

TG/SESAME(proj.8) ORIGINAL: English DATE: 2012-04-16

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS Geneva

DRAFT

SESAME

UPOV Code: SESAM_IND

Sesamum indicum L.

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by experts from Israel and Republic of Korea

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
Sesamum indicum L.	Sesame	Sésame	Sesam	Sésamo

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.]

TG/SESAME(proj.8) Sesame, 2012-04-17 - 2 -

TABLE OF CONTENTS

PAGE

1.	SUBJECT OF THESE TEST GUIDELINES	3
2.	MATERIAL REQUIRED	3
3.	METHOD OF EXAMINATION	3
	 3.1 NUMBER OF GROWING CYCLES	
4.	ASSESSMENT OF DISTINCTNESS, UNIFORMITY AND STABILITY	4
	 4.1 DISTINCTNESS	5
5.	GROUPING OF VARIETIES AND ORGANIZATION OF THE GROWING TRIAL	5
6.	INTRODUCTION TO THE TABLE OF CHARACTERISTICS	5
	 6.1 CATEGORIES OF CHARACTERISTICS	6 6
7.	TABLE OF CHARACTERISTICS/TABLEAU DES CARACTÈRES/MERKMALSTABELLE/TABLA DE CARACTERES	
8.	EXPLANATIONS ON THE TABLE OF CHARACTERISTICS	12
	 8.1 EXPLANATIONS COVERING SEVERAL CHARACTERISTICS	
9.	LITERATURE	18
10). TECHNICAL QUESTIONNAIRE	

1. <u>Subject of these Test Guidelines</u>

These Test Guidelines apply to all varieties of Sesamum indicum L..

2. <u>Material Required</u>

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:

30 g of seed.

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. <u>Method of Examination</u>

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

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.

3.4 Test Design

Each test should be designed to result in a total of at least 50 plants, which should be divided between at least 2 replicates.

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 / 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 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 For the assessment of uniformity, a population standard of 1% and an acceptance probability of at least 95% should be applied. In the case of a sample size of 50 plants, 2 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 or plant stock to ensure that it exhibits the same characteristics as those shown by the initial material supplied.

5. <u>Grouping of Varieties and Organization of the Growing Trial</u>

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: growth type (characteristic 1)
- (b) Flowering stem: number of flowers per leaf axil (characteristic 16)
- (c) Capsule: number of carpels (characteristic 22)
- (d) Seed coat: color (characteristic 27)

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

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

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

TG/SESAME(proj.8) Sesame, 2012-04-17 - 7 -

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

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1. (*) (+)	VG	Plant: growth type					
QL	(a)	indeterminate				Yangbaek	1
		determinate					2
2. (*) (+)	VG	Plant: number of branches					
QN	(a)	absent or very few				Jinju	1
		moderate				Pyungan	3
		very many				Ansan	5
3. (+)	VG	Plant: position of branches					
PQ	(a)	basal				Kanto 1 go	1
		along stem				Ansan	2
		apical				H 65	3
4. (*) (+)	MS	Stem: number of nodes to first flower					
QN	(a)	few				Yunhuck	3
		medium				Jinju	5
		many				Whangbaek	7
5.	VG	Stem: pubescence					
QN	(a)	absent or very weak				Jinki	1
		medium				Poongnam	2
		strong				Sunbaek	3
6. (*) (+)	MS	Stem: length					
QN	(c)	short				Adam	3
		medium					5
		long				Ansan	7

7.

TG/SESAME(proj.8) Sesame, 2012-04-17 - 8 -

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
7.	MS	Leaf blade: length					
(+)							
QN	(b)	short				Soonhuck	3
		medium				Danbaek	5
		long				Osan	7
8.	MS	Leaf blade: width					
(+)							
QN	(b)	narrow				Soonhuck	3
		medium				Danbaek	5
		broad				Osan	7
9. (*)	MS	Leaf blade: length/width ratio					
QN	(b)	weakly elongated				Soonhuck	3
		moderately elongated				Danbaek	5
		strongly elongated				Osan	7
10.	VG	Leaf blade: degree of lobing					
(+)	4.)					Quantum	
QN	(b)	absent or very weak				Soonhuck	1
		weak				Hucksun	3
		medium				Nambaek	5
		strong				Osan	7
		very strong				Milsung	9
11.	VG	Leaf blade: intensity of green color					
QN	(b)	light				Osan	3
		medium				Yanghuck	5
		dark				Milsung	7
12.	VG	Leaf blade: venations on lower side					
QL	(b)	absent				Brazil provide	1
		present				Yangbaek	9

TG/SESAME(proj.8) Sesame, 2012-04-17 - 9 -

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
13.	MS	Petiole: length					
QN	(b)	short				Kanghuck	3
		medium				Namsan	5
		long				Poongsan	7
14.	VG	Petiole: anthocyanin coloration					
QN	(b)	absent or weak				Danbaek	1
		moderate					2
		strong				Dasak	3
15.	VG	Flower: color of corolla					
PQ	(a)	white				BRS Seda	1
		yellowish				Yangbaek	2
		pink				Heuksun	3
16. (*)	VG	Flowering stem: number of flowers per leaf axil					
QL	(a)	one				Ansan	1
		more than one				Yangbaek	2
17. (+)	VG	Flowering stem: nectaries					
QL	(a)	absent				Masekin	1
	.,	present				Yangbaek	9
18. (*) (+)	VG	Flower: intensity of pink color at outer side of corolla					
QN	(a)	absent					1
		light				Kanghuck	2
		medium				Yanghuck	3
		dark				Hucksun	4
19. (+)	VG	Flower: intensity of pink color at inner side of lower lip					
QN		light				Naman	1
		medium				Dasak	2
		dark				Hucksun	3

TG/SESAME(proj.8) Sesame, 2012-04-17 - 10 -

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
20.	VG	Flower: pubescence of corolla					
QN		weak				Mihuck	1
		medium				Kanghuck	2
		strong				Kyeonghuck	3
21.	VG	Flower: 'V' mark of inner side of corolla					
(+)							
QL		absent					1
		present				Yangbaek	9
22. (*) (+)	VG	Capsule: number of carpels					
QL	(c)	two				Ansan	1
		more than two					2
23.	MS	Capsule: length					
(+)							
QN	(c)	short				Adam	3
		medium				Ansan	5
		long					7
24.	MS	Capsule: width					
(+)							
QN	(c)	narrow				Adam	3
		medium				Miheuk	5
		broad					7
25.	VG	Capsule: pubescence	•				
QN	(c)	weak				Mihuck	1
		medium				Poongan	2
		strong				Whangbaek	3
26.	VG	Capsule: color					
QL	(c)	green				Yangbaek	1
		yellow				Whangbaek	2
		purple					3

TG/SESAME(proj.8) Sesame, 2012-04-17 - 11 -

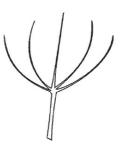
		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
27. (*)	VG	Seed coat: color					
PQ	(c)	white				Yangbaek	1
		grey				Mankum	2
		gold				Masekin	3
		brown				Yuyoung	4
		black				Jingi	5
28.	VG	Seed coat: texture					
(+)							
QL	(c)	smooth				Yangbaek	1
		rough				NonggiS1	2
29. (+)	VG/ MG	Time of beginning of flowering					
QN	(a)	early				Jingi	3
		medium				Yangbaek	5
		late				Namda	7
30.	MG	Time of maturity					
(+)							
QN	(c)	early				Manhuck	3
		medium				Kangbaek	5
		late				Namda	7

- 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) characteristics should be measured at full flowering stage.(Full flowering stage: 50% of plants with flowers open)
- (b) characteristics related to leaf should be observed at full flowering stage on the middle part of plant.
- (c) characteristics related to capsule and seed should be observed at fully matured stage on the middle part of plant.(Fully matured stage: 50% plant dehiscence of capsule on the main stem)
- 8.2 Explanations for individual characteristics
- Ad. 1: Plant: growth type





1 indeterminate

2 determinate

Ad. 2: Plant: number of branches



1 absent or very few

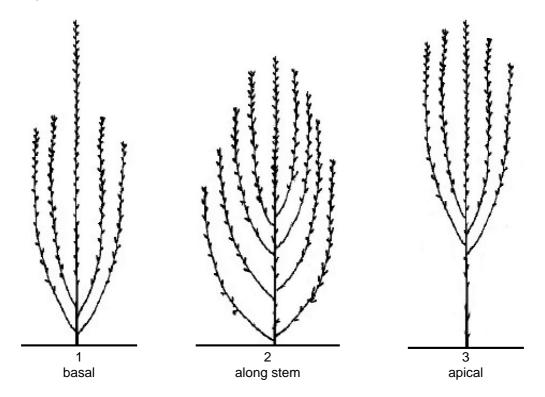


3 moderate



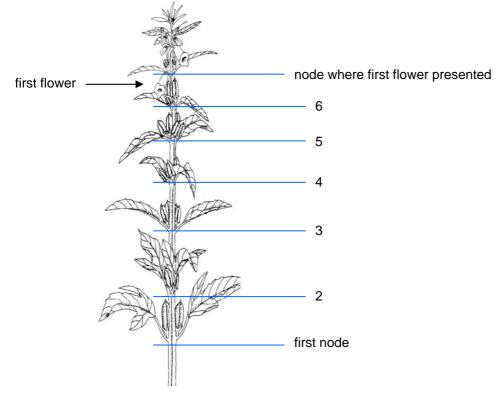
5 very many

Ad. 3: Plant: position of branches



Ad. 4: Stem: number of nodes to first flower

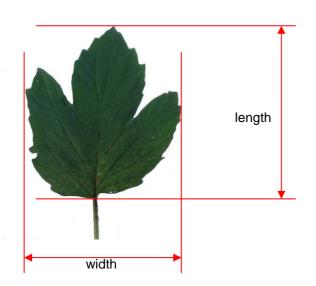
The observation should be made on main stem (the number of nodes on the main stem varies between 4 and 65.) and count from first node to node where first flower presented.



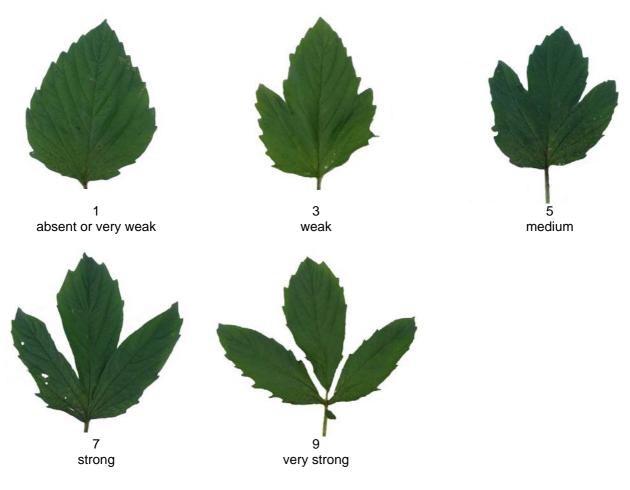
Ad. 6: Stem: length

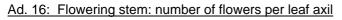
To be observed at fully matured stage.

Ad. 7: Leaf blade: length Ad. 8: Leaf blade: width



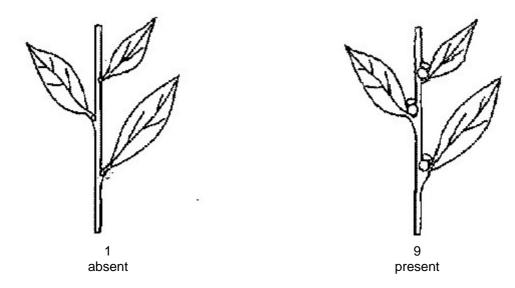
Ad. 10: Leaf blade: degree of lobing



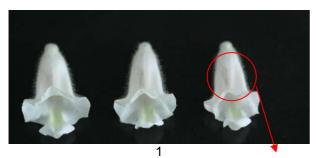


Observation should be made on the middle part of the plant.

Ad. 17: Flowering stem: nectaries



Ad. 18: Flower: intensity of pink color at outer side of corolla



absent

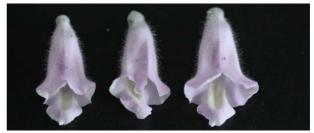
corolla



2 light

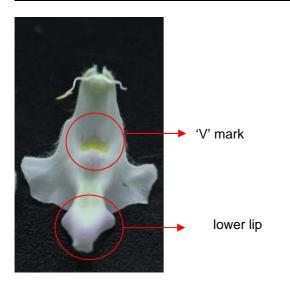


3 medium



4 dark

Ad. 19: Flower: intensity of pink color at inner side of lower lip Ad. 21: Flower: 'V' mark of inner side of corolla



Ad. 22: Capsule: number of carpels

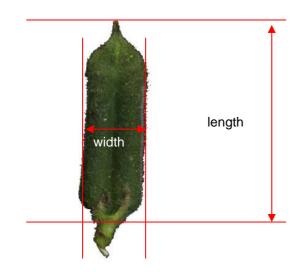




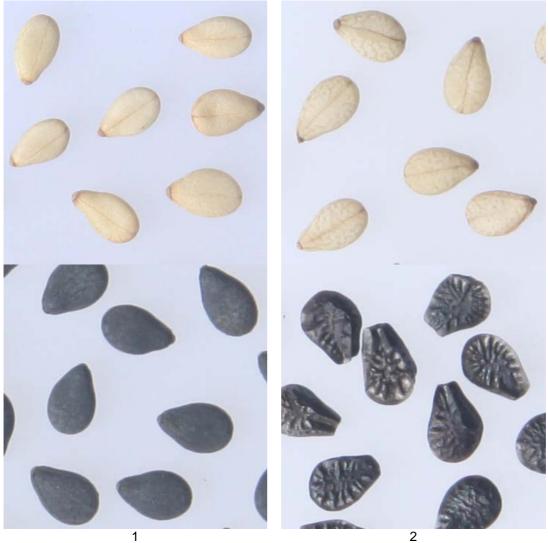


2 more than two

Ad. 23: Capsule: length Ad. 24: Capsule: width



Ad. 28: Seed coat: texture



smooth

rough

Ad. 29: Time of beginning of flowering

The time of at least one open flower on 10% of plants.

Ad. 30: Time of maturity

The time of 50% plant dehiscence of capsule on the main stem in one plot.

9. <u>Literature</u>

- IPGRI, Descriptors for Sesame. IPGRI. 2004
- RDA. Descriptors and guideline for management of Sesame. Korea, 2006
- KSVS. Test guideline for Sesame. Korea. 2002

TG/SESAME(proj.8) Sesame, 2012-04-17 - 19 -

10. <u>Technical Questionnaire</u>

TECH	INICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
			Application date: (not to be filled in by the applicant)
		ECHNICAL QUESTIONNAI	
1.	Subject of the Technical Questionna	ire	
	1.1 Botanical name	samum indicum L.	
	1.2 Common name Se	same	
2.	Applicant		
	Name		
	Address		
	Telephone No.		
	Fax No.		
	E-mail address		
	Breeder (if different from applicant)		
3.	Proposed denomination and breede	's reference	
	Proposed denomination (if available)		
	Breeder's reference		

TG/SESAME(proj.8) Sesame, 2012-04-17

ame,	20	12-04-
-	20	-

TEC	HNIC	AL QUEST	IONNAIRE	Page {x} of {y}		Reference Number:	
[#] 4.	Info 4.1	Breedin	the breeding scheme a g scheme resulting from: Crossing	nd propagation of	the variet	у	
		4.1.1	(a) controlled cros	s arent varieties)		[]	
		(female pa	(b) partially known	cross	male pa) arent	
	(please state k () female parent					arent	
		4.1.2	(c) unknown cross Mutation (please state parent v			[]	
		4.1.3	Discovery and develo (please state where a	oment nd when discovere	ed and ho	[] w developed)	
		4.1.4	Other (please provide details	5)"		[]	

TG/SESAME(proj.8) Sesame, 2012-04-17 - 21 -

TECHNICAL QUESTIONNAIRE Page {x} of {y} Reference Number: Method of propagating the variety 4.2 4.2.1 Seed-propagated varieties Self-pollination [] (a) (b) **Cross-pollination** (i) population [] (ii) synthetic variety [] (c) Hybrid [] Other (d) [] (please provide details)" 4.2.2 Vegetatively propagated varieties (a) cuttings [] in vitro propagation (b) [] (C) other (state method) [] 4.2.3 Other [] (please provide details)

TG/SESAME(proj.8) Sesame, 2012-04-17 - 22 -

TECH	NICAL 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: growth type					
	indeterminate		Yangbeak	1[]		
	determinate			2[]		
5.2 (16)	Flowering stem: number of flowers per	r leaf axil				
	one		Ansan	1[]		
	more than one		Yangbeak	2[]		
5.3 (22)	Capsule: number of carpels					
	two		Ansan	1[]		
	more than two			2[]		
5.4 (27)	Seed coat: color					
	white		Yangbeak	1[]		
	grey		Mankum	2[]		
	yellow		Masekin	3[]		
	brown		Yuyoung	4[]		
	black		Jingi	5[]		

TG/SESAME(proj.8) Sesame, 2012-04-17 - 23 -

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 Characteristic(s) in which Describe the expression of Describe the expression of variety(ies) similar to your your candidate variety differs the characteristic(s) for the the characteristic(s) for from the similar variety(ies) candidate variety similar variety(ies) your candidate variety Example indeterminate Plant: growth type determinate Comments:

TG/SESAME(proj.8) Sesame, 2012-04-17

-	24	-
---	----	---

TECHNICAL QUESTIONNAIRE		Page {x} of {y} Reference Number:		Reference Number:		
[#] 7. Additional information which may help in the examination of the variety						
[#] 7.	Addit	ional inforr	mation which may help	o in the exa	amination of the v	variety
7.1			e information provided ish the variety?	d in sectior	ns 5 and 6, are th	nere any additional characteristics which may
	Yes	[]		No []	
	(If yes	s, please p	rovide 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	Othe	r informatio	on			
8.	Autho	orization fo	or 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 atta	ach a copy	of the authorizat	ion.

TG/SESAME(proj.8) Sesame, 2012-04-17 - 25 -

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:			
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)	Chemical treatment (e.g. growth retardant, pesticide)	Yes []	No []			
	(b)	Tissue culture	Yes []	No []			
	(c)	Other factors	Yes []	No []			
	Please provide details for where you have indicated "yes".						
10.	I hereb	by declare that, to the best of my knowledge, the information provided in t	his form is corre	ect:			
	Applica	int's name					
	Signatu	ure Date					

[End of document]