

TG/ROCK\_ERU(proj.2) ORIGINAL: English DATE: 2008-01-08

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

GENEVA



## CULTIVATED ROCKET

UPOV Code: ERUCA\_SAT

Eruca sativa Mill.

## GUIDELINES

## FOR THE CONDUCT OF TESTS

## FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by experts from France

to be considered by the Technical Committee at its forty-fourth session, to be held in Geneva, from April 7 to 9, 2008

Alternative Names:\*

Botanical name	English	French	German	Spanish
<i>Eruca sativa</i> Mill.	Arugula, Cultivated Rocket, Garden Rocket, Rocket-salad, Rugula, Salad Rocket	Roquette cultivée	Ölrauke, Rauke, Ruke, Rukola, Senfrauke	Oruga común, Roqueta

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.

Other associated UPOV documents: TG/ROCK-DIP

<sup>\*</sup> 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. <u>Subject of these Test Guidelines</u>

These Test Guidelines apply to all varieties of Eruca sativa Mill.

### 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:

25 g or 15 000 seeds.

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

3.3.1 The tests should be carried out under conditions ensuring satisfactory growth for the expression of the relevant characteristics of the variety and for the conduct of the examination.

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

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- 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

#### 3.4 Test Design

3.4.1 Each test should be designed to result in a total of at least 60 plants, which should be divided between two or more replicates.

3.4.2 The design of the tests should be such that plants or parts of plants may be removed for measurement or counting without prejudice to the observations which must be made up to the end of the growing cycle.

#### 3.5 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 and any other observations made on all plants in the test."

#### 3.6 Additional Tests

Additional tests, for examining relevant characteristics, may be established.

#### 4. <u>Assessment of Distinctness, Uniformity and Stability</u>

#### 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 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.

4.3.2 Where appropriate, or in cases of doubt, stability may be tested, either by growing a further generation, or by testing a new seed stock to ensure that it exhibits the same characteristics as those shown by the previous 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) Leaf: length (characteristic 4)
- b) Leaf: width (characteristic 5)
- c) Leaf: division (characteristic 6)
- d) Leaf: secondary lobing (characteristic 8)
- e) Flower: color of petals (characteristic 13)

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

#### 6. <u>Introduction to the Table of Characteristics</u>

#### 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, MS, VG, VS: See Chapter 3.3.2

- (a) See Explanations on the Table of Characteristics in Chapter 8.1
- (+) See Explanations on the Table of Characteristics in Chapter 8.2

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#### 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	Leaf: attitude	Feuille : port	Blatt: Haltung	Hoja: porte		
QN	(a)	erect	dressé	aufrecht	erecto	Runway, Sky Rocket	1
		semi erect	demi dressé	halbaufrecht	semi erecto	Myway	3
		horizontal	horizontal	waagerecht	horizontal	Highway	5
2. (*)	VG	Leaf: color of blade	Feuille : couleur du limbe	Blatt: Farbe der Spreite	Hoja: color del limbo		
QL	(a)	yellow green	vert jaune	gelbgrün	amarillo verde	Highway, Runway	1
_		green	vert	grün	verde	Myway	2
3.	VG	Leaf: intensity of color	Feuile: intensité de la couleur	Blatt: Intensität der Farbe	Hoja: intensidad del color		
QN	(a)	light	claire	hell	claro		3
		medium	moyenne	mittel	medio		5
		dark	foncée	dunkel	oscuro		7
<b>4.</b> (*) (+)	VG/ MG	Leaf: length	Feuille: longueur	Blatt: Länge	Hoja: longitud		
QN	(a)	short	courte	kurz	corta	Rococo	3
		medium	moyenne	mittel	media	Myway	5
		long	longue	lang	larga	Runway	7
5. (*)	VG/ MG	Leaf: width	Feuille: largeur	Blatt: Breite	Hoja: anchura		
QN	(a)	narrow	étroit	schmal	estrecha		3
		medium	moyenne	mittel	media	Myway	5
		broad	large	breit	ancha	Highway	7

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		English	français	Deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
<b>6.</b> (*) (+)	VG	Leaf: division	Feuille: découpe	Blatt: Fiederung	Hoja: división		
QN	(a)	absent or very weak	absente ou très faible	fehlend oder sehr gering	ausente o muy débil	Apollo	1
		weak	faible	gering	débil	Aladin	3
		moderate	moyenne	mittel	mediana	Rococo	5
		strong	forte	stark	fuerte	Myway	7
		very strong	très forte	sehr stark	muy fuerte	Runway	9
7. (+)	VG	Leaf: width of primary lobes	Feuille: largeur des lobes primaires	Blatt: Breite der Lappen erster Ordnung	Hoja: anchura de los lóbulos principales		
QN	(a)	narrow	étroite	schmal	estrecha	Runway	3
		medium	moyenne	mittel	media	Highway	5
		broad	large	breit	ancha	Rococo	7
<b>8.</b> (*) (+)	VG	Leaf: secondary lobing	Feuille: découpe secondaire	Blatt: Lappung zweiter Ordnung	Hoja: lobulado secundario		
QN	(a)	absent or very weak	absente ou très faible	fehlend oder sehr gering	ausente o muy débil	Aladin	1
		weak	faible	gering	débil		3
		moderate	moyenne	mittel	medio	Rococo	5
		strong	forte	stark	fuerte	Myway	7
		very strong	très forte	sehr stark	muy fuerte	Highway, Runway	9
9.	VG	Leaf: undulation of margin	Feuille: ondulation du bord	Blatt: Randwellung	Hoja: ondulación del borde		
QN	(a)	weak	faible	gering	débil	Highway	3
		medium	moyenne	mittel	media	Rococo	5
		strong	forte	stark	fuerte	Myway	7

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		English	français	Deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
10.	VG	Leaf: hairiness	Feuille: pilosité	Blatt: Behaarung	Hoja: vellosidad		
QN	(a)	weak	faible	gering	débil	Highway	3
		medium	moyenne	mittel	media	Sky Rocket	5
		strong	forte	stark	fuerte		7
11. (*) (+)	VG/ MG	Time of flowering	Epoque de floraison	Zeitpunkt der Blüte	Época de floración		
QN		early	précoce	früh	temprana	Astro	3
		medium	moyenne	mittel	media	Highway	5
		late	tardive	spät	tardía	Runway	7
		very late	très tardive	sehr spät	muy tardía	Sky Rocket	9
12.	VG	Plant: height at flowering stage	Plante: hauteur au stade floraison	Pflanze: Höhe im Blühstadium	Planta: altura en floración		
QN		short	courte	niedrig	baja		3
		medium	moyenne	mittel	media	Rococo	5
		long	longue	hoch	alta	Highway	7
<b>13.</b> (*) (+)	VG	Flower: color of petals	s Fleur: couleur des pétales	Blüte: Farbe der Blütenblätter	Flor: color de los pétalos		
PQ		whitish	blanchâtre	weißlich	blanquecino	Rococo	1
		creamish	blanc jaunâtre	cremefarben	cremoso	Myway	2
		light yellow	jaune pâle	hellgelb	amarillo claro	Highway	3
14.	VG	Flower: anthocyanin coloration of vein	Fleur: coloration anthocyanique des nervures	Blüte: Anthocyanfärbung der Ader	Flor: coloración antoaciánica de los nervios		
QN		absent or weak	absente à faible	fehlend oder gering	ausente o débil	Flash	1
		medium	moyenne	mittel	media	Highway	2
		strong	forte	stark	fuerte	Rococo	3

## 8. <u>Explanations on the Table of Characteristics</u>

#### 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 observation on the leaf should be made on the rosette before the appearance of the inflorescence.

## 8.2 Explanations for individual characteristics

#### Ad. 4: Leaf: length

The leaf length includes the blade and petiole.

### Ad. 6: Leaf: division



The division of the leaf should be observed in the middle third of the leaf.

Ad. 7: Leaf: width of primary lobes



The width of the primary lobes should be observed in the middle third of the leaf.

Ad. 8: Leaf: secondary lobing





The time of flowering is when 50% of plants have at least one open flower.

## Ad. 13: Flower: color of petals

The color of the petals should be observed at the time of flower opening.

## 9. <u>Literature</u>

IPGRI, 1999: Descriptors for Rocket (*Eruca* spp.). International Plant Genetic Resources Institute, Rome, IT, 56 pp.

Padulosi, S., Pignone, D., editors, 1997: Rocket: a Mediterranean crop for the world. Report of a workshop, 13-14 December 1996, Legnaro, IT. International Plant Genetic Resources Institute, Rome, IT, 97 pp.

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#### 10. Technical Questionnaire

TEC	HNICAL QUESTIONNAIRE	1 7	Page {x} of {y}	Reference Number:
				Application date: (not to be filled in by the applicant)
	TEO	CHN	ICAL QUESTIONNA	JIRE
	to be completed in conn	ectio	on with an application	for plant breeders' rights
1.	Subject of the Technical Que	estio	nnaire	
	1.1 Botanical name	Erı	uca sativa Mill.	
	1.2 Common name	Cu	ltivated rocket	
2.	Applicant			
	Name			
	Address			
	Telephone No.			
	Fax No.			
	E-mail address			
	Breeder (if different from ap	plica	nt)	
3.	Proposed denomination and	bree	der's reference	
	Proposed denomination (if available)			
	Breeder's reference			

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TECHNICAL QUESTION	NAIRE Page $\{x\}$ of $\{y\}$	Reference Number:				
<sup>#</sup> 4. Information on the breeding scheme and propagation of the variety						
4.1 Breeding scheme						
Variety resulting f	rom:					
4.1.1 Crossing (a) con (ple	trolled cross ease state parent varieties)	[ ]				
(b) par (ple	tially known cross ease state known parent variety	[ ] y(ies))				
(c) unk	tnown cross	[ ]				
4.1.2 Mutation (please st	ate parent variety)	[ ]				
4.1.3 Discover (please st and how	y and development ate where and when discovere developed)	[ ] d				
4.1.4 Other (please pr	rovide details)	[ ]				
4.2 Method of propagating	4.2 Method of propagating the variety					
(a) Cross (i) p (ii) s	s-pollination opulation ynthetic variety	[ ]				
(b) Other (plea	r se provide details)	[ ]				

<sup>&</sup>lt;sup>#</sup> Authorities may allow certain of this information to be provided in a confidential section of the Technical Questionnaire.

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TECHN	NICAL QUESTIONNAIRE	Page $\{x\}$ of $\{y\}$	Reference Number:				
5. Ch corresp	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 (4)	Leaf: length						
	short		Rococo	3[]			
	medium		Myway	5[]			
	long		Runway	7[]			
5.2 (5)	Leaf: width						
	narrow			3[]			
	medium		Myway	5[]			
	broad		Highway				
5.3 (6)	Leaf: division						
	absent or very weak		Apollo	1[]			
	weal		Aladin	3[]			
	medium		Rococo				
	strong		Myway				
	very strong		Runway	9[]			
5.4 (8)	Leaf: secondary lobing						
	absent or very weak		Aladin	1[]			
	weak			3[]			
	medium		Rococo	5[]			
	strong		Myway	7[]			
	very strong		Highway, Runway	9[]			

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TECHNICAL QUESTIONNAIRE		Page {x} of {y}	Reference Number:	
	Characteristics	-	Example Varieties	Note
5.5 (11)	Time of flowering			
	early		Astro	3[]
	medium		Highway	5[]
	late		Runway	7[]
	very late		Sky Rocket	9[]
5.6 (13)	Flower: color of petals			
	whitish		Rococo	1[]
	creamish		Myway	2[]
	light yellow		Highway	3[]

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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.						

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Denomination(s) of	Characteristic(s) in	Describe the	Describe the expression
variety(ies) similar to	which your candidate	expression of the	of the characteristic(s)
your candidate variety	variety differs from the	characteristic(s) for	for your candidate
	similar variety(ies)	the similar	variety
		variety(ies)	
Example	Flower: color of petals	whitish	light yellow

Comments:

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TECHNICAL QUESTIONNAIRE			Page {x	} of {y}	Reference Number:	
<sup>#</sup> 7.	Add	itional ir	nformation which m	ay help in	the examina	tion 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	[]	Ν	[o []		
	(If ye	es, please	e provide details)			
7.2	Are	there any	y special conditions	for growi	ng the variety	y or conducting the examination?
	Yes	[]	Ν	[o []		
	(If ye	es, please	e provide details)			
8.	Auth	norizatio	n 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 su	ch authorization be	en obtaine	d?	
		Yes	[]	No	[]	
	If the	e answer	to (b) is yes, pleas	e attach a	copy of the a	uthorization.

<sup>&</sup>lt;sup>#</sup> Authorities may allow certain of this information to be provided in a confidential section of the Technical Questionnaire.

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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)	Microorganisms (e.g. virus, bacteria, phytoplasm	na)	Yes []	No [ ]			
	(b)	Chemical treatment (e.g. growth retardant, pestic	ide)	Yes []	No [ ]			
	(c)	Tissue culture		Yes []	No [ ]			
	(d)	Other factors		Yes []	No [ ]			
	Please provide details for where you have indicated "yes".							
0. I hereby declare that, to the best of my knowledge, the information provided in this form s correct:								
	Appli	icant's name						
	Signa	ature	Date					

[End of document]