

UPOV

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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-sixth session, to be held in Budapest, Hungary, from May 28 to June 1, 2007*

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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Subject of these Test Guidelines

These Test Guidelines apply to all varieties of *Pennisetum glaucum* (L.) R. Br.

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.

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.

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 For 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.

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) Bristles (characteristic 27)

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

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*

(*) Asterisk 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, MS, VG, VS: 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.

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 of leaf sheath					
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				Add ex vars	
(*)						
(+)						
VG						
QN	erect					1
	semi erect				ANSB Milheto MC	3
	horizontal					5
	moderately drooping				ENA 1	7
4. DS3	Leaf: color of midrib					
VG						
PQ	transparent					1
	white					2
	greenish				ADR 300, ADR 500	3
	brown					4

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota	
5.	DS3	Leaf: ligule					
	VG						
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:					
	VG	color					
PQ	yellow					1	
	light green					2	
	medium green					3	
	dark green					4	
	red					5	
	purple					6	

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

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

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

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
21. DS8	Panicle: diameter					
(+)	VG					
QN	small					3
	medium					5
	large					7
22. DS8	Panicle: exertion					
(+)	VG					
QN	absent or very weak					1
	weak					3
	moderate					5
	strong				ADR 300, ADR 500	7
23. DS8	Panicle: anthocyanin coloration of glume					
	VG					
QN	absent or very weak				ADR 300, ADR 500	1
	weak					3
	medium					5
	strong					7
24. DS8	Glume: intensity of anthocyanin coloration of tip					Add ex vars
(*)	VG					
QN	absent or very weak				ANSB Milheto MC, ENA 1	1
	weak					3
	medium					5
	strong					7

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielsorten/ Variedades ejemplo	Note/ Nota
25. DS8	Bristle: length					
(+)	MS					
QN	absent or short				ADR 300, ADR 500	1
	medium					3
	long					5
26. DS8	Bristle: anthocyanin					
	VG					
QN	absent or very weak					1
	weak					3
	moderate					5
	strong					7
27. DS8	Bristle: type					
(+)	VG					
QL	scabrous					1
	ciliate				ADR 300, ADR 500	2
	plumose					3
28. DS8	Bristle: number					
	VG					
QL	one					1
	more than one					2
29. DS8	<u>Only varieties with</u>					
(+)	VG					
QN	short					3
	medium					5
	long					7

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota	
30.	DS8	Only varieties with more than one bristle: Bristle: density					
(+)	VG						
QN		sparse				3	
		medium				5	
		dense				7	
31.	DS8	Bristle: anthocyanin coloration at tip				Add ex vars	
(*)	VG						
QN		absent or very weak			ANSB Milheto MC, ENA 1	1	
		weak				3	
		medium				5	
		strong				7	
32.	DS8	Culm: diameter					
(+)	MS						
QN		small				3	
		medium				5	
		large				7	
33.	DS8	Culm: number of panicle-bearing tillers					
	MS						
QN		few				3	
		medium				5	
		many				7	
34.	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
35. DS8	Culm: anthocyanin coloration of node					
(*)						
	VG					
QN	absent or weak				ADR 300, ADR 500	1
	medium					3
	strong					5
36. DS8	Culm: anthocyanin color of internode				Add ex vars	
(*)						
	VG					
QN	absent or weak				ADR 300	1
	medium				ANSB Milheto MC	3
	strong				ADR 500	5
37. DS8	Culm: succulence					
(*)						
(+)	VG					
QL	absent				ADR 300, ADR 500	1
	present					9
38. DS8	Culm: juice quality					
(+)	MS					
QN	low					1
	medium					2
	high					3
39. DS8	Culm: number of basal tillers					
(+)	MS					
QN	few					3
	medium					5
	many					7

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

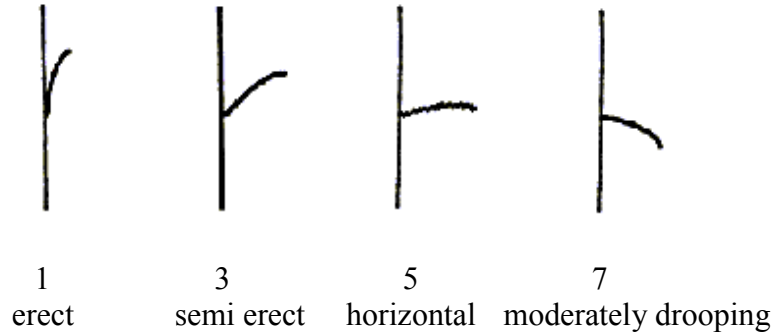
	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
44. DS9⁺ Caryopsis: color					review the collection. Do we need all these colours?	
(*) VG						
PQ	ivory					1
	cream				ENA 1	2
	yellow					3
	medium grey				ADR 300, ADR 500, ANSB Milheto MC	4
	dark grey					5
	grey brown					6
	brown					7
	purple					8
	purplish black					9
45. DS9⁺⁺ Caryopsis: form of apex						
(+) VG						
QL ?	non-mucronate				ADR 300, ADR 500	1
	mucronate					2
46. DS9⁺⁺ Caryopsis: texture of endosperm						
(+) VG						
QN	completely glassy					1
	¾ glassy					2
	½ glassy					3
	¾ floury				ADR 300, ADR 500	4
	completely floury					5

Explanations to the Table of Characteristics

8.1 *Explanations for individual characteristics*

Check char. Nos - all have changed msb 27.4.07

Ad.3: Leaf: attitude



Ad. 6 and 7: Leaf blade: length (6), Leaf blade: width (7)

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

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



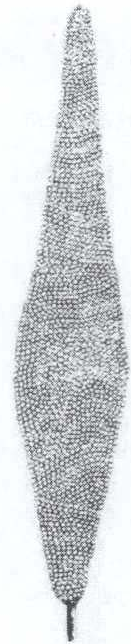
2
candle



3
cylindrical



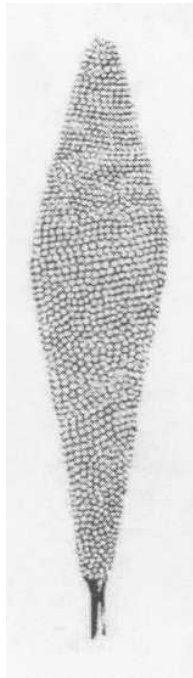
4
globose



5
lanceolate



6
spindle



7
oblanceolate



8
club

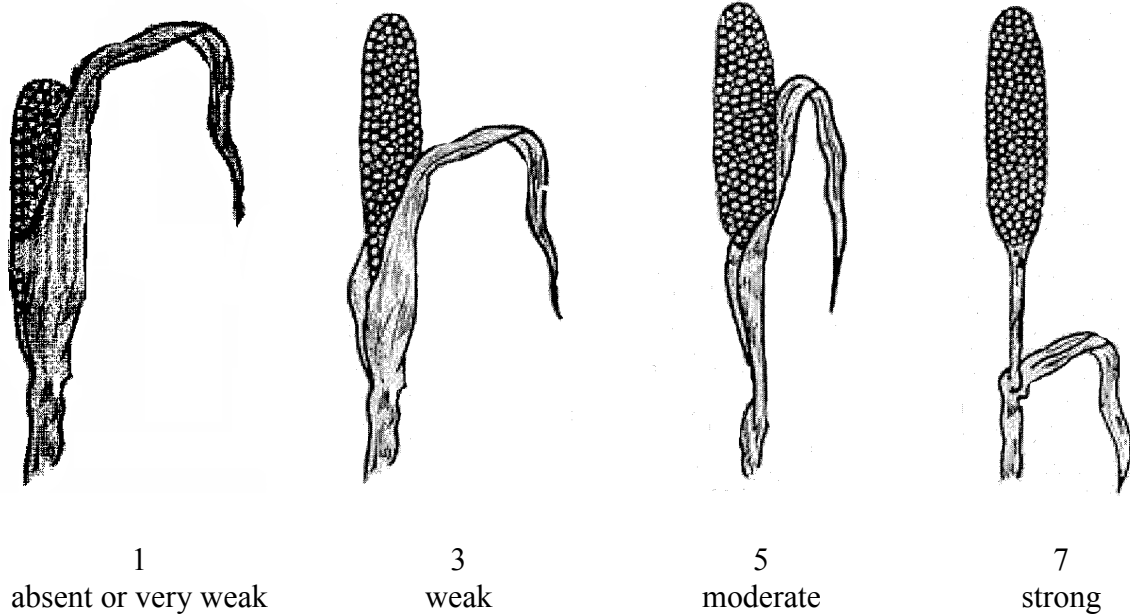


9
dumb-bell

Ad. 22: Panicle: diameter

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

Ad. 23: Panicle: exertion

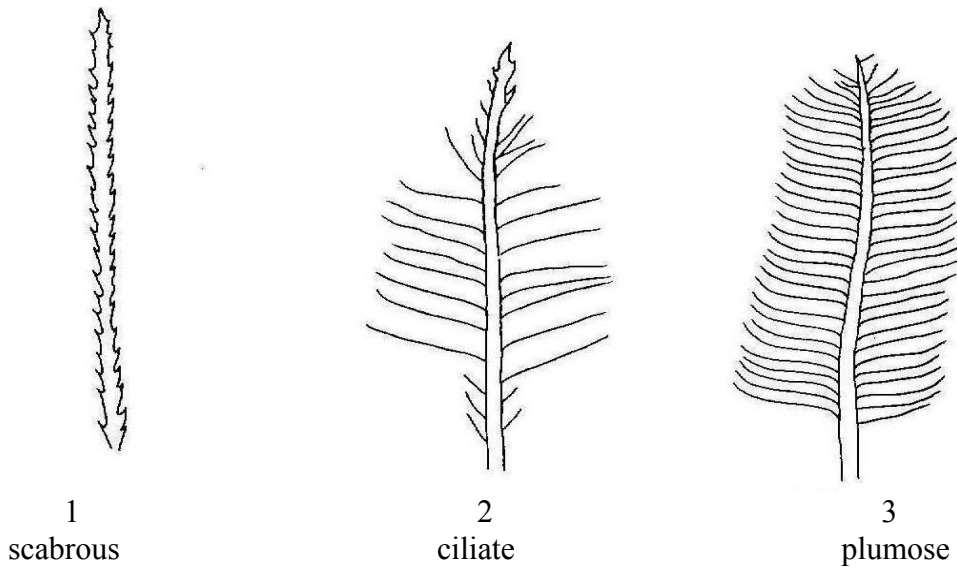


Ad. 28: Bristle: length

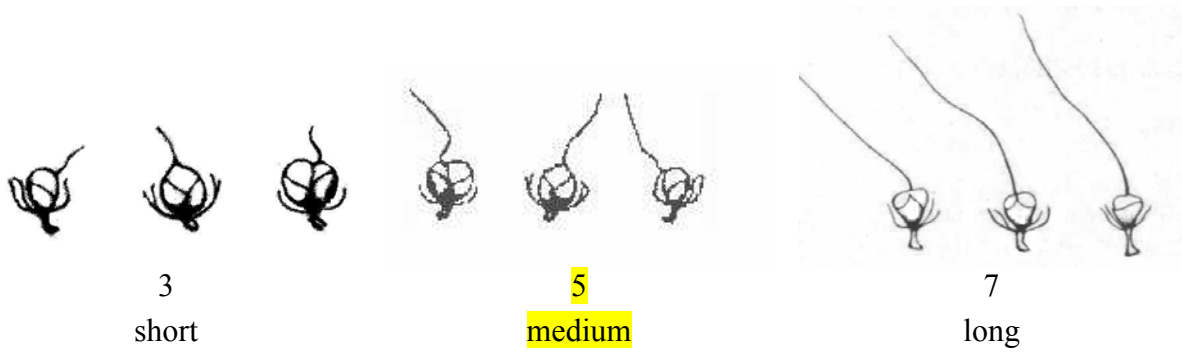
To be observed in the panicle of the main culm above of the grain surface as follows:

- absent or 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

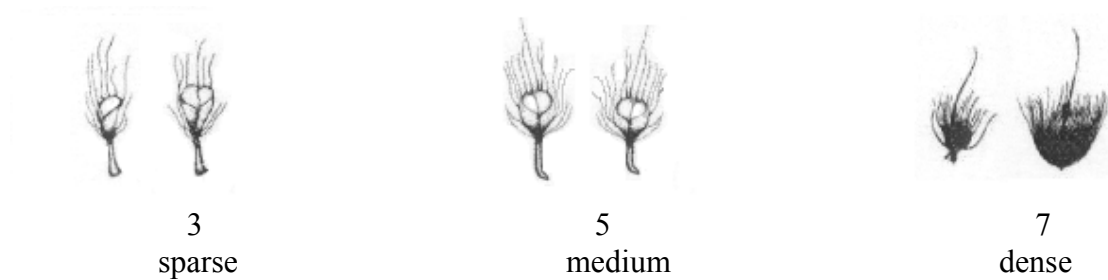
Ad. 30: Bristle: type



Ad. 32: Only varieties with one bristle: Bristle: length:



Ad. 33: Only varieties with more than one bristle: Bristle: density



Ad. 36: Culm: diameter

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

Ad. 38: Culm: emergence of nodal tillers

Emergence 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

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

- low..... Add ex vars
- medium..... Add ex vars
- high..... Add ex vars

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



1
absent or
weakly exerted

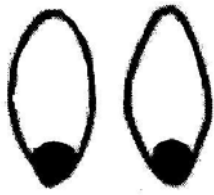


2
moderately
exserted

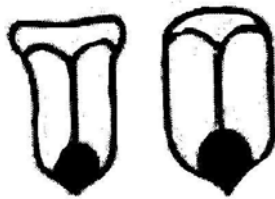


3
strongly exerted

Ad. 47: Caryopsis: shape



1
elliptical



2
hexagonal



3
globular

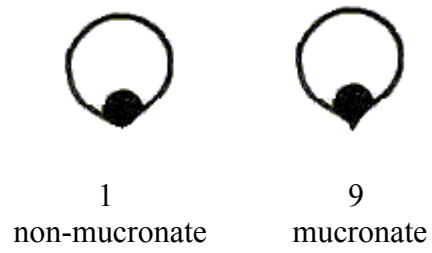


4
oblanceolate

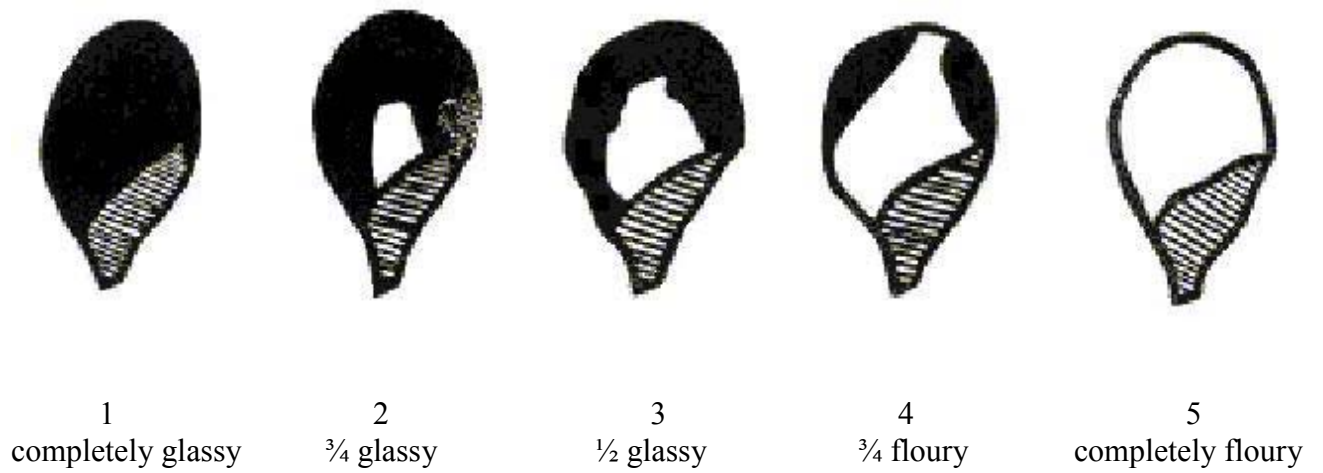


5
obovate

Ad. 49: Caryopsis: form of apex



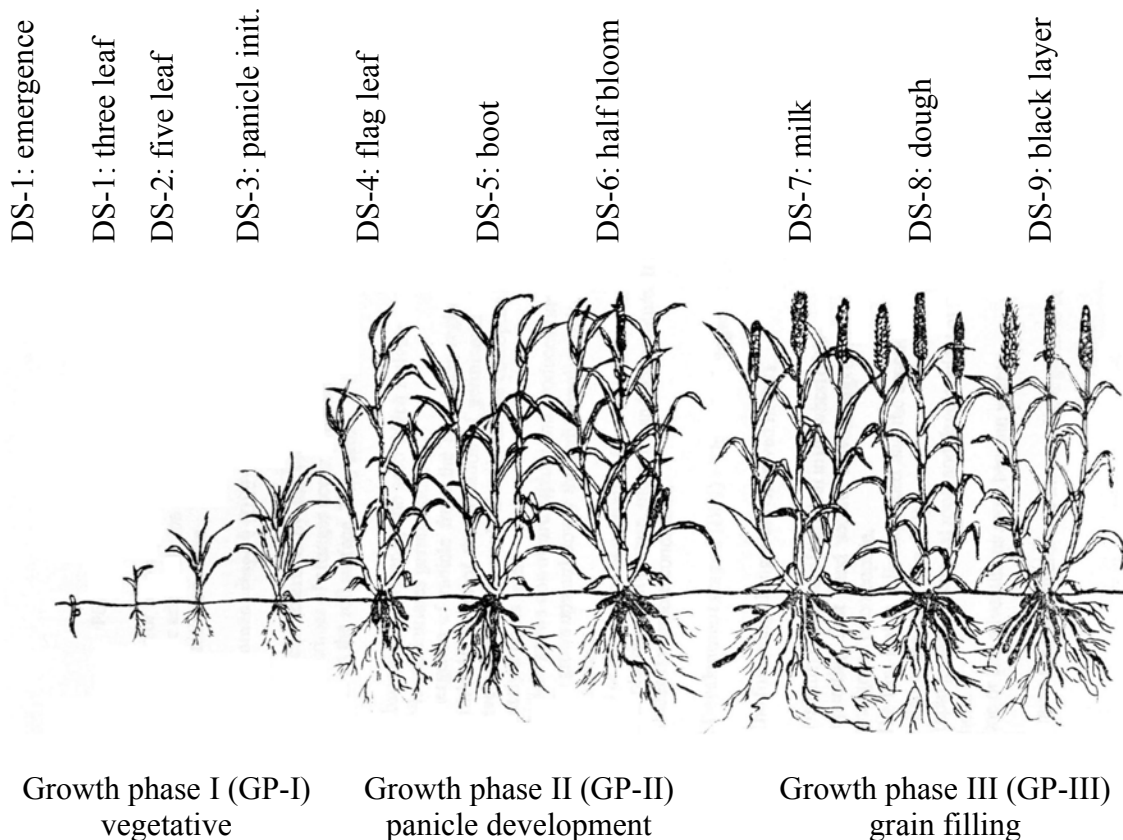
Ad. 50: Caryopsis: endosperm texture



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
GPI	Vegetative Phase
DS0	Emergence Stage
DS1	Three leaf Stage
DS2	Five Leaf Stage
DS3	Panicle Initiation Stage
GPII	Panicle Development Phase
DS4	Flag Leaf Stage
DS5	Boot Stage
DS6	Half Bloom Stage
DS6 ⁺	Full Flowering (before anther dehiscence)
GPIII	Grain Filling Stage
DS7	Milk Stage
DS8	Dough Stage
DS9	Black Layer Formation
DS9 ⁺	After thresh
DS9 ⁺⁺	After harvest time



Literature

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

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

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

Drawings:

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

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

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:																					
<p>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.</p> <p style="margin-left: 40px;">Single Hybrid</p> <p style="margin-left: 80px;">(... female parent ...) x (... male parent ...)</p> <p style="margin-left: 40px;">Three-Way Hybrid</p> <p style="margin-left: 80px;">(... female line ...) x (... male line ...)</p> <p style="margin-left: 80px;">=> single hybrid used as female parent x (... male parent ...)</p> <p>and should identify in particular:</p> <p style="margin-left: 20px;">(a) any male sterile lines</p> <p style="margin-left: 20px;">(b) maintenance system of male sterile lines.</p>																							
<p>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).</p> <p style="margin-left: 40px;">(b) Culm: succulence (characteristic 41)</p>																							
Characteristics	Example Varieties	Note																					
<p>5.1 Time of flowering (15)</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">very early</td> <td></td> <td style="text-align: right;">1 []</td> </tr> <tr> <td>early</td> <td></td> <td style="text-align: right;">3 []</td> </tr> <tr> <td>medium</td> <td style="text-align: center;">ADR 500</td> <td style="text-align: right;">5 []</td> </tr> <tr> <td>late</td> <td></td> <td style="text-align: right;">7 []</td> </tr> <tr> <td>very late</td> <td></td> <td style="text-align: right;">9 []</td> </tr> </table> <p>5.2 Culm: pubescence of node (16)</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">absent</td> <td style="text-align: center;">ADR 300</td> <td style="text-align: right;">1 []</td> </tr> <tr> <td>present</td> <td></td> <td style="text-align: right;">9 []</td> </tr> </table>			very early		1 []	early		3 []	medium	ADR 500	5 []	late		7 []	very late		9 []	absent	ADR 300	1 []	present		9 []
very early		1 []																					
early		3 []																					
medium	ADR 500	5 []																					
late		7 []																					
very late		9 []																					
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 Bristles (27)			
absent			1 []
present		ADR 300, ADR 500	9 []

TECHNICAL QUESTIONNAIRE		Page {x} of {y}	Reference Number:
Characteristics		Example Varieties	Note
5.6 Culm: succulence (41)			
absent		ADR 300, ADR 500	1 []
present			9 []
<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>#7. Additional information which may help in the examination of the variety</p> <p>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?</p> <p>Yes [] No []</p> <p>(If yes, please provide details)</p> <p>7.2 Are there any special conditions for growing the variety or conducting the examination?</p> <p>Yes [] No []</p> <p>(If yes, please provide details)</p> <p>7.3 Other information</p>		
<p>8. Authorization for release</p> <p>(a) Does the variety require prior authorization for release under legislation concerning the protection of the environment, human and animal health?</p> <p>Yes [] No []</p> <p>(b) Has such authorization been obtained?</p> <p>Yes [] No []</p> <p>If the answer to (b) is yes, please attach a copy of the authorization.</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:												
<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 1070"><tbody><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></tbody></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</p> <p>Signature <input data-bbox="422 1469 984 1532" type="text"/> Date <input data-bbox="1136 1469 1428 1532" type="text"/></p>														

[End of document]