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TG/88/7(proj.2)
ORIGINAL: English
DATE: 2016-06-01

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

Technical Working Party for Agricultural Crops
at its forty-fifth session, to be held in Mexico City, Mexico,
from 2016-07-11 to 2016-07-15

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. If requested in the case of hybrids an interspecific hybrid varieties, an additional 1 kg of seed of each component should be sumitted, 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 second column of 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 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 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.

4.3 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)-(e) 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					
		clustered				Alepo, Armada	1
		semi-clustered				Aphrica, DP411	2
		non-clustered				CS37, DP332	3
2.	**(*)**	**QL VG**	**(b)**	**65**			
		Flower: color of petal					
		whitish				DP377, Select	1
		yellow				Armada, Intercott 670	2
3.		**QN VG**	**(b)**	**65**			
		Flower: intensity of yellow color					
		light				DP377, Solera	3
		medium				Armada, Intercott 670	5
		dark					7
4.		**QN VG**	**(b)**	**65**			
		Flower: intensity of spot on petal					
		absent or very weak				ST405, Tosca	1
		weak					3
		medium				Intercott 701	5
		strong				Armada, Sevilla	7
		very strong				E1	9
5.	**(*)**	**PQ VG**	**(b)**	**65**			
		Flower: color of pollen					
		whitish				DP414, Solera	1
		meium yellow				Alepo, Armada	2
		dark yellow				Acalpi	3

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
6.		**QN VG**	**(b)**	**65**			
		Flower: position of stigma relative to anthers					
		clearly below				Carlota, CS37	1
		same level				DP377, DP411	2
		clearly above				Lanovia, ST478	3
7.		**QN VG**		**65-69**			
		Plant: density of foliage					
		sparse	faible	locker	escasa	Ourania	3
		medium	moyenne	mittel	media	E1, Solera	5
		dense	elevée	dicht	densa	Zeta 2	7
8.		**QN VG**	**(a)**	**65-69**			
		Leaf: intensity of green					
		light				Corona	3
		medium				Aphrica, CT13	5
		dark				Armada, Lagiralda	7
9.	**(*)**	**PQ VG**	**(+)** **(a)**	**65-69**			
		Leaf: shape					
		palmate				Alepo, Solera	1
		palmate to digitate				Intercott 195, Intercott 211	2
		digitate				Lacta, Roka	3
		lanceolate					4
10.		**QN VG**	**(+)** **(a)**	**65-69**			
		Leaf: size					
		small					3
		medium				DP377, Intercott 670	5
		large				Alepo, Lagiralda	7

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
11.		**QN**	**VG**		**(a)**	**65-69**			
		Leaf: pubescense (lower side)							
		absent or very weak						Claudia	1
		weak						Celia, DP466	3
		medium						Flora, Intercott 670	5
		strong						PRG9811, ST405	7
		very strong						Lanovia	9
12.	**(*)**	**QL**	**VG**		**(a)**	**65-69**			
		Leaf: presence of nectaries							
		absent							1
		present						DP396, ST488	9
13.		**QN**	**VG**		**(a)**	**65-79**			
		Stem: pubescence in upper part							
		absent or very weak						Alepo, Claudia	1
		weak						E1, Lydia	3
		medium						DP332, Fokion	5
		strong						Europa, ST478	7
		very strong							9
14.		**PQ**	**VG**	**(+)**	**(a)**	**65-79**			
		Stem: color							
		light green							1
		dark green						ST318, ST405	2
		light red						Alepo, Solera	3
		dark red							4
15.		**QN**	**VG**	**(+)**	**(c)**	**71-75**			
		Bract: dentation							
		fine						E1, Intercott 701	3
		medium						Elsa, Intercott 670	5
		coarse						Prime1848, Roka	7

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
16.		**QN**	**VG**		**(c)**	**71-75**			
		Bract: size							
		very small							1
		small						DP332, ST478	3
		medium						DP414, Solera	5
		large						Alepo, E1	7
		very large						Armada	9
17.		**QN**	**MS/VG**		**(c)**	**71-75**			
		Boll: size							
		very small							1
		small						Armada, Lanovia	3
		medium						E1, Solera	5
		large						Zeta 2	7
		very large						Intercott 701	9
18.	**(*)**	**PQ**	**MS/VG**	**(+)**	**(c)**	**71-75**			
		Boll: shape in longitudinal section							
		circular						Prime1848, ST439	1
		elliptical						DP399, ST478	2
		ovate						Alepo, Solera	3
		conical						Intercott 195, Intercott 211	4
19.		**QN**	**VG**		**(c)**	**71-75**			
		Boll: pitting of surface							
		absent or very fine							1
		fine						Viky	3
		medium						DP414, Solera	5
		coarse						E1, Intercott 211	7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
20.	**(*)**	**QN MS/VG**	**(c)**	**71-75**			
		Boll: length of peduncle					
		very short					1
		short				DP377, Solera	3
		medium				E1, Intercott 701	5
		long				Beky, Intercott 211	7
		very long				Armada	9
21.		**QN VG**	**(+) (c)**	**71-75**			
		Boll:prominence of tip					
		weak				Carla	3
		medium				DP377, DP414	5
		strong				E1, Intercott 670	7
22.	**(*)**	**PQ VG**	**(+)**	**75-79**			
		Plant: shape					
		cylindrical				Alepo, Armada	1
		conical	conique	kegelförmig	cónica	Fokion, Intercott 670	2
		globose				E1, Solera	3
23.	**(*)**	**QN MG/MS**		**79-89**			
		Plant: height					
		very short	très courte	sehr niedrig	muy baja		1
		short	courte	niedrig	baja	Armada, DP419	3
		medium	moyenne	mittel	media	Alepo, Solera	5
		tall	haute	hoch	alta	Intercott 670	7
		very tall	très haute	sehr hoch	muy alta	Intercott 670, Tzortzina	9
24.	**(*)**	**QN VG**	**(+)**	**80-81**			
		Boll:time of opening					
		very early					1
		early				ST318, ST402	3
		medium				Alepo, Solera	5
		late				Abaco, DP332	7
		very late				Vered 171	9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
25.	**QN VG**		**85-89**			
	Boll: degree of opening					
	weak					3
	medium				Lagiralda, Solera	5
	strong				ST318, ST402	7
26.	**QN VG**	**(d)**	**99**			
	Seed: density of fuzz					
	absent or very sparse					1
	sparse				Lanovia, Sevilla	3
	medium				DP377, DP414	5
	dense				Acala sj-2	7
	very dense					9
27.	**PQ VG**	**(d)**	**99**			
	Seed: color of fuzz					
	white				Armada, Lagiralda	1
	beige					2
	grey				ST318, ST402	3
	light green				DP414, Solera	4
	light brown				Intercott 670, Lanovia	6
28.	**QN MG**	**(d)**	**99**			
	Seed: weight of 100 seeds					
	low				DP377, Solera	3
	medium				E1, Elsa	5
	high				Armada, Intercott 701	7
29.	**QN MG**	**(+) (d)**	**99**			
	Boll: content of lint					
	very low				Europa	1
	low				Etna, Sevilla	3
	medium				Helena, Intercott 701	5
	high				ST318, ST405	7
	very high				DP414, Solera	9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
30.	**(*) QN MG**	**(d), (e)**	**99**			
	Fiber: length					
	very short					1
	short					3
	medium				DP414, Solera	5
	long				DP332, Elsa	7
	very long				E1, Intercott 670	9
31.	**QN MG**	**(d), (e)**	**99**			
	Fiber: strenght					
	very weak					1
	weak					3
	medium				ST318, ST402	5
	strong				DP332, PRG9811	7
	very strong				Alepo, Solera	9
32.	**QN MG**	**(d), (e)**	**99**			
	Fiber: elongation					
	very small				Celia, DP411	1
	small				Elsa, Fokion	3
	medium				Intercott 670, Lanovia	5
	large				Armada, Lagiralda	7
	very large				DP414, Etna	9
33.	**QN MG**	**(d), (e)**	**99**			
	Fiber: fineness					
	fine				Intercott 195, Intercott 701	3
	medium				E1, Lagiralda	5
	coarse				Alepo, Solera	7
34.	**QN MG**	**(d), (e)**	**99**			
	Fiber: length uniformity					
	very low					1
	low					3
	medium				Elina, Lydia	5
	high				Alepo, Intercott 701	7
	very high				E1, Elsa	9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
35.	**QL** **VG**	**(d)**	**99**			
	Fiber: color					
	white				Alepo, Solera	1
	not white					2

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) Unless otherwise indicated, all observations on the leaf and on the stem should be made where leaves are fully extended. Colour observations should be made early in the morning.

(b) All observations on the flower should be made on the first day of flowering in the morning.

(c) Unless otherwise indicated, all observations on the boll should be made at green maturity.

(d) All observations on the seed and fiber should be made at full maturity.

(e) Ad. 30, 31, 32, 33 and 34: Fiber: legth (30), strength (31), elongation (32), fineness (micronaire (33), length uniformity (34)

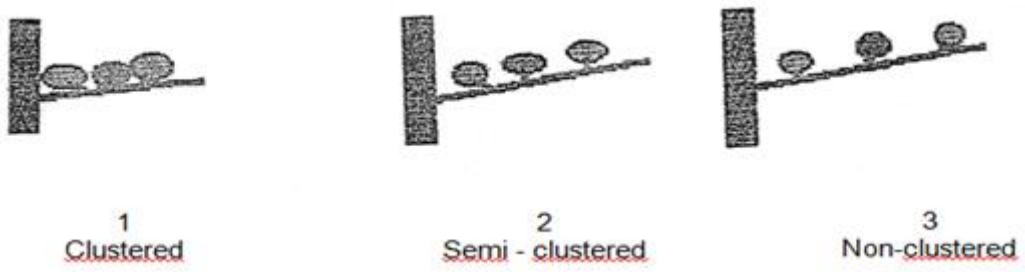
These characteristics should be observed according to:

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

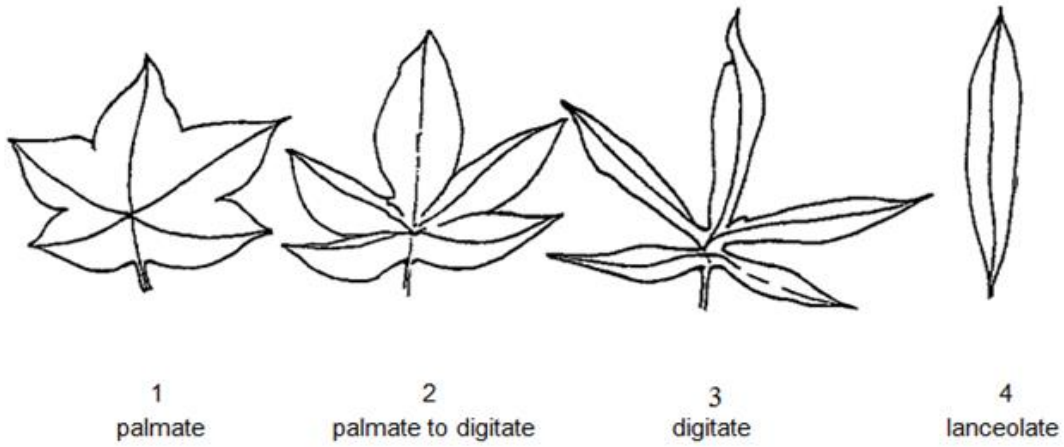
- Standard Test Methods for Measurement of Physical Properties of Cotton Fibers by High Volume Instruments (HVI). Designation D-5867-95
- Established by the American Society for Testing and Materials (ASTM)

8.2 Explanations for individual characteristics

Ad. 1: Plant: type of flowering



Ad. 9: Leaf: shape



Ad. 10: Leaf: size

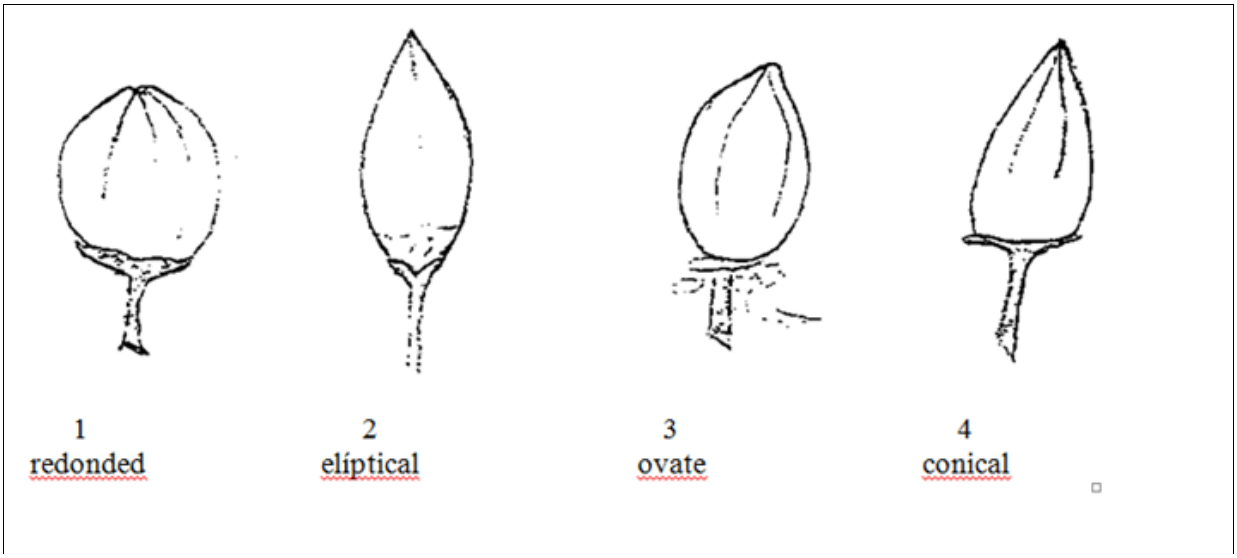
Take the leaf from the 5th node from the top of the plant

Ad. 14: Stem: color

The stem color needs to be assessed on the main stem

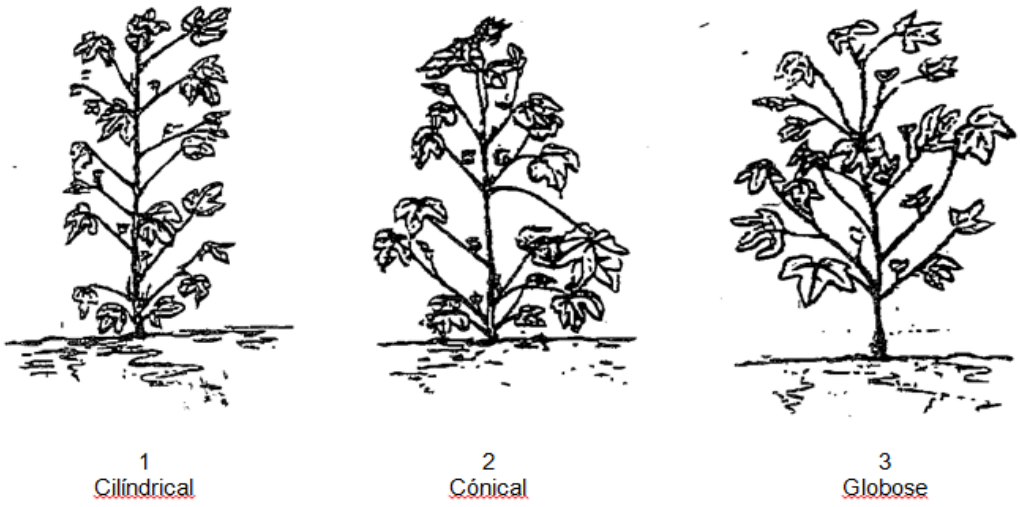
Ad. 15: Bract: dentation

Ad. 18: Boll: shape in longitudinal section



Ad. 21: Boll:prominence of tip

Ad. 22: Plant: shape



Ad. 24: Boll:time of opening

The time of opening is reached when 50% of the plants have at least one boll opened.

Ad. 29: Boll: content of lint

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

8.3 Growth stages

Growth stages

Decimal code for the growth stage

CODE	DESCRIPTION
Principal growth stage 0: Germination	
00	Dry seed
01	Beginning of seed imbibition
02	-
03	Seed imbibition complete
04	-
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
11	First true leaf unfolded[1]
12	2nd true leaf unfolded
13	3rd true leaf unfolded
1.	Stages continuous till ....
19	9 or more true leaves unfolded, no side shoots visible[2]
Principal growth stage 2: Formation of side shoots[3]	
20	-
21	First vegetative side shoot (2nd order) visible
22	2 vegetative side shoots (2nd order) visible
23	3 vegetative side shoot (2nd order) visible
2.	Stages continuous till ...
29	9 or more vegetative side shoots (2nd order) visible +

[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

CODE	DESCRIPTION
Principal growth stage 3: Main stem elongation (Crop cover)	
30	-
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 4: -----	
Principal growth stage 5: Inflorescence emergence (Main shoot)	
50	-
51	First flower buds detectable ("pin-head square")[4]
52	First flower buds visible ("match-head square")
53	-
54	-
55	Floral buds distinctly enlarged
56	-
57	-
58	-
59	Petals visible; flower buds still closed

[4] "pin-head square" or "match-head square" is the first square which forms at the first fruiting position of the first fruiting branch

CODE	DESCRIPTION
Principal growth stage 6: Flowering	
60	First flowers opened (sporadically within population)
61	Beginning of flowering ("Early bloom"): 5-6 blooms / 25 ft of row (=5-6 blooms / 7.5 meter of row)
62	-
63	-
64	-
65	Full flowering: ("Mid bloom"): 11 and more blooms / 25 ft of row = 11 and more blooms / 7.5 meter of row
66	-
67	Flowering finishing: majority of flowers faded ("Late bloom")
68	-
69	End of flowering -
Principal growth stage 7: Development of fruits and seeds	
70	-
71	About 10% of boils have attained their final size -
72	About 20% of boils have attained their final size
73	About 30% of boils have attained their final size
74	About 40% of boils have attained their final size
75	About 50% of boils have attained their final size
76	About 60% of boils have attained their final size
77	About 70% of boils have attained their final size
78	About 80% of boils have attained their final size
79	About 90% of boils have attained their final size
Principal growth stage 8: Ripening of fruits and seeds	
80	First open boils on the first fruiting branches
81	Beginning of boil opening: about 10% of boils open. Nodes Above White Flower (NAWF)-
82	About 20% of boils open
83	About 30% of boils open. Nodes Above Cracked Boil (NACB)-
84	About 40% of boils open
85	About 50% of boils open
86	About 60% of boils open -
87	About 70% of boils open
88	About 80% of boils open
89	About 90% of boils open

CODE	DESCRIPTION
Principal growth stage 9: Senescence	
90	-
91	About 10% of leaves discoloured or fallen
92	About 20% of leaves discoloured or fallen
93	About 30% of leaves discoloured or fallen
94	About 40% of leaves discoloured or fallen
95	About 50% of leaves discoloured or fallen
96	About 60% of leaves discoloured or fallen
97	Above ground parts of plants dead; plant dormant
98	-
99	Harvested product (boils and seeds)

9. Literature

American Society for Testing and Materials (ASTM) (1995): Standard Test.

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

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Manual de identificación de Variedades Algodón, Ministerio de Agricultura, Pesca y Alimentación, Secretaria General de Agricultura y Alimentación, 1999, ES.

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.

Munger p., H Bleiholder, H. Hess, R. Stauss, T. van den Boom and E. Weber. 1998. Phenological growth stages of the coton plant (Gossypium hirsutum l.) codification and description according to the BBCH scale. J. Agronomy & Crop Scince. 180: 143-149.

"Cotton. Origin, History, Tecnology and Production. "Ed C.W. Smith and J.T. Cothren. Wiley Series in Crop Science. John Wiley & Sons, Inc.. 1999. US.

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 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.

4.2 Method of propagating the variety

4.2.1 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 [ ]
	meium 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		4 [ ]
5.5 (12)	**Leaf: presence of nectaries**		
	absent		1 [ ]
	present	DP396, ST488	9 [ ]
5.6 (18)	**Boll: shape in longitudinal section**		
	circular	Prime1848, ST439	1 [ ]
	elliptical	DP399, ST478	2 [ ]
	ovate	Alepo, Solera	3 [ ]
	Characteristics	Example Varieties	Note
5.7 (20)	**Boll: length of peduncle**		
	very short		1 [ ]
	short	DP377, Solera	3 [ ]
	medium	E1, Intercott 701	5 [ ]
	long	Beky, Intercott 211	7 [ ]
	very long	Armada	9 [ ]

	Characteristics	Example Varieties	Note
5.8	**Plant: shape**		
(22)			
	cylindrical	Alepo, Armada	1 [ ]
	conical	Fokion, Intercott 670	2 [ ]
	globose	E1, Solera	3 [ ]
5.9	**Boll:time of opening**		
(24)			
	very early		1 [ ]
	early	ST318, ST402	3 [ ]
	medium	Alepo, Solera	5 [ ]
	late	Abaco, DP332	7 [ ]
	very late	Vered 171	9 [ ]
5.10	**Fiber: length**		
(30)			
	very short		1 [ ]
	short		3 [ ]
	medium	DP414, Solera	5 [ ]
	long	DP332, Elsa	7 [ ]
	very long	E1, Intercott 670	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			

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.

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]