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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS
GENEVA

<p>APPLE (Fruit Varieties)</p> <p>UPOV Code: MALUS_DOM</p> <p>(<i>Malus domestica</i> Borkh.)</p>
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GUIDELINES
FOR THE CONDUCT OF TESTS
FOR DISTINCTNESS, UNIFORMITY AND STABILITY

Alternative Names:*

<i>Botanical name</i>	<i>English</i>	<i>French</i>	<i>German</i>	<i>Spanish</i>
<i>Malus domestica</i> Borkh.	Apple	Pommier	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/163/3 Apple Rootstocks
TG/192/1 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.]

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1. Subject of these Test Guidelines

1.1 These Test Guidelines apply to all varieties of *Malus domestica* Borkh., except for varieties used only as rootstock varieties (see TG/163/3) or only as ornamental varieties (see TG/192/1).

1.2 Any varieties which might be considered as rootstock or ornamental varieties but which might also be used for fruit production should be examined for DUS using these Test Guidelines in addition to the other Test Guidelines mentioned above.

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*

The minimum duration of tests should normally be two independent growing cycles. The growing cycle is considered to be the duration of a single growing season, beginning with bud burst (flowering and/or vegetative), flowering and fruit harvest and concluding when the following dormant period ends with the swelling of new season buds.

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*

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, it is essential that the trees produce a satisfactory crop of fruit in each of the two growing cycles.

3.4 *Test Design*

3.4.1 Varieties resulting from crossing: Each test should be designed to result in a total of at least 5 trees.

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

3.5.1 Varieties resulting from crossing: Unless otherwise indicated, all observations should be made on 5 trees or parts taken from each of 5 trees. In the case of parts of the tree, the number to be taken from each of the trees should be 2.

3.5.2 Varieties resulting from mutation: Unless otherwise indicated, all observations should be made on 10 trees or parts taken from each of 10 trees. In the case of parts of the tree, the number to be taken from each of the trees should be 1.

3.6 *Additional Tests*

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

4. Assessment of Distinctness, Uniformity and Stability

4.1 *Distinctness*

4.1.1 General Recommendations

It is of particular importance for users of these Test Guidelines to consult the General Introduction prior to making decisions regarding distinctness. However, the following points are provided for elaboration or emphasis in these Test Guidelines.

4.1.2 Consistent Differences

The differences observed between varieties may be so clear that more than one growing cycle is not necessary. In addition, in some circumstances, the influence of the environment is not such that more than a single growing cycle is required to provide assurance that the differences observed between varieties are sufficiently consistent. One means of ensuring that a difference in a characteristic, observed in a growing trial, is

sufficiently consistent is to examine the characteristic in at least two independent growing cycles.

4.1.3 Clear Differences

Determining whether a difference between two varieties is clear depends on many factors, and should consider, in particular, the type of expression of the characteristic being examined, i.e. whether it is expressed in a qualitative, quantitative, or pseudo-qualitative manner. Therefore, it is important that users of these Test Guidelines are familiar with the recommendations contained in the General Introduction prior to making decisions regarding distinctness.

4.2 *Uniformity*

4.2.1 It is of particular importance for users of these Test Guidelines to consult the General Introduction prior to making decisions regarding uniformity. However, the following points are provided for elaboration or emphasis in these Test Guidelines:

4.2.2 For the assessment of uniformity, 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. 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 tested, either by growing a further generation, or by testing a new plant stock to ensure that it exhibits the same characteristics as those shown by the previous material supplied.

5. Grouping of Varieties and Organization of the Growing Trial

5.1 The selection of varieties of common knowledge to be grown in the trial with the candidate varieties and the way in which these varieties are divided into groups to facilitate the assessment of distinctness are aided by the use of grouping characteristics.

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

5.3 The following have been agreed as useful grouping characteristics:

- (a) Tree: type (characteristic 2)
- (b) Only varieties with ramified tree type: Tree: habit (characteristic 3)
- (c) Fruit: general shape (characteristic 28)
- (d) Fruit: relative area of over color (characteristic 36)
- (e) Fruit: hue of over color - with any bloom removed (characteristic 37)
- (f) Fruit: pattern of over color of skin (characteristic 39)
- (g) Time of beginning of flowering (characteristic 55)
- (h) Time of eating maturity (characteristic 57)

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. The states of expression of the example varieties provided in these Test Guidelines are the states expressed when the example varieties are grown on M9 rootstock.

6.5 *Legend*

(*) Asterisked characteristic – see Chapter 6.1.2

QL: Qualitative characteristic – see Chapter 6.3

QN: Quantitative characteristic – see Chapter 6.3

PQ: Pseudo-qualitative characteristic – see Chapter 6.3

(a)–(e) See Explanations on the Table of Characteristics in Chapter 8.1

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

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

	English	français	deutsch	español	Example Varieties Exemples Beispielsorten Variedades ejemplo	Note/ Nota
1.	Tree: vigor	Arbre: vigueur	Baum: Wuchsstärke	Árbol: vigor		
(+)						
QN	(c) very weak	très faible	sehr gering	muy débil	Nield's Drooper	1
	weak	faible	gering	débil	Akane	3
	medium	moyenne	mittel	medio	Golden Delicious	5
	strong	forte	stark	fuerte	Bramley's Seedling	7
2.	Tree: type	Arbre: type	Baum: Typ	Árbol: tipo		
(*)						
(+)						
QL	(a) columnar	colonnaire	säulenförmig	columnar	MacExcel, Wijcik	1
	ramified	ramifié	verzweigt	ramificado	Elstar, Golden Delicious	2
3.	<u>Only varieties with ramified tree type:</u>	<u>Seulement pour les variétés dont le type d'arbre est ramifié:</u>	<u>Nur Sorten, deren Baumtyp verzweigt ist:</u>	<u>Sólo variedades que tienen un tipo de árbol ramificado:</u>		
(*)	Tree: habit	Arbre: port	Baum: Wuchsform	Árbol: hábito		
(+)						
QN	upright	dressé	aufrecht	erguido	Benoni, Gloster	1
	spreading	divergent	auseinanderfallend	extendido	Bramley's Seedling, Jonagold	2
	drooping	retombant	überhängend	colgante	Jonathan	3
	weeping	pleureur	lang überhängend	llorón	Nield's Drooper, Rome Beauty	4
4.	Tree: type of bearing	Arbre: type de fructification	Baum: Fruchtansatz	Árbol: tipo de fructificación		
(+)						
QN	(e) on spurs only	sur spurs seulement	nur an Kurztrieben	únicamente en espolones	Starkrimson Delicious	1
	on spurs and long shoots	sur spurs et rameaux longs	an Kurz- und an Langtrieben	en espolones y tallos largos	Jonagold	2
	on long shoots only	sur rameaux longs seulement	nur an Langtrieben	únicamente en tallos largos	Cortland, Rome Beauty	3

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
5.	One-year-old shoot: thickness	Rameau d'un an: épaisseur	Einjähriger Trieb: Dicke	Rama de un año: grosor		
(+)						
QN (b)	thin	mince	dünn	delgada	Laxton's Fortune, Remo	3
	medium	moyen	mittel	media	Jonagold	5
	thick	épais	dick	gruesa	Bramley's Seedling	7
	very thick	très épais	sehr dick	muy gruesa	Charlotte, Wijcik	9
6.	One-year-old shoot: length of internode	Rameau d'un an: longueur des entre-nœuds	Einjähriger Trieb: Internodienlänge	Rama de un año: longitud de los entrenudos		
(*)						
(+)						
QN (b)	very short	très courts	sehr kurz	muy cortos	MacExcel, Wijcik	1
	short	courts	kurz	cortos	Alkmene, Florina	3
	medium	moyens	mittel	medios	Jonagold, Redaphough	5
	long	longs	lang	largos	Auralia	7
7.	One-year-old shoot: color on sunny side	Rameau d'un an: couleur de la face exposée au soleil	Einjähriger Trieb: Farbe auf der Sonnenseite	Rama de un año: color de la parte expuesta al sol		
PQ (b)	greenish brown	brun verdâtre	grünlichbraun	marrón verdoso	Granny Smith	1
	reddish brown	brun rougeâtre	rötlichbraun	marrón rojizo	Vicking	2
	light brown	brun clair	hellbraun	marrón claro	Arkcharm	3
	medium brown	brun moyen	mittel braun	marrón medio	Golden Delicious	4
	dark brown	brun foncé	dunkelbraun	marrón oscuro	Ingrid Marie	5
8.	One-year-old shoot: pubescence (on distal half of shoot)	Rameau d'un an: pubescence (sur la partie supérieure du rameau)	Einjähriger Trieb: Behaarung (im oberen Triebabschnitt)	Rama de un año: pubescencia (en la mitad distal de la rama)		
QN (b)	absent or very weak	absente ou très faible	fehlend oder sehr gering	ausente o muy débil	Laxton's Fortune, Rewena	1
	weak	faible	gering	débil	Golden Delicious	3
	medium	moyenne	mittel	media	Cox's Orange Pippin	5
	strong	forte	stark	fuerte	Bramley's Seedling	7
	very strong	très forte	sehr stark	muy fuerte	Rambour d'Hiver	9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
9. (*)	One-year-old shoot: number of lenticels	Rameau d'un an: nombre de lenticelles	Einjähriger Trieb: Anzahl der Lentizellen	Rama de un año: número de lenticelas		
QN (b)	few	petit	gering	bajo	Alkmene, Bramley's Seedling	3
	medium	moyen	mittel	medio	Cox's Orange Pippin	5
	many	grand	groß	alto	Mutsu	7
10. (*) (+)	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		
QN (c)	upwards	dressé	aufwärts gerichtet	ascendente	Katja, Redsleeves	1
	outwards	perpendiculaire	abstehend	horizontal	Bramley's Seedling	2
	downwards	retombant	abwärts gerichtet	descendente	Granny Smith, Schone van Boskoop	3
11. (*)	Leaf blade: length	Limbe: longueur	Blattspreite: Länge	Limbo: longitud		
QN (c)	very short	très court	sehr kurz	muy corta	Reanda	1
	short	court	kurz	corta	Court Pendu Plat	3
	medium	moyen	mittel	media	Florina	5
	long	long	lang	larga	Bramley's Seedling	7
12. (*)	Leaf blade: width	Limbe: largeur	Blattspreite: Breite	Limbo: anchura		
QN (c)	narrow	étroit	schmal	estrecha	Cox's Orange Pippin	3
	medium	moyen	mittel	media	Jonagold	5
	broad	large	breit	ancha	Bramley's Seedling	7
13. (*)	Leaf blade: ratio length/width	Limbe: rapport longueur/largeur	Blattspreite: Ver- hältnis Länge/Breite	Limbo: relación entre la longitud y la anchura		
QN (c)	small	faible	klein	pequeña	Bramley's Seedling	3
	medium	moyen	mittel	media	Jonagold	5
	large	élevé	groß	grande	Granny Smith	7

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
14.	Leaf blade: intensity of green color	Limbe: intensité de la couleur verte	Blattspreite: Intensität der Grünfärbung	Limbo: intensidad del color verde		
QN (c)	light	claire	hell	clara	Golden Delicious, Sansa	3
	medium	moyenne	mittel	media	James Grieve	5
	dark	foncée	dunkel	oscura	Mutsu	7
15.	Leaf blade: incisions of margin (upper half)	Limbe: incisions du bord (moitié supérieure)	Blattspreite: Randeinschnitte (obere Hälfte)	Limbo: incisiones del borde (mitad superior)		
(+)						
PQ (c)	crenate	crénelées	gekerbt	crenadas	Summerred	1
	bicrenate	bicrénelées	doppelt gekerbt	bicrenadas	Alkmene, Jim Brian	2
	serrate type 1	en scie simple type 1	gesägt Typ 1	serradas (tipo 1)	Elstar, Gala	3
	serrate type 2	en scie simple type 2	gesägt Typ 2	serradas (tipo 2)	Sirprize	4
	biserrate	en scie double	doppelt gesägt	biserradas	Freedom, Mutsu, Schone van Boskoop	5
16.	Leaf blade: pubescence on lower side	Limbe: pilosité de la face inférieure	Blattspreite: Behaarung der Unterseite	Limbo: pubescencia del lado inferior		
QN (c)	absent or weak	absente ou faible	fehlend oder sehr gering	ausente o débil	Golden Delicious	1
	medium	moyenne	mittel	media	Cox's Orange Pippin, Elstar	2
	strong	forte	stark	fuerte	James Grieve, Jonathan	3
17.	Petiole: length	Pétiole: longueur	Blattstiel: Länge	Peciolo: longitud		
(*)						
QN (c)	short	court	kurz	corta	Jonagold	3
	medium	moyen	mittel	media	Granny Smith	5
	long	long	lang	larga	Falstaff	7

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
18.	Petiole: extent of anthocyanin coloration from base	Pétiole: extension de la coloration anthocyanique	Blattstielansatz: Ausbreitung der Anthocyanfärbung von der Basis	Pecíolo: extensión de la coloración antociánica		
QN (c)	small	petite	gering	pequeña	Golden Delicious, Jonagold	3
	medium	moyenne	mittel	media	Cox's Orange Pippin, Gala	5
	large	grande	hoch	grande	Discovery, Richard Delicious	7
19. (* (+)	Flower: predominant color at balloon stage	Fleur: couleur au stade ballon	Blüte: vorwiegende Farbe im Ballonstadium	Flor: color predominante en la fase de capullo		
PQ (d)	white	blanche	weiß	blanco	Norhey	1
	yellowish pink	rose jaunâtre	gelblichrosa	rosa amarillento	Schöner aus Herrenhut, Worcester Pearmain	2
	light pink	rose pâle	hellrosa	rosa claro	Gravensteiner, Jonathan	3
	dark pink	rose foncé	dunkelrosa	rosa oscuro	Elstar, Sylvia	4
	medium red	rouge moyen	mittelrot	rojo medio	Kidd's Orange Red	5
	dark red	rouge foncé	dunkelrot	rojo oscuro	Weirouge	6
	purple	pourpre	purpurn	púrpura	Rafzubin	7
20. (*	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 los pétalos extendidos en posición horizontal		
QN (d)	very small	très petit	sehr klein	muy pequeño	Freedom, Spätblühender Taffettapfel	1
	small	petit	klein	pequeño	Jonafree	3
	medium	moyen	mittel	medio	Cox's Orange Pippin	5
	large	grand	groß	grande	Schone van Boskoop	7

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
21. (*) (+)	Flower: arrangement of petals	Fleur: disposition des pétales	Blüte: Anordnung der Blütenblätter	Flor: disposición de los pétalos		
QN	(d) free	indépendants	freistehend	separados	Worcester Pearmain	1
	intermediate	intermédiaire	intermediär	intermedios	Golden Delicious, Jonagold, Topaz	2
	overlapping	se recouvrant	überlappend	solapados	Schone van Boskoop	3
22. (+)	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		
QN	(d) below	au-dessous	unterhalb	por debajo	Alkmene	1
	same level	au même niveau	auf gleicher Höhe	al mismo nivel	Cox's Orange Pippin	2
	above	au-dessus	oberhalb	por encima	Golden Delicious	3
23.	Young fruit: extent of anthocyanin overcolor	Jeune fruit: extension de la coloration anthocyanique	Junge Frucht: Grad der Anthocyanfärbung	Fruto joven: extensión de la coloración antociánica		
QN	(e) absent or very small	absente ou très petite	fehlend oder sehr gering	ausente o muy pequeña	Grenadier, Norhey	1
	small	petite	gering	pequeña	Fuji	3
	medium	moyenne	mittel	media	Idared	5
	large	grande	hoch	grande	Elise	7
	very large	très grande	sehr hoch	muy grande	Weirouge	9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
24. (*)	Fruit: size	Fruit: taille	Frucht: Größe	Fruto: tamaño		
QN (f)	very small	très petit	sehr klein	muy pequeño	Api Noir	1
	very small to small	très petit à petit	sehr klein bis klein	muy pequeño a pequeño	Golden Harvey	2
	small	petit	klein	pequeño	Akane, Miller's Seedling	3
	small to medium	petit à moyen	klein bis mittel	pequeño a medio	Alkmene	4
	medium	moyen	mittel	medio	Cox's Orange Pippin	5
	medium to large	moyen à gros	mittel bis groß	medio a grande	Gravensteiner	6
	large	gros	groß	grande	Mutsu	7
	large to very large	gros à très gros	groß bis sehr groß	grande a muy grande	Bramley's Seedling	8
	very large	très gros	sehr groß	muy grande	Howgate Wonder	9
25. (*) (+)	Fruit: height	Fruit: hauteur	Frucht: Höhe	Fruto: altura		
QN (f)	short	court	niedrig	corta	Auralia	3
	medium	moyen	mittel	media	James Grieve	5
	tall	haut	hoch	alta	Čadel, Iduna	7
26. (*) (+)	Fruit: diameter	Fruit: diamètre	Frucht: Durchmesser	Fruto: diámetro		
QN (f)	small	petit	klein	pequeño	Orei	3
	medium	moyen	mittel	medio	Golden Delicious	5
	large	grand	groß	grande	Melrose	7

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
27. (* (*)	Fruit: ratio height/diameter	Fruit: rapport hauteur/diamètre	Frucht: Verhältnis Höhe/Durchmesser	Fruto: relación altura/diámetro		
QN (f)	very small	très petit	sehr klein	muy pequeña	Court Pendu Plat, Ingol	1
	small	petit	klein	pequeña	Idared, Ontario	3
	medium	moyen	mittel	mediana	Jonagold	5
	large	grand	groß	grande	Golden Delicious	7
	very large	très grand	sehr groß	muy grande	Iduna, Priam	9
28. (* (+)	Fruit: general shape	Fruit: forme générale	Frucht: allgemeine Form	Fruto: forma general		
PQ (f)	cylindrical waisted	cylindrique étranglé	tailliert zylindrisch	cilíndrica entallada	Starkrimson	1
	conic	conique	kegelförmig	cónica	Jonagold	2
	ovoid	ovoïde	eiförmig	ovoïde	Summerred	3
	cylindrical	cylindrique	zylindrisch	cilíndrica	Gravensteiner, Mutsu	4
	ellipsoid	ellipsoïde	ellipsoid	elipsoïde	Spencer	5
	globose	globuleux	kugelförmig	globosa	Golden Noble, Resi	6
	obloid	obloïde	abgeplattet kugelförmig	obloïde	Bramley's Seedling, Idared	7
29.	Fruit: ribbing	Fruit: côtes	Frucht: Rippung	Fruto: acostillado		
QN (f)	absent or weak	absentes ou faibles	fehlend oder gering	ausente o débil	Charles Ross, Discovery	1
	moderate	moyennes	mittel	moderado	Golden Delicious	2
	strong	fortes	stark	fuerte	Red Delicious, Reinette Russet	3
30.	Fruit: crowning at calyx end	Fruit: couronnement au sommet du calice	Frucht: Wülste oder Höcker am Kelchende	Fruto: coronado del extremo del cáliz		
QN (f)	absent or weak	absent ou faible	fehlend oder gering	ausente o débil	Charles Ross, Discovery, Granny Smith	1
	moderate	moyen	mittel	moderado	Cox's Orange Pippin, Jonagold	2
	strong	fort	stark	fuerte	Red Delicious	3

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
31.	Fruit: size of eye	Fruit: taille de l'œil	Frucht: Größe des Kelches	Fruto: tamaño del ojo		
QN (*)	(f) small	petit	klein	pequeño	McIntosh	3
	medium	moyen	mittel	medio	Cox's Orange Pippin	5
	large	grand	groß	grande	Ingol, Monarch	7
32.	Fruit: length of sepal	Fruit: longueur du sépale	Frucht: Länge des Kelchblattes	Fruto: longitud del sépalo		
QN (*)	(f) short	court	kurz	corta	McIntosh	3
	medium	moyen	mittel	media	Alkmene	5
	long	long	lang	larga	Gala	7
33.	Fruit: bloom of skin	Fruit: pruine de l'épiderme	Frucht: Bereifung der Schale	Fruto: pruina de la epidermis		
QN (*)	(f) absent or weak	absente ou faible	fehlend oder gering	ausente o débil	Golden Delicious	1
	moderate	moyenne	mittel	moderada	James Grieve, Jonathan	2
	strong	forte	stark	fuerte	Vicking, Vista Bella	3
34.	Fruit: greasiness of skin	Fruit: état cireux de l'épiderme	Frucht: Fettigkeit der Schale	Fruto: epidermis grasienta		
QN (*)	(f) absent or weak	absent ou faible	fehlend oder gering	ausente o débil	Schone van Boskoop	1
	moderate	moyen	mittel	moderado	James Grieve	2
	strong	fort	stark	fuerte	Arlet, Jonagold	3
35.	Fruit: ground color	Fruit: couleur du fond	Frucht: Grundfarbe	Fruto: color de fondo		
PQ (*)	(f) not visible	non visible	nicht sichtbar	no visible	Red Jonaprince	1
	whitish yellow	jaune blanchâtre	weißlichgelb	amarillo blanquecino	Silken	2
	yellow	jaune	gelb	amarillo	Delorgue, Gala, Transparent de Cronsels	3
	whitish green	vert blanchâtre	weißlichgrün	verde blanquecino	Angold, Lodi, Lena, White Transparent	4
	yellow green	vert-jaune	gelbgrün	verde amarillento	Cox's Orange Pippin	5
	green	vert	grün	verde	Granny Smith	6

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
36. (* (*)	Fruit: relative area of over color	Fruit: proportion de lavis	Frucht: Anteil der Deckfarben	Fruto: zona relativa del color superior		
QN (f)	absent or very small	nulle ou très petite	fehlend oder sehr klein	ausente o muy pequeña	Granny Smith	1
	small	petite	klein	pequeña	Auralia, Cox's Orange Pippin	3
	medium	moyenne	mittel	media	Gala	5
	large	grande	groß	grande	Spartan	7
	very large	très grande	sehr groß	muy grande	Red Jonaprince	9
37. (* (*)	Fruit: hue of over color – with bloom removed	Fruit: teinte du lavis – une fois la pruine enlevée	Frucht: Ton der Deckfarbe – Bereifung entfernt	Fruto: tono del color superior, una vez retirada la pruina		
PQ (f)	orange red	rouge orangé	orangerot	rojo anaranjado	Cox's Orange Pippin, Egremont Russet	1
	pink red	rouge-rose	rosarot	rojo rosado	Cripps Pink, Delorgue	2
	red	rouge	rot	rojo	Akane, Galaxy, Red Elstar, Regal Prince	3
	purple red	rouge-pourpre	purpurrot	rojo púrpura	Red Jonaprince, Spartan	4
	brown red	rouge-brun	braunrot	rojo marrón	Fiesta, Joburn, Lord Burghley	5
38. (* (+)	Fruit: intensity of over color	Fruit: intensité du lavis	Frucht: Intensität der Deckfarbe	Fruto: intensidad del color superior		
QN (f)	light	claire	hell	clara	<i>see Chapter 8.2/ voir chapitre 8.2/ siehe Kapitel 8.2/ véase capítulo 8.2</i>	3
	medium	moyenne	mittel	media		5
	dark	foncée	dunkel	oscura		7

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
39. (*)	Fruit: pattern of over color	Fruit: distribution du lavis	Frucht: Verteilung der Deckfarbe	Fruto: distribución del color superior		
PQ (f)	only solid flush	seulement en plages continues	nur ganzflächig	de manera puramente uniforme	Red Jonaprince, Richard Delicious	1
	solid flush with weakly defined stripes	en plages continues avec rayures faiblement délimitées	ganzflächig mit schwachen Streifen	uniforme con estrías levemente delimitadas	Galaxy	2
	solid flush with strongly defined stripes	en plages continues avec rayures fortement délimitées	ganzflächig mit deutlichen Streifen	uniforme con estrías claramente delimitadas	Jonagored	3
	weakly defined flush with strongly defined stripes	en plages continues faiblement exprimées avec rayures fortement délimitées	schwach flächig mit deutlichen Streifen	de manera leve y uniforme con estrías claramente delimitadas	Gravensteiner	4
	only stripes (no flush)	rayures seulement	nur Streifen (nicht flächig)	únicamente en estrías	Helios	5
	flushed and mottled	en plages continues et tacheté	flächig und gepunktet	uniforme y jaspeado	Elstar	6
	flushed, striped and mottled	en plages continues, rayé et tacheté	flächig, gestreift und gepunktet	uniforme, estriado y jaspeado	Jonagold	7
40. (*)	Fruit: width of stripes	Fruit: largeur des rayures	Frucht: Breite der Streifen	Fruto: anchura de las estrías		
QN (f)	narrow	étroites	schmal	estrechas	Eden, Pinova, Pirella	3
	medium	moyennes	mittel	medias	Rubinola, Tenroy	5
	broad	larges	breit	anchas	Baigent, Caudle	7
41. (*)	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		
QN (f)	absent or small	nulle ou petite	fehlend oder klein	ausente o pequeño	Elstar, Granny Smith, Piros	1
	medium	moyenne	mittel	medio	Alkmene	2
	large	grande	groß	grande	Egremont Russet, Kaiser Wilhelm	3

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
42.	Fruit: area of russet on cheeks	Fruit: surface de liège sur les joues	Frucht: Fläche der Berostung auf den Wangen	Fruto: zona de russetting de las caras		
QN (f)	absent or small	nulle ou petite	sehr klein	ausente o pequeño	Golden Noble	1
	medium	moyenne	mittel	medio	Karmijn de Sonnaville	2
	large	grande	groß	grande	Egremont Russet, Zabergäu Reinette	3
43. (*)	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		
QN (f)	absent or small	nulle ou petite	fehlend oder klein	ausente o pequeño	Golden Noble	1
	medium	moyenne	mittel	medio	Cox's Orange Pippin	2
	large	grande	groß	grande	Arlet	3
44.	Fruit: number of lenticels	Fruit: nombre de lenticelles	Frucht: Anzahl der Lentizellen	Fruto: número de lenticelas		
QN (f)	few	petit	klein	bajo	James Grieve	3
	medium	moyen	mittel	medio	Golden Delicious	5
	many	grand	groß	alto	Granny Smith	7
45.	Fruit: size of lenticels	Fruit: taille des lenticelles	Frucht: Größe der Lentizellen	Fruto: tamaño de los lenticelas		
QN (f)	small	petites	klein	pequeños	Idared, Jonathan	3
	medium	moyennes	mittel	medios	Elstar	5
	large	grandes	groß	grandes	Florina, Reine de Reinettes	7
46. (*)	Fruit: length of stalk	Fruit: longueur du pédoncule	Frucht: Länge des Stiels	Fruto: longitud del pedúnculo		
QN (f)	very short	très court	sehr kurz	muy corto	Egremont Russet	1
	short	court	kurz	corto	Cox's Orange Pippin	3
	medium	moyen	mittel	medio	Worcester Pearmain	5
	long	long	lang	largo	Richared Delicious	7
	very long	très long	sehr lang	muy largo	Pinova, Rewena, Sirprize	9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
47. (*)	Fruit: thickness of stalk	Fruit: grosueur du pédoncule	Frucht: Dicke des Stiels	Fruto: grosor del pedúnculo		
QN (f)	thin	fin	dünn	delgado	Golden Delicious	3
	medium	moyen	mittel	medio	Cox's Orange Pippin	5
	thick	gros	dick	grueso	Schone van Boskoop	7
48. (*) (+)	Fruit: depth of stalk cavity	Fruit: profondeur de la cavité du pédoncule	Frucht: Tiefe der Stielgrube	Fruto: profundidad de la cavidad peduncular		
QN (f)	shallow	peu profonde	flach	poco profunda	Edward VII	3
	medium	moyenne	mittel	media	Golden Delicious	5
	deep	profonde	tief	profunda	Jonagold, Schone van Boskoop	7
49. (*) (+)	Fruit: width of stalk cavity	Fruit: largeur de la cavité du pédoncule	Frucht: Breite der Stielgrube	Fruto: anchura de la cavidad peduncular		
QN (f)	narrow	étroite	schmal	estrecha	Beauty of Bath, Gala	3
	medium	moyenne	mittel	media	Golden Delicious	5
	broad	large	breit	ancha	Jonagold	7
50. (*) (+)	Fruit: depth of eye basin	Fruit: profondeur de la cuvette de l'œil	Frucht: Tiefe der Kelchgrube	Fruto: profundidad de la cavidad del ojo		
QN (f)	shallow	peu profonde	flach	poco profunda	Worcester Pearmain	3
	medium	moyenne	mittel	media	Golden Delicious	5
	deep	profonde	tief	profunda	Bramley's Seedling, Delcorf	7
51. (*) (+)	Fruit: width of eye basin	Fruit: largeur de la cuvette de l'œil	Frucht: Breite der Kelchgrube	Fruto: anchura de la cavidad del ojo		
QN (f)	narrow	étroite	schmal	estrecha	Pinova, Worcester Pearmain	3
	medium	moyenne	mittel	media	Golden Delicious	5
	broad	large	breit	ancha	Bramley's Seedling	7

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
52. (*) (+)	Fruit: firmness of flesh	Fruit: fermeté de la chair	Frucht: Festigkeit des Fruchtfleisches	Fruto: firmeza de la pulpa		
QN	(e) very soft	très molle	sehr weich	muy blanda	Astrachan	1
	soft	molle	weich	blanda	Jonagold	3
	medium	moyenne	mittel	media	Cox's Orange Pippin	5
	firm	ferme	fest	firme	Kent	7
	very firm	très ferme	sehr fest	muy firme	Pilot, Scifresh	9
53. (*)	Fruit: color of flesh	Fruit: couleur de la chair	Frucht: Farbe des Fruchtfleisches	Fruto: color de la pulpa		
PQ	(f) white	blanche	weiß	blanco	Akane, Spartan	1
	cream	crème	cremefarben	crema	Jonagold	2
	yellowish	jaunâtre	gelblich	amarillento	Delorina, Topaz	3
	greenish	verdâtre	grünlich	verdoso	Gloster, Granny Smith	4
	pinkish	rosâtre	blaßrosa	rosáceo	Pomfit	5
	reddish	rougeâtre	rötlich	rojizo	Weirouge	6
54. (*) (+)	Fruit: aperture of locules (in transverse section)	Fruit: ouverture des loges carpellaires (en section transversale)	Frucht: Öffnung der Kernkammern (im Querschnitt)	Fruto: apertura de los lóculos (en sección transversal)		
QN	(f) closed or slightly open	fermées ou légèrement ouvertes	geschlossen oder leicht offen	cerrados o ligeramente abiertos	Idared, Worcester Pearmain	1
	moderately open	modérément ouvertes	mäßig offen	moderadamente abiertos	Reine de Reinettes, Šampion	2
	fully open	complètement ouvertes	vollständig offen	completamente abiertos	McIntosh	3

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
55. (*) (+)	Time of beginning of flowering	Époque de début de floraison	Zeitpunkt des Blühbeginns	Época de inicio de la floración		
QN	very early	très précoce	sehr früh	muy temprana	Anna, Ein-Shemer	1
	early	précoce	früh	temprana	Idared	3
	medium	moyenne	mittel	media	Cox's Orange Pippin, Jonagold	5
	late	tardive	spät	tardía	Court Pendu Plat	7
	very late	très tardive	sehr spät	muy tardía	Feuilmorte, Spätblühender Taffetapfel	9
56. (+)	Time for harvest	Époque de récolte	Zeitpunkt der Pflückreife	Época de la cosecha		
QN	very early	très précoce	sehr früh	muy temprana	Vista Bella	1
	early	précoce	früh	temprana	Discovery, Jersey mac, Sunrise	3
	medium	moyenne	mittel	media	Cox's Orange Pippin, Elstar, Gala	5
	late	tardive	spät	tardía	Golden Delicious, Jonagold	7
	very late	très tardive	sehr spät	muy tardía	Granny Smith, Cripps Pink	9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
57. (*) (+)	Time of eating maturity	Époque de maturité pour la consommation	Zeitpunkt der Genußreife	Época de madurez para el consumo		
QN (f)	very early	très précoce	sehr früh	muy precoz	Vista Bella	1
	very early to early	très précoce à précoce	sehr früh bis früh	muy precoz a precoz	White Transparent	2
	early	précoce	früh	precoz	Discovery, Jerseymac, Mountain Cove, Sunrise	3
	early to medium	précoce à moyenne	früh bis mittel	precoz a media	Akane, James Grieve, Summerred	4
	medium	moyenne	mittel	media	Elstar, Gala, Honeycrisp	5
	medium to late	moyenne à tardive	mittel bis spät	media a tardía	Ambrosia, Spartan, Šampion	6
	late	tardive	spät	tardía	Golden Delicious	7
	late to very late	tardive à très tardive	spät bis sehr spät	tardía a muy tardía	Fuji	8
	very late	très tardive	sehr spät	muy tardía	Cripps Pink, Granny Smith	9

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) Tree: type and habit: Observations should be made on bare trees in winter.
- (b) One-year-old shoot: Observations on one-year-old shoots should be made on lateral dormant shoots in winter, on trees that have completed at least one growing season at the testing center.
- (c) Tree vigor, leaf blade, petiole: Observations should be made in summer when the tree is in peak vegetative growth. Observations on the leaf blade and petiole should be made on fully developed leaves from the middle third of vigorous current season shoots from the outside of the tree.
- (d) Flower: Observations on the flower should be made on the second or subsequent flowers, at the start of anther dehiscence.
- (e) Type of bearing, young fruit: Observations should be made 40 days after flowering.
- (f) Fruit: Observations on the fruit should be made on 10 typical fruits taken from a minimum sample of 20 fruits, at the time of ripeness for eating. The terminal (king) fruit should be excluded from the sample.

8.2 *Explanations for Individual Characteristics*

Ad. 1: Tree: vigor

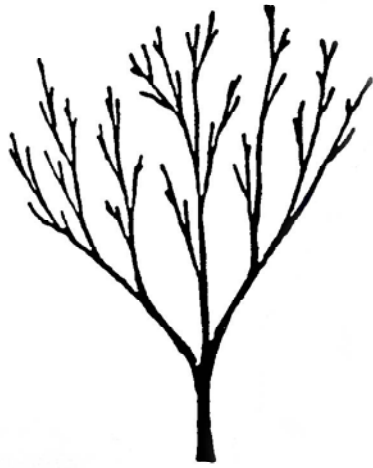
The vigor of the tree should be considered as the overall abundance of vegetative growth.

Ad. 2: Tree: type

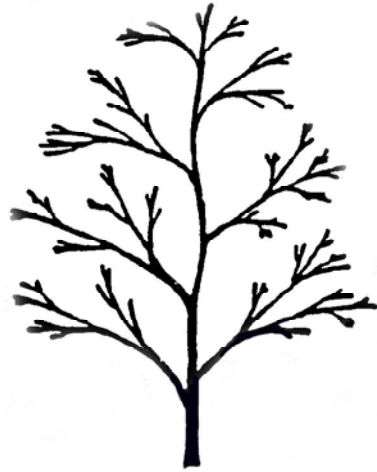
Columnar: a compact spur-type tree form with virtually no side branches. Closely spaced short fruiting spurs are produced along the main stem.

Ramified: form where trees have well developed branches.

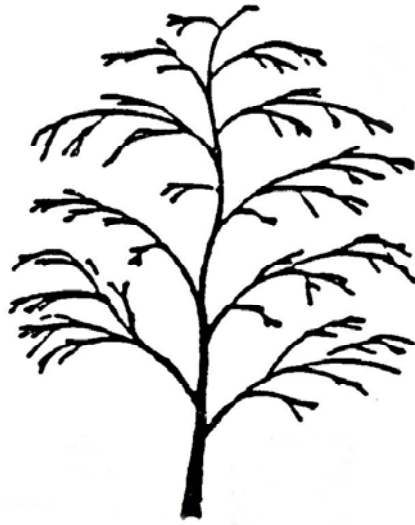
Ad. 3: Only varieties with ramified tree type: Tree: habit



1
upright



2
spreading

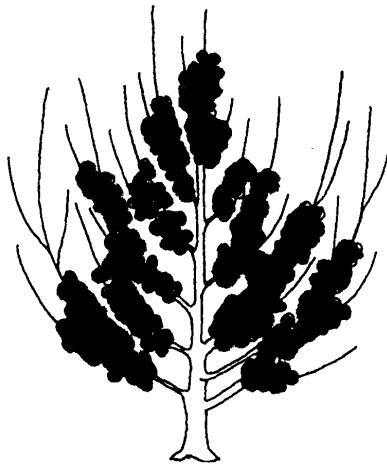


3
drooping

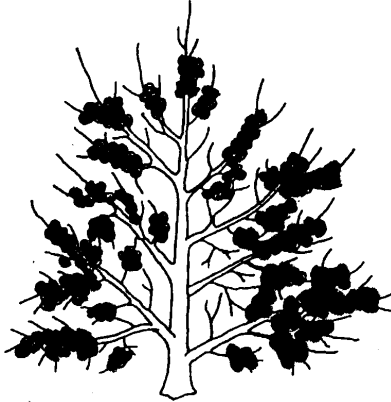


4
weeping

Ad. 4: Tree: type of bearing



1
on spurs only



2
on spurs and long shoots



3
on long shoots only

Ad. 5: One-year-old shoot: thickness

The thickness of the one-year-old shoot should be observed in the center of the middle internode. Measurements can be made using a vernier caliper gauge.

Ad. 6: One-year-old shoot: length of internode

The length of the internode should be observed in the middle third of the shoot. Measurements can be made using a vernier caliper gauge.

Ad. 10: Leaf blade: attitude in relation to shoot



1
upwards

2
outwards

3
downwards

Ad. 15: Leaf blade: incisions of margin (upper half)

The predominant type of incision should be observed.



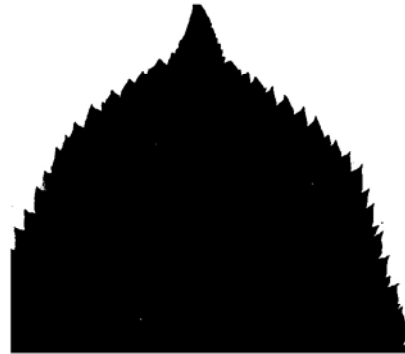
1
crenate



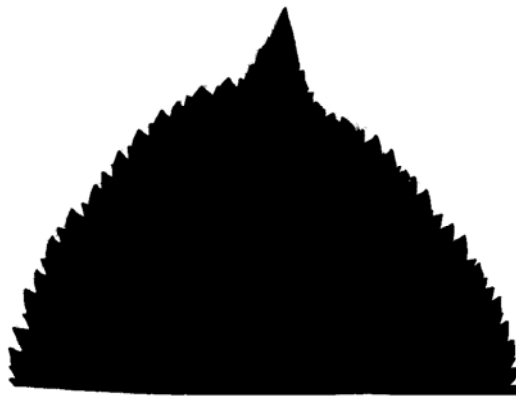
2
bicrenate



3
serrate type 1



4
serrate type 2

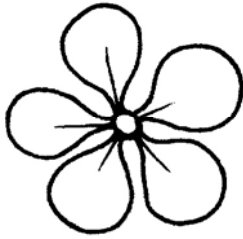


5
biserrate

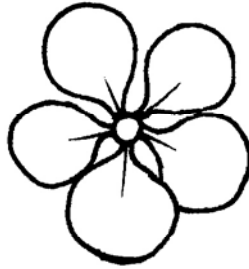
Ad. 19: Flower: predominant color at balloon stage

‘Balloon stage’ is the phenological stage in the course of flower development when the calyx is fully expanded and the petals are recognizable, having partially expanded and inflated but are closed, covering the internal flower organs. Balloon stage is usually 1-2 days before the petals unfold.

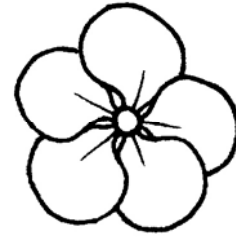
Ad. 21: Flower: arrangement of petals



1
free



2
intermediate

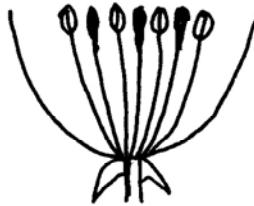


3
overlapping

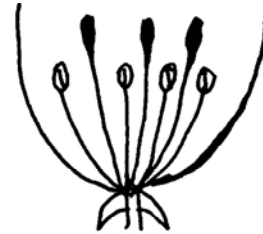
Ad. 22: Flower: position of stigmas relative to anthers



1
below



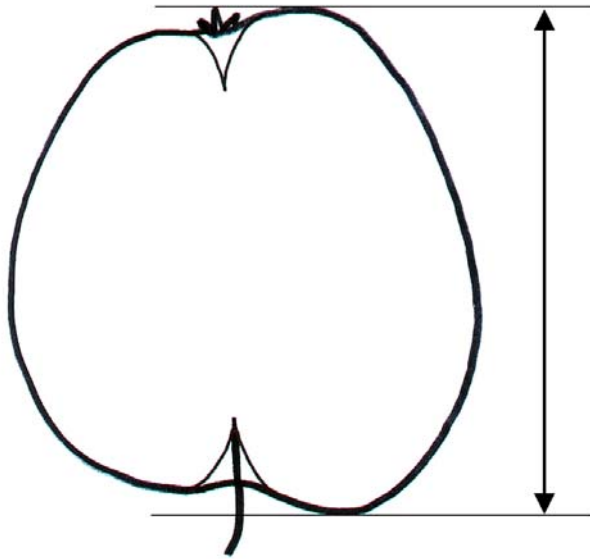
2
same level



3
above

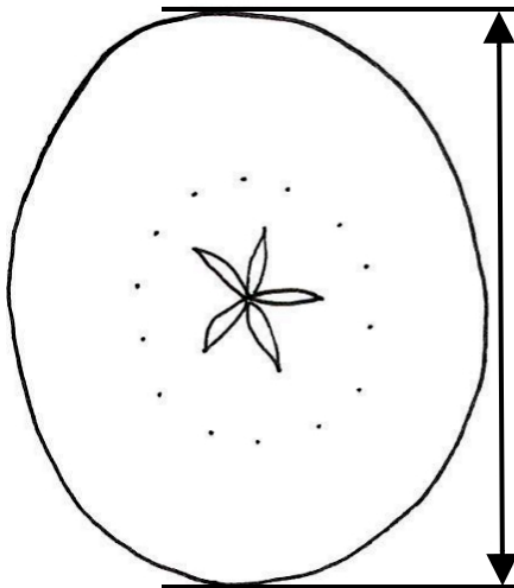
Ad. 25: Fruit: height

The maximum height should be observed.

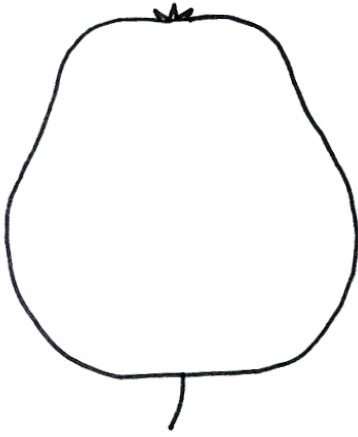


Ad. 26: Fruit: diameter

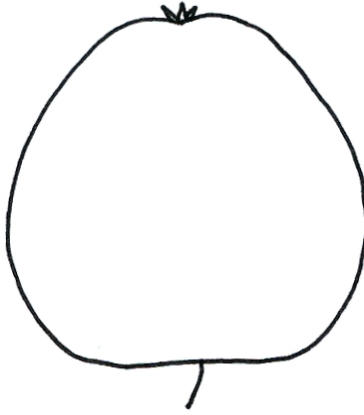
The maximum diameter should be observed.



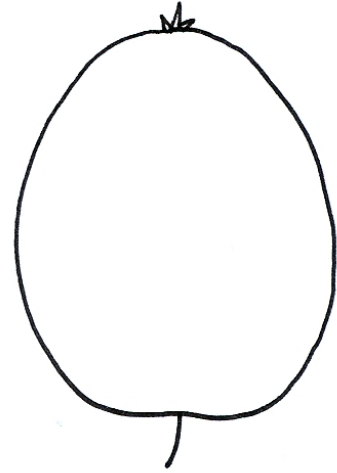
Ad. 28: Fruit: general shape



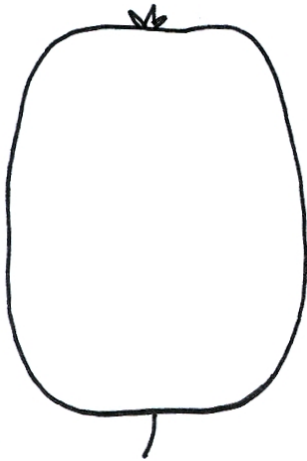
1
cylindrical waisted



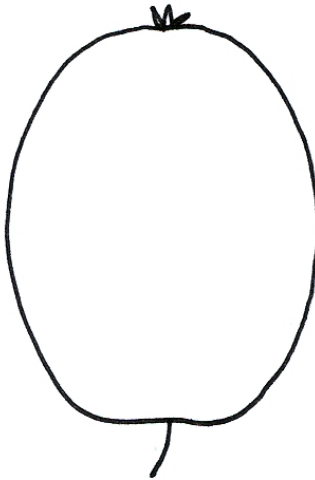
2
conic



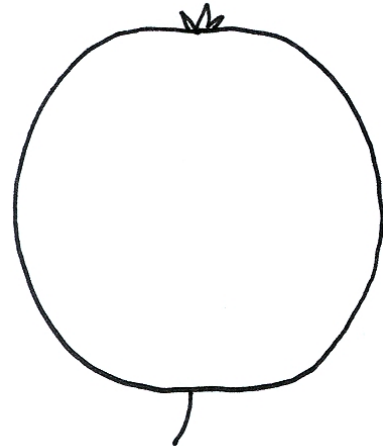
3
ovoid



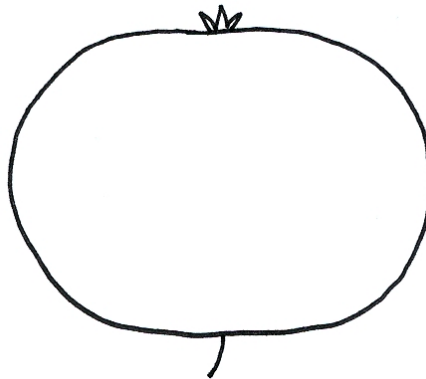
4
cylindrical



5
ellipsoid



6
globose



7
obloid

Additional example varieties with conic shape (state 1):

		Fruit: ratio height/diameter (char. 27)				
		very small	small	medium	large	very large
Fruit: maximum height (char. 25)	short	Regia	Cox's Orange Pippin			
	medium		Melodie	Kidd's Orange Red	Pinova	
	tall			Jonagold		Kent, Adam's Pearmain, Saturn

Additional example varieties with obloid shape (state 6):

		Fruit: ratio height/diameter (char. 27)	
		very small	small
Fruit: maximum height (char. 25)	very short	Court Pendu Plat	
	short	Discovery	
	medium		Idared
	tall		Bramley's Seedling

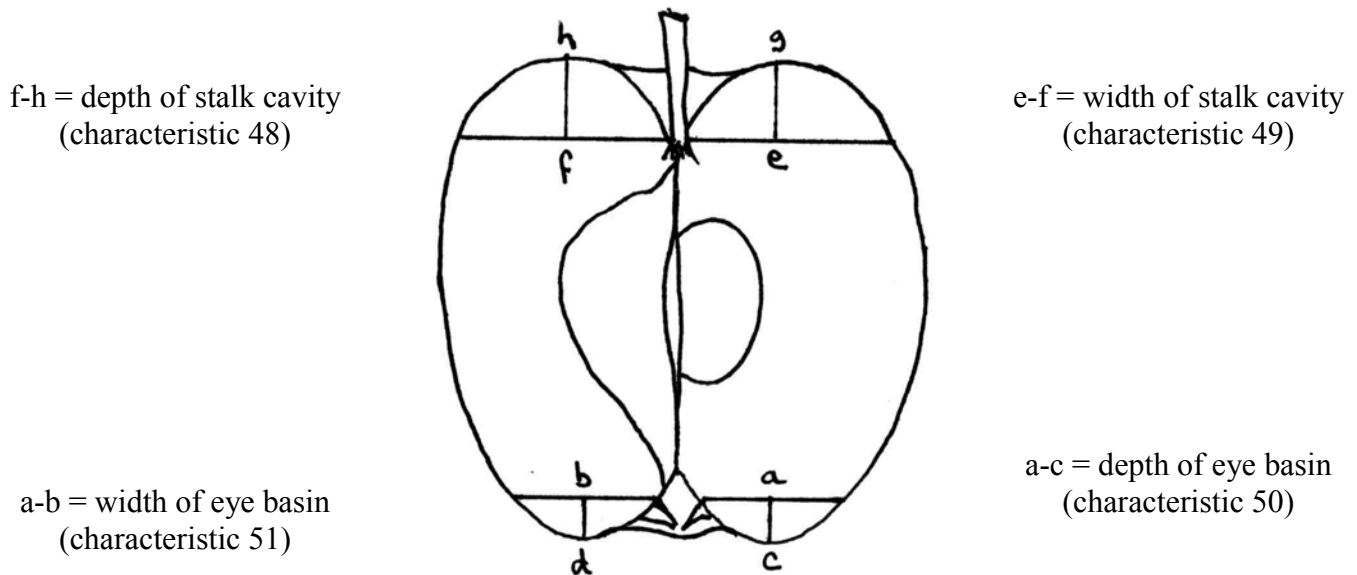
Ad. 38: Fruit: intensity of over color

		Fruit: intensity of over color (char. 38)		
		light	medium	dark
Fruit: hue of over color - with bloom removed (char. 37)	orange red	Egremont Russet, Scigold, Sirprize	Cox's Orange Pippin, Reine de Reinettes	
	pink red	Lady Williams	Cripps Pink	Delorgue
	red	Winter Banana	Gala	Akane, Galaxy, Red Elstar, Regal Prince
	purple red			Red Jonaprince, Spartan
	brown red	Sturmer Pippin	Fiesta	Lord Burgley, Joburn

Ad. 48-51: Fruit: depth and width of stalk cavity; depth and width of eye basin

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.

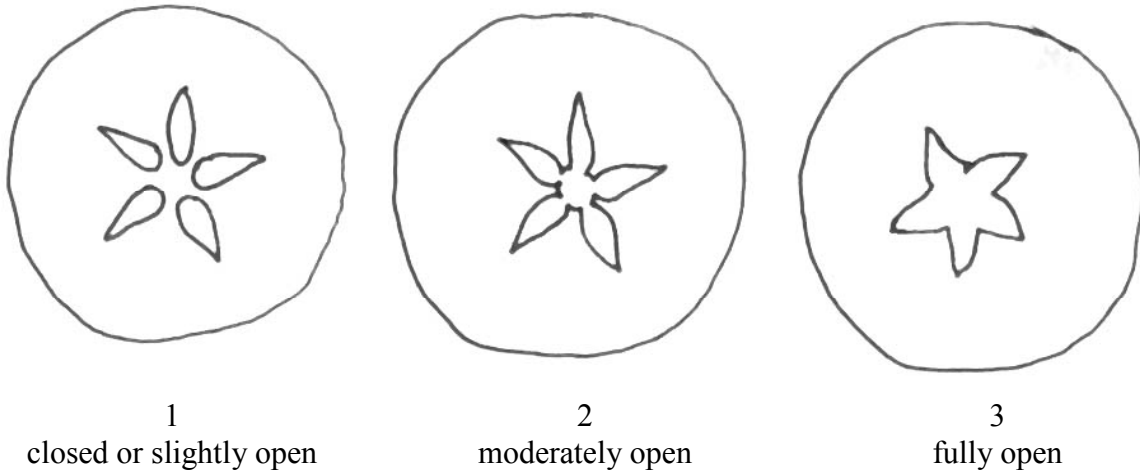
- The lines a-b and e-f must be at right angles to the axis of the fruit. (A plastic protractor can be used to ensure accuracy.)
- The line a-b is marked at the base of the sepals.
- The line e-f is marked at the insertion of the stalk.
- The lines a-c and b-d indicate the eye basin depth. They are drawn 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, the larger side should be considered.



Ad. 52: Fruit: firmness of flesh

Firmness of flesh should be assessed at time of ripeness for eating. It can be measured using a penetrometer.

Ad. 54: Fruit: aperture of locules (in transverse section)



Ad. 55: Time of beginning of flowering

Time of beginning of flowering is when 10% of the flowers are fully open.

Ad. 56: Time for harvest

Time for harvest is the optimum time of picking to achieve fruit in peak condition for eating (see Ad. 57).

Ad. 57: Time of eating maturity

Time of eating maturity is the period when a fruit has reached optimum color, firmness, texture, aroma and flavor for consumption. Depending on the type of fruit, this period can occur directly after removal from the tree (e.g. early varieties) or after a period of storage or conditioning (e.g. later varieties).

8.3 *Other Names of the Example Varieties*

Example Varieties	Synonyms
Auralia	Tumanga
Cox's Orange Pippin	Cox Orangenrenette
Gloster	Gloster 69
Golden Delicious	Gelber Köstlicher
Golden Noble	Gelber Edelapfel
Gravensteiner	Graasten
Nouvelle Europe	New Europe
Red Jonaprince	Jonaprince; Red Prince
Regal Prince	Prince Gala
Reine de Reinettes	Goldparmäne; Plassart; Wintergoldparmäne
Šampion	Shampion
Schone van Boskoop	Belle de Boskoop; Schöner aus Boskoop
White Transparent	Papirovska; Transparente Jaune; Weisser Klarapfel

9. Literature

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10. Technical Questionnaire

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
		Application date: (not to be filled in by the applicant)
TECHNICAL QUESTIONNAIRE to be completed in connection with an application for plant breeders' rights		
1. Subject of the Technical Questionnaire		
1.1	Botanical name	<input type="text" value="Malus domestica 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:
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#4. Information on the breeding scheme and propagation of the variety

4.1 Breeding scheme

Variety resulting from:

4.1.1 Crossing

- (a) controlled cross []
(please state parent varieties)
- (b) partially known cross []
(please state known parent variety(ies))
- (c) unknown cross []

4.1.2 Mutation []
(please state parent variety)

4.1.3 Discovery and development []
(please state where and when discovered
and how developed)

4.1.4 Other []
(please provide details)

4.2 Method of propagating the variety

4.2.1 Vegetative propagation

- (a) grafting
- (b) other
(state method)

4.2.2 Other
(please state 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:
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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 Tree: type (2)		
columnar	MacExel, Wijcik	1[]
ramified	Elstar, Golden Delicious	2[]
5.2 <u>Only varieties with ramified tree type</u>: Tree: habit (3)		
upright	Benoni, Gloster	1[]
spreading	Bramley's Seedling, Jonagold	2[]
drooping	Jonathan	3[]
weeping	Nield's Drooper, Rome Beauty	4[]
5.3 Fruit: general shape (28)		
cylindrical waisted	Starkrimson	1[]
conic	Jonagold	2[]
ovoid	Summerred	3[]
cylindrical	Gravensteiner, Mutsu	4[]
ellipsoid	Spencer	5[]
globose	Golden Noble, Resi	6[]
obloid	Bramley's Seedling, Idared	7[]
5.4 Fruit: relative area of over color (36)		
absent or very small	Granny Smith	1[]
small	Auralia, Cox's Orange Pippin	3[]
medium	Gala	5[]
large	Spartan	7[]
very large	Red Jonaprince	9[]

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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Characteristics	Example Varieties	Note
5.5 Fruit: hue of over color – with bloom removed (37)		
orange red	Cox's Orange Pippin, Egremont Russet	1[]
pink red	Cripps Pink, Delorgue	2[]
red	Akane, Galaxy, Red Elstar, Regal Prince	3[]
purple red	Red Jonaprince, Spartan	4[]
brown red	Fiesta, Joburn, Lord Burghley	5[]
5.6 Fruit: pattern of over color (39)		
only solid flush	Red Jonaprince, Richared Delicious	1[]
solid flush with weakly defined stripes	Galaxy	2[]
solid flush with strongly defined stripes	Jonagored	3[]
weakly defined flush with strongly defined stripes	Gravensteiner	4[]
only stripes (no flush)	Helios	5[]
flushed and mottled	Elstar	6[]
flushed, striped and mottled	Jonagold	7[]
5.7 Fruit: width of stripes (40)		
narrow	Eden, Pinova, Pirella	3[]
medium	Rubinola, Tenroy	5[]
broad	Baigent, Caudle	7[]
5.8 Time of beginning of flowering (55)		
very early	Anna, Ein-Shemer	1[]
early	Idared	3[]
medium	Cox's Orange Pippin, Jonagold	5[]
late	Court Pendu Plat	7[]
very late	Feuilmorte, Spätblühender Taffetapfel	9[]

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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Characteristics	Example Varieties	Note
5.9 Time of eating maturity (57)		
very early	Vista Bella	1[]
very early to early	White Transparent	2[]
early	Discovery, Jersey mac, Mountain Cove, Sunrise	3[]
early to medium	Akane, James Grieve, Summerred	4[]
medium	Elstar, Gala, Honeycrisp	5[]
medium to late	Ambrosia, Spartan, Šampion	6[]
late	Golden Delicious	7[]
late to very late	Fuji	8[]
very late	Cripps Pink, Granny Smith	9[]

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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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
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<i>Example:</i>	<i>Fruit: pattern of over color</i>	<i>solid flush with strongly defined stripes</i>	<i>only solid flush</i>
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Comments:

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 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 should accompany the Technical Questionnaire.

8. Authorization for release

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

Yes [] No []

(b) Has such authorization been obtained?

Yes [] No []

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

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:
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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 of 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]