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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS
GENEVA

DRAFT**AMARANTH**

UPOV code: AMARA_

(Amaranthus L.)

*

GUIDELINES**FOR THE CONDUCT OF TESTS****FOR DISTINCTNESS, UNIFORMITY AND STABILITY***prepared by experts from Mexico**to be considered by the**Technical Working Party for Agricultural Crops at its thirty-third session,**to be held in Poznań, Poland, from June 28 to July 2, 2004**and the**Technical Working Party for Ornamental Plants and Forest Trees (TWO),**at its thirty-seventh session, to be held in Hanover, Germany, from July 12 to 16, 2004*

Alternative Names:*

<i>Latin</i>	<i>English</i>	<i>French</i>	<i>German</i>	<i>Spanish</i>
<i>Amaranthus L.</i>	Amaranth	Amarante	Amarant, Fuchsschwanz	Amaranto

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 guidelines ("Test Guidelines") should be read in conjunction with document TG/1/3, "General Introduction to the Examination of Distinctness, Uniformity and Stability and the Development of Harmonized Descriptions of New Varieties of Plants" (hereinafter referred to as the "General Introduction") and its associated "TGP" documents.

Other associated UPOV 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 *Amaranthus* 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:

100 g

2.4 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.

2.5 The plant material supplied should be visibly healthy, not lacking in vigor, nor affected by any important pest or disease.

2.6 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*

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.

3.3.1 Stage of development for the assessment

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 at the end of Chapter 8.

3.3.2 Type of observation – visual or measurement

The recommended method of observing the characteristic is indicated by the following key in the second column of the Table 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

3.3.3 Type of plot for observation

The recommended type of plot in which to observe the characteristic is indicated by the following key in the second column of the Table of Characteristics:

A: spaced plants

B: row plot

C: special test]

3.3.4 Observation of color by eye

Because daylight varies, color determinations made against a color chart should be made either in a suitable cabinet providing artificial daylight or in the middle of the day in a room without direct sunlight. The spectral distribution of the illuminant for artificial daylight should conform with the CIE Standard of Preferred Daylight D 6500 and should fall within the tolerances set out in the British Standard 950, Part I. These determinations should be made with the plant part placed against a white background.

3.4 *Test Design*

3.4.1 In the case of inbred lines, each test should be designed to result in a total of at least 50 plants, which should be divided between two or more replicates.

3.4.2 In the case of cross-pollinated varieties, each test should be designed to result in a total of at least 150 plants, which should be divided between two or more replicates.

3.4.3 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 *Number of Plants / Parts of Plants to be Examined*

Unless otherwise indicated, all observations determined by measuring should be made on 20 plants or parts taken from each of 20 plants.

3.6 *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.

4.2 *Uniformity*

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

4.2.2 For the assessment of uniformity of inbred lines, 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, two off-types are allowed.

4.2.3 The assessment of uniformity for cross-pollinated varieties should be according to the recommendations for cross-pollinated varieties in the General Introduction.

4.3 *Stability*

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

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 is 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:

{...}

5.4 Guidance for the use of grouping characteristics, in the process of examining distinctness, is provided through the General Introduction.

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*

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.

6.3 *Types of Expression*

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

6.4 *Example Varieties*

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

6.5 *Legend*

(*) Asterisked characteristic – see Section 6.1.2

QL Qualitative characteristic – see Section 6.3

QN Quantitative characteristic – see Section 6.3

PQ Pseudo-qualitative characteristic – see Section 6.3

MG: single measurement of a group of plants or parts of plants – see Section 3.3.2

MS: measurement of a number of individual plants or parts of plants – see Section 3.3.2

VG: visual assessment by a single observation of a group of plants or parts of plants
– see Section 3.3.2

VS: visual assessment by observation of individual plants or parts of plants
– see Section 3.3.2

(a) – (d) See Explanations on the Table of Characteristics in Chapter 8, Section 8.1

(+) See Explanations on the Table of Characteristics in Chapter 8, Section 8.2

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

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielsorten/ Variedades ejemplo	Note/ Nota
1.	Species			Especie		
	<i>A. hypochondriacus</i>			<i>A. hypochondriacus</i>		1
	<i>A. cruentus</i>			<i>A. cruentus</i>		2
	<i>A. caudatus</i>			<i>A. caudatus</i>		3
	<i>A. hybridus</i>			<i>A. hybridus</i>		4
	other: state species			otra		5
2.	Cotyledon: anthocyanin pigmentation			Cotiledones: Pigmentación antociánica		
QL	absent			ausente		1
	present			presente		9
3.	Seedling: anthocyanin pigmentation of hypocotyl			Plántula: Pigmentación antociánica del hipocótilo		
QL (a)	absent			ausente		1
	present			presente		9
4. (+)	Seedling: intensity of anthocyanin pigmentation of hypocotyl (3-6 days after emergence)			Plántula: intensidad de la pigmentación antociánica del hipocótilo (**3-6 días después de la emergencia)		
QN	weak			débil		3
	medium			media		5
	strong			fuerte		7
5.	Leaf blade: base color on the upper side			Limbo: color base del haz		
PQ (b)	light green			verde claro		1
	medium green			verde medio		2
	dark green			verde oscuro		3

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
6.	Leaf blade: base color on the lower side			Limbo: color base en el envés		
PQ (b)	green			verde		1
	red			rojo		2
	purple			púrpura		3
7.	Leaf blade: color of pigmentation at beginning of growth (30 days**)			Limbo: color de la pigmentación al inicio del crecimiento (30 días**)		
(+)						
PQ (b)	purple			púrpura		1
	red			roja	Nutrisol	2
	pink			rosada		3
	dark green			verde oscuro	Rojita	4
	green			verde normal		5
	pale green			verde pálido	Revancha	6
	other: state distribution			otra: indique		7
8.	Leaf blade: distribution of pigmentation at beginning of growth (30 days**)			Limbo: Distribución de la pigmentación al inicio del crecimiento (30 días**)		
PQ (b)	complete			completa		1
	colored basal area			área basal pigmentada		2
	central spot			mancha central		3
	2 “V” shaped stripes			dos franjas en forma de “V”		4
	one “V” shaped stripe			una franja en forma de “V”		5
	colored margin and venation			margen y venas pigmentadas		6
	in strip			en franja		7

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
9.	Plant: growth habit	Opinion by Mexican experts: all the plants of <i>Amaranthus</i> we had examined, have an upright growth habit; the characteristic of upright, pendulous or semi, its determined by de position of the panicle.		Planta: porte		
PQ (b)	upright			erecto		1
	spreading			extendido		2
	decumbent			decumbente		3
	drooping			colgante		4
10.	Plant: growth type			Planta crecimiento		
QL (b)	determinate			determinado	Rojita, Revancha	1
	indeterminate			indeterminado	Nutrisol	2
11.	Leaf: incisions of margin			Hoja: incisiones		
QL (b)	absent			ausente		1
	present			presente		9
12.	Leaf: type of the margin			Hoja : tipo del margen		
(+)						
PQ (b)	entire			entero		1
	crenate			crenado		2
	undulate			ondulado		3
	other: state type			otro (especificar)		4
13.	Leaf shape (last leaf completely developed, before inflorescence appears)			Hoja forma (última hoja completamente desarrollada, antes de aparición de inflorescencia)		
(+)						
PQ (b)	lanceolate			lanceolada		1
	elliptic			elíptica		2
	ovate			oval		3

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
14.	Leaf: length	Comment: leaf measures could be made on 6th leaf, when this is fully developed.		Longitud de la hoja		
(+)						
QN (b)	short			corta		3
	medium			mediana		5
	long			larga		7
15.	Leaf: width			Ancho de la hoja		
(+)						
QN (b)	narrow			estrecha		3
	medium			mediana		5
	broad			ancha		7
16.	Leaf: anthocyanin pigmentation of blade			Hoja: intensidad de la pigmentación antocianica del limbo		
QL (b)	absent			ausente		1
	present			presente		9
17.	Leaf: anthocyanin pigmentation on petiole			Hoja: pigmentación antocianica del peciolo		
QL (b)	absent			ausente		1
	present			presente		9
18.	Leaf: intensity of anthocyanin pigmentation on petiole			Hoja: intensidad de la pigmentación antocianica del peciolo		
QL (b)	absent			ausente	Rojita	1
	weak			débil		3
	medium			media		5
	strong			fuerte		7
	very strong			muy fuerte	Nutrisol	9

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
19.	Leaf: prominence of veins		Hoja: prominencia de nervaduras			
(+)						
QN	(b)	weak		débil	Rojita	3
		medium		media		5
		strong		fuerte	Revancha, Nutrisol	7
20.	Leaf: basic color		Hoja: color base			
PQ	(b)	light green		verde claro		1
		medium green		verde medio		2
		dark green		verde oscuro		3
		orange		anaranjado		4
		red		rojo		5
21.	Leaf: presence of patch		Hoja: presencia de mancha en la hoja			
QL	(b)	absent		ausente		1
		present		presente		9
22.	Leaf: size of patch in relation to blade		Hoja: tamaño de la mancha con relación al tamaño del limbo			
QN	(b)	small		pequeña		3
		medium		mediana		5
		large		grande		7
23.	Leaf: color of patch		Hoja: color de la mancha			
PQ	(b)	yellow		amarillo		1
		green		verde		2
		silvery		plateada		3
		red		roja		4
		purple		púrpura		5

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
24.	Leaf: shape distribution of patch			Hoja: forma de la distribución de la mancha		
PQ (b)	ovoid			ovalada		1
	“V”shaped			en forma de “V”		2
25.	Plant: time of flowering			Planta: época de floración		
QN	early			precoz		3
	medium			media		5
	late			tardía		7
26.	Stem: color (at anthesis)			Tallo: color (en antesis)		
PQ	green			verde		1
	orange			anaranjado		2
	pink			rosa		3
	red			rojo		4
	purple			púrpura		5
	striped (green as main color, and red or purple stripes)			estriado (color verde principal y las estrías en rojo o púrpura)		6
	other: state color			otro: indique		7
27.	Stem: anthocyanin pigmentation on base (at maturity)			Tallo pigmentación antociánica de la base (en madurez)		
QL	absent			ausente		1
	present			presente		9
28.	Stem: margin in cross section (at maturity)			Tallo: borde de la sección transversal (en madurez)		
PQ	entire			entero		1
	undulate			ondulado		2

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
29.	Inflorescence: attitude			Inflorescencia: porte		
(+)						
PQ	(c)	upright		erecto		1
		spreading		abierto		5
		drooping		colgante		9
30.	Inflorescence: length			Inflorescencia: longitud		
QN	(c)	short		corta		3
		medium		media		5
		long		larga		7
31.	Inflorescence: color			Inflorescencia: color		
PQ	(c)	yellow		amarillo		1
		yellowish green		amarillento verdoso		2
		yellowish brown		pardo amarillento		3
		green		verde		4
		pink		rosado	Revancha	5
		red		rojo		6
		purple		púrpura	Rojita	7
		brown		pardo	Nutrisol, Rojita	8
32.	Inflorescence: density			Inflorescencia: densidad		
(+)						
QN	(c)	sparse		laxa		3
		medium		media	Revancha	5
		dense		densa	Nutrisol, Rojita	7
33.	Inflorescence: shape			Inflorescencia: forma		
(+)						
QL	(c)	amaranth form		amarantiforme		1
		glomerule form		glomerulada		2

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
34.	Inflorescence: number of female flowers per glomerule			Inflorescencia: número de flores femeninas por glomérulo		
QN (c)	few			pocas		3
	medium			medias		5
	many			muchas		7
35.	Inflorescence: size of bract relative to utricle			Inflorescencia: tamaño de las brácteas con relación al utrículo		
QN (c)	smaller			más pequeñas		1
	same size			del mismo tamaño		2
	larger			más grandes		3
36.	Inflorescence: time of emergence of inflorescence			Inflorescencia: época de emergencia da la inflorescencia		
QN (c)	early			precoz		3
	medium			media		5
	late			tardía		7
37.	Root: color at emergence of inflorescence			Raíz: color en emergencia de la inflorescencia		
(+)						
QL (b)	white			blanca		1
	red			roja		2
38.	Plant: height (at maturity): from base of the plant to tip of the inflorescence			Planta: altura (en madurez): desde la base de la planta a la punta de la inflorescencia		
(+)						
QN	short			baja		3
	medium			media		5
	tall			alta		7

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
39.	Plant: time of maturity		Planta: época de madurez			
QN	early			precoz		3
	medium			media		5
	late			tardía		7
40.	Seed: weight per 1000 grains at moisture of 10 %		Semilla: peso de 1000 semillas al 10 % de humedad			
(+)						
QN (d)	low			bajo		3
	medium			medio		5
	high			alto		7
41.	Seed: color		Semilla: color			
PQ (d)	white			blanca		1
	yellow			amarilla		2
	brown			marrón		3
	pink			rosa		4
	black			negro		5
42.	Seed: shape		Semilla: forma			
PQ (d)	spheroid			esferoide		1
	ellipsoid			elipsoidal	Nutrisol, Revancha	2
	discoid (flattened)			discoide (aplanada)	Rojita	3
43.	Seed type		Semilla: tipo			
QL (d)	translucent			translúcido	Rojita, Nutrisol	1
	opaque			opaco	Revancha	2

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
44.	Seed: pop percent (relative increase of volume)			Semilla: porcentaje de reventado (aumento relativo de volumen)		
(+)						
QN (d)	low			bajo		3
	medium			medio		5
	high			alto		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) All observations on seedling, should be made 3-6 days after to emerge
- (b) All observations of the growth habit, leaf, plant height, root and on the stem should be made at full flowering (50% of the plants).
- (c) All observations of inflorescence should be made on main inflorescence.
- (d) All observations on the seed should be made on dry seed at harvest time.

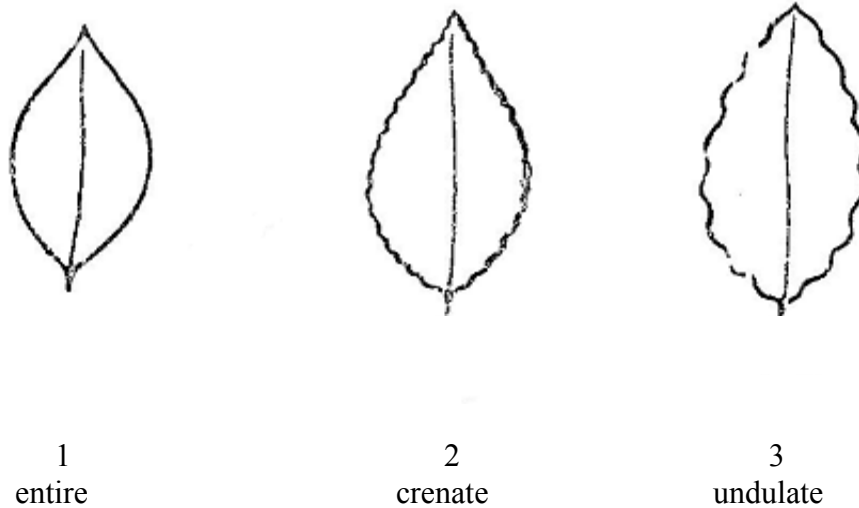
8.2 *Explanations for individual characteristics*

Ad. 4: Seedling: intensity of anthocyanin pigmentation of hypocotyl (3-6 days after emergence)

Ad. 7: Leaf blade: color of pigmentation at beginning of growth (30 days)

Ad. 12: Leaf: type of margin

To be assessed on last completely developed leaf, before inflorescence appears.

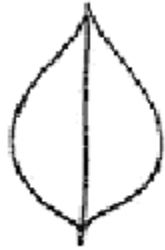


Ad. 13: Leaf: shape

To be assessed on last completely developed leaf, before inflorescence appears.



1
lanceolate



2
elliptic



3
ovate

Ad. 14: Leaf: length, and Ad. 15: Leaf: width

To be assessed on sixth leaf.

Ad. 19: Leaf: prominence of veins

To be assessed at 6-8 leaf stage.

Ad: 29: Inflorescence: attitude



1
upright



5
spreading



9
drooping

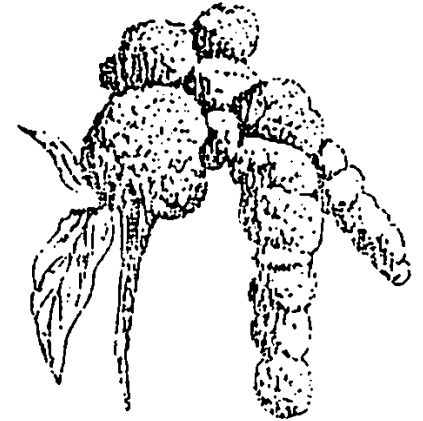
Ad. 32: Inflorescence: density



3
sparse

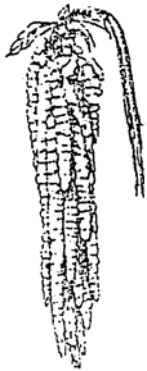


5
medium



7
dense

Ad. 33: Inflorescence: shape



1
amaranth form



2
glomerule form

Ad. 37: Root: color at emergence of inflorescence

The root should be extracted for the observations of color on root.

Ad. 38: Plant: height (at maturity).

From base of the plant to tip of the inflorescence.

Ad. 40: Seed: weight per 1000 seeds

The seed weight should be measured on eight samples of 100 seeds, at moisture of 10%.

Ad. 44: Seed: pop percent (relative increase of volume).

Determinate previously the moisture content (it must be between 14 and 16%); if it is necessary, should be soaked.

CODE TO IDENTIFY SOME FOOD SPECIES OF FAMILY AMARANTHACEAE

- A. UNISEXUAL FLOWERS.
- B. Three tepals
 - C. Tepals at same level or longer than utricule
circumscissile 1. *Amarantus tricolor*
 - CC. Tepals shorter than utricule: utricule indehiscent.
 - D. Utricule smooth 2. *A. blitum*
 - DD. Utricule rough 3. *A. viridis*.
- BB. Five Tepals
 - E. Tepals almost equal length and curved to the utricule.
 - F. Thorny plants; inflorescence with upper
staminate cyme and lower pistillate cymes 4. *A. spinosus*.
 - FF. Plants without thorn cymes, with first
staminate flower and the rest pistillate 5. *A. dubius*
- EE. Inside tepals shorter than external, tepals straight or curved to the utricule.
 - G. Bracts longer than style branches; inflorescences are small and
thick or moderately developed; the seed is always dark.
 - H. Tepals as long as utricule, internal with obtuse or
emarginated apex; utricule is not tower shaped,
and the inflorescence is small and thick 6. *A. retrofractus*
 - HH. Tepals shorter than utricule, internal with acute apex;
utricule has a narrowing in the apex, like tower
shaped; inflorescence moderately developed... 7. *A. hybridus*.

- GG. Bracts shorter than style branches; inflorescence very developed, reach a long size (typical in cultivated species); seeds usually of light colors, sometimes dark.
 - I. Bracts at same level than style branches; stiff inflorescence: the style branches makes a kind of split at base; tepals has an acuminated apex 8. *A. hipochondriacus*.
 - II. Bracts shorter than style branches, drooping inflorescence.
 - J. Utricle with a narrowing in the apex, like a tower shape; upright style branches; tepals with acute apex 9. *A. cruentus*.
 - JJ. Utricle unlike tower shape; style branches are very sparse, grouping at base; broad tepals and frequently superimposed, internal has obtuse apex 10. *A. caudatus*.

AA PERFECT FLOWER

- K. Broad flowers at apex; like a cock comb 11. *Celosia cristata*
- KK. Flower forming simple ears 12. *C. argentea*

* Feine L. B. from Kaufman & Belder, 1984.

9. Literature

Mexican Experts in *Amaranth*: Carballo, Aquiles. E-mail: carballo@colpos.colpos.mx, Coordinator. Bernal, Roberto. Instituto Tecnológico Agropecuario (ITA) 29. Barrales, Sergio, Universidad Autónoma Chapingo (UACH). Sandoval, Humberto y Trinidad, José Antonio, Colegio de Postgraduados (CP). Espitia, Eduardo, INIFAP.

Figures from “Descriptores del germoplasma de Kiwicha”. Programa de Investigación de Cultivos Andinos, Instituto Nacional de Investigación Agraria. Universidad Nacional del Cusco, Perú.

Descriptors used by OMNI-Hungary (provided by COBORU)

9. 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 <i>Latin Name</i>	<input type="text" value="Amaranthus L."/>	
1.2 Common Name	<input type="text" value="Amaranth"/>	
2. Applicant		
Name	<input type="text"/>	
Address	<input type="text"/>	
Telephone No.	<input type="text"/>	
Fax No.	<input type="text"/>	
E-mail address	<input type="text"/>	
Breeder (if different from applicant)	<input type="text"/>	
3. Proposed denomination and breeder's reference		
Proposed denomination (if available)	<input type="text"/>	
Breeder's reference	<input type="text"/>	

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

4.1 Breeding scheme

(i) Variety resulting from:

4.1.1 Crossing

- (a) controlled cross []
(please state parent varieties)
- (b) partially known cross []
(please state known parent variety(ies))
- (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)

.....

(ii) Variety resulting from:

4.1.1 Crossing

- (a) controlled cross []
(please state parent varieties)
- (b) partially known cross []
(please state known parent variety(ies))
- (c) unknown cross []

4.1.2 Discovery and development []
(please state where and when discovered and how developed)

4.1.3 Other []
(please provide details)

.....

4.2 Method of propagating the variety (see GN 31 and GN 32)

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

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

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
<i>Example</i>		<i>(example to be inserted)</i>	<i>(example to be inserted)</i>

Comments:

#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 Special conditions for the examination of the variety

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

Yes [] No []

7.2.2 If yes, please give details:

7.3 Other information

8. Authorization for release

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

Yes [] No []

(b) Has such authorization been obtained?

Yes [] No []

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

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

9. Information on plant material to be examined.

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 or pesticide) | Yes [] | No [] |
| (c) Tissue culture | Yes [] | No [] |
| (d) Other factors | Yes [] | No [] |

Please provide details of 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]