

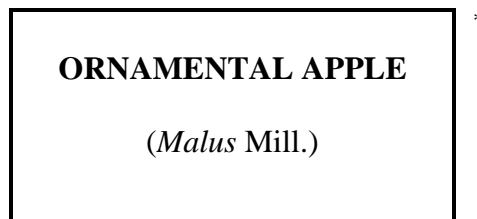


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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS
GENEVA



GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

Alternative Names: *

<i>Latin</i>	<i>English</i>	<i>French</i>	<i>German</i>	<i>Spanish</i>
<i>Malus Mill.</i>	Ornamental Apple	Pommier ornemental	Zierapfel	Manzano ornamental

ASSOCIATED DOCUMENTS

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

* 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.]

<u>TABLE OF CONTENTS</u>	<u>PAGE</u>
1. SUBJECT OF THESE GUIDELINES	3
2. MATERIAL REQUIRED	3
3. METHOD OF EXAMINATION.....	3
3.1 Duration of Tests.....	3
3.2 Testing Place	3
3.3 Conditions for Conducting the Examination.....	3
3.4 Test Design	4
3.5 Number of Plants / Parts of Plants to be Examined.....	4
3.6 Additional Tests	4
4. ASSESSMENT OF DISTINCTNESS, UNIFORMITY AND STABILITY	4
4.1 Distinctness	4
4.2 Uniformity.....	5
4.3 Stability	5
5. GROUPING OF VARIETIES AND ORGANIZATION OF THE GROWING TRIAL	5
6. INTRODUCTION TO THE TABLE OF CHARACTERISTICS	6
6.1 Categories of Characteristics.....	6
6.2 States of Expression and Corresponding Notes.....	6
6.3 Types of Expression	6
6.4 Example Varieties	6
6.5 Legend.....	6
7. TABLE OF CHARACTERISTICS	7
8. EXPLANATIONS ON THE TABLE OF CHARACTERISTICS	18
8.1 Explanations covering several characteristics	18
8.2 Explanations for individual characteristics	19
9. LITERATURE	22
10. TECHNICAL QUESTIONNAIRE.....	23

1. Subject of these Guidelines

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

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 three-year-old trees grafted on a rootstock.

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

5 trees.

2.4 The plant material supplied should be visibly healthy, not lacking in vigor, nor affected by any important pest or disease. The rootstock should be named when the plant material is supplied. The competent authorities may prescribe the rootstock on which the variety should be grafted.

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 *Duration of Tests*

The minimum duration of tests should normally be two independent growing cycles. For the purposes of these Test Guidelines, a growing cycle refers to the fruiting cycle.

3.2 *Testing Place*

The tests should normally be conducted at one place. If any characteristics of the variety, which are relevant for the examination of DUS, cannot be seen at that place, the variety may be tested at an additional place.

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. In particular, a satisfactory crop of fruit must be produced in at least two fruiting cycles.

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

3.4 *Test Design*

3.4.1 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.

3.4.2 Each test should be designed to result in a total of at least five trees.

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

Unless otherwise indicated, all observations should be made on 5 trees or plant parts taken from each of 5 trees. In the case of plant parts, the number to be taken from each of the trees should be 2.

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 minimum duration of tests recommended in section 3.1 reflects, in general, the need to ensure that any differences in a characteristic are sufficiently consistent.

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 a population standard of 1% and an acceptance probability of at least 95% should be applied. In the case of a sample size of 5 plants no 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.

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 is aided by the use of grouping characteristics.

5.2 Grouping characteristics are those in which the documented states of expression, even where produced at different locations, can be used, either individually or in combination with other such characteristics: (a) to select varieties of common knowledge that can be excluded from the growing trial used for examination of distinctness; and (b) to organize the growing trial so that similar varieties are grouped together.

5.3 The following have been agreed as useful grouping characteristics:

- (a) Flower: type (characteristic 6);
- (b) Petal: color of marginal zone of inner side: white, light pink, dark pink, red, purple (characteristic 12);
- (c) Expanding leaf: color of blade (characteristic 16);
- (d) Fruit: size (characteristic 29);
- (e) Fruit: predominant color (characteristic 35).

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

6. Introduction to the Table of Characteristics

6.1 *Categories of Characteristics*

6.1.1 Standard Test Guidelines Characteristics

Standard Test Guidelines characteristics are those which are approved by UPOV for examination of DUS and from which members of the Union can select those suitable for their particular circumstances.

6.1.2 Asterisked Characteristics

Asterisked characteristics (denoted by *) are those included in the Test Guidelines which are important for the international harmonization of variety descriptions and should always be examined for DUS and included in the variety description by all members of the Union, except when the state of expression of a preceding characteristic or regional environmental conditions render this inappropriate.

6.2 *States of Expression and Corresponding Notes*

States of expression are given for each characteristic to define the characteristic and to harmonize descriptions. Each state of expression is allocated a corresponding numerical note for ease of recording of data and for the production and exchange of the description.

6.3 *Types of Expression*

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

6.4 *Example Varieties*

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

6.5 *Legend*

(*) Asterisked characteristic – see Section 6.1.2

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

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

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

	English	français	deutsch	español	Example Varieties Exemples Beispielsorten Variedades ejemplo	Note/ Nota
1.	Tree: vigor	Arbre: vigueur	Baum: Wuchsstärke	Árbol: vigor		
	weak	faible	schwach	débil	Dorothea	3
	medium	moyenne	mittel	medio	Dolgo	5
	strong	forte	stark	fuerte	Jackii	7
2. (*) (+)	Tree: habit	Arbre: port	Baum: Wuchsform	Árbol: porte		
	columnar	columnaire	säulenförmig	columnar	Maypole	1
	fastigiata	fastigé	sehr aufrecht	fastigiado	Laura	2
	upright	dressé	aufrecht	erecto	Van Eseltine	3
	spreading	divergent	breitwüchsig	rastrero	Red Glow	4
	drooping	retombant	überhängend	colgante	Elise Rathke	5
	weeping	pleureur	lang überhängend	llorón	Oekonomierat Echtermeyer	6
3. (+)	Shoot: color	Rameau: couleur	Trieb: Farbe	Brote: color		
	grey green	vert-gris	graugrün	verde grisáceo	Red Sentinel	1
	brown green	vert-brun	braungrün	verde pardo	Wintergold	2
	brown	brun	braun	marrón	Van Eseltine	3
	red brown	rouge-brun	rotbraun	marrón rojizo	Henry F. Dupont	4
	dark red	rouge foncé	dunkelrot	rojo oscuro	Evereste	5
4.	Inflorescence: type	Inflorescence: type	Blütenstand: Typ	Inflorescencia: tipo		
	umbellate	ombelle	doldenförmig	umbelado	Golden Hornet	1
	corymbiform	corymbe	traubenförmig	corimbiforme	Charlottae	2

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
5. (* (+)	Unopened flower: color (balloon stage)	Fleur non épanouie: couleur (stade ballon)	Ungeöffnete Blüte: Farbe (Ballonstadium)	Flor cerrada: color (capullo)	
	white	blanc	weiß	blanco	<i>Malus toringoides</i> 1
	light pink	rose pâle	hellrosa	rosa claro	Charlottae 2
	medium pink	rose moyen	mittelrosa	rosa medio	Cowichan 3
	dark pink	rose foncé	dunkelrosa	rosa oscuro	<i>Malus floribunda</i> 4
	red	rouge	rot	rojo	Red Glow 5
	purple	pourpre	purpur	púrpura	6
6. (* (a)	Flower: type	Fleur: type	Blüte: Typ	Flor: tipo	
	single	simple	einfach	sencillo	Profusion 1
	semi-double	demi double	halbgefüllt	semidoble	<i>Malus xscheideckeri</i> 2
	double	double	gefüllt	doble	Nieuwlandiana 3
7. (* (a)	Flower: diameter with petals pressed into horizontal position	Fleur: diamètre avec les pétales étalés dans un plan horizontal	Blüte: Durchmesser bei in waagerechte Position gedrückten Blütenblättern	Flor: diámetro con pétalos apretados en posición horizontal	
	small	petit	klein	pequeño	Wintergold 3
	medium	moyen	mittel	medio	Profusion 5
	large	grand	groß	grande	Montreal Beauty 7
8. (* (a)	Flower: shape	Fleur: forme	Blüte: Form	Flor: forma	
	flat	aplatie	flach	plana	1
	shallow cup	en coupe peu profonde	flach schüsselförmig	cáliz poco profundo	Courtarrow 2
	deep cup	en coupe profonde	tief schüsselförmig	cáliz profundo	Van Eseltine 3

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
9. (a) Petal: shape (* (excluding claw)	Pétale: forme (sans l'onglet)	Blütenblatt: Form (ohne Blattöhrchen)	Pétalo: forma (excluyendo la uña)		
oblong	oblong	rechteckig	oblonga	Charlottae	1
narrow elliptic	elliptique étroite	schmal elliptisch	elíptica estrecha		2
elliptic	elliptique	elliptisch	elíptica	Makamik	3
broad elliptic	elliptique large	breit elliptisch	elíptica ancha	Wynema	4
circular	arrondi	kreisförmig	circular	Veitchii	5
narrow ovate	ovale étroit	schmal eiförmig	oval estrecha	Katherine	6
ovate	ovale	eiförmig	oval	Profusion	7
10. (a) Petals: relative (* position of margins)	Pétales: position relative des bords	Blütenblätter: Relative Stellung der Ränder	Pétalos: posición relativa de los bordes		
free	disjoints	freistehend	separada	Makamik	1
touching	tangents	sich berührend	en contacto	John Downie	2
overlapping	chevauchants	überlappend	solapada	Butterball	3
11. (a) Petal: veins	Pétale: nervures	Blütenblatt: Adern	Pétalo: nervaduras		
not prominent	non proéminentes	nicht ausgeprägt	no prominentes	John Downie	1
prominent	proéminentes	ausgeprägt	prominentes	Almey	2
12. (a) Petal: color of (* marginal zone of inner side)	Pétale: couleur de la zone marginale de la face interne	Blütenblatt: Farbe der Randzone der Innenseite	Pétalo: color del borde de la cara interna		
RHS-Colour Chart (indicate reference number)	Code RHS des couleurs- (indiquer le numéro de référence)	RHS-Farbkarte (Nummer angeben)	Carta de colores RHS (indíquese el número de referencia)		
13. (a) Petal: color of (* middle zone of inner side (if different)	Pétale: couleur de la zone centrale de la face interne (si différente)	Blütenblatt: Farbe der mittleren Zone der Innenseite (wenn verschieden)	Pétalo: color de la zona media de la cara interna (si es distinto)		
RHS-Colour Chart (indicate reference number)	Code RHS des couleurs- (indiquer le numéro de référence)	RHS-Farbkarte (Nummer angeben)	Carta de colores RHS (indíquese el número de referencia)		

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
14. (*) (a) Petal: color of basal zone of inner side (if different)	Pétale: couleur de la base de la face interne (si différente)	Blütenblatt: Farbe der basalen Zone der Innenseite (wenn verschieden)	Pétalo: color de la zona basal de la cara interna (si es distinto)		
RHS-Colour Chart (indicate reference number)	Code RHS des couleurs- (indiquer le numéro de référence)	RHS-Farbkarte (Nummer angeben)	Carta de colores RHS (indíquese el número de referencia)		
15. (*) (a) Petal: color of outer side	Pétale: couleur de la face externe	Blütenblatt: Farbe der Außenseite	Pétalo: color de la cara externa		
RHS-Colour Chart (indicate reference number)	Code RHS des couleurs- (indiquer le numéro de référence)	RHS-Farbkarte (Nummer angeben)	Carta de colores RHS (indíquese el número de referencia)		
16. (*) (b) Expanding leaf: color of blade	Feuille en cours de croissance: couleur du limbe	Sich entfaltendes Blatt: Farbe der Blattspreite	Hoja en crecimiento: color del limbo		
green	vert	grün	verde	John Downie	1
reddish green	vert rougeâtre	rötlichgrün	verde rojizo	Winter Gold	2
red	rouge	rot	rojo		3
reddish brown	brun rougeâtre	rötlichbraun	marrón rojizo	Laura	4
bronze	bronze	bronze	bronce	Indian Magic	5
purple	violet	purpur	púrpura	Royalty	6
17. (*) (b) Leaf blade: ratio length/width (from fourth to sixth fully expanded leaf)	Limbe: rapport longueur/largeur (de la quatrième à la sixième feuille complètement développée)	Blattspreite: Verhältnis Länge/Breite (vom vierten bis sechsten voll entwickelten Blatt)	Limbo: relación longitud/anchura (de cuatro a seis hojas completamente extendidas)		
small	faible	klein	pequeño		3
medium	moyen	mittel	medio		5
large	élevé	groß	grande		7
18. (*) (b) Petiole: length	Pétiole: longueur	Blattstiel: Länge	Pecíolo: longitud		
short	court	kurz	corta		3
medium	moyen	mittel	media		5
long	long	lang	larga		7

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
19. (b) Leaf blade: lobes (*)	Limbe: lobes	Blattspreite: Lappung	Limbo: lóbulos		
absent	absents	fehlend	ausentes	Dolgo	1
sometimes present	parfois présents	manchmal vorhanden	presentes a veces	Wynema	2
always present	toujours présents	immer vorhanden	siempre presentes	Nieuwlandiana	3
20. (b) Leaf blade: incisions of margin (*)	Limbe: incisions du bord	Blattspreite: Randeinschnitte	Limbo: incisiones del borde		
crenate	crénelé	gekerbt	crenadas	Courtabri	1
serrate	dentelé	gesägt	serradas	Scarlett	2
21. (b) Leaf blade: glossiness of upper side (*)	Limbe: brillance de la face supérieure	Blattspreite: Glanz der Oberseite	Limbo: brillo del haz		
weak	faible	gering	ligero	Laura	3
medium	moyenne	mittel	medio		5
strong	forte	stark	fuerte	Scarlett	7
22. (b) Leaf blade: green color of upper side (*)	Limbe: couleur verte de la face supérieure	Blattspreite: Grünfärbung der Oberseite	Limbo: color verde del haz		
light	claire	hell	claro	Red Jade	3
medium	moyenne	mittel	medio		5
dark	foncée	dunkel	oscuro	Red Jewel	7
23. (b) Leaf blade: anthocyanin coloration of upper side (*)	Limbe: pigmentation anthocyanique de la face supérieure	Blattspreite: Anthocyanfärbung der Oberseite	Limbo: pigmentación antociánica del haz		
absent	absente	fehlend	ausente	Courtabri	1
present	présente	vorhanden	presente	Royalty	9

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
24. (b) Leaf blade: intensity of anthocyanin coloration of upper side	Limbe: intensité de la pigmentation anthocyanique de la face supérieure	Blattspreite: Intensität der Anthocyanfärbung der Oberseite	Limbo: intensidad de la pigmentación antocianica del haz		
weak	faible	schwach	baja	Cowichan	3
medium	moyenne	mittel	media	Baskatong	5
strong	forte	stark	fuerte	Royalty	7
25. (b) Leaf blade: main color just before leaf fall	Limbe: couleur principale juste avant la chute des feuilles	Blattspreite: Hauptfarbe unmittelbar vor Blattfall	Limbo: color principal antes de la caída de la hoja		
yellow	jaune	gelb	amarillo	<i>Malus sargentii</i>	1
orange	orange	orange	anaranjado	Scarlett	2
red	rouge	rot	rojo	Rosseau	3
brown	brun	braun	marrón	Royalty	4
bronze	bronze	bronze	bronce		5
purple	violet	purpur	púrpura		6
26. (b) Leaf blade: length (from fourth to sixth fully expanded leaf)	Limbe: longueur (de la quatrième à la sixième feuille complètement développée)	Blattspreite: Länge (vom vierten bis sechsten voll entwickelten Blatt)	Limbo: longitud (de cuatro a seis hojas completamente extendidas)		
short	court	kurz	corta	<i>Malus floribunda</i>	3
medium	moyen	mittel	media	Lemoinei	5
long	long	lang	larga	Simcoe	7
27. (b) Leaf blade: width (from fourth to sixth fully expanded leaf)	Limbe: largeur (de la quatrième à la sixième feuille complètement développée)	Blattspreite: Breite (vom vierten bis sechsten voll entwickelten Blatt)	Limbo: anchura (de cuatro a seis hojas completamente extendidas)		
narrow	étroit	schmal	estrecha	Hopa	3
medium	moyen	mittel	media	John Downie	5
broad	large	breit	ancha	Montreal Beauty	7

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
28. Tree: fruit setting	Arbre: quantité de fruits	Baum: Fruchtansatz	Árbol: cantidad de frutos		
none or very few	nulle ou très faible	keine oder sehr wenige	ninguno o muy pocos	<i>Malus xatrosanguinea</i>	1
few	faible	wenige	pocos	<i>Malus xmagdeburgensis</i>	3
medium	moyenne	mittel	algunos	Makamik	5
many	abondante	viele	muchos	John Downie	7
very many	très abondante	sehr viele	muchísimos	Golden Hornet	9
29. (c) Fruit: size (*)	Fruit: taille	Frucht: Größe	Fruto: tamaño		
very small	très petit	sehr klein	muy pequeño	<i>Malus sargentii</i>	1
small	petit	klein	pequeño	Profusion	3
medium	moyen	mittel	medio	John Downie	5
large	gros	groß	grande	Wynema	7
very large	très gros	sehr groß	muy grande	Niedzwetzkyana	9

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
30. (c) Fruit: shape (* (+)	Fruit: forme	Frucht: Form	Fruto: forma		
globose	globuleuse	kugelförmig	globulosa	Winter Gold	1
globose conical	conique globuleuse	kugel-kegelförmig	cónica globulosa	Scarlett	2
broad globose conical	conique globuleuse large	breit kugel- kegelförmig	cónica globulosa ancha		3
flat obloid	obloïde aplatie	abgeplattet	obloïde plana	<i>Malus xschiedeckeri</i>	4
obloid	obloïde	abgeplattet kugelförmig	obloïde	Profusion	5
conical	conique	kegelförmig	cónica	Eleyi	6
narrow conical	conique étroite	schmal kegelförmig	cónica estrecha	John Downie	7
truncate conical	conique tronquée	stumpf kegelförmig	cónica truncada	<i>Malus xarnoldiana</i>	8
ellipsoid	ellipsoïde	ellipsoid	elipsoïde	<i>Malus baccata</i> var. <i>mandshurica</i>	9
ellipsoid conical (ovoid)	conique ellipsoïde (ovale)	ellipsoid kegelförmig (eiförmig)	elipsoïde cónica	Dolgo	10
oblong	oblongue	rechteckig	oblonga	Veitchii	11
oblong conical	conique oblongue	rechteckig kegelförmig	oblonga cónica		12
pyriform	piriforme	birnenförmig	piriforme	<i>Malus toringoides</i>	13
31. (c) Fruit: calyx (*	Fruit: calice	Frucht: Kelch	Fruto: cáliz		
absent	absent	fehlend	ausente	Scarlett	1
sometimes present	parfois présent	manchmal vorhanden	presente a veces	Golden Hornet	2
always present	toujours présent	immer vorhanden	siempre presente	John Downie	3

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
32. (c) Fruit: length of stalk	Fruit: longueur du pédoncule	Frucht: Länge des Stiels	Fruto: longitud del pedúnculo		
very short	très court	sehr kurz	muy corto	Redflesh	1
short	court	kurz	corto	Strathmore	3
medium	moyen	mittel	medio	John Downie	5
long	long	lang	largo	Evereste	7
very long	très long	sehr lang	muy largo	Aldenhamensis	9
33. (c) Fruit: bloom of skin	Fruit: pruine de l'épiderme	Frucht: Bereifung der Schale	Fruto: pruina de la piel		
absent	absente	fehlend	ausente	Courtabri	1
weakly expressed	faible	schwach ausgeprägt	muy poca		2
strongly expressed	forte	stark ausgeprägt	mucha	Dartmouth	3
34. (c) Fruit: glossiness of skin	Fruit: brillance de la peau	Frucht: Glanz der Schale	Fruto: brillo de la piel		
absent	absente	fehlend	ausente		1
weakly expressed	faible	schwach ausgeprägt	muy poco		2
strongly expressed	forte	stark ausgeprägt	mucho	Selkirk	3

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
35. (c) Fruit: predominant color (*)	Fruit: couleur dominante	Frucht: vorherrschende Farbe	Fruto: color predominante		
whitish yellow	jaune blanchâtre	weißlichgelb	amarillo blanquecino		1
yellow	jaune	gelb	amarillo	Golden Hornet	2
whitish green	vert blanchâtre	weißlichgrün	verde blanquecino		3
green yellow	jaune vert	grüngelb	amarillo verdoso	White Cascade	4
medium green	vert moyen	mittelgrün	verde medio	<i>Malus trilobata</i>	5
orange	orange	orange	anaranjado	Evereste	6
light red	rouge clair	hellrot	rojo claro		7
medium red	rouge moyen	mittelrot	rojo medio	Red Jade	8
dark red	rouge foncé	dunkelrot	rojo oscuro	Profusion	9
purple	violet	purpur	púrpura	Purple Prince	10
brownish	brunâtre	bräunlich	parduzco		11
36. (c) Fruit: color of flesh (*)	Fruit: couleur de la chair	Frucht: Farbe des Fleisches	Fruto: color de la carne		
white	blanche	weiß	blanco		1
yellowish white	blanche jaunâtre	gelblichweiß	blanco amarillento	Elise Rathke	2
yellowish	jaunâtre	gelblich	amarillento	Dolgo	3
greenish	verdâtre	grünlich	verdoso	Charlottae	4
pink	rose	rosa	rosa		5
red	rouge	rot	rojo	Laura	6
37. (c) Fruit: persistence (*)	Fruit: persistance	Frucht: Haltbarkeit	Fruto: persistencia		
very short	très courte	sehr kurz	muy corta	John Downie	1
short	courte	kurz	corta	Dolgo	3
medium	moyenne	mittel	media	Dorothea	5
long	longue	lang	larga	Makamik	7
very long	très longue	sehr lang	muy larga	Evereste	9

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
38. Time of beginning of flowering (10% open flowers)	Époque de début de floraison (10% des fleurs épanouies)	Zeitpunkt des Blühbeginns (10% offene Blüten)	Inicio de la floración (10% de flores abiertas)		
early	précoce	früh	precoz	Hopa	3
medium	moyenne	mittel	media	Lemoinei	5
late	tardive	spät	tardía	Wynema	7

8. Explanations on the Table of Characteristics

8.1 *Explanations covering several characteristics*

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

- (a) All observations on the flower should be made at the start of anther dehiscence on second or third flowers with intact pedicel.
- (b) 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.
- (c) 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.

8.2 *Explanations for individual characteristics*

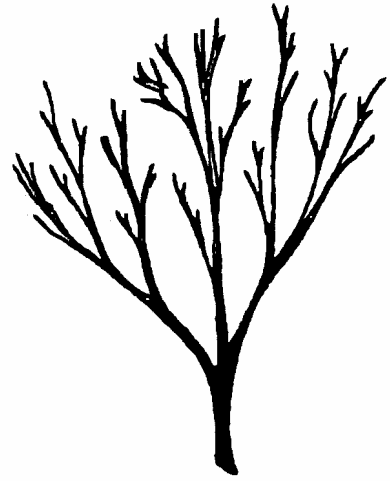
Ad. 2: Tree: habit



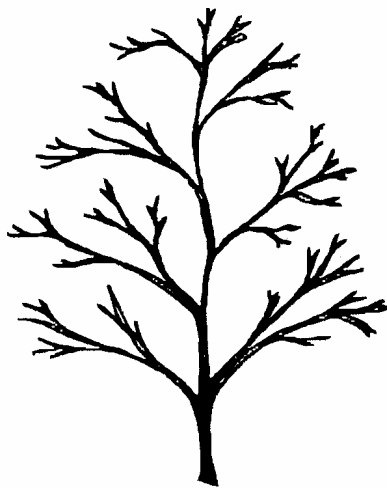
1
columnar



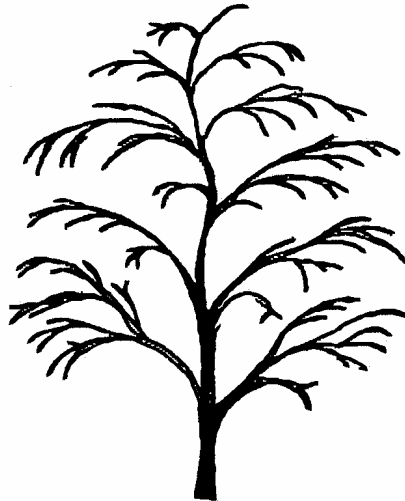
2
fastigate



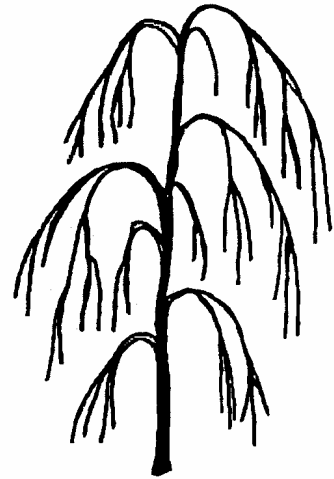
3
upright



4
spreading



5
drooping



6
weeping

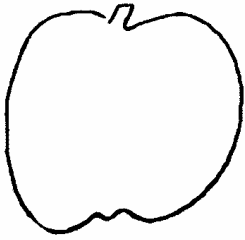
Ad. 3: Shoot: color

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.

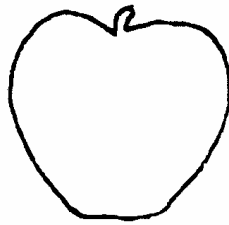
Ad. 5: Unopened flower: color (balloon stage)

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

Ad. 30: Fruit: shape



1
globose



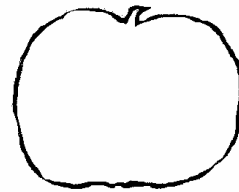
2
globose conical



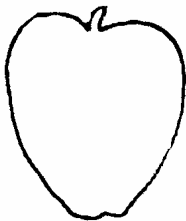
3
broad globose conical



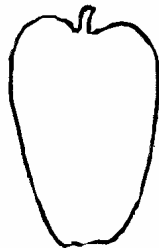
4
flat obloid



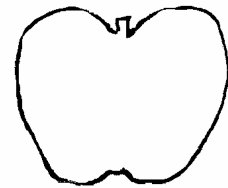
5
obloid



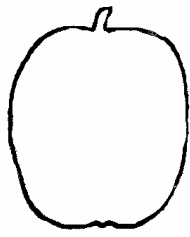
6
conical



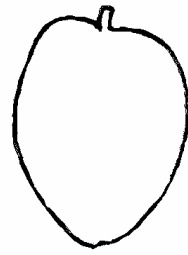
7
narrow conical



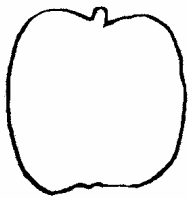
8
truncate conical



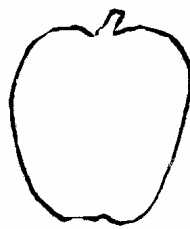
9
ellipsoid



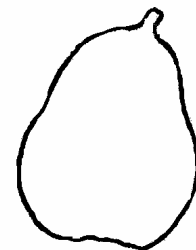
10
ellipsoid conical (ovoid)



11
oblong



12
oblong conical



13
pyriform

9. Literature

Den Boer, Arie F.: 1959 "Ornamental Crab Apples", American Association of Nurserymen, USA.

Bean, W.J.: "Trees and Shrubs Hardy in the British Isles", John Murray, 1970-1980, 4 vols.

Fiala, Fr. John L.: 1994 "Flowering Crab Apples, the genus Malus" Timber Press, Portland, Oregon, USA, (273 pp.).

Grootendorst, Herman J.: 1964 "Malus - sierappels", Dendroflora, NL (1964, 1: pp. 3-15).

Hillier Nurseries (Winchester) Ltd.: 1991 "The Hillier Manual of Trees and Shrubs", David and Charles, Newton Abbott, Devon, UK (pp. 263-269).

Krussmann, G. : "Manual of Cultivated Broadleaved Trees and Shrubs", 1984-1986, Batsford, London, 3 vols.

Royal Horticultural Society, London: "The New Royal Horticultural Society Dictionary of Gardening", 1992, Macmillan Press Ltd, London, 4 vols.

Wyman, Donald E.: 1965 "Trees for American Gardens", MacMillan, New York, USA (pp 293-319, 483-486).

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 Genus		
1.1.1 Latin Name	<input type="text" value="Malus Mill."/>	
1.1.2 Common Name	<input type="text" value="Ornamental apple"/>	
1.2 Species (please complete)		
1.2.1 Latin Name	<input type="text"/>	
1.2.2 Common Name	<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"/>	

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

3. Proposed denomination and breeder's reference

Proposed denomination
(if available)

Breeder's reference

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 unknown cross
(please state known parent variety(ies))
- (c) totally unknown cross

4.1.2 Mutation
(please state parent variety)

4.1.3 Discovery
(please state where, when and how developed)

4.1.4 Other
(please provide details)

4.2 Method of Propagating the Variety

(a) cuttings

(b) *in vitro* propagation

(c) other (state method)

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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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 Flower: type (6)		
single	Profusion	1[]
semi-double	<i>Malus xscheideckeri</i>	2[]
double	Nieuwlandiana	3[]
5.2i Petal: color of marginal zone of inner side (12)		
RHS-Colour Chart (indicate reference number)		
5.2ii Petal: color of marginal zone of inner side (12)		
white		1[]
light pink		2[]
dark pink		3[]
red		4[]
purple		5[]
5.3 Expanding leaf: color of blade (16)		
green	John Downie	1[]
reddish green	Winter Gold	2[]
red		3[]
reddish brown	Laura	4[]
bronze	Indian Magic	5[]
purple	Royalty	6[]

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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Characteristics	Example Varieties	Note
5.4 Fruit: size (29)		
very small	<i>Malus sargentii</i>	1[]
small	Profusion	3[]
medium	John Downie	5[]
large	Wynema	7[]
very large	Niedzwetzkyana	9[]
5.5 Fruit: predominant color (35)		
whitish yellow		1[]
yellow	Golden Hornet	2[]
whitish green		3[]
green yellow	White Cascade	4[]
medium green	<i>Malus trilobata</i>	5[]
orange	Evereste	6[]
light red		7[]
medium red	Red Jade	8[]
dark red	Profusion	9[]
purple	Purple Prince	10[]
brownish		11[]

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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7. Additional information which may help in the examination of the variety

7.1 In addition to the information provided in sections 5 and 6, are there any additional characteristics which may help to distinguish the variety?

Yes [] No []

(If yes, please provide details)

7.2 Special conditions for the examination of the variety

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

Yes [] No []

7.2.2 If yes, please give details:

7.3 Other information

8. Authorization for release

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

Yes [] No []

(b) Has such authorization been obtained?

Yes [] No []

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

9. 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]