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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

DRAFT

SORGHUM *

UPOV Code: SRGHM

Sorghum ssp.

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by experts from Spain

to be considered by the

Technical Working Party for Agricultural Crops
at its forty-first session, to be held in Angers, France, from May 21 to 25, 2012

Alternative Names:*

Botanical name	*English*	*French*	*German*	*Spanish*
Sorghum bicolor, *Sorghum sudanense* *S. bicolor x S. sudanense*	Sorghum, Sudan Grass	Sorgho, Sorgho du Soudan	Mohrenhirse, Sudangrass	Sorgo, Pasto de Sudán

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 *Sorghum bicolor*, *Sorghum sudanense* and hybrid *Sorghum bicolor* x *Sorghum sudanense*.

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:

0.5 kg for parentals
1 kg for hybrids and open-pollinated varieties.

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.

2.4 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

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 in Chapter 8.3.

3.4 Test Design

3.4.1 Each test should be designed to result in a total of at least 40 plants in the case of inbred lines and single hybrids and 60 plants in the case of other hybrids and open-pollinated varieties. Each test should be divided between at least 2 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 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.

To assess distinctness of hybrids, a pre-screening system on the basis of the parental lines and the formula may be established according to the following recommendations:

(i) description of parental lines according to the Test Guidelines;

(ii) check of the originality of the parental lines in comparison with the reference collection, based on the characteristics in Section 7 in order to screen the closest inbred lines;

(iii) check of the originality of the hybrid formula in comparison with those of the hybrids in common knowledge, taking into account the closest inbred lines;

(iv) assessment of the distinctness at the hybrid level of varieties with a similar formula.

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 / Parts of Plants to be Examined

4.1.4.1 Inbred lines and single hybrids: All observations on single plants (MS) should be made on 10 plants or parts taken from each of 10 plants and all other observations made on all plants in the test.

4.1.4.2 Other types of hybrids: All observations on single plants (MS) should be made on 20 plants or parts taken from each of 20 plants and all other observations made on all plants in the test.

4.1.4.3 Open-pollinated varieties: All observations on single plants (MS) should be made on 40 plants or parts taken from each of 40 plants and all other observations made on all plants in the test.

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 second column of 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 For the assessment of uniformity of inbred lines and single hybrids, a population standard of 3% and an acceptance probability of at least 95% should be applied. In the case of a sample size of 40 plants, 3 off-types are allowed. In addition, the same population standard and acceptance probability should apply to clear cases of out-crossed plants in inbred lines as well as plants obviously resulting from the selfing of a parent line in single-cross hybrids

4.2.3 For three-way cross hybrids, double cross hybrids and open-pollinated varieties, the variability within the variety should not exceed the variability of comparable varieties already known.

4.2.4 The assessment of uniformity for open-pollinated varieties should be according to the recommendations for cross-pollinated 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 of inbred lines or open-pollinated varieties 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) Plant: time of panicle emergence (characteristic 4)
(b) Plant: total height (characteristic 18)
(c) Panicle: shape (characteristic 26)
(d) Caryopsis: color after threshing (characteristic 29)

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

(*) 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, MS, VG, VS – see Chapter 4.1.5

(a)-(b) See explanations on the Table of Characteristics in Chapter 8.1
(+) See explanations on the Table of Characteristics in Chapter 8.2
00-99 See explanations on the Table of Characteristics in Chapter 8.3 (Decimal Code for the Growth Stages)

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

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1.	**14 VG**	**Seedling: anthocyanin coloration of coleoptile**	**Plantule : pigmentation anthocyanique du coléoptile**	**Keimpflanze: Anthocyanfärbung der Keimscheide**	**Plántula: pigmentación antocianica del coleóptilo**		
QN		absent or very weak	nulle ou très faible	fehlend oder sehr gering	ausente o muy débil	Aralba	1
		weak	faible	gering	débil	Aneto, PR85G85	3
		medium	moyenne	mittel	media	Cellu, SF2003	5
		strong	forte	stark	fuerte	Piper	7
		very strong	très forte	sehr stark	muy fuerte		9
2.	**14 VG**	**Seedling: anthocyanin coloration of dorsal side of first leaf**	**Plantule : pigmentation anthocyanique de la face dorsale de la première feuille**	**Keimpflanze: Anthocyanfärbung der dorsalen Seite des ersten Blattes**	**Plántula: pigmentación antocianica de la cara dorsal de laprimera hoja**		
QN		absent or very weak	nulle ou très faible	fehlend oder sehr gering	ausente o muy débil	PR82G55, Róna 1	1
		weak	faible	gering	débil	Aneto, PR85G85	3
		medium	moyenne	mittel	media	Brise, SF2003	5
		strong	forte	stark	fuerte		7
		very strong	très forte	sehr stark	muy fuerte		9
3.	**15 VG**	**Leaf: anthocyanin coloration of blade**	**Feuille: pigmentation anthocyanique du limbe**	**Blatt: Anthocyanfärbung der Blattspreite**	**Hoja: coloración antocianica del limbo**		
QN		absent or very weak	nulle ou très faible	fehlend oder sehr gering	ausente o muy débil	Albita, Aneto	1
		weak	faible	gering	débil	Alpilles, Solarius	3
		medium	moyenne	mittel	media		5
		strong	forte	stark	fuerte		7
		very strong	très forte	sehr stark	muy fuerte		9
4. (*)	**50 MG**	**Plant: time of panicle emergence**	**Plante : époque d´apparition des panicules**	**Pflanze: Zeitpunkt des Rispenschiebens**	**Planta: época de aparición de las panículas**		
QN		very early	très précoce	sehr früh	muy precoz	Ludan	1
		early	précoce	früh	precoz	Artaban, Artigas	3
		medium	moyenne	mittel	medio	Albita, DORADO DR	5
		late	tardive	spät	tardía	Béreny, Piper, PR82G55	7
		very late	très tardive	sehr spät	muy tardía	Moster	9

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
5.	**50-69 VG**	**Foliage: intensity of green color**	**Feuillage: intensité de la couleur verte**	**Foliage: Grünfärbung der Blattspreite**	**Follaje: intensidad del color verde**		
QN		very light	très clair	sehr hell	muy claro		1
		light	clair	hell	claro	Nectar	3
		medium	moyenne	mittel	medio	Grazer, P8500	5
		dark	foncé	dunkel	oscuro	CK Zófia	7
		very dark	très foncé	sehr dunkel	muy oscuro		9
6.	**50-69 VG**	**Flag leaf: intensity of green coloration of midrib compared to blade (if not discolored)**	**Dernière feuille: intensité de la coloration verte de la nervure principale par rapport au limbe (quand elle n'est pas décolorée)**	**Oberstes Blatt: Intensität der Grünfärbung der Mittelrippe im Vergleich zur Spreite (wenn nicht verfärbt)**	**Última hoja: intensidad de la coloración verde de la nerviadura principal en comparación al limbo (cuando no está descolorida)**		
QN		lighter	plus pâle	heller	más claro	Grazer, PR82G55	
		same color	même	gleichfarbig	mismo color		
		darker	plus foncée	dunkler	más oscuro	P8500	
7. (*)	**50-69 VG**	**Leaf: color of midrib**	**Feuille: couleur de la nervure principale**	**Oberstes: Farbe der Mittelrippe**	**Hoja: color de la nerviadura principal**		
PQ	**(a)**	white	blanc	weiss	blanco	Gardavan, Velox 701	1
		yellowish white	blanc jaunâtre	weiss gelblich	blanco amarillento		2
		light yellow	jaune clair	hellgelb	amarillo claro	Aneto, PR82G55	3
		medium yellow	jaune moyenne	mittel gelb	amarillo medio		4
		dark yellow	jaune foncé	dunkel gelb	amarillo oscuro	Teide	5
		brownish	brunâtre	bräunlich	amarronado		6
8.	**50-69 VG**	**Flag leaf: extension of discoloration of midrib**	**Derniére feuille: étendue de la décoloration de la nervure principale**	**Oberstes Blatt: Ausdehnung der Verfärbung der Mittelrippe**	**Última hoja: extensión de la decoloración de la nerviadura principal**		
QN		absent or very weak	absente ou très faible	fehlend oder sehr gering	ausente o muy débil	Dorado E	1
		weak	faible	gering	débil	Lussi, PR83G66	3
		medium	moyenne	mittel	media	DORADO DR, HAY DAY	5
		strong	forte	stark	fuerte	Aneto, PR84G62	7
		very strong	très forte	sehr stark	muy fuerte		9

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
9.	**65-69 VG**	**Glume: color**	**Glume : couleur**	**Hüllspelze: Farbe**	**Gluma: color**		
PQ	**(b)**	green	verte	grün	verde	Velox 701	1
		light green	vert clair	hellgrün	verde claro	P8500	2
		yellow green	vert jaune	gelbrün	amarillo verdoso		3
		green yellow	jaune vert	grüngelb	verde amarillento	Grazer, PR82G55	4
		yellow	jaune	gelb	amarillo	Vidan 697	5
		light yellow	jaune clair	hellgelb	amarillo claro		6
10.	**65-69 VG**	**Glume: anthocyanin coloration**	**Glume : pigmentation anthocyanique**	**Hüllspelze: Anthocyanfärbung**	**Gluma: pigmentación antociánica**		
QN	**(b)**	absent or very weak	nulle ou très faible	fehlend oder sehr gering	ausente o muy débil	DK18, Grazer	1
		weak	faible	gering	débil	SD 105, Vidan 697	3
		medium	moyenne	mittel	media	B SD 106	5
		strong	forte	stark	fuerte		7
		very strong	très forte	sehr stark	muy fuerte		9
11.	**69-75 VG**	**Lemma: arista formation**	**Glumelle : aristation**	**Deckspelze: Grannenbildung**	**Gluma: aristado**		
QN	**(b)**	absent or very weak	nulle ou très faible	fehlend oder sehr gering	ausente o muy débil	Dorado E, Grazer	1
		weak	faible	gering	débil	Lussi	3
		medium	moyenne	mittel	media	Digestivo	5
		strong	forte	stark	fuerte	Ludan	7
		very strong	très forte	sehr stark	muy fuerte		9
12.	**65-69 VG**	**Stigma: anthocyanin coloration**	**Stigmate : pigmentation anthocyanique**	**Narbe: Gelbfärbung**	**Estigma: pigmentación antocianica**		
QN	**(b)**	absent or very weak	nulle ou très faible	fehlend oder sehr gering	ausente o muy débil	P8500	1
		weak	faible	gering	débil		3
		medium	moyenne	mittel	media		5
		strong	forte	stark	fuerte		7
		very strong	très forte	sehr stark	muy fuerte		9

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
12a. (*)	**65-69 VG**	**Stigma: color**	**Stigmate: couleur**	**Narbe: Farbe**	**Estigmna: color**		
PQ	**(b)**	white	blanc	weiss	blanco	P8500	1
		yellowish white	blanc jaunâtre	weiss gelblich	blanco amarillento	PR88G20, SF2003	2
		light yellow	jaune clair	hellgelb	amarillo claro		3
		medium yellow	jaune moyenne	mittel gelb	amarillo medio	PR82G55	4
		dark yellow	jaune foncé	dunkel gelb	amarillo oscuro		5
		greyish	grisâtre	gräulich	grisáceo		6
13.	**65-69 VG**	**Stigma: yellow coloration**	**Stigmate : coloration jaune**	**Narbe: Gelbfärbung**	**Estigma: coloración amarilla**		
QN	**(b)**	absent or very weak	nulle ou très faible	fehlend oder sehr gering	ausente o muy débil		1
		weak	faible	gering	débil	PR88G20, SF2003	3
		medium	moyenne	mittel	media	PR82G55	5
		strong	forte	stark	fuerte	Gardavan	7
		very strong	très forte	sehr stark	muy fuerte		9
14.	**65-69 VG**	**Stigma: length**	**Stigmate : longueur**	**Narbe: Länge**	**Estigma: longitud**		
QN	**(b)**	very short	très court	sehr kurz	muy corto		1
		short	court	kurz	corto	Grazer, PR83G66	3
		medium	moyen	mittel	medio	Nutrey Honey, P8500	5
		long	long	lang	largo	Arfrio, Beefbuilder	7
		very long	très long	sehr lang	muy largo		9
15. (+)	**65-69 VG**	**Flower with pedicel: length of flower**	**Fleur pédicellée : longueur de la fleur**	**Gestielte Blüte: Länge der Blüte**	**Flor pedicelada: longitud de la flor**		
QN	**(b)**	very short	très court	sehr kurz	muy corto		1
		short	court	kurz	corto	Nicol, PR82G55	3
		medium	moyen	mittel	medio	Aneto, P8500	5
		long	long	lang	largo	Albita, Elite	7
		very long	très long	sehr lang	muy largo		9

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
NEW	**65-69 VG**	**Flower: fertility**	**Fleur : fertilité**	**Blüte: Fruchtbarkeit**	**Flor: fertilidad**		
PQ		sterile	stérile	steril	estéril		1
		partially sterile	partiellement stérile	teilweise fruchtbar	parcialmente estéril	Nicol, PR82G55	2
		fertile	fertile	fruchtbar	fértil	Aneto, P8500	3
16.	**65-69 VG**	**Panicle: density at end of flowering**	**Panicule : compacité á la fin de la floraison**	**Rispe: Dichte zum Zeitpunkt des Blütenendes**	**Panícula: densidad al final de la floración**		
QN		very sparse	très lâche	sehr locker	muy laxa		1
		sparse	lâche	locker	laxa	Gardavan	3
		medium	moyenne	mittel	media	DORADO DR, Nutrey Honey	5
		dense	compacte	dicht	densa	Beefbuilder, PR82G55	7
		very dense	très compacte	sehr dicht	muy densa	Velox 701	9
17. (*)	**70-75 VG**	**Dry stamen: color**	**Etamine sèche : couleur**	**Trockenes Staubgefäß: Farbe**	**Estambre seco: color**		
QN	**(b)**	light yellow	jaune clair	hellgelb	amarillo claro		1
		pink grey	gris rosé	rosagrau	rosa grisáceo		2
		orange	orange	orange	naranja	DORADO DR Gardavan	3
		orange red	rouge orange	orangerot	rojo anaranjado	Elite, PR82G55	4
		red	rouge	rot	rojo		5
		red brown	brun rouge	rotbraun	marrón rojizo		6
NEW	**70-75 MS**	**Pant: number of tillers (forage varieties only)**	**Plante: nombre de tiges (variétés fourragères seulement)**	**Rispe: Anzahl der Stämme (nur Mohrenhirse Futter)**	**Planta: número de tallos (solo para variedades forrajeras)**		
QN		absent or very few	très lâche	abwesend oder wenige	ausente o muy pocos		1
		few	lâche	wenige	pocos		3
		medium	moyenne	mittel	medio		5
		many	compacte	sehr viele	muchos		7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
18.1 (*)	**75-85 MS**	**Plant: total height (grain varieties only)**	**Seulement sorgho grain** **Plante : hauteur totale**	**Nur Mohrenhirse Samen** **Pflanze: Gesamthöhe**	**Solamente sorgo grano.** **Planta: altura total**		
QN		very short	très court	sehr kurz	muy corto		1
		short	court	kurz	corto	Classus	3
		medium	moyen	mittel	medio	DORADO DR	5
		high	haute	gross	alto	PR82G55	7
		very high	très haute	sehr gross	muy alto		9
18.2 (*)	**75-85 MS**	**Plant: total height (forage varieties only)**	**Seulement sorgho fourrage** **Plante : hauteur totale**	**Nur Mohrenhirse Futter** **Pflanze: Gesamthöhe**	**Solamente sorgo forrajero.** **Planta: altura total**		
QN		very short	très court	sehr kurz	muy corto		1
		short	court	kurz	corto	Topsilo	3
		medium	moyen	mittel	medio	Beefbuilder	5
		high	haute	groß	alto	Aneto	7
		very high	très haute	sehr groß	muy alto		9
19.	**75-85 MS**	**Stem: diameter (one third of height of plant)**	**Tige : diamétre (au tiers inférieur de la hauteur de la plante)**	**Stengel: Durchmesser (ein Drittel der Höhe der Pflanze)**	**Tallo: diámetro (en el tercio inferior de la planta)**		
QN		small	petit	klein	pequeño	Nicol	3
		medium	moyen	mittel	medio	Dorado E Celliu	5
		large	grand	groß	grande	Elite	7
20.	**75-85 MS**	**Leaf: length of blade of the third leaf from top**	**Feuille : longueur du limbe de la troisième feuille á partir du sommet**	**Blatt: Länge der Blattspreite des dritten Blattes von der Spitze aus**	**Panícula: longitud del limbo de la tercera hoja a partir del vertice**		
QN	**(a)**	very short	très court	sehr kurz	muy corta		1
		short	court	kurz	corta	Buggy	3
		medium	moyen	mittel	media	Choice, PR85G85	5
		long	long	lang	larga	HAY DAY	7
		very long	très long	sehr lang	muy larga		9

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
21.	**75-85 MS**	**Leaf: width of blade of the third leaf from top**	**Feuille : largeur du limbe de la troisième feuille a partir du sommet**	**Blatt: Breite der Blattspreite des dritten Blattes von der Spitze aus**	**Hoja: anchura del limbo de la tercera hoja a partir del vértice**		
QN	**(a)**	very narrow	très étroite	sehr schmal	muy estrecha		1
		narrow	etroite	schmal	estrecha	Gardavan, Maya	3
		medium	moyenne	mittel	media	Aneto, DORADO DR	5
		broad	large	breit	ancha	Beefbuilder, PR82G55	7
		very broad	très large	sehr breit	muy ancha		9
22.	**75-85 MS**	**Panicle: length without neck**	**Panicule : longueur sans le col**	**Rispe: Länge ohne Hals**	**Panícula: longitud sin cuello**		
QN		very short	très courte	sehr kurz	muy corta		1
		short	courte	kurz	corta	Iggloo, Kornberger Köners	3
		medium	moyenne	mittel	media	Aneto, Dorado Dr	5
		long	longue	lang	larga	Jimggo, Soleillade	7
		very long	très longue	sehr lang	muy larga		9
23.	**75-85 MS**	**Neck of panicle: visible length above sheath**	**Col de la panicule : longueur visible au dessus de la gaine**	**Rispenhals: sichtbare Länge oberhalb der Blattspreite**	**Cuello de la panícula: longitud visible por encima de la vaina**		
QN		absent or very short	nulle ou très courte	fehlend oder sehr kurz	ausente o muy corto		1
		short	courte	kurz	corto	Nectar, Profus	3
		medium	moyenne	mittel	medio	PR88G20, Solleillade	5
		long	longue	lang	largo	Arlys, SF 2003	7
		very long	très longue	sehr lang	muy largo		9
24.	**75-85 MS**	**Panicle: length of branches**	**Panicule : longueur des ramifications**	**Rispe: Länge der verzweigungen**	**Panícula: longitud de las ramificaciones**		
QN	**(b)**	short	courte	kurz	corto	Velox 701	3
		medium	moyenne	mittel	medio	Grazer, PR83G66	5
		long	longue	lang	largo	Gardavan	7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
25. (*)	**92-93 VG**	**Panicle: density at maturity**	**Panicule : compacité á maturité**	**Rispe: Dichte zum Zeitpunkt der Reife**	**Panícula: densidad en maduración**		
QN		very sparse	très lâche	sehr locker	muy laxa	DK18	1
		sparse	lâche	locker	laxa	Grazer, SF2003	3
		medium	moyenne	mittel	media		5
		dense	compacte	dicht	densa	PR85G85	7
		very dense	très compacte	sehr dicht	muy densa		9
26. (*) (+)	**92-93 VG**	**Panicle: shape**	**Panicule : forme**	**Rispe: Form**	**Panícula: forma**		
PQ		reversed pyramide	pyramide inversée	umgekehrte Pyramide	pirámide invertida		1
		panicle broader in upper part	panicule évasée dans la partie supérieure	Kolben im oberen Teil breiter	panícula ensanchada parte superior	PR84G62	2
		symmetric	symétrique	symmetrisch	simétrica	Aralba, Nectar	3
		panicle broader in lower part	panicule évasée dans la partie inférieure	Kolben im unteren Teil breiter	panícula ensanchada parte inferior	Beefbeuilder	4
		pyramidal	pyramidale	pyramidenförmig	piramidal	HAY DAY	5
27. (*)	**92-93 VG**	**Glume: color at maturity**	**Glume : couleur á maturité**	**Hüllspelze: Farbe zum Zeitpunkt der Reife**	**Gluma: color en maduración**		
PQ		white	blanc	weiss	blanco		1
		light yellow	jaune clair	hellgelb	amarillo claro		2
		yellow	jaune	gelb	amarillo	Dorado E	3
		light brown	brun clair	hellbraun	marrón claro		4
		reddish brown	brun rougeâtre	rötlichbraun	marrón rojizo	Beefbeuilder, P8500	5
		dark brown	brun foncé	dunkelbraun	marrón oscuro	HAY DAY	6
		black	noire	schwarz	negro	Digestivo, Vidan 697	7
28. (+)	**92-93 VG**	**Glume: length**	**Glume : longueur**	**Hüllspelze: Länge**	**Gluma: longitud**		
QN		very short	très courte	sehr kurz	muy corto		1
		short	courte	kurz	corto	PR83G66	3
		medium	moyenne	mittel	medio	Aralba, PR85G85	5
		long	longue	lang	largo	Nutrey Honey	7
		very long	très longue	sehr lang	muy largo		9

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
29. (*)	**92-93 VG**	**Caryopsis: color after threshing**	**Caryopse : couleur après battage**	**Karyopse: Farbe nach dem Dreschen**	**Cariópside: color después de la recogida**		
PQ		white	blanc	weiss	blanco	Choice	1
		grey white	blanc gris	grauweiss	blanco grisáceo	Albita, PR88G20	2
		yellowish white	blanc jaunâtre	gelblichweiss	blanco amarillento	Aralba	3
		straw yellow	jaune paille	strohgelb	amarillo pálido	Beefbuilder, Gardavan	4
		orange	orange	orange	naranja	Argence, PR85G85	5
		orange red	rouge orangé	orangerot	rojo anaranjado	PR82G55, PR83G66	6
		ligth brown	brun clair	hellbraun	marrón claro	Velox 701	7
		red brown	brun rouge	rotbraun	marrón rojizo	Nutrey Honey	8
		dark brown	brun foncé	dunkelbraun	marrón oscuro	Nicol, Vidan 697	9
30. (*)	**92-93 MG**	**Weight of 1000 grains**	**Poids de mille grains**	**Tausendkorngewicht**	**Peso de 1000 granos**		
QN		very low	très petit	sehr gering	muy pequeño	Velox 701	1
		low	petit	gering	pequeño	PR87G57	3
		medium	moyen	mittel	medio	Nutrey Honey	5
		high	grand	groß	grande	Aralba, PR82G66	7
		very high	très grand	sehr groß	muy grande		9
31. (+)	**92-93 VG**	**Grain: shape in dorsal view**	**Grain : forme de la face dorsale**	**Korn: form in der vorderansicht**	**Grano: forma de la cara dorsal**		
PQ		narrow elliptic	elliptique étroite	schmal elliptisch	elíptica estrecha	Vidan 697 Aneto	1
		elliptic	elliptique	elliptisch	elíptica	Nectar, Nutrey Honey	3
		circular	circulaire	rund	circular	Aralba, Beefbuider	5
32. (+)	**92-93 VG**	**Grain: size of mark of germ**	**Grain : taille de l´empreinte du germe**	**Korn: Größe des Zeichens des Keimes**	**Grano: tamaño de la marca del germen**		
QN		very small	très petite	sehr klein	muy pequeña		1
		small	petite	klein	pequeña		3
		medium	moyenne	mittel	media	Aneto, PR84G62	5
		large	grande	groß	grande	Dorado E Grazer	7
		very large	très grande	sehr groß	muy grande		9

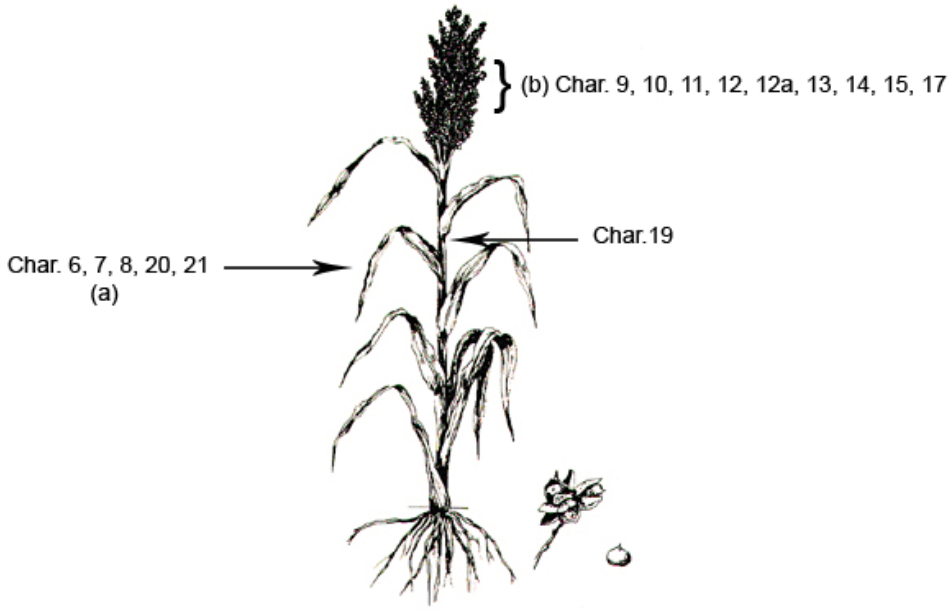
		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
33.	**92-93 VG**	**Grain: surface covered by testa**	**Grain : surface couverte par la testa**	**Korn: von der Samenschale bedeckte Oberfläche**	**Grano: superficie cubierta por la testa**		
QN		absent or very small	nulle ou très petite	fehlend oder sehr klein	ausente o muy pequeña	PR88Y20	1
		small	petite	klein	pequeña	Dorado E Nectar	3
		medium	moyenne	mittel	media	Agnes, Beefbuilder	5
		large	grande	groß	grande		7
		very large	très grande	sehr groß	muy grande		9
34.	**92-93**	**Grain: content of tannin**	**Grain : teneur en tannin**	**Korn: Tanningehalt**	**Grano: contenido en tanino**		
QN		absent or very low	absente ou très faible	fehlend oder sehr niedrig	muy bajo		1
		low	faible	niedrig	bajo		3
		medium	moyenne	mittel	medio		5
		high	forte	hoch	alto		7
		very high	très forte	hoch	muy alto		9
35.	**92-93 VG**	**Grain: texture of endosperm (in longitudinal section)**	**Grain : texture de l´endosperme (en section longitudinale)**	**Korn: Textur des Endosperms (im Längsschnitt)**	**Grano: textura del endospermo (en la sección longitudinal)**		
QN		fully vitreous	complétement vitreux	vollglasig	completamente vítreo		1
		¾ vitreous	¾ vitreux	¾ glasig	¾ vítreo	Agnes, Albita	3
		half vitreous	demi-vitreux	halbglasig	medio vítreo	Aneto, Dorado E	5
		¾ farinaceous	¾ farineux	¾ mehlig	¾ harinoso	Gk Zsófia, Vidan 697	7
		fully farinaceous	complétement farineux	vollmehlig	completamente harinoso		9
36.	**92-93 VG**	**Grain: color of vitreous albumen**	**Grain : couleur de l´albumen vitreux**	**Korn: Farbe des glasigen Albumens**	**Grano: color del albumen vitroso**		
PQ		white	blanc	weiss	Blanco	Sanggat, Sweet Virginia	1
		light yellow	jaune clair	hellgelb	amarillo claro	Aralba	2
		yellow	jaune	gelb	Amarillo	Beebuilder, PR82G55	3
		orange	orange	orange	Naranja	Arfrio, Nectar	4
		violet	violacé	violett	Violeta	Agnes, Primsilo	5

8. Explanations on the Table of Characteristics

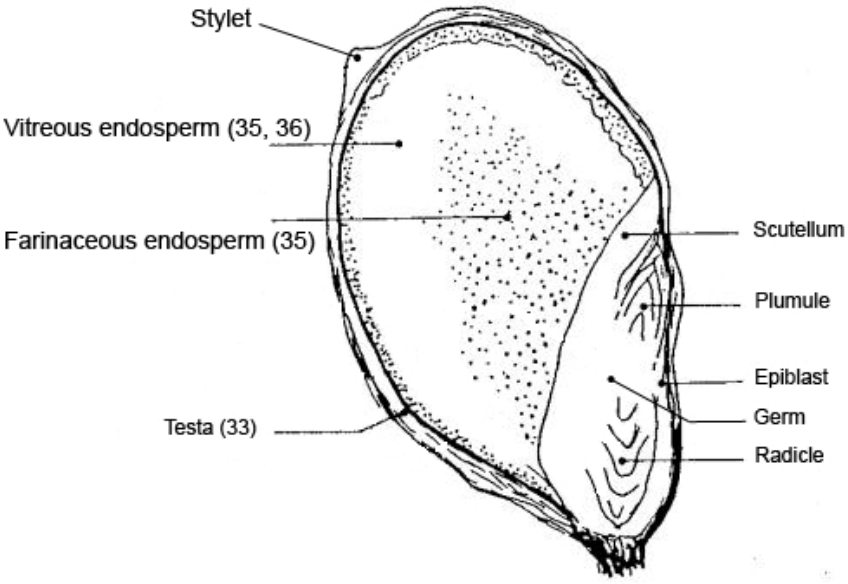
8.1 Explanations covering several characteristics

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

(a) The observation should be made on the third leaf from the top of the plant.
(b) The observation should be made in the middle third of the main panicle.



Grain of Sorghum



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8.2 Explanations for individual characteristics

Ad. 7: Leaf: color of midrib

1 white | 2 yellowish white | 4 medium yellow | 5 dark yellow | 6 brownish

Ad. 12a: Stigma: color

1 white | 3 light yellow | 4 medium yellow

Ad. 15: Flower with pedicel: length of flower

1 very short | 3 short | 5 medium | 7 long | 9 very long

Ad. 26: Panicle: shape

1	2	3	4	5
reversed pyramid	panicle broader in upper part	symmetric	panicle broader in lower part	pyramidal

Ad. 28: Glume: length

1	3	5	7	9
very short (about 1/4 of grain covered)	short (about 1/2 of grain covered)	medium (about 3/4 of grain covered)	long (as long as grain)	very long

Ad. 31: Grain: shape in dorsal view

1	3	5
narrow elliptic	elliptic	circular

Ad. 32: Grain: size of mark of germ

1	3	5	7	9
very small	small	medium	large	very large

Ad. 34: Grain: content of tannin

For the observation of the content of tannin, the EEC norm should be applied.

Annex III to Commission Regulation (EEC) No. 1908/84 of 4 July 1984 (OJ No. L 178, 5.7.1984, p. 22), inserted by Commission Regulation (EEC) No. 2159/84 of 26 July 1984 (OJ No. L 197, 27.7.1984, p. 18), and amended by Commission Regulation (EEC) No. 2281/86 of 22 July 1986 (OJ No. L 200, 23.7.1987, p. 7).

8.3 Decimal Code for the Growth Stages of Cereals

This decimal code is in close conformity with the BBCH-code (Meier, 1997)

CODE	GENERAL DESCRIPTION
	Germination
00	Dry seed
01	Start of imbibition
02	-
03	Imbibition complete-
04	-
05	Radicle emerged from caryopsis
06	-
07	Coleoptile emerged from caryopsis
08	-
09	Leaf just at coleoptile tip
	Seeding growth
10	First leaf through coleoptile
11	First leaf unfolded
12	2 leaves unfolded
13	3 leaves unfolded
14	4 leaves unfolded
15	5 leaves unfolded
16	6 leaves unfolded
17	7 leaves unfolded
18	8 leaves unfolded
19	9 or more leaves unfolded
	Tillering
20	Main shoot only
21	Main shoot and 1 tiller
22	Main shoot and 2 tillers
23	Main shoot and 3 tillers
24	Main shoot and 4 tillers
25	Main shoot and 5 tillers
26	Main shoot and 6 tillers
27	Main shoot and 7 tillers
28	Main shoot and 8 tillers
29	Main shoot and 9 or more tillers
	Stem elongation
30	Pseudo stem erection
31	1st node detectable
32	2nd node detectable
33	3rd node detectable
34	4th node detectable
35	5th node detectable
36	6th node detectable
37	Flag leaf just visible
38	-
39	Flag leaf ligule/collar just visible

	Booting
40	-
41	Flag leaf sheath extending
42	-
43	Boots just visibly swollen
44	-
45	Boots swollen
46	-
47	Flag leaf sheath opening
48	-
49	First awns visible
	Inflorescence emergence
50	First spikelet of inflorescence just visible
52	1/4 of inflorescence emerged
53	
54	1/2 of inflorescence emerged
55	
56	3/4 of inflorescence emerged
57	
58	Emergence of inflorescence completed
59	
	Anthesis
60	Beginning of anthesis
61	
62	-
63	-
64	Anthesis half-way
65	
66	-
67	-
68	Anthesis complete
69	
	Milk development
70	-
71	Caryopsis water ripe
72	-
73	Early milk
74	-
75	Medium milk
76	-
77	Late milk
78	-
79	-
	Dough development
80	-
81	-
82	-
83	Early dough
84	-
85	Soft dough
86	-
87	Hard dough
88	-
89	-
	Ripening
90	-
91	Caryopsis hard (difficult to divide by thumb-nail)
92	Caryopsis hard (can no longer be dented by thumb-nail)
93	Caryopsis loosening in daytime
94	Over-ripe, straw dead and collapsing
95	Seed dormant
96	Viable seed giving 50% germination
97	Seed not dormant
98	Secondary dormancy induced
99	Secondary dormancy lost

9. Literature

Meier, U., 1997: Growth stages of mono- and dicotyledonous plants: BBCH-Monograph Blackwell Science, Berlin, Vienna, a.o., pp 622.

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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	*Sorghum bicolor* L.
1.2 Common name	Sorghum

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

(i)	Inbred line	[ ]
(ii)	Single-cross hybrid	[ ]
(iii)	Three-way cross hybrid	[ ]
(iv)	Double-cross hybrid	[ ]
(v)	Open-pollinated variety	[ ]
(vi)	Other (provide details)	[ ]

Variety resulting from:

4.1.1 Crossing

(a) controlled cross [ ]
(please state parent varieties)

(……..……..) 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 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.

(a) Single Hybrid

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

(b) Three-Way Hybrid

single hybrid (below) used as female parent x (….....)
male parent line

or (…….....) x single hybrid (below) used as male parent
female parent line

(….....) x (….....…)
female parent line male parent line
single hybrid

(c) Double Hybrid

(….....…) x (….....…)
female parent line male parent line
single hybrid used as female parent

(….....) x (….....)
female parent line male parent line
single hybrid used as male parent

(single hybrid used as female parent) x (single hybrid used as male parent)

and should identify in particular:

(i) any male sterile female parent lines
……

(ii) maintenance system of male sterile female parent lines

4.2.2 Open–pollinated variety (please provide details)

4.2.3 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 (4)	**Plant: time of panicle emergence**		
	very early	Ludan	1 [ ]
	very early to early		2 [ ]
	early	Artaban, Artigas	3 [ ]
	early to medium		4 [ ]
	medium	Albita, DORADO DR	5 [ ]
	medium to late		6 [ ]
	late	Béreny, Piper, PR 82G55	7 [ ]
	late to very late		8 [ ]
	very late	Moster	9 [ ]
5.2 (7)	**Leaf: color of midrib**		
	white	Gardavan, Velox 701	1 [ ]
	yellowish white		2 [ ]
	light yellow	Aneto, PR82G55	3 [ ]
	medium yellow		4 [ ]
	dark yellow	Teide	5 [ ]
	brownish		6 [ ]
5.3 (12a)	**Stigma: color**		
	white	P8500	1 [ ]
	yellowish white	PR88G20, SF2003	2 [ ]
	light yellow		3 [ ]
	medium yellow	PR82G55	4 [ ]
	dark yellow		5 [ ]
	greyish		6 [ ]

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

	Characteristics	Example Varieties	Note
5.4 (18.1)	**Only grain sorghum. Plant: total heigth**		
	very short		1 [ ]
	very short to short		2 [ ]
	short	Classus	3 [ ]
	short to medium		4 [ ]
	medium	DORADO DR	5 [ ]
	medium to high		6 [ ]
	high	PR82G55	7 [ ]
	high to very high		8 [ ]
	very high		9 [ ]
5.5 (18.2)	**Only forage sorghum. Plant: total heigth**		
	very short		1 [ ]
	very short to short		2 [ ]
	short	Topsilo	3 [ ]
	short to medium		4 [ ]
	medium	Beefbuilder	5 [ ]
	medium to high		6 [ ]
	high	Aneto	7 [ ]
	high to very high		8 [ ]
	very high		9 [ ]

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

	Characteristics	Example Varieties	Note
5.6 (25)	**Panicle: density at maturity**		
	very sparse	DK18	1 [ ]
	very sparse to sparse		2 [ ]
	sparse	Grazer, SF2003	3 [ ]
	sparse to medium		4 [ ]
	medium		5 [ ]
	medium to dense		6 [ ]
	dense	PR85G85	7 [ ]
	dense to very dense		8 [ ]
	very dense		9 [ ]
5.7 (26)	**Panicle: shape**		
	reversed pyramide		1 [ ]
	panicle broader in upper part	PR84G62	2 [ ]
	symmetric	Aralba, Nectar	3 [ ]
	panicle broader in lower part	Beefbuilder	4 [ ]
	pyramidal	HAY DAY	5 [ ]
5.8 (27)	**Glume: color <u>at maturity</u>**		
	white		1 [ ]
	light yellow		2 [ ]
	yellow	Dorado E	3 [ ]
	light brow		4 [ ]
	reddish brow	Beefbeuilder, P8500	5 [ ]
	dark brow	Hayday	6 [ ]
	black	Digestivo, Vidan697	7 [ ]

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

	Characteristics	Example Varieties	Note
5.9 (29)	**Caryopsis: color after threshing**		
	white	Choice	1 [ ]
	grey white	Albita, PR88G20	2 [ ]
	yellowish white	Aralba	3 [ ]
	straw yellow	Beefbuilder, Gardavan	4 [ ]
	orange	Argence, PR85G85	5 [ ]
	orange red	PR82G55, PR83G66	6 [ ]
	pale brown	Velox 701	7 [ ]
	red brown	Nutrey Honey	8 [ ]
	dark brown	Nicol, Vidan 697	9 [ ]

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 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
Example	*Plant: time of panicle emergence*	*early*	*early to medium*

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

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”.

…….

[#] 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:

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

Applicant's name

Signature

Date

[Annex follows]

Comments by the Subgroup

COVER PAGE	COMMENTS
1.	**Japan** To change “These Test Guidelines apply to all varieties of Sorghum bicolor, Sorghum sudanense and hybrid Sorghum bicolor x Sorghum sudanense” by “These Test Guidelines apply to all varieties of Sorghum bicolor (L) Moench, Sorghum sudanense (Piper) Stapf and hybrid Sorghum bicolor x Sorghum sudanense and their hybrids”
2.3	**France** 0,5 kg for parental France asks for different quantities depending on the type of components (male sterile or male fertile). 0.5 kg for male fertile inbred lines (B and R, 0,200 kg for male sterile lines (A).
Char. 1 Seedling: anthocyanin coloration of coleoptile	**France** France proposes as method of observation VG or VS: depending on the type of variety (inbred line, single hybrid or multiple hybrid) the way of observation must be different. This comment is general and must be considered for each characteristic to define if it’s VG or VS and MG or MS We can consider how this point is solved in case of maize.
Char. 2 Seedling: anthocyanin coloration of dorsal side of first leaf	**Spain** Spain proposes to delete it because it’s correlated with char. 1 and influenced by environmental conditions. **South Africa** supports proposal to delete. **France** agrees to delete char. 1 or 2 but prefers to keep the char. 2 because is easier to observe.
Char. 4 Plant: time of panicle emergence	**France** France proposes as method of observation MG or MS and FR also proposes to explain what to do in case of MG.
Char. 5 Foliage: intensity of green color	**South Africa** South Africa proposes the states: Light green 1 Medium green 2 Dark green 3
Char. 6 Flag leaf: intensity of green coloration of midrib compared to blade (if not discolored)	**Spain** Spain proposes to delete it because is enough with char. 7. If this characteristic is kept SP proposes that the observation should be made on the third leaf from the top of the plant. **France** wants to keep it because discriminative although it is not easy to observe.. **Germany** To explain “discolored”

Char. 7 Leaf: color of midrib	**France** FR proposes to delete the state “yellowish white”. South Africa proposes the states: White 1 Yellowish white 2 Light green 3 Medium green 4 Dark green 5 Light yellow 6 Medium yellow 7 Dark yellow 8 Brownish 9 **Japan** Japan proposes to add a new state “light green “ Japan proposes to do the evaluation in the stages 39-45.
Char. 8 Flag leaf: extension of discoloration of midrib	**Spain** Spain proposes to delete it because it’s difficult to evaluate. If this characteristics is kept SP proposes that the observation should be made on the third leaf from the top of the plant. **South Africa** South Africa supports to delete. **France** France wants to keep it because discriminative although is not easy to observe. **Germany** To explain discoloration
Char. 9 Glume: color	**Germany** Germany proposes to change the states “green” by “dark green” and “yellow” by “medium yellow” **France** France proposes to delete the state “yellow green”.
Char. 12 Stigma: anthocyanin coloration	**Spain** Spain proposes to replace by char. 12a **France** France disagrees with Spanish proposal and proposes the states: Absent or very weak 1 Medium 3 Strong 5
Char. 12a Stigma: color	**France** France disagrees because the anthocyanin coloration exits. **South Africa** South Africa proposes the states: Whitish 1 Light yellow 2 Medium yellow 3 Dark yellow 4 Grey 5

Char. 13 Stigma: yellow coloration	**Spain** Spain proposes replace by char. 12a **France** France disagrees with Spanish proposal because can be used when there is no anthocyanin coloration and propose the states: Absent or very weak 1 Medium 3 Strong 5
Char. 14 Stigma: length	**Spain** Spain proposes to delete because it's difficult to evaluate. **France** France disagrees with the Spanish proposal because it is easy to observe **South Africa** South Africa proposes the states: Short 1 Medium 2 Long 3
Char. Flower: fertility	**Japan** Japan proposal.
Char. 17 Dry stamen: color	**South Africa** South Africa proposes the states: Light yellow 1 Orange 2 Orange red 3 Red 4 Red brown 5 Pink grey 6
Char. Plant: number of tillers (forage varieties only)	**Japan** Japan proposal.
Char. 18.1 Plant: total height (grain varieties only)	**France and Germany** France and Germany prefer to keep only one characteristic 18. **South Africa** South Africa proposes to include VG as evaluation method.
Char. 18.2 Plant: total height (forage varieties only)	**France and Germany** France and Germany prefer to keep only one characteristic 18. **South Africa** South Africa proposes to include VG as evaluation method.
Char. 19 Stem: diameter (one third of height of plant.	**France** France proposes to delete this characteristic. **Spain** Spain proposes to do the measurement just above the insertion of the third leaf from the top. **South Africa** South Africa proposes to include VG as evaluation method.

Char. 20 Leaf: length of blade of the third leaf from top .	**Spain** Spain proposes to delete because there aren't great differences between varieties. **South Africa** South Africa supports proposal to delete. **France** France wants to keep it because discriminative and proposes MG or MS as evaluation methods.
Char. 21 Leaf: width of blade of the third leaf from top.	**France** France proposes MG or MS as evaluation methods. **South Africa** South Africa proposes to include VG as evaluation method.
Char. 22 Panicle: length without neck	**France** France proposes MG or MS as evaluation methods. **South Africa** South Africa proposes to include VG as evaluation method.
Char. 23 Neck of panicle: visible length above sheath	**France** France proposes MG or MS as evaluation methods. **South Africa** South Africa proposes to include VG as evaluation method.
Char. 24 Panicle: length of branches	**France** France proposes to delete because correlated with panicle length. **South Africa** South Africa proposes to include VG as evaluation method.
Char. 27 Glume: color <u>at maturity</u>	**South Africa** South Africa proposes the states: White 1 Light yellow 2 Medium yellow 3 Light brown 4 Dark brown 5 Red brown 6 Black 7
Char. 29 Caryopsis: color after threshing	**South Africa** South Africa proposes the states: White 1 Yellowish white 2 Grey white 3 Brownish yellow 4 Orange 5 Orange red 6 Light brown 7 Medium brown 8 Dark brown 9
Char. 31 Grain: shape in dorsal view	**Germany** Germany proposes to change the state "elliptic" by "broad elliptic".
Char. 33 Grain: surface covered by testa	**Germany** Germany proposes to delete due to strong correlation to characteristics 32. **Spain** Spain supports to delete because it`s difficult to evaluate and due to correlation to characteristics 29 and 34.

Char. 34 Grain: content of tannin	**Spain** Spain proposes to delete because is difficult to evaluate **France** France agrees with Spanish proposal **South Africa** South Africa proposes the states: Absent 1 Present 2
Char. 36 Grain: color of vitreous albumen	**Spain** Spain proposes to delete because is difficult to evaluate. **France** France disagrees with the Spanish proposal and proposes to delete this state “light yellow”
8.3 Decimal Code for the Growth Stages of Cereals	**Germany** *Seeding growth* To change “s*eeding growth”* by “leaf development” *To change “milk development”* by “development of fruit” *To change “dough development”* by “ripening” *To change “ripening”* by “senescence” To delete codes 90 to 99.

[End of Annex and of document]