



TWO/33/15

ORIGINAL: English

DATE: June 2, 2000

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS
GENEVA

**TECHNICAL WORKING PARTY
FOR
ORNAMENTAL PLANTS AND FOREST TREES**

WORKING PAPER ON DRAFT TEST GUIDELINES FOR ORNAMENTAL APPLE
(*Malus Mill.*)

prepared by experts from the United Kingdom

<u>TABLE OF CONTENTS</u>	<u>PAGE</u>
I. Subject of these Guidelines	3
II. Material Required	3
III. Conduct of Tests	3
IV. Methods and Observations.....	3
V. Grouping of Varieties	4
VI. Characteristics and Symbols	4
VII. Table of Characteristics	6
VIII. Explanations on the Table of Characteristics	15
IX. Literature	17
X. Technical Questionnaire	18

I. Subject of these Guidelines

1. These Test Guidelines apply to all vegetatively propagated varieties of ornamental apple, *Malus* Mill., of the family Rosaceae.

II. Material Required

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

Five trees, three years old, on a rootstock which should be named when the plant material is supplied. The competent authorities may prescribe the rootstock on which the variety should be grafted.

2. The plant material supplied should be visibly healthy, not lacking in vigor or affected by any important pest or disease.

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

III. Conduct of Tests

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

2. The test should be carried out under conditions ensuring normal growth.

3. Additional tests for special purposes may be established.

IV. Methods and Observations

1. All observations determined by measurement, weighing or counting should be made on two plant parts from each of five trees.

2. For the assessment of uniformity, a population standard of 1% and an acceptance probability of at least 95% should be applied. In the case of a sample size of five plants, no off-types would be allowed.

3. All observations on the unopened flower should be made on the second or third flower bud when the terminal flower is opening.

4. All observations on the flower should be made at the start of anther dehiscence on an average of 10 second or third flowers with intact pedicel.

5. All observations on the current season's shoot should be made on shoots from the outside of the tree in summer while the tree is still in active growth.
6. Unless otherwise indicated all observations on the leaf should be made on mature leaves taken in summer from the middle third of a vigorous shoot of the current season on the outside of the tree.
7. Unless otherwise indicated, for the observations on the fruit, 10 typical fruits should be selected. The terminal fruits should be excluded. The fruits should be examined before they are affected by any damage due to weather, birds etc..
8. 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 British Standard 950, Part I. These determinations should be made with the plant part placed against a white background.

V. Grouping of Varieties

1. The collection to be grown should be divided into groups to facilitate the assessment of distinctness. Characteristics which are suitable for grouping purposes are those which are known from experience not to vary, or to vary only slightly, within a variety and which in their various states are fairly evenly distributed within the collection.
2. It is recommended that the competent authorities use the following characteristics for grouping varieties:
 - (a) Flower: type (characteristic 8)
 - (b) Petal: color of marginal zone of upper side (characteristic 14)
 - (c) Expanding leaf: color of blade (characteristic 17)
 - (d) Fruit: size (characteristic 29)
 - (e) Fruit: colour group (characteristic 40).

VI. Characteristics and Symbols

1. To assess distinctness, homogeneity and stability, the characteristics and their states as given in the Table of Characteristics should be used.
2. Notes (numbers), for the purposes of electronic data processing, are given opposite the states of the different characteristics.
3. Some species are indicated as examples in the Table of Characteristics. Names of further example varieties will be indicated as soon as they become available.

4. Legend

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

(+) See Explanations on the table of characteristics in Chapter VIII.

VII. Table of Characteristics/Tableau des caractères/Merkmalstabelle

	Characteristics Caractères Merkmale	English	français	deutsch	Example Varieties Exemples Beispielssorten	Note
1.	Tree: vigor	weak	faible	gering	Dorothea	3
	Arbre: vigueur	medium	moyenne	mittel	Dolgo	5
	Baum: Wuchsstärke	strong	forte	stark	M. baccata Jackii	7
*2.	DELETED					
*3.	Tree: habit	columnar			Maypole	1
+		fastigate			Laura	2
		upright	dressé	aufrecht	Van Eseltine	3
		spreading	divergent	breitwüchsig	Red Glow	4
		drooping	retombant	überhängend	Elise Rathke	5
		weeping	pleureur	lang über- hängend	Oekonomierat Echtermeyer	6
4.	DELETED					
5.	DELETED					
5a.	Shoot: colour	grey green			Red Sentinel	1
		brown green			Wintergold	2
		brown			Van Eseltine	3
		red brown			Henry F. Dupont	4
		dark red			Evereste	5
6.	Inflorescence: type	umbellate			Golden Hornet	1
		corymbiform			M. coronaria Charlottae	2

Characteristics Caractères Merkmale	English	français	deutsch	Example Varieties Exemples Beispielsorten	Note
*7. Unopened flower: color (balloon stage) Fleur non épanouie: couleur Ungeöffnete Blüte: Knospenfarbe	white	blanche	weiss	M. toringoides	1
	light pink	rose pâle	hellrosa	M. coronaria Charlottae	2
	medium pink	rose moyen	mittelrosa	Cowichan	3
	dark pink	rose foncé	dunkelrosa	M. floribunda	4
	red	rouge	rot	Red Glow	5
	purple	pourpre	purpur		6
*8. Flower: type Fleur: type Blüte: Typ	single	simple	einfach	Profusion	1
	semi-double	demi-double	halbgefüllt	M. x Scheideckeri	2
	double	double	gefüllt	M. coronaria Nieuwlandiana	3
*9. Flower: diameter with petals pressed into horizontal position Fleur: Blüte:	small	petite	klein	Wintergold	3
	medium	moyenne	mittel	Profusion	5
	large	grande	gross	Montreal Beauty	7
*10. Flower: form	flat				1
	shallow cup			Courtarou	2
	deep cup			Van Eseltine	3
*11. Petal: shape (excluding claw) Pétale: forme Blütenblatt: Form	narrow elliptic	elliptique étroite	schmall elliptisch		1
	elliptic	elliptique	elliptisch	Makamik	2
	broad elliptic	elliptique large	breit elliptisch	Wynema	3
	orbicular			M. yunnanensis Veitchii	4
	narrow ovate	ovale étroite	schmal ei- förmig	Katherine	5
	ovate	ovale	eiförmig	Profusion	6
	oblong	rectangulaire	rechteckig	M. coronaria Charlottae	7

Characteristics Caractères Merkmale	English	français	deutsch	Example Varieties Exemples Beispielssorten	Note
*12. Petals: relative position of margins Pétales: position relative des bords Blütenblätter: Stellung zueinander	apart			Makamik	3
	touching	tangents	sich berührend	John Downie	5
	overlapping	chevauchants	überlappend	Butterball	7
13. Petal:veins	not prominent			John Downie	1
	prominent			Almey	2
*14. Petal: color of <u>marginal</u> zone of <u>inner</u> side Pétale: Blütenblatt:	RHS-Colour Chart (indicate reference number)	Code RHS des Couleurs (indiquer le numéro de référence)	RHS-Farbkarte (Nummer angeben)		
*14a. Petal: color of <u>middle</u> zone of <u>inner</u> side (if different) Pétale: Blütenblatt:	RHS-Colour Chart (indicate reference number)	Code RHS des Couleurs (indiquer le numéro de référence)	RHS-Farbkarte (Nummer angeben)		
*14b. Petal: color of <u>basal</u> zone of <u>inner</u> side (if different) Pétale: Blütenblatt:	RHS-Colour Chart (indicate reference number)	Code RHS des Couleurs (indiquer le numéro de référence)	RHS-Farbkarte (Nummer angeben)		
*15. Petal: color of <u>outer</u> side Pétale: couleur de la face <u>inférieure</u> Blütenblatt: Farbe der <u>Unterseite</u>	RHS-Colour Chart (indicate reference number)	Code RHS des Couleurs (indiquer le numéro de référence)	RHS-Farbkarte (Nummer angeben)		
16. DELETED					

Characteristics Caractères Merkmale	English	français	deutsch	Example Varieties Exemples Beispielssorten	Note
*17. Expanding leaf: color of blade Feuille en cours de croissance: couleur du limbe Sich entfaltendes Blatt: Farbe der Blattspreite	green	vert	grün	John Downie	1
	reddish green			Winter Gold	2
	red				3
	reddish brown			Laura	4
	bronze			Indian Magic	5
	purple			Royalty	6
*18. Leaf: lobes Feuille: lobes Blatt: Lappung	absent	absents	fehlend	Dolgo	1
	sometimes present	parfois présents	manchmal vorhanden	Wynema	2
	always present	toujours présents	immer vorhanden	M. coronaria Nieuwlandiana	3
*19. Leaf: length of blade Feuille: Blatt:	short	courte	kurz	M. floribunda	3
	medium	moyenne	mittel	M. x purpurea Lemoinei	5
	long	longue	lang	Simcoe	7
*19a. Leaf: length of petiole Feuille: Blatt:	short	courte	kurz		3
	medium	moyenne	mittel		5
	long	longue	lang		7
*20. Leaf: width Feuille: largeur Blatt: Breite	narrow	étroite	schmal	Hopa	3
	medium	moyenne	mittel	John Downie	5
	broad	large	breit	Montreal Beauty	7
21. Leaf blade: ratio length/width (from fourth to sixth fully expanded leaf) Limbe: rapport longueur/largeur (de la quatrième à la sixième feuille bien développée) Blattspreite: Verhältnis Länge/Breite (4. bis 6. gut entwickeltes Blatt)	small	faible	klein		3
	medium	moyen	mittel		5
	large	élevé	gross		7

Characteristics Caractères Merkmale	English	français	deutsch	Example Varieties Exemples Beispielsorten	Note
*22. Leaf blade: incisions of margin	crenate	crénelée	gekerbt	Courtabri	1
	serrate	dentée	gesägt	Scarlett	2
*23. Leaf blade: glossiness of upper side Limbe: brillance de la face supérieure Blattspreite: Glanz der Oberseite	weak	faible	gering	Laura	3
	medium	moyenne	mittel		5
	strong	forte	stark	Scarlett	7
*24. DELETED					
*25. Leaf blade: green color of upper side Limbe: couleur verte de la face supérieure Blattspreite: Grün- färbung der Oberseite	light	faible	hell	Red Jade	3
	medium	moyenne	mittel		5
	dark	forte	dunkel	Red Jewel	7
*26. Leaf blade: antho- cyanin coloration of upper side Limbe: pigmentation anthocyanique de la face supérieure Blatt: Anthocyanfär- bung der Oberseite	absent	absente	fehlend	Courtabri	1
	present	présente	vorhanden	Royalty	9
*27. Leaf blade: intensity of anthocyanin color- ation of upper side Limbe: intensité de la pigmentation antho- cyanique de la face supérieure Blatt: Intensität der Anthocyanfärbung der Oberseite	weak	faible	gering	Cowichan	3
	medium	moyenne	mittel	Baskatong	5
	strong	forte	stark	Royalty	7
28. Leaf blade: main color just before leaf fall Limbe: couleur juste avant la chute des feuilles Blattspreite: Farbe kurz vor Laubfall	yellow	jaune	gelb	M. sargentii	1
	orange	orange	orange	Scarlett	2
	red	rouge	rot	Rosseau	3
	brown	brune	braun	Royalty	4
	bronze				5
	purple				6

Characteristics Caractères Merkmale	English	français	deutsch	Example Varieties Exemples Beispielsorten	Note
*29. Fruit: size	very small	très petit	sehr klein	M. sargentii	1
Fruit: taille	small	petit	klein	Profusion	3
Frucht: Grösse	medium	moyen	mittel	John Downie	5
	large	gros	gross	Wynema	7
	very large	très gros	sehr gross	M. sieversii f. niedzwetzkyana	9
*30. Fruit: form (+)	globose	globuleuse	kugelförmig	Winter Gold	1
Fruit: forme	globose conical	conique globuleuse	kugelförmig kegelförmig	Scarlett	2
Frucht: Form	broad globose conical	conique globu- leuse trapue	kurz kugel- förmig kegel- förmig		3
	compressed			M. x schiede- deckeri	4
	flat globose (obloid)			Profusion	5
	conical	conique	kegelförmig	Eleyi	6
	narrow conical			John Downie	7
	truncate conical	conique tronquée	stumpf kegel- förmig		8
				M. x arnol- diana	
	ellipsoid	ellipsoïde	ellipsoid	M. baccata var. mandshurica	9
	ellipsoid conical (ovoid)	conique ellipsoïde (ovale)	ellipsoid kegelförmig (oval)	Dolgo	10
	oblong	oblongue	rechteckig	Malus yunnanen- sis Veitchii	11
	oblong conical	conique oblongue	rechteckig kegelförmig		12
	pyriform			Malus toringoides	3

Characteristics Caractères Merkmale	English	français	deutsch	Example Varieties Exemples Beispielsorten	Note
31. DELETED					
*32. Fruit: calyx	absent			Scarlett	1
Fruit: calice	sometimes present			Golden Hornet	2
Frucht: Kelches	always present			John Downie	3
33. DELETED					
34. DELETED					
35. Fruit: length of stalk	very short	très courte	sehr kurz	Redflesh	1
Fruit: longueur du pédoncule	short	courte	kurz	Strathmore	3
Frucht: Länge des Stieles	medium	moyenne	mittel	John Downie	5
	long	longue	lang	Evereste	7
	very long	très longue	sehr lang	M. x purpurea Aldenhamensis	9
36. DELETED					
37. Fruit: bloom of skin	absent	absente	fehlend	Courtabri	1
Fruit: pruine de l'épiderme	weakly expressed				2
Frucht: Bereifung der Schale	strongly expressed			Dartmouth	3
38. Fruit: glossiness of skin	absent	absente	fehlend		1
Fruit:	weakly expressed				2
Frucht:	strongly expressed			Selkirk	3

Characteristics Caractères Merkmale	English	français	deutsch	Example Varieties Exemples Beispielsorten	Note
39. DELETED					
*40. Fruit: color group	yellow	jaune	gelb	Golden Hornet	1
Fruit:	whitish yellow	jaune blanchâtre	weisslich- gelb		2
Frucht:	green yellow	jaune vert	grüngelb	White Cascade	3
	whitish green	vert blanchâtre	weisslich- grün		4
	medium green	verte	grün	M. trilobata	5
	orange			Evereste	6
	light red				7
	medium red			Red Jade	8
	dark red			Profusion	9
	purple			Purple Prince	10
	brownish				11
*41. Fruit: amount of over color of skin	absent or very low	absent ou très faible	fehlend oder sehr gering	Golden Hornet	1
Fruit: importance du lavis de l'épiderme	low	faible	gering	Winter Gold	3
Frucht: Anteil der Deckfarbe der Schale	medium	moyen	mittel	M. x magdeburgensis	5
	high	fort	hoch	Red Sentinel	7
	very high	très fort	sehr hoch	Liset	9
*42. Fruit: color of over color of skin	orange	orange	orange	Evereste	1
	red	rouge	rot	Red Jade	2
Fruit: couleur du lavis de l'épiderme	pink				3
Frucht: Deckfarbe der Schale	purple	violette	purpur		4
	brownish	brunâtre	bräunlich	Van Eseltine	5
*43. DELETED					
44. DELETED					

Characteristics Caractères Merkmale	English	français	deutsch	Example Varieties Exemples Beispielsorten	Note
45. Fruit: color of the flesh	white	blanche	weiss		1
	yellowish white			Elise Rathke	2
Fruit: couleur de la chair	greenish	verdâtre	grünlich	M. coronaria Charlottae	3
Frucht: Farbe des Fruchtfleisches	yellowish	jaunâtre	gelblich	Dolgo	4
	pink	rose	rosa		5
	red	rouge	rot	Laura	6
*46. Fruit: persistence	very short	très courte	sehr kurz	John Downie	1
Fruit: persistance à l'arbre	short	courte	kurz	Dolgo	3
	medium	moyenne	mittel	Dorothea	5
Frucht: Haften am Baum	long	longue	lang	Makamik	7
	very long	très longue	sehr lang	Evereste	9
47. DELETED					
48. Time of beginning of flowering (10% open flowers)	early	précoce	früh	Hopa	3
Epoque de début de floraison (10% des fleurs épanouies)	medium	moyenne	mittel	M. x purpurea Lemoinei	5
Zeitpunkt des Beginns der Blüte (10% geöffnete Blüten)	late	tardive	spät	Wynema	7
49. Tree: fruit setting	none or very few	nulle ou très peu nombreuse	fehlend oder sehr gering	M. x atrosanguinea	1
Arbre: fructification	few	peu nombreuse	gering	M. x magdeburgensis	3
Baum: Fruchtansatz	medium	moyennement nombreuse	mittel	Makamik	5
	many	nombreuse	stark	John Downie	7
	very many	très nombreuse	sehr stark	Golden Hornet	9
50. DELETED					

VIII. Explanations on the Table of Characteristics

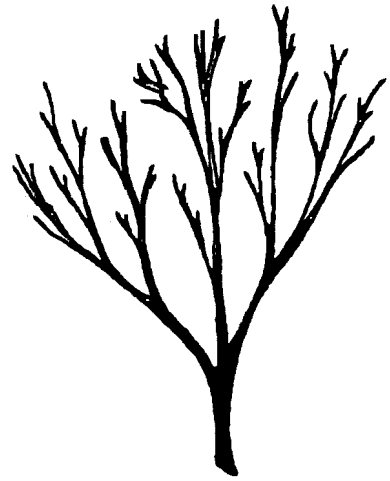
Ad 3: Tree: habit



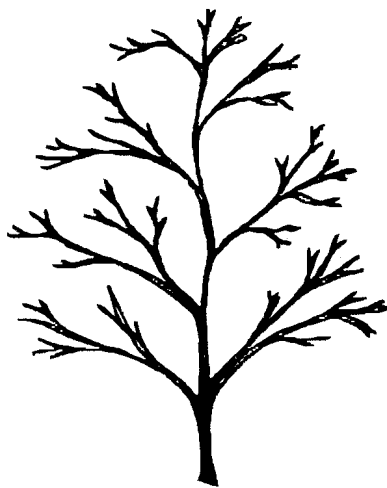
1
columnar



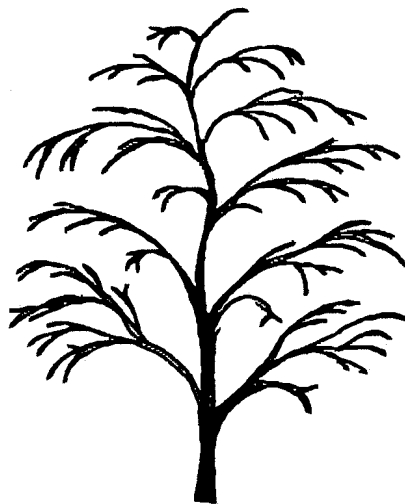
2
fastigate



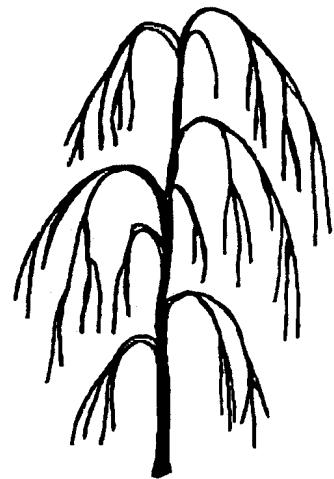
3
upright



4
spreading

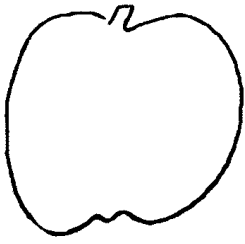


5
drooping

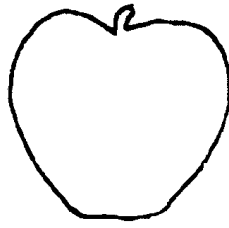


6
weeping

Ad 30: Fruit: form



1
globose



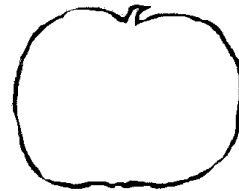
2
globose conical



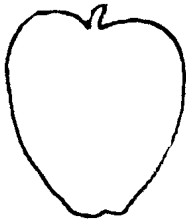
3
broad globose conical



4
compressed



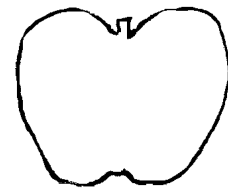
5
flat globose



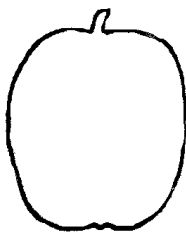
conical



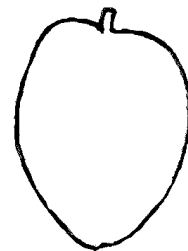
7
narrow conical



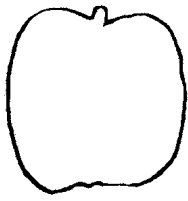
8
truncate conical



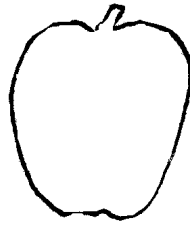
9
ellipsoid



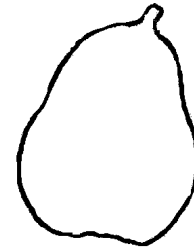
10
ellipsoid conical (ovoid)



11
oblong



12
oblong conical



13
pyriform

IX. Literature

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X. Technical Questionnaire

	<p>Reference Number (not to be filled in by the applicant)</p>
<p style="text-align: center;">TECHNICAL QUESTIONNAIRE to be completed in connection with an application for plant breeders' rights</p>	
<p>1.1 Genus <i>Malus</i> Mill.</p> <p style="padding-left: 100px;">ORNAMENTAL APPLE</p> <p>1.2 Species </p> <p style="padding-left: 100px;">(indicate species)</p>	
<p>2. Applicant (Name and address)</p>	
<p>3. Proposed denomination or breeder's reference</p>	

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

4.1 Origin

(a) Seedling (indicate parent varieties) []

(b) Mutation (indicate parent variety) []

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

4.2 Method of reproduction

Grafting (indicate rootstock) []

Other (specify) []

4.3 Other information

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

Caractères de la variété à indiquer (le chiffre entre parenthèses renvoie au caractère correspondant dans les principes directeurs d'examen; prière de marquer d'une croix le niveau d'expression approprié)

Anzugebende Merkmale der Sorte (die in Klammern angegebene Zahl verweist auf das entsprechende Merkmal in den Prüfungsrichtlinien; die Ausprägungsstufe, die der der Sorte am nächsten kommt, bitte ankreuzen)

Note	Characteristics Caractères Merkmale	English	français	deutsch	Example Varieties Exemples Beispielssorten	
5.1 (8)	Flower: type	single	simple	einfach	Profusion	1[]
	Fleur: type	semi-double	demi-double	halbgefüllt	M x Scheideckeri	2[]
	Blüte: Typ	double	double	gefüllt	M. coronaria Nieuwlandiana	3[]
5.2 (14)	Petal: color of marginal zone of <u>inner</u> side	RHS-Colour Chart (indicate refer- ence number)	Code RHS des Couleurs (indiquer le numéro de référence)	RHS-Farbkarte (Nummer an- geben)		
	Pétale:					
	Blütenblatt:		
5.3 (17)	Expanding leaf: color of blade	green	vert	grün	John Downie	1[]
		reddish green			Winter Gold	2[]
	Feuille en cours de croissance: couleur du limbe	red				3[]
		reddish brown			Laura	4[]
	Sich entfaltendes Blatt: Farbe der Blattspreite	bronze				5[]
		purple			Royalty	6[]
5.4 (29)	Fruit: size	very small	très petit	sehr klein	M. sargentii	1[]
	Fruit: taille	small	petit	klein	Profusion	3[]
	Frucht: Grösse	medium	moyen	mittel	John Downie	5[]
		large	gros	gross	Wynema	7[]
		very large	très gros	sehr gross	M. sieversii f. niedzwetzkyana	9[]

Note	Characteristics Caractères Merkmale	English	français	deutsch	Example Varieties Exemples Beispielssorten	
5.5] (40)	Fruit: colour group	yellow	jaune	gelb	Golden Hornet	1[
]	Fruit:	whitish	jaune	weisslich-		2[
]	Frucht:	yellow	blanchâtre	gelb		
]		green yellow	jaune vert	grüngelb	White Cascade	3[
]		whitish	vert	weisslich-		4[
]		green	blanchâtre	grün		
]		medium green	verte	grün	M. trilobata	5[
]		orange			Evereste	6[
]		light red				7[
]		medium red			Red Jade	8[
]		dark red			Profusion	9[
]		purple			Purple Prince	10[
]		brownish				11[

6. Similar varieties and differences from these varieties

Denomination of similar variety	Characteristic in which the similar variety is different ^{o)}	State of expression of similar variety	State of expression of candidate variety
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^{o)} In the case of identical states of expressions of both varieties, please indicate the size of the difference.

7. Additional information which may help to distinguish the variety

7.1 Resistance to pests and diseases

7.2 Special conditions for the examination of the variety

7.3 Other information

A representative color photo of the variety should be included in the Technical Questionnaire.

8. Authorization for release

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

Yes [] No []

(b) Has such authorization been obtained?

Yes [] No []

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