knowledge at the time of the filing of the application (here in after referred to as a “variety of common knowledge”) and that it is sufficiently uniform (U) and stable (S), or DUS in short. The examination, or DUS test, is based mainly on growing tests, carried out by the authority competent for granting Plant Breeders’ Right or by separate institutions, such as public research institutes, acting on behalf of that authority or, in some cases, on the basis of growing tests carried out by the breeder. The examination generates a description of the variety, using its relevant characteristics (e.g. plant height, leaf shape, time of flowering), by which it can be defined as a variety in terms of Article 1 (vi) of the 1991 Act of the Convention.

### **Study on DUS Parameters**

DUS stands for distinctness, uniformity and stability (DUS) of new varieties of plants for the purpose of granting breeders’ Right. The new variety should be distinct from the other varieties for at least one characteristic to pass in the DUS test. DUS testing is useful for identification of varieties, registration of varieties and plant variety protection, for varietal information system and classification of varieties into different groups, and for genetic resources. DUS guideline and testing centre was prepared by authority which was crop specific.

DUS testing is a way of determining whether a newly bred variety differs from existing varieties within the same species (the Distinctness part), whether the characteristics used to establish Distinctness are expressed uniformly ( the Uniformity part) and that these characteristics do not change over subsequent generations ( the Stability part). DUS tests exist so that new varieties can legally gain access to their market for granting of Plant Breeders Rights, a form of intellectual property rights designed to safeguard the substantial economic investment involved in modern plant breeding.

## Criteria for Registration of Plant Varieties

**Distinctness:** The new variety must be clearly distinguishable in one or more characters from previously available varieties. It may differ in morphological quality, agronomic or any other character.

**Uniformity:** The variety must be sufficiently uniform in its relevant characteristics, subject to the variation that may be expected from the particular features of its propagation, it should be pure and look phenotypically similar. The assessment of uniformity of characteristics on the plot as a whole. In the case of 400 plants sample, the maximum number of off-types would be two (0.5% allowable).

**Stability:** The essential characteristics must remain unchanged under different agro-climatic conditions.

**Novelty:** It refers to newness of a variety.

## Method of Observation

There are two methods of observation:

a) Visual observation: Visual observation made on the basis of expert's judgement, usually in comparison to a reference point and includes all sensory observations (sight, smell, taste, touch). It is quicker and cheaper than measurements for example stem colouration.

b) Measurement observation: It can be observed by using linear scale e.g. ruler, weighing scales, colorimeter, dates, counts, etc. It gives numerical value often with units e.g. cm, gram, days.

Type of records:

a) MG- Single measurement of a group of plants or parts of plants.

b) MS- Measurement of a number of individual plants or parts of plants.

c) VG- Visual assessment by a single observation of a group of plants or parts of plants.

d) VS- Visual assessment by observation of individual plants or parts of plants.

When a method of observation is attributed to a certain characteristic, the first differentiation is made on the basis of action taken either visual observation (V) or a measurement (M). The second differentiation deals with the number of observations the expert attributes to each variety, thus the attribution of either G or S. If a single observation of a group consisting of an undefined number of individual plants is appropriate to assess the expression of a variety, this type of record expressed either VG or MG. Example measurement of plant length on a plot (MG), green colour of leaves on a plot (VG).

Observation on a number of individual plants that assess the expression of a variety could be expressed by S (thus either VS or MS). For example, measurement of length of ears (MS) and growth habit of single plants in grasses (VS). Colour characteristics, can be assessed with the help of Royal Horticultural Society colour chart.

Grouping of varieties: The candidate varieties for DUS testing shall be divided into groups to facilitate the assessment of distinctness. Some characteristics are proposed to be used for grouping in case rice varieties such as basal leaf, sheath colour, time of heading and content of amylose etc.

## **DUS Test Design**

The use of experimental design with respect to the number of growing cycles, lay out of the trial, number of plants to be examined and method of observation is largely determined by the number and nature of varieties to be examined in a particular trial. In DUS trials, because of the presence of only one treatment factor (variety), the following designs are used.

1. Completely Randomized Design: This design was applied if total number of test varieties is small.
2. Randomised Complete Block Design: When number of plots per block equals the number of varieties and all varieties are placed in each block this design is used. The advantage is that standard deviation between plots does not contain variation due to difference in blocks.
3. Randomised incomplete block design: In case of large number of varieties. Here, the number of plots per block is less than the number of varieties this type of design.

## **The Zadoks Decimal Growth Stages**

Growth is a complex process with different organs developing, growing and dying in overlapping sequences. However, it is easier to think of it as a series of growth stages as in the Zadoks scale. This has 10 main stages, labelled 0 to 9, which described the crop. These are named in the following table.

<b>0</b>	<b>Germination</b>	<b>5</b>	<b>Ear/ Panicle emergence</b>
00	Dry seed	50	-
01	Start of water absorption(imbibition)	51	First spikelet or ear just visible
02		52	-
03	Water absorption complete seed swollen	53	¼ of ear emerged
04		54	-
05	Root (radicle) emerged from seed	55	½ of ear emerged
06	-	56	-
07	Shoot (coleoptiles) emerged from seed	57	¾ of ear emerged
08	-	58	-
09	Leaf just at coleoptile tip	59	Emergence of ear complete
1	Seedling growth	6	Flowering
10	First leaf through coleoptile	60	-
11	First leaf unfolded	61	Beginning of anthesis
12	2 leaves unfolded	62	-
13	3 leaves unfolded	63	-
14	4 leaves unfolded	64	-
15	5 leaves unfolded	65	Flowering halfway
16	6 leaves unfolded	66	-
17	7 leaves unfolded	67	-
18	8 leaves unfolded	68	-
19	9 or more leaves unfolded	69	Flowering complete
2	Tillering	7	Milk development
20	Main shoot only	70	-
21	Main shoot and 1 tiller	71	Grain (caryopsis) water ripe
22	Main shoot and 2 tiller	72	-
23	Main shoot and 3 tiller	73	Early milk
24	Main shoot and 4 tiller	74	-
25	Main shoot and 5 tiller	75	Medium milk
26	Main shoot and 6 tiller	76	-
27	Main shoot and 7 tiller	77	Late milk
28	Main shoot and 8 tiller	78	-
29	Main shoot and 9 or more tillers	79	-
3	Stem Elongation	8	Dough development
30	Pseudostem (leaf sheath) exertion	80	-
31	1 <sup>st</sup> node detectable	81	-
32	2 <sup>nd</sup> node detectable	82	-
33	3 <sup>rd</sup> node detectable	83	Early dough
34	4 <sup>th</sup> node detectable	84	-
35	5 <sup>th</sup> node detectable	85	Soft dough
36	6 <sup>th</sup> node detectable	86	-
37	Flag leaf just visible	87	Hard dough
38	-	88	-
39	Flag leaf ligule/collar just visible	89	-
4	Booting	9	Ripening
40	-	90	-
41	Flag leaf sheath extending	91	Grain hard
42	-	92	-
43	Boots just visible swollen	93	Grain loosening in day time
44	-	94	Over ripe straw dead and collapsing
45	Boots swollen	95	Seed dormant
46	-	96	Viable seed giving 50% germination
47	Flag leaf sheath opening	97	Seed not dormant
48	-	98	Secondary dormancy induced
49	First awns visible (where appropriate)	99	Secondary dormancy lost

## **DUS data of Rice Varieties**

## DUS Test Characters of Inbred Rice

S. N	Characteristics	Observation time/stage (Zadok's scale)	States of the character	Code
1.	Leaf sheath: anthocyanin color	15-17	Absent	1
			Present	9
2.	Leaf color	25-40	Pale green	1
			Green	2
			Dark green	3
			Purple tip	4
			Purple margins	5
			Purple blotch	6
			Purple	7
3.	Penultimate leaf : pubescence of blade	40	Absent or very weak	1
			Weak or only on the margins	3
			Medium hairs on the lower portion of the leaf	5
			Strong hairs on the leaf blade	7
			Very strong	9
*4.	Penultimate leaf : anthocyanin colorations of auricles & collar	40	Absent	1
			Present	9
*5.	Penultimate leaf: Ligule	40-45	Absent	1
			Present	9
6.	Penultimate leaf: shape of the ligule	40-45	Truncate	1
			Acute	2
			Split or two-cleft	3
*7.	Flag leaf: attitude of blade	60-65	Erect (<30)	1
			Intermediate or semi-erect (30-45)	3
			Horizontal (45-90)	5
			Reflexed or descending (>90)	7
*8.	Time of heading (50% of plants with heads)	55	Very early	1
			Early	3
			Medium	5
			Late	7
			Very late	9
*9(a).	Male sterility	55-59	Absent	1
			CMS	3
			TGMS	5
			PGMS	7
			P(T)GMS	9

S. N	Characteristics	Observation time/stage (Zadok's scale)	States of the character	Code
9(b).	Microscopic Observation of Pollen with I <sub>2</sub> -KI solution	55-59	Completely sterile with TA Pollen	1
			Completely sterile with 80% TA Pollen	2
			Completely sterile with 50% TA Pollen	3
			Sterile (91-99%)	4
			Partial sterile (31-70%)	5
			Partial fertile (31-70%)	6
			Fertile (21-30%)	7
			Fully fertile (0-20%)	8
10.	Lemma & palea: anthocyanin colouration below apex	75-85	Absent or very weak	1
			Weak	3
			Medium	5
			Strong	7
			Very strong	9
11.	Lemma & palea: anthocyanin colouration below apex	75-85	Absent or very weak	1
			Weak	3
			Medium	5
			Strong	7
			Very strong	9
*12.	Lemma: anthocyanin colouration of apex	75-85	Absent or very weak	1
			Weak	3
			Medium	5
			Strong	7
			Very strong	9
13(a).	Colour of stigma	65	White	1
			Light green	2
			Yellow	3
			Light purple	4
			Purple	5
13(b).	Stigma exertion	68-69	No or a few (<5%)	1
			Low (5-20%)	3
			Medium (21-40%)	5
			High (41-60%)	7
			Very high (>61%)	9
14.	Stem: Culm diameter	65	Small	1
			Medium	3
			Large	5
			Very Large	7

S. N	Characteristics	Observation time/stage (Zadok's scale)	States of the character	Code
*15.	Stem length (Culm length)	70	Very short	1
			Short	3
			Medium	5
			Long	7
			Very Long	9
*16.	Stem: anthocyanin colouration of nodes	70	Absent	1
			Present	9
17.	Stem: intensity of anthocyanin colouration of nodes	70	Weak	3
			Medium	5
			Strong	7
			Very strong	9
18.	Stem: intensity of anthocyanin colouration of internodes	70	Absent or very weak	1
			Weak	3
			Medium	5
			Strong	7
			Very strong	9
*19.	Stem: anthocyanin colouration of internodes	72-90	Short	3
			Medium	5
			Long	7
			Very long	9
*20.	Panicle: curvature of main axis	90	Absent or very weak	1
			Weak	3
			Medium	5
			Strong	7
21.	Panicle: number of effective tillers per plant	75-90	Few (<6)	3
			Medium (6-10)	5
			Many (>10)	7
*22.	Spikelet: Pubescence of lemma & palea	60-80	Absent or very weak	1
			Weak	3
			Medium	5
			Strong	7
			Very strong	9
23.	Spikelet: colour of tip of lemma	65-90	White	1
			Brownish	3
			Red	4
			Purple	5
			Black	6
24.	Spikelet: awns in the spikelet	90	Absent	
			Present	

S. N	Characteristics	Observation time/stage (Zadok's scale)	States of the character	Code
25.	Spikelet: length of the longest awn	90	Very short	1
			Short	3
			Medium	5
			Long	7
			Very long	9
*26 (a).	Panicle: distribution of awns	90	Tip only	1
			Upper half only	3
			Whole length	5
26 (b).	Panicle: colour of awns	90	Yellow white	1
			Brown	3
			Reddish	5
			Purple	7
			Black	9
*27.	Panicle: attitude of branches	90	Erect	1
			Semi-erect	3
			Spreading	5
28.	Panicle: exertion	90	Enclosed	1
			Partly exerted	3
			Just exerted	5
			Moderately exerted	7
			Well exerted	9
29.	Time of maturity	92	Very early (<100 days)	1
			Early (101-115 days)	3
			Medium (116-135 days)	5
			Late (136-150 days)	7
			Very late (>150 days)	9
30.	Grain: weight of 1000 fully developed grains (adjusted at 12% of moisture)	92	Very low (<15g)	1
			Low (16-19g)	3
			Medium (20-23g)	5
			High (24-27g)	7
			Very high (>27g)	9
31.	Grain: length (without dehulling)	92	Very short (<6.0mm)	1
			Short (6.1-7.0mm)	3
			Medium (7.1-8.0mm)	5
			Long (8.1-9.0mm)	7
			Very long (>9.0mm)	9
32.	Sterile lemma length: measure at post harvest stage	92	Short (<1.5mm)	1
			Medium (1.5-2.5mm)	3
			Long (2.6-3.0mm)	5
			Very long (>3.0mm)	7

S. N	Characteristics	Observation time/stage (Zadok's scale)	States of the character	Code
33.	Decorticated grain length (After dehulling, before milling)	92	Short (<5.5mm)	1
			Medium (5.6-6.5mm)	3
			Long (6.6-7.5mm)	5
			Very long (>7.5mm)	7
34.	Leaf senescence: penultimate leaves are observed at the time of harvest.	92	Late and slow (2 or more leaves retain green colour at maturity)	1
			Intermediate	5
			Early and fast (leaves are dead at maturity)	9
*35.	Decorticated grain:shape {length-width (widest point) ratio of dehulled grain}	92	Round (L:W<1.5)	1
			Bold (L:W= 1.5-2.0)	3
			Medium (L:W= 2.1-2.5)	5
			Medium Slender (L:W=2.6-3.0)	7
			Slender (L:W>3.0)	9
36.	Decorticated grain (bran): colour	92	White	1
			Light brown	2
			Variegated brown	3
			Dark brown	4
			Red	5
			Variegated purple	6
			Purple	7
37.	Polished grain: size of white core or chalkiness (% of kernel area)	92	Absent or very small	1
			Small (>10%)	3
			Medium (11-20%)	5
			Large (>20%)	7
38.	Endosperm: content of amylose (non waxy type varieties)	92	Low (<20%)	1
			Intermediate (21-25%)	3
			High (>25%)	5
39.	Decorticated grain : aroma	92	Absent	1
			Lightly present	5
			Strongly present	9
40.	Other distinct special character (if any)		Description:	

\*The asterisk characteristics, which should always be included in description of the variety, except when the state of expression of a preceding characteristic renders this impossible (UPOV/MD-N/95/4-T/1/3).

As a general rule (Quantitative characteristics), states are formed in such a way that for the weak and strong expression a reasonable word pair is chosen, for example:

Weak/strong

Short/large

These word pairs are given the notes 3 and 7 and word “medium” is given the notes 5. The remaining states of the scale indicated by the notes 1 to 9 are formed according to the following example.

<b>State</b>	<b>Note</b>
Very weak	1
Very weak to weak	2
Weak	3
Weak to medium	4
Medium	5
Medium to strong	6
Strong	7
Strong to very strong	8
Very strong	9

(UPOV/MDN/95/4-T/1/3).

### DUS data of BRR1 dhan101 (Boro)

S.N	Characteristics	Code	State
1	Leaf sheath: anthocyanin color	1	Absent
2	Leaf color	2	Green
3	Penultimate leaf: pubescence of blade	5	Medium
4	Penultimate leaf: anthocyanin color of auricles & collar	1	Absent
5	Penultimate leaf: ligule	9	Present
6	Penultimate leaf: shape of the ligule	3	Two-cleft
7	Flag leaf: attitude of blade	1	Erect
8	Time of heading (50% of plants with heads)	7(106)	Late
9	Male sterility	-	
10	Lemma & palea: anthocyanin coloration	1	Absent
11	Lemma & palea: anthocyanin coloration below apex	1	Absent
12	Lemma: anthocyanin coloration of apex	1	Absent
13	Spikelet: color of stigma	1	White
14	Culm diameter	3	Medium
15	Culm: Length	7	Long
16	Stem: anthocyanin coloration of nodes	1	Absent
17	Stem: Intensity of anthocyanin coloration of nodes	1	Absent
18	Stem: anthocyanin coloration of internodes	1	Absent
19	Panicle: length	5	Medium
20	Panicle: curvature of main axis	5	Medium
21	Panicle: number of effective tillers in plant	5	Medium
22	Spikelet: pubescence of lemma & palea	7	Strong
23	Spikelet: color of tip of lemma	2	Yellowish
24	Panicle: awn in spikelet	1	Absent
25	Panicle: length of the longest awn	-	-
26a	Panicle: distribution of awns	-	-
26b	Panicle: color of awns	-	-
27	Panicle: attitude of branches	3	Semi-Erect
28	Panicle: exertion	7-9	Moderate to well
29	Time of maturity	7(142)	Late
30	Grain: wt of 1000 fully developed grains (at 12%)	5	Medium
31	Grain: length (without dehulling)	9	Very Long
32	Spikelet: Sterile lemma length	3	Medium
33	Decorticated grain: length (After dehulling, before milling)	5	Long
34	Leaf senescence	1	Late & Slow
35	Decorticated grain: shape (Length-breadth ratio)	9	Slender
36	Decorticated, unpolished grain: color	1	White
37	Polished grain: size of white core or chalkiness	1	Absent
38	Endosperm: content of amylose	3 (25%)	Intermediate
39	Decorticated grain: aroma	1	Absent
40	Other distinct special character (if any)	BB resistance (score 1) - Highly resistant	

### DUS data of BRR1 dhan102 (Boro)

S.N	Characteristics	Code	State
1	Leaf sheath: anthocyanin color	1	Absent
2	Leaf color	2	Green
3	Penultimate leaf: pubescence of blade	5-7	Medium
4	Penultimate leaf: anthocyanin color of auricles & collar	1	Absent
5	Penultimate leaf: ligule	9	Present
6	Penultimate leaf: shape of the ligule	3	Two-cleft
7	Flag leaf: attitude of blade	3	Semi Erect
8	Time of heading (50% of plants with heads)	7	Late
9	Male sterility	-	
10	Lemma & palea: anthocyanin coloration	1	Absent
11	Lemma & palea: anthocyanin coloration below apex	1	Absent
12	Lemma: anthocyanin coloration of apex	1	Absent
13	Spikelet: color of stigma	1	Absent
14	Culm diameter	1	Small
15	Culm: Length	5	Medium
16	Stem: anthocyanin coloration of nodes	1	Absent
17	Stem: Intensity of anthocyanin coloration of nodes	1	Absent
18	Stem: anthocyanin coloration of internodes	1	Absent
19	Panicle: length	7	Long
20	Panicle: curvature of main axis	5	Medium
21	Panicle: number of effective tillers in plant	7	Many
22	Spikelet: pubescence of lemma & palea	7	Strong
23	Spikelet: color of tip of lemma	2	Yellowish
24	Panicle: awn in spikelet	1	Absent
25	Panicle: length of the longest awn	-	-
26a	Panicle: distribution of awns	-	-
26b	Panicle: color of awns	-	-
27	Panicle: attitude of branches	3	Semi-Erect
28	Panicle: exertion	5	Just
29	Time of maturity	7(148)	Late
30	Grain: wt of 1000 fully developed grains (at 12%)	5	Medium
31	Grain: length (without dehulling)	9	Very Long
32	Spikelet: Sterile lemma length	5	Medium
33	Decorticated grain: length (After dehulling, before milling)	5	Long
34	Leaf senescence	5	Intermediate
35	Decorticated grain: shape (Length-breadth ratio)	9	Slender
36	Decorticated, unpolished grain: color	1	White
37	Polished grain: size of white core or chalkiness	3	Small
38	Endosperm: content of amylose	5	High
39	Decorticated grain: aroma	1	Absent
40	Other distinct special character (if any)	Milling outturn (70%), Zn enriched (25.5mg/kg)	

### DUS data of BRR1 dhan103 (T. Aman)

S.N	Characteristics	Code	State
1	Leaf sheath: anthocyanin color	1	Absent
2	Leaf color	2	Green
3	Penultimate leaf : pubescence of blade	7	Strong hairs on the blade
4	Penultimate leaf : anthocyanin color of auricles & collar	1	Absent or very weak
5	Penultimate leaf: ligule	9	Present
6	Penultimate leaf: shape of the ligule	3	Split or two-cleft
7	Flag leaf: attitude of blade	1	Erect
8	Time of heading (50% of plants with heads)	5	Medium
9	Male sterility	-	-
10	Lemma & palea: anthocyanin coloration	1	Absent
11	Lemma & palea: anthocyanin coloration below apex	1	Absent
12	Lemma: anthocyanin coloration of apex	1	Absent
13	Spikelet: color of stigma	1	White
14	Culm diameter	5	Large
15	Culm: Length	9	Very long
16	Stem: anthocyanin coloration of nodes	1	Absent
17	Stem: Intensity of anthocyanin coloration of nodes	-	-
18	Stem: anthocyanin coloration of internodes	1	Absent
19	Panicle: length	7	Long
20	Panicle: curvature of main axis	5	Medium
21	Panicle: number of effective tillers in plant	5	Medium
22	Spikelet: Pubescence of lemma & palea	7	Strong
23	Spikelet: color of tip of lemma	2	Yellowish
24	Panicle: awn in spikelet	1	Absent
25	Panicle: length of the longest awn	-	-
26a	Panicle: distribution of awns	-	-
26b	Panicle: color of awns	-	-
27	Panicle: attitude of branches	3	Semi-erect
28	Panicle: exertion	7	Moderately exerted
29	Time of maturity	5	Medium
30	Grain: wt of 1000 fully developed grains (at 12%)	5	Medium
31	Grain: length (without dehulling)	9	Very long
32	Spikelet: Sterile lemma length	3	Medium
33	Decorticated grain: length (After dehulling, before milling)	5	Long
34	Leaf senescence	1	Late & Slow
35	Decorticated grain: shape (Length-breadth ratio)	9	Slender
36	Decorticated, unpolished grain: color	1	White
37	Polished grain: size of white core or chalkiness	1	Absent
38	Endosperm: content of amylose	5	High
39	Decorticated grain: aroma	1	Absent
40	Other distinct special character (if any)		

### DUS data of BRR1 dhan104 (Boro)

S.N	Characteristics	Code	State
1	Leaf sheath: anthocyanin color	1	Absent
2	Leaf color	2	Green
3	Penultimate leaf : pubescence of blade	3	Weak or only on the margin
4	Penultimate leaf : anthocyanin color of auricles & collar	1	Absent
5	Penultimate leaf: ligule	9	Present
6	Penultimate leaf: shape of the ligule	3	Split or two-cleft
7	Flag leaf: attitude of blade	1	Erect
8	Time of heading (50% of plants with heads)	9	Very late (>120 days)
9	Male sterility	-	-
10	Lemma & palea: anthocyanin coloration	1	Absent or very weak
11	Lemma & palea: anthocyanin coloration below apex	1	Absent or very weak
12	Lemma: anthocyanin coloration of apex	1	Absent or very weak
13	Spikelet: color of stigma	1	White
14	Culm diameter	1	Small (<5.0mm)
15	Culm: Length	5	Medium(61 -80cm)
16	Stem: anthocyanin coloration of nodes	1	Absent
17	Stem: Intensity of anthocyanin coloration of nodes	1	Absent
18	Stem: anthocyanin coloration of internodes	1	Absent or very weak
19	Panicle: length	7	Long (26-30cm)
20	Panicle: curvature of main axis	5	Medium
21	Panicle: number of effective tillers in plant	5	Medium (6-10)
22	Spikelet: Pubescence of lemma & palea	7	Strong
23	Spikelet: color of tip of lemma	2	Yellowish
24	Panicle: awn in spikelet	1	Absent
25	Panicle: length of the longest awn	-	-
26a	Panicle: distribution of awns	-	-
26b	Panicle: color of awns	-	-
27	Panicle: attitude of branches	3	Semi-erect
28	Panicle: exertion	5	Just Exerted
29	Time of maturity	9	Very late (>150 days)
30	Grain: wt of 1000 fully developed grains (at 12%)	5	Medium(20 -23g)
31	Grain: length (without dehulling)	9	Very long (>9.0mm)
32	Spikelet: Sterile lemma length	5	Long (2.6-3.0mm)
33	Decorticated grain: length (After dehulling, before milling)	7	Very long (>7.5mm)
34	Leaf senescence	5	Interm
35	Decorticated grain: shape (Length-breadth ratio)	9	Slender (L:W>3.0)
36	Decorticated, unpolished grain: color	1	White
37	Polished grain: size of white core or chalkiness	1	Absent or very small
38	Endosperm: content of amylose	5	High (26.8%)
39	Decorticated grain: aroma	9	Strongly present
40	Other distinct special character (if any)	Milling (70.1%) & Head rice (85%)	

### DUS data of BRR1 dhan105 (Boro)

S.N	Characteristics	Code	State
1	Leaf sheath: anthocyanin color	1	Absent
2	Leaf color	3	Dark Green
3	Penultimate leaf : pubescence of blade	3	Weak or only on the margins
4	Penultimate leaf : anthocyanin color of auricles & collar	1	Absent
5	Penultimate leaf: ligule	9	Present
6	Penultimate leaf: shape of the ligule	3	Split or two-cleft
7	Flag leaf: attitude of blade	1	Erect
8	Time of heading (50% of plants with heads)	9	Very late (>120 days)
9	Male sterility	0	Absent
10	Lemma & palea: anthocyanin coloration	1	Absent or very weak
11	Lemma & palea: anthocyanin coloration below apex	1	Absent or very weak
12	Lemma: anthocyanin coloration of apex	1	absent or very weak
13	Spikelet: color of stigma	1	White
14	Culm diameter	1	Small (<5mm)
15	Culm: Length	5	Medium (61-80cm)
16	Stem: anthocyanin coloration of nodes	1	Absent
17	Stem: Intensity of anthocyanin coloration of node	1	Absent
18	Stem: anthocyanin coloration of internodes	1	Absent or very weak
19	Panicle: length	7	Long(26-30cm)
20	Panicle: curvature of main axis	5	Medium
21	Panicle: number of effective tillers in plant	7	Many(>10)
22	Spikelet: Pubescence of lemma & palea	7	strong
23	Spikelet: color of tip of lemma	2	Yellowish
24	Panicle: awn in spikelet	1	absent
25	Panicle: length of the longest awn	0	Absent
26a	Panicle: distribution of awns	0	Absent
26b	Panicle: color of awns	0	Absent
27	Panicle: attitude of branches	3	Semi-Erect
28	Panicle: exertion	5	Just exerted
29	Time of maturity	9	Very late (>150 days)
30	Grain: wt of 1000 fully developed grains (at 12%)	7	High (24-27g)
31	Grain: length (without dehulling)	9	Very long (>9.0mm)
32	Spikelet: Sterile lemma length	5	Long (2.6-3.0mm)
33	Decorticated grain: length (After dehulling, before milling)	5	Long (6.6-7.5mm)
34	Leaf senescence	5	Intermediate
35	Decorticated grain: shape (Length-breadth ratio)	9	Slender (L:W>3.0)
36	Decorticated, unpolished grain: color	2	Light brown
37	Polished grain: size of white core or chalkiness	1	Absent or very small
38	Endosperm: content of amylose	5	High (>25%)
39	Decorticated grain: aroma	1	Absent
40	Other distinct special character (if any)		Low GI (55.20%)

### DUS data of BRR1 dhan106 (AUS)

S.N	Characteristics	Code	State
1	Leaf sheath: anthocyanin color	9	Present
2	Leaf color	5	Purple margin
3	Penultimate leaf: pubescence of blade	3	Weak
4	Penultimate leaf: anthocyanin color of auricles & collar	9	Present
5	Penultimate leaf: ligule	9	Present
6	Penultimate leaf: shape of the ligule	3	Two-cleft
7	Flag leaf: attitude of blade	1	Erect
8	Time of heading (50% of plants with heads)	5	Medium
9	Male sterility	-	-
10	Lemma & palea: anthocyanin coloration	1	Absent
11	Lemma & palea: anthocyanin coloration below apex	1	Absent
12	Lemma: anthocyanin coloration of apex	7	Strong
13	Spikelet: color of stigma	5	Purple
14	Culm diameter	5	Large
15	Culm: Length	9	Very long
16	Stem: anthocyanin coloration of nodes	1	Absent
17	Stem: Intensity of anthocyanin coloration of nodes	-	-
18	Stem: anthocyanin coloration of internodes	1	Absent
19	Panicle: length	7	Long
20	Panicle: curvature of main axis	5	Medium
21	Panicle: number of effective tillers in plant	7	Many
22	Spikelet: Pubescence of lemma & palea	7	Strong
23	Spikelet: color of tip of lemma	5	Purple
24	Panicle: awn in spikelet	1	Absent
25	Panicle: length longest awn	-	-
26a	Panicle: distribution of awns	-	-
26b	Panicle: color of awns	-	-
27	Panicle: attitude of branches	3	Semi-erect
28	Panicle: exertion	7-9	Moderate to Well exerted
29	Time of maturity	5	Medium
30	Grain: wt of 1000 fully developed grains (at 12%)	7	High
31	Grain: length (without dehulling)	7	Long
32	Spikelet: Sterile lemma length	3	Medium
33	Decorticated grain: length (After dehulling, before milling)	3	Medium
34	Leaf senescence	1	Late & slow
35	Decorticated grain: shape (Length-breadth ratio)	9	Slender
36	Decorticated, unpolished grain: color	2	Light brown
37	Polished grain: size of white core or chalkiness	1	Absent
38	Endosperm: content of amylose	5	High
39	Decorticated grain: aroma	1	Absent
40	Other distinct special character (if any)	Lodging tolerant & Suitable for non-saline tidal area	

### DUS data of Iratom-24 (Boro & AUS)

S.N	Characteristics	Code	State
1	Leaf sheath: anthocyanin color	1	Absent
2	Leaf color	2	Green
3	Penultimate leaf: pubescence of blade	3	Weak or only on the margins
4	Penultimate leaf: anthocyanin color of auricles & collar	1	Absent
5	Penultimate leaf: ligule	9	Present
6	Penultimate leaf: shape of the ligule	3	Split or two-cleft
7	Flag leaf: attitude of blade	3	Semi-Erect
8	Time of heading (50% of plants with heads)	7	Late
9	Male sterility	-	-
10	Lemma & palea: anthocyanin coloration	1	Absent
11	Lemma & palea: anthocyanin coloration below apex	1	Absent
12	Lemma: anthocyanin coloration of apex	1	Absent
13	Spikelet: color of stigma	2	Light green
14	Culm diameter	3	Medium
15	Culm: Length	5	Medium
16	Stem: anthocyanin coloration of nodes	1	Absent
17	Stem: Intensity of anthocyanin coloration of nodes	-	-
18	Stem: anthocyanin coloration of internodes	1	Absent
19	Panicle: length	5	Medium
20	Panicle: curvature of main axis	5	Medium
21	Panicle: number of effective tillers in plant	5	Medium
22	Spikelet: pubescence of lemma & palea	7	Strong
23	Spikelet: color of tip of lemma	2	Yellowish
24	Panicle: awn in spikelet	1	Absent
25	Panicle: length of the longest awn	-	-
26a	Panicle: distribution of awns	-	-
26b	Panicle: color of awns	-	-
27	Panicle: attitude of branches	3	Semi-erect
28	Panicle: exertion	5	Just exerted
29	Time of maturity	7	Late
30	Grain: wt of 1000 fully developed grains (at 12%)	7	High
31	Grain: length (without dehulling)	7	Long
32	Spikelet: Sterile lemma length	3	Medium
33	Decorticated grain: length (After dehulling, before milling)	3	Medium
34	Leaf senescence	5	Intermediate
35	Decorticated grain: shape (Length-breadth ratio)	5	Medium
36	Decorticated, unpolished grain: color	1	White
37	Polished grain: size of white core or chalkiness	5	Medium
38	Endosperm: content of amylose	3	High
39	Decorticated grain: aroma	1	Absent
40	Other distinct special character (if any)		

### DUS data of BINA dhan5 (Boro)

S.N	Characteristics	Code	State
1	Leaf sheath: anthocyanin color	1	Absent
2	Leaf color	3	Dark Green
3	Penultimate leaf: pubescence of blade	9	Very strong
4	Penultimate leaf: anthocyanin color of auricles & collar	1	Absent
5	Penultimate leaf: ligule	9	Present
6	Penultimate leaf: shape of the ligule	3	Split or two-cleft
7	Flag leaf: attitude of blade	3	Semi-Erect
8	Time of heading (50% of plants with heads)	9	Very Late
9	Male sterility	-	-
10	Lemma & palea: anthocyanin coloration	1	Absent
11	Lemma & palea: anthocyanin coloration below apex	1	Absent
12	Lemma: anthocyanin coloration of apex	1	Absent
13	Spikelet: color of stigma	2	Light green
14	Culm diameter	5	Large
15	Culm: Length	7	Long
16	Stem: anthocyanin coloration of nodes	1	Absent
17	Stem: Intensity of anthocyanin coloration of nodes	-	-
18	Stem: anthocyanin coloration of internodes	1	Absent
19	Panicle: length	5	Medium
20	Panicle: curvature of main axis	5	Medium
21	Panicle: number of effective tillers in plant	5	Medium
22	Spikelet: pubescence of lemma & palea	7	Strong
23	Spikelet: color of tip of lemma	2	Yellowish
24	Panicle: awn in spikelet	9	Present
25	Panicle: length of the longest awn	3	Short
26a	Panicle: distribution of awns	1	Tip only
26b	Panicle: color of awns	3	Brown
27	Panicle: attitude of branches	3	Semi-erect
28	Panicle: exertion	7	Moderately exerted
29	Time of maturity	9	Very Late
30	Grain: wt of 1000 fully developed grains (at 12%)	7	High
31	Grain: length (without dehulling)	9	Very long
32	Spikelet: Sterile lemma length	5	Long
33	Decorticated grain: length (After dehulling, before milling)	5	Long
34	Leaf senescence	5	Intermediate
35	Decorticated grain: shape (Length-breadth ratio)	9	Slender
36	Decorticated, unpolished grain: color	2	Light Brown
37	Polished grain: size of white core or chalkiness	3	Small
38	Endosperm: content of amylose	3	Intermediate
39	Decorticated grain: aroma	1	Absent
40	Other distinct special character (if any)		

### DUS data of BINA dhan6 (Boro)

S.N	Characteristics	Code	State
1	Leaf sheath: anthocyanin color	1	Absent
2	Leaf color	2	Green
3	Penultimate leaf: pubescence of blade	7	Strong hairs on the leaf blade
4	Penultimate leaf: anthocyanin color of auricles & collar	1	Absent
5	Penultimate leaf: ligule	9	Present
6	Penultimate leaf: shape of the ligule	3	Split or two-cleft
7	Flag leaf: attitude of blade	3	Semi-Erect
8	Time of heading (50% of plants with heads)	9	Very Late
9	Male sterility	-	-
10	Lemma & palea: anthocyanin coloration	1	Absent
11	Lemma & palea: anthocyanin coloration below apex	1	Absent
12	Lemma: anthocyanin coloration of apex	1	Absent
13	Spikelet: color of stigma	2	Light green
14	Culm diameter	5	Large
15	Culm: Length	7	Long
16	Stem: anthocyanin coloration of nodes	1	Absent
17	Stem: Intensity of anthocyanin coloration of nodes	-	-
18	Stem: anthocyanin coloration of internodes	1	Absent
19	Panicle: length	7	Long
20	Panicle: curvature of main axis	7	Long
21	Panicle: number of effective tillers in plant	5	Medium
22	Spikelet: pubescence of lemma & palea	7	Strong
23	Spikelet: color of tip of lemma	2	Yellowish
24	Panicle: awn in spikelet	1	Present
25	Panicle: length of the longest awn	-	-
26a	Panicle: distribution of awns	-	-
26b	Panicle: color of awns	-	-
27	Panicle: attitude of branches	3	Semi-erect
28	Panicle: exertion	7	Moderately exerted
29	Time of maturity	9	Very Late
30	Grain: wt of 1000 fully developed grains (at 12%)	7	High
31	Grain: length (without dehulling)	5	Medium
32	Spikelet: Sterile lemma length	3	Medium
33	Decorticated grain: length (After dehulling, before milling)	3	Medium
34	Leaf senescence	5	Intermediate
35	Decorticated grain: shape (Length-breadth ratio)	5	Medium
36	Decorticated, unpolished grain: color	1	White
37	Polished grain: size of white core or chalkiness	1	Absent or small
38	Endosperm: content of amylose	3	Intermediate
39	Decorticated grain: aroma	1	Absent
40	Other distinct special character (if any)	-	-

### DUS data of BINA dhan7 (T. Aman)

S.N	Characteristics	Code	State
1	Leaf sheath: anthocyanin color	1	Absent
2	Leaf color	2	Green
3	Penultimate leaf: pubescence of blade	3	Weak or only on the margins
4	Penultimate leaf: anthocyanin color of auricles & collar	1	Absent
5	Penultimate leaf: ligule	9	Present
6	Penultimate leaf: shape of the ligule	3	Split or two-cleft
7	Flag leaf: attitude of blade	3	Semi-Erect
8	Time of heading (50% of plants with heads)	3	Early
9	Male sterility	-	-
10	Lemma & palea: anthocyanin coloration	1	Absent
11	Lemma & palea: anthocyanin coloration below apex	1	Absent
12	Lemma: anthocyanin coloration of apex	1	Absent
13	Spikelet: color of stigma	1	White
14	Culm diameter	3	Medium
15	Culm: Length	5	Medium
16	Stem: anthocyanin coloration of nodes	1	Absent
17	Stem: Intensity of anthocyanin coloration of nodes	-	-
18	Stem: anthocyanin coloration of internodes	1	Absent
19	Panicle: length	5	Medium
20	Panicle: curvature of main axis	5	Medium
21	Panicle: number of effective tillers in plant	5	Medium
22	Spikelet: Pubescence of lemma & palea	7	Strong
23	Spikelet: color of tip of lemma	2	Yellowish
24	Panicle: awn in spikelet	1	Absent
25	Panicle: length of the longest awn	-	-
26a	Panicle: distribution of awns	-	-
26b	Panicle: color of awns	-	-
27	Panicle: attitude of branches	3	Semi-erect
28	Panicle: exertion	7	Moderately exerted
29	Time of maturity	3	Early
30	Grain: wt of 1000 fully developed grains (at 12%)	5	Medium
31	Grain: length (without dehulling)	9	Very Long
32	Spikelet: Sterile lemma length	3	Medium
33	Decorticated grain: length (After dehulling, before milling)	7	Very Long
34	Leaf senescence	9	Early and Fast
35	Decorticated grain: shape (Length-breadth ratio)	9	Slender
36	Decorticated, unpolished grain: color	1	White
37	Polished grain: size of white core or chalkiness	1	Absent or small
38	Endosperm: content of amylose	5	High
39	Decorticated grain: aroma	1	Absent
40	Other distinct special character (if any)		

### DUS data of BINA dhan8 (Boro)

S.N	Characteristics	Code	State
1	Leaf sheath: anthocyanin color	1	Absent
2	Leaf color	2	Green
3	Penultimate leaf: pubescence of blade	1	Absent
4	Penultimate leaf: anthocyanin color of auricles & collar	1	Absent
5	Penultimate leaf: ligule	9	Present
6	Penultimate leaf: shape of the ligule	3	Split or two-cleft
7	Flag leaf: attitude of blade	1	Erect
8	Time of heading (50% of plants with heads)	7	Late
9	Male sterility	-	-
10	Lemma & palea: anthocyanin coloration	1	Absent
11	Lemma & palea: anthocyanin coloration below apex	1	Absent
12	Lemma: anthocyanin coloration of apex	1	Absent
13	Spikelet: color of stigma	1	White
14	Culm diameter	3	Medium
15	Culm: Length	5	Medium
16	Stem: anthocyanin coloration of nodes	1	Absent
17	Stem: Intensity of anthocyanin coloration of nodes	-	-
18	Stem: anthocyanin coloration of internodes	1	Absent
19	Panicle: length	5	Medium
20	Panicle: curvature of main axis	5	Medium
21	Panicle: number of effective tillers in plant	5	Medium
22	Spikelet: Pubescence of lemma & palea	7	Strong
23	Spikelet: color of tip of lemma	1	White
24	Panicle: awn in spikelet	1	Absent
25	Panicle: length of the longest awn	-	-
26a	Panicle: distribution of awns	-	-
26b	Panicle: color of awns	-	-
27	Panicle: attitude of branches	3	Semi-erect
28	Panicle: exertion	5	Just exerted
29	Time of maturity	7	Late
30	Grain: wt of 1000 fully developed grains (at 12%)	7	High
31	Grain: length (without dehulling)	7	Long
32	Spikelet: Sterile lemma length	5	Long
33	Decorticated grain: length (After dehulling, before milling)	3	Medium
34	Leaf senescence	5	Intermediate
35	Decorticated grain: shape (Length-breadth ratio)	5	Medium
36	Decorticated, unpolished grain: color	1	White
37	Polished grain: size of white core or chalkiness	5	Medium
38	Endosperm: content of amylose	3	Intermediate
39	Decorticated grain: aroma	1	Absent
40	Other distinct special character (if any)		Salt tolerant (8-10 ds/m)

### DUS data of BINA dhan9 (T. Aman)

S.N	Characteristics	Code	State
1	Leaf sheath: anthocyanin color	1	Absent
2	Leaf color	3	Dark Green
3	Penultimate leaf: pubescence of blade	1	Absent
4	Penultimate leaf: anthocyanin color of auricles & collar	1	Absent
5	Penultimate leaf: ligule	9	Present
6	Penultimate leaf: shape of the ligule	3	Split or two-cleft
7	Flag leaf: attitude of blade	3	Semi-Erect
8	Time of heading (50% of plants with heads)	5	Medium
9	Male sterility	-	-
10	Lemma & palea: anthocyanin coloration	9	Very Strong
11	Lemma & palea: anthocyanin coloration below apex	9	Very Strong
12	Lemma: anthocyanin coloration of apex	9	Very Strong
13	Spikelet: color of stigma	1	White
14	Culm diameter	3	Medium
15	Culm: Length	7	Long
16	Stem: anthocyanin coloration of nodes	1	Absent
17	Stem: Intensity of anthocyanin coloration of nodes	-	-
18	Stem: anthocyanin coloration of internodes	1	Absent
19	Panicle: length	7	Long
20	Panicle: curvature of main axis	5	Medium
21	Panicle: number of effective tillers in plant	7	Many
22	Spikelet: pubescence of lemma & palea	1	Absent or very weak
23	Spikelet: color of tip of lemma	6	Black
24	Panicle: awn in spikelet	1	Absent
25	Panicle: length of the longest awn	-	-
26a	Panicle: distribution of awns	-	-
26b	Panicle: color of awns	-	-
27	Panicle: attitude of branches	3	Semi-erect
28	Panicle: exertion	7	Moderately exerted
29	Time of maturity	5	Medium
30	Grain: wt of 1000 fully developed grains (at 12%)	5	Medium
31	Grain: length (without dehulling)	9	Very Long
32	Spikelet: Sterile lemma length	5	Long
33	Decorticated grain: length (After dehulling, before milling)	5	Long
34	Leaf senescence	9	Early & fast
35	Decorticated grain: shape (Length-breadth ratio)	9	Slender
36	Decorticated, unpolished grain: color	1	White
37	Polished grain: size of white core or chalkiness	1	Absent or very small
38	Endosperm: content of amylose	5	High
39	Decorticated grain: aroma	9	Strongly present
40	Other distinct special character (if any)		

### DUS data of BINA dhan10 (Boro)

S.N	Characteristics	Code	State
1	Leaf sheath: anthocyanin color	1	Absent
2	Leaf color	2	Green
3	Penultimate leaf: pubescence of blade	3	Weak or only on the margins
4	Penultimate leaf: anthocyanin color of auricles & collar	1	Absent
5	Penultimate leaf: ligule	9	Present
6	Penultimate leaf: shape of the ligule	3	Split or two-cleft
7	Flag leaf: attitude of blade	1	Erect
8	Time of heading (50% of plants with heads)	5	Medium
9	Male sterility	-	-
10	Lemma & palea: anthocyanin coloration	1	Absent
11	Lemma & palea: anthocyanin coloration below apex	1	Absent
12	Lemma: anthocyanin coloration of apex	1	Absent
13	Spikelet: color of stigma	1	White
14	Culm diameter	3	Medium
15	Culm: Length	5	Medium
16	Stem: anthocyanin coloration of nodes	1	Absent
17	Stem: Intensity of anthocyanin coloration of nodes	-	-
18	Stem: anthocyanin coloration of internodes	1	Absent
19	Panicle: length	5	Medium
20	Panicle: curvature of main axis	5	Medium
21	Panicle: number of effective tillers in plant	5	Medium
22	Spikelet: pubescence of lemma & palea	7	Strong
23	Spikelet: color of tip of lemma	2	Yellowish
24	Panicle: awn in spikelet	1	Absent
25	Panicle: length of the longest awn	-	-
26a	Panicle: distribution of awns	-	-
26b	Panicle: color of awns	-	-
27	Panicle: attitude of branches	3	Semi-erect
28	Panicle: exertion	7	Moderately exerted
29	Time of maturity	7	Late
30	Grain: wt of 1000 fully developed grains (at 12%)	7	High
31	Grain: length (without dehulling)	9	Very Long
32	Spikelet: Sterile lemma length	3	Medium
33	Decorticated grain: length (After dehulling, before milling)	5	Long
34	Leaf senescence	1	Late & slow
35	Decorticated grain: shape (Length-breadth ratio)	9	Slender
36	Decorticated, unpolished grain: color	1	White
37	Polished grain: size of white core or chalkiness	1	Absent or very small
38	Endosperm: content of amylose	3	Intermediate
39	Decorticated grain: aroma	1	Absent
40	Other distinct special character (if any)		Salt tolerant (10-12 ds/m)

### DUS data of BINA dhan11 (T. Aman)

S.N	Characteristics	Code	State
1	Leaf sheath: anthocyanin color	1	Absent
2	Leaf color	2	Green
3	Penultimate leaf: pubescence of blade	3	Weak or only on the margins
4	Penultimate leaf: anthocyanin color of auricles & collar	1	Absent
5	Penultimate leaf: ligule	9	Present
6	Penultimate leaf: shape of the ligule	3	Split or two-cleft
7	Flag leaf: attitude of blade	1	Erect
8	Time of heading (50% of plants with heads)	5	Medium
9	Male sterility	-	-
10	Lemma & palea: anthocyanin coloration	1	Absent
11	Lemma & palea: anthocyanin coloration below apex	1	Absent
12	Lemma: anthocyanin coloration of apex	1	Absent
13	Spikelet: color of stigma	1	White
14	Culm diameter	3	Medium
15	Culm: Length	5	Medium
16	Stem: anthocyanin coloration of nodes	1	Absent
17	Stem: Intensity of anthocyanin coloration of nodes	-	-
18	Stem: anthocyanin coloration of internodes	1	Absent
19	Panicle: length	5	Medium
20	Panicle: curvature of main axis	5	Medium
21	Panicle: number of effective tillers in plant	5	Medium
22	Spikelet: pubescence of lemma & palea	7	Strong
23	Spikelet: color of tip of lemma	2	Yellowish
24	Panicle: awn in spikelet	1	Absent
25	Panicle: length of the longest awn	-	-
26a	Panicle: distribution of awns	-	-
26b	Panicle: color of awns	-	-
27	Panicle: attitude of branches	3	Semi-erect
28	Panicle: exertion	7	Moderately exerted
29	Time of maturity	3	Early
30	Grain: wt of 1000 fully developed grains (at 12%)	7	High
31	Grain: length (without dehulling)	9	Very Long
32	Spikelet: Sterile lemma length	3	Medium
33	Decorticated grain: length (After dehulling, before milling)	5	Long
34	Leaf senescence	1	Late & slow
35	Decorticated grain: shape (Length-breadth ratio)	9	Slender
36	Decorticated, unpolished grain: color	1	White
37	Polished grain: size of white core or chalkiness	1	Absent or very small
38	Endosperm: content of amylose	3	Intermediate
39	Decorticated grain: aroma	1	Absent
40	Other distinct special character (if any)	Submegerce tolerant at seedling stage	

### DUS data of BINA dhan12 (T. Aman)

S.N	Characteristics	Code	State
1	Leaf sheath: anthocyanin color	1	Absent
2	Leaf color	2	Green
3	Penultimate leaf: pubescence of blade	7	Strong hairs on the leaf blade
4	Penultimate leaf: anthocyanin color of auricles & collar	1	Absent
5	Penultimate leaf: ligule	9	Present
6	Penultimate leaf: shape of the ligule	3	Split or two-cleft
7	Flag leaf: attitude of blade	1	Erect
8	Time of heading (50% of plants with heads)	5	Medium
9	Male sterility	-	-
10	Lemma & palea: anthocyanin coloration	1	Absent
11	Lemma & palea: anthocyanin coloration below apex	1	Absent
12	Lemma: anthocyanin coloration of apex	1	Absent
13	Spikelet: color of stigma	1	White
14	Culm diameter	3	Medium
15	Culm: Length	5	Medium
16	Stem: anthocyanin coloration of nodes	1	Absent
17	Stem: Intensity of anthocyanin coloration of nodes	-	-
18	Stem: anthocyanin coloration of internodes	1	Absent
19	Panicle: length	5	Medium
20	Panicle: curvature of main axis	5	Medium
21	Panicle: number of effective tillers in plant	5	Medium
22	Spikelet: pubescence of lemma & palea	7	Strong
23	Spikelet: color of tip of lemma	2	Yellowish
24	Panicle: awn in spikelet	1	Absent
25	Panicle: length of the longest awn	-	-
26a	Panicle: distribution of awns	-	-
26b	Panicle: color of awns	-	-
27	Panicle: attitude of branches	3	Semi-erect
28	Panicle: exertion	3	Partly exerted
29	Time of maturity	7	Late
30	Grain: wt of 1000 fully developed grains (at 12%)	3	Low
31	Grain: length (without dehulling)	5	Medium
32	Spikelet: Sterile lemma length	3	Medium
33	Decorticated grain: length (After dehulling, before milling)	1	Short
34	Leaf senescence	1	Late & slow
35	Decorticated grain: shape (Length-breadth ratio)	7	Medium Slender
36	Decorticated, unpolished grain: color	1	White
37	Polished grain: size of white core or chalkiness	1	Absent or very small
38	Endosperm: content of amylose	3	Intermediate
39	Decorticated grain: aroma	1	Absent
40	Other distinct special character (if any)	Submergence tolerant at seedling stage	

### DUS data of BINA dhan13 (T. Aman)

S.N	Characteristics	Code	State
1	Leaf sheath: anthocyanin color	1	Absent
2	Leaf color	2	Green
3	Penultimate leaf: pubescence of blade	1	Absent
4	Penultimate leaf: anthocyanin color of auricles & collar	1	Absent
5	Penultimate leaf: ligule	9	Present
6	Penultimate leaf: shape of the ligule	3	Split or two-cleft
7	Flag leaf: attitude of blade	7	Reflexed
8	Time of heading (50% of plants with heads)	7	Late
9	Male sterility	-	-
10	Lemma & palea: anthocyanin coloration	9	Very Strong
11	Lemma & palea: anthocyanin coloration below apex	9	Very Strong
12	Lemma: anthocyanin coloration of apex	9	Very Strong
13	Spikelet: color of stigma	1	White
14	Culm diameter	5	Large
15	Culm: Length	9	Very long
16	Stem: anthocyanin coloration of nodes	1	Absent
17	Stem: Intensity of anthocyanin coloration of nodes	-	-
18	Stem: anthocyanin coloration of internodes	1	Absent
19	Panicle: length	7	long
20	Panicle: curvature of main axis	5	Medium
21	Panicle: number of effective tillers in plant	7	Many
22	Spikelet: Pubescence of lemma & palea	7	Strong
23	Spikelet: color of tip of lemma	6	Black
24	Panicle: awn in spikelet	1	Absent
25	Panicle: length of the longest awn	-	-
26a	Panicle: distribution of awns	-	-
26b	Panicle: color of awns	-	-
27	Panicle: attitude of branches	3	Semi-erect
28	Panicle: exertion	9	Well exerted
29	Time of maturity	5	Medium
30	Grain: wt of 1000 fully developed grains (at 12%)	1	Very Low
31	Grain: length (without dehulling)	1	Very Short
32	Spikelet: Sterile lemma length	3	Medium
33	Decorticated grain: length (After dehulling, before milling)	1	Short
34	Leaf senescence	5	Intermediate
35	Decorticated grain: shape (Length-breadth ratio)	3	Bold
36	Decorticated, unpolished grain: color	2	Light Brown
37	Polished grain: size of white core or chalkiness	1	Absent or very small
38	Endosperm: content of amylose	3	Intermediate
39	Decorticated grain: aroma	9	Strongly present
40	Other distinct special character (if any)		

### DUS data of BINA dhan14 (Boro)

S.N	Characteristics	Code	State
1	Leaf sheath: anthocyanin color	1	Absent
2	Leaf color	2	Green
3	Penultimate leaf: pubescence of blade	1	Absent
4	Penultimate leaf: anthocyanin color of auricles & collar	1	Absent
5	Penultimate leaf: ligule	9	Present
6	Penultimate leaf: shape of the ligule	3	Split or two-cleft
7	Flag leaf: attitude of blade	7	Reflexed
8	Time of heading (50% of plants with heads)	7	Late
9	Male sterility	-	-
10	Lemma & palea: anthocyanin coloration	9	Very Strong
11	Lemma & palea: anthocyanin coloration below apex	9	Very Strong
12	Lemma: anthocyanin coloration of apex	9	Very Strong
13	Spikelet: color of stigma	1	White
14	Culm diameter	5	Large
15	Culm: Length	9	Very long
16	Stem: anthocyanin coloration of nodes	1	Absent
17	Stem: Intensity of anthocyanin coloration of nodes	-	-
18	Stem: anthocyanin coloration of internodes	1	Absent
19	Panicle: length	7	long
20	Panicle: curvature of main axis	5	Medium
21	Panicle: number of effective tillers in plant	7	Many
22	Spikelet: pubescence of lemma & palea	7	Strong
23	Spikelet: color of tip of lemma	6	Black
24	Panicle: awn in spikelet	1	Absent
25	Panicle: length of the longest awn	-	-
26a	Panicle: distribution of awns	-	-
26b	Panicle: color of awns	-	-
27	Panicle: attitude of branches	3	Semi-erect
28	Panicle: exertion	7	Moderately exerted
29	Time of maturity	7	Late
30	Grain: wt of 1000 fully developed grains (at 12%)	5	Medium
31	Grain: length (without dehulling)	9	Very Long
32	Spikelet: Sterile lemma length	3	Medium
33	Decorticated grain: length (After dehulling, before milling)	5	Long
34	Leaf senescence	5	Intermediate
35	Decorticated grain: shape (Length-breadth ratio)	9	Slender
36	Decorticated, unpolished grain: color	1	White
37	Polished grain: size of white core or chalkiness	1	Absent or very small
38	Endosperm: content of amylose	5	High
39	Decorticated grain: aroma	1	Absent
40	Other distinct special character (if any)		

### DUS data of BINA dhan15 (T. Aman)

S.N	Characteristics	Code	State
1	Leaf sheath: anthocyanin color	1	Absent
2	Leaf color	2	Green
3	Penultimate leaf: pubescence of blade	5	Medium Hairs on the lower portion of the leaf
4	Penultimate leaf: anthocyanin color of auricles & collar	1	Absent
5	Penultimate leaf: ligule	9	Present
6	Penultimate leaf: shape of the ligule	3	Split or two-cleft
7	Flag leaf: attitude of blade	1	Erect
8	Time of heading (50% of plants with heads)	5	Medium
9	Male sterility	-	-
10	Lemma & palea: anthocyanin coloration	1	Absent
11	Lemma & palea: anthocyanin coloration below apex	1	Absent
12	Lemma: anthocyanin coloration of apex	1	Absent
13	Spikelet: color of stigma	1	White
14	Culm diameter	5	Large
15	Culm: Length	5	Medium
16	Stem: anthocyanin coloration of nodes	1	Absent
17	Stem: Intensity of anthocyanin coloration of nodes	-	-
18	Stem: anthocyanin coloration of internodes	1	Absent
19	Panicle: length	7	Long
20	Panicle: curvature of main axis	5	Medium
21	Panicle: number of effective tillers in plant	5	Medium
22	Spikelet: Pubescence of lemma & palea	7	Strong
23	Spikelet: color of tip of lemma	2	Yellowish
24	Panicle: awn in spikelet	1	Absent
25	Panicle: length of the longest awn	-	-
26a	Panicle: distribution of awns	-	-
26b	Panicle: color of awns	-	-
27	Panicle: attitude of branches	3	Semi-erect
28	Panicle: exertion	9	Well exerted
29	Time of maturity	5	Medium
30	Grain: wt of 1000 fully developed grains (at 12%)	5	Medium
31	Grain: length (without dehulling)	7	Long
32	Spikelet: Sterile lemma length	3	Medium
33	Decorticated grain: length (After dehulling, before milling)	5	Long
34	Leaf senescence	5	Intermediate
35	Decorticated grain: shape (Length-breadth ratio)	9	Slender
36	Decorticated, unpolished grain: color	1	White
37	Polished grain: size of white core or chalkiness	1	Absent or very small
38	Endosperm: content of amylose	3	Intermediate
39	Decorticated grain: aroma	1	Absent
40	Other distinct special character (if any)		

### DUS data of BINA dhan16 (T. Aman)

S.N	Characteristics	Code	State
1	Leaf sheath: anthocyanin color	1	Absent
2	Leaf color	2	Green
3	Penultimate leaf: pubescence of blade	5	Medium Hairs on the lower portion of the leaf
4	Penultimate leaf: anthocyanin color of auricles & collar	1	Absent
5	Penultimate leaf: ligule	9	Present
6	Penultimate leaf: shape of the ligule	3	Split or two-cleft
7	Flag leaf: attitude of blade	1	Erect
8	Time of heading (50% of plants with heads)	3	Early
9	Male sterility	-	-
10	Lemma & palea: anthocyanin coloration	1	Absent
11	Lemma & palea: anthocyanin coloration below apex	1	Absent
12	Lemma: anthocyanin coloration of apex	1	Absent
13	Spikelet: color of stigma	1	White
14	Culm diameter	3	Medium
15	Culm: Length	5	Medium
16	Stem: anthocyanin coloration of nodes	1	Absent
17	Stem: Intensity of anthocyanin coloration of nodes	-	-
18	Stem: anthocyanin coloration of internodes	1	Absent
19	Panicle: length	5	Medium
20	Panicle: curvature of main axis	5	Medium
21	Panicle: number of effective tillers in plant	7	Many
22	Spikelet: pubescence of lemma & palea	7	Strong
23	Spikelet: color of tip of lemma	2	Yellowish
24	Panicle: awn in spikelet	1	Absent
25	Panicle: length of the longest awn	-	-
26a	Panicle: distribution of awns	-	-
26b	Panicle: color of awns	-	-
27	Panicle: attitude of branches	3	Semi-erect
28	Panicle: exertion	7	Moderately exerted
29	Time of maturity	3	Early
30	Grain: wt of 1000 fully developed grains (at 12%)	9	Very High
31	Grain: length (without dehulling)	9	Very Long
32	Spikelet: Sterile lemma length	3	Medium
33	Decorticated grain: length (After dehulling, before milling)	5	Long
34	Leaf senescence	5	Intermediate
35	Decorticated grain: shape (Length-breadth ratio)	9	Slender
36	Decorticated, unpolished grain: color	1	White
37	Polished grain: size of white core or chalkiness	1	Absent or very small
38	Endosperm: content of amylose	3	Intermediate
39	Decorticated grain: aroma	1	Absent
40	Other distinct special character (if any)		

### DUS data of BINA dhan17 (T. Aman)

S.N	Characteristics	Code	State
1	Leaf sheath: anthocyanin color	1	Absent
2	Leaf color	2	Green
3	Penultimate leaf: pubescence of blade	5	Medium Hairs on the lower portion of the leaf
4	Penultimate leaf: anthocyanin color of auricles & collar	1	Absent
5	Penultimate leaf: ligule	9	Present
6	Penultimate leaf: shape of the ligule	3	Split or two-cleft
7	Flag leaf: attitude of blade	1	Erect
8	Time of heading (50% of plants with heads)	5	Medium
9	Male sterility	-	-
10	Lemma & palea: anthocyanin coloration	1	Absent
11	Lemma & palea: anthocyanin coloration below apex	1	Absent
12	Lemma: anthocyanin coloration of apex	1	Absent
13	Spikelet: color of stigma	1	White
14	Culm diameter	5	Large
15	Culm: Length	7	Long
16	Stem: anthocyanin coloration of nodes	1	Absent
17	Stem: Intensity of anthocyanin coloration of nodes	-	-
18	Stem: anthocyanin coloration of internodes	1	Absent
19	Panicle: length	7	Long
20	Panicle: curvature of main axis	5	Medium
21	Panicle: number of effective tillers in plant	5	Medium
22	Spikelet: pubescence of lemma & palea	7	Strong
23	Spikelet: color of tip of lemma	2	Yellowish
24	Panicle: awn in spikelet	1	Absent
25	Panicle: length of the longest awn	-	-
26a	Panicle: distribution of awns	-	-
26b	Panicle: color of awns	-	-
27	Panicle: attitude of branches	3	Semi-erect
28	Panicle: exertion	9	Well exerted
29	Time of maturity	5	Medium
30	Grain: wt of 1000 fully developed grains (at 12%)	5	Medium
31	Grain: length (without dehulling)	7	Long
32	Spikelet: Sterile lemma length	3	Medium
33	Decorticated grain: length (After dehulling, before milling)	3	Medium
34	Leaf senescence	5	Intermediate
35	Decorticated grain: shape (Length-breadth ratio)	9	Slender
36	Decorticated, unpolished grain: color	1	White
37	Polished grain: size of white core or chalkiness	1	Absent or very small
38	Endosperm: content of amylose	3	Intermediate
39	Decorticated grain: aroma	1	Absent
40	Other distinct special character (if any)	Green Super Rice (GSR) variety	

**DUS data of BINA dhan19 (B. AUS & T. Aman)**

S.N	Characteristics	Code	State
1	Leaf sheath: anthocyanin color	1	Absent
2	Leaf color	2	Green
3	Penultimate leaf: pubescence of blade	1	Absent
4	Penultimate leaf: anthocyanin color of auricles & collar	1	Absent
5	Penultimate leaf: ligule	9	Present
6	Penultimate leaf: shape of the ligule	3	Split or two-cleft
7	Flag leaf: attitude of blade	1	Erect
8	Time of heading (50% of plants with heads)	3	Early
9	Male sterility	-	-
10	Lemma & palea: anthocyanin coloration	1	Absent
11	Lemma & palea: anthocyanin coloration below apex	1	Absent
12	Lemma: anthocyanin coloration of apex	1	Absent
13	Spikelet: color of stigma	1	White
14	Culm diameter	1	Small
15	Culm: Length	5	Medium
16	Stem: anthocyanin coloration of nodes	1	Absent
17	Stem: Intensity of anthocyanin coloration of nodes	-	-
18	Stem: anthocyanin coloration of internodes	1	Absent
19	Panicle: length	5	Medium
20	Panicle: curvature of main axis	5	Medium
21	Panicle: number of effective tillers in plant	7	Many
22	Spikelet: pubescence of lemma & palea	7	Strong
23	Spikelet: color of tip of lemma	2	Yellowish
24	Panicle: awn in spikelet	9	Present
25	Panicle: length of the longest awn	1	Very short
26a	Panicle: distribution of awns	1	Tip only
26b	Panicle: color of awns	1	Yellow White
27	Panicle: attitude of branches	3	Semi-erect
28	Panicle: exertion	7	Moderately exerted
29	Time of maturity	3	Early
30	Grain: wt of 1000 fully developed grains (at 12%)	5	Medium
31	Grain: length (without dehulling)	9	Very Long
32	Spikelet: Sterile lemma length	3	Medium
33	Decorticated grain: length (After dehulling, before milling)	5	Long
34	Leaf senescence	5	Intermediate
35	Decorticated grain: shape (Length-breadth ratio)	9	Slender
36	Decorticated, unpolished grain: color	2	Light brown
37	Polished grain: size of white core or chalkiness	1	Absent or very small
38	Endosperm: content of amylose	3	Intermediate
39	Decorticated grain: aroma	1	Absent
40	Other distinct special character (if any)		

### DUS data of BINA dhan20 (T. Aman)

S.N	Characteristics	Code	State
1	Leaf sheath: anthocyanin color	1	Absent
2	Leaf color	2	Green
3	Penultimate leaf: pubescence of blade	3	Weak or only on the margins
4	Penultimate leaf: anthocyanin color of auricles & collar	1	Absent
5	Penultimate leaf: ligule	9	Present
6	Penultimate leaf: shape of the ligule	3	Split or two-cleft
7	Flag leaf: attitude of blade	3	Semi-Erect
8	Time of heading (50% of plants with heads)	5	Medium
9	Male sterility	-	-
10	Lemma & palea: anthocyanin coloration	1	Absent
11	Lemma & palea: anthocyanin coloration below apex	1	Absent
12	Lemma: anthocyanin coloration of apex	1	Absent
13	Spikelet: color of stigma	1	White
14	Culm diameter	5	Large
15	Culm: Length	7	Long
16	Stem: anthocyanin coloration of nodes	1	Absent
17	Stem: Intensity of anthocyanin coloration of nodes	-	-
18	Stem: anthocyanin coloration of internodes	1	Absent
19	Panicle: length	7	Long
20	Panicle: curvature of main axis	5	Medium
21	Panicle: number of effective tillers in plant	7	Many
22	Spikelet: pubescence of lemma & palea	7	Strong
23	Spikelet: color of tip of lemma	2	Yellowish
24	Panicle: awn in spikelet	1	Absent
25	Panicle: length of the longest awn	-	-
26a	Panicle: distribution of awns	-	-
26b	Panicle: color of awns	-	-
27	Panicle: attitude of branches	3	Semi-erect
28	Panicle: exertion	7	Moderately exerted
29	Time of maturity	5	Medium
30	Grain: wt of 1000 fully developed grains (at 12%)	7	High
31	Grain: length (without dehulling)	9	Very Long
32	Spikelet: Sterile lemma length	3	Medium
33	Decorticated grain: length (After dehulling, before milling)	5	Long
34	Leaf senescence	5	Intermediate
35	Decorticated grain: shape (Length-breadth ratio)	9	Slender
36	Decorticated, unpolished grain: color	5	Red
37	Polished grain: size of white core or chalkiness	1	Absent or very small
38	Endosperm: content of amylose	5	High
39	Decorticated grain: aroma	1	Absent
40	Other distinct special character (if any)		Iron enriched-2.8 ppm Zinc enriched-27.5 ppm

### DUS data of BINA dhan21 (AUS)

S.N	Characteristics	Code	State
1	Leaf sheath: anthocyanin color	1	Absent
2	Leaf color	2	Green
3	Penultimate leaf : pubescence of blade	3-5	Weak to Medium
4	Penultimate leaf : anthocyanin color of auricles & collar	1	Absent
5	Penultimate leaf: ligule	9	Present
6	Penultimate leaf: shape of the ligule	3	Split or two-cleft
7	Flag leaf: attitude of blade	1	Erect
8	Time of heading (50% of plants with heads)	3	Early
9	Male sterility	-	-
10	Lemma & palea: anthocyanin coloration	1	Absent
11	Lemma & palea: anthocyanin coloration below apex	1	Absent
12	Lemma: anthocyanin coloration of apex	1	Absent
13	Spikelet: color of stigma	1	White
14	Culm diameter	1	Small
15	Culm: Length	5	Medium
16	Stem: anthocyanin coloration of nodes	1	Absent
17	Stem: Intensity of anthocyanin coloration of nodes	-	-
18	Stem: anthocyanin coloration of internodes	1	Absent
19	Panicle: length	5	Medium
20	Panicle: curvature of main axis	5	Medium
21	Panicle: number of effective tillers in plant	7	Many
22	Spikelet: pubescence of lemma & palea	7	Strong
23	Spikelet: color of tip of lemma	2	Yellowish
24	Panicle: awn in spikelet	9	Present
25	Panicle: length of the longest awn	3	Short
26a	Panicle: distribution of awns	1	Tip only
26b	Panicle: color of awns	1	Yellow white
27	Panicle: attitude of branches	3	Semi-erect
28	Panicle: exertion	7	Moderately exerted
29	Time of maturity	3	Early
30	Grain: wt of 1000 fully developed grains (at 12%)	5	Medium
31	Grain: length (without dehulling)	7	Long
32	Spikelet: Sterile lemma length	3	Medium
33	Decorticated grain: length (After dehulling, before milling)	3	Medium
34	Leaf senescence	1	Late & slow
35	Decorticated grain: shape (Length-breadth ratio)	7	Medium Slender
36	Decorticated, unpolished grain: color	2	Light brown
37	Polished grain: size of white core or chalkiness	1	Absent or very small
38	Endosperm: content of amylose	3	Intermediate
39	Decorticated grain: aroma	1	Absent
40	Other distinct special character (if any)		Drought tolerant

### DUS data of BINA dhan22 (T. Aman)

S.N	Characteristics	Code	State
1	Leaf sheath: anthocyanin color	1	Absent
2	Leaf color	2	Green
3	Penultimate leaf: pubescence of blade	1	Absent
4	Penultimate leaf : anthocyanin color of auricles & collar	1	Absent
5	Penultimate leaf: ligule	9	Present
6	Penultimate leaf: shape of the ligule	3	Split or two-cleft
7	Flag leaf: attitude of blade	1	Erect
8	Time of heading (50% of plants with heads)	5	Medium
9	Male sterility	-	-
10	Lemma & palea: anthocyanin coloration	1	Absent
11	Lemma & palea: anthocyanin coloration below apex	1	Absent
12	Lemma: anthocyanin coloration of apex	1	Absent
13	Spikelet: color of stigma	1	Absent
14	Culm diameter	3	Medium
15	Culm: Length	5	Medium
16	Stem: anthocyanin coloration of nodes	1	Absent
17	Stem: Intensity of anthocyanin coloration of nodes	-	-
18	Stem: anthocyanin coloration of internodes	1	Absent
19	Panicle: length	7	Long
20	Panicle: curvature of main axis	5	Medium
21	Panicle: number of effective tillers in plant	5	Medium
22	Spikelet: Pubescence of lemma & palea	7	Strong
23	Spikelet: color of tip of lemma	2	Yellowish
24	Panicle: awn in spikelet	1	Absent
25	Panicle: length of the longest awn	-	-
26a	Panicle: distribution of awns	-	-
26b	Panicle: color of awns	-	-
27	Panicle: attitude of branches	3	Semi-erect
28	Panicle: exertion	7	Moderately exerted
29	Time of maturity	5	Medium
30	Grain: wt of 1000 fully developed grains (at 12%)	7	High
31	Grain: length (without dehulling)	9	Very Long
32	Spikelet: Sterile lemma length	3	Medium
33	Decorticated grain: length (After dehulling, before milling)	5	Long
34	Leaf senescence	5	Intermediate
35	Decorticated grain: shape (Length-breadth ratio)	9	Slender
36	Decorticated, unpolished grain: color	2	Light brown
37	Polished grain: size of white core or chalkiness	1	Absent or very small
38	Endosperm: content of amylose	3	Intermediate
39	Decorticated grain: aroma	1	Absent
40	Other distinct special character (if any)		

### DUS data of BINA dhan23 (T. Aman)

S.N	Characteristics	Code	State
1	Leaf sheath: anthocyanin color	1	Absent
2	Leaf color	3	Dark Green
3	Penultimate leaf: pubescence of blade	3	Weak or only on the margins
4	Penultimate leaf: anthocyanin color of auricles & collar	1	Absent
5	Penultimate leaf: ligule	9	Present
6	Penultimate leaf: shape of the ligule	3	Split or two-cleft
7	Flag leaf: attitude of blade	1	Erect
8	Time of heading (50% of plants with heads)	5	Medium
9	Male sterility	-	-
10	Lemma & palea: anthocyanin coloration	1	Absent
11	Lemma & palea: anthocyanin coloration below apex	1	Absent
12	Lemma: anthocyanin coloration of apex	1	Absent
13	Spikelet: color of stigma	1	White
14	Culm diameter	3	Medium
15	Culm: Length	7	Long
16	Stem: anthocyanin coloration of nodes	1	Absent
17	Stem: Intensity of anthocyanin coloration of nodes	-	-
18	Stem: anthocyanin coloration of internodes	1	Absent
19	Panicle: length	7	Long
20	Panicle: curvature of main axis	5	Medium
21	Panicle: number of effective tillers in plant	5	Medium
22	Spikelet: Pubescence of lemma & palea	7	Strong
23	Spikelet: color of tip of lemma	5	Purple
24	Panicle: awn in spikelet	1	Absent
25	Panicle: length of the longest awn	-	-
26a	Panicle: distribution of awns	-	-
26b	Panicle: color of awns	-	-
27	Panicle: attitude of branches	3	Semi-erect
28	Panicle: exertion	7	Moderately exerted
29	Time of maturity	5	Medium
30	Grain: wt of 1000 fully developed grains (at 12%)	5	Medium
31	Grain: length (without dehulling)	7	Long
32	Spikelet: Sterile lemma length	3	Medium
33	Decorticated grain: length (After dehulling, before milling)	5	Long
34	Leaf senescence	1	Late & slow
35	Decorticated grain: shape (Length-breadth ratio)	7	Medium Slender
36	Decorticated, unpolished grain: color	2	Light brown
37	Polished grain: size of white core or chalkiness	1	Absent
38	Endosperm: content of amylose	3	Intermediate
39	Decorticated grain: aroma	1	Absent
40	Other distinct special character (if any)	Salt tolerant (8 ds/m) & Flood tolerant (Submerge) upto 15 days	

### DUS data of BINA dhan24 (Boro)

S.N	Characteristics	Code	State
1	Leaf sheath: anthocyanin color	1	Absent
2	Leaf color	3	Dark Green
3	Penultimate leaf: pubescence of blade	5	Medium
4	Penultimate leaf: anthocyanin color of auricles & collar	1	Absent
5	Penultimate leaf: ligule	9	Present
6	Penultimate leaf: shape of the ligule	3	Split or two-cleft
7	Flag leaf: attitude of blade	1	Erect
8	Time of heading (50% of plants with heads)	7	Late
9	Male sterility	-	-
10	Lemma & palea: anthocyanin coloration	1	Absent
11	Lemma & palea: anthocyanin coloration below apex	1	Absent
12	Lemma: anthocyanin coloration of apex	1	Absent
13	Spikelet: color of stigma	1	White
14	Culm diameter	3	Medium
15	Culm: Length	5	Medium
16	Stem: anthocyanin coloration of nodes	1	Absent
17	Stem: Intensity of anthocyanin coloration of nodes	-	-
18	Stem: anthocyanin coloration of internodes	1	Absent
19	Panicle: length	5	Medium
20	Panicle: curvature of main axis	5	Medium
21	Panicle: number of effective tillers in plant	7	Many
22	Spikelet: Pubescence of lemma & palea	7	Strong
23	Spikelet: color of tip of lemma	2	Yellowish
24	Panicle: awn in spikelet	1	Absent
25	Panicle: length of the longest awn	-	-
26a	Panicle: distribution of awns	-	-
26b	Panicle: color of awns	-	-
27	Panicle: attitude of branches	3	Semi-erect
28	Panicle: exertion	9	Well exerted
29	Time of maturity	7	Late
30	Grain: wt of 1000 fully developed grains (at 12%)	7	High
31	Grain: length (without dehulling)	9	Very Long
32	Spikelet: Sterile lemma length	3	Medium
33	Decorticated grain: length (After dehulling, before milling)	5	Long
34	Leaf senescence	1	Late & slow
35	Decorticated grain: shape (Length-breadth ratio)	7	Medium Slender
36	Decorticated, unpolished grain: color	2	Light brown
37	Polished grain: size of white core or chalkiness	5	Medium
38	Endosperm: content of amylose	3	Intermediate
39	Decorticated grain: aroma	1	Absent
40	Other distinct special character (if any)		Lodging tolerant

### DUS data of BINA dhan25 (Boro)

SN	Characteristics	Code	State
1	Leaf sheath: anthocyanin color	1	Absent
2	Leaf color	2	Green
3	Penultimate leaf : pubescence of blade	3-5	Weak to Medium
4	Penultimate leaf : anthocyanin color of auricles & collar	1	Absent
5	Penultimate leaf: ligule	9	Present
6	Penultimate leaf: shape of the ligule	3	Split or two-cleft
7	Flag leaf: attitude of blade	3	Semi-Erect
8	Time of heading (50% of plants with heads)	7	Late
9	Male sterility	1	Absent
10	Lemma & palea: anthocyanin coloration	1	Absent
11	Lemma & palea: anthocyanin coloration below apex	1	Absent
12	Lemma: anthocyanin coloration of apex	1	Absent
13	Spikelet: color of stigma	1	Absent
14	Culm diameter	5	Large
15	Culm: Length	7	Long
16	Stem: anthocyanin coloration of nodes	1	Absent
17	Stem: Intensity of anthocyanin coloration of nodes	1	Absent
18	Stem: anthocyanin coloration of internodes	1	Absent
19	Panicle: length	7	Long
20	Panicle: curvature of main axis	5	Medium
21	Panicle: number of effective tillers in plant	5	Medium
22	Spikelet: Pubescence of lemma & palea	7	Strong
23	Spikelet: color of tip of lemma	2	Yellowish
24	Panicle: awn in spikelet	9	Present
25	Panicle: length of the longest awn	1	Very Short
26a	Panicle: distribution of awns	1	Tip only
26b	Panicle: color of awns	1	Yellow white
27	Panicle: attitude of branches	3	Semi-erect
28	Panicle: exertion	5-7	Just to Moderately exerted
29	Time of maturity	7	Late
30	Grain: wt of 1000 fully developed grains (at 12%)	5	Medium
31	Grain: length (without dehulling)	9	Very Long
32	Spikelet: Sterile lemma length	3	Medium
33	Decorticated grain: length (After dehulling, before milling)	7	Long
34	Leaf senescence	5	Intermediate
35	Decorticated grain: shape (Length-breadth ratio)	9	Slender
36	Decorticated, unpolished grain: color	1	White
37	Polished grain: size of white core or chalkiness	1	Absent
38	Endosperm: content of amylose	3	Intermediate
39	Decorticated grain: aroma	1	Absent
40	Other distinct special character (if any)		Premium quality

### DUS data of BINA dhan26 (T. Aman)

SN	Characteristics	Code	State
1	Leaf sheath: anthocyanin color	1	Absent
2	Leaf color	2	Green
3	Penultimate leaf : pubescence of blade	3	Weak or only in the margin
4	Penultimate leaf : anthocyanin color of auricles & collar	1	Absent
5	Penultimate leaf: ligule	9	Present
6	Penultimate leaf: shape of the ligule	3	Split or two-cleft
7	Flag leaf: attitude of blade	1	Erect
8	Time of heading (50% of plants with heads)	5	Medium
9	Male sterility	-	-
10	Lemma & palea: anthocyanin coloration	1	Absent
11	Lemma & palea: anthocyanin coloration below apex	1	Absent
12	Lemma: anthocyanin coloration of apex	1	Absent
13	Spikelet: color of stigma	1	Absent
14	Culm diameter	3	Medium
15	Culm: Length	7	Long
16	Stem: anthocyanin coloration of nodes	1	Absent
17	Stem: Intensity of anthocyanin coloration of nodes		
18	Stem: anthocyanin coloration of internodes	1	Absent
19	Panicle: length	7	Long
20	Panicle: curvature of main axis	5	Medium
21	Panicle: number of effective tillers in plant	5	Medium
22	Spikelet: Pubescence of lemma & palea	7	Strong
23	Spikelet: color of tip of lemma	2	Yellowish
24	Panicle: awn in spikelet	1	Absent
25	Panicle: length of the longest awn	-	-
26a	Panicle: distribution of awns	-	-
26b	Panicle: color of awns	-	-
27	Panicle: attitude of branches	3	Semi-erect
28	Panicle: exertion	7-9	Moderate to Well exerted
29	Time of maturity	5	Medium
30	Grain: wt of 1000 fully developed grains (at 12%)	7	High
31	Grain: length (without dehulling)	9	Very Long
32	Spikelet: Sterile lemma length	3	Medium
33	Decorticated grain: length (After dehulling, before milling)	5	Long
34	Leaf senescence	5	Intermediate
35	Decorticated grain: shape (Length-breadth ratio)	9	Slender
36	Decorticated, unpolished grain: color	2	Light brown
37	Polished grain: size of white core or chalkiness	1	Absent
38	Endosperm: content of amylose	5	High
39	Decorticated grain: aroma	1	Absent
40	Other distinct special character (if any)		

### DUS data of BRAC dhan1 (Aman)

S.N	Characteristics	Code	State
1	Leaf sheath: anthocyanin color	1	Absent
2	Leaf color	2	Green
3	Penultimate leaf : pubescence of blade	5	Medium
4	Penultimate leaf : anthocyanin color of auricles & collar	1	Absent
5	Penultimate leaf: ligule	9	Present
6	Penultimate leaf: shape of the ligule	3	Split or two cleft
7	Flag leaf: attitude of blade	1	Erect
8	Time of heading (50% of plants with heads)	5	Medium
9	Male sterility	-	
10	Lemma & palea: anthocyanin coloration	7	Strong
11	Lemma & palea: anthocyanin coloration below apex	7	Strong
12	Lemma: anthocyanin coloration of apex	1	Absent
13	Spikelet: color of stigma	1	White
14	Culm diameter	5	Large
15	Culm: Length	7	Long
16	Stem: anthocyanin coloration of nodes	1	Absent
17	Stem: Intensity of anthocyanin coloration of nodes	-	-
18	Stem: anthocyanin coloration of internodes	1	Absent
19	Panicle: length	7	Long
20	Panicle: curvature of main axis	5	Strong
21	Panicle: number of effective tillers in plant	5	Medium
22	Spikelet: Pubescence of lemma & palea	7	Strong
23	Spikelet: color of tip of lemma	2	Yellowish
24	Panicle: awn in spikelet	9	Present
25	Panicle: length of the longest awn	1	Very Short
26a	Panicle: distribution of awns	1	Tip only
26b	Panicle: color of awns	1	Yellow white
27	Panicle: attitude of branches	3	Semi-erect
28	Panicle: exertion	5-7	Just to Moderately exerted
29	Time of maturity	5	Medium
30	Grain: wt of 1000 fully developed grains (at 12%)	7	High
31	Grain: length (without dehulling)	5	Medium
32	Spikelet: Sterile lemma length	3	Medium
33	Decorticated grain: length (After dehulling, before milling)	3	Medium
34	Leaf senescence	1	Late & slow
35	Decorticated grain: shape (Length-breadth ratio)	5	Medium
36	Decorticated, unpolished grain: color	2	Light brown
37	Polished grain: size of white core or chalkiness	1	Absent
38	Endosperm: content of amylose	5	High
39	Decorticated grain: aroma	1	Absent
40	Other distinct special character (if any)		

### DUS data of BRAC dhan2 (Boro)

S.N	Characteristics	Code	State
1	Leaf sheath: anthocyanin color	1	Absent
2	Leaf color	2	Green
3	Penultimate leaf : pubescence of blade	3-5	Weak to Medium
4	Penultimate leaf : anthocyanin color of auricles & collar	1	Absent
5	Penultimate leaf: ligule	9	Present
6	Penultimate leaf: shape of the ligule	3	Split or two cleft
7	Flag leaf: attitude of blade	3	Semi-Erect
8	Time of heading (50% of plants with heads)	7	Late(109-110)
9	Male sterility	-	
10	Lemma & palea: anthocyanin coloration	1	Absent
11	Lemma & palea: anthocyanin coloration below apex	1	Absent
12	Lemma: anthocyanin coloration of apex	1	Absent
13	Spikelet: color of stigma	1	White
14	Culm diameter	5	Large
15	Culm: Length	5	Medium
16	Stem: anthocyanin coloration of nodes	1	Absent
17	Stem: Intensity of anthocyanin coloration of nodes	1	Absent
18	Stem: anthocyanin coloration of internodes	1	Absent
19	Panicle: length	7	Long
20	Panicle: curvature of main axis	5	Medium
21	Panicle: number of effective tillers in plant	7	Many
22	Spikelet: Pubescence of lemma & palea	7	Strong
23	Spikelet: color of tip of lemma	2	Yellowish
24	Panicle: awn in spikelet	9	Present
25	Panicle: length of the longest awn	-	-
26a	Panicle: distribution of awns	1	Tip only
26b	Panicle: color of awns	1	Yellow white
27	Panicle: attitude of branches	3	Semi-erect
28	Panicle: exertion	9	Well exerted
29	Time of maturity	7	Late(139)
30	Grain: wt of 1000 fully developed grains (at 12%)	3	Low
31	Grain: length (without dehulling)	7	Long
32	Spikelet: Sterile lemma length	3	Medium
33	Decorticated grain: length (After dehulling, before milling)	3	Medium
34	Leaf senescence	5	Intermediate
35	Decorticated grain: shape (Length-breadth ratio)	9	Slender
36	Decorticated, unpolished grain: color	2	Light brown
37	Polished grain: size of white core or chalkiness	1	Absent
38	Endosperm: content of amylose	3 (23.4%)	Intermediate
39	Decorticated grain: aroma	9	Strongly present
40	Other distinct special character (if any)		Premium quality

### DUS data of BU dhan1 (T. Aman)

S.N	Characteristics	Code	State
1	Leaf sheath: anthocyanin color	1	Absent
2	Leaf color	2	Green
3	Penultimate leaf: pubescence of blade	5	Medium
4	Penultimate leaf : anthocyanin color of auricles & collar	1	Absent
5	Penultimate leaf: ligule	9	Present
6	Penultimate leaf: shape of the ligule	3	Split or two cleft
7	Flag leaf: attitude of blade	1	Erect
8	Time of heading (50% of plants with heads)	5	Medium
9	Male sterility	-	
10	Lemma & palea: anthocyanin coloration	1	Absent
11	Lemma & palea: anthocyanin coloration below apex	1	Absent
12	Lemma: anthocyanin coloration of apex	1	Absent
13	Spikelet: color of stigma	1	White
14	Culm diameter	5	Large
15	Culm: Length	5	Medium
16	Stem: anthocyanin coloration of nodes	1	Absent
17	Stem: Intensity of anthocyanin coloration of nodes	-	-
18	Stem: anthocyanin coloration of internodes	1	Absent
19	Panicle: length	7	Long
20	Panicle: curvature of main axis	5	Strong
21	Panicle: number of effective tillers in plant	7	Many
22	Spikelet: pubescence of lemma & palea	7	Strong
23	Spikelet: color of tip of lemma	2	Yellowish
24	Panicle: awn in spikelet	1	Absent
25	Panicle: length of the longest awn	-	
26a	Panicle: distribution of awns	-	
26b	Panicle: color of awns	-	
27	Panicle: attitude of branches	3	Semi-erect
28	Panicle: exertion	5-7	Just to Moderately exerted
29	Time of maturity	5	Medium
30	Grain: wt of 1000 fully developed grains (at 12%)	7	High
31	Grain: length (without dehulling)	9	Very long
32	Spikelet: Sterile lemma length	3	Medium
33	Decorticated grain: length (After dehulling, before milling)	5	long
34	Leaf senescence	5	Intermediate
35	Decorticated grain: shape (Length-breadth ratio)	9	Slender
36	Decorticated, unpolished grain: color	2	Light brown
37	Polished grain: size of white core or chalkiness	1	Absent
38	Endosperm: content of amylose	3	Intermediate
39	Decorticated grain: aroma	1	Absent
40	Other distinct special character (if any)		

### DUS data of BU dhan2 (T. Aman)

S.N	Characteristics	Code	State
1	Leaf sheath: anthocyanin color	1	Absent
2	Leaf color	2	Green
3	Penultimate leaf : pubescence of blade	5	Medium
4	Penultimate leaf : anthocyanin color of auricles & collar	1	Absent
5	Penultimate leaf: ligule	9	Present
6	Penultimate leaf: shape of the ligule	3	Split or two cleft
7	Flag leaf: attitude of blade	3	Semi-Erect
8	Time of heading (50% of plants with heads)	5	Medium
9	Male sterility	-	
10	Lemma & palea: anthocyanin coloration	1	Absent
11	Lemma & palea: anthocyanin coloration below apex	1	Absent
12	Lemma: anthocyanin coloration of apex	1	Absent
13	Spikelet: color of stigma	1	White
14	Culm diameter	5	Large
15	Culm: Length	5	Medium
16	Stem: anthocyanin coloration of nodes	1	Absent
17	Stem: Intensity of anthocyanin coloration of nodes	-	-
18	Stem: anthocyanin coloration of internodes	1	Absent
19	Panicle: length	7	Long
20	Panicle: curvature of main axis	5	Strong
21	Panicle: number of effective tillers in plant	5	Medium
22	Spikelet: Pubescence of lemma & palea	7	Strong
23	Spikelet: color of tip of lemma	2	Yellowish
24	Panicle: awn in spikelet	9	Very small awn is present in some spikelet in 2 <sup>nd</sup> year
25	Panicle: length of the longest awn	-	
26a	Panicle: distribution of awns	-	
26b	Panicle: color of awns	-	
27	Panicle: attitude of branches	3	Semi-erect
28	Panicle: exertion	5-7	Just to Moderately exerted
29	Time of maturity	5	Medium
30	Grain: wt of 1000 fully developed grains (at 12%)	7	High
31	Grain: length (without dehulling)	9	Very long
32	Spikelet: Sterile lemma length	3	Medium
33	Decorticated grain: length (After dehulling, before milling)	7	Very long
34	Leaf senescence	5	Intermediate
35	Decorticated grain: shape (Length-breadth ratio)	9	Slender
36	Decorticated, unpolished grain: color	2	Light brown
37	Polished grain: size of white core or chalkiness	1	Absent
38	Endosperm: content of amylose	3	Intermediate
39	Decorticated grain: aroma	5	Lightly present
40	Other distinct special character (if any)		

### DUS data of BAU dhan3 (Boro)

S.N	Characteristics	Code	State
1	Leaf sheath: anthocyanin color	1	Absent
2	Leaf color	2	Green
3	Penultimate leaf : pubescence of blade	3-5	Weak to Medium
4	Penultimate leaf : anthocyanin color of auricles & collar	1	Absent
5	Penultimate leaf: ligule	9	Present
6	Penultimate leaf: shape of the ligule	3	Split or two cleft
7	Flag leaf: attitude of blade	1	Erect
8	Time of heading (50% of plants with heads)	7	Late
9	Male sterility	-	
10	Lemma & palea: anthocyanin coloration	1	Absent
11	Lemma & palea: anthocyanin coloration below apex	1	Absent
12	Lemma: anthocyanin coloration of apex	1	Absent
13	Spikelet: color of stigma	1	White
14	Culm diameter	1	Small
15	Culm: Length	5	Medium
16	Stem: anthocyanin coloration of nodes	1	Absent
17	Stem: Intensity of anthocyanin coloration of nodes	-	-
18	Stem: anthocyanin coloration of internodes	1	Absent
19	Panicle: length	5	Medium
20	Panicle: curvature of main axis	5	Strong
21	Panicle: number of effective tillers in plant	5	Medium
22	Spikelet: Pubescence of lemma & palea	7	Strong
23	Spikelet: color of tip of lemma	2	Yellowish
24	Panicle: awn in spikelet	1	Absent
25	Panicle: length of the longest awn	-	-
26a	Panicle: distribution of awns	-	-
26b	Panicle: color of awns	-	-
27	Panicle: attitude of branches	3	Semi-erect
28	Panicle: exertion	9	Well exerted
29	Time of maturity	7	Late
30	Grain: wt of 1000 fully developed grains (at 12%)	7	High
31	Grain: length (without dehulling)	9	Very Long
32	Spikelet: Sterile lemma length		
33	Decorticated grain: length (After dehulling, before milling)	5	Long
34	Leaf senescence	1	Late & slow
35	Decorticated grain: shape (Length-breadth ratio)	9	Slender
36	Decorticated, unpolished grain: color	2	Light brown
37	Polished grain: size of white core or chalkiness	5	Medium
38	Endosperm: content of amylose	5	High
39	Decorticated grain: aroma	1	Absent
40	Other distinct special character (if any)		

### DUS data of RABI dhan1 (T. Aman)

S.N	Characteristics	Code	State
1	Leaf sheath: anthocyanin color	1	Absent
2	Leaf color	2	Green
3	Penultimate leaf : pubescence of blade	5	Medium
4	Penultimate leaf : anthocyanin color of auricles & collar	1	Absent
5	Penultimate leaf: ligule	9	Present
6	Penultimate leaf: shape of the ligule	3	Split or two cleft
7	Flag leaf: attitude of blade	1	Erect
8	Time of heading (50% of plants with heads)	5	Medium
9	Male sterility	-	
10	Lemma & palea: anthocyanin coloration	1	Absent
11	Lemma & palea: anthocyanin coloration below apex	1	Absent
12	Lemma: anthocyanin coloration of apex	1	Absent
13	Spikelet: color of stigma	1	White
14	Culm diameter	5	Large
15	Culm: Length	7	Long
16	Stem: anthocyanin coloration of nodes	1	Absent
17	Stem: Intensity of anthocyanin coloration of nodes	-	-
18	Stem: anthocyanin coloration of internodes	1	Absent
19	Panicle: length	7	Long
20	Panicle: curvature of main axis	5	Strong
21	Panicle: number of effective tillers in plant	5	Medium
22	Spikelet: Pubescence of lemma & palea	7	Strong
23	Spikelet: color of tip of lemma	2	Yellowish
24	Panicle: awn in spikelet	1	Absent
25	Panicle: length of the longest awn	-	
26a	Panicle: distribution of awns	-	
26b	Panicle: color of awns	-	
27	Panicle: attitude of branches	3	Semi-erect
28	Panicle: exertion	7-9	Moderately to well exerted
29	Time of maturity	5	Medium
30	Grain: wt of 1000 fully developed grains (at 12%)	5	Medium
31	Grain: length (without dehulling)	9	Very long
32	Spikelet: Sterile lemma length	3	Medium
33	Decorticated grain: length (After dehulling, before milling)	5	Long
34	Leaf senescence	5	Intermediate
35	Decorticated grain: shape (Length-breadth ratio)	9	Slender
36	Decorticated, unpolished grain: color	2	Light brown
37	Polished grain: size of white core or chalkiness	1	Absent
38	Endosperm: content of amylose	5	High
39	Decorticated grain: aroma	1	Absent
40	Other distinct special character (if any)		

### DUS data of ACI dhan1 (T. Aman)

SN	Characteristics	Code	State
1	Leaf sheath: anthocyanin color	1	Absent
2	Leaf color	2	Green
3	Penultimate leaf : pubescence of blade	3	Weak or only in the margin
4	Penultimate leaf : anthocyanin color of auricles & collar	1	Absent
5	Penultimate leaf: ligule	9	Present
6	Penultimate leaf: shape of the ligule	3	Split or two-cleft
7	Flag leaf: attitude of blade	1	Erect
8	Time of heading (50% of plants with heads)	3	Early
9	Male sterility	-	-
10	Lemma & palea: anthocyanin coloration	1	Absent
11	Lemma & palea: anthocyanin coloration below apex	1	Absent
12	Lemma: anthocyanin coloration of apex	1	Absent
13	Spikelet: color of stigma	1	White
14	Culm diameter	3	Medium
15	Culm: Length	7	Long
16	Stem: anthocyanin coloration of nodes	1	Absent
17	Stem: Intensity of anthocyanin coloration of nodes	-	-
18	Stem: anthocyanin coloration of internodes	1	Absent
19	Panicle: length	5	Medium
20	Panicle: curvature of main axis	5	Medium
21	Panicle: number of effective tillers in plant	5	Medium
22	Spikelet: Pubescence of lemma & palea	7	Strong
23	Spikelet: color of tip of lemma	2	Yellowish
24	Panicle: awn in spikelet	1	Absent
25	Panicle: length of the longest awn	-	-
26a	Panicle: distribution of awns	-	-
26b	Panicle: color of awns	-	-
27	Panicle: attitude of branches	3	Semi-erect
28	Panicle: exertion	7-9	Well exerted
29	Time of maturity	3	Early
30	Grain: wt . of 1000 fully developed grains (at 12%)	5	Medium
31	Grain: length (without dehulling)	9	Very Long
32	Spikelet: Sterile lemma length	3	Medium
33	Decorticated grain: length (After dehulling, before milling)	3	Medium
34	Leaf senescence	1	Late & Slow
35	Decorticated grain: shape (Length-breadth ratio)	9	slender
36	Decorticated, unpolished grain: color	2	Light brown
37	Polished grain: size of white core or chalkiness	1	Absent
38	Endosperm: content of amylose	5	High
39	Decorticated grain: aroma	1	Absent
40	Other distinct special character (if any)	Zinc enriched 24.8 mg/kg	

## **DUS data of Wheat Varieties**

### DUS Test Characters of Wheat

SN	Characteristics	Observation time (on the basis of Zadok's scale)	State of the characters	Code
1	Coleoptile pigment (To be done in the laboratory)	09-11	Absent	1
			Present	9
2	Plant growth habit	25-29	Erect	1
			Semi-erect	3
			Intermediate	5
			Semi-prostrate	7
			Prostrate	9
3	Leaf spiral: (Flag leaf)	40-47	Absent	<b>1</b>
			Weak	<b>3</b>
			Moderate	<b>5</b>
			Strong	<b>7</b>
			Very strong	9
4	Flag leaf auricle pigment	47-51	Absent	1
			Present	9
5	Flag leaf attitude	47-51	All flag leaves are	1
			1/4 of the plants with	3
			1/2 of the plants with	5
			3/4 of the plants with	7
			All plants with flag leaves are erect	9
6	50% spike emergence (days to be quantified)	55	Early (<63 days)	3
			Medium (63-70 days)	5
			Late (>70 days)	7
7	Upper culm node hairs	55-75	Absent or few	1
			Medium	5
			Very numerous	9
8	Glaucoisity: spike	60-69	Absent	1
			Weak	3
			Medium	5
			Very strong	9
9	Glaucoisity: culm (neck)	60-69	Absent	1
			Weak	3
			Medium	5
			Very strong	9
10	Glaucoisity: flag leaf sheath	60-69	Absent	1
			Weak	3
			Medium	5
			Very strong	9
11	Anther colour	62-68	Yellowish	1
			Purple	9
12	Straw wall thickness	80-92	Thin	1
			Thick	5

SN	Characteristics	Observation time (on the basis of Zadok's scale)	State of the characters	Code
13	Spike density	80-92	Lax	3
			Medium	5
			Dense	7
14	Spike shape	80-92	Club	1
			Parallel	5
			Taper	9
15	Lower glume: beak length (3rd middle of the spike) spikelet upward from	80-92	Short (1-5mm)	3
			Medium (5.1-12mm)	5
			Long (12.1mm and above)	7
16	Lower glume: beak spicules	80-92	Absent	1
			Present	9
17	Lower glume: shoulder shape	80-92	Slope	1
			Square	5
			Elevated	9
18	Lower glume: shoulder width	80-92	Narrow	3
			Medium	5
			Wide	7
19	Lower glume: keel inflection	80-92	Absent	1
			Present	9
20	Lower glume: internal hair group (Visible through 10x or 20x lens)	80-92	Group 1 (few hairs confined to fold)	1
			Group 2 (hairs extending across part of shoulder)	5
			Group 3 (many hairs across shoulder)	7
21	Spike length	80-92	Short (<10cm)	3
			Medium (10.1- 12cm)	5
			Long (>12.1cm)	7
22	Awn length (At the tip of ear)	80-92	Absent	1
			Short (3-5cm)	3
			Medium (5.1-7cm)	5
			Long (>7.1cm)	7

SN	Characteristics	Observation time (on the basis of Zadok's scale)	State of the characters	Code
23	Spike colour Code 1 for Code 2 for	90-92	Yellowish	1
			Reddish brown	2
24	Grain colour Code 1 for Code 2 for	92	White or amber	1
			Reddish	2
25	Grain shape Code 1 for Code 5 for Code 9 for	92	Rounded	1
			Ovoid	5
			Elongated	9
26	Ventral crease pit Code 1 for Code 9 for	92	Absent	1
			Present	9
27	Embryo shape Code 1 for Code 9 for	92	Round	1
			Oval	9
28	Grain colouration with phenol (To be done in the laboratory)	92	None or very light	1
			Light	3
			Medium	5
			Dark	7
			Very dark	9
29	Other distinct special characters (if any)			

**DUS data of BARI gom19 (Sourov)**

<b>S.N</b>	<b>Characteristics</b>	<b>Code</b>	<b>State</b>
1	Coleoptile pigment	1	Absent
2	Plant growth habit	1	Erect
3	Leaf spiral: (Flag leaf)	5	Moderate
4	F. L. Auricle pigment	1	Absent
5	Flag leaf attitude	7	3/4th of the plants with recurved flag leaves
6	50% spike emergence	5	Medium
7	Upper culm Node hairs	3	Weak
8	Glaucosity: Spike	5	Medium
9	Glaucosity: Culm	7	Strong
10	Glaucosity: Flag leaf sheath	9	Very Strong
11	Anther Col.	1	Yellowish
12	Straw wall thickness	1	Thin
13	Spike density	5	Medium
14	Spike shape	9	Taper
15	Lower glume: Beak length	5	Medium
16	Lower glume: Beak spicules	9	Present
17	Lower glume: Shoulder shape	9	Elevated
18	Lower glume: Shoulder width	5	Medium
19	Lower glume: Keel Inflection	9	Present
20	Lower glume: Internal hair group	1	Group I (few hairs confined to fold)
21	Spike length	5	Medium
22	Awn length	3	Short
23	Spike color	1	Yellowish
24	Grain color	1	Amber
25	Grain Shape	5	Ovoid
26	Ventral crease pit	9	Present
27	Embryo shape	9	Oval
28	Grain coloration with phenol	9	Very Dark
29	Other distinct special character (if any)	-	-

### DUS data of BARI gom21 (Shatabdi)

S.N	Characteristics	Code	State
1	Coleoptile pigment	1	Absent
2	Plant growth habit	3	Semi erect
3	Leaf spiral: (Flag leaf)	1	Absent
4	F. L. Auricie pigment	1	Absent
5	Flag leaf attitude	7	3/4 of the plants with recurved flag leaves
6	50% spike emergence	7	Late
7	Upper culm Node hairs	3	Few
8	Glaucosity: Spike	1-3	Absent-Weak
9	Glaucosity: Culm	1	Absent
10	Glaucosity: Flag leaf sheath	5	Medium
11	Anther Col.	1	Yellowish
12	Straw wall thickness	1	thin
13	Spike density	5	Medium
14	Spike shape	9	Taper
15	Lower glume: Beak length	5	Short
16	Lower glume: Beak spicules	9	Present
17	Lower glume: Shoulder shape	1	Slope
18	Lower glume: Shoulder width	3	Narrow
19	Lower glume: Keel Inflection	9	Present
20	Lower glume: Internal hair group	1	Group I
21	Spike length	7	Long
22	Awn length	5	Medium
23	Spike color	1	Yellowish
24	Grain color	1	Amber
25	Grain Shape	5	Ovoid
26	Ventral crease pit	9	Present
27	Embryo shape	9	oval
28	Grain coloration with phenol		Very Dark
29	Other distinct special character (if any)	-	-

### DUS data of BARI gom22 (Sufi)

S.N	Characteristics	Code	State
1	Coleoptile pigment	1	Absent
2	Plant growth habit	1	Erect
3	Leaf spiral: (Flag leaf)	3	Weak
4	F. L. Auricle pigment	1	Absent
5	Flag leaf attitude	7	3/4 of the plants with recurved flag leaves
6	50% spike emergence	3	Early
7	Upper culm Node hairs	5	Medium
8	Glaucosity: Spike	5	Medium
9	Glaucosity: Culm	9	Very strong
10	Glaucosity: Flag leaf sheath	7	Strong
11	Anther Col.	1	Yellowish
12	Straw wall thickness	1	Thin
13	Spike density	5	Medium
14	Spike shape	9	Taper
15	Lower glume: Beak length	5	Medium
16	Lower glume: Beak spicules	9	Present
17	Lower glume: Shoulder shape	9	Elevated
18	Lower glume: Shoulder width	5	Medium
19	Lower glume: Keel Inflection	9	Present
20	Lower glume: Internal hair group	1	Group I
21	Spike length	3	Short
22	Awn length	5	Medium
23	Spike color	1	Yellowish
24	Grain color	1	Amber
25	Grain Shape	5	Ovoid
26	Ventral crease pit	9	Present
27	Embryo shape	9	Oval
28	Grain coloration with phenol	-	-
29	Other distinct special character (if any)	-	-

### DUS data of BARI gom23 (Bijoy)

S.N	Characteristics	Code	State
1	Coleoptile pigment	1	Absent
2	Plant growth habit	1	Erect
3	Leaf spiral: (Flag leaf)	5	Moderate
4	F. L. Auricle pigment	1	Absent
5	Flag leaf attitude	3	1/4 of the plants with recurved flag leaves
6	50% spike emergence	3	Early
7	Upper culm Node hairs	1	Absent or Few
8	Glaucosity: Spike	3	Weak
9	Glaucosity: Culm	5	Medium
10	Glaucosity: Flag leaf sheath	5	Medium
11	Anther Col.	1	Yellowish
12	Straw wall thickness	1	Thin
13	Spike density	5	Medium
14	Spike shape	9	Taper
15	Lower glume: Beak length	3	Short
16	Lower glume: Beak spicules	9	Present
17	Lower glume: Shoulder shape	5	Square
18	Lower glume: Shoulder width	7	Wide
19	Lower glume: Keel Inflection	9	Present
20	Lower glume: Internal hair group	1	Group I
21	Spike length	5	Medium
22	Awn length	5	Medium
23	Spike color	1	Yellowish
24	Grain color	1	Amber
25	Grain Shape	5	Ovoid
26	Ventral crease pit	9	Present
27	Embryo shape	9	Oval
28	Grain coloration with phenol	3	Light
29	Other distinct special character (if any)	-	-

### DUS data of BARI gom24

S.N	Characteristics	Code	State
1	Coleoptile pigment	1	Absent
2	Plant growth habit	1	Erect
3	Leaf spiral: (Flag leaf)	3	Weak
4	F. L. Auricic pigment	1	Absent
5	Flag leaf attitude	7	$\frac{3}{4}$ of the plants with recurved flag leaves
6	50% spike emergence	3	Early
7	Upper culm Node hairs	3	Few
8	Glaucosity: Spike	1	Absent
9	Glaucosity: Culm	1	Absent
10	Glaucosity: Flag leaf sheath	1	Absent
11	Anther Col.	1	Yellowish
12	Straw wall thickness	1	Thin
13	Spike density	5	Medium
14	Spike shape	9	Taper
15	Lower glume: Beak length	7	Long
16	Lower glume: Beak spicules	9	Present
17	Lower glume: Shoulder shape	9	Elevated
18	Lower glume: Shoulder width	7	Wide
19	Lower glume: Keel Inflection	9	Present
20	Lower glume: Internal hair group	5	Group II
21	Spike length	7	Long
22	Awn length	5	Medium
23	Spike color	1	Yellowish
24	Grain color	1	Amber
25	Grain Shape	5	Ovoid
26	Ventral crease pit	9	Present
27	Embryo shape	9	Oval
28	Grain coloration with phenol	3	Light
29	Other distinct special character (if any)	-	Tolerant to baf blight, Susceptible to rust disease

**DUS data of BARI gom25**

S.N	Characteristics	Code	State
1	Coleoptile pigment	1	Absent
2	Plant growth habit	1	Erect
3	Leaf spiral: (Flag leaf)	1	Absent
4	F. L. Auricle pigment	1	Absent
5	Flag leaf attitude	7	$\frac{3}{4}$ of the plants with recurved flag leaves
6	50% spike emergence	5	Medium
7	Upper culm Node hairs	1	Absent or few
8	Glaucosity: Spike	3	Weak
9	Glaucosity: Culm	7	Strong
10	Glaucosity: Flag leaf sheath	7	Strong
11	Anther Col.	1	Yellowish
12	Straw wall thickness	1	Thin
13	Spike density	5	Medium
14	Spike shape	9	Taper
15	Lower glume: Beak length	3	Short
16	Lower glume: Beak spicules	9	Present
17	Lower glume: Shoulder shape	1	Slope
18	Lower glume: Shoulder width	3	Narrow
19	Lower glume: Keel Inflection	9	Present
20	Lower glume: Internal hair group	5	Group II
21	Spike length	7	Long
22	Awn length	5	Medium
23	Spike color	1	Yellowish
24	Grain color	1	Amber
25	Grain Shape	5	Ovoid
26	Ventral crease pit	9	Present
27	Embryo shape	1	Round
28	Grain coloration with phenol	3	Light
29	Other distinct special character (if any)	-	Tolerant to leaf streak; Resistant to rust disease, heat & Salt tolerant (8-10 ds/m)

**DUS data of BARI gom26**

S.N	Characteristics	Code	State
1	Coleoptile pigment	1	Absent
2	Plant growth habit	1	Erect
3	Leaf spiral: (Flag leaf)	1	Absent
4	F. L. Auricle pigment	1	Absent
5	Flag leaf attitude	7	$\frac{3}{4}$ of the plants with recurved flag leaves
6	50% spike emergence	5	Medium
7	Upper culm Node hairs	7	Numerous
8	Glaucosity: Spike	1	Absent
9	Glaucosity: Culm	3	Weak
10	Glaucosity: Flag leaf sheath	5	Medium
11	Anther Col.	1	Yellowish
12	Straw wall thickness	1	Thin
13	Spike density	5	Medium
14	Spike shape	9	Taper
15	Lower glume: Beak length	3	Short
16	Lower glume: Beak spicules	9	Present
17	Lower glume: Shoulder shape	9	Slope
18	Lower glume: Shoulder width	5	Medium
19	Lower glume: Keel Inflection	9	Present
20	Lower glume: Internal hair group	1	Group I
21	Spike length	5	Medium
22	Awn length	3	Short
23	Spike color	1	Yellowish
24	Grain color	1	Amber
25	Grain Shape	5	Ovoid
26	Ventral crease pit	9	Present
27	Embryo shape	9	Oval
28	Grain coloration with phenol	7	Dark
29	Other distinct special character (if any)	-	

### DUS data of BARI gom27

S.N	Characteristics	Code	State
1	Coleoptile pigment	1	Absent
2	Plant growth habit	1	Erect
3	Leaf spiral: (Flag leaf)	1	Absent
4	F. L. Auricle pigment	1	Absent
5	Flag leaf attitude	3	¼ th of the plants with recurved flag leaves
6	50% spike emergence	5	Medium
7	Upper culm Node hairs	1	Absent or few
8	Glaucosity: Spike	7	Strong
9	Glaucosity: Culm	7	Strong
10	Glaucosity: Flag leaf sheath	7	Strong
11	Anther Col.	1	yellowish
12	Straw wall thickness	1	thin
13	Spike density	5	medium
14	Spike shape	9	Taper
15	Lower glume: Beak length	3	Short
16	Lower glume: Beak spicules	9	Present
17	Lower glume: Shoulder shape	9	Elevated
18	Lower glume: Shoulder width	5	Medium
19	Lower glume: Keel Inflection	9	Present
20	Lower glume: Internal hair group	1	Group I
21	Spike length	5	Medium
22	Awn length	3	Short
23	Spike color	1	Yellowish
24	Grain color	1	Amber
25	Grain Shape	5	Ovoid
26	Ventral crease pit	9	Present
27	Embryo shape	9	Oval
28	Grain coloration with phenol	9	Very dark
29	Other distinct special character (if any)	-	

### DUS data of BARI gom28

S.N	Characteristics	Code	State
1	Coleoptile pigment	1	Absent
2	Plant growth habit	3	Semi-Erect
3	Leaf spiral: (Flag leaf)	5	Moderate
4	F. L. Auricle pigment	1	Absent
5	Flag leaf attitude	7	3/4 of the plants with recurved flag leaves
6	50% spike emergence	5	Medium
7	Upper culm Node hairs	5	Medium
8	Glaucosity: Spike	3	Weak
9	Glaucosity: Culm	9	Very Strong
10	Glaucosity: Flag leaf sheath	5	Medium
11	Anther Col.	1	Yellowish
12	Straw wall thickness	1	Thin
13	Spike density	5	Medium
14	Spike shape	9	Taper
15	Lower glume: Beak length	5	Medium
16	Lower glume: Beak spicules	1	Absent
17	Lower glume: Shoulder shape	9	Elevated
18	Lower glume: Shoulder width	3	Narrow
19	Lower glume: Keel Inflection	1	Absent
20	Lower glume: Internal hair group	1	Group I (few hair confined to fold)
21	Spike length	3	Short
22	Awn length	5	Medium
23	Spike color	1	Yellowish
24	Grain color	1	Amber
25	Grain Shape	5	Ovoid
26	Ventral crease pit	9	Present
27	Embryo shape	9	Oval
28	Grain coloration with phenol	7	Dark
29	Other distinct special character (if any)	-	Tolerant to leaf streak; Resistant to rust disease & heat tolerant

### DUS data of BARI gom29

S.N	Characteristics	Code	State
1	Coleoptile pigment	1	Absent
2	Plant growth habit	1	Erect
3	Leaf spiral: (Flag leaf)	3	Weak
4	F. L. Auricie pigment	1	Absent
5	Flag leaf attitude	7	3/4 of the plants with recurved flag leaves
6	50% spike emergence	5	Medium
7	Upper culm Node hairs	5	Medium
8	Glaucosity: Spike	5	Medium
9	Glaucosity: Culm	5	Medium
10	Glaucosity: Flag leaf sheath	9	Strong
11	Anther Col.	1	Yellowish
12	Straw wall thickness	1	Thin
13	Spike density	5	Medium
14	Spike shape	9	Taper
15	Lower glume: Beak length	5	Medium
16	Lower glume: Beak spicules	9	Present
17	Lower glume: Shoulder shape	9	Elevated
18	Lower glume: Shoulder width	5	Medium
19	Lower glume: Keel Inflection	9	Present
20	Lower glume: Internal hair group	5	Group II
21	Spike length	7	Long
22	Awn length	3	Short
23	Spike color	1	Yellowish
24	Grain color	1	Amber
25	Grain Shape	5	Ovoid
26	Ventral crease pit	9	Present
27	Embryo shape	9	Oval
28	Grain coloration with phenol	9	Very Dark
29	Other distinct special character (if any)	-	-

### DUS data of BARI gom30

S.N	Characteristics	Code	State
1	Coleoptile pigment	1	Absent
2	Plant growth habit	3	Semi Erect
3	Leaf spiral: (Flag leaf)	3	Weak
4	F. L. Auricie pigment	1	Absent
5	Flag leaf attitude	7	3/4 of the plants with recurved flag leaves
6	50% spike emergence	3	Early
7	Upper culm Node hairs	1	Absent or Few
8	Glaucoisity: Spike	3	Weak
9	Glaucoisity: Culm	3	Weak
10	Glaucoisity: Flag leaf sheath	5	Medium
11	Anther Col.	1	Yellowish
12	Straw wall thickness	1	Thin
13	Spike density	5	Medium
14	Spike shape	9	Taper
15	Lower glume: Beak length	5	Medium
16	Lower glume: Beak spicules	9	Present
17	Lower glume: Shoulder shape	9	Elevated
18	Lower glume: Shoulder width	5	Medium
19	Lower glume: Keel Inflection	9	Present
20	Lower glume: Internal hair group	1	Group I
21	Spike length	5	Medium
22	Awn length	5	Medium
23	Spike color	1	Yellowish
24	Grain color	1	Amber
25	Grain Shape	5	Ovoid
26	Ventral crease pit	9	Present
27	Embryo shape	9	Oval
28	Grain coloration with phenol	7	Dark
29	Other distinct special character (if any)	-	-

### DUS data of BARI gom31

S.N	Characteristics	Code	State
1	Coleoptile pigment	1	Absent
2	Plant growth habit	3	Semi Erect
3	Leaf spiral: (Flag leaf)	3	Weak
4	F. L. Auricle pigment	1	Absent
5	Flag leaf attitude	7	3/4 of the plants with recurved flag leaves
6	50% spike emergence	3	Early
7	Upper culm Node hairs	5	Medium
8	Glaucoity: Spike	3	Weak
9	Glaucoity: Culm	3	Weak
10	Glaucoity: Flag leaf sheath	5	Medium
11	Anther Col.	1	Yellowish
12	Straw wall thickness	1	Thin
13	Spike density	5	Medium
14	Spike shape	9	Taper
15	Lower glume: Beak length	7	Long
16	Lower glume: Beak spicules	9	Present
17	Lower glume: Shoulder shape	9	Elevated
18	Lower glume: Shoulder width	5	Medium
19	Lower glume: Keel Inflection	9	Present
20	Lower glume: Internal hair group	1	Group I
21	Spike length	5	Medium
22	Awn length	5	Medium
23	Spike color	1	Yellowish
24	Grain color	1	Amber
25	Grain Shape	5	Ovoid
26	Ventral crease pit	9	Present
27	Embryo shape	9	Oval
28	Grain coloration with phenol	3	Light
29	Other distinct special character (if any)	-	-

### DUS data of BARI gom32

S.N	Characteristics	Code	State
1	Coleoptile pigment	1	Absent
2	Plant growth habit	3	Semi Erect
3	Leaf spiral: (Flag leaf)	3	Weak
4	F. L. Auricic pigment	1	Absent
5	Flag leaf attitude	7	3/4 of the plants with recurved flag leaves
6	50% spike emergence	3	Early
7	Upper culm Node hairs	1	Absent or Few
8	Glaucoisity: Spike	3	Weak
9	Glaucoisity: Culm	3	Weak
10	Glaucoisity: Flag leaf sheath	3	Weak
11	Anther Col.	1	Yellowish
12	Straw wall thickness	1	Thin
13	Spike density	5	Medium
14	Spike shape	9	Taper
15	Lower glume: Beak length	3	Short
16	Lower glume: Beak spicules	9	Present
17	Lower glume: Shoulder shape	9	Elevated
18	Lower glume: Shoulder width	5	Medium
19	Lower glume: Keel Inflection	9	Present
20	Lower glume: Internal hair group	1	Group I
21	Spike length	5	Medium
22	Awn length	5	Medium
23	Spike color	1	Yellowish
24	Grain color	1	Amber
25	Grain Shape	5	Ovoid
26	Ventral crease pit	9	Present
27	Embryo shape	9	Oval
28	Grain coloration with phenol	7	Dark
29	Other distinct special character (if any)	-	Tolerant to heat & blast diseases & early variety

### DUS data of BARI gom33

S.N	Characteristics	Code	State
1	Coleoptile pigment	9	Present
2	Plant growth habit	3	Semi Erect
3	Leaf spiral: (Flag leaf)	9	Very strong
4	F. L. Auricie pigment	1	Absent
5	Flag leaf attitude	7	3/4 of the plants with recurved flag leaves
6	50% spike emergence	5	Medium
7	Upper culm Node hairs	1	Absent or Few
8	Glaucosity: Spike	5	Medium
9	Glaucosity: Culm	5	Medium
10	Glaucosity: Flag leaf sheath	9	Strong
11	Anther Col.	1	Yellowish
12	Straw wall thickness	1	Thin
13	Spike density	5	Medium
14	Spike shape	9	Taper
15	Lower glume: Beak length	7	Long
16	Lower glume: Beak spicules	9	Present
17	Lower glume: Shoulder shape	9	Elevated
18	Lower glume: Shoulder width	5	Medium
19	Lower glume: Keel Inflection	9	Present
20	Lower glume: Internal hair group	7	Group III
21	Spike length	5	Medium
22	Awn length	5	Medium
23	Spike color	1	Yellowish
24	Grain color	1	Amber
25	Grain Shape	5	Ovoid
26	Ventral crease pit	9	Present
27	Embryo shape	9	Oval
28	Grain coloration with phenol	7	Dark
29	Other distinct special character (if any)	-	Resistant to blast & rust disease; tolerant to leaf blight & heat; Zinc enriched (50-55 ppm)

### DUS data of BINA gom1

S.N	Characteristics	Code	State
1	Coleoptile pigment	1	Absent
2	Plant growth habit	1	Erect
3	Leaf spiral: (Flag leaf)	3	Weak
4	F. L. Auricie pigment	9	Present
5	Flag leaf attitude	7	$\frac{3}{4}$ of the plants with recurved flag leaves
6	50% spike emergence	5	Medium
7	Upper culm Node hairs	1	Absent or few
8	Glaucoisity: Spike	7	Strong
9	Glaucoisity: Culm	7	Strong
10	Glaucoisity: Flag leaf sheath	7	Strong
11	Anther Col.	1	Yellowish
12	Straw wall thickness	1	Thin
13	Spike density	5	Medium
14	Spike shape	5	Parallel
15	Lower glume: Beak length	3	Short
16	Lower glume: Beak spicules	9	Present
17	Lower glume: Shoulder shape	1	Slope
18	Lower glume: Shoulder width	3	Narrow
19	Lower glume: Keel Inflection	9	Present
20	Lower glume: Internal hair group	5	Group II
21	Spike length	5	Medium
22	Awn length	5	Medium
23	Spike color	1	Yellowish
24	Grain color	1	Amber
25	Grain Shape	5	Ovoid
26	Ventral crease pit	9	Present
27	Embryo shape	1	Round
28	Grain coloration with phenol	9	Very dark
29	Other distinct special character (if any)	-	-

### DUS data of BWMRI gom1

S.N	Characteristics	Code	State
1	Coleoptile pigment	9	Present
2	Plant growth habit	3	Semi Erect
3	Leaf spiral: (Flag leaf)	5	Moderate
4	F. L. Auricie pigment	1	Absent
5	Flag leaf attitude	7	¾ of the plants with recurved flag leaves
6	50% spike emergence	3	Early
7	Upper culm Node hairs	1	Absent or Few
8	Glaucoisity: Spike	3	Weak
9	Glaucoisity: Culm	3	Weak
10	Glaucoisity: Flag leaf sheath	3	Weak
11	Anther Col.	1	Yellowish
12	Straw wall thickness	1	Thin
13	Spike density	5	Medium
14	Spike shape	9	Taper
15	Lower glume: Beak length	7	Long
16	Lower glume: Beak spicules	9	Present
17	Lower glume: Shoulder shape	9	Elevated
18	Lower glume: Shoulder width	5	Medium
19	Lower glume: Keel Inflection	9	Present
20	Lower glume: Internal hair group	1	Group I
21	Spike length	5	Medium
22	Awn length	5	Medium
23	Spike color	1	Yellowish
24	Grain color	1	Amber
25	Grain Shape	5	Ovoid
26	Ventral crease pit	9	Present
27	Embryo shape	9	Oval
28	Grain coloration with phenol	5	Medium
29	Other distinct special character (if any)	-	Resistant to blast & rust disease; tolerant to leaf blight & heat

### DUS data of BWMRI gom2

S.N	Characteristics	Code	State
1	Coleoptile pigment	1	Absent
2	Plant growth habit	3	Semi Erect
3	Leaf spiral: (Flag leaf)	5	Moderate
4	F. L. Auricic pigment	1	Absent
5	Flag leaf attitude	7	$\frac{3}{4}$ of the plants with recurved flag leaves
6	50% spike emergence	3	Early
7	Upper culm Node hairs	1	Absent or Few
8	Glaucosity: Spike	3	Weak
9	Glaucosity: Culm	3	Weak
10	Glaucosity: Flag leaf sheath	3	Weak
11	Anther Col.	1	Yellowish
12	Straw wall thickness	1	Thin
13	Spike density	5	Medium
14	Spike shape	9	Taper
15	Lower glume: Beak length	5	Medium
16	Lower glume: Beak spicules	9	Present
17	Lower glume: Shoulder shape	5	Square
18	Lower glume: Shoulder width	5	Medium
19	Lower glume: Keel Inflection	9	Present
20	Lower glume: Internal hair group	1	Group I
21	Spike length	5	Medium
22	Awn length	5	Medium
23	Spike color	1	Yellowish
24	Grain color	1	Amber
25	Grain Shape	5	Ovoid
26	Ventral crease pit	9	Present
27	Embryo shape	9	Oval
28	Grain coloration with phenol	-	-
29	Other distinct special character (if any)	-	Resistant to rust & leaf streak; tolerant to blast & moderate heat

### DUS data of BWMRI gom3

S.N	Characteristics	Code	State
1	Coleoptile pigment	1	Absent
2	Plant growth habit	3	Semi Erect
3	Leaf spiral: (Flag leaf)	3	Weak
4	F. L. Auricie pigment	1	Absent
5	Flag leaf attitude	3	¼ of the plants with Recurved flag leaves
6	50% spike emergence	7	Late
7	Upper culm Node hairs	1	Absent or Few
8	Glaucosity: Spike	7	Strong
9	Glaucosity: Culm	9	Very strong
10	Glaucosity: Flag leaf sheath	9	Very strong
11	Anther Col.	1	Yellowish
12	Straw wall thickness	1	Thin
13	Spike density	5	Medium
14	Spike shape	9	Taper
15	Lower glume: Beak length	3	Short
16	Lower glume: Beak spicules	9	Present
17	Lower glume: Shoulder shape	1	Slope
18	Lower glume: Shoulder width	3	Narrow
19	Lower glume: Keel Inflection	9	Present
20	Lower glume: Internal hair group	1	Group I
21	Spike length	5	Medium
22	Awn length	5	Medium
23	Spike color	1	Yellowish
24	Grain color	1	Amber
25	Grain Shape	5	Ovoid
26	Ventral crease pit	9	Present
27	Embryo shape	9	Oval
28	Grain coloration with phenol	-	-
29	Other distinct special character (if any)	-	Resistant to blast; rust & leaf streak disease

### DUS data of BWMRI gom4

S.N	Characteristics	Code	State
1	Coleoptile pigment	1	Absent
2	Plant growth habit	1	Erect
3	Leaf spiral: (Flag leaf)	1	Absent
4	F. L. Auricie pigment	1	Absent
5	Flag leaf attitude	5	½ of the plants with recurved flag leaves
6	50% spike emergence	3	Early
7	Upper culm Node hairs	5	Medium
8	Glaucoisity: Spike	1	Absent
9	Glaucoisity: Culm	1	Absent
10	Glaucoisity: Flag leaf sheath	5	Medium
11	Anther Col.	1	Yellowish
12	Straw wall thickness	1	Thin
13	Spike density	5	Medium
14	Spike shape	1	Taper
15	Lower glume: Beak length	5	Medium
16	Lower glume: Beak spicules	1	Absent
17	Lower glume: Shoulder shape	5	Square
18	Lower glume: Shoulder width	3	Narrow
19	Lower glume: Keel Inflection	1	Absent
20	Lower glume: Internal hair group	1	GroupI (few hair confined to fold)
21	Spike length	5	Medium
22	Awn length	5	Medium
23	Spike color	1	Yellowish
24	Grain color	1	Amber
25	Grain Shape	5	Ovoid
26	Ventral crease pit	1	Absent
27	Embryo shape	9	Oval
28	Grain coloration with phenol	7	Dark
29	Other distinct special character (if any)	-	Resistant to rust & leaf streak disease

### DUS data of ACI gom1

S.N	Characteristics	Code	State
1	Coleoptile pigment	1	Absent
2	Plant growth habit	3	Semi erect
3	Leaf spiral: (Flag leaf)	5	Moderate
4	F. L. Auricie pigment	1	Absent
5	Flag leaf attitude	7	3/4 of plants with recurved flag leaves
6	50% spike emergence	5	Medium
7	Upper culm Node hairs	5	Medium
8	Glaucoisity: Spike	5	Medium
9	Glaucoisity: Culm	5	Medium
10	Glaucoisity: Flag leaf sheath	5	Medium
11	Anther Col.	1	Yellowish
12	Straw wall thickness	1	Thin
13	Spike density	5	Medium
14	Spike shape	5	Parallel
15	Lower glume: Beak length	5	Medium
16	Lower glume: Beak spicules	9	Present
17	Lower glume: Shoulder shape	5	Square
18	Lower glume: Shoulder width	5	Medium
19	Lower glume: Keel Inflection	9	Present
20	Lower glume: Internal hair group	5	GroupII (hair extending across part of shoulder)
21	Spike length	5	Medium
22	Awn length	7	Long
23	Spike color	1	Yellowish
24	Grain color	1	Amber
25	Grain Shape	5	Ovoid
26	Ventral crease pit	9	Present
27	Embryo shape	9	Oval
28	Grain coloration with phenol	5	Medium
29	Other distinct special character (if any)	-	Gluten 32.02%

### DUS data of ACI gom2

S.N	Characteristics	Code	State
1	Coleoptile pigment	1	Absent
2	Plant growth habit	3	Semi erect
3	Leaf spiral: (Flag leaf)	5	Moderate
4	F. L. Auricie pigment	1	Absent
5	Flag leaf attitude	7	3/4 of plants with recurved flag leaves
6	50% spike emergence	5	Medium
7	Upper culm Node hairs	5	Medium
8	Glaucoisity: Spike	3	Weak
9	Glaucoisity: Culm	3	Medium
10	Glaucoisity: Flag leaf sheath	3	Weak
11	Anther Col.	1	Yellowish
12	Straw wall thickness	1	Thin
13	Spike density	5	Medium
14	Spike shape	9	Taper
15	Lower glume: Beak length	7	Long
16	Lower glume: Beak spicules	9	Present
17	Lower glume: Shoulder shape	5	Square
18	Lower glume: Shoulder width	5	Medium
19	Lower glume: Keel Inflection	9	Present
20	Lower glume: Internal hair group	5	GroupII (hair extending across part of shoulder)
21	Spike length	5	Medium
22	Awn length	7	Long
23	Spike color	1	Yellowish
24	Grain color	1	Amber
25	Grain Shape	5	Ovoid
26	Ventral crease pit	9	Present
27	Embryo shape	9	Oval
28	Grain coloration with phenol	5	Medium
29	Other distinct special character (if any)	-	Gluten 28.9%

# **DUS data of Jute , Mesta and Kenaf Varieties**

### DUS Test Characters of Jute

Sl.No	Characters	Measurements of characters		Stages data collection
		Code	Guide	
1	Stem colour	G R	Green - no sign of any red pigmentation Red - includes the presence of a trace of red pigmentation	50-60 days age
2	Petiole colour	G R	Green Red	50-60 days age
3	Stipule shape	1 2 3	Scaly Filiform Foliaceous	50-60 days age
4	Stipule colour	G R T	Green Red Tip red	50-60 days age
5	Leaf length-breadth ratio	Ratios of length & breadth	Average length and breadth ratio of 10 leaves starting from the 6th leaf from top of the main stem.	50-60 days age
6	Leaf shape	1 2 3 4 5 6	Shape of 10 leaves as of sl No. 5 Ovate Ovate-Lanceolate Lanceolate- Elliptical Cordate Other (specify)	50-60 days age
7	Leaf texture	S R	Smooth or glossy. Rough or non-glossy	50-60 days age
8	Leaf margin	W N	Wavy Non wavy	50-60 days age
9	Pigmentation of flower	G R	Green Red	At appearance of flower buds on all
10	Days to first	-	The date of opening of the first flower	At flowering stage
11	Days to flowering of 50% plants	-	Days of 50% flowering	At 50% flowering stage
12	Pigmentaion of fruits	G R	Green Red	At early flowering stage
13	Seed dispersal mechanism	1 2	Dehiscent Indehiscent	Before or during harvesting for seed
14	Seed coat colour	1 2	Predominant colour by interpretation Brown Blue	After harvesting threshing and cleaning of seed
15	1000 seed weight		Actual weight at 10% moisture content	Do
16	Any new character			

### DUS Test Characters of Kenaf and Mesta

Sl.No	Characters	Measurements of characters		Stages data collection
		Code	Guide	
1	Stem colour	G R P RG PG GrP PbGa RaGb	Green-no sign of any red/ purple Pigmentation Red- includes the presence of a red pigmentation Purple-includes the presence of a Purple pigmentation Reddish green Purplish green Green with reddish patches Purple below greenish above Reddish above greenish below	50-60 days age
2	Stem pubescence	1 2 3	Smooth Hairy Prickly	Pre-bud
3	Leaf shape	1 2 3 4	Unlobed Partially lobed deeply Mixed	First bud stage (i.e at appearance of first visible bud on main stem). Measure first 10 leaves from this point downwards
4	Leaf length- breadth ratio	Rations of length and breadth	Average length and breadth ratio of 10 leaves starting from the 6th leaf from top of the main stem	50-60 days age
5	Leaf colour (lamina)	1 2 3 4 5 6	Pale green Green Deep green Reddish green Purplish green Red	50-60 days age
6	Leaf texture	1 2 3	Smooth or glossy Ventral glabrous (hairless), dorsal hairy Ventral glabrous, dorsal prickly	50-60 days age
7	Leaf pubescence	0 1	Presence of prickles and hairs on upper and lower surface of leaf Absent Present	First bud stage
8	Petiole colour	1 2 3 4 5	Green Red Reddish Purple/Purplish Upper reddish/purplish, lower greenish	50-60 days age

Sl.No	Characters	Measurements of characters		Stages data collection
		Code	Guide	
9	Petiole length		Average length of 10 leaves starting from the 6th leaf from top of the main stem	50-60 days age
10	Stipule colour	G R TR	Green Red Tip red	50-60 days age
11	Stipule shape	1 2 3	Scaly Filiform Foliaceous	50-60 days age
12	Flower colour	1 2 3 4 5	Cream/yellow with purple centre Completely cream/yellow Cream with purplish venation and centre Pink with purple centre Purple	At mid flowering stage
13	Anther colour	1 2	Yellow Purplish	At mid flowering stage
14	Pigmentation of flower bud (calyx)	1 2 3	Green Green with reddish spots Light red	At bud stage
15	Days to first flowering		The date of opening of the first flower	At flowering stage
16	Days to flowering of 50% plants		Date of 50% flowering (1st flowering in 50% plants in the plot)	At 50% flowering stage
17	Pigmentation of fruits (calyx and epicalyxes)	1 2 3	Green Green with reddish spots stage Red	At early fruiting stage before Capsule browning
18	Fruit shape	1 2 3	Globular (Round) Ovoid (Egg shaped) stage Pointed (Elongated)	At harvesting stage
19	Fruit pubescence	1 2 3	Smooth Hairy Bristled	At harvesting stage
20	Seed dispersal mechanism	1 2	Dehiscent Indehiscent	Before or during harvesting for seed
21	Days to maturity.		The date of 60 -70% fruits browning	At harvesting stage
22	Seed shape	1 2 3	Reniform Sub-Reniform Brownish	After harvesting, threshing cleaning of seed
23	Seed coat colour	1 2 3	Ash grey Blackish Brownish	-Do-
24	1000 seed weight		Actual weight at 10% moisture content	-Do-
25	Any new character			

### DUS Test Characters of BJRI kenaf5 (KBL-155 (1))

Sl.No	Characters	Code	State
1	Stem color	RG	Reddish Green
2	Stem pubescence	3	Prickly
3	Leaf shape	1	Unlobed
4	Leaf length -breadth ratio	-	1.04
5	Leaf colour (lamina)	2	Green
6	Leaf texture	2	Ventral glabrous (hairless), dorsal hairy
7	Leaf pubescence	1	Present
8	Petiole colour	3	Reddish
9	Petiole length	-	13.5 cm
10	Stipule color	G	Green
11	Stipule shape	2	Filiform
12	Flower color	1	Cream/yellow with purple centre
13	Anther color	1	Yellow
14	Pigmentation of flower bud (calyx)	1	Green
15	Days to first flowering		135 -145 days
16	Days to flowering of 50% plants		145 -155 days
17	Pigmentation of fruits (calyx and epicalyxes)	1	Green
18	Fruit shape	2	Ovoid (Egg shaped)
19	Fruit pubescence	3	Bristled
20	Seed dispersal mechanism	2	Indehiscent
21	Days to maturity		The date of 60 -70% fruits browning
22	Seed shape	3	Angular
23	Seed coat color	1	Ash grey
24	1000 seed weight	-	28.96 g
25	Any new character		

### DUS Test Characters of BJRI kenaf4

Sl. No	Characters	Code	State
1	Stem color	R	Red - includes the presence of a red pigmentation
2	Stem pubescence	3	Prickly
3	Leaf shape	3	Deeply lobed
4	Leaf length-breadth ratio		1.55
5	Leaf color (lamina)	5	Purplish green
6	Leaf texture	2	Ventral glabrous (hairless), dorsal hairy
7	Leaf pubescence	1	Present
8	Petiole color	3	Reddish
9	Petiole length		17 cm
10	Stipule color	G	Green
11	Stipule shape	2	Filiform
12	Flower color	3	Cream with purplish venation and centre
13	Anther color	2	Purplish
14	Pigmentation of flower bud (calyx)	1	Green
15	Days to first flowering		135 -145 days
16	Days to flowering of 50% plants		145 -155 days
17	Pigmentation of fruits (calyx and epicalyxes)	1	Green
18	Fruit shape	2	Ovoid (Egg shaped)
19	Fruit pubescence	3	Bristled
20	Seed dispersal mechanism	2	Indehiscent
21	Days to maturity		The date of 60-70% fruits browning
22	Seed shape	3	Angular
23	Seed coat color	1	Ash grey
24	1000 seed weight		25.20 g
25	Any new character		

### DUS data of HC-95

Sl. No	Characters	Code	State
1	Stem color	G	Green - no sign of any red/purple pigmentation
2	Stem pubescence	3	Prickly
3	Leaf shape	3	Deeply lobed
4	Leaf length-breadth ratio		1.29
5	Leaf colour (lamina)	2	Green
6	Leaf texture	2	Ventral glabrous (hairless), dorsal hairy
7	Leaf pubescence	1	Present
8	Petiole color	1	Reddish
9	Petiole length		18 cm
10	Stipule color	G	Green
11	Stipule shape	2	Filiform
12	Flower color	2	Completely Cream
13	Anther color	1	Yellow
14	Pigmentation of flower bud (calyx)	1	Green
15	Days to first flowering		140-150 days
16	Days to flowering of 50% plants		150-160 days
17	Pigmentation of fruits (calyx and epicalyxes)	1	Green
18	Fruit shape	2	Ovoid (Egg shaped)
19	Fruit pubescence	3	Bristled
20	Seed dispersal mechanism	2	Indehiscent
21	Days to maturity		The date of 60 -70% fruits browning
22	Seed shape	3	Angular
23	Seed coat color	1	Ash grey
24	1000 seed weight		23.76 g
25	Any new character		

### DUS Test Characters of BJRI mesta1 (HS-24)

Sl. No	Characters	Code	State
1	Stem color	GrP	Green with reddish patches/ having nodes purple pigmentation
2	Stem pubescence	3	Prickly/Hairy
3	Leaf shape	3	Deeply lobed
4	Leaf length-breadth ratio		1.20
5	Leaf colour (lamina)	5	Purplish green (base of the venation and leaf margin purple)
6	Leaf texture	2	Ventral glabrous (hairless), dorsal hairy
7	Leaf pubescence	1	Present
8	Petiole color	5	Upper side purplish, lower green, both ends purple
9	Petiole length		10 cm
10	Stipule color	G	Green
11	Stipule shape	1	Scaly
12	Flower color	2	Completely Cream
13	Anther color	1	Yellow
14	Pigmentation of flower bud (calyx)	1	Green
15	Days to first flowering		150-160 days
16	Days to flowering of 50% plants		165-170 days
17	Pigmentation of fruits (calyx and epicalyxes)	2	Green with reddish spotted
18	Fruit shape	2	Ovoid (Egg shaped)
19	Fruit pubescence	3	Bristled
20	Seed dispersal mechanism	1	Dehiscent
21	Days to maturity		The date of 60-70% fruits browning
22	Seed shape	1	Reinform
23	Seed coat colour	3	Brownish
24	1000 seed weight		19.26 g
25	Any new character		

### DUS Test Characters of BJRI mesta-3 (SAMU'93)

Sl. No	Characters	Code	State
1	Stem color	G	Green - no sign of any red/purple pigmentation
2	Stem pubescence	1	Smooth
3	Leaf shape	3	Deeply lobed
4	Leaf length-breadth ratio		1.33
5	Leaf color (lamina)	2	Green
6	Leaf texture	1	Smooth
7	Leaf pubescence	0	Absent
8	Petiole color	1	Green
9	Petiole length		9 cm
10	Stipule color	G	Green
11	Stipule shape	1	Scaly
12	Flower color	2	Completely Cream
13	Anther colour	1	Yellow
14	Pigmentation of flower bud (calyx)	1	Green
15	Days to first flowering		150-160 days
16	Days to flowering of 50% plants		165-170 days
17	Pigmentation of fruits (calyx and epicalyxes)	1	Green
18	Fruit shape	2	Ovoid (Egg shaped)
19	Fruit pubescence	1	Smooth
20	Seed dispersal mechanism	1	Dehiscent
21	Days to maturity		The date of 60 -70% fruits browning
22	Seed shape	1	Reinform
23	Seed coat colour	3	Brownish
24	1000 seed weight		17.48 g
25	Any new character		

### DUS data of BJRI tosha pat3 (OM1)

Sl.No	Characters	Code	State
1	Stem color	G	Green
2	Petiole	G	Green
3	Stipule Shape	1	Scaly
4	Stipule color	G	Green
5	Leaf length-breath ratio	-	1.71
6	Leaf Shape	1	Ovate
7	Leaf texture	S	Smooth or glossy
8	Leaf margin	N	Non wavy
9	Pigmentation of flower bud (Calyx)	G	Green
10	Days to first flowering	-	150-155days
11	Days to flowering of 50% plants	-	165-170days
12	Pigmentation of fruits	G	Green
13	Seed dispersal mechanism	2	Indehiscent
14	Seed coat color	1	Brown
15	1000 seed weight	-	2.0 g at 10% moisture
16	Any new Character	-	

### DUS Test Characters of BJRI tosha pat7 (MG 1)

Sl. No	Characters	Code	State
1	Stem color	G	Green
2	Petiole	G	Green
3	Stipule Shape	1	Scaly
4	Stipule colour	G	Green
5	Leaf length-breath ratio	-	2.5
6	Leaf Shape	2	Ovate-Lanceolate
7	Leaf texture	S	Smooth or glossy
8	Leaf margin	N	Non wavy
9	Pigmentation of flower bud (Calyx)	G	Green
10	Days to first flowering	-	155-160 days
11	Days to flowering of 50% plants	-	170-175 days
12	Pigmentation of fruits	G	Green
13	Seed dispersal mechanism	2	Indehiscent
14	Seed coat color	2	Greenish Blue
15	1000 seed weight	-	1.92 g at 10% moisture
16	Any new Character	-	

### DUS data of BJRI tosha pat8

Sl. No	Characters	Code	State
1	Stem color	R	Red
2	Petiole	R	Red
3	Stipule Shape	2	Filiform
4	Stipule color	G	Green
5	Leaf length-breath ratio	-	1.20
6	Leaf Shape	3	Lanceolate
7	Leaf texture	S	Smooth
8	Leaf margin	W	Wavy
9	Pigmentation of flower bud (Calyx)	G	Green
10	Days to first flowering	-	150-155 days
11	Days to flowering of 50% plants	-	165-170 days
12	Pigmentation of fruits	G	Green
13	Seed dispersal mechanism	2	Dehiscent
14	Seed coat color	2	Greenish Blue
15	1000 seed weight	-	1.90 g
16	Any new Character	-	-

### DUS data of BJRI tosha pat9 (O-043-7-9)

Sl. No	Characters	Code	State
1	Stem color	G	Full green
2	Petiole	G	Green
3	Stipule Shape	2	Filiform
4	Stipule color	G	Green
5	Leaf length-breath ratio	-	2.55
6	Leaf Shape	3	Lanceolate
7	Leaf texture	S	Smooth
8	Leaf margin	W	Wavy
9	Pigmentation of flower bud (Calyx)	G	Green
10	Days to first flowering	-	150-155 days
11	Days to flowering of 50% plants	-	165-170 days
12	Pigmentation of fruits	G	Green
13	Seed dispersal mechanism	2	Dehiscent
14	Seed coat color	2	Greenish Blue
15	1000 seed weight	-	1.75 g
16	Any new Character	-	Narrow lanceolate leaves with wavy margin, deep green color near the margin.

### DUS Test Characters of BJRI deshi Pat8

Sl. No	Characters	Code	State
1	Stem color	G	Green
2	Petiole	R	Red
3	Stipule Shape	2	Filiform
4	Stipule colour	G	Green
5	Leaf length-breath ratio		2.09
6	Leaf Shape	3	Lanceolate
7	Leaf texture	S	Smooth
8	Leaf margin	W	Wavy
9	Pigmentation of flower bud (Calyx)	G	Green
10	Days to first flowering		113 -119 days
11	Days to flowering of 50% plants		120 -128 days
12	Pigmentation of fruits	CR	Light coppery red
13	Seed dispersal mechanism	2	Indehiscent
14	Seed coat color		Coppery
15	1000 seed weight		3.38 g
16	Any new Character		Moderate salinity tolerant (upto 10 ds/m)

### DUS Test Characters of BJRI deshi Pat9

Sl. No	Characters	Code	State
1	Stem color	G	Green
2	Petiole	G	Green
3	Stipule Shape	2	Filiform
4	Stipule colour	G	Green
5	Leaf length -breath ratio		2.21
6	Leaf Shape	2	Ovate lanceolate
7	Leaf texture	S	Smooth
8	Leaf margin	W	Wavy
9	Pigmentation of flower bud (Calyx)	G	Green
10	Days to first flowering		122 -128 days
11	Days to flower ing of 50% plants		130 -132 days
12	Pigmentation of fruits	G	Green
13	Seed dispersal mechanism	2	Indehiscent
14	Seed coat color		Coppery
15	1000 seed weight		3.03 g
16	Any new Character		Moderate to high salinity tolerant (upto 14 ds/m)

**Pictorial view of Jute, Mesta and Kenaf**



**CVL1**



**BJC7370**



**BJC2197**



**BJRI kenaf4**



**BINA deshi pat2**



**BINA patshak1**



**MG1**



**BJC5003**



**BJC1221**



**JRO524**



**BJM 10-1-3**



**BJRI tosha pat8**



**HC95**



**O9897**

# **DUS data of Sugarcane Varieties**

## DUS Test Characters of Sugarcane

Sl. No	Characters	States	Code	Example varieties	Stage of observation (days)
1. (* (+)	Plant: Growth habit	Erect	1	Isd 40	210-240
		Semi-erect	2	Isd 25	
2. (* (+)	Plant: Adherence of leaf sheath	weak (self de-trashing)	3	Isd 30	270-300
		Medium (semi claspings)	5	Isd 35	
		Strong (tight claspings)	7	Isd 28	
3. (+)	Plant: Number of millable canes (NMC) per stool	Low (<3.0)	3	Isd 25 Isd 37	300-360
		Medium (3.0-5.0)	5		
		High (5.1-7.0)	7		
		Very high (>7.0)	9		
4.	Plant: Leaf carriage	Open	1	Isd 35	210-240
		Compact	2	Isd 37	
5.	Plant: Intensity of green colour of leaf canopy	Light	3	Isd 2-54	210-240
		Medium	5	Isd 16	
		Dark	7	Isd 25	
6. (+)	Plant: Cane height (from the base to the TVD leaf)	Short (<1.75 m)	3	Isd 24 BSRI akh42	300-360
		Medium (1.75-3.0m)	5		
		Tall (>3.0 mm)	7		
7. (* (+)	Internode: Diameter	Thin (<2.2 cm)	3	Isd 35	270-300
		Medium (2.2-3.0 cm)	5	BSRI akh41	
		Thick (>3.0 cm)	7		
8. (* (+)	Internode: Shape	Cylindriacal	1	Isd 37	270-300
		Tumescant	2	BSRI akh42	
		Bobbin shaped	3	Isd 39	
		Conoidal	4	Isd 38	
		Obconoidal	5		
		Curved	6		
9.	Internode: Cross- section	Round	1	Isd 39	300-360
		Oval	2		
10.	Internode: Colour (Exposed to sun)	Green yellow group (RHS 1)	1		270-300
		Yellow green group (RHS 144-154)	2		
		Yellow group (RHS 3-13, 22)	3		
		Greyed group (RHS 160- 182, 184, 199)	4		
		Brown group (RHS 160-182, 184,199)	5		
		Purple group (RHS 59-65, 77)	6		

Sl. No	Characters	States	Code	Example varieties	Stage of observation (days)
11. (* (+)	Internode: Colour (Not Exposed to sun)	Green (RHS 138-143) Green yellow (RHS 1) Green White (RHS 157) Yellow (RHS 2-11) Yellow Green (RHS 145-154) Yellow white (RHS 158) Orange white (RHS 159) Greyed green (RHS 193) Greyed yellow (RHS 160)	1 2 3 4 5 6 7 8 9		270-300
12.	Internode: Split/growth crack	Absent Present	1 9	Isd 39 Isd 25	270-300
13.	Internode: Alignment	Straight Zigzag	1 9	Isd 37	270-300
14. (* (+)	Internode: Appearance (rind surface)	Smooth Corky patches only Ivory marks only Corky patches and ivory marks present	1 2 3 4	Isd 16 BSRI akh41	270-300
15.	Internode: Pithiness	Absent Present	1 9	Isd 39 Isd 35	300-360
16. (*	Internode: Waxiness	Absent Light Medium Heavy	1 3 5 7	BSRI akh42 Isd 27 Isd 30 Isd 40	270-300
17.	Node: With of root band	Narrow (< 6mm) Medium (6-8 mm) Broad (>8mm)	3 5 7	Isd 24 Isd 40 Isd 39	270-300
18. (+)	Node: Bud shape	Triangular-pointed Oval Obovate Pentagonal Rhomboid Round Ovate Rectangular Beaked	1 2 3 4 5 6 7 8 9	Isd 20 Isd 24    Isd 33 Isd 38 Isd 16	270-300
19.	Node: Bud prominence	Flat Bulging	1 9	Isd 19 Isd 40	270-300
20. (*	Node: Depth of bud groove	Absent Shallow Medium Deep	1 3 4 5	Isd 40  Isd 34 Isd 16	270-300

Sl. No	Characters	States	Code	Example varieties	Stage of observation (days)
21.	Node: Size of bud (Measured from base of bud to the tip)	Small (6 mm or less), Medium (7-9 mm), Large (10 mm or more)	3 5 7	Isd 19 Isd 24 BSRI akh41	270-300
22.	Node: Bud tip position in relation to growth ring	Clearly below growth ring Touching the ring Clearly above growth ring	3 5 7	Isd 19 Isd 33 Isd 26	270-300
23.	Node: Pubescence on the bud	Absent Present	1 9		270-300
24. (*)	Node: Bud cushion (Space between bud base and leaf scar)	Absent Present	1 9	Isd 38 Isd 19	270-300
25. (+)	Node: Growth ring appearance	Weak (Not swollen) Strong (Swollen)	1 9	Isd 39 Isd 33	270-300
26.	Node: Root primordial arrangement	One row Two rows Three rows Four rows Irregular	1 2 3 4 5	Isd 34 Isd 17 Isd 39	270-300
27. (*)	Leaf sheath: Number of hairs (Groups 57)	Absent Few Many	1 3 5	Isd 34 Isd 16 Isd 24	210-240
28.	Leaf sheath: Distribution of hairs	Absent Only dorsal Lateral and dorsal	1 3 5	Isd 39 Isd 33 Isd 24	210-240
29.	Leaf sheath: Shape of ligule	Strap-shaped Deltoid Crescent-shaped Bow-shaped	1 2 3 4	Isd 27 Isd 39 Isd 2-54	210-240
30. (+)	Leaf sheath: Shape of inner auricle	Sloping transitional Straight transitional Ascending transitional Deltoid Dentoid Unciform Calciform Lanceolate Falcate	1 2 3 4 5 6 7 8 9	Isd 25 Isd 19 Isd 33 Isd 17 Isd 34 Isd 30	210-240

Sl. No	Characters	States	Code	Example varieties	Stage of observation (days)
31. (+)	Leaf sheath: Shape of outer auricle	Sloping transitional Straight transitional Ascending transitional Deltoid Dentoid Unciform Calcareform Lanceolate Falcate	1 2 3 4 5 6 7 8 9	Isd 25 Isd 33 Isd 20 Isd 34 Isd 30	210-240
32. (*)	Leaf sheath: Colour of dewlap	Greenish-yellow Yellow Yellowish-green Brown Purple	1 2 3 4 5	Isd 39	210-240
33. (*)	Leaf blade: Curvature	Erect to tip Curved near tip Bent near tip Curved near middle	1 2 3 4	Isd 18 Isd 25 Isd 17 Isd 28	210-240
34. (*)	Leaf blade: width at the longitudinal midpoint	Narrow (<3.0 cm) Medium (3.0-5.0 cm) Broad (5.0 cm)	3 5 7	Isd 28 Isd 34 Isd 25	210-240
35.	Leaf blade: Serration of margin	Absent Present	1 9	Isd 30 Isd 18	210-240
36.	Cane top: Waxiness	Absent Weak Medium Strong	1 3 4 5	Isd 40 Isd 38 Isd 34	210-240
37.	Special feature: (if any)				

### 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.

(+) It is to be noted that for certain characteristics the plant parts on which observation to be taken are given in the explanation or figure(s) for clarity and not for the colour variation.

### DUS Test Characters of BSRI akh39

S.N	Characteristics	Code	State
1. (* (+)	Plant: Growth habit	1	Erect
2.	Plant: Adherence of leaf sheath	7	Strong
3. (+)	Plant: Number of millable canes (NMC) per stool	7	High
4.	Plant: Leafcarriage	2	Compact
5.	Plant: Intensity of green color of leaf canopy	5	Medium
6.	Plant: Cane height (from the base to the TVD leaf)	5	Medium
7.	Internode: Diameter	5	Medium
8.	Internode: Shape	3	Bobbin
9.	Internode: Cross- section	1	Round
10.	Internode: Colour (Exposed to sun)	2	Yellow green group
11.	Internode: Colour (Not exposed to sun)	5	Yellowish Green
12.	Internode: Split/growth crack	1	Absent
13.	Internode: Alignment	1	Straight
14. (* (+)	Internode: Appearance (rind surface)	1	Smooth
15.	Internode: Pithiness	1	Absent
16. (*	Internode: Waxiness	5	Medium
17.	Node: Width of root band	5	Medium
18. (+)	Node: Bud shape	2	Oval
19.	Node: Bud prominence	9	Bulging
20. (*	Node: Depth of bud groove	1	Absent
21.	Node: Size of bud (Measured from base of bud to the tip)	5	Medium
22.	Node: Bud tip position in relation to growth ring	3	Below growth ring
23.	Node: Pubescence on the bud	9	Present
24. (*	Node: Bud cushion (Space between bud base and leaf scar)	1	Absent
25. (+)	Node: Growth ring appearance	9	Swollen
26.	Node: Root primordial arrangement	5	Irregular
27. (*	Leaf sheath: Number of hairs (groups 57)	1	Absent
28.	Leaf sheath: Distribution of hairs	1	Absent
29. (+)	Leaf sheath: Shape of ligule	3	Crescent
30. (+)	Leaf sheath: Shape of inner auricle	8	Short Lanceolate
31. (+)	Leaf sheath: Shape of outer auricle	4	Deltoid
32. (*	Leaf sheath: Colour of dewlap	5	Deep Purple
33. (*	Leaf blade: Curvature	4	Curved near middle
34. (*	Leaf blade: width at the longitudinal midpoint	5	Medium
35.	Leaf blade: Serration of margin	9	Present
36.	Cane top: Waxiness	4	Medium
37.	Special feature: (If any)		Flowering Brix - 21%

## DUS Test Characters of BSRI akh42

S.N	Characteristics	Code	State
1. (* (+)	Plant: Growth habit	1	Erect
2.	Plant: Adherence of leaf sheath	5	Medium
3. (+)	Plant: Number of millable canes (NMC) per stool	5	Medium
4.	Plant: Leaf carriage	2	Compact
5.	Plant: Intensity of green color of leaf canopy	5	Medium
6.	Plant: Cane height (from the base to the TVD leaf)	7	Tall
7.	Internode: Diameter	7	Thick
8.	Internode: Shape	2	Tune scent
9.	Internode: Cross-section	1	Round
10.	Internode: Colour (Exposed to sun)	6	Purple group
11.	Internode: Colour (Not exposed to sun)	6	Yellow white
12.	Internode: Split/growth crack	9	Present
13.	Internode: Alignment	1	Straight
14. (* (+)	Internode: Appearance (rind surface)	4	Corky patches & ivory marks present
15.	Internode: Pithiness	1	Absent
16. (*	Internode: Waxiness	3	Light
17.	Node: Width of root band	5	Medium
18. (+)	Node: Bud shape	2	Oval
19.	Node: Bud prominence	9	Bulging
20. (*	Node: Depth of bud groove	1	Absent
21.	Node: Size of bud (Measured from base of bud to the tip)	5	Medium
22.	Node: Bud tip position in relation to growth ring	7	Above growth ring
23.	Node: Pubescence on the bud	9	Present
24. (*	Node: Bud cushion (Space between bud base and leaf scar)	1	Absent
25. (+)	Node: Growth ring appearance	1	Not swollen
26.	Node: Root primordial arrangement	5	Irregular
27. (*	Leaf sheath: Number of hairs (groups 57)	5	Many
28.	Leaf sheath: Distribution of hairs	3	Only dorsal
29. (+)	Leaf sheath: Shape of ligule	3	Crescent (Broad)
30. (+)	Leaf sheath: Shape of inner auricle	2	Straight transitional
31. (+)	Leaf sheath: Shape of outer auricle	1	Slopping transitional
32. (*	Leaf sheath: Color of dewlap	5	Purple
33. (*	Leaf blade: Curvature	4	Curved near middle
34. (*	Leaf blade: width at the longitudinal midpoint	7	Board
35.	Leaf blade: Serration of margin	9	Present
36.	Cane top: Waxiness	3	Weak
37.	Special feature: (If any)	-	

## DUS Test Characters of BSRI akh47

S.N	Characteristics	Code	State
1. (* (+)	Plant: Growth habit	1	Erect
2.	Plant: Adherence of leaf sheath	5	Medium
3. (+)	Plant: Number of millable canes (NMC) per stool	5	Medium
4.	Plant: Leaf carriage	2	Compact
5.	Plant: Intensity of green color of leaf canopy	5	Medium
6.	Plant: Cane height (from the base to the TVD leaf)	7	Tall
7.	Internode: Diameter	5	Medium
8.	Internode: Shape	1	Cylindrical
9.	Internode: Cross-section	1	Round
10.	Internode: Color (Exposed to sun)	3	Yellow group
11.	Internode: Color (Not exposed to sun)	6	Yellowish white
12.	Internode: Split/growth crack	9	Present
13.	Internode: Alignment	1	Straight
14. (* (+)	Internode: Appearance (rind surface)	4	Corky patches & ivory marks present
15.	Internode: Pithiness	1	Absent
16. (*	Internode: Waxiness	3	Light
17.	Node: Width of root band	5	Medium
18. (+)	Node: Bud shape	2	Oval
19.	Node: Bud prominence	1	Flat
20. (*	Node: Depth of bud groove	1	Absent
21.	Node: Size of bud (Measured from base of bud to the tip)	5	Medium
22.	Node: Bud tip position in relation to growth ring	5	On growth ring
23.	Node: Pubescence on the bud	9	Present
24. (*	Node: Bud cushion (Space between bud base and leaf scar)	1	Absent
25. (+)	Node: Growth ring appearance	1	Not swollen
26.	Node: Root primordial arrangement	5	Irregular
27. (*	Leaf sheath: Number of hairs (groups 57)	5	Many
28.	Leaf sheath: Distribution of hairs	3	Only dorsal
29. (+)	Leaf sheath: Shape of ligule	3	Crescent (Flat)
30. (+)	Leaf sheath: Shape of inner auricle	1	Sloping transitional
31. (+)	Leaf sheath: Shape of outer auricle	2	Straight transitional
32. (*	Leaf sheath: Colour of dewlap	5	Purple
33. (*	Leaf blade: Curvature	4	Curved near middle
34. (*	Leaf blade: width at the longitudinal midpoint	7	Board
35.	Leaf blade: Serration of margin	9	Present
36.	Cane top: Waxiness	3	Weak
37.	Special feature: (If any)	-	

### DUS Test Characters of BSRI akh48

S.N	Characteristics	Code	State
1. (* (+)	Plant: Growth habit	1	Erect
2.	Plant: Adherence of leaf sheath	5	Medium
3. (+)	Plant: Number of millable canes (NMC) per stool	9	Very High
4.	Plant: Leaf carriage	2	Compact
5.	Plant: Intensity of green color of leaf canopy	7	Dark
6.	Plant: Cane height (from the base to the TVD leaf)	7	Tall
7.	Internode: Diameter	5	Medium
8.	Internode: Shape	1	Cylindrical
9.	Internode: Cross-section	1	Round
10.	Internode: Colour (Exposed to sun)	1	Green Yellow group
11.	Internode: Colour (Not exposed to sun)	5	Yellowish Green
12.	Internode: Split/growth crack	9	Present
13.	Internode: Alignment	1	Straight
14. (* (+)	Internode: Appearance (rind surface)	4	Corky patches & ivory marks present
15.	Internode: Pithiness	1	Absent
16. (*	Internode: Waxiness	7	Heavy
17.	Node: Width of root band	5	Medium
18. (+)	Node: Bud shape	6	Round
19.	Node: Bud prominence	1	Flat
20. (*	Node: Depth of bud groove	1	Absent
21.	Node: Size of bud (Measured from base of bud to the tip)	5	Medium
22.	Node: Bud tip position in relation to growth ring	3	Below growth ring
23.	Node: Pubescence on the bud	9	Present
24. (*	Node: Bud cushion (Space between bud base and leaf scar)	9	Present
25. (+)	Node: Growth ring appearance	9	Swollen
26.	Node: Root primordial arrangement	5	Irregular
27. (*	Leaf sheath: Number of hairs (groups 57)	1	Absent
28.	Leaf sheath: Distribution of hairs	1	Absent
29. (+)	Leaf sheath: Shape of ligule	3	Crescent
30. (+)	Leaf sheath: Shape of inner auricle	4	Deltoid
31. (+)	Leaf sheath: Shape of outer auricle	3	Ascending transitional
32. (*	Leaf sheath: Colour of dewlap	5	Light Purple
33. (*	Leaf blade: Curvature	2	Curved near tip
34. (*	Leaf blade: width at the longitudinal midpoint	7	Board
35.	Leaf blade: Serration of margin	9	Present
36.	Cane top: Waxiness	4	Medium
37.	Special feature: (If any)		Sparse flowering Brix- 21%

## **Conclusion**

The mission of UPOV is to provide and promote an effective system of plant variety protection, with the aim of encouraging the development of new varieties of plants for the benefit of society. So, DUS testing has an imperative role before release of plant varieties that providing an opportunity for the legal protection of plant varieties, diversification of agriculture and overall growth of agriculture.

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