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TG/229/1
ORIGINAL: English
DATE: 2006-04-05

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

PEPPERMINT *

UPOV Code: MENTH_PIP

Mentha ×piperita L.

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

Alternative Names:*

Botanical name	*English*	*French*	*German*	*Spanish*
Mentha ×piperita L., *Mentha aquatica* L. × *Mentha spicata* L.	Peppermint	Menthe poivrée	Pfefferminze	Menta piperia, Menta negra, Piperita

The purpose of these guidelines ("Test Guidelines") is to elaborate the principles contained in the General Introduction (document TG/1/3), and its associated TGP documents, into detailed practical guidance for the harmonized examination of distinctness, uniformity and stability (DUS) and, in particular, to identify appropriate characteristics for the examination of DUS and production of harmonized variety descriptions.

ASSOCIATED DOCUMENTS

These Test Guidelines should be read in conjunction with the General Introduction and its associated TGP documents.

* These names were correct at the time of the introduction of these Test Guidelines but may be revised or updated. [Readers are advised to consult the UPOV Code, which can be found on the UPOV Website (www.upov.int), for the latest information.]

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1. Subject of these Test Guidelines

These Test Guidelines apply to all varieties of *Mentha ×piperita* L. (sterile interspecific hybrid between *Mentha spicata* L. and *Mentha aquatica* 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 rooted cuttings.

2.3 The minimum quantity of plant material, to be supplied by the applicant, should be:

30 rooted cuttings.

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. 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

3.3.1 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:

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 20 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 should de made on 10 plants or parts taken from each of 10 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 vegetatively propagated varieties, a population standard of 1% and an acceptance probability of at least 95 % should be applied. In the case of a sample size of 20 plants, 1 off-type is allowed.

4.3 Stability

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

4.3.2 Where appropriate, or in cases of doubt, stability may be tested, either by growing a further generation, or by testing a new plant stock to ensure that it exhibits the same characteristics as those shown by the previous material supplied.

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.

The following have been agreed as useful grouping characteristics:

(a) Plant: height (characteristic 2)
(b) Leaf: hairiness (on upper side) (characteristic 8)
(c) Inflorescence: shape (characteristic 17)

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, MS, VG, VS: See Chapter 3.3.1

(a)-(b) 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
1. (*) (+)	**VG**	**Plant: growth habit**	**Plante: port**	**Pflanze: Wuchsform**	**Planta: porte**		
QN	**(a)**	erect	dressé	aufrecht	erecto	Feldioara, Tota 1, Toulouse	1
		semi-erect	demi-dressé	halbaufrecht	semierecto	Columna	3
		prostrate	étalé	liegend	postrado	Mitcham Dr Bomme	5
2. (*)	**VG**	**Plant: height**	**Plante: hauteur**	**Pflanze: Höhe**	**Planta: altura**		
QN	**(a)**	short	courte	niedrig	pequeña	Toulouse	3
		medium	moyenne	mittel	media	Feldioara, Krasnodarskaja	5
		tall	haute	hoch	grande	Multimentha, Todd's	7
3.	**VG**	**Plant: number of stolons**	**Plante: nombre de stolons**	**Pflanze Anzahl Ausläufer**	**Planta: número de estolones**		
QN	**(a)**	few	faible	gering	escaso	Multimentha	3
		medium	moyen	mittel	medio	Tschernolistnaja	5
		many	élevé	groß	elevado		7
4.	**VG**	**Stem: anthocyanin coloration**	**Tige: pigmentation anthocyanique**	**Stengel: Anthocyanfärbung**	**Tallo: pigmentación antociánica**		
QN	**(a)**	weak	faible	gering	débil	Toulouse	3
		medium	moyenne	mittel	medio	Multimentha	5
		strong	forte	stark	fuerte	Feldioara, Wysokomentolnaja	7
5. (*)	**VG/ MS**	**Leaf blade: length**	**Limbe: longueur**	**Blattspreite: Länge**	**Limbo: longitud**		
QN	**(a)**	short	courte	kurz	corto	M19	3
		medium	moyenne	mittel	medio	Multimentha	5
		long	longue	lang	largo	Minze A	7

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
6. (*)	**VG/ MS**	**Leaf blade: width**	**Limbe: largeur**	**Blattspreite: Breite**	**Limbo: anchura**		
QN	**(a)**	narrow	étroit	schmal	estrecho	M19, NR36A Dr Bomme	3
		medium	moyen	mittel	medio	Multimentha	5
		broad	large	breit	ancho	Minze A	7
7. (*) (+)	**VG/ MS**	**Leaf blade: ratio length/width**	**Limbe: rapport longueur/largeur**	**Blattspreite: Verhältnis Länge/Breite**	**Limbo: relación longitud/anchura**		
QN	**(a)**	small	petit	klein	pequeño	De Banat, Tschernolistnaja	3
		medium	moyen	mittel	medio		5
		large	grand	groß	grande	Multimentha	7
8. (*)	**VG**	**Leaf: hairiness (on upper side)**	**Feuille: pilosité (sur la face supérieure)**	**Blatt Behaarung (an der Oberseite)**	**Hoja: pilosidad (borde superior)**		
QL	**(a)**	absent	absente	fehlend	ausente	Menthola, Mitcham Wien	1
		present	présente	vorhanden	presente	Multimentha	9
9.	**VG**	**Leaf: intensity of hairiness (as for 8)**	**Feuille: intensité de la pilosité (comme pour 8)**	**Blatt: Intensität der Behaarung (wie unter 8)**	**Hoja: intensidad de la pilosidad (como para el 8)**		
QN	**(a)**	weak	faible	gering	débil		3
		medium	moyenne	mittel	medio	Multimentha	5
		strong	forte	stark	fuerte	Tota 1, Toulouse	7
10. (*)	**VG**	**Leaf: intensity of green color**	**Feuille: intensité de la couleur verte**	**Blatt: Intensität der Grünfärbung**	**Hoja: intensidad del color verde**		
QN	**(a)**	light	claire	hell	claro	Tota 1, Toulouse	3
		medium	moyenne	mittel	medio	De Banat, Multimentha, Wysokomentolnaja	5
		dark	foncée	dunkel	oscuro	Feldioara	7

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
11.	**VG**	**Leaf: anthocyanin coloration of veins on lower side**	**Feuille: pigmentation anthocyanique des veines sur la face inférieure**	**Blatt: Anthocyanfärbung der Adern an der Unterseite**	**Hoja: pigmentación antociánica de los nervios en el envés**		
QN	**(a)**	weak	faible	gering	débil	De Banat, Tschernolistnaja	3
		medium	moyenne	mittel	medio		5
		strong	forte	stark	fuerte		7
12. **(+)**	**VG**	**Leaf: type of incisions of margin**	**Feuille: type d'incisions du bord**	**Blatt: Typ der Randeinschnitte**	**Hoja: tipo de incisiones del borde**		
PQ	**(a)**	serrate	en dents de scie	gesägt	serradas		1
		dentate	denté	gezähnt	dentadas		2
		crenate	crénelé	gekerbt	almenadas		3
		sinuate	sinué	gebuchtet	sinuosas		4
13. **(+)**	**VG**	**Leaf: depth of incisions of margin**	**Feuille: profondeur des incisions du bord**	**Blatt: Tiefe der Randeinschnitte**	**Hoja: profundidad de las incisiones del borde**		
QN	**(a)**	shallow	peu profond	flach	poco profundas	De Banat	3
		medium	moyen	mittel	medias	Multimentha	5
		deep	profond	tief	profundas	Minze A	7
14.	**VG**	**Leaf: degree of blistering**	**Feuille: cloqûre**	**Blatt: Stärke der Blasigkeit**	**Hoja: intensidad del abullonado**		
QN	**(a)**	weak	faible	gering	débil	Türkische Minze	3
		medium	moyenne	mittel	medio	Kliment, Krasmodarskaja	5
		strong	forte	stark	fuerte	Feldioara, Toulouse	7

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
15. (*) (+)	**VG**	**Leaf: shape of apex**	**Feuille: forme du sommet**	**Blatt: Form der Spitze**	**Hoja: forma del ápice**		
PQ	**(a)**	acute	aiguë	spitz	aguda	Multimentha	1
		obtuse	obtuse	stumpf	obtusa		2
		rounded	arrondie	abgerundet	redondeada	Toulouse	3
16.	**VG**	**Leaf: anthocyanin coloration of margin**	**Feuille: pigmentation anthocyanique du bord**	**Blatt: Anthocyanfärbung des Randes**	**Hoja: pigmentación antociánica del borde**		
QL	**(a)**	absent	absente	fehlend	ausente	Multimentha	1
		present	présente	vorhanden	presente	Tota 1, Toulouse	9
17. (*) (+)	**VG**	**Inflorescence: shape**	**Inflorescence: forme**	**Blütenstand: Form**	**Inflorescencia: forma**		
PQ	**(b)**	cylindrical	cylindrique	zylindrisch	cilíndrica	Krasnodarskaja, Todd's	1
		conical	conique	kegelförmig	cónica	Feldioara, Kliment	2
		globular	globuleuse	kugelförmig	globulosa	NR 36A Dr Bomme, Toulouse	3
18. (*) (+)	**MS/ VG**	**Inflorescence: length**	**Inflorescence: longueur**	**Blütenstand: Länge**	**Inflorescencia: longitud**		
QN	**(b)**	short	courte	kurz	corta	Minze B, Toulouse	3
		medium	moyenne	mittel	media	Menthola, Minze A	5
		long	longue	lang	larga	Kliment, Multimentha	7
19. (*)	**MS/ VG**	**Inflorescence: width (at the widest point)**	**Inflorescence: largeur (au point le plus large)**	**Blütenstand: Breite (an der breitesten Stelle)**	**Inflorescencia: anchura (en el punto más ancho)**		
QN	**(b)**	narrow	étroite	schmal	estrecha	M19, Minze B	3
		medium	moyenne	mittel	media	Sagittaire, Türkische Minze	5
		broad	large	breit	ancha	Multimentha, Toulouse	7

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
20. (*)	**VG**	**Flower: color of petals**	**Fleur: couleur des pétales**	**Blüte: Farbe der Blütenblätter**	**Flor: color de los pétalos**		
PQ	**(b)**	white	blanc	weiß	blanco	Columna, Kliment	1
		pink	rose	rosa	rosa		2
		violet	violet	violett	violeta	Multimentha	3
21.	**VG**	**Flower: anthocyanin coloration of sepals**	**Fleur: pigmentation anthocyanique des sépales**	**Blüte: Anthocyanfärbung der Kelchblätter**	**Flor: pigmenación antociánica de los cépalos**		
QN	**(b)**	weak	faible	gering	débil	Multimentha	3
		medium	moyenne	mittel	media	De Banat	5
		strong	forte	stark	fuerte	Minze B	7
22. (*)	**MS**	**Time of beginning of flowering (50% of plants with at least one open flower)**	**Époque de début de floraison (50% des plantes avec au moins une fleur épanouie)**	**Zeitpunkt des Blühbeginns (50 % der Pflanzen mit mindestens einer geöffneten Blüte)**	**Época de inicio de la floración (50% de las plantas con al menos una flor abierta)**		
QN		early	précoce	früh	temprana	Tschernolistnaja	3
		medium	moyenne	mittel	media	Kliment, Multimentha	5
		late	tardive	spät	tardía	Krasnodarskaja, Minze B, Mitcham Kölleda	7

8. Explanations on the Table of Characteristics

8.1 Explanations covering several characteristics

Characteristics containing the following key in the second column of the Table of Characteristics should be examined as indicated below:

(a) Characteristics to be observed at the beginning of flowering.
(b) Characteristics to be observed at full flowering.

8.2 Explanations for individual characteristics

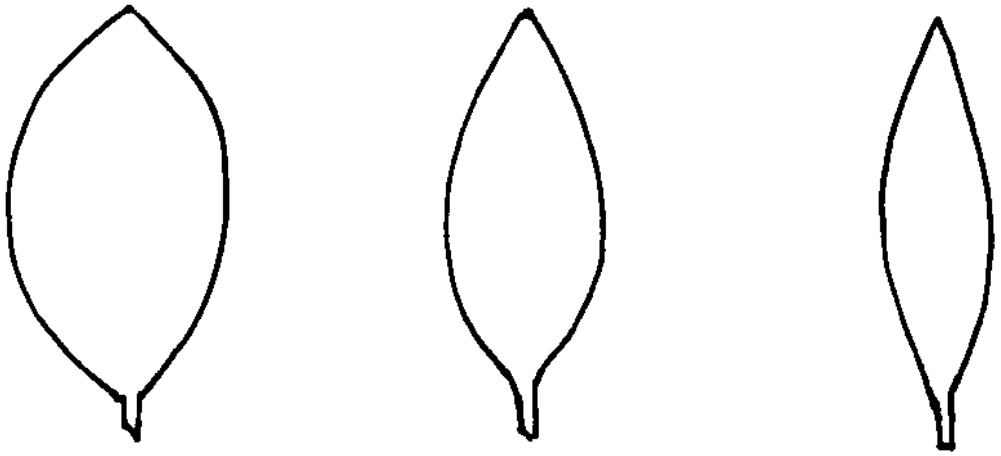
Ad. 1: Plant: growth habit

1
erect

3
semi-erect

5
prostrate

Ad. 7: Leaf blade: ratio length/width

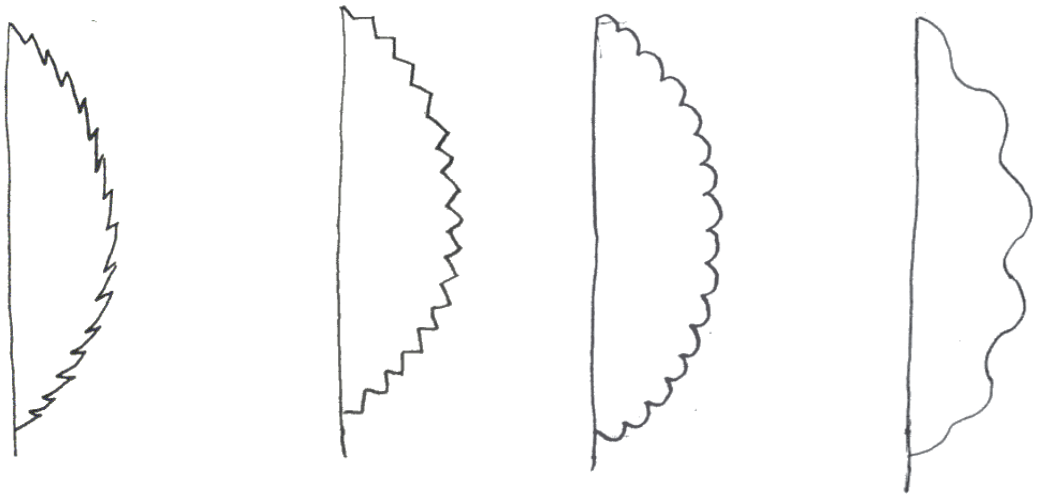


3
small

5
medium

7
large

Ad 12: Leaf: type of incisions of margin



1
serrate

2
dentate

3
crenate

4
sinuate

Ad 13: Leaf: depth of incisions of margin

3
shallow

5
medium

7
deep

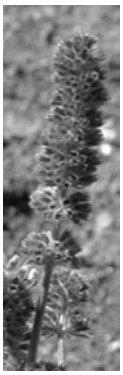
Ad. 15: Leaf: shape of apex

1
acute

2
obtuse

3
rounded

Ad. 17: Inflorescence: shape

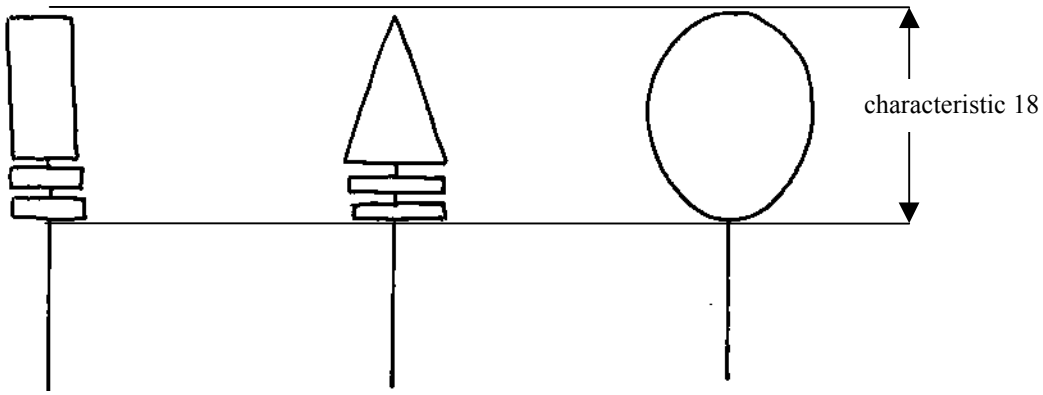


1
cylindrical

2
conical

3
globular

Ad. 18: Inflorescence: length



9. Literature

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10. 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 Botanical name: *Mentha ×piperita* L.

1.2 Common name: Peppermint

2. Applicant

Name

Address

Telephone No.

Fax No.

E-mail address

Breeder (if different from applicant)

3. Proposed denomination and breeder's reference

Proposed denomination (if available)

Breeder's reference

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

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

4.1 Breeding scheme

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)

4.2 Method of propagating the variety

4.2.1 Vegetative propagation

(a) cuttings [ ]
(b) *in vitro* propagation [ ]
(c) other (state method) [ ]

4.2.3 Other [ ]
(please provide details)

[#] 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:

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

	Characteristics	Example Varieties	Note
5.1 (1)	**Plant: growth habit**		
	erect	Feldioara, Tota 1, Toulouse	1[ ]
	semi- erect	Columna	3[ ]
	prostate	Mitcham Dr Bomme	5[ ]
5.2 (2)	**Plant: height**		
	short	Toulouse	3[ ]
	medium	Feldioara, Krasnodarskaja	5[ ]
	tall	Multimentha, Todd's	7[ ]
5.3 (7)	**Leaf blade: ratio length/width**		
	small	De Banat, Tschernolistnaja	3[ ]
	medium		5[ ]
	large	Multimentha	7[ ]
5.4 (8)	**Leaf: hairiness (on upper side)**		
	absent	Menthola, Mitcham Wien	1[ ]
	present	Multimentha	9[ ]
5.5 (17)	**Inflorescence: shape**		
	cylindrical	Krasnodarskaja, Todd's	1[ ]
	conical	Feldioara, Kliment	2[ ]
	globular	NR 36A Dr Bomme, Toulouse	3[ ]

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

	Characteristics	Example Varieties	Note
5.6 (20)	**Flower: color of petals**		
	white	Columna, Kliment	1[ ]
	pink		2[ ]
	violet	Multimentha	3[ ]
5.7 (22)	**Time of beginning of flowering (50% of plants with at least one open flower)**		
	early	Tschernolistnaja	3[ ]
	medium	Kliment, Multimentha	5[ ]
	late	Krasnodarskaja, Minze B, Mitcham Kölleda	7[ ]

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
Example	*Plant: height*	*medium*	*tall*

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.

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, 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]