

**UPOV**

**TG/AMARANT(proj.4)**

**ORIGINAL:** English

**DATE:** 2005-10-27

**INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS**

GENEVA

**DRAFT**

**GRAIN 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-fourth session  
to be held in Christchurch, New Zealand, from October 31 to November 4, 2005*

Alternative Names:\*

<i>Botanical name</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 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](http://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 Grain amaranth.

## 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*

3.31 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 Type of observation

The recommended method of observing the characteristics 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 characteristics is indicated by the following key in the second column of the Table of Characteristics:

A: spaced plants

C: special test

### 3.3.4 Visual color observation

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

4.2.3 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.

### 4.3 *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 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:

{...}

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 Chapter 6.1.2

QL: Qualitative characteristic – see Chapter 6.3

QN: Quantitative characteristic – see Chapter 6.3

PQ: Pseudo-qualitative characteristic – see Chapter 6.3

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

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

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

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

A: spaced plants” – see Chapter 3.3.3

C: special test” – see Chapter 3.3.3

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

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

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

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
<b>1. VG</b>	<b>Cotyledon: anthocyanin</b>					
<b>A</b>	<b>pigmentation</b>					
<b>QL</b>	absent				Edit, Eniko, Maros, Reka, Roza,	1
	present				Nutrisol, Revancha,	9
<b>2. VS</b>	<b>Seedling: anthocyanin</b>					
<b>A</b>	<b>pigmentation of hypocotyl</b>					
<b>QL</b>	(a) absent					1
	present				Eniko, Rojita, Roza, Edit, Revancha, Nutrisol, Reka, Maros	9
<b>3. VS</b>	<b>Seedling: intensity of anthocyanin</b>					
<b>(+)</b>	<b>A</b>					
	<b>pigmentation of hypocotyl</b>					
<b>QN</b>	(a) weak				Rojita	3
	medium				Eniko, Maros, Reka, Revancha	5
	strong				Edit, Roza	7
<b>4. VS</b>	<b>Leaf: green color of the upper side</b>					
<b>A</b>						
<b>QN</b>	(b) light green				Revancha	3
	medium green					5
	dark green					7
<b>5. VS</b>	<b>Leaf blade: color of lower side</b>					
<b>A</b>						
<b>PQ</b>	(b) green					1
	red					2
	purple					3



	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota	
<b>6.</b>	<b>VS</b>	<b>Leaf: secondary color of upper side</b>					
<b>(+)</b>	<b>A</b>	<b>(at beginning of growth) on the upper side</b>					
<b>PQ</b>		yellow				1	
		light green			Revancha	2	
		medium green				3	
		dark green			Rojita	4	
		pink				5	
		red			Nutrisol	6	
		purple				7	
<b>7.</b>	<b>VS</b>	<b>Leaf blade: distribution of upper side</b>					
	<b>A</b>	<b>(secondary color at beginning of growth)</b>					
<b>PQ</b>	<b>(b)</b>	colored basal area			Rojita	1	
		central patch			Edit	2	
		2 “V” shaped stripes				3	
		one “V” shaped stripe				4	
		colored margin and venation				5	
		in strip				6	
		one pale green or chlorotic strip on green			Revancha	7	
<b>8.</b>	<b>VG</b>	<b>Plant: growth type</b>					
	<b>A</b>						
<b>QL</b>	<b>(b)</b>	determinate			Edit, Eniko, Maros, Reka, Revancha, Rojita, Roza	1	
		indeterminate			Nutrisol	2	

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
<b>9.</b>	<b>VS</b>	<b>Leaf: incisions of margin</b>				
	<b>A</b>					
<b>QL</b>	<b>(b)</b>	absent			Edit, Eniko, Maros, Nutrisol, Reka, Rojita, Roza	1
		present				9
<b>10.</b>	<b>VS</b>	<b>Leaf: type of the margin</b>				
<b>(+)</b>	<b>A</b>					
<b>PQ</b>		entire			Edit, Maros, Reka, Rojita, Roza	1
		crenate				2
		sinuate			Revancha	3
<b>11.</b>	<b>VS</b>	<b>Leaf shape</b>				
<b>(+)</b>	<b>A</b>					
<b>PQ</b>	<b>(b)</b>	lanceolate			Reka, Revancha, Roza	1
		elliptic				2
		obovate				3
<b>12.</b>	<b>MS</b>	<b>Leaf: length</b>				
<b>(+)</b>	<b>A</b>					
	<b>(b)</b>	short				3
		medium				5
		long				7
<b>13</b>	<b>MS</b>	<b>Leaf: width</b>				
<b>(+)</b>	<b>A</b>					
<b>QN</b>	<b>(b)</b>	narrow				3
		medium				5
		broad				7

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
<b>14.</b>	<b>VS Leaf: anthocyanin pigmentation of petiole</b>					
	<b>A</b>					
<b>QL</b>	<b>(b)</b> absent				Edit, Maros, Revancha, Rojita	1
	present				Nutrisol, Reka, Roza	9
<b>15.</b>	<b>VS Leaf: intensity of anthocyanin pigmentation of petiole</b>					
	<b>A</b>					
<b>QN</b>	<b>(b)</b> very weak					1
	weak					3
	medium				Reka	5
	strong				Roza	7
	very strong				Nutrisol	9
<b>16.</b>	<b>VS Leaf blade: prominence of veins</b>					
	<b>(+) A</b>					
<b>QN</b>	weak				Rojita	3
	medium					5
	strong				Nutrisol, Revancha	7
<b>17.</b>	<b>VS Leaf blade: main color</b>					
	<b>A</b>					
<b>PQ</b>	<b>(b)</b> light green				Maros, Revancha	1
	medium green				Rojita, Roza	2
	dark green				Edit	3
	orange					4
	red					5
<b>18.</b>	<b>VS Leaf blade: presence of patch</b>					
	<b>A</b>					
<b>QL</b>	<b>(b)</b> absent				Eniko, Maros, Reka, Revancha, Roza	1
	present				Edit	9

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota	
<b>19.</b>	<b>VS</b>	<b>Leaf blade: size of patch in relation to blade</b>					
	<b>A</b>						
<b>QN</b>	<b>(b)</b>	small				3	
		medium			Edit	5	
		large				7	
<b>20.</b>	<b>VS</b>	<b>Leaf blade: color of patch</b>					
	<b>A</b>						
<b>PQ</b>	<b>(b)</b>	yellow				1	
		green				2	
		silvery				3	
		red			Edit	4	
		purple				5	
<b>21.</b>	<b>VS</b>	<b>Leaf blade: shape distribution of patch</b>					
	<b>A</b>						
<b>QL</b>	<b>(b)</b>	ovoid			Edit	1	
		“V”shaped				2	
<b>22.</b>	<b>VS</b>	<b>Root: color (see (b))</b>					
	<b>(+)</b>	<b>A</b>					
<b>QN</b>	<b>(b)</b>	white				1	
		red			Edit, Reka	2	
<b>23.</b>	<b>MS</b>	<b>Inflorescence: time of beginning of emergence of inflorescence</b>					
	<b>A</b>						
<b>QN</b>	<b>(c)</b>	early			Edit	3	
		medium			Roza, Reka, Maros	5	
		late			Nutrisol	7	

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
<b>24.</b>	<b>VS Plant: time of flowering</b>					
(+)	A					
<b>QN</b>	early				Edit	3
	medium				Eniko, Maros, Reka, Revancha, Rojita, Roza	5
	late				Nutrisol	7
<b>25.</b>	<b>VS Stem: color (at anthesis)</b>					
	A					
<b>PQ</b>	green				Edit, Eniko, Maros, Reka, Revancha	1
	orange					2
	pink				Roza	3
	red				Nutrisol	4
	purple					5
	striped (green as main color, and red or purple stripes)					6
<b>26.</b>	<b>VS Stem: anthocyanin pigmentation of base (at maturity)</b>					
	A					
<b>QL</b>	absent					1
	present				Roza, Nutrisol, Revancha	9
<b>27.</b>	<b>VS Stem: undulation of margin (at maturity)</b>					
	A					
<b>QL</b>	A absent					1
	present				Edit, Maros, Revancha, Roza	9

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota	
<b>28.</b>	<b>VS</b>	<b>Inflorescence: position</b>					
(+)	A						
<b>QN</b>	(b)	upright or very			Revancha, Rojita	1	
	(c)	weakly recurved					
		weakly recurved				3	
		moderately recurved			Edit, Eniko, Maros, Roza	5	
		strongly recurved				7	
		very strongly recurved			Reka	9	
<b>29.</b>	<b>MS</b>	<b>Inflorescence: length</b>					
	A						
<b>QN</b>	(b)	short			Edit	3	
	(c)						
		medium			Maros, Revancha, Roza	5	
		long			Nutrisol	7	
<b>30.</b>	<b>VS</b>	<b>Inflorescence: color</b>					
	A						
<b>PQ</b>	(b)	yellow				1	
	(c)						
		yellowish green				2	
		yellowish brown				3	
		green			Eniko, Maros, Revancha	4	
		pink			Roza	5	
		red			Edit, Rojita	6	
		purple			Nutrisol, Reka	7	
		brown				8	

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
<b>31.</b>	<b>VS Inflorescence: density</b>					
(+)	A					
<b>QN</b>	(b) sparse					3
	(c) medium				Reka, Revancha	5
	dense				Edit, Nutrisol, Rojita, Roza	7
<b>32.</b>	<b>VS Inflorescence: shape</b>					
(+)	A					
<b>QL</b>	(b) amaranth form				Eniko, Nutrisol, Edit	1
	(c) glomerule form				Reka, Rojita, Revancha, Roza	2
<b>33.</b>	<b>MS Inflorescence: number of female flowers per glomerule</b>					
<b>QN</b>	(b) few					3
	(c) medium					5
	many				Reka	7
<b>34.</b>	<b>VS Inflorescence: size of bract relative to utricle</b>					
<b>QN</b>	(b) smaller				Eniko, Maros, Reka, Revancha	1
	(c) same size					2
	larger				Edit	3
<b>35.</b>	<b>MS Plant: time of maturity</b>					
	A					
<b>QN</b>	early				Edit	3
	medium				Maros, Media, Revancha, Roza	5
	late					7

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
<b>36.</b>	<b>MS</b>					
	<b>Plant: height (at maturity)</b>					
(+)	<b>A</b>					
<b>QN</b>	short				Edit	3
	medium				Maros, Reka, Revancha, Roza	5
	tall				Nutrisol	7
<b>37.</b>	<b>MS</b>					
	<b>Seed: weight per 1000 grains (10% moisture)</b>					
(+)	<b>C</b>					
<b>QN</b>	(d) low					3
	medium					5
	high					7
<b>38.</b>	<b>VG</b>					
	<b>Seed: color</b>					
	<b>C</b>					
<b>PQ</b>	(d) white				Edit, Maros, Revancha, Roza	1
	yellow					2
	pink				Reka	3
	brown					4
	black					5
<b>39.</b>	<b>VG</b>					
	<b>Seed: shape</b>					
	<b>C</b>					
<b>PQ</b>	(d) spheroid					1
	ellipsoid				Nutrisol, Revancha	2
	discoid (flattened)				Rojita	3
<b>40.</b>	<b>VS</b>					
	<b>Seed: type</b>					
	<b>C</b>					
<b>QL</b>	(d) translucent				Rojita, Nutrisol	1
	opaque				Revancha, Edit	2



	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
<b>41. VG</b>	<b>Seed: pop percent</b>					
<b>(+)</b>	<b>C</b>					
	<b>(d)</b>					
<b>QN</b>	low					3
	medium					5
	high					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) Observations on seedlings should be made 3-6 days after emergence.
- (b) Observations to be made at full flowering (50% of the plants at flowering stage).
- (c) Observations on the inflorescence should be made on the main inflorescence.
- (d) Observations on the seed should be made on dry seed at harvest time.

### 8.2 *Explanations for individual characteristics*

#### Ad. 3: Seedling: intensity of anthocyanin pigmentation of hypocotyl

To be observed 3-6 days after emergence.

#### Ad. 6: Leaf: secondary color of pigmentation (at beginning of growth) on the upper side

#### Ad. 10: Leaf: type of margin

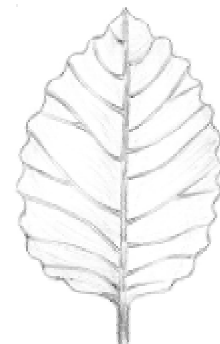
To be assessed on last completely developed leaf, before inflorescence appears.



1  
entire



2  
crenate



3  
undulate

Ad. 11: Leaf: shape

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



1  
lanceolate



2  
elliptic



3  
obovate

Ad. 12: Leaf: length, and Ad. 13: Leaf: width

To be assessed on sixth leaf.

Ad. 16: Leaf: prominence of veins

To be assessed at 6-8 leaf stage.

Ad. 22: Root: color

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

Ad. 24: Plant: time of flowering

Time of flowering is when 50 % of the plants are in anthesis in the main inflorescence.

Ad. 28: Inflorescence: position



1  
upright



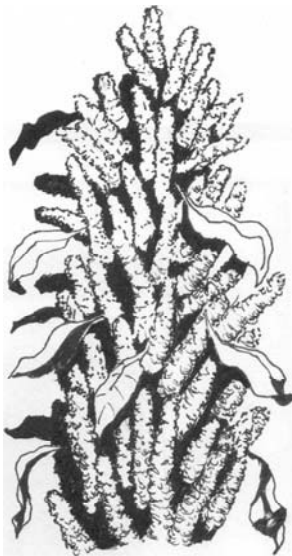
5  
moderately recurved



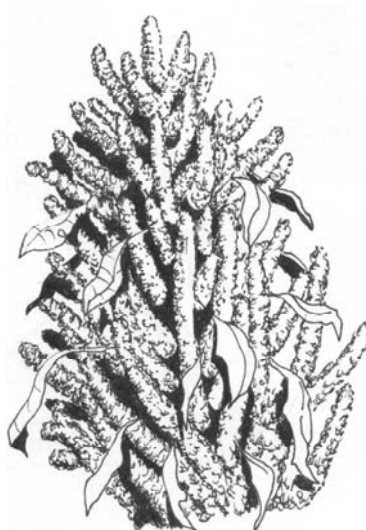
9  
very strongly recurved

Ad. 31: Inflorescence: density

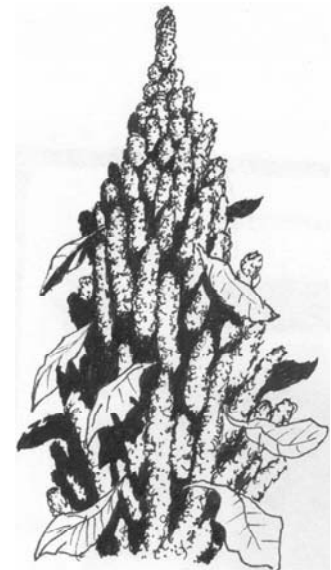
The density of the inflorescence relates to both the number and position of the clusters



3  
sparse

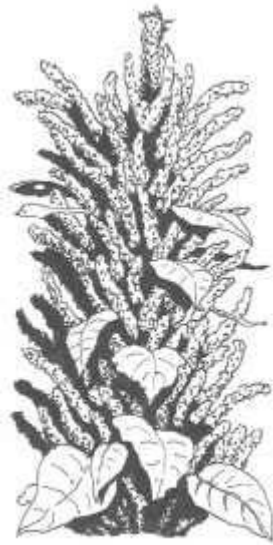


5  
medium



7  
dense

Ad. 32: Inflorescence: shape



amaranth form



2  
glomerule form

Ad. 36: Plant: height (at maturity)

From base of the plant to tip of the inflorescence.

Ad. 37: Seed: weight per 1000 seeds

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

Ad. 41: Seed: pop percent (relative increase of volume).

To be observed on seeds with a moisture content of between 14 and 16%; if necessary, the seeds should be soaked.

9. Literature

Mexican Experts in *Amaranth*: Carballo, Aquiles. E-mail: [carballo@colpos.colpos.mx](mailto:carballo@colpos.colpos.mx), Coordinator. Ramírez Ma. Elena, Colegio de Postgraduados (CP). Bernal, Roberto. Instituto Tecnológico Agropecuario (ITA) 29. Espitia, Eduardo. INIFAP.

Figures prepared by “Jesús Javier Pastrana C”. High school student.

Descriptors used by OMNI-Hungary (provided by COBORU)

10. Technical Questionnaire

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
		Application date: (not to be filled in by the applicant)
<b>TECHNICAL QUESTIONNAIRE</b> to be completed in connection with an application for plant breeders' rights		
1. Subject of the Technical Questionnaire		
1.1.1 Botanical Name	<input type="text" value="Amaranthus L."/>	
1.1.2 Common Name	<input type="text" value="Amaranth"/>	
1.2 Species (please complete)	<input type="text"/>	
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"/>	

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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#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) ( )

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

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



TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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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 <b>similar</b> variety(ies)	Describe the expression of the characteristic(s) for <b>your</b> candidate variety
<i>Example</i>		<i>(example to be inserted) (example to be inserted)</i>	

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

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.

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