



TG/14/10(proj.8)

ORIGINAL: English

DATE: 2023-10-04

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

DRAFT

APPLE

UPOV Code(s): MALUS_DOM

Malus domestica (Suckow) Borkh.

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

*prepared by an expert from Germany**to be considered by**the Technical Committee at its fifty-ninth session
to be held in Geneva on October 23 and 24, 2023**Disclaimer: this document does not represent UPOV policies or guidance*

Alternative names:*

<i>Botanical name</i>	<i>English</i>	<i>French</i>	<i>German</i>	<i>Spanish</i>
<i>Malus domestica</i> (Suckow) Borkh.	Apple	Pommier, Pommier commun	Apfel, Kultur-Apfel	Manzano

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/163 Apple Rootstocks
TG/192 Ornamental Apple

* 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.]

TABLE OF CONTENTS	PAGE
1. SUBJECT OF THESE TEST GUIDELINES.....	3
2. MATERIAL REQUIRED.....	3
3. METHOD OF EXAMINATION.....	3
3.1 Number of Growing Cycles.....	3
3.2 Testing Place.....	3
3.3 Conditions for Conducting the Examination.....	3
3.4 Test Design.....	4
3.5 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.....	6
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.....	7
6.5 Legend.....	7
7. TABLE OF CHARACTERISTICS/TABLEAU DES CARACTÈRES/MERKMALSTABELLE/TABLA DE CARACTERES.....	8
8. EXPLANATIONS ON THE TABLE OF CHARACTERISTICS.....	26
8.1 Explanations covering several characteristics.....	26
8.2 Explanations for individual characteristics.....	26
8.3 BBCH-Scale for the description of the phenological growth stages of pome fruit.....	36
9. LITERATURE.....	40
10. TECHNICAL QUESTIONNAIRE.....	41

1. Subject of these Test Guidelines

These Test Guidelines apply to all varieties of *Malus domestica* (Suckow) Borkh. except for varieties used only as rootstock varieties (see TG/163) or only as ornamental varieties (see TG/192).

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 trees, on a rootstock specified by the competent authority, or in the form of budsticks or graftwood.
- 2.3 The minimum quantity of plant material, to be supplied by the applicant, should be:
- (a) varieties resulting from crossing:
5 trees; 5 budsticks; or 5 dormant shoots for grafting;
 - (b) varieties resulting from mutation:
10 trees; 10 budsticks; or 10 dormant shoots for grafting.
- 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*

- 3.1.1 The minimum duration of tests should normally be two independent growing cycles.
- 3.1.2 The two independent growing cycles may be observed from a single planting, examined in two separate growing cycles.
- 3.1.3 In particular, it is essential that the trees produce a satisfactory crop of fruit in each of the two growing cycles.
- 3.1.4 The growing cycle is considered to be the duration of a single growing season, beginning with the dormancy period, followed by bud burst (flowering and/or vegetative), flowering and fruit harvest and concluding when the following dormant period starts.
- 3.1.5 The testing of a variety may be concluded when the competent authority can determine with certainty the outcome of the test.

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 optimum stage of development for the assessment of each characteristic is indicated by a number in the Table of Characteristics. The stages of development denoted by each number are described in Chapter 8.3

3.4 *Test Design*

- 3.4.1 In the case of varieties resulting from crossing, each test should be designed to result in a total of at least 5 trees.
- 3.4.2 In the case of varieties resulting from mutation, each test should be designed to result in a total of at least 10 trees.
- 3.4.3 The design of the tests should be such that plants or parts of plants may be removed for measurement or counting without prejudice to the observations which must be made up to the end of the growing cycle.

3.5 *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.

4.1.4 Number of Plants or Parts of Plants to be Examined

Unless otherwise indicated, for the purposes of distinctness, all observations on single plants should be made on 3 plants or parts of plants taken from each of 3 plants and any other observations made on all plants in the test, disregarding any off-type plants.

In the case of observations of parts taken from single plants, the number of parts to be taken from each of the plants should be at least 2.

4.1.5 Method of Observation

The recommended method of observing the characteristic for the purposes of distinctness is indicated by the following key in the Table of Characteristics (see document TGP/9 "Examining Distinctness", Section 4 "Observation 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

Type of observation: visual (V) or measurement (M)

“Visual” observation (V) is an observation made on the basis of the expert’s judgment. For the purposes of this document, “visual” observation refers to the sensory observations of the experts and, therefore, also includes smell, taste and touch. Visual observation includes observations where the expert uses reference points (e.g. diagrams, example varieties, side-by-side comparison) or non-linear charts (e.g. color charts). Measurement (M) is an objective observation against a calibrated, linear scale e.g. using a ruler, weighing scales, colorimeter, dates, counts, etc.

Type of record: for a group of plants (G) or for single, individual plants (S)

For the purposes of distinctness, observations may be recorded as a single record for a group of plants or parts of plants (G), or may be recorded as records for a number of single, individual plants or parts of plants (S). In most cases, “G” provides a single record per variety and it is not possible or necessary to apply statistical methods in a plant-by-plant analysis for the assessment of distinctness.

In cases where more than one method of observing the characteristic is indicated in the Table of Characteristics (e.g. VG/MG), guidance on selecting an appropriate method is provided in document TGP/9, Section 4.2.

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 These Test Guidelines have been developed for the examination of vegetatively propagated varieties. For varieties with other types of propagation, the recommendations in the General Introduction and document TGP/13 "Guidance for new types and species" Section 4.5 "Testing Uniformity" should be followed.

4.2.3 For the assessment of uniformity of varieties resulting from crossing, 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.

4.2.4 For the assessment of uniformity of varieties resulting from mutation, a population standard of 1% and an acceptance probability of at least 95% should be applied. In the case of a sample size of 10 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 further examined by testing a new plant stock to ensure that it exhibits the same characteristics as those shown by the initial 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.
- 5.3 The following have been agreed as useful grouping characteristics:
- (a) Tree: type (characteristic 2)
 - (b) Only varieties with Tree type: ramified: Tree: habit (characteristic 3)
 - (c) Fruit: shape (characteristic 26)
 - (d) Fruit: hue of over color (characteristic 30)
 - (e) Fruit: relative area of over color (characteristic 32)
 - (f) Fruit: pattern of over color (characteristic 33)
 - (g) Fruit: main color of flesh (characteristic 45)
 - (h) Time of beginning of flowering (characteristic 49)
 - (i) Time of eating maturity (characteristic 51)
- 5.4 Guidance for the use of grouping characteristics, in the process of examining distinctness, is provided through the General Introduction and document TGP/9 "Examining Distinctness".

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*

6.2.1 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.

6.2.2 All relevant states of expression are presented in the characteristic.

6.2.3 Further explanation of the presentation of states of expression and notes is provided in document TGP/7 "Development of Test Guidelines".

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

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1	2	3	4	5	6	7	
		Name of characteristics in English	Nom du caractère en français	Name des Merkmals auf Deutsch	Nombre del carácter en español		
		states of expression	types d'expression	Ausprägungsstufen	tipos de expresión		

1 Characteristic number

2 (*) Asterisked characteristic – see Chapter 6.1.2

3 Type of expression
 QL Qualitative characteristic – see Chapter 6.3
 QN Quantitative characteristic – see Chapter 6.3
 PQ Pseudo-qualitative characteristic – see Chapter 6.3

4 Method of observation (and type of plot, if applicable)
 MG, MS, VG, VS – see Chapter 4.1.5

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

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

7 Growth stage key See Explanations on the Table of Characteristics in Chapter 8.3

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

	English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1.	QN	MG/VG	(+)		99			
	Tree: vigor	Arbre : vigueur	Baum: Wuchsstärke	Árbol: vigor				
	very weak	très faible	sehr gering	muy débil	Grenadier, Nield's Drooper		1	
	very weak to weak	très faible à faible	sehr gering bis gering	muy débil a débil	James Grieve, Redkan		2	
	weak	faible	gering	débil	Alkmene, Regine		3	
	weak to medium	faible à moyenne	gering bis mittel	débil a medio	Piros, Pomforyou, Renora		4	
	medium	moyenne	mittel	medio	Gala, Pinova, Trajan		5	
	medium to strong	moyenne à forte	mittel bis stark	media a fuerte	Dalili, Pia, Pivita		6	
	strong	forte	stark	fuerte	Elstar, Rafzubin, Santana		7	
	strong to very strong	forte à très forte	stark bis sehr stark	fuerte a muy fuerte	Bay 3484, Collina, Cripps Pink		8	
	very strong	très forte	sehr stark	muy fuerte	Gloster, Ingrid Marie		9	
2. (*)	QL	VG	(+)	(a)	99			
	Tree: type	Arbre : type	Baum: Typ	Árbol: tipo				
	columnar	columnaire	säulenförmig	columnar	MacExcel, Wjick		1	
	ramified	ramifié	verzweigt	ramificado	Elstar, Golden Delicious		2	
3. (*)	PQ	VG	(+)	(a)	99			
	<u>Only varieties with Tree type: ramified:</u> Tree: habit	<u>Seulement les variétés avec Type d'arbre ; ramifié : Arbre : port</u>	<u>Nur Sorten mit Baumtyp: verzweigt: Baum: Wuchsform</u>	<u>Solo variedades con Árbol tipo: ramificado: Árbol: hábito</u>				
	upright	dressé	aufrecht	erecto	Alkmene, Fresco, Solaris		1	
	upright to spreading	dressé à étalé	aufrecht bis auseinanderfallend	erecto a extendido	Akane, Arkcharm, Harmensz, Katrina, Reka		2	
	spreading	étalé	auseinanderfallend	extendido	Pinova, Redkan, Topaz		3	
	drooping	retombant	herabhängend	colgante	Idared, James Grieve, Pivita		4	
	weeping	pleureur	lang überhängend	llorón	Gerlinde, Nield's Drooper		5	

	English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
4.	(*)	QN	MG/VG	(+)	(b)	99		
		One-year-old shoot: length of internode	Rameau d'un an : longueur des entre- nœuds	Einjähriger Trieb: Internodienlänge	Rama de un año: longitud del entrenudo			
		very short	très courte	sehr kurz	muy corta	MacExcel, Wjicik	1	
		very short to short	très courte à courte	sehr kurz bis kurz	muy corta a corta	Alkmene, Coxcolumnar, Tuscan	2	
		short	courte	kurz	corta	Florina	3	
		short to medium	courte à moyenne	kurz bis mittel	corta a media	Ahrista, Margol	4	
		medium	moyenne	mittel	media	Jonagold, Redaphough	5	
		medium to long	moyenne à longue	mittel bis lang	media a larga	Constance, Crowngold, Nicoter, Stela	6	
		long	longue	lang	larga	Auralia	7	
		long to very long	longue à très longue	lang bis sehr lang	larga a muy larga	Angold	8	
		very long	très longue	sehr lang	muy larga	Teser	9	
5.	(*)	QN	MG/VG	(+)	(b)	99		
		One-year-old shoot: number of lenticels	Rameau d'un an : nombre de lenticelles	Einjähriger Trieb: Anzahl Lentizellen	Rama de un año: número de lenticelas			
		few	petit	gering	bajo	Alkmene, Bramley's Seedling	1	
		medium	moyen	mittel	medio	Cox's Orange Pippin	2	
		many	élevé	groß	alto	Mutsu, SQ 159	3	
6.	(*)	QN	VG	(+)	(c)	71-77		
		Leaf blade: attitude in relation to shoot	Limbe : port par rapport au rameau	Blattspreite: Haltung im Verhältnis zum Trieb	Limbo: porte en relación con la rama			
		upwards	dressé	aufwärts gerichtet	ascendente	Delblush, Elstar, Fresco, Redkan, Santana	1	
		upwards to outwards	dressé à perpendiculaire	aufwärts gerichtet bis abstehend	ascendente a hacia el exterior	Jugala, Prem A 153, Resista, Sweet Lady	2	
		outwards	perpendiculaire	abstehend	hacia el exterior	Cripps Pink, Jonagold, Pinova, Pomforyou, Schone van Boskoop	3	
		downwards	retombant	abwärts gerichtet	hacia abajo	Fuji BC, Himekami, Rewena	4	

	English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
7. (*)	QN	MG/VG	(+)	(c)	71-77			
	Leaf blade: length	Limbe : longueur	Blattspreite: Länge	Limbo: longitud				
	very short	très courte	sehr kurz	muy corta	Mars, Reanda			1
	very short to short	très courte à courte	sehr kurz bis kurz	muy corta a corta	Coxcolumnar, Goldstar			2
	short	courte	kurz	corta	Ariwa, Gusto			3
	short to medium	courte à moyenne	kurz bis mittel	corta a media	Braeburn, Fuji BC, Topaz			4
	medium	moyenne	mittel	media	Cripps Red, Dalili, Elstar			5
	medium to long	moyenne à longue	mittel bis lang	media a larga	Jonagold, Pinova, Santana			6
	long	longue	lang	larga	Fresco, Minnewashta, Monidel			7
	long to very long	longue à très longue	lang bis sehr lang	larga a muy larga	Pomforyou, Pompink			8
	very long	très longue	sehr lang	muy larga	Northpole, Telamon			9
8. (*)	QN	MG/VG	(+)	(c)	71-77			
	Leaf blade: width	Limbe : largeur	Blattspreite: Breite	Limbo: anchura				
	very narrow	très étroite	sehr schmal	muy estrecha	Coxdwarf			1
	very narrow to narrow	très étroite à étroite	sehr schmal bis schmal	muy estrecha a estrecha	Cox La Vera, Dalinco			2
	narrow	étroite	schmal	estrecha	Braeburn, La Flamboyante			3
	narrow to medium	étroite à moyenne	schmal bis mittel	estrecha a media	Dalili, Dalinbel, Elstar, Topaz			4
	medium	moyenne	mittel	media	Cripps Red, Nicoter, Pinova, Santana			5
	medium to broad	moyenne à large	mittel bis breit	media a ancha	Cripps Pink, Jonagold, Rubinola, Zari			6
	broad	large	breit	ancha	Jonagored, Rubinstep			7
	broad to very broad	large à très large	breit bis sehr breit	ancha a muy ancha	Pomforyou			8
	very broad	très large	sehr breit	muy ancha	Charlotte, Northpole			9

	English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
9. (*)	QN	MG/VG	(+)	(c)	71-77			
	Leaf blade: ratio length/width	Limbe : rapport longueur/largeur	Blattspreite: Verhältnis Länge/Breite	Limbo: relación longitud/anchura				
	very low	très bas	sehr klein	muy baja				1
	very low to low	très bas à bas	sehr klein bis klein	muy baja a baja	Reanda			2
	low	bas	klein	baja	Goldstar			3
	low to medium	bas à moyen	klein bis mittel	baja a media	Bay 3484, Rubinola			4
	medium	moyen	mittel	media	Cripps Pink, Rafzubin, Santana			5
	medium to high	moyen à élevé	mittel bis groß	media a alta	Braeburn, Cripps Red, Elstar, Pinova			6
	high	élevé	groß	alta	Fiesta, Minnewashta			7
	high to very high	élevé à très élevé	groß bis sehr groß	alta a muy alta	Civni, Monidel			8
	very high	très élevé	sehr groß	muy alta	Dalincó, Telamon			9
10.	PQ	VG	(c)	71-77				
	Leaf blade: color	Limbe : couleur	Blattspreite: Farbe	Limbo: color				
	light green	vert clair	hellgrün	verde claro				1
	light to medium green	vert clair à moyen	hell- bis mittelgrün	verde claro a medio	Maribelle			2
	medium green	vert moyen	mittelgrün	verde medio	Civni, Cripps Pink, Ecolette			3
	medium to dark green	vert moyen à foncé	mittel- bis dunkelgrün	verde medio a oscuro	Braeburn, Karmijn de Sonnaville, La Flamboyante, Pomforyou			4
	dark green	vert foncé	dunkelgrün	verde oscuro				5
	light purple red	rouge-pourpre clair	hellpurpurrot	rojo púrpura claro				6
	medium purple red	rouge-pourpre moyen	mittelpurpurrot	rojo púrpura medio				7
	dark purple red	rouge-pourpre foncé	dunkelpurpurrot	rojo púrpura oscuro	Luresweet, R201			8
11.	QN	VG	(c)	71-77				
	Leaf blade: glossiness	Limbe : brillance	Blattspreite: Glanz	Limbo: brillo				
	absent or weak	absente ou faible	fehlend oder gering	ausente o débil	Blahova Libovice, Solaris			1
	medium	moyenne	mittel	medio	Elstar, Falstaff			2
	strong	forte	stark	fuerte	Elise, Fresco, Idared			3
12. (*)	QN	VG	(+)	(c)	71-77			
	Leaf blade: incisions of margin	Limbe : incisions du bord	Blattspreite: Randeinschnitte	Limbo: incisiones del borde				
	crenate	crênelées	gekerbt	crenadas	Braeburn, Pinova, Santana			1
	crenate to serrate	crênelées à dentelées	gekerbt bis gesägt	crenadas a serradas	Ecolette, Elstar, Tenroy			2
	serrate	dentelées	gesägt	serradas	Fuji, Jonagold, Mutsu			3

	English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
13.	PQ	VG	(+)	(c)	71-77			
	Leaf blade: shape in cross-section		Limbe : forme en section transversale		Blattspreite: Form im Querschnitt	Limbo: forma en sección transversal		
	v-shaped		en forme de V		v-förmig	en forma de v	Frureru	1
	concave		concave		konkav	cóncava	Alkmene, Clivia, Gloster, Piros	2
	flat with reflexed margins		plate, avec des bords réfléchis		flach mit gebogenen Rändern	plana con bordes reflejados	Rambour d'Hiver	3
	flat		plate		flach	plana	Bittenfelder Sämling, Minnewashta	4
	convex		convexe		konvex	convexa	Collina, Vicking	5
14. (*)	QN	MG/VG	(+)	(c)	71-77			
	Petiole: length		Pétiole : longueur		Blattstiel: Länge	Peciole: longitud		
	very short		très courte		sehr kurz	muy corta		1
	very short to short		très courte à courte		sehr kurz bis kurz	muy corta a corta	Jonagold	2
	short		courte		kurz	corta	Delgollune, Jonagored	3
	short to medium		courte à moyenne		kurz bis mittel	corta a media	Bay 3484, Dalinbel	4
	medium		moyenne		mittel	media	Cripps Pink, Ecolette, Nicoter, Pinova, Topaz	5
	medium to long		moyenne à longue		mittel bis lang	media a larga	Civni, Cripps Red, Elstar	6
	long		longue		lang	larga	Resista	7
	long to very long		longue à très longue		lang bis sehr lang	larga a muy larga	Pomforyou, Trajan	8
	very long		très longue		sehr lang	muy larga	Northpole, Pompink	9
15.	QN	MG/VG	(+)	(c)	71-77			
	Leaf: ratio length of leaf blade / length of petiole		Feuille : rapport longueur du limbe / longueur du pétiole		Blatt: Verhältnis Länge der Blattspreite / Länge des Blattstiels	Hoja: relación longitud del limbo / longitud del peciolo		
	very low		très bas		sehr klein	muy baja		1
	low		bas		klein	baja		2
	medium		moyen		mittel	media		3
	high		élevé		groß	alta		4
	very high		très élevé		sehr groß	muy alta		5

	English		français		deutsch		español		Example Varieties Exemples Beispielssorten Variedades ejemplo		Note/ Nota
16.	QN	VG	(c)		71-77						
	Petiole: extent of anthocyanin coloration from base		Pétiole : étendue de la pigmentation anthocyanique depuis la base		Blattstiel: Ausdehnung der Anthocyanfärbung von der Basis aus		Pecíolo: extensión de la pigmentación antocianica desde la base				
	absent or very small		absente ou très petite		fehlend oder sehr klein		ausente o muy pequeña		Befresh		1
	small		petite		klein		pequeña		Civni, Cripps Red, Jonagold		2
	medium		moyenne		mittel		media		Braeburn, Dalinbel, Pilot		3
	large		grande		groß		grande		Pomforyou, Scired		4
	very large		très grande à très grande		sehr groß		muy grande		Bay 3484		5
17. (*)	QN	MG/VG	(+)	(d)	60-65						
	Flower: diameter		Fleur : diamètre		Blüte: Durchmesser		Flor: diámetro				
	very small		très petit		sehr klein		muy pequeño		Spätblühender Taffetapfel		1
	small		petit		klein		pequeño		Pia, Pingo		2
	medium		moyen		mittel		medio		Civni, Elstar, Pinova		3
	large		grand		groß		grande		Delcorf, Rafzubin, Zari		4
	very large		très grand		sehr groß		muy grande		Astramel		5
18. (*)	QN	VG	(+)	(d)	60-65						
	Flower: arrangement of petals		Fleur : disposition des pétales		Blüte: Anordnung der Blütenblätter		Flor: disposición de los pétalos				
	free		disjoints		intermediär		libre		Braeburn, Nicoter, Scifresh		1
	intermediate		intermédiaire		mittel		intermedia		Civni, Elstar, Pinova, Topaz		2
	overlapping		se recouvrant		überlappend		solapada		Cripps Red, Pomforyou, Šampion		3
19.	QN	VG	(+)	(d)	60-65						
	Flower: position of stigmas relative to anthers		Fleur : position des stigmates par rapport aux anthères		Blüte: Stellung der Narben im Vergleich zu den Antheren		Flor: posición de los estigmas en relación con las anteras				
	below		au-dessous		unterhalb		por debajo		Bay 3484, Braeburn, Pomforyou, Topaz		1
	same level		même niveau		auf gleicher Höhe		al mismo nivel		Cripps Pink, Ecolette, Pinova, Santana		2
	above		au-dessus		oberhalb		por encima		Civni, Elstar, Nicoter, Rafzubin		3

	English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
20.	QN	VG	(+)	(d)	65-69			
	Flower: anthocyanin coloration at base of filament	Fleur : pigmentation anthocyanique à la base du filament	Blüte: Anthocyanfärbung an der Basis des Staubfadens	Flor: pigmentación antocianica en la base del filamento				
	absent or very weak	absente ou très faible	fehlend oder sehr gering	ausente o muy débil	Braeburn, Cripps Pink, Karneval, Minnewashta			1
	weak	faible	gering	débil	Bruggers Festivale, Dalinbel, Red Jonaprince			2
	medium	moyenne	mittel	media	Elstar			3
	strong	forte	stark	fuerte	Weirouge			4
	very strong	très forte	sehr stark	muy fuerte	Luregust			5
21.	QN	VG			73-74			
	Young fruit: relative area of over color	Jeune fruit : surface relative de la couleur du lavis	Junge Frucht: Anteil der Deckfarbe	Fruto joven: zona relativa del color superficial				
	absent or very small	absente ou très petite	fehlend oder sehr gering	ausente o muy pequeña	Norhey			1
	very small to small	très petite à petite	sehr gering bis gering	muy pequeña a pequeña	Nicogreen			2
	small	petite	gering	pequeña	Cripps Pink, Delcorf, Nicoter			3
	small to medium	petite à moyenne	gering bis mittel	pequeña a media	Braeburn, Tenroy, Topaz			4
	medium	moyenne	mittel	media	Elstar, Golden Delicious			5
	medium to large	moyenne à grande	mittel bis hoch	media a grande	Pinova, Solaris			6
	large	grande	hoch	grande	Delblush, Rafzubin			7
	large to very large	grande à très grande	hoch bis sehr hoch	grande a muy grande	Jolana			8
	very large	très grande	sehr hoch	muy grande	Bay 3484, Luregust			9
22. (*)	QN	MG	(e)		89			
	Fruit: weight	Fruit : poids	Frucht: Gewicht	Fruto: peso				
	very low	très faible	sehr niedrig	muy bajo	Api Noir			1
	very low to low	très faible à faible	sehr niedrig bis niedrig	muy bajo a bajo	Norhey			2
	low	faible	niedrig	bajo	Heco, Trajan			3
	low to medium	faible à moyen	niedrig bis mittel	bajo a medio	Bay 3484, Pomforyou			4
	medium	moyen	mittel	medio	Cripps Pink, Elstar, Pinova, Topaz			5
	medium to high	moyen à élevé	mittel bis hoch	medio a alto	Golden Delicious, Santana			6
	high	élevé	hoch	alto	Jonagold, Nicoter			7
	high to very high	élevé à très élevé	hoch bis sehr hoch	alto a muy alto	Nicogreen			8
	very high	très élevé	sehr hoch	muy alto	Howgate Wonder, Pisaxa			9

	English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
23. (*)	QN	MG/VG	(+)	(e)	89			
	Fruit: height	Fruit : hauteur	Frucht: Höhe	Fruto: altura				
	very short	très courte	sehr niedrig	muy baja	Norhey			1
	very short to short	très courte à courte	sehr niedrig bis niedrig	muy baja a baja	Heco			2
	short	courte	niedrig	baja	Trajan			3
	short to medium	courte à moyenne	niedrig bis mittel	baja a media	Elstar, Pomforyou, Topaz			4
	medium	moyenne	mittel	media	Bay 3484, La Flamboyante, Santana			5
	medium to tall	moyenne à haute	mittel bis hoch	media a alta	Cripps Pink, Pinova, Şampion			6
	tall	haute	hoch	alta	Golden Delicious, Jonagold			7
	tall to very tall	haute à très haute	hoch bis sehr hoch	alta a muy alta	Pisaxa			8
	very tall	très haute	sehr hoch	muy alta	Befresh			9
24. (*)	QN	MG/VG	(+)	(e)	89			
	Fruit: diameter	Fruit : diamètre	Frucht: Durchmesser	Fruto: diámetro				
	very small	très petit	sehr klein	muy pequeño	Nela, Scarlet Surprise, Summerred			1
	very small to small	très petit à petit	sehr klein bis klein	muy pequeño a pequeño	Heco			2
	small	petit	klein	pequeño				3
	small to medium	petit à moyen	klein bis mittel	pequeño a medio	Cox's Orange Pippin, Cripps Pink, Dalili, Pomforyou			4
	medium	moyen	mittel	medio	Elstar, Pinova, Topaz			5
	medium to large	moyen à grand	mittel bis groß	medio a grande	Braeburn, Nicoter			6
	large	grand	groß	grande	Dalinbel, Jonagold			7
	large to very large	grand à très grand	groß bis sehr groß	grande a muy grande	Befresh, Ontario			8
	very large	très grand	sehr groß	muy grande	Bramley's Seedling			9

	English		français		deutsch	español	Example Varieties Exemples Beispielsorten Variedades ejemplo	Note/ Nota
25. (*)	QN	MG/VG	(e)		89			
	Fruit: ratio height/diameter	Fruit : rapport hauteur/diamètre	Frucht: Verhältnis Höhe/Durchmesser	Fruto: relación altura/diámetro				
	very low	très bas	sehr klein	muy baja				1
	very low to low	très bas à bas	sehr klein bis klein	muy baja a baja	Brettacher, Ingol			2
	low	bas	klein	baja	Auralia, Harmensz			3
	low to medium	bas à moyen	klein bis mittel	baja a media	Dalinbel, Elstar, Karmijn de Sonnaville			4
	medium	moyen	mittel	media	Ecolette, Fuji BC, Pomforyou, Santana			5
	medium to high	moyen à élevé	mittel bis groß	media a alta	Civni, Jonagold, Rafzubin			6
	high	élevé	groß	alta	Braeburn, Golden Delicious, Pinova			7
	high to very high	élevé à très élevé	groß bis sehr groß	alta a muy alta	Cripps Pink, Dalili			8
	very high	très élevé	sehr groß	muy alta	Rewena, Saturn			9
26. (*)	PQ	VG	(+)	(e)	89			
	Fruit: shape	Fruit : forme	Frucht: Form	Fruto: forma				
	flat globose conic	conique globuleuse plate	flach kugel-kegelförmig	plana globosa cónica	Melrose			1
	oblate	arrondie-aplatie	breitrund	achatada	Bramley's Seedling, Lipno			2
	circular	circulaire	kreisförmig	circular	Dalinbel, Rubinola, Topaz			3
	elliptic	elliptique	elliptisch	elíptica	Fuji BC, Minnewashta			4
	square	équilatérale	quadratisch	cuadrada	Bonita			5
	oblong	oblongue	rechteckig	oblonga	Čadel, Renora			6
	ovate	ovale	eiförmig	oval	Cripps Pink, Delcorf			7
	conic	conique	kegelförmig	cónica	Civni, Elstar, Nicoter, Pinova, Rafzubin			8
	conic waisted	conique rétrécie	tailliert kegelförmig	cónica entallada	Gloster, Redkan			9
	obconic	obconique	verkehrt kegelförmig	obcónica	Empire			10
27.	QN	VG	(e)		89			
	Fruit: ribbing	Fruit : côtes	Frucht: Rippung	Fruto: acostillado				
	absent or weak	absentes ou faibles	fehlend oder gering	ausente o débil	Elstar, Harmensz, Pinova, Scifresh, SQ 159			1
	medium	moyennes	mittel	medio	Cripps Pink, Dalili, Pilot, Santana			2
	strong	fortes	stark	fuerte	Redkan			3

	English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
28.	QN	VG	(e)		89			
	Fruit: crowning at calyx end	Fruit : couronnement au sommet du calice	Frucht: Krönung am Kelchende	Fruto: coronado del extremo del cáliz				
	absent or weak	absent ou faible	fehlend oder gering	ausente o débil	Elstar, Fresco, Heco, Schone van Boskoop			1
	medium	moyen	mittel	medio	Luregust, Pinova, Santana, Scifresh, Topaz			2
	strong	fort	stark	fuerte	Redkan			3
29. (*)	PQ	VG	(+)	(e)	89			
	Fruit: ground color	Fruit : couleur de fond	Frucht: Grundfarbe	Fruto: color de fondo				
	not visible	non visible	nicht sichtbar	no visible	Bay 3484, Lurefresh, Luregust, Red Jonaprince			1
	whitish yellow	jaune blanchâtre	weißlichgelb	amarillo blanquecino	Heco			2
	yellow	jaune	gelb	amarillo	Rea Gold, Scifresh, Solaris			3
	whitish green	vert blanchâtre	weißlichgrün	verde blanquecino	Fuji BC, MC 38, Pomforyou, Pompink			4
	yellow green	vert jaune	gelbgrün	verde amarillento	Jonagold, Pia, Suntan			5
	green	vert	grün	verde	Canada gris, Granny Smith, Ontario, Tuscan			6
30. (*)	PQ	VG	(+)	(e), (f)	89			
	Fruit: hue of over color	Fruit : teinte du lavis	Frucht: Ton der Deckfarbe	Fruto: tono del color superficial				
	orange red	rouge orangé	orangerot	rojo anaranjado	Goldstar, Rea Gold, Solaris			1
	pink red	rouge-rose	rosarot	rojo rosado	Cripps Pink, Delorgue			2
	red	rouge	rot	rojo	Pinova, Prima, Red Elstar, Tenroy			3
	purple red	rouge-pourpre	purpurrot	rojo púrpura	Bay 3484, Luresweet, MC 38, Spartan			4
	brown red	rouge-brun	braunrot	rojo amarronado	Braeburn, Fiesta, Fresco, Fuji BC, Suntan			5

	English		français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
31. (*)	QN	VG	(e), (f)	89			
	Fruit: intensity of over color	Fruit : intensité du lavis	Frucht: Intensität der Deckfarbe	Fruto: intensidad del color superficial			
	very light	très claire	sehr hell	muy clara	Alexis		1
	very light to light	très claire à claire	sehr hell bis hell	muy clara a clara	Golden Delicious, Solaris		2
	light	claire	hell	clara	Tenroy, Tuscan		3
	light to medium	claire à moyenne	hell bis mittel	clara a media	Elstar, Monidel, Rafzubin		4
	medium	moyenne	mittel	media	Cripps Pink, Pia, Pilot, Remo		5
	medium to dark	moyenne à foncée	mittel bis dunkel	media a oscura	Fiesta, James Grieve, Jonagold, Suntan		6
	dark	foncée	dunkel	oscura	Elise, Jonagored, Lurefresh, Scired		7
	dark to very dark	foncée à très foncée	dunkel bis sehr dunkel	oscura a muy oscura	Bay 3484, Obelisk, Red Jonaprince, Redkan		8
	very dark	très foncée	sehr dunkel	muy oscura	B 8 A 3-323, CIVG 198		9
32. (*)	QN	VG	(e), (f)	89			
	Fruit: relative area of over color	Fruit : surface relative du lavis	Frucht: Anteil der Deckfarbe	Fruto: zona relativa del color superficial			
	absent or very small	absente ou très petite	fehlend oder sehr gering	ausente o muy pequeña	Granny Smith, Tuscan		1
	very small to small	très petite à petite	sehr gering bis gering	muy pequeña a pequeña	Golden Delicious		2
	small	petite	gering	pequeña	Auralia, Cox's Orange Pippin, Goldstar, Solaris		3
	small to medium	petite à moyenne	gering bis mittel	pequeña a media	Charlotte, Schone van Boskoop		4
	medium	moyenne	mittel	media	Dalili, Elstar, Minnewashta, Rea Gold		5
	medium to large	moyenne à grande	mittel bis groß	media a grande	Heco, Pia, Rafzubin		6
	large	grande	groß	grande	Fiesta, Santana, Suntan, Tenroy		7
	large to very large	grande à très grande	groß bis sehr groß	grande a muy grande	Mars, Rosy Glow, SQ 159		8
	very large	très grande	sehr groß	muy grande	Bay 3484, MC 38, Red Jonaprince, Redkan		9

	English		français		deutsch	español	Example Varieties Exemples Beispielsorten Variedades ejemplo	Note/ Nota
33. (*)	PQ	VG	(+)	(e), (f)	89			
	Fruit: pattern of over color	Fruit : répartition du lavis	Frucht: Muster der Deckfarbe	Fruto: forma de disposición				
	only solid flush	seulement surteinte solide	nur ganzflächig	de manera puramente uniforme	Bay 3484, Red Jonaprince, Telamon			1
	solid flush with stripes	surteinte solide avec des raies	ganzflächig mit Streifen	uniforme con rayas	Bruggers Festivale, Charlotte, Cripps Pink, Dalili, James Grieve Esselborn, Pingo			2
	only stripes	raies seulement	nur Streifen	sólo rayas	Dülmener Rosenapfel			3
	flushed and mottled	surteinte et tachetée	geflammt und gepunktet	uniforme y jaspeada	Dalinbel, Scifresh			4
	flushed, striped and mottled	surteinte, striée et tachetée	geflammt, gestreift und gesprenkelt	uniforme, rayada y jaspeada	Elstar, Pinova, Rafzubin, Topaz			5
	marbled	marbrée	marmoriert	veteada	Karneval			6
34.	QN	VG	(e)	89				
	Fruit: conspicuousness of stripes	Fruit : netteté des raies	Frucht: Ausprägung der Streifen	Fruto: visibilidad de las rayas				
	absent or weak	absente ou faible	fehlend oder gering	ausente o débil	Eden			1
	medium	moyenne	mittel	media	Tenroy			2
	strong	forte	stark	fuerte	Caudle			3
35. (*)	QN	VG	(+)	(e)	89			
	Fruit: area of russet around stalk attachment	Fruit : surface de liège autour du pédoncule	Frucht: Fläche der Berostung im Bereich des Stielansatzes	Fruto: zona de russeting en torno a la base peduncular				
	absent or small	absente ou petite	fehlend oder klein	ausente o pequeña	Dalili, Jonagold, Pinova, Tuscan			1
	medium	moyenne	mittel	media	Charlotte, Nela, Pilot, Prima			2
	large	grande	groß	grande	Elstar, Holsteiner Cox, Schone van Boskoop, Suntan			3
36.	QN	VG	(+)	(e)	89			
	Fruit: area of russet on cheeks	Fruit : surface de liège sur les joues	Frucht: Fläche der Berostung auf den Wangen	Fruto: zona de russeting de las caras				
	absent or small	absente ou petite	fehlend oder klein	ausente o pequeña	Gala, Jonagold, Monidel, Obelisk, Pia, Pilot			1
	medium	moyenne	mittel	media	Lurefresh, Schone van Boskoop, Suntan			2
	large	grande	groß	grande	Canada gris, Egremont Russet, Zabergäurennette			3

	English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
37. (*)	QN	VG	(+)	(e)	89			
	Fruit: area of russet around eye basin	Fruit : surface de liège autour de la cuvette de l'œil	Frucht: Fläche der Berostung im Bereich der Kelchgrube	Fruto: zona de russetting de la cavidad del ojo				
	absent or small	absente ou petite	fehlend oder klein	ausente o pequeña	Gala, Jonagold, Pinova, Prima			1
	medium	moyenne	mittel	media	Elstar, Holsteiner Cox			2
	large	grande	groß	grande	Egremont Russet, Fresco, Schone van Boskoop, Suntan			3
38.	QN	MG/VG	(+)	(e)	89			
	Fruit: number of lenticels	Fruit : nombre de lenticelles	Frucht: Anzahl Lentizellen	Fruto: número de lenticelas				
	very few	très petit	sehr gering	muy bajo				1
	few	petit	gering	bajo	Coxcolumnar, Rewena			2
	medium	moyen	mittel	medio	Elstar, Pia, Pinova, Redkan, Tenroy			3
	many	élevé	groß	alto	Dalili, Honeycrisp, Jonagored, Scifresh			4
	very many	très élevé	sehr groß	muy alto a muy alto	Hidden Rose			5
39. (*)	QN	MG/VG	(+)	(e)	89			
	Fruit: length of stalk	Fruit : longueur du pédoncule	Frucht: Länge des Stiels	Fruto: longitud del pedúnculo				
	very short	très courte	sehr kurz	muy corta				1
	short	courte	kurz	corta	Holsteiner Cox, Minnewashta, Telamon, Trajan, Tuscan			2
	medium	moyenne	mittel	media	Bay 3484, Lurefresh, Nicoter			3
	long	longue	lang	larga	Elise, Pinova, Rafzubin, Tenroy			4
	very long	très longue	sehr lang	muy larga	Rewena			5
40. (*)	QN	MG/VG	(+)	(e)	89			
	Fruit: depth of stalk cavity	Fruit : profondeur de la cavité du pédoncule	Frucht: Tiefe der Stielgrube	Fruto: profundidad de la cavidad peduncular				
	very shallow	très peu profonde	sehr flach	muy poco profunda				1
	shallow	peu profonde	flach	poco profunda	Pomfit, Pompink, Rafzubin, Suntan, Trajan			2
	medium	moyenne	mittel	media	Dalili, Elstar, Fiesta, Topaz			3
	deep	profonde	tief	profunda	Jonagold, MC 38, Rosy Glow			4
	very deep	très profonde	sehr tief	muy profunda				5

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
41.	QN	VG	(e)	89		
	Fruit: calyx eye	Fruit : œil du calice	Frucht: Kelch	Fruto: ojo de cáliz		
	closed	fermé	geschlossen	cerrado		1
	partially open	partiellement ouvert	teilweise offen	parcialmente abierto		2
	fully open	entièrement ouvert	vollständig offen	completamente abierto		3
42. (*)	QN	MG/VG	(+) (e)	89		
	Fruit: depth of eye basin	Fruit : profondeur de la cuvette de l'œil	Frucht: Tiefe der Kelchgrube	Fruto: profundidad de la cavidad del ojo		
	very shallow	très peu profond	sehr flach	muy poco profunda		1
	shallow	peu profond	flach	poco profunda	Braeburn, Lurefresh	2
	medium	moyenne	mittel	media	Obelisk, Pinova, Scifresh, Topaz	3
	deep	profond	tief	profunda	Dalili, Elstar, Jonagold	4
	very deep	très profond	sehr tief	muy profunda	MC 38	5
43. (*)	QN	MG/VG	(+) (e)	89		
	Fruit: width of eye basin	Fruit : largeur de la cuvette de l'œil	Frucht: Breite der Kelchgrube	Fruto: anchura de la cavidad del ojo		
	very narrow	très étroite	sehr schmal	muy estrecha		1
	narrow	étroite	schmal	estrecha	SQ 159	2
	medium	moyenne	mittel	media	Braeburn, Elstar, Minnewashta, Pia, Tenroy	3
	broad	large	breit	ancha	Bruggers Festivale, Dalili, Dalinbel, Obelisk	4
	very broad	très large	sehr breit	muy ancha	Solaris	5
44. (*)	QN	MG/VG	(+) (e)	89		
	Fruit: firmness of flesh	Fruit : fermeté de la chair	Frucht: Festigkeit des Fleisches	Fruto: firmeza de la pulpa		
	very soft	très molle	sehr weich	muy blanda	Transparent de Croncels	1
	soft	molle	weich	blanda	Bay 3484, Pia, Pingo, Piros, Tuscan	2
	medium	moyenne	mittel	media	Obelisk, Red Fuji, Santana, Schone van Boskoop, Topaz	3
	firm	ferme	fest	firme	Braeburn, Pilot	4
	very firm	très ferme	sehr fest	muy firme	LB 4852	5

	English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
45. (*)	PQ	VG	(+)	(e)	89			
	Fruit: main color of flesh	Fruit : couleur principale de la chair	Frucht: Hauptfarbe des Fleisches	Fruto: color principal de la pulpa				
	white	blanc	weiß	blanco			Akane, Minnewashta, Pia, Spartan	1
	greenish	verdâtre	grünlich	verdoso			Angold, Gloster, Granny Smith, Northpole, Telamon	2
	yellowish white	blanc jaunâtre	gelblichweiß	blanco amarillento			Elstar, Jonagold, Pinova, Rafzubin	3
	yellowish	jaunâtre	gelblich	amarillento			Coxcolumnar, Pisaxa, Topaz, Zari	4
	orangish	orangée	blassorange	anaranjado			Ladina, Transcendent Crab	5
	pinkish	rosâtre	blassrosa	rosado			Pomfit	6
	reddish	rougeâtre	rötlich	rojizo			Bay 3484, Lureprec	7
46. (*)	PQ	VG	(+)	(e)	89			
	Fruit: secondary color of flesh	Fruit : couleur secondaire de la chair	Frucht: Sekundärfarbe des Fleisches	Fruto: color secundario de la pulpa				
	none	aucune	keine	ninguno			Gloster, Pinova, Zari	1
	white	blanc	weiß	blanco			Luresweet, Pomfital 1	2
	greenish	verdâtre	grünlich	verdoso				3
	yellowish white	blanc jaunâtre	gelblichweiß	blanco amarillento			Bay 4584, Lureprec, Weirouge	4
	yellowish	jaunâtre	gelblich	amarillento			Y101	5
	orangish	orangée	blassorange	anaranjado				6
	pinkish	rosâtre	blassrosa	rosado			Tiara, Y102	7
	reddish	rougeâtre	rötlich	rojizo				8
47.	QN	VG	(+)	(e)	89			
	Fruit: extent of secondary color	Fruit : étendue de la couleur secondaire	Frucht: Ausbreitung der Sekundärfarbe	Fruto: extensión del color secundario				
	very small	très petite	sehr gering bis gering	muy pequeña				1
	small	petite	gering	pequeña				2
	medium	moyenne	mittel	media			Bay 3484, Y102	3
	large	grande	groß	grande				4
	very large	très grande	sehr groß	muy grande			Luregust	5

	English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
48. (*)	PQ	VG	(+)	(e)	89			
	Flesh color: distribution of pinkish or reddish coloration	Couleur de la chair : distribution de la coloration rosâtre ou rougeâtre	Fleischfarbe: Verteilung der blassrosanen oder rötlichen Färbung	Color de la pulpa: forma de disposición de la coloración rosada o rojiza				
	none	aucune	keine	ninguno	Gloster, Pinova, Zari			1
	under skin only	sous l'épiderme seulement	nur unter der Haut	sólo bajo la epidermis	Pomfit, Y102			2
	around core only	autour du cœur seulement	nur um den Innenstrunk	sólo alrededor del corazón	R 201			3
	under skin and around core	sous l'épiderme et autour du cœur	unter der Haut und um den Innenstrunk	bajo la epidermis y alrededor del corazón	Lureprec			4
	throughout	partout	überall	en la totalidad	Y101			5
49. (*)	QN	MG/VG	(+)		61			
	Time of beginning of flowering	Époque du début de la floraison	Zeitpunkt des Blühbeginns	Época de inicio de la floración				
	very early	très précoce	sehr früh	muy temprana	Anna, Ein-Shemer			1
	very early to early	très précoce à précoce	sehr früh bis früh	muy temprana a temprana	Collina, Delblush, Pompink			2
	early	précoce	früh	temprana	Astramel, Civni, Idared, Topaz			3
	early to medium	précoce à moyenne	früh bis mittel	temprana a media	Cripps Red, Dalili, James Grieve, Jonagored			4
	medium	moyenne	mittel	media	Braeburn, Rafzubin, Tenroy, White Transparent, Zari			5
	medium to late	moyenne à tardive	mittel bis spät	media a tardía	Elise, Gala, Granny Smith, Sansa			6
	late	tardive	spät	tardía	Golden Delicious, Karmijn de Sonnaville, Reine de Reinettes, Sirprize			7
	late to very late	tardive à très tardive	spät bis sehr spät	tardía a muy tardía	Delorina, Suntan			8
	very late	très tardive	sehr spät	muy tardía	Spätblühender Taffetapfel			9

	English		français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
50.	QN	MG/VG	(+)	87			
	Time for harvest	Époque de la récolte	Zeitpunkt der Pflückreife	Época de la cosecha			
	extremely early	extrêmement précoce	extrem früh	extremadamente temprana	Astramel, Collina, White Transparent		1
	extremely early to very early	extrêmement précoce à très précoce	extrem früh bis sehr früh	extremadamente temprana a muy temprana	Piros		2
	very early	très précoce	sehr früh	muy temprana	Arkcharm, Lena, Minnewashta, Nela		3
	very early to early	très précoce à précoce	sehr früh bis früh	muy temprana a temprana	Bruggers Festivale, Coxcolumnar, Dalili		4
	early	précoce	früh	temprana	Akane, Delorgue, James Grieve, Monidel, Sansa		5
	early to medium	précoce à moyenne	früh bis mittel	temprana a media	Gerlinde, Prima, Santana, Zari		6
	medium	moyenne	mittel	media	Bay 3484, Fiesta, Rubinola		7
	medium to late	moyenne à tardive	mittel bis spät	media a tardía	Civni, Elstar, Karmijn de Sonnaville, Saturn, Suntan, Tenroy		8
	late	tardive	spät	tardía	Jonagold, Pomforyou, Redkan, Sirprize, Telamon		9
	late to very late	tardive à très tardive	spät bis sehr spät	tardía a muy tardía	Florina, Golden Delicious, La Flamboyante, Pinova, Pompink, Topaz		10
	very late	très tardive	sehr spät	muy tardía	Delblush, Delgollune, Fuji BC, Mutsu, Nicoter		11
	very late to extremely late	très tardive à extrêmement tardive	sehr spät bis extrem spät	muy tardía a extremadamente tardía	Braeburn, Fuji		12
	extremely late	extrêmement tardive	extrem spät	extremadamente tarde	Cripps Pink, Cripps Red, Granny Smith, Iduna		13

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
51. (*)	QN	MG/VG	(+)	89		
	Time of eating maturity	Époque de maturité pour la consommation	Zeitpunkt der Genussreife	Época de madurez para el consumo		
	extremely early	extrêmement précoce	extrem früh	extremadamente temprana	Samo	1
	extremely early to very early	extrêmement précoce à très précoce	extrem früh bis sehr früh	extremadamente temprana a muy temprana	Astramel, Julia	2
	very early	très précoce	sehr früh	muy temprana	Discovery, Helios, Nela	3
	very early to early	très précoce à précoce	sehr früh bis früh	muy temprana a temprana	Bruggers Festivale, Minnewashta	4
	early	précoce	früh	temprana	Alkmene, Gravensteiner, James Grieve, Transparent de Croncels	5
	early to medium	précoce à moyenne	früh bis mittel	temprana a media	Santana	6
	medium	moyenne	mittel	media	Elstar, Gala, Holsteiner Cox, Reine de Reinettes	7
	medium to late	moyenne à tardive	mittel bis spät	media a tardía	Honeycrisp, Karneval, Rubinstep	8
	late	tardive	spät	tardía	Golden Delicious, Jonagold, Pinova, Topaz	9
	late to very late	tardive à très tardive	spät bis sehr spät	tardía a muy tardía	Nicoter, Pilot, Scifresh, Solaris	10
	very late	très tardive	sehr spät	muy tardía	Braeburn, Florina	11
	very late to extremely late	très tardive à extrêmement tardive	sehr spät bis extrem spät	muy tardía a extremadamente tardía	Elise	12
	extremely late	extrêmement tardive	extrem spät	extremadamente tarde	Cripps Pink, Granny Smith	13

8. Explanations on the Table of Characteristics

8.1 *Explanations covering several characteristics*

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

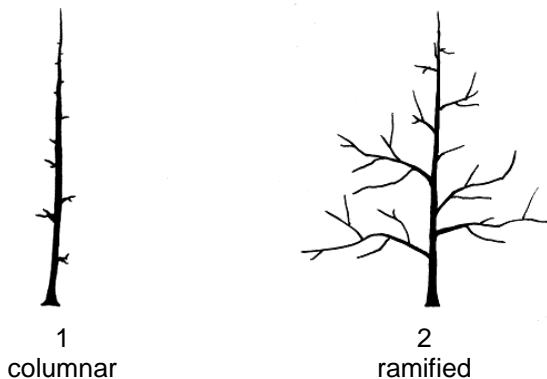
- (a) Observations should be made on bare trees in winter, after at least one satisfactory crop of fruit.
- (b) Observations should be made in the middle third of lateral dormant shoots in winter, on trees that have completed at least one growing season.
- (c) Observations should be made on fully developed leaves from the middle third of vigorous vegetative current season shoot (growth stage 39).
- (d) Observations should be made on second or subsequent flowers, at the start of anther dehiscence.
- (e) Observations should be made on fruits when they are ripe for eating.
- (f) The over color is considered a second color such as a flush which develops over time, covering the ground color of the fruit.

8.2 *Explanations for individual characteristics*

Ad. 1: Tree: vigor

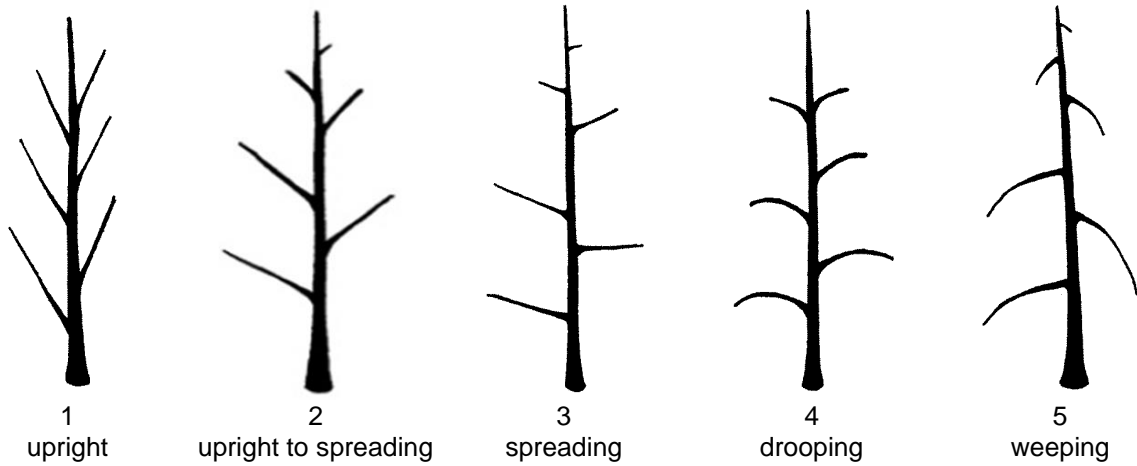
The vigor of the tree should be considered as the overall abundance of vegetative growth, after at least one significant production of fruit. It can either be assessed at the peak of vegetative growth in summer (growth stage 39), or during the dormant season before pruning (stage 00), considering shoot length and thickness, and trunk diameter.

Ad. 2: Tree: type



Ad. 3: Only varieties with Tree type: ramified: Tree: habit

The habit of the tree should be assessed in dormant period, after at least one sufficient fruit production.



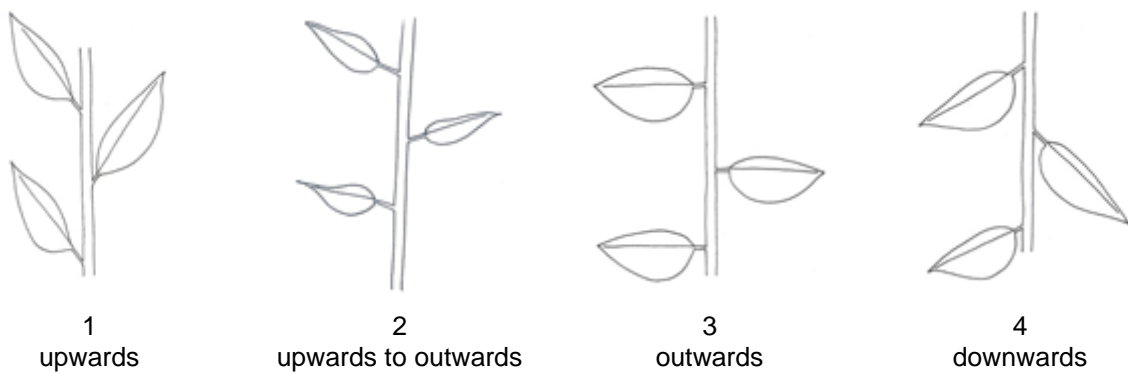
Ad. 4: One-year-old shoot: length of internode

Measurements can be made using a vernier caliper gauge.

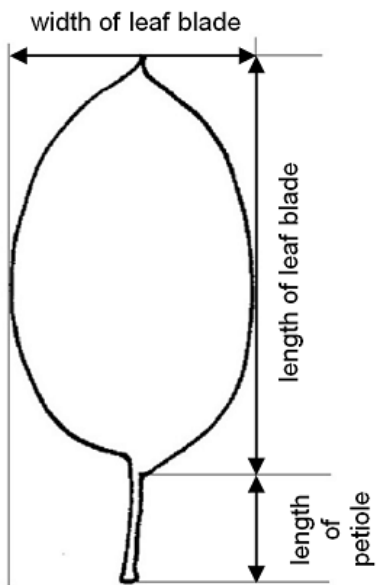
Ad. 5: One-year-old shoot: number of lenticels

Observations should be made by counting in a defined area or by visual assessment of the density of lenticels on the bark.

Ad. 6: Leaf blade: attitude in relation to shoot



Ad. 7: Leaf blade: length



Ad. 8: Leaf blade: width

See Ad. 7

Ad. 9: Leaf blade: ratio length/width

See Ad. 7

Ad. 12: Leaf blade: incisions of margin

The predominant type of incision at distal half should be observed.



1
crenate



2
crenate to serrate



3
serrate

Ad. 13: Leaf blade: shape in cross-section



1
v-shaped



2
concave



3
flat with raised margins



4
flat



5
convex

Ad. 14: Petiole: length

See Ad. 7

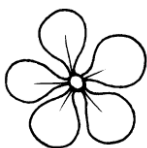
Ad. 15: Leaf: ratio length of leaf blade / length of petiole

See Ad. 7

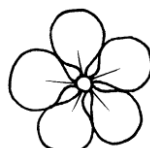
Ad. 17: Flower: diameter

Observations should be made with petals pressed into a horizontal position.

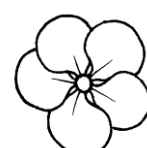
Ad. 18: Flower: arrangement of petals



1
free



2
intermediate



3
overlapping

Ad. 19: Flower: position of stigmas relative to anthers



1
below



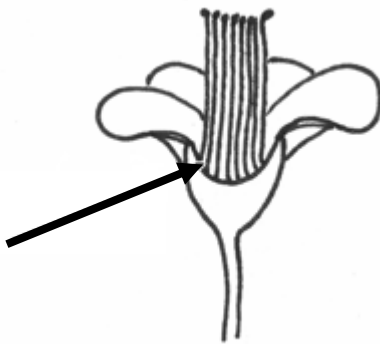
2
same level



3
above

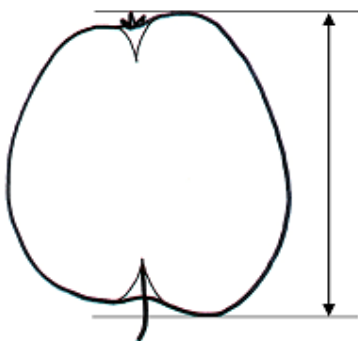
Ad. 20: Flower: anthocyanin coloration at base of filament

Observations should be made just after petal drop.



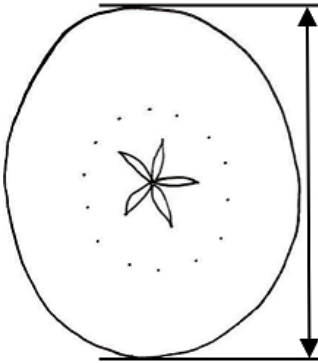
Ad. 23: Fruit: height

The maximum height should be observed.

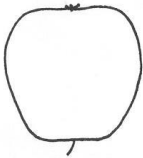
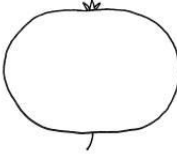
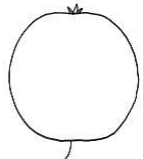
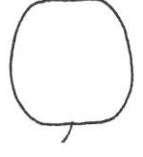
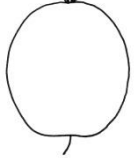

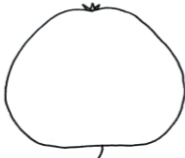
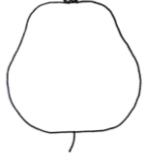

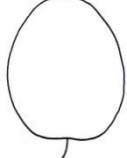


Ad. 24: Fruit: diameter

The maximum diameter should be observed.



Ad. 26: Fruit: shape

		← ratio height / diameter →			
		low	medium	high	
broadest part	↑	above middle		 10 obconical	
	↕	at middle	 2 oblate	 3 circular  5 square	 4 elliptic  6 oblong
	↓	below middle	 1 flat globose conical	 9 conical waisted	 8 conical  7 ovate

Ad. 29: Fruit: ground color

The ground color is the first color to appear chronologically during the development of the fruit.

Ad. 30: Fruit: hue of over color

Observations should be made after removing the bloom.

Ad. 33: Fruit: pattern of over color



1
only solid flush



2
solid flush with stripes



3
only stripes (no flush)



4
flushed and mottled



5
flushed, striped and mottled



6
marbled

Ad. 35: Fruit: area of russet around stalk attachment

See Ad. 40.

The russet should be considered as the dull brown rough finish on the skin of some apple fruit.

Ad. 36: Fruit: area of russet on cheeks

See Ad. 35.

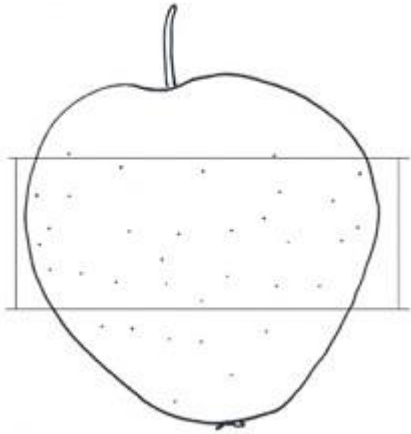
Observations should be made on the outer part of the fruit skin, in the area between the stalk cavity and the eye basin (see Ad. 40: fruit outline between the lines through e-f and a-b).

Ad. 37: Fruit: area of russet around eye basin

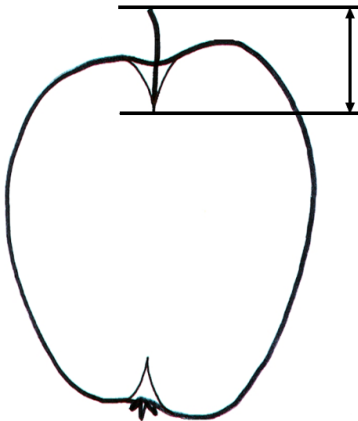
See Ad. 35 and Ad. 40.

Ad. 38: Fruit: number of lenticels

Observations should be made in the central part of the fruit, by counting (in a defined area [e.g. an area of 1 cm²]) or by visual assessment of the density of lenticels on the skin.



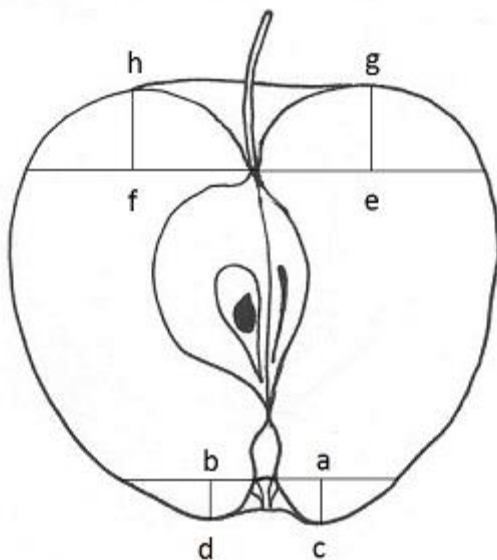
Ad. 39: Fruit: length of stalk



Ad. 40: Fruit: depth of stalk cavity

Fruits should be cut through the central axis as accurately as possible. Stalk cavity and eye basin depth and width should be measured from the sectioned fruits. The following diagram indicates the position of lines scored, using a knife or scalpel, on the fruit prior to measuring these characteristics.

- The lines a-b and e-f must be at right angles to the axis of the fruit. (A plastic protractor can be used to ensure accuracy.)
- The line a-b is marked at the base of the sepals.
- The line e-f is marked at the insertion of the stalk.
- The lines a-c and b-d indicate the eye basin depth. They are drawn at right angles to the line a-b to the point where the basin curve levels out.
- The lines e-g and f-h indicate the stalk cavity depth. They are drawn at right angles to the line e-f to the point where the stalk cavity curve levels out.
- In the case of asymmetric or irregular sections, observations should be made on the larger side (i.e. in case of depths of stalk cavity: e-g instead of f-h; in case of depth of eye basin: a-c instead of b-d).



f-h = depth of stalk cavity (characteristic 40)
a-c = depth of eye basin (characteristic 42)
a-b = width of eye basin (characteristic 43)

Ad. 42: Fruit: depth of eye basin

See Ad. 40.

Ad. 43: Fruit: width of eye basin

See Ad. 40.

Ad. 44: Fruit: firmness of flesh

Observations can be made by measuring, using a penetrometer.

Ad. 45: Fruit: main color of flesh

The main color is the color with the largest surface area. In cases where the areas of the main and secondary color are too similar to reliably decide which color has the largest area, the darker color is considered to be the main color.

Ad. 46: Fruit: secondary color of flesh

The color with the second largest area is the secondary color.

Ad. 47: Fruit: extent of secondary color

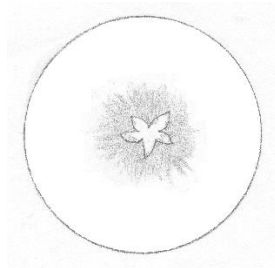
See Ad. 46.

Ad. 48: Flesh color: distribution of pinkish or reddish coloration

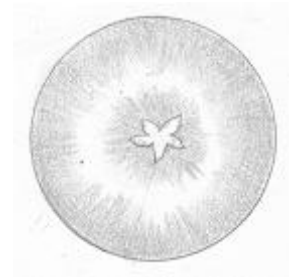
To be observed in cross section.



2
under skin only



3
around core only



4
under skin and around core



5
throughout

Ad. 49: Time of beginning of flowering

The time of beginning of flowering is reached when 10% of the flowers are fully open.

Ad. 50: Time for harvest

The time for harvest is reached when fruits are ripe for picking and can most easily be picked from the trees. As this physiological stage of the fruit is characterized by a degression of starch content in the flesh, the time for harvest can also be determined by assessing the starch content.

Ad. 51: Time of eating maturity


The time of eating maturity is reached when the fruit is ripe for eating and has reached its optimum of flavor and aroma. Eating maturity can be reached on trees or in cold chambers. As this physiological stage of the fruit is characterized by a degradation of starch content in the flesh, the time of eating maturity can also be determined by assessing the starch content.

8.3

BBCH-Scale for the description of the phenological growth stages of pome fruit

Stage	Explanation	
Principal growth stage 0: Bud development		
00	Dormancy: leaf buds and the thicker inflorescence buds closed and covered by dark brown scales	
01	Beginning of bud swelling (leaf buds); buds visibly swollen, bud scales elongated, with light colored patches	
03	End of leaf bud swelling: bud scales light colored with some parts densely covered by hairs	
07	Beginning of bud break: first green leaf tips just visible	
09	Green leaf tips about 5 mm above bud scales	
Principal growth stage 1: Leaf development		
10	Green leaf tips 10 mm above the bud scales; first leaves separating (mouse-ear stage)	
11	First leaves unfolded (others still unfolding)	
15	More leaves unfolded, not yet at full size	
19	First leaves fully expanded	
Principal growth stage 2: (not applicable)		
Principal growth stage 3: Shoot development⁴⁾		
⁴⁾ From terminal buds		
31	Beginning of shoot growth: axes of developing shoots visible	
32	Shoots about 20 % of final length	
39	Shoots about 90 % of final length	

Principal growth stage 4: Development of stolons and young plants (not applicable)		
Principal growth stage 5: Inflorescence emergence		
51	Inflorescence buds swelling: Inflorescence buds swelling: bud scales elongated, with light buds closed, light brown scales colored patches visible	
52	End of bud swelling: light colored bud scales visible with parts densely covered by hairs	
53	Bud burst: green leaf tips enclosing flowers visible	
54	Mouse-ear stage: green leaf tips 10 mm above bud scales; first leaves separating Flower buds visible (still closed)	
56	Green bud stage: single flowers separating (still closed)	
57	Red bud stage: flower petals elongating; sepals slightly open; petals just visible	
59	Most flowers with petals forming a hollow ball	
Principal growth stage 6: Flowering		
60	First flowers open	
61	Beginning of flowering: about 10 % of flowers open	
65	Full flowering: at least 50 % of flowers open, first petals falling	
67	Flowers fading: majority of Flowers fading: majority of petals fallen	
69	End of flowering: all petals fallen	

Principal growth stage 7: Development of fruit		
71	Fruit size up to 10 mm; fruit fall after flowering	 <p style="text-align: center;">75</p>
72	Fruit size up to 20 mm	
73	Second fruit fall	
74	Fruit diameter up to 40 mm; fruit erect (T-stage: underside of fruit and stalk forming a T)	
75	Fruit about half final size	
77	Fruit about 70 % of final size	
Principal growth stage 8: Maturity of fruit and seed		
81	Beginning of ripening: lightening of cultivar-specific fruit color	(no drawing)
85	Advanced ripening: increase in intensity of cultivar-specific color	
87	Fruit ripe for picking	
89	Fruit ripe for consumption: fruit have typical taste and firmness	
Principal growth stage 9: Senescence, beginning of dormancy		
91	Shoot growth completed; terminal bud developed; foliage still fully green	(no drawing)
92	Leaves begin to discolor	
93	Beginning of leaf fall	
97	All leaves fallen	
99	Harvested product	

(taken from: Biologische Bundesanstalt für Land- und Forstwirtschaft [1997])

8.4 Other Names of the Example Varieties

Example varieties	Synonyms
Api Noir	Schwarzer Noir
Auralia	Tumanga
Canada gris	Kanadarenette; Reinette de Caen
Cox's Orange Pippin	Cox Orangenrenette
Gloster	Gloster 69
Golden Delicious	Gelber Köstlicher
Golden Noble	Gelber Edelapfel
Ingrid Marie	Hoed Orange
Rambour d'Hiver	Rheinischer Winterrambur
Teser	TSR 29
Transparente de Croncels	Yellow Transparent
Šampion	Shampion
Schone van Boskoop	Belle de Boskoop; Schöner aus Boskoop
White Transparent	Papirovka, Transparente Jaune, Weißer Klarapfel

9. Literature

Aeppli, A., Gremminger, U., Rapillard, Ch., Röhliberger, K., 1983: 100 Obstsorten. Verlag Landwirtschaftliche Lehrmittelzentrale Zollikofen, CH

Aomori-ken, 1977: The report on the characterization and classification of apple varieties. Aomori-ken, JP

Baldini, E., Sansavini, S., 1967: Monografia delle principale cultivar di melo. Istituto di coltivazioni arboree dell'Università di Bologna, IT

Bergamini, A., Faedi, W. 1983 and 1985: Monografia di cultivar di melo. Volumes I + II, Ministero Agricoltura e Foreste, Roma, IT

Biologische Bundesanstalt für Land- und Fortswirtschaft (Editor), 1997: Growth Stages of Plants / Entwicklungsstadien von Pflanzen / Estadios de las Plantas / Stades de Développement des Plantes. BBCH-Monograph. Blackwell Wissenschaftsverlag Berlin, DE, Wien, AU

Brozik, S., Regius J., 1957: Termesztett gyumolcsfajtáink Almatermesűek. Alma Fruit varieties Apple. Mezogazdasági Kiadó, Budapest, HU

Bultitude, J., 1983: A Guide to the Identification of International Varieties. Macmillan Reference Books, Macmillan Press, London, GB

Dvorak, A., et al., 1956: Jablka (Apple). Academia Praha, CZ

Fischer, M., 1995: Farbatlas Obstsorten. Eugen Ulmer Verlag, Stuttgart, DE

Fleckinger, J., 1948: Les stades végétatives des arbres fruitiers, en rapport avec les traitements. Pomology Français 1948, supplements 81-93, FR

Khanizadeh, S. and Cousineau, J., 1998: Our Apples – Les Pommiers de chez nous. Agriculture and Agri-Food Canada, St.-Jean-sur Richelieu, Quebec, CA

Kessler, H., 1948: Apfelsorten der Schweiz. Verlag Verbandsdruckerei AG Bern, CH

Krümmel, H., Groh W., Friedrich, G., 1956: Deutsche Obstsorten. Deutscher Bauernverlag, Berlin, DE

Meier, U., 1997: Growth stages of mono- and dicotyledonous plants. Blackwell, Berlin, Vienna.

Morgan, J., Richards, A., 2002: The Book of Apples. Ebury Press, London, GB

Nilsson, Anton, 1987: Vara applesorter. Allmanna Forlaget AB, Stockholm SE

Petzold, H., 1990: Apfelsorten. Verlag Neumann, Leipzig, Radebeul, DE

Silbereisen, R., 1980: Apfelsorten. 2nd. ed., Verlag Eugen Ulmer, Stuttgart, DE

Smith, M.W.G., 1971: National Apple Register of the United Kingdom. Ministry of Agriculture, Fisheries & Food, London, GB

Toth, G. M., 2001: Gyumolcseszét. Primom, Nyiregyháza, HU

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	<input type="text" value="Malus domestica (Suckow) Borkh."/>
1.2	Common name	<input type="text" value="Apple"/>
2. Applicant		
	Name	<input type="text"/>
	Address	<input type="text"/>
	Telephone No.	<input type="text"/>
	Fax No.	<input type="text"/>
	E-mail address	<input type="text"/>
	Breeder (if different from applicant)	<input type="text"/>
3. Proposed denomination and breeder's reference		
	Proposed denomination (if available)	<input type="text"/>
	Breeder's reference	<input type="text"/>

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

#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 variety)

(.....) x (.....)

female parent male parent

(b) partially known cross []

(please state known parent variety(ies))

(.....) x (.....)

female parent male parent

(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)

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:
-------------------------	-----------------	-------------------

4.2	Method of propagating the variety	
4.2.1	Vegetative propagation	
(a)	Budding or grafting	[]
(b)	Other (state method)	[]
<input type="text"/>		
4.2.2	Other (Please provide details)	[]
<input type="text"/>		

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 Tree: type (2)		
columnar	MacExcel, Wijcik	1 []
ramified	Elstar, Golden Delicious	2 []
5.2 <u>Only varieties with Tree type: ramified</u>: Tree: habit (3)		
upright	Alkmene, Fresco, Solaris	1 []
upright to spreading	Akane, Arkcharm, Harmensz, Katrina, Reka 2	[]
spreading	Pinova, Redkan, Topaz	3 []
drooping	Idared, James Grieve, Pivita	4 []
weeping	Gerlinde, Nield's Drooper	5 []
5.3 Fruit: shape (26)		
flat globose conic	Melrose	1 []
oblate	Bramley's Seedling, Lipno	2 []
circular	Dalinbel, Rubinola, Topaz	3 []
elliptic	Fuji BC, Minnewashta	4 []
square	Bonita	5 []
oblong	Renora, Čadel	6 []
ovate	Cripps Pink, Delcorf	7 []
conic	Civni, Elstar, Nicoter, Pinova, Rafzubin	8 []
conic waisted	Gloster, Redkan	9 []
obconic	Empire	10 []
5.4 Fruit: hue of over color (30)		
orange red	Goldstar, Rea Gold, Solaris	1 []
pink red	Cripps Pink, Delorgue	2 []
red	Pinova, Prima, Red Elstar, Tenroy	3 []
purple red	Bay 3484, Luresweet, MC 38, Spartan	4 []
brown red	Braeburn, Fiesta, Fresco, Fuji BC, Suntan	5 []

Characteristics	Example Varieties	Note
5.5 Fruit: relative area of over color (32)		
absent or very small	Granny Smith, Tuscan	1 []
very small to small	Golden Delicious	2 []
small	Auralia, Cox's Orange Pippin, Goldstar, Solaris	3 []
small to medium	Charlotte, Schone van Boskoop	4 []
medium	Dalili, Elstar, Minnewashta, Rea Gold	5 []
medium to large	Heco, Pia, Rafzubin	6 []
large	Fiesta, Santana, Suntan, Tenroy	7 []
large to very large	Mars, Rosy Glow, SQ 159	8 []
very large	Bay 3484, MC 38, Red Jonaprince, Redkan	9 []
5.6 Fruit: pattern of over color (33)		
only solid flush	Bay 3484, Red Jonaprince, Telamon	1 []
solid flush with stripes	Bruggers Festivale, Charlotte, Cripps Pink, Dalili, James Grieve Esselborn, Pingo	2 []
only stripes	Dülmener Rosenapfel	3 []
flushed and mottled	Dalinel, Scifresh	4 []
flushed, striped and mottled	Elstar, Pinova, Rafzubin, Topaz	5 []
marbled	Karneval	6 []
5.7 Fruit: main color of flesh (45)		
white	Akane, Minnewashta, Pia, Spartan	1 []
greenish	Angold, Gloster, Granny Smith, Northpole, Telamon	2 []
yellowish white	Elstar, Jonagold, Pinova, Rafzubin	3 []
yellowish	Coxcolumnar, Pisaxa, Topaz, Zari	4 []
orangish	Ladina, Transcendent Crab	5 []
pinkish	Pomfit	6 []
reddish	Bay 3484, Lureprec	7 []

Characteristics	Example Varieties	Note
5.8 Time of beginning of flowering (49)		
very early	Anna, Ein-Shemer	1 []
very early to early	Collina, Delblush, Pompink	2 []
early	Astramel, Civni, Idared, Topaz	3 []
early to medium	Cripps Red, Dalili, James Grieve, Jonagored	4 []
medium	Braeburn, Rafzubin, Tenroy, White Transparent, Zari	5 []
medium to late	Elise, Gala, Granny Smith, Sansa	6 []
late	Golden Delicious, Karmijn de Sonnaville, Reine de Reinettes, Sirprize	7 []
late to very late	Delorina, Suntan	8 []
very late	Spätblühender Taffetapfel	9 []
5.9 Time for harvest (50)		
extremely early	Astramel, Collina, White Transparent	1 []
extremely early to very early	Piros	2 []
very early	Arkcharm, Lena, Minnewashta, Nela	3 []
very early to early	Bruggers Festivale, Coxcolumnar, Dalili	4 []
early	Akane, Delorgue, James Grieve, Monidel, Sansa	5 []
early to medium	Gerlinde, Prima, Santana, Zari	6 []
medium	Bay 3484, Fiesta, Rubinola	7 []
medium to late	Civni, Elstar, Karmijn de Sonnaville, Saturn, Suntan, Tenroy	8 []
late	Jonagold, Pomforyou, Redkan, Sirprize, Telamon	9 []
late to very late	Florina, Golden Delicious, La Flamboyante, Pinova, Pompink, Topaz	10 []
very late	Delblush, Delgollune, Fuji BC, Mutsu, Nicoter	11 []
very late to extremely late	Braeburn, Fuji	12 []
extremely late	Cripps Pink, Cripps Red, Granny Smith, Iduna	13 []

Characteristics	Example Varieties	Note
5.10 Time of eating maturity (51)		
extremely early	Samo	1 []
extremely early to very early	Astramel, Julia	2 []
very early	Discovery, Helios, Nela	3 []
very early to early	Bruggers Festivale, Minnewashta	4 []
early	Alkmene, Gravensteiner, James Grieve, Transparent de Croncels	5 []
early to medium	Santana	6 []
medium	Elstar, Gala, Holsteiner Cox, Reine de Reinettes	7 []
medium to late	Honeycrisp, Karneval, Rubinstep	8 []
late	Golden Delicious, Jonagold, Pinova, Topaz	9 []
late to very late	Nicoter, Pilot, Scifresh, Solaris	10 []
very late	Braeburn, Florina	11 []
very late to extremely late	Elise	12 []
extremely late	Cripps Pink, Granny Smith	13 []

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.

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
<i>Example</i>	<i>One-year-old shoot: number of lenticels</i>	<i>few</i>	<i>many</i>
Comments:			

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

#7. Additional information which may help in the examination of the variety

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

Yes No

(If yes, please provide details)

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

Yes No

(If yes, please provide details)

7.3 Other information

A representative color photograph of the variety displaying its main distinguishing feature(s), should accompany the Technical Questionnaire. The photograph will provide a visual illustration of the candidate variety which supplements the information provided in the Technical Questionnaire.

The key points to consider when taking a photograph of the candidate variety are:

- Indication of the date and geographic location
- Correct labeling (breeder's reference)
- Good quality printed photograph (minimum 10 cm x 15 cm) and/or sufficient resolution electronic format version (minimum 960 x 1280 pixels)

Further guidance on providing photographs with the Technical Questionnaire is available in document TGP/7 "Development of Test Guidelines", Guidance Note 35 (<http://www.upov.int/tgp/en/>).

[The link provided may be deleted by members of the Union when developing authorities' own test guidelines.]

In the case of mutant varieties, (a) characteristic(s) should be indicated in which the candidate variety differs from the variety it has originated from, or from any other mutant variety of the same origin, if not provided already under 6.

Denomination(s) of variety(ies) similar to your candidate variety	Characteristic(s) in which your candidate variety differs	Describe the expression of the characteristic(s) for the similar variety(ies)	Describe the expression of the characteristic(s) for your candidate variety

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:
-------------------------	-----------------	-------------------

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. 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]