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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

DRAFT

COTTON *

UPOV Code(s): GOSSY

Gossypium L.

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by experts from Spain
to be considered by the
Enlarged Editorial Committee
at its meeting, to be held in Geneva
from 2018-03-26 to 2018-03-27

Disclaimer: this document does not represent UPOV policies or guidance

Alternative names:*

Botanical name	*English*	*French*	*German*	*Spanish*
Gossypium L.	Cotton	Cotonnier	Baumwolle	Algodón, Algodonero

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 *Gossypium* L..

2. Material Required

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

2.2 The material is to be supplied in the form of seed.

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

3 kg of delinted seed. In the case of hybrids and interspecific hybrid varieties, an additional 1 kg of seed of each component should be submitted, if requested.

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 Table of Characteristics. The stages of development denoted by each number are described in Chapter 8.

3.4 Test Design

3.4.1 Each test should be designed to result in a total of at least 500 plants, which 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.

4.1.2 Consistent Differences

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

4.1.3 Clear Differences

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

4.1.4 Number of Plants or Parts of Plants to be Examined

Unless otherwise indicated, for the purposes of distinctness, all observations on single plants should be made on 20 plants or parts of plants taken from each of 20 plants and any other observations made on all plants in the test, disregarding any off-type plants.

4.1.5 Method of Observation

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

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

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

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

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

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

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

4.2 Uniformity

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

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

4.2.3 The assessment of uniformity for hybrid varieties depends on the type of hybrid and should be according to the recommendations for hybrid varieties in the General Introduction.

4.2.4 For the assessment of uniformity of seed-propagated varieties, a population standard of 1% and an acceptance probability of at least 95% should be applied. In the case of a sample size of 500 plants, 9 off-types are allowed.

4.3 Stability

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

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

5. Grouping of Varieties and Organization of the Growing Trial

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

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

5.3 The following have been agreed as useful grouping characteristics:

(a) Plant: type of flowering (characteristic 1)
(b) Flower: color of petal (characteristic 2)
(c) Leaf: shape (characteristic 9)
(d) Leaf: presence of nectaries (characteristic 12)
(e) Boll: shape in longitudinal section (characteristic 18)
(f) Boll: time of opening (characteristic 24)

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

6. Introduction to the Table of Characteristics

6.1 Categories of Characteristics

6.1.1 Standard Test Guidelines Characteristics

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

6.1.2 Asterisked Characteristics

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

6.2 States of Expression and Corresponding Notes

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

6.2.2 In the case of qualitative and pseudo-qualitative characteristics (see Chapter 6.3), all relevant states of expression are presented in the characteristic. However, in the case of quantitative characteristics with 5 or more states, an abbreviated scale may be used to minimize the size of the Table of Characteristics. For example, in the case of a quantitative characteristic with 9 states, the presentation of states of expression in the Test Guidelines may be abbreviated as follows:

State	*Note*
small	3
medium	5
large	7

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

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

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

6.3 Types of Expression

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

6.4 Example Varieties

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

6.5 Legend

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

1 Characteristic number

2 (*) Asterisked characteristic – see Chapter 6.1.2

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

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

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

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

7 Growth stage key See Explanations on the Table of Characteristics in Chapter 8

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

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1.	**(*) PQ VG**		**(+)**	**61-65**			
		Plant: type of flowering	**Plante : type d'épanouissement des fleurs**	**Pflanze: Anordnung der Blüte**	**Planta: tipo de floración**		
		clustered	groupées	büschelformig	agrupada	Alepo, Armada	1
		semi-clustered	semi-groupées	halb büschelformig	semiagrupada	Aphrica, DP411	2
		non-clustered	non groupées	nicht büschelformig	no agrupada	CS37, DP332	3
2.	**(*) QL VG**		**(a)**	**65**			
		Flower: color of petal	**Fleur : couleur des pétales**	**Blüte: Farbe des Blütenblattes**	**Flor: color de los pétalos**		
		whitish	blanchâtre	weißlich	blanquecinos	DP377, Select	1
		yellow	jaune	gelb	amarillos	Armada, Intercott 670	2
3.	**QN VG**		**(a)**	**65**			
		Flower: intensity of yellow color	**Fleur : intensité de la couleur jaune**	**Blüte: Intensität der Gelbfärbung**	**Flor: intensidad del color amarillo**		
		light	claire	hell	claro	Solera	3
		medium	moyenne	mittel	medio	Armada, Intercott 670	5
		dark	foncée	dunkel	oscuro		7
4.	**QN VG**		**(a)**	**65**			
		Petal: spot	**Pétale : tache**	**Blütenblatt: Fleck**	**Pétalo: mancha**		
		absent or very weak	absente ou très faible	fehlend oder sehr gering	ausente o muy débil	ST405, Tosca	1
		weak	faible	gering	débil		3
		medium	moyenne	mittel	media	Intercott 701	5
		strong	forte	stark	fuerte	Armada, Sevilla	7
		very strong	très forte	sehr stark	muy fuerte	E1	9

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
5.	**(*)**	**PQ**	**VG**		**(a)**	**65**			
		Flower: color of pollen		**Fleur : couleur du pollen**		**Blüte: Farbe des Pollens**	**Flor: color del polen**		
		whitish		blanchâtre		weißlich	blanquecino	DP414, Solera	1
		medium yellow		jaune moyen		mittelgelb	amarillo medio	Alepo, Armada	2
		dark yellow		jaune foncé		dunkelgelb	amarillo oscuro	Acalpi	3
6.		**QN**	**VG**	**(+)**	**(a)**	**65**			
		Flower: position of stigma relative to anthers		**Fleur : position des stigmates par rapport aux anthères**		**Blüte: Position der Narbe im Verhältnis zu den Antheren**	**Flor: posición del estigma en relación a las anteras**		
		clearly below		clairement au-dessous		deutlich unterhalb	claramente por debajo	Carlota, CS37	1
		same level		au même niveau		auf gleicher Höhe	al mismo nivel	DP377, DP411	2
		clearly above		clairement au-dessus		deutlich oberhalb	claramente por encima	Lanovia, ST478	3
7.		**QN**	**VG**			**65-69**			
		Plant: density of foliage		**Plante : densité du feuillage**		**Pflanze: Dichte des Laubes**	**Planta: densidad del follaje**		
		sparse		lâche		locker	laxa	Ourania	3
		medium		moyen		mittel	media	E1, Solera	5
		dense		dense		dicht	densa	Zeta 2	7
8.		**QN**	**VG**		**(b)**	**65-69**			
		Leaf: intensity of green color		**Feuille : intensité de la couleur verte**		**Blatt: Intensität der Grünfärbung**	**Hoja: intensidad del color verde**		
		light		claire		hell	claro	Corona	3
		medium		moyenne		mittel	medio	Aphrica, CT13	5
		dark		foncée		dunkel	oscuro	Armada, Lagiralda	7

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
9.	**(*)**	**PQ**	**VG**	**(+)**	**(b)**	**65-69**			
		Leaf: shape		**Feuille : forme**		**Blatt: Form**	**Hoja: forma**		
		palmate		palmée		handförmig	palmada	Alepo, Solera	1
		palmate to digitate		palmée à digitée		hand- bis fingerförmig	palmada a digitada	Intercott 195, Intercott 211	2
		digitate		digitée		fingerförmig	digitada	Lacta, Roka	3
		lanceolate		lancéolée		lanzettlich	lanceolada	LD Frego	4
10.		**QN**	**VG**	**(+)**	**(b)**	**65-69**			
		Leaf: size		**Feuille : taille**		**Blatt: Größe**	**Hoja: tamaño**		
		small		petite		klein	pequeño		3
		medium		moyenne		mittel	medio	DP377, Intercott 670	5
		large		grande		groß	grande	Alepo, Lagiralda	7
11.	**(*)**	**QN**	**VG**	**(+)**	**(b)**	**65-69**			
		Leaf: pubescense		**Feuille : pilosité**		**Blatt: Behaarung**	**Hoja: pubescencia**		
		absent or very weak		nulle ou très faible		fehlend oder sehr gering	ausente o muy débil	Claudia	1
		weak		faible		gering	débil	Celia, DP466	3
		medium		moyenne		mittel	media	Flora, Intercott 670	5
		strong		forte		stark	fuerte	PRG9811, ST405	7
		very strong		très forte		sehr stark	muy fuerte	Lanovia	9
12.	**(*)**	**QL**	**VG**		**(b)**	**65-69**			
		Leaf: presence of nectaries		**Feuille : présence de nectaires**		**Blatt: Vorhandensein von Nektarien**	**Hoja: presencia de nectarios**		
		absent		absents		fehlend	ausentes	Guazuncho 3 INTA	1
		present		présents		vorhanden	presentes	DP396, ST488	9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
13.	**QN VG**	**(b)**	**65-79**			
	Stem: pubescence on upper part	**Tige : pilosité sur la partie supérieure**	**Stiel: Behaarung des oberen Teiles**	**Tallo: pubescencia en la parte superior**		
	absent or very weak	nulle ou très faible	fehlend oder sehr gering	ausente o muy débil	Alepo, Claudia	1
	weak	faible	gering	débil	E1, Lydia	3
	medium	moyenne	mittel	media	DP332, Fokion	5
	strong	forte	stark	fuerte	Europa, ST478	7
	very strong	très forte	sehr stark	muy fuerte		9
14.	**PQ VG**	**(+) (b)**	**65-79**			
	Stem: color	**Tige : couleur**	**Stiel: Farbe**	**Tallo: color**		
	light green	vert pâle	hellgrün	verde claro		1
	dark green	vert foncé	dunkelgrün	verde oscuro	ST318, ST405	2
	light red	rouge pâle	hellrot	rojo claro	Alepo, Solera	3
	dark red	rouge foncé	dunkelrot	rojo oscuro		4
15.	**QN VG**	**(+)**	**71-75**			
	Bract: dentation	**Bractée : denticulation**	**Hüllblatt: Zähnung**	**Bráctea: dentado**		
	fine	fine	fein	fino	E1, Intercott 701	3
	medium	moyenne	mittel	medio	Elsa, Intercott 670	5
	coarse	grossière	grob	grosero	Prime1848, Roka	7
16.	**QN VG**		**71-75**			
	Bract: size	**Bractée : taille**	**Hüllblatt: Größe**	**Bráctea: tamaño**		
	very small	très petite	sehr klein	muy pequeño		1
	small	petite	klein	pequeño	DP332, ST478	3
	medium	moyenne	mittel	medio	DP414, Solera	5
	large	grande	groß	grande	Alepo, E1	7
	very large	très grande	sehr groß	muy grande	Armada	9

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
17.		**QN VG**		**71-75**			
		Boll: size	**Capsule : taille**	**Kapsel: Größe**	**Cápsula: tamaño**		
		very small	très petite	sehr klein	muy pequeño		1
		small	petite	klein	pequeño	Armada, Lanovia	3
		medium	moyenne	mittel	medio	E1, Solera	5
		large	grande	groß	grande	Zeta 2	7
		very large	très grande	sehr groß	muy grande	Intercott 701	9
18.	**(*)**	**PQ VG**	**(+)**	**71-75**			
		Boll: shape in longitudinal section	**Capsule : forme en section longitudinale**	**Kapsel: Form im Längsschnitt**	**Cápsula: forma en sección longitudinal**		
		circular	circulaire	rund	circular	Prime1848, ST439	1
		narrow elliptic	elliptique étroite	schmal elliptisch	elíptica estrecha	DP399, ST478	2
		broad elliptic	elliptique large	breit elliptisch	elíptica ancha	Alepo, Solera	3
		ovate	ovale	eiförmig	oval	Intercott 195, Intercott 211	4
19.		**QN VG**		**71-75**			
		Boll: pitting of surface	**Capsule : granulation de la surface**	**Kapsel: Körnung der Oberfläche**	**Cápsula: punteado de la superficie**		
		fine	fine	fein	fina	Viky	3
		medium	moyenne	mittel	media	DP414, Solera	5
		coarse	grossière	grob	rugosa	E1, Intercott 211	7
20.	**(*)**	**QN MS/VG**		**71-75**			
		Boll: length of peduncle	**Capsule : longueur du pédoncule**	**Kapsel: Länge des Blütenstandstiels**	**Cápsula: longitud del pedúnculo**		
		very short	très court	sehr kurz	muy corto		1
		short	court	kurz	corto	DP377, Solera	3
		medium	moyen	mittel	medio	E1, Intercott 701	5
		long	long	lang	largo	Beky, Intercott 211	7
		very long	très long	sehr lang	muy largo	Armada	9

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
21.		**QN VG**	**(+)**	**71-75**			
		Boll: prominence of tip	**Capsule : proéminence du bec**	**Kapsel: Ausbildung der Spitze**	**Cápsula: prominencia de la punta**		
		weak	faible	gering	débil	Carla	1
		medium	moyenne	mittel	media	DP377, DP414	3
		strong	forte	stark	fuerte	E1, Intercott 670	5
22.	**(*)**	**PQ VG**	**(+)**	**75-79**			
		Plant: shape	**Plante : forme**	**Pflanze: Form**	**Planta: forma**		
		cylindrical	cylindrique	zylindrisch	cilíndrica	Alepo, Armada	1
		conical	conique	kegelförmig	cónica	Fokion, Intercott 670	2
		globose	en forme de globe	kugelförmig	globosa	E1, Solera	3
23.	**(*)**	**QN MG/MS**		**79-89**			
		Plant: height	**Plante : hauteur**	**Pflanze: Höhe**	**Planta: altura**		
		very short	très basse	sehr kurz	muy baja		1
		short	basse	kurz	baja	Armada, DP419	3
		medium	moyenne	mittel	media	Alepo, Solera	5
		tall	haute	hoch	alta	Intercott 670, Intercott 701	7
		very tall	très haute	sehr hoch	muy alta	Tzortzina	9
24.	**(*)**	**QN MG**	**(+)**	**80-81**			
		Boll: time of opening	**Capsule : époque de déhiscence**	**Kapsel: Zeitpunkt der Öffnung**	**Cápsula: época de apertura**		
		very early	très précoce	sehr früh	muy precoz		1
		early	précoce	früh	precoz	ST318, ST402	3
		medium	moyenne	mittel	media	Alepo, Solera	5
		late	tardive	spät	tardía	Abaco, DP332	7
		very late	très tardive	sehr spät	muy tardía	Vered 171	9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
25.	**QN VG**		**85-89**			
	Boll: degree of opening	**Capsule : degré d'ouverture**	**Kapsel: Stärke der Öffnung**	**Cápsula: grado de apertura**		
	weak	faible	gering	leve		3
	medium	moyenne	mittel	media	Lagiralda, Solera	5
	strong	forte	stark	fuerte	ST318, ST402	7
26.	**QN VG**		**99**			
	Seed: density of fuzz	**Semence : densité du duvet**	**Samen: Dichte des Flaumes**	**Semilla: densidad de la borra**		
	absent or very sparse	absent ou très lâche	fehlend oder sehr locker	ausente o muy laxa		1
	sparse	lâche	locker	laxa	Lanovia, Sevilla	3
	medium	moyen	mittel	media	DP377, DP414	5
	dense	dense	dicht	densa	Acala sj-2	7
	very dense	très dense	sehr dicht	muy densa		9
27.	**PQ VG**		**99**			
	Seed: color of fuzz	**Semence : couleur du duvet**	**Samen: Farbe des Flaumes**	**Semilla: color de la borra**		
	white	blanc	weiß	blanco	Armada, Lagiralda	1
	greenish	verdâtre	grünlich	verdoso	DP414, Solera	2
	yellowish	jaunâtre	gelblich	amarillento		3
	brownish	brunâtre	bräunlich	amarronado	Intercott 670, Lanovia	4
	grey	gris	grau	gris	ST318, ST402	5
28.	**QN MG**	**(+)**	**99**			
	Seed: 100 seed weight	**Semence : poids de 100 grains**	**Samen: Gewicht von 100 Samen**	**Semilla: peso de 100 semillas**		
	low	petit	niedrig	pequeño	DP377, Solera	3
	medium	moyen	mittel	medio	E1, Elsa	5
	high	grand	hoch	grande	Armada, Intercott 701	7

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
29.	**QN MG**	**(+)**	**99**			
	Boll: content of lint	**Capsule : teneur en fibre**	**Kapsel: Fasergehalt**	**Cápsula: cantidad de fibra**		
	very low	très faible	sehr gering	muy baja	Europa	1
	low	faible	gering	baja	Etna, Sevilla	3
	medium	moyenne	mittel	media	Helena, Intercott 701	5
	high	élevée	hoch	alta	ST318, ST405	7
	very high	très élevée	sehr hoch	muy alta	DP414, Solera	9
30.	**(*) QN MG**	**(c)**	**99**			
	Fiber: length	**Fibre : longueur**	**Faser: Länge**	**Fibra: longitud**		
	very short	très courte	sehr kurz	muy corta		1
	short	courte	kurz	corta		3
	medium	moyenne	mittel	media	DP414, Solera	5
	long	longue	lang	larga	DP332, Elsa	7
	very long	très longue	sehr lang	muy larga	E1, Intercott 670	9
31.	**QN MG**	**(c)**	**99**			
	Fiber: strength	**Fibre : résistance à la traction**	**Faser: Zugfestigkeit**	**Fibra: resistencia**		
	very weak	très faible	sehr gering	muy débil		1
	weak	faible	gering	leve		3
	medium	moyenne	mittel	media	ST318, ST402	5
	strong	forte	stark	fuerte	DP332, PRG9811	7
	very strong	très forte	sehr stark	muy fuerte	Alepo, Solera	9

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
32.		**QN MG**	**(c)**	**99**			
		Fiber: elongation	**Fibre : élongation**	**Faser: Verlängerung**	**Fibra: alargamiento**		
		very small	très petite	sehr klein	muy pequeño	Celia, DP411	1
		small	petite	klein	pequeño	Elsa, Fokion	3
		medium	moyenne	mittel	medio	Intercott 670, Lanovia	5
		large	grande	groß	grande	Armada, Lagiralda	7
		very large	très grande	sehr groß	muy grande	DP414, Etna	9
33.		**QN MG**	**(c)**	**99**			
		Fiber: fineness	**Fibre : finesse**	**Faser: Feinheit**	**Fibra: finura**		
		fine	fine	fein	fina	Intercott 195, Intercott 701	3
		medium	moyenne	mittel	media	E1, Lagiralda	5
		coarse	grossière	grob	grosera	Alepo, Solera	7
34.		**QN MG**	**(c)**	**99**			
		Fiber: length uniformity	**Fibre : uniformité de la longueur**	**Faser: Einheitlichkeit der Länge**	**Fibra: uniformidad de la longitud**		
		very low	très faible	sehr gering	muy baja		1
		low	faible	gering	baja		3
		medium	moyenne	mittel	media	Elina, Lydia	5
		high	élevée	hoch	alta	Alepo, Intercott 701	7
		very high	très élevée	sehr hoch	muy alta	E1, Elsa	9
35.	**(*)**	**QL VG**		**99**			
		Fiber: color	**Fibre : couleur**	**Faser: Farbe**	**Fibra: color**		
		white	blanche	weiß	blanca	Alepo, Solera	1
		colored	colorée	farbig	coloreada	Rainbow-34	2

8. Explanations on the Table of Characteristics

8.1 Explanations covering several characteristics

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

(a) Observations on the flower should be made on the first day of flowering in the morning.

(b) Observations on the leaf and on the stem should be made where leaves are fully extended. Color observations should be made early in the morning.

(c) Observations should be made according to:

Standard Test Methods for Measurement of Cotton Fibres by High Volume Instruments (HVI) (Motion Control Fiber Information System). Designation D-4604-95

- Standard Test Methods for Measurement of Physical Properties of Cotton Fibers by High Volume Instruments (HVI). Designation D-5867-95
- Established by the American Society for Testing and Materials (ASTM)

8.2 Explanations for individual characteristics

Ad. 1: Plant: type of flowering

1
clustered

2
semi-clustered

3
non-clustered

Ad. 6: Flower: position of stigma relative to anthers

Observations should be made on the first flower of the lowest fruiting branch

1
clearly below

2
same level

3
clearly above

Ad. 9: Leaf: shape

1
palmate

2
palmate to digitate

3
digitate

4
lanceolate

Ad. 10: Leaf: size

Observations should be made on the leaf from the fifth node from the top of the plant.

Ad. 11: Leaf: pubescense

Observations should be made on the lower side of the leaf.

Ad. 14: Stem: color

Observations should be made on the middle third of the main stem.

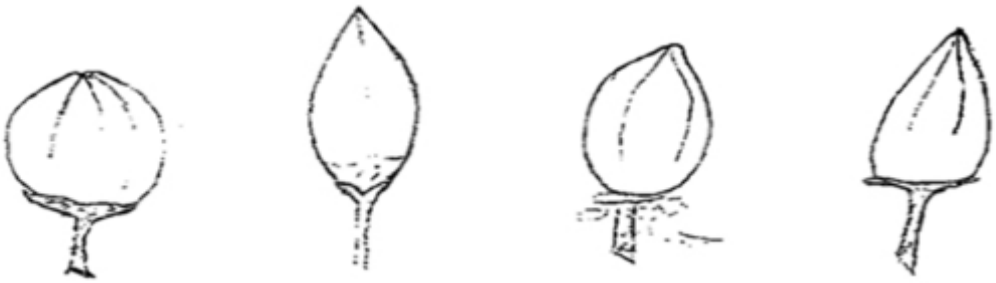
Ad. 15: Bract: dentation

3
fine

5
medium

7
coarse

Ad. 18: Boll: shape in longitudinal section



1
circular

2
narrow elliptic

3
broad elliptic

4
ovate

Ad. 21: Boll: prominence of tip

1
weak

3
medium

5
strong

Ad. 22: Plant: shape

1
cylindrical

2
conical

3
globose

Ad. 24: Boll: time of opening

Time of opening is when 50% of the plants have at least one boll open.

Ad. 28: Seed: 100 seed weight

Observations should be made on a sample of delinted seed.

Ad. 29: Boll: content of lint

Content of lint in the boll is expressed in % excluding seeds.

8.3 Growth Stages

Code	Description
Principal growth stage 0: Germination	
00	Dry seed
01	Beginning of seed imbibition
03	Seed imbibition complete
05	Radicle emerged from seed
06	Elongation of radicle
07	Hypocotyl with cotyledons breaking through seed coat
08	Hypocotyl with cotyledons growing towards soil surface
09	Emergence: hypocotyl with cotyledons breaking through soil surface (“crook stage”)
Principal growth stage 1: Leaf development (Main shoot)	
10	Cotyledons completely unfolded[1]
11	First true leaf unfolded[1]
12	2nd true leaf unfolded[1]
13	3rd true leaf unfolded[1]
1 .	Stages continuous till . . .
19	9 or more true leaves unfolded;1 no side shoots visible[2]
Principal growth stage 2: Formation of side shoots[3]	
21	First vegetative side shoot (2nd order) visible
22	2 vegetative side shoots (2nd order) visible
23	3 vegetative side shoots (2nd order) visible
2 .	Stages continuous till . . .
29	9 or more vegetative side shoots (2nd order) visible
Principal growth stage 3: Main stem elongation (Crop cover)	
31	Beginning of crop cover: 10% of plants meet between rows
32	20% of plants meet between rows
33	30% of plants meet between rows
34	40% of plants meet between rows
35	50% of plants meet between rows
36	60% of plants meet between rows
37	70% of plants meet between rows
38	80% of plants meet between rows
39	Canopy closure: 90% of the plants meet between rows
Principal growth stage 5: Inflorescence emergence (Main shoot)	
51	First floral buds detectable (“pin-head square”)[4]
52	First floral buds visible (“match-head square”)[4]
55	Floral buds distinctly enlarged
59	Petals visible: floral buds still closed
Principal growth stage 6: Flowering	
60	First flowers opened (sporadically within the population)
61	Beginning of flowering (“Early bloom”): 5–6 blooms / 25 ft of row (= 5–6 blooms / 7.5 meter of row)
65	Full flowering: (“Mid bloom”): 11 and more blooms / 25 ft of row = 11 and more blooms / 7.5 meter of row
67	Flowering finishing: majority of flowers faded (“Late bloom”)
69	End of flowering
Principal growth stage 7: Development of fruits and seeds	
71	About 10% of bolls have attained their final size
72	About 20% of bolls have attained their final size
73	About 30% of bolls have attained their final size
74	About 40% of bolls have attained their final size
75	About 50% of bolls have attained their final size
76	About 60% of bolls have attained their final size
77	About 70% of bolls have attained their final size
78	About 80% of bolls have attained their final size
79	About 90% of bolls have attained their final size

Principal growth stage 8: Ripening of fruits and seeds

80 First open bolls on the first fruiting branches
81 Beginning of boll opening: about 10% of bolls open. Nodes Above White Flower (NAWF)
82 About 20% of bolls open
83 About 30% of bolls open. Nodes Above Cracked Boll (NACB)
84 About 40% of bolls open
85 About 50% of bolls open
86 About 60% of bolls open
87 About 70% of bolls open
88 About 80% of bolls open
89 About 90% of bolls open

Principal growth stage 9: Senescence

91 About 10% of leaves discolored or fallen
92 About 20% of leaves discolored or fallen
93 About 30% of leaves discolored or fallen
94 About 40% of leaves discolored or fallen
95 About 50% of leaves discolored or fallen
96 About 60% of leaves discolored or fallen
97 Above ground parts of plant dead; plant dormant
99 Harvested product (bolls and seeds)

[1] Leaves are counted from the cotyledon node (= node 0)
[2] Side shoot development may occur earlier, if there is a vegetative side shoot continue with principal growth stage 2. If there is a reproductive side shoot (fruiting branch) continue with the principal growth stage 5
[3] Vegetative side shoots are counted from the cotyledon node
[4] “pin-head square” or “match-head square” is the first square which forms at the first fruiting position of the first fruiting branch

9. Literature

Methods for Measurement of Cotton Fibres by High Volume Instruments (HVI).

American Society for Testing and Materials (ASTM), 1995 Standard Test Methods for Measurement of Physical Properties of Cotton Fibers by High Volume Instruments (Designation: D5867-95).

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Meier U. 1997: Growth stages of mono and dicotyledoneus plants: BBCH. Monograph. Wien Federal Biological Research Center for Agriculture and Forestry, Blackwell Wissenschafts-Verlag. Berlin, DE.

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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	*Gossypium* L.
1.2	Common name	Cotton

2. Applicant

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

3. Proposed denomination and breeder's reference

Proposed denomination (if available)	
Breeder's reference	

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

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

4.1 Breeding scheme

Variety resulting from:

4.1.1 Crossing

(a) controlled cross [ ]
(please state parent 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 Discovery and development [ ]
(please state where and when discovered and how developed)

4.1.3 Mutation [ ]
(please state parent variety)

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 Seed-propagated varieties

(a)	Self-pollination	[ ]
(b)	Cross-pollination	[ ]
(c)	Hybrid	[ ]
(d)	Other (please provide details)	[ ]

4.2.2 Other [ ]
(Please provide details)

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

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

	Characteristics	Example Varieties	Note
5.1 (1)	**Plant: type of flowering**		
	clustered	Alepo, Armada	1 [ ]
	semi-clustered	Aphrica, DP411	2 [ ]
	non-clustered	CS37, DP332	3 [ ]
5.2 (2)	**Flower: color of petal**		
	whitish	DP377, Select	1 [ ]
	yellow	Armada, Intercott 670	2 [ ]
5.3 (5)	**Flower: color of pollen**		
	whitish	DP414, Solera	1 [ ]
	medium yellow	Alepo, Armada	2 [ ]
	dark yellow	Acalpi	3 [ ]
5.4 (9)	**Leaf: shape**		
	palmate	Alepo, Solera	1 [ ]
	palmate to digitate	Intercott 195, Intercott 211	2 [ ]
	digitate	Lacta, Roka	3 [ ]
	lanceolate	LD Frego	4 [ ]
5.5 (11)	**Leaf: pubescense**		
	absent or very weak	Claudia	1 [ ]
	very weak to weak		2 [ ]
	weak	Celia, DP466	3 [ ]
	weak to medium		4 [ ]
	medium	Flora, Intercott 670	5 [ ]
	medium to strong		6 [ ]
	strong	PRG9811, ST405	7 [ ]
	strong to very strong		8 [ ]
	very strong	Lanovia	9 [ ]

	Characteristics	Example Varieties	Note
5.6 (12)	**Leaf: presence of nectaries**		
	absent	Guazuncho 3 INTA	1 [ ]
	present	DP396, ST488	9 [ ]
5.7 (18)	**Boll: shape in longitudinal section**		
	circular	Prime1848, ST439	1 [ ]
	narrow elliptic	DP399, ST478	2 [ ]
	broad elliptic	Alepo, Solera	3 [ ]
	ovate	Intercott 195, Intercott 211	4 [ ]
5.8 (20)	**Boll: length of peduncle**		
	very short		1 [ ]
	very short to short		2 [ ]
	short	DP377, Solera	3 [ ]
	short to medium		4 [ ]
	medium	E1, Intercott 701	5 [ ]
	medium to long		6 [ ]
	long	Beky, Intercott 211	7 [ ]
	long to very long		8 [ ]
	very long	Armada	9 [ ]
5.9 (22)	**Plant: shape**		
	cylindrical	Alepo, Armada	1 [ ]
	conical	Fokion, Intercott 670	2 [ ]
	globose	E1, Solera	3 [ ]
5.10 (23)	**Plant: height**		
	very short		1 [ ]
	very short to short		2 [ ]
	short	Armada, DP419	3 [ ]
	short to medium		4 [ ]
	medium	Alepo, Solera	5 [ ]
	medium to tall		6 [ ]
	tall	Intercott 670, Intercott 701	7 [ ]
	tall to very tall		8 [ ]
	very tall	Tzortzina	9 [ ]

	Characteristics	Example Varieties	Note
5.11 (24)	**Boll: time of opening**		
	very early		1 [ ]
	very early to early		2 [ ]
	early	ST318, ST402	3 [ ]
	early to medium		4 [ ]
	medium	Alepo, Solera	5 [ ]
	medium to late		6 [ ]
	late	Abaco, DP332	7 [ ]
	late to very late		8 [ ]
	very late	Vered 171	9 [ ]
5.12 (30)	**Fiber: length**		
	very short		1 [ ]
	very short to short		2 [ ]
	short		3 [ ]
	short to medium		4 [ ]
	medium	DP414, Solera	5 [ ]
	medium to long		6 [ ]
	long	DP332, Elsa	7 [ ]
	long to very long		8 [ ]
	very long	E1, Intercott 670	9 [ ]
5.13 (35)	**Fiber: color**		
	white	Alepo, Solera	1 [ ]
	colored	Rainbow-34	2 [ ]

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	*Boll: time of opening*	*early*	*medium to late*

Comments:

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

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

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

Yes [ ] No [ ]

(If yes, please provide details)

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

Yes [ ] No [ ]

(If yes, please provide details)

7.3 Other information

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

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

8. Authorization for release

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

Yes [ ] No [ ]

(b) Has such authorization been obtained?

Yes [ ] No [ ]

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

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

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

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

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

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

.....

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

Applicant’s name

Signature Date

[End of document]