



TG/167/3

INTERNATIONAL UNION
FOR THE PROTECTION
OF NEW VARIETIES OF
PLANTS

UNION INTERNATIONALE
POUR LA PROTECTION
DES OBTENTIONS
VÉGÉTALES

INTERNATIONALER
VERBAND ZUM SCHUTZ
VON PFLANZEN-
ZÜCHTUNGEN

UNIÓN INTERNACIONAL
PARA LA PROTECCIÓN
DE LAS OBTENCIONES
VEGETALES

GUIDELINES
FOR THE CONDUCT OF TESTS
FOR DISTINCTNESS, UNIFORMITY AND STABILITY

OKRA

(Abelmoschus esculentus
(L.) Moench.)

GENEVA
1999

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These Guidelines should be read in conjunction with document TG/1/2, which contains explanatory notes on the general principles on which the Guidelines have been established.

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I. Subject of these Guidelines

These Test Guidelines apply to all varieties of *Abelmoschus eschlentus* (L.) Moench.

II. Material Required

1. The competent authorities decide when, where and in what quantity and quality the plant material required for testing the variety is to be delivered. Applicants submitting material from a State other than that in which the testing takes place must make sure that all customs formalities are complied with. The minimum quantity of plant material to be supplied by the applicant in one or several samples should be:

200 g.

The seed should at least meet the minimum requirements for germination capacity, moisture content and purity for marketing seed in the country in which the application is made. The germination capacity of the seed should be as high as possible.

2. The plant material must not have undergone any treatment unless the competent authorities allow or request such treatment. If it has been treated, full details of the treatment must be given.

III. Conduct of Tests

1. The minimum duration of tests should normally be two similar growing periods.

2. The tests should normally be conducted at one place. If any important characteristics of the variety cannot be seen at that place, the variety may be tested at an additional place.

3. The tests should be carried out under conditions ensuring normal growth. The size of the plots should be such that plants or parts of plants may be removed for measurement and counting without prejudice to the observations which must be made up to the end of the growing period. Each test should include a total of 40 plants which should be divided between two or more replicates. Separate plots for observation and for measuring can only be used if they have been subject to similar environmental conditions.

4. Additional tests for special purposes may be established.

IV. Methods and Observations

1. Unless otherwise indicated, all observations determined by measurement, weighting or counting should be made on 20 plants or parts taken from each of the 20 plants.

2. For the assessment of uniformity a population standard of 1 % with an acceptance probability of at least 95% should be applied. In the case of a sample size of 40 plants the maximum number of off-types allowed would be 2.

3. Unless otherwise indicated, all observations on the fruit should be made on the young fruit at the time of commercial harvest.

4. All observations on the stem, the leaf blade and the petiole should be made on the 10th to 15th nodes of the main stem.

V. Grouping of Varieties

1. The collection of varieties to be grown should be divided into groups to facilitate the assessment of distinctness. Characteristics which are suitable for grouping purposes are those which are known from experience not to vary, or to vary only slightly, within a variety. Their various states of expression should be fairly evenly distributed throughout the collection.

2. It is recommended that the competent authorities use the following characteristics for grouping varieties:

- (a) Plant: degree of branching (characteristic 1)
- (b) Stem: color (characteristic 4)
- (c) Leaf blade: depth of lobing (characteristic 8)
- (d) Fruit: color (characteristic 15)
- (e) Fruit: number of locules (characteristic 21)

VI. Characteristics and Symbols

1. To assess distinctness, uniformity and stability, the characteristics and their states as given in the Table of Characteristics should be used.

2. Notes (numbers), for the purposes of electronic data processing, are given opposite the states of expression for each characteristic.

3. Legend:

(*) Characteristics that should be used on all varieties in every growing period over which the examinations are made and always be included in the variety descriptions, except when the state of expression of a preceding characteristic or regional environmental conditions render this impossible.

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

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

English	Français	Deutsch	Español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1. Plant: degree of branching (+) (*)	Plante: degré de ramification	Pflanze: Stärke der Verzweigung	Planta: grado de ramificación		
weak	faible	gering	débil		3
medium	moyen	mittel	media	Tokyo-gokaku	5
strong	fort	stark	fuerte	Emerarudo	7
2. Plant: height	Plante: hauteur	Pflanze: Höhe	Planta: altura		
short	courte	niedrig	corta	Tokyo-gokaku	3
medium	moyenne	mittel	media	Ryokusei	5
tall	haute	hoch	alta		7
3. Stem: diameter	Tige: diamètre	Stengel: Durchmesser	Tallo: diámetro		
small	petit	klein	pequeño	Gurin-sta	3
medium	moyen	mittel	medio		5
large	grand	groß	grande	Yaeyama	7
4. Stem: color (*)	Tige: couleur	Stengel: Farbe	Tallo: color		
green	vert	grün	verde	Dwarf green, Log Pod, Tokyo-gokaku	1
red	rouge	rot	rojo	Aka-okura, Burgundy	2
5. Stem: intensity of color	Tige: intensité de la couleur	Stengel: Intensität der Farbe	Tallo: intensidad del color		
light	claire	hell	claro		3
medium	moyenne	mittel	medio		5
dark	foncée	dunkel	oscuro		7

English	Français	Deutsch	Español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
6. Stem: number of nodes (up to and including the first flowering node)	Tige: nombre de nœuds (jusqu'au premier nœud florifère, inclus)	Stengel: Anzahl Nodien (bis einschließlich erster Blüte)	Tallo: número de nudos (hasta el primer nudo floral inclusive)		
few	petit	gering	bajo	Tokyo-gokaku	3
medium	moyen	mittel	medio		5
many	grand	groß	alto	Yaeyama	7
7. Leaf blade: size	Limbe: taille	Blattspreite: Größe	Limbo: tamaño		
small	petit	klein	pequeño		3
medium	moyen	mittel	medio	Tokyo-gokaku	5
large	grand	groß	grande	Surimu-okura	7
8. (+) Leaf blade: depth of lobing (*)	Limbe: profondeur de la découpure	Blattspreite: Tiefe der Lappeneinschnitte	Limbo: profundidad de los incisiones de los lóbulos		
shallow	peu profonde	flach	poco profunda	Tokyo-gokaku	3
medium	moyenne	mittel	media	Ryokusei	5
deep	profonde	tief	profunda	Emerarudo	7
9. Leaf blade: dentation of margin	Limbe: dentelure du bord	Blattspreite: Zähnung des Randes	Limbo: dentado del borde		
weak	faible	gering	débil		3
medium	moyenne	mittel	medio		5
strong	forte	stark	fuerte		7
10. (*) Leaf blade: color between veins	Limbe: couleur entres les nervures	Blattspreite: Farbe der Interkostalfelder	Limbo: color entre los nervios		
green	vert	grün	verde	Tokyo-gokaku	1
red	rouge	rot	rojo	Aka-okura	2

English	Français	Deutsch	Español	Example Varieties Exemples Beispielsorten Variedades ejemplo	Note/ Nota
11. Leaf blade: intensity of color between veins	Limbe: intensité de la couleur entre les nervures	Blattspreite: Intensität der Farbe der Interkostalfelder	Limbo: intensidad del color entre los nervios		
light	claire	hell	claro		3
medium	moyenne	mittel	medio		5
dark	foncée	dunkel	oscuro		7
12. Petiole: length	Pétiole: longueur	Blattstiel: Länge	Peciolo: longitud		
short	court	kurz	corto		3
medium	moyen	mittel	medio	Tokyo-gokaku	5
long	long	lang	largo	Yaeyama	7
13. Petiole: diameter	Pétiole: diamètre	Blattstiel: Durchmesser	Peciolo: diámetro		
small	petit	klein	pequeño		3
medium	moyen	mittel	medio	Horidei	5
large	grand	groß	grande	Surimu-okura	7
14. Flower: size	Fleur: taille	Blüte: Größe	Flor: tamaño		
small	petite	klein	pequeño	Emerarudo	3
medium	moyenne	mittel	medio		5
large	grande	groß	grande	Surimu-okura	7
15. Fruit: color (*)	Fruit: couleur	Frucht: Farbe	Fruto: color		
green	vert	grün	verde	Tokyo-gokaku	1
red	rouge	rot	rojo	Aka-okura, Burgundy	2
16. Fruit: intensity of color	Fruit: intensité de la couleur	Frucht: Intensität der Farbe	Fruto: intensidad del color		
light	claire	hell	claro		3
medium	moyenne	mittel	medio		5
dark	foncée	dunkel	oscuro		7

English	Français	Deutsch	Español	Example Varieties Exemples Beispielsorten Variedades ejemplo	Note/ Nota
17. Fruit: diameter of young fruit (at mid length)	Fruit: diamètre du fruit jeune (au milieu de la longueur)	Frucht: Durchmesser der jungen Frucht (in der Mitte der Länge)	Fruto: diámetro del fruto joven (a mitad de la longitud)		
small	petit	klein	pequeño	Emerarudo	3
medium	moyen	mittel	media	Tokyo-gokaku	5
large	grand	groß	grande	Yaeyama	7
18. Fruit: surface between ridges (+) (*)	Fruit: surface entre arêtes	Frucht: Oberfläche zwischen den Rippen	Fruto: superficie entre aristas		
concave	concave	konkav	cóncava	Tokyo-gokaku	3
flat	plane	flach	plana		5
convex	convexe	konvex	convexa	Emerarudo	7
19. Fruit: constriction of basal part (+)	Fruit: constriction de la partie basale	Frucht: Einschnürung des basalen Teiles	Fruto: constricción de la parte basal		
absent or very weakly expressed	absente ou très faiblement exprimée	fehlend oder sehr gering ausgeprägt	ausente o muy débilmente expresado		1
weakly expressed	faiblement exprimée	gering ausgeprägt	débilmente expresado	Emerarudo	2
strongly expressed	fortement exprimée	stark ausgeprägt	fuertemente expresado	Yaeyama	3
20. Fruit: shape of apex (+)	Fruit: forme du sommet	Frucht: Form der Spitze	Fruto: forma del ápice		
narrow acute	aigu étroit	schmal spitz	agudo estrecho	Emerarudo	1
acute	aigu	spitz	agudo	Tokyo-gokaku	2
broad acute	aigu large	breit spitz	agudo ancho	Yaeyama	3
21. Fruit: number of locules (*)	Fruit: nombre de loges	Frucht: Anzahl Kammern	Fruto: número de lóculos		
five	cinq	fünf	cinco	Tokyo-gokaku	1
more than five	plus de cinq	mehr als fünf	más de cinco	Yaeyama	2

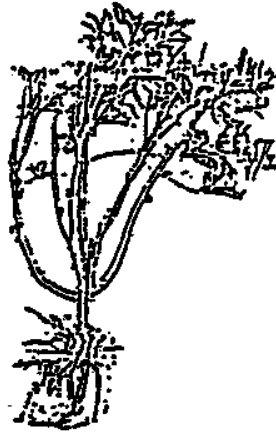
English	Français	Deutsch	Español	Example Varieties Exemples Beispielsorten Variedades ejemplo	Note/ Nota
22. Fruit: thickness of carpel	Fruit: grosseur du carpelle	Frucht: Dicke des Karpells	Fruto: grosor del cárpelo		
thin	mince	dünn	delgado		3
medium	moyen	mittel	medio	Tokyo-gokaku	5
thick	gros	dick	grueso	Emerarudo	7
23. Fruit: length of (+) <u>mature</u> fruit	Fruit: longueur du fruit <u>mature</u>	Frucht: Länge der <u>reifen</u> Frucht	Fruto: longitud del fruto <u>maduro</u>		
short	court	kurz	corto	Gurin-sta	3
medium	moyen	mittel	medio	Tokyo-gokaku	5
long	long	lang	largo	Emerarudo	7
24. Fruit: diameter of <u>mature</u> fruit (as for 17)	Fruit: diamètre du fruit <u>mature</u> (comme pour 17)	Frucht: Durchmesser der <u>reifen</u> Frucht (wie unter 17)	Fruto: diámetro del fruto <u>maduro</u> (como para 17)		
small	petit	klein	pequeño	Emerarudo	3
medium	moyen	mittel	media		5
large	grand	groß	grande	Yaeyama	7
25. Time of flowering	Époque de la floraison	Zeitpunkt der Blüte	Época de floración		
early	précoce	früh	temprana		3
medium	moyenne	mittel	media		5
late	tardive	spät	tardía		7
26. Time of commercial harvest	Époque de la récolte commerciale	Zeitpunkt der gewerbsmäßigen Ernte	Época de cosecha comercial		
early	précoce	früh	temprana		3
medium	moyenne	mittel	media	Tokyo-gokaku	5
late	tardive	spät	tardía	Yaeyama	7

VIII. Explanations on the Table of Characteristics

Ad. 1: Plant: degree of branching



3
weak



5
medium



7
strong

Ad. 8: Leaf blade: depth of lobing



3
shallow



5
medium

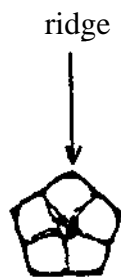


7
deep

Ad. 18: Fruit: surface between ridges



3
concave



5
flat



7
convex

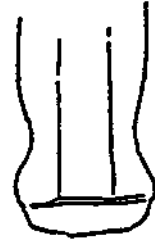
Ad. 19: Fruit: construction of basal part



1
absent or very weakly
expressed



2
weakly expressed



3
strongly expressed

Ad. 20: Fruit: shape of apex



1
narrow acute

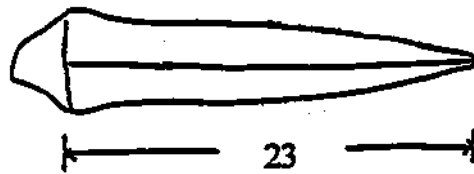


2
acute



3
broad acute

Ad. 23: Fruit: length of mature fruit



IX. Literature

Ashizawa, M., 1980: "Okra," Yasaiengei-dai-jiten, p 961-965, Yokendo, Tokyo.

Phillips, R. et al., 1993: "Okra," Vegetables, p 62-63, Pan Books Ltd.

Sumita, A., 1998: "Okra," Nogyogijutu-taiki; Vegetable Vol. 11, p 77-90, Yokendo, Tokyo.

X. Technical Questionnaire

	<p>Reference Number (not to be filled in by the applicant)</p>
<p>TECHNICAL QUESTIONNAIRE to be completed in connection with an application for plant breeders' rights</p>	
1. Species	<p><i>Abelmoschus esculentus</i> (L). Moench. OKRA</p>
2. Applicant (Name and address)	
3. Proposed denomination or breeder's reference	

4. Information on origin, maintenance and reproduction of the variety

4.1 Origin

(a) Seedling (indicate parent varieties) []

.....

(b) Mutation (indicate parent varieties) []

.....

(c) Discovery (indicate where and when) []

.....

4.2 Other information

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

	Characteristics	Example Varieties	Note
5.1	Plant: degree of branching		
(1)			
	weak		3[]
	medium	Tokyo-gokaku	5[]
	strong	Emerarudo	7[]
5.2	Stem: color		
(4)			
	green	Dwarf green, Log Pod, Tokyo-gokaku	1[]
	red	Aka-okura, Burgundy	2[]
5.3	Leaf blade: depth of lobing		
(8)			
	shallow	Tokyo-gokaku	3[]
	medium	Ryokusei	5[]
	deep	Emerarudo	7[]
5.4	Fruit: color		
(15)			
	green	Tokyo-gokaku	1[]
	red	Aka-okura, Burgundy	2[]
5.5	Fruit: number of locules		
(21)			
	five	Tokyo-gokaku	1[]
	more than five	Yaeyama	2[]

6. Similar varieties and differences between these varieties

Denomination of similar variety	Characteristic in which the similar variety is different ⁰⁾	State of expression of similar variety	State of expression of candidate variety
---------------------------------	--	--	--

⁰⁾ In the case of identical states of expressions of both varieties, please indicate the size of the difference.

7. Additional information which may help to distinguish the variety

7.1 Resistance to pests and diseases

7.2 Special conditions for the examination of the variety

7.3 Other information

8. Authorization for release

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

Yes [] No []

- (b) Has such authorization been obtained?

Yes [] No []

If the answer to that question is yes, please attach a copy of such an authorization.

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