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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

DRAFT

PEARL MILLET

UPOV Code: PENNI_GLA

Pennisetum glaucum (L.) R. Br.

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by an expert from Brazil

*to be considered by the
Technical Working Party for Agricultural Crops at its thirty-fifth session
to be held in Beijing, China, from July 3 to 7, 2006*

Alternative Names:*

<i>Botanical name</i>	<i>English</i>	<i>French</i>	<i>German</i>	<i>Spanish</i>
<i>Pennisetum glaucum</i> (L.) R. Br., <i>Pennisetum americanum</i> (L.) Leeke, <i>Pennisetum typhoides</i> (Burm.f.) Stapf C.E. Hubb.	Pearl Millet	Pénicillaire, Mil à chandelle Mil Pénicillaire	Federborstengras	Panizo de Daimiel, Panizo mamozo Mijo Perla

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 *Pennisetum glaucum* (L.) R. Br.

Note: Modifications made after the 34th TWA meeting (Christchurch, New Zealand) are marked in yellow

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 seed.

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

1 kg.

2.4 The seed should meet the minimum requirements for germination, species and analytical purity, health and moisture content, specified by the competent authority. In cases where the seed is to be stored, the germination capacity should be as high as possible and should be stated by the applicant.

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

2.6 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*

The minimum duration of tests should normally be two independent growing cycles.

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*

3.3.1 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.

3.3.2 The optimum stage of development for the assessment of each characteristic is indicated by a number in the second column of the Table of Characteristics. The stages of development denoted by each number are described at the end of Chapter 8.

3.3.3 The recommended method of observing the characteristic is indicated by the following key in the second column of the Table 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

3.4 *Test Design*

3.4.1 Each test should be designed to result in a total of at least 240 plants, which should be divided between two or more replicates.

3.4.2 The design of the tests should be such that plants or parts of plants may be removed for measurement or counting without prejudice to the observations which must be made up to the end of the growing cycle.

3.5 *Number of Plants / Parts of Plants to be Examined*

3.5.1 In the case of cross-pollinated varieties and three-way-cross hybrids, unless otherwise indicated, all observations should be made on 60 plants or parts taken from each of 60 plants.

3.5.2 In the case of inbred lines and single-cross hybrids, unless otherwise indicated, all observations should be made on 40 plants or parts taken from each of 40 plants.

3.6 *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.

4.2 *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 The assessment of uniformity for cross-pollinated varieties should be according to the recommendations for cross-pollinated varieties in the General Introduction.

4.2.3 The assessment of uniformity of inbred lines and single-cross hybrids, a population standard of 1 % and an acceptance probability of at least 95 % should be applied. In the case of a sample size of 40 plants, 2 off-types are allowed.

4.2.4 The assessment of uniformity for hybrid varieties, other than single-cross hybrid varieties, depends on the type of hybrid and should be according to the recommendations for hybrid varieties in the General Introduction.

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 tested, either by growing a further generation, or by testing a new seed stock to ensure that it exhibits the same characteristics as those shown by the previous material supplied.

4.3.3 Where appropriate, or in cases of doubt, the stability of a hybrid variety may, in addition to an examination of the hybrid variety itself, also be assessed by examination of the uniformity and stability of its parent lines.

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) Time of flowering (characteristic 15)
- (b) Culm: pubescence of node (characteristic 16)
- (c) Plant: height (characteristic 17)
- (d) Panicle: shape (characteristic 20)
- (e) Scurs (characteristic 27)
- (f) Culm: succulence (characteristic 41)

5.4 Guidance for the use of grouping characteristics, in the process of examining distinctness, is provided through the General Introduction.

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*

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.

6.3 *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*

(*) Asterisked characteristic – see Chapter 6.1.2

QL: Qualitative characteristic – see Chapter 6.3

QN: Quantitative characteristic – see Chapter 6.3

PQ: Pseudo-qualitative characteristic – see Chapter 6.3

MG: single measurement of a group of plants or parts of plants – see Chapter 3.3.3

MS: measurement of a number of individual plants or parts of plants – see Chapter 3.3.3

VG: visual assessment by a single observation of a group of plants or parts of plants – Chapter 3.3.3

VS: visual assessment by observation of individual plants or parts of plants” – see Chapter 3.3.3

(+) See Explanations on the Table of Characteristics in Chapter 8.1

(DS1 - 9) See Explanations on the Table of Characteristics in Chapter 8.2.

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

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
1. DS1	Seedling: anthocyanin					
VG	coloration of base					
QN	absent or very weak				ADR 300, ADR 500	1
	weak					3
	medium					5
	strong					7
	very strong					9
2. DS3	Culm: attitude of tillers					
VG						
QN	erect				ADR 300, ADR 500	1
	semi-erect					3
	prostrate					5
3. DS3	Leaf: attitude					
(*)						
(+)	VG					
QN	erect					1
	semi erect					3
	horizontal					5
	drooping					7
4. DS3	Leaf: color of midrib					
VG						
PQ	white					1
	colorless					
	greenish				ADR 300, ADR 500	2
	brown					3

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
5. VG	Leaf: ligule					
QL	absent					1
	present				ADR 300, ADR 500	9
6. DS3	Leaf blade: length					
(+)	VG					
QN	short					3
	medium					5
	long					7
7. DS3	Leaf blade: width					
(+)	VG					
QN	narrow					3
	medium				ADR 300, ADR 500	5
	broad					7
8. DS3	Leaf blade: variegation					
	VG					
QL	absent					1
	present					9
9. DS3	<u>Only non-variegated varieties:</u> Leaf blade: color					
	VG					
PQ	yellow					1
	light green					2
	medium green					3
	dark green					4
	red					5
	purple					6

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
10. DS3	Leaf blade:					
	anthocyanin					
VS	coloration					
QL	absent					1
	present					9
11. DS3	Leaf blade: intensity					
	of anthocyanin					
VS	coloration					
QN	weak					3
	medium					5
	strong					7
12. DS3	Leaf sheath:					
(*)	pubescence					
VG						
QL	absent				ADR 300, ADR 500	1
	present					9
13. DS6	Panicle: stigma					
(*)	anthocyanin					
VS	coloration					
QL	absent				ADR 300, ADR 500	1
	present					9
14. DS6⁺	Panicle: color of					
(+)	anthers					
VS						
PQ	cream yellow					1
	yellow				ADR 300	2
	green					3
	brown					4
	purple					5

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
15. VG	Time of flowering					
(*)						
(+)						
QN	very early					1
	early					3
	medium				ADR 500	5
	late					7
	very late					9
16. DS6	Culm: pubescence of node					
(*)						
VG						
QL	absent				ADR 300	1
	present					9
17. DS3	Plant: height					
(*)						
VG						
QN	very short					1
	short					3
	medium					5
	tall					7
	very tall				ADR 500	9
18. DS8	Leaf sheath: variegation					
VG						
QL	absent					1
	present					9

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
19. DS8	Leaf sheath:					
	anthocyanin					
VG	coloration					
PQ	absent or very weak				ADR 300, ADR 500	1
	weak					3
	moderate					5
	strong					7
20. DS8	Panicle: shape					
(*)						
(+)	VG					
PQ	conical					1
	candle				ADR 300, ADR 500	2
	lanceolate					3
	dumb-bell					4
	cylindrical					5
	spindle					6
	globose					7
	oblanceolate					8
	club					9
21. DS8	Panicle: length of					
(*)	main rachis					
VG						
QN	short					3
	medium					5
	long					7
22. DS8	Panicle: diameter					
(+)	VG					
QN	small					3
	medium					5
	large					7

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
23. DS8	Panicle: exertion					
(+)	VG					
QN	moderately negative					3
	zero					5
	moderately positive				ADR 300, ADR 500	7
24. DS8	Panicle: coloration of glume					
	VG					
PQ	absent or very weak				ADR 300, ADR 500	1
	weak					3
	moderate					5
	strong					7
25. DS8	Glume: anthocyanin coloration of tip					
(*)	VG					
QL	absent					1
	present					9
26. DS8	Glume: intensity of anthocyanin coloration of tip					
(*)	VG					
QN	weak					3
	medium					5
	strong					7
27. DS8	Scurs					
(*)	VG					
QL	absent					1
	present				ADR 300, ADR 500	9
28. DS8	Scur: length					
(+)	MS					
QN	short				ADR 300, ADR 500	1
	medium					2
	long					3

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
29. DS8	Scur: anthocyanin					
VG	coloration					
PQ	absent or very weak					1
	weak					3
	moderate					5
	strong					7
30. DS8	Scur: type					
(+) VG						
PQ	scabrous					1
	ciliate				ADR 300, ADR 500	2
	plumose					3
31. DS8	Scur: number					
VG						
QL	one					1
	more than one					2
32. DS8	<u>Only varieties with</u>					
(+) VG	<u>one scur:</u> Scur: length					
QN	short					3
	medium					5
	long					7
33. DS8	<u>Only varieties with</u>					
(+) VG	<u>more than one scur:</u> Scur: density					
QN	sparse					3
	medium					5
	dense					7

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
34. DS8	Scur: coloration at tip					
(*)	VG					
QL	absent					1
	present					9
35. DS8	Scur: intensity of coloration at tip					
(*)	VG					
QN	weak					3
	medium					5
	strong					7
36. DS8	Culm: diameter					
(+)	MS					
QN	small					3
	medium					5
	large					7
37. DS8	Culm: number of panicle-bearing tillers					
	MS					
QN	few					3
	medium					5
	many					7
38. DS8	Culm: number of nodal tillers					
(+)	MS					
QN	few				ADR 300, ADR 500	3
	medium					5
	many					7

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
39. DS8	Culm: color of node					
(*)	VG					
PQ	green				ADR 300, ADR 500	1
	red					2
	purple					3
	brown					4
40. DS8	Culm: color of internode					
(*)	VG					
PQ	white					1
	green				ADR 300	2
	red					3
	purple				ADR 500	4
	brown					5
41. DS8	Culm: succulence					
(+)	VS					
QL	absent				ADR 300, ADR 500	1
	present					9
42. DS8	Culm: juice quality (Brix)					
(+)	MS					
QN	low					1
	medium					2
	high					3
43. DS8	Culm: number of basal tillers					
(+)	MS					
QN	low					3
	medium					5
	high					7

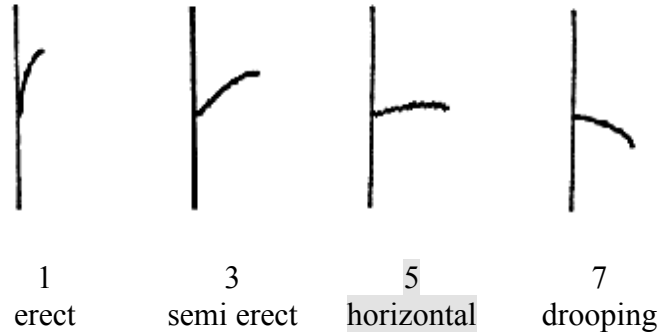
	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
44. DS9	Culm: basal tiller: synchronization of maturity of panicles					
(+)	VG					
QN	low					3
	medium					5
	high				ADR 300	7
45. DS9	Panicle: density					
(*)	VG					
QN	sparse					3
	medium				ADR 500	5
	dense					7
46. VG	Seed: enclosure					
(+)						
QN	absent or weakly exserted				ADR 300	1
	moderately exserted					2
	strongly exserted					3
47. DS9⁺	Caryopsis: shape					
(+)	VG					
PQ	elliptical					1
	hexagonal					2
	globular					3
	oblanceolate					4
	obovate				ADR 300	5

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
48. DS9⁺ Caryopsis: color						
(*) VG						
PQ	ivory					1
	cream					2
	yellow					3
	medium grey				ADR 300, ADR 500	4
	dark grey					5
	grey brown					6
	brown					7
	purple					8
	purplish black					9
49. DS9⁺⁺ Caryopsis: form of apex						
(+) VG						
QL	non-mucronate				ADR 300, ADR 500	1
	mucronate					2
50. DS9⁺⁺ Caryopsis: texture of endosperm						
(+) VG						
QN	completely glassy					1
	$\frac{3}{4}$ glassy					3
	$\frac{1}{2}$ glassy					5
	$\frac{3}{4}$ floury				ADR 300, ADR 500	7
	completely floury					9

8. Explanations on the Table of Characteristics

8.1 *Explanations for individual characteristics*

Ad.3: Leaf: attitude



Ad. 6: Leaf blade: length

Ad. 7: Leaf blade: width

To be observed on the fourth node below the panicle on the main culm.

Ad. 14: Panicle: color of anthers

To be assessed at full flowering, before anther dehiscence.

Ad. 15: Time of flowering

Time of flowering is when 50% of plants emit the stigma in the main panicle.

Ad. 20: Panicle: shape



1
conical



2
candle



3
lanceolate



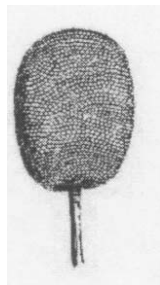
4
dumb-bell



5
cylindrical



6
spindle



7
globose



8
oblanceolate

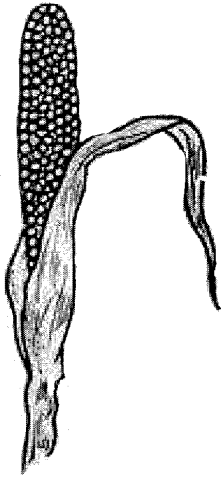


9
club

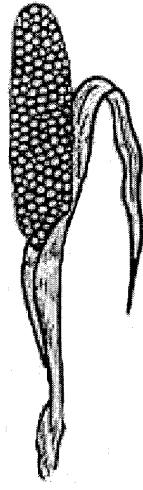
Ad. 22: Panicle: diameter

To be observed in the medium third of the panicle, excluding the scurs.

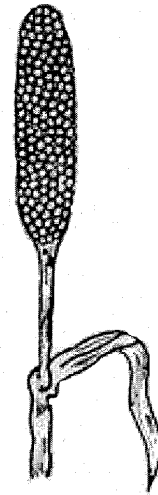
Ad. 23: Panicle: exsertion



3
moderately negative



5
zero



7
moderately positive

Ad. 28: Scur: length

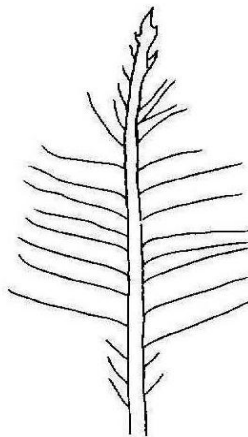
To be observed in the panicle of the main culm above of the grain surface as follows:

- short.....below the level of grain apex
- medium.....up to 2 cm above the grain apex
- long.....more than 2 cm above the grain apex

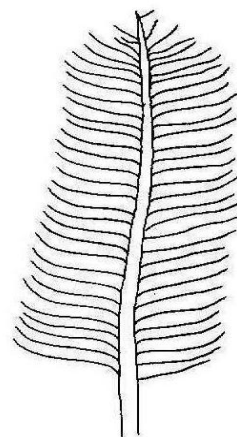
Ad. 30: Scur: type



1
scabrous

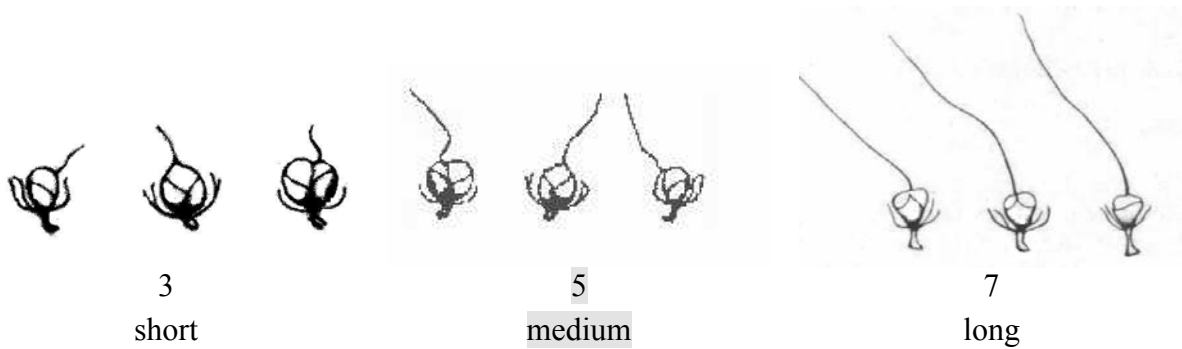


2
ciliate

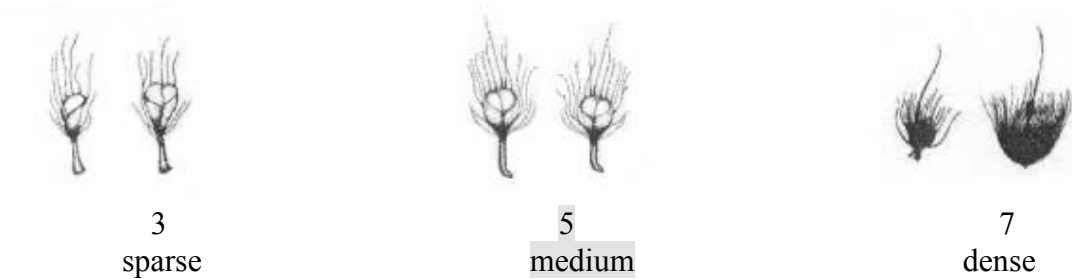


3
plumose

Ad. 32: Only varieties with one scur: Scur: length:



Ad. 33: Only varieties with more than one scur: Scur: density



Ad. 36: Culm: diameter

To be observed between the third and fourth nodes below the panicle.

Ad. 38: Culm: number of nodal tillers

Number of tillers from the median portion of the main or primary tiller

Ad. 41: Culm: succulence

To be observed between the third and fourth nodes above the ground. Cut the culm transversally, observe the internal part.

Ad. 42: Culm: juice quality (Brix)

Assess from the medium third of the culm. Measure the juice brix using a refractometer.
Consider:

- low.....below 8° Brix
- medium.....from 8° to 15° Brix
- high.....above 15° Brix

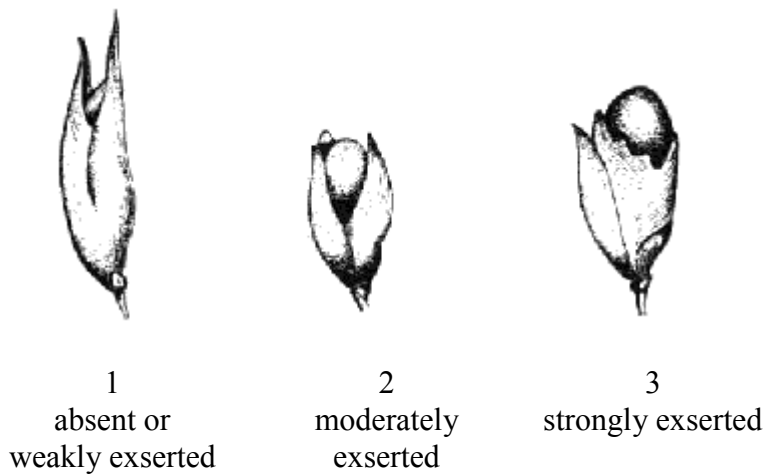
Ad. 43: Culm: number of basal tillers

The number of tillers is to be observed at or above ground level. Only those tillers originating from basal nodes are considered.

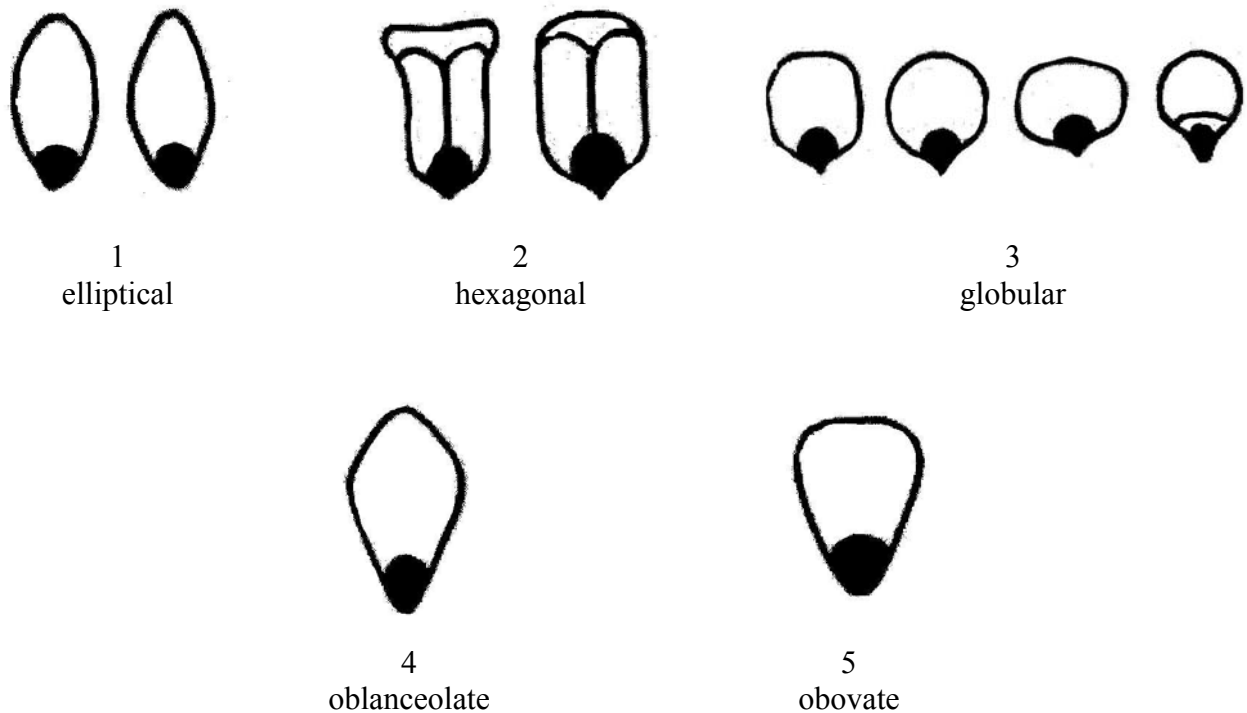
Ad. 44: Culm: basal tiller: synchronization of maturity of panicles

Synchronicity between tillers in the panicles maturity. Only those tillers originating from basal nodes are considered.

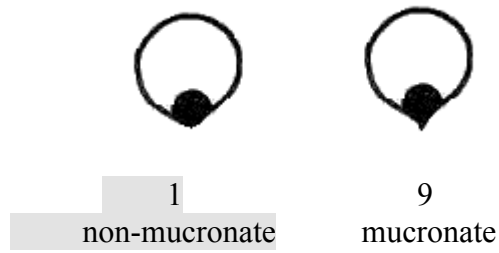
Ad. 46: Seed: enclosure



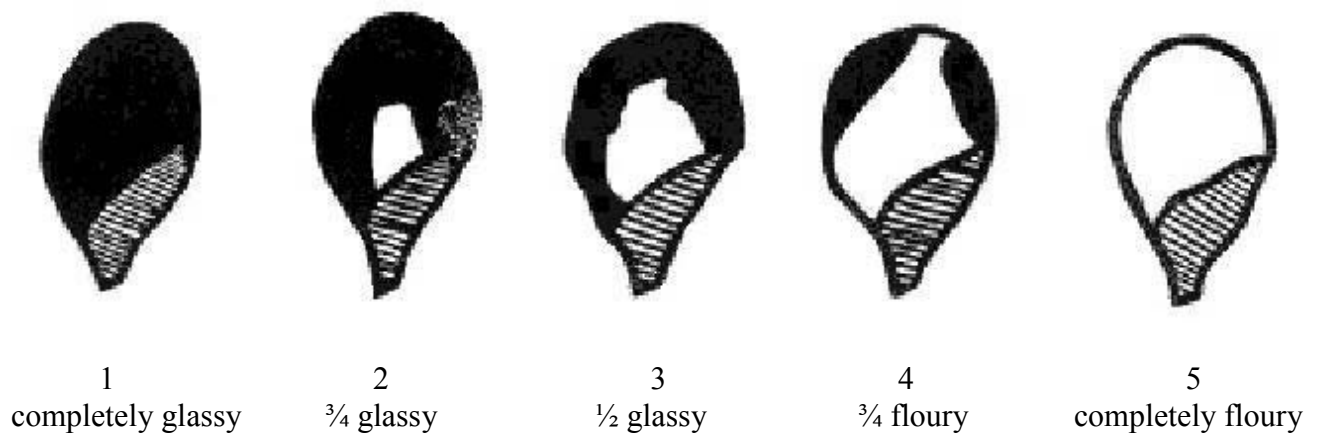
Ad. 47: Caryopsis: shape



Ad. 49: Caryopsis: form of apex



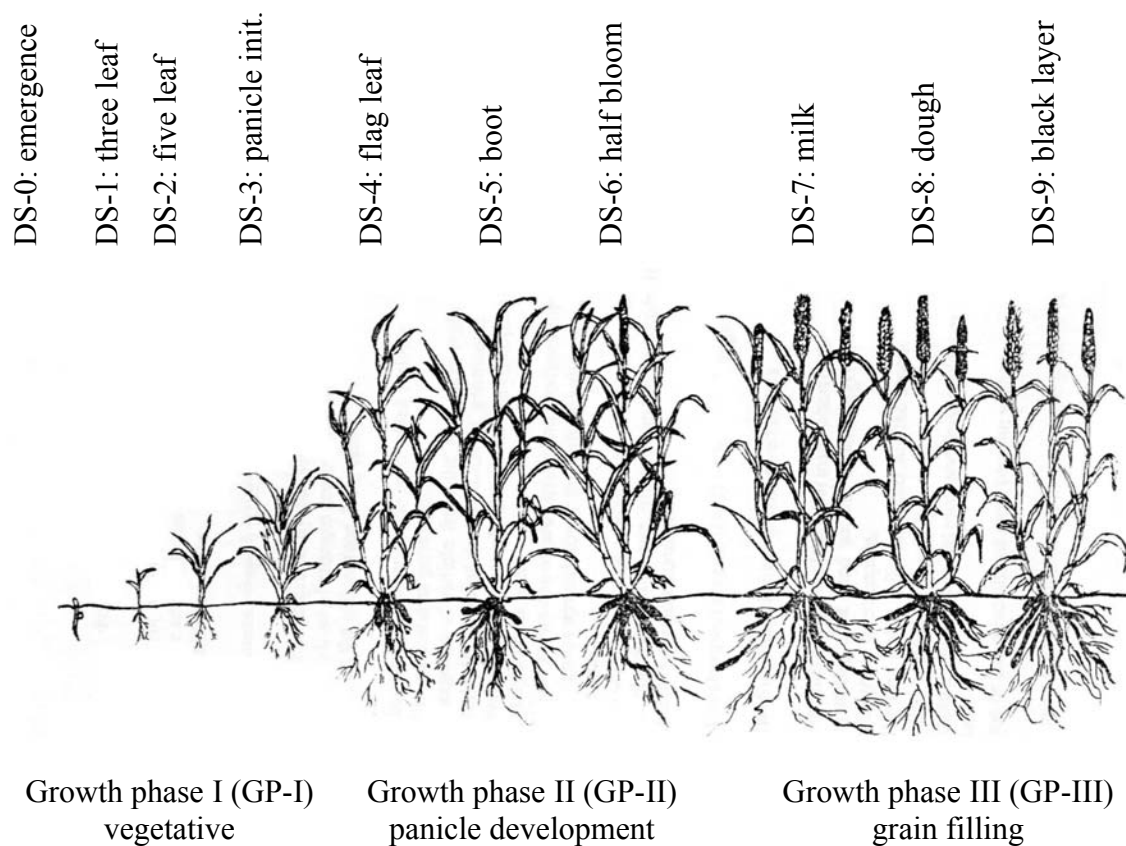
Ad. 50: Caryopsis: texture of endosperm



8.2 Growth Stages

Characteristics containing the following key in the second column of the Table of Characteristics should be examined at the following stages (table and drawing adapted from the book “Pearl Millet, Seed Production & Technology” – see Chapter 9 Literature).

Growth Stage	Identifying Characteristic	Approximate days after Emergence
GPI	Vegetative Phase	0-21
DS0	Emergence Stage	2-3
DS1	Three leaf Stage	3-7
DS2	Five Leaf Stage	7-14
DS3	Panicle Initiation Stage	14-21
GPII	Panicle Development Phase	21-42
DS4	Flag Leaf Stage	21-28
DS5	Boot Stage	28-35
DS6	Half Bloom Stage	35-42
DS6 ⁺	Full Flowering (before anther dehiscence)	-
GPIII	Grain Filling Stage	42-77
DS7	Milk Stage	42-49
DS8	Dough Stage	49-56
DS9	Black Layer Formation	56-63
DS9 ⁺	After thrash	-
DS9 ⁺⁺	After harvest time	-



9. Literature

Khairwal, I.S., Ram C. & Chhabra, A.K. Pearl Millet, Seed Production & Technology, Ed Manohar, 1990.

Descriptors for Pearl Millet [*Pennisetum glaucum* (L.) R. Br.]. IBPGR/ICRISAT, Rome, 1993.

Singh, F., Rai, K.N., Reddy, B.V.S. & Diwakar, B. Development of Cultivars and Seed Production Techniques in Sorghum and Pearl Millet – Training Manual, ICRISAT, 1997.

Drawings:

Descriptors for Pearl Millet [*Pennisetum glaucum* (L.) R. Br.]. IBPGR/ICRISAT.

Khairwal, I.S., Ram C. & Chhabra, A.K. Pearl Millet, Seed Production & Technology, Ed Manohar, 1990.

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	<input type="text" value="Pennisetum glaucum (L.) R. Br."/>	
1.2 Common Name	<input type="text" value="Pearl Millet"/>	
2. Applicant		
Name	<input type="text"/>	
Address	<input type="text"/>	
Telephone No.	<input type="text"/>	
Fax No.	<input type="text"/>	
E-mail address	<input type="text"/>	
Breeder (if different from applicant)	<input type="text"/>	
3. Proposed denomination and breeder's reference		
Proposed denomination (if available)	<input type="text"/>	
Breeder's reference	<input type="text"/>	

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
<p>#4. Information on the breeding scheme and propagation of the variety</p> <p>4.1 Breeding scheme</p> <p>Variety resulting from:</p> <p>4.1.1 Crossing</p> <p style="margin-left: 40px;">(a) controlled cross [] (please state parent varieties)</p> <p style="margin-left: 40px;">(b) partially known cross [] (please state known parent variety(ies))</p> <p style="margin-left: 40px;">(c) unknown cross []</p> <p>4.1.2 Mutation [] (please state parent variety)</p> <p>4.1.3 Discovery and development [] (please state where and when discovered and how developed)</p> <p>4.1.4 Other [] (please provide details)</p> <p style="margin-left: 40px;">.....</p> <p>4.2 Method of propagating the variety</p> <p>4.2.1 Seed-propagated varieties</p> <p style="margin-left: 40px;">(a) Self-pollination []</p> <p style="margin-left: 40px;">(b) Cross-pollination []</p> <p style="margin-left: 80px;">(i) population []</p> <p style="margin-left: 80px;">(ii) synthetic variety []</p> <p style="margin-left: 40px;">(c) Hybrid [] (see below)</p> <p style="margin-left: 40px;">(d) Other [] (please provide details)</p> <p>4.2.2 Other [] (please provide details)</p>		

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:
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In the case of hybrid varieties the production scheme for the hybrid should be provided on a separate sheet. This should provide details of all the parent lines required for propagating the hybrid e.g.

Single Hybrid

(... female parent ...) x (... male parent ...)

Three-Way Hybrid

(... female line ...) x (... male line ...)

=> single hybrid used as female parent x (... male parent ...)

and should identify in particular:

- (a) any male sterile lines
- (b) maintenance system of male sterile lines.

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 Time of flowering (15)		
very early		1
early		3
medium	ADR 500	5
late		7
very late		9
5.2 Culm: pubescence of node (16)		
absent	ADR 300	1
present		9

TECHNICAL QUESTIONNAIRE		Page {x} of {y}	Reference Number:
Characteristics		Example Varieties	Note
5.3 Plant: height (17)			
	very short		1
	short		3
	medium		5
	tall		7
	very tall	ADR 500	9
5.4 Panicle: shape (20)			
	conical		1
	candle	ADR 300, ADR 500	2
	lanceolate		3
	dumb-bell		4
	cylindrical		5
	spindle		6
	globose		7
	oblanceolate		8
	club		9
5.5 Scurs (27)			
	absent		1
	present	ADR 300, ADR 500	9
5.6 Culm: succulence (41)			
	absent	ADR 300, ADR 500	1
	present		9

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:	
<p>6. Similar varieties and differences from these varieties</p> <p><i>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.</i></p>			
Denomination(s) of variety(ies) similar to your candidate variety	Characteristic(s) in which your candidate variety differs from the similar variety(ies)	Describe the expression of the characteristic(s) for the similar variety(ies)	Describe the expression of the characteristic(s) for your candidate variety
<i>Example</i>			
<p>Comments:</p>			

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:												
<p>9. Information on plant material to be examined or submitted for examination.</p> <p>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.</p> <p>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:</p> <table data-bbox="284 801 1406 1064"><tr><td>(a) Microorganisms (e.g. virus, bacteria, phytoplasma)</td><td>Yes []</td><td>No []</td></tr><tr><td>(b) Chemical treatment (e.g. growth retardant, pesticide)</td><td>Yes []</td><td>No []</td></tr><tr><td>(c) Tissue culture</td><td>Yes []</td><td>No []</td></tr><tr><td>(d) Other factors</td><td>Yes []</td><td>No []</td></tr></table> <p>Please provide details for where you have indicated "yes".</p> <p>.....</p>			(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 []
(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 []												
<p>10. I hereby declare that, to the best of my knowledge, the information provided in this form is correct:</p> <p>Applicant's name <input data-bbox="539 1352 1426 1413" type="text"/></p> <p>Signature <input data-bbox="424 1429 983 1489" type="text"/> Date <input data-bbox="1136 1429 1426 1489" type="text"/></p>														

[End of document]