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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

DRAFT

SUGARCANE

UPOV Code(s): SACCH

Saccharum L.

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by experts from Australia
to be considered by the
Technical Working Party for Agricultural Crops
at its forty-ninth session, to be held in Saskatoon, Canada,
from 2020-06-22 to 2020-06-26

Disclaimer: this document does not represent UPOV policies or guidance

Alternative names:*

Botanical name	*English*	*French*	*German*	*Spanish*
Saccharum L.	Sugarcane	Canne à sucre	Zuckerrohr	Caña de azúcar

The purpose of these guidelines ("Test Guidelines") is to elaborate the principles contained in the General Introduction (document TG/1/3), and its associated TGP documents, into detailed practical guidance for the harmonized examination of distinctness, uniformity and stability (DUS) and, in particular, to identify appropriate characteristics for the examination of DUS and production of harmonized variety descriptions.

ASSOCIATED DOCUMENTS

These Test Guidelines should be read in conjunction with the General Introduction and its associated TGP documents.

* These names were correct at the time of the introduction of these Test Guidelines but may be revised or updated. [Readers are advised to consult the UPOV Code, which can be found on the UPOV Website (www.upov.int), for the latest information.]

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1. Subject of these Test Guidelines

These Test Guidelines apply to all varieties of *Saccharum* L.

2. Material Required

2.1 The competent authorities decide on the quantity and quality of the plant material required for testing the variety and when and where it is to be delivered. Applicants submitting material from a State other than that in which the testing takes place must ensure that all customs formalities and phytosanitary requirements are complied with.

2.2 The material is to be supplied in the form of vegetative cuttings which are about 8 to 12 months old.

2.3 The minimum quantity of plant material, to be supplied by the applicant, should be:

12 segments of culm with 3 buds each, properly packaged to minimize damage to the buds

2.4 The plant material supplied should be visibly healthy, not lacking in vigor, nor affected by any important pest or disease.

2.5 The plant material should not have undergone any treatment which would affect the expression of the characteristics of the variety, unless the competent authorities allow or request such treatment. If it has been treated, full details of the treatment must be given.

3. Method of Examination

3.1 Number of Growing Cycles

3.1.1 The minimum duration of tests should normally be a single growing cycle.

3.1.2 The testing of a variety may be conducted when the competent authority can determine with certainty the outcome of the test.

3.2 Testing Place

Tests are normally conducted at one place. In the case of tests conducted at more than one place, guidance is provided in TGP/9 “Examining Distinctness”.

3.3 Conditions for Conducting the Examination

The tests should be carried out under conditions ensuring satisfactory growth for the expression of the relevant characteristics of the variety and for the conduct of the examination.

3.4 Test Design

Each test should be designed to result in a total of at least 24 culms, which should be divided between at least 2 replicates.

3.5 Additional Tests

Additional tests, for examining relevant characteristics, may be established.

4. Assessment of Distinctness, Uniformity and Stability

4.1 Distinctness

4.1.1 General Recommendations

It is of particular importance for users of these Test Guidelines to consult the General Introduction prior to making decisions regarding distinctness. However, the following points are provided for elaboration or emphasis in these Test Guidelines.

4.1.2 Consistent Differences

The differences observed between varieties may be so clear that more than one growing cycle is not necessary. In addition, in some circumstances, the influence of the environment is not such that more than a single growing cycle is required to provide assurance that the differences observed between varieties are sufficiently consistent. One means of ensuring that a difference in a characteristic, observed in a growing trial, is sufficiently consistent is to examine the characteristic in at least two independent growing cycles.

4.1.3 Clear Differences

Determining whether a difference between two varieties is clear depends on many factors, and should consider, in particular, the type of expression of the characteristic being examined, i.e. whether it is expressed in a qualitative, quantitative, or pseudo-qualitative manner. Therefore, it is important that users of these Test Guidelines are familiar with the recommendations contained in the General Introduction prior to making decisions regarding distinctness.

4.1.4 Number of Plants or Parts of Plants to be Examined

Unless otherwise indicated, for the purposes of distinctness, all observations on single plants should be made on 12 plants or parts of plants taken from each of 12 plants and any other observations made on all plants in the test, disregarding any off-type plants.

4.1.5 Method of Observation

The recommended method of observing the characteristic for the purposes of distinctness is indicated by the following key in the Table of Characteristics (see document TGP/9 “Examining Distinctness”, Section 4 “Observation of characteristics”):

MG: single measurement of a group of plants or parts of plants
MS: measurement of a number of individual plants or parts of plants
VG: visual assessment by a single observation of a group of plants or parts of plants
VS: visual assessment by observation of individual plants or parts of plants

Type of observation: visual (V) or measurement (M)

“Visual” observation (V) is an observation made on the basis of the expert’s judgment. For the purposes of this document, “visual” observation refers to the sensory observations of the experts and, therefore, also includes smell, taste and touch. Visual observation includes observations where the expert uses reference points (e.g. diagrams, example varieties, side-by-side comparison) or non-linear charts (e.g. color charts). Measurement (M) is an objective observation against a calibrated, linear scale e.g. using a ruler, weighing scales, colorimeter, dates, counts, etc.

Type of record: for a group of plants (G) or for single, individual plants (S)

For the purposes of distinctness, observations may be recorded as a single record for a group of plants or parts of plants (G), or may be recorded as records for a number of single, individual plants or parts of plants (S). In most cases, “G” provides a single record per variety and it is not possible or necessary to apply statistical methods in a plant-by-plant analysis for the assessment of distinctness.

In cases where more than one method of observing the characteristic is indicated in the Table of Characteristics (e.g. VG/MG), guidance on selecting an appropriate method is provided in document TGP/9, Section 4.2.

4.2 Uniformity

4.2.1 It is of particular importance for users of these Test Guidelines to consult the General Introduction prior to making decisions regarding uniformity. However, the following points are provided for elaboration or emphasis in these Test Guidelines:

4.2.2 These Test Guidelines have been developed for the examination of vegetatively propagated varieties. For varieties with other types of propagation, the recommendations in the General Introduction and document TGP/13 "Guidance for new types and species" Section 4.5 "Testing Uniformity" should be followed.

4.2.3 For the assessment of uniformity of vegetatively propagated varieties, a population standard of 1% and an acceptance probability of at least 95% should be applied. In the case of a sample size of 24 plants, 1 off-type is allowed.

4.3 Stability

4.3.1 In practice, it is not usual to perform tests of stability that produce results as certain as those of the testing of distinctness and uniformity. However, experience has demonstrated that, for many types of variety, when a variety has been shown to be uniform, it can also be considered to be stable.

4.3.2 Where appropriate, or in cases of doubt, stability may be further examined by testing a new seed or plant stock to ensure that it exhibits the same characteristics as those shown by the initial material supplied.

5. Grouping of Varieties and Organization of the Growing Trial

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

5.2 Grouping characteristics are those in which the documented states of expression, even where produced at different locations, can be used, either individually or in combination with other such characteristics: (a) to select varieties of common knowledge that can be excluded from the growing trial used for examination of distinctness; and (b) to organize the growing trial so that similar varieties are grouped together.

5.3 The following have been agreed as useful grouping characteristics:

(a) Internode: cross section (characteristic 8)
(b) Internode: color where not exposed to sun (characteristic 10)
(c) Node: presence of wing on bud (characteristic 19)
(d) Node: shape of bud (characteristic 20)

5.4 Guidance for the use of grouping characteristics, in the process of examining distinctness, is provided through the General Introduction and document TGP/9 “Examining Distinctness”.

6. Introduction to the Table of Characteristics

6.1 Categories of Characteristics

6.1.1 Standard Test Guidelines Characteristics

Standard Test Guidelines characteristics are those which are approved by UPOV for examination of DUS and from which members of the Union can select those suitable for their particular circumstances.

6.1.2 Asterisked Characteristics

Asterisked characteristics (denoted by *) are those included in the Test Guidelines which are important for the international harmonization of variety descriptions and should always be examined for DUS and included in the variety description by all members of the Union, except when the state of expression of a preceding characteristic or regional environmental conditions render this inappropriate.

6.2 States of Expression and Corresponding Notes

6.2.1 States of expression are given for each characteristic to define the characteristic and to harmonize descriptions. Each state of expression is allocated a corresponding numerical note for ease of recording of data and for the production and exchange of the description.

6.2.2 In the case of qualitative and pseudo-qualitative characteristics (see Chapter 6.3), all relevant states of expression are presented in the characteristic. However, in the case of quantitative characteristics with 5 or more states, an abbreviated scale may be used to minimize the size of the

Table of Characteristics. For example, in the case of a quantitative characteristic with 9 states, the presentation of states of expression in the Test Guidelines may be abbreviated as follows:

State	*Note*
small	3
medium	5
large	7

However, it should be noted that all of the following 9 states of expression exist to describe varieties and should be used as appropriate:

State	*Note*
very small	1
very small to small	2
small	3
small to medium	4
medium	5
medium to large	6
large	7
large to very large	8
very large	9

6.2.3 Further explanation of the presentation of states of expression and notes is provided in document TGP/7 “Development of Test Guidelines”.

6.3 Types of Expression

An explanation of the types of expression of characteristics (qualitative, quantitative and pseudo-qualitative) is provided in the General Introduction.

6.4 Example Varieties

Where appropriate, example varieties are provided to clarify the states of expression of each characteristic.

6.5 Legend

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1 **2**	**3** **4**	**5** **6**	**7**			
	Name of characteristics in English	**Nom du caractère en français**	**Name des Merkmals auf Deutsch**	**Nombre del carácter en español**		
	states of expression	types d’expression	Ausprägungsstufen	tipos de expresión		

1 Characteristic number

2 (*) Asterisked characteristic – see Chapter 6.1.2

3 Type of expression
QL Qualitative characteristic – see Chapter 6.3
QN Quantitative characteristic – see Chapter 6.3
PQ Pseudo-qualitative characteristic – see Chapter 6.3

4 Method of observation (and type of plot, if applicable)
MG, MS, VG, VS – see Chapter 4.1.5

5 (+) See Explanations on the Table of Characteristics in Chapter 8.2

6 (a)-(d) See Explanations on the Table of Characteristics in Chapter 8.1

7 Not applicable

7. Table of Characteristics/Tableau des caractères/Merkmalstabelle/Tabla de caracteres

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1.	**QN VG**	**(+)**				
	Plant: stool growth habit					
	erect				Q 121, Q186	1
	semi-erect				Q96, RB72-454	3
	intermediate					5
	semi-prostrate				H56-752	7
	prostrate					9
2. **(*)**	**QN VS**	**(+)**				
	Plant: adherence of leaf sheath					
	weak				H56-752, Q96	3
	medium				Q124, Q186	5
	strong				NC0 310, Q120, Q201	7
3.	**QN VG**					
	Plant: number of tillers					
	few				Q124	3
	medium				RB72-454	5
	many				Q138	7
4. **(*)**	**QN MS**	**(+)**				
	Culm: height					
	short				Q117	3
	medium				Q124, Q138, Q170	5
	long				Q136, RB72-454	7
5.	**QN MS**	**(+)** **(a)**				
	Internode: length on the bud side					
	short				Q117	3
	medium				Q138, Q170	5
	long				Q124	7

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
6.	**(*)**	**QN**	**MS**	**(+)**	**(a)**				
		Internode: diameter							
		thin						Q136	3
		medium						H56-752, Q124, Q170	5
		thick						Q117	7
7.	**(*)**	**PQ**	**VG**	**(+)**					
		Internode: shape							
		cylindrical						Q169, RB72-454	1
		tumescent							2
		bobbin-shaped						H56-752	3
		conoidal							4
		obconoidal						H60-3802	5
		concave-convex						Q115	6
8.	**(*)**	**QN**	**VG**						
		Internode: cross section							
		circular						Q 121, RB72-454	1
		circular to ovate							2
		ovate						Q152, Q186, Q96	3
9.	**(*)**	**PQ**	**VG**						
		Internode: color where <u>exposed</u> to sun							
		yellow							1
		yellow green							2
		grey yellow							3
		grey orange							4
		grey red							5
		grey purple							6

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
10. (*)	**PQ VG**					
	Internode: color where <u>not exposed</u> to sun					
	yellow					1
	yellow green					2
	grey yellow					3
	grey orange					4
	grey red					5
	grey purple					6
11.	**QN VS**					
	Internode: number of growth crack					
	absent or very few				H56-752, RB72-454	1
	few				Q124	3
	medium				Q121	5
	many				Q179	7
	very many					9
12. (*)	**QN VG**	**(+)**				
	Internode: expression of zigzag alignment					
	absent or very weak				Q124	1
	weak				Q135, Q152	3
	moderate				Q117	5
	strong				H56-752	7
13.	**QN VS**					
	Internode: waxiness					
	absent or very weak				Q179	1
	weak				Q138	3
	medium				Q121, RB72-454	5
	strong				H56-752, Q117	7
14.	**QN VS**	**(a)**				
	Internode: length of bud groove					
	short				Q121	3
	medium				Q135, Q138	5
	long				H56-752, Q179, Q96	7

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
15.	**QN VS**	**(a)**				
	Internode: depth of bud groove					
	absent or very shallow				Q117, Q121, Q186	1
	shallow				Q138, Q170, RB72-454	3
	medium				Q179	5
	deep					7
16.	**QN MS**	**(a)**				
	Node: width of root band					
	narrow					3
	medium					5
	wide					7
17.	**PQ VG**	**(+)**				
	Node: shape of root band					
	tall					1
	constricted					2
	conoidal					3
	obconoidal					4
18.	**QL VG**	**(a)**				
	Node: width of wax ring					
	absent or very narrow				Q179	1
	narrow					3
	medium				Q113, Q96, RB72-454	5
	wide				Q115, Q138	7
	very wide					9
19. **(*)**	**PQ VG**					
	Node: presence of wing on bud					
	absent					1
	present					9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
20. (*)	**PQ VG**	**(+)**				
	Node: shape of bud					
	triangular-pointed				RB72-454	1
	oval				Q138	2
	obovate					3
	pentagonal					4
	rhomboid					5
	round				Q124, Q179	6
	ovate				Q115, Q170, Q186	7
	rectangular					8
21. (*)	**QN MS**	**(a)**				
	Node: length of bud					
	very short					1
	short					3
	medium					5
	long					7
	very long					9
22. (*)	**QN MS**	**(+) (a)**				
	Node: width of bud					
	very narrow					1
	narrow				Q138	3
	medium					5
	wide				Q121, Q124	7
	very wide				H56-752, Q136	9
23. (*)	**QN VS**	**(+)**				
	Node: bud prominence					
	very weak				Q152	1
	weak				RB72-454	3
	medium				H56-752, Q121	5
	strong				Q136	7

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
24.	**QN VS**	**(a)**				
	Node: position of bud tip in relation to growth ring					
	clearly below					1
	intermediate				Q179, RB72-454	2
	clearly above					3
25.	**QN VS**	**(+) (a)**				
	Node: bud cushion					
	absent or very narrow				Q121, Q186	1
	narrow				Q96	3
	medium				Q181, RB72-454	5
	wide				Q170	7
26.	**QN VS**					
	Node: width of bud wing					
	narrow				RB72-454	1
	medium				Q121	3
	wide				BN81-1394	5
27.	**PQ VG**					
	Node: color of root band where <u>not exposed</u> to sun					
	white and green					1
	yellow and green					2
	yellow and purple					3
	green					4
	purple					6

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
28.	**PQ** **VG**					
	Node: color of growth ring where <u>not exposed</u> to sun					
	white and green					1
	yellow and green					2
	yellow and purple					3
	green					4
	green and purple					5
	purple					6
29.	**QN** **MS**	**(b)**				
	Leaf sheath: length					
	short				Q117	3
	medium				Q136, Q170	5
	long				Q121, Q124	7
30.	**QN** **VG**	**(b), (c)**				
	Leaf sheath: number of hairs					
	absent or very few				Q186, RB72-454	1
	few				Q170	3
	medium				Q117, Q179	5
	many				Q124	7
	very many				Q169	9
31.	**QN** **VG**	**(b), (c)**				
	Leaf sheath: length of hairs					
	short				Q186	3
	medium				Q117, Q138, Q179	5
	long				Q121	7
32.	**QL** **VG**	**(b), (c)**				
	Leaf sheath: distribution of hairs					
	only dorsal				Q138, Q170	1
	lateral and dorsal					2

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
33.		**PQ**	**VS**	**(+)**	**(b)**				
		Leaf sheath: shape of ligule							
		strap-shaped							1
		deltoid						H56-752, Q170	2
		crescent-shaped						Q121, Q179, Q96	3
		bow-shaped							4
34.		**QN**	**VS**		**(b)**				
		Leaf sheath: width of ligule							
		narrow							1
		medium						Q115, Q179, Q186	2
		wide						H56-752, Q170	3
35.	**(*)**	**QN**	**VS**		**(b)**				
		Leaf sheath: length of ligule hairs (group 61)							
		short						Q152, Q170, Q96	3
		medium						Q179, RB72-454	5
		long						BN81-1394, Q124	7
36.	**(*)**	**QN**	**VS**		**(b)**				
		Leaf sheath: density of ligule hairs (group 61)							
		absent or very sparse							1
		sparse							3
		medium						Q152	5
		dense						Q121, RB72-454	7
		very dense						Q179	9
37.	**(*)**	**QL**	**VS**		**(b)**				
		Leaf sheath: underlapping auricle							
		absent							1
		present							9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
38. (*)	**PQ VS**	**(+) (b)**				
	Leaf sheath: shape of underlapping auricle					
	deltoid				Q186	1
	dentoid					2
	unciform					3
	calcarifom					4
	lanceolate				H56-752, RB72-454	5
	falcate					6
39.	**QN VS**	**(b)**				
	Leaf sheath: size of underlapping auricle					
	small				Q96	3
	medium				Q201	5
	large				Q135	7
40.	**QL VS**	**(b)**				
	Leaf sheath: overlapping auricle					
	absent					1
	present					9
41.	**PQ VS**	**(+) (b)**				
	Leaf sheath: shape of overlapping auricle					
	deltoid				Q117, RB72-454	1
	dentoid					2
	unciform					3
	calcariform					4
	lanceolate				Q138	5
	falcate					6
42.	**QN VS**	**(b)**				
	Leaf sheath: size of overlapping auricle					
	small					3
	medium					5
	large					7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
43.		**QN MS**	**(b)**				
		Leaf blade: length					
		short				Q124	3
		medium				Q136	5
		long				Q170	7
44.	**(*)**	**QN MS**	**(b)**				
		Leaf blade: width at the longitudinal mid-point					
		narrow				Q113, Q186	3
		medium				Q121, Q124	5
		broad				Q138, Q179	7
45.		**QN MS**	**(b)**				
		Leaf: midrib width at the longitudinal mid-point					
		very narrow					1
		narrow				Q121	3
		medium				Q124, Q170	5
		wide					7
		very wide				Q138	9
46.		**QN MS**	**(b)**				
		Leaf: ratio leaf blade width/midrib width					
		low					3
		medium				H56-752, Q124	5
		high					7
47.		**QN VG**	**(d)**				
		Cane top: length					
		short					3
		medium					5
		long					6

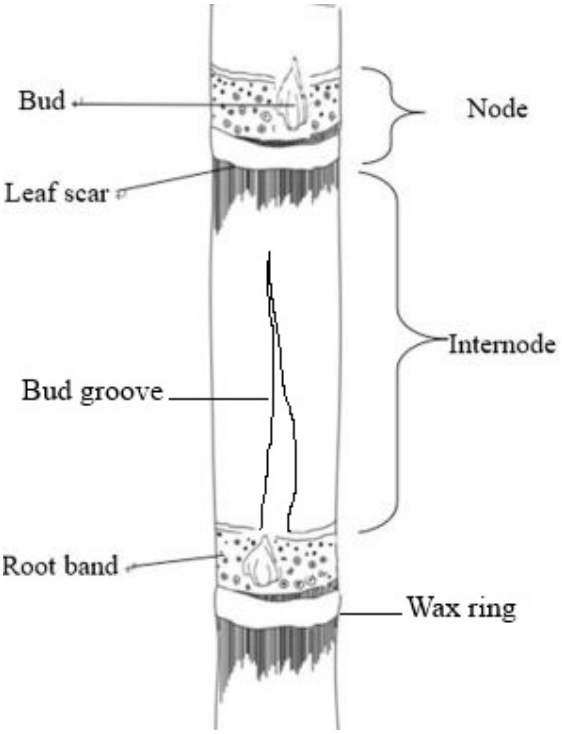
	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
48.	**QL** **VG**	**(d)**				
	Cane top: shape of cross-section					
	circular					1
	ovate					2
49.	**QN** **VG**	**(d)**				
	Cane top: waxiness					
	absent or very weak					1
	weak					3
	medium					5
	strong					7

8. Explanations on the Table of Characteristics

8.1 Explanations covering several characteristics

Characteristics containing the following key in the Table of Characteristics should be examined as indicated below:

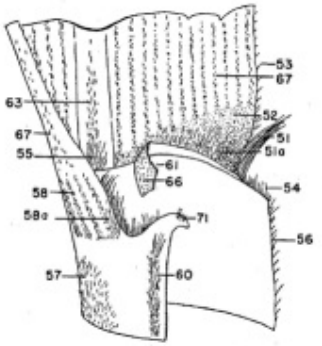
(a) Observations on the internode and node to be made on the longest internode of a representative culm. Different parts of internode and node are illustrated:



(b) Observations on the leaf sheath and leaf blade to be made on the top visible dewlap (TVD) leaf.

(c) Leaf sheath hairs to be observed on hair groups 57 and 60.
Distribution of hairs is dorsal when only hair group 57 is present. Distribution of hairs is lateral and dorsal when both hair groups 57 and 60 are present.

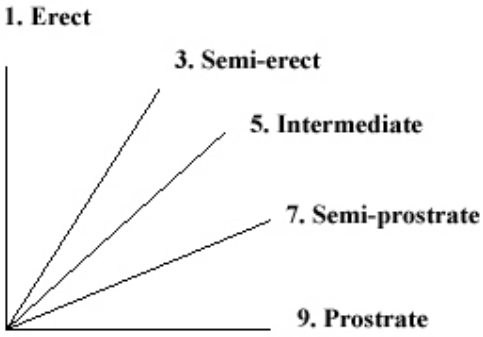
Leaf sheath ligule hairs to be observed on hair group 61.



(d) The cane top is the region between the youngest exposed visible dewlap and the insertion of the fourth youngest fully extended leave (leaf + 4) in the culm.

8.2 Explanations for individual characteristics

Ad. 1: Plant: stool growth habit



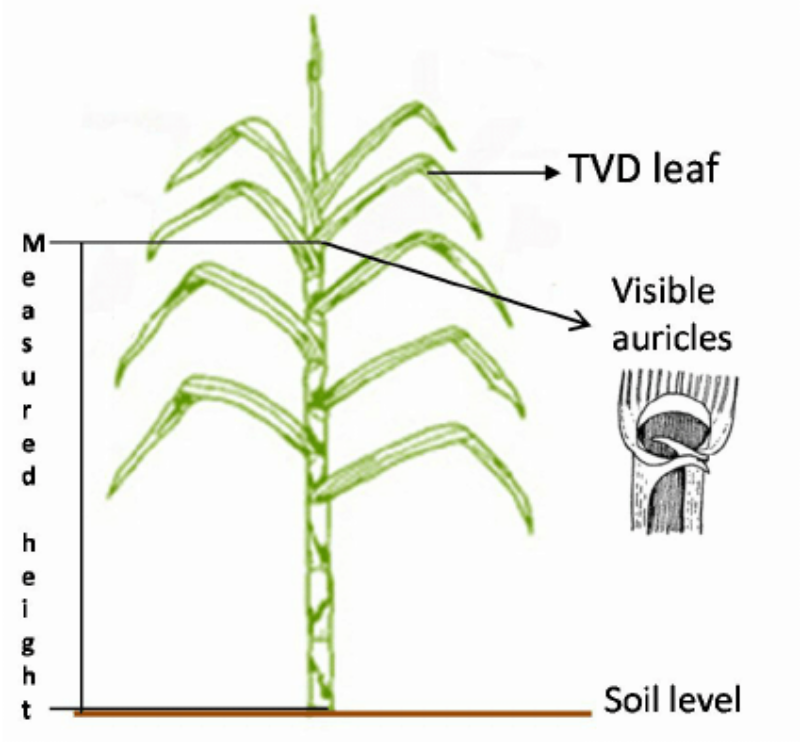
To be observed 2-3 months after transplantation.

Ad. 2: Plant: adherence of leaf sheath

To be observed on the lower half of the stool on the senescing leaves.

Ad. 4: Culm: height

To be observed from the base of the culm at soil level to the base of the Top Visible Dewlap (TVD) leaf.



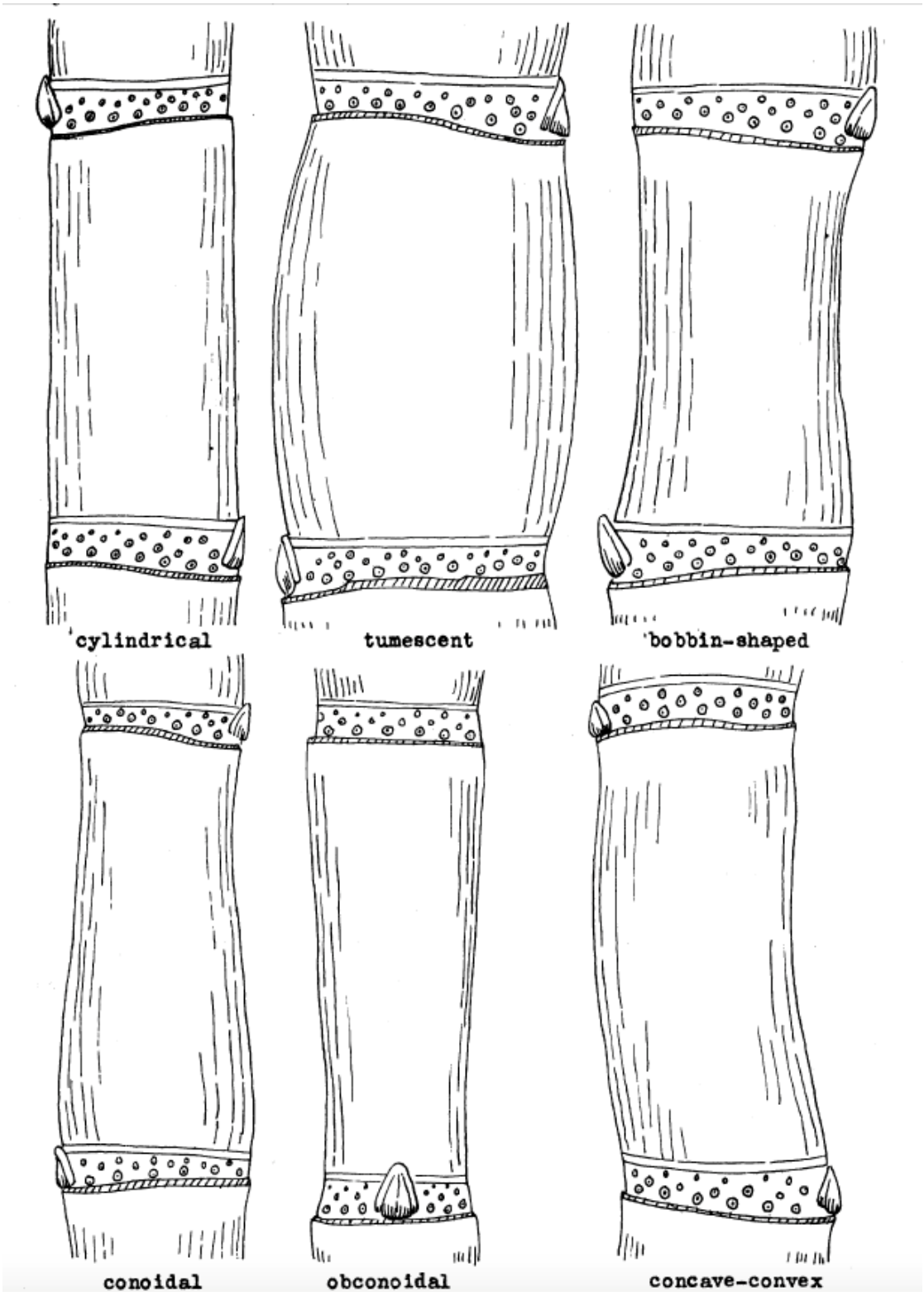
Ad. 5: Internode: length on the bud side

To be observed on the bud side of the longest internode of the culm.

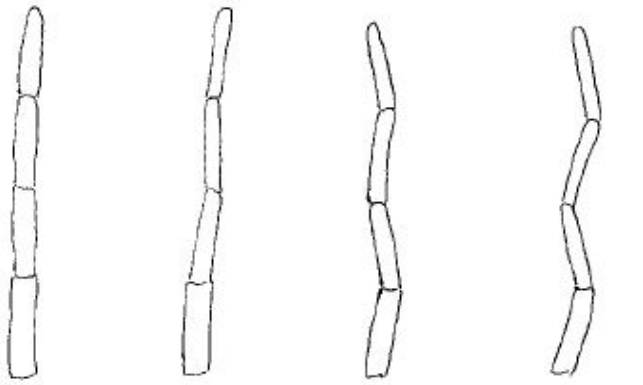
Ad. 6: Internode: diameter

To be observed perpendicular to bud side on the longest internode of the culm.

Ad. 7: Internode: shape

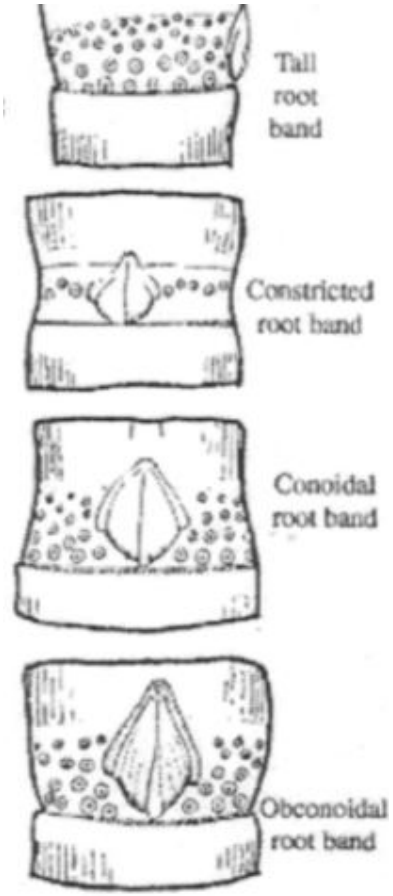


Ad. 12: Internode: expression of zigzag alignment



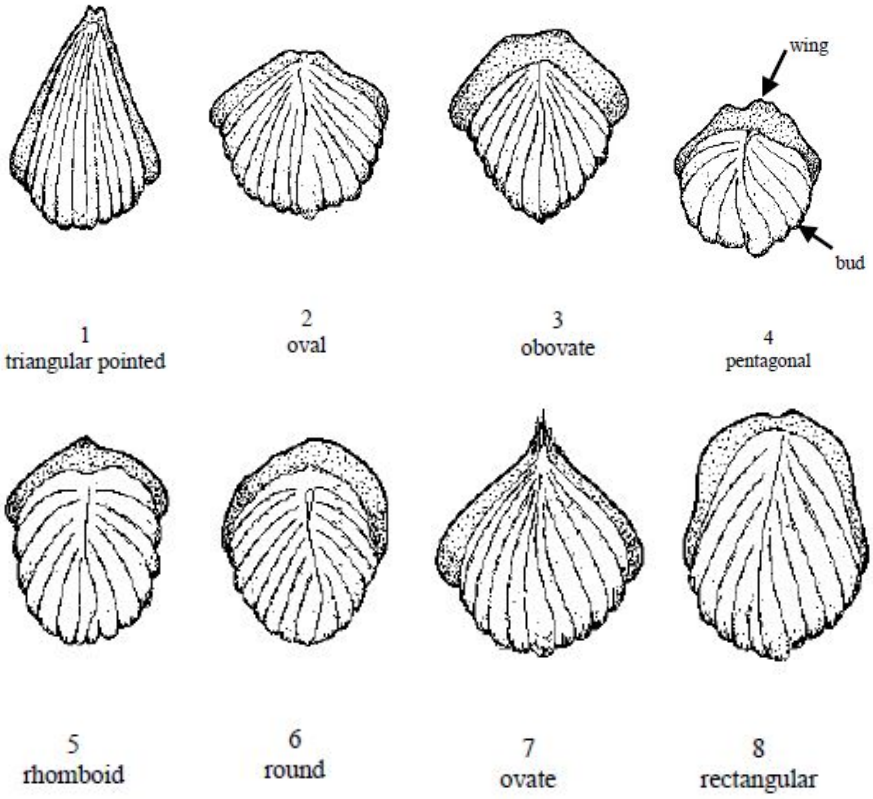
1	3	5	7
absent or very weak	weak	moderate	strong

Ad. 17: Node: shape of root band



Ad. 20: Node: shape of bud

To be observed excluding the bud wings



Ad. 22: Node: width of bud

To be observed excluding the bud wings.

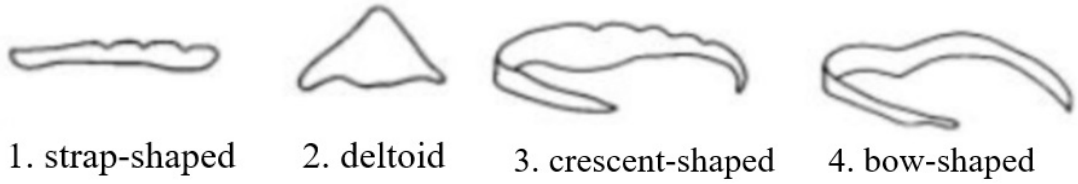
Ad. 23: Node: bud prominence

To be observed on second senescent leaf from the top.

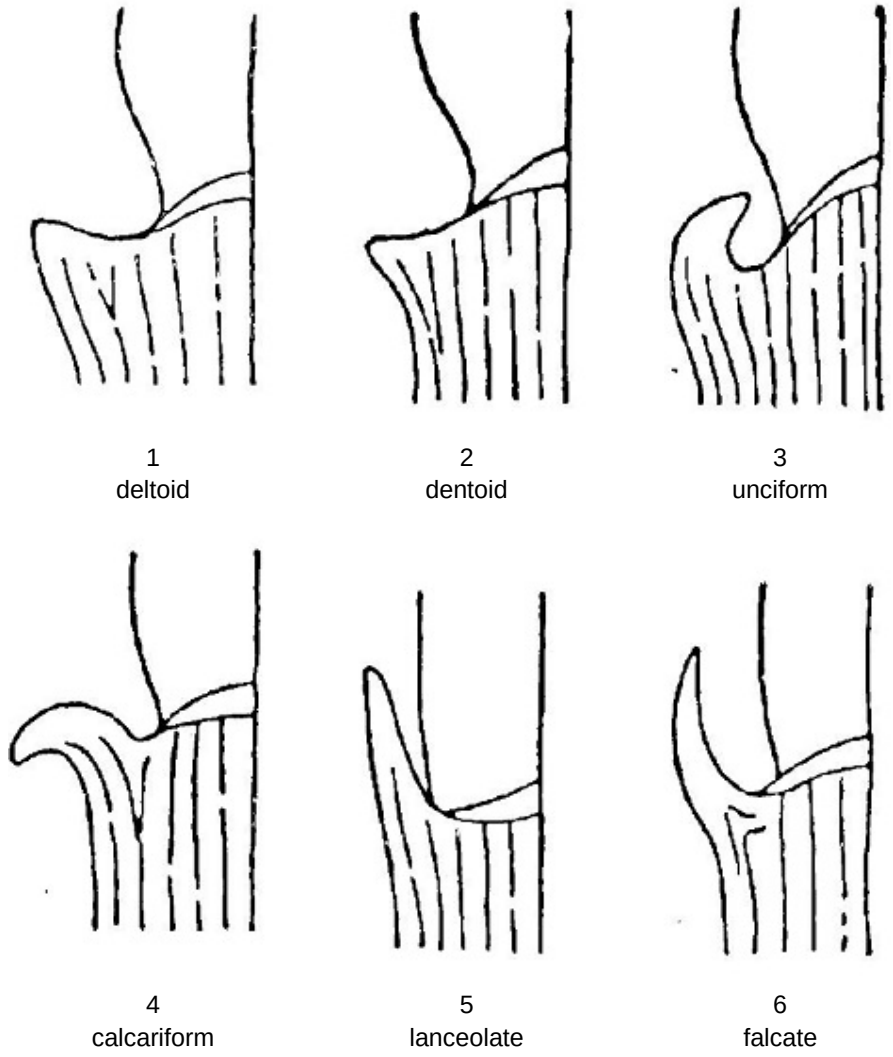
Ad. 25: Node: bud cushion

To be observed in the space between base of bud and leaf scar.

Ad. 33: Leaf sheath: shape of ligule



Ad. 38: Leaf sheath: shape of underlapping auricle



1
deltoid

2
dentoid

3
unciform

4
calcariform

5
lanceolate

6
falcate

Ad. 41: Leaf sheath: shape of overlapping auricle

Same as Leaf sheath: shape of underlapping auricle (Characteristics 34)

9. Literature

Artschwager, E., 1940: Journal of Agricultural Research, v. 60, n. 8, pp. 503-508.
Gallacher, D.J., 1994: Development of a minimum descriptor set for individuals of *Saccharum* spp. Hybrid germplasm. Thesis submitted for Ph.D., Department of Botany and Tropical Agriculture, James Cook University of North Queensland, AU.
Gallacher, D.J. and Berding, N. 1997: Purpose selection and application of descriptors for sugarcane germplasm. *Aust. J. Agric. Res* 48: 759-67.
Gallacher, D.J., 1997: Evaluation of sugarcane morphological descriptors using variance components analysis. *Aust. J. Agric. Res* 48: 769-73.
Gallacher, D.J., 1997: Optimised descriptors recommended for Australian sugarcane germplasm (*Saccharum* spp. hybrid) *Aust. J. Agric. Res* 48: 775-79.

10. Technical Questionnaire

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:

	Application date: (not to be filled in by the applicant)

TECHNICAL QUESTIONNAIRE
to be completed in connection with an application for plant breeders' rights

1. Subject of the Technical Questionnaire

1.1 Botanical name	*Saccharum* L.
1.2 Common name	Sugarcane

2. Applicant

Name	
Address	
Telephone No.	
Fax No.	
E-mail address	
Breeder (if different from applicant)	

3. Proposed denomination and breeder's reference

Proposed denomination (if available)	
Breeder's reference	

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:

[#]4. Information on the breeding scheme and propagation of the variety

4.1 Breeding scheme

Variety resulting from:

4.1.1 Crossing

(a) controlled cross [ ]

(please state parent variety)

(……..……..) x (……..……..)

female parent male parent

(b) partially known cross [ ]

(please state known parent variety(ies))

(……..……..) x (……..……..)

female parent male parent

(c) unknown cross [ ]

4.1.2 Mutation [ ]
(please state parent variety)

4.1.3 Discovery and development [ ]
(please state where and when discovered and how developed)

4.1.4 Other [ ]
(Please provide details)

Authorities may allow certain of this information to be provided in a confidential section of the Technical Questionnaire.

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:

4.2 Method of propagating the variety

4.2.1 Vegetative propagation

4.2.2 Other [ ]
(Please provide details)

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:

5. Characteristics of the variety to be indicated (the number in brackets refers to the corresponding characteristic in Test Guidelines; please mark the note which best corresponds).

	Characteristics	Example Varieties	Note
5.1 (2)	**Plant: adherence of leaf sheath**		
	weak	H56-752, Q96	3 [ ]
	medium	Q124, Q186	5 [ ]
	strong	NC0 310, Q120, Q201	7 [ ]
5.2 (7)	**Internode: shape**		
	cylindrical	Q169, RB72-454	1 [ ]
	tumescent		2 [ ]
	bobbin-shaped	H56-752	3 [ ]
	conoidal		4 [ ]
	obconoidal	H60-3802	5 [ ]
	concave-convex	Q115	6 [ ]
5.3 (9)	**Internode: color where <u>exposed</u> to sun**		
	yellow		1 [ ]
	yellow green		2 [ ]
	grey yellow		3 [ ]
	grey orange		4 [ ]
	grey red		5 [ ]
	grey purple		6 [ ]
5.4 (10)	**Internode: color where <u>not exposed</u> to sun**		
	yellow		1 [ ]
	yellow green		2 [ ]
	grey yellow		3 [ ]
	grey orange		4 [ ]
	grey red		5 [ ]
	grey purple		6 [ ]

	Characteristics	Example Varieties	Note
5.5 (12)	**Internode: expression of zigzag alignment**		
	absent or very weak	Q124	1 [ ]
	weak	Q135, Q152	3 [ ]
	moderate	Q117	5 [ ]
	strong	H56-752	7 [ ]
5.6 (20)	**Node: shape of bud**		
	triangular-pointed	RB72-454	1 [ ]
	oval	Q138	2 [ ]
	obovate		3 [ ]
	pentagonal		4 [ ]
	rhomboid		5 [ ]
	round	Q124, Q179	6 [ ]
	ovate	Q115, Q170, Q186	7 [ ]
	rectangular		8 [ ]
5.7 (44)	**Leaf blade: width at the longitudinal mid-point**		
	narrow	Q113, Q186	3 [ ]
	medium	Q121, Q124	5 [ ]
	broad	Q138, Q179	7 [ ]

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:

6. Similar varieties and differences from these varieties

Please use the following table and box for comments to provide information on how your candidate variety differs from the variety (or varieties) which, to the best of your knowledge, is (or are) most similar. This information may help the examination authority to conduct its examination of distinctness in a more efficient way.

Denomination(s) of variety(ies) similar to your	Characteristic(s) in which your candidate variety differs	Describe the expression of the characteristic(s) for the	Describe the expression of the characteristic(s) for **your**
Example			

Comments:

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:

#7. Additional information which may help in the examination of the variety

7.1 In addition to the information provided in sections 5 and 6, are there any additional characteristics which may help to distinguish the variety?

Yes [ ] No [ ]

(If yes, please provide details)

7.2 Are there any special conditions for growing the variety or conducting the examination?

Yes [ ] No [ ]

(If yes, please provide details)

7.3 Other information

Authorities may allow certain of this information to be provided in a confidential section of the Technical Questionnaire.

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:

8. Authorization for release

(a) Does the variety require prior authorization for release under legislation concerning the protection of the environment, human and animal health?

Yes [ ] No [ ]

(b) Has such authorization been obtained?

Yes [ ] No [ ]

If the answer to (b) is yes, please attach a copy of the authorization.

9. Information on plant material to be examined or submitted for examination

9.1 The expression of a characteristic or several characteristics of a variety may be affected by factors, such as pests and disease, chemical treatment (e.g. growth retardants or pesticides), effects of tissue culture, different rootstocks, scions taken from different growth phases of a tree, etc.

9.2 The plant material should not have undergone any treatment which would affect the expression of the characteristics of the variety, unless the competent authorities allow or request such treatment. If the plant material has undergone such treatment, full details of the treatment must be given. In this respect, please indicate below, to the best of your knowledge, if the plant material to be examined has been subjected to:

(a)	Microorganisms (e.g. virus, bacteria, phytoplasma)	Yes [ ]	No [ ]
(b)	Chemical treatment (e.g. growth retardant, pesticide)	Yes [ ]	No [ ]
(c)	Tissue culture	Yes [ ]	No [ ]
(d)	Other factors	Yes [ ]	No [ ]

Please provide details for where you have indicated “yes”.

.....

10. I hereby declare that, to the best of my knowledge, the information provided in this form is correct:

Applicant’s name

Signature Date

[End of document]