



TG/68/4

ORIGINAL: English

DATE: 2022-09-23

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

BERBERIS

UPOV Code(s): BERBE

Berberis L.

excluding *Berberis aquifolium* Pursh,
Berberis bealei Fortune,
Berberis japonica (Thunb.) Spreng.,
Berberis napaulensis (DC.) Spreng.,
Berberis oiwakensis (Hayata) Laferr.,
Berberis pumila Greene,
Berberis repens Lindl.
 and hybrids between these species and
 other *Berberis* species

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>Berberis</i> L.	Barberry, Berberis	Berberis, Épine-vinette	Berberitze	Bérbero

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

ASSOCIATED DOCUMENTS

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

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

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.....	7
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.....	15
8.1 Explanations covering several characteristics.....	15
8.2 Explanations for individual characteristics.....	15
9. LITERATURE.....	21
10. TECHNICAL QUESTIONNAIRE.....	22

1. Subject of these Test Guidelines

These Test Guidelines apply to all varieties of *Berberis* L. excluding: *Berberis aquifolium* Pursh, *Berberis bealei* Fortune, *Berberis japonica* (Thunb.) Spreng., *Berberis napaulensis* (DC.) Spreng., *Berberis oiwakensis* (Hayata) Laferr., *Berberis pumila* Greene, *Berberis repens* Lindl. and hybrids between these species and other *Berberis* species.

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 plants capable of flowering and expressing all relevant characteristics of the variety during the first growing cycle.

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

6 plants

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 a single growing cycle.

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

3.4 *Test Design*

3.4.1 Each test should be designed to result in a total of at least 6 plants.

3.4.2 The design of the tests should be such that plants or parts of plants may be removed for measurement or counting without prejudice to the observations which must be made up to the end of the growing cycle.

3.5 *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 5 plants or parts of plants taken from each of 5 plants and any other observations made on all plants in the test, disregarding any off-type plants.

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 vegetatively propagated varieties, a population standard of 1% and an acceptance probability of at least 95% should be applied. In the case of a sample size of 6 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) Plant: type (characteristic 1)
 - (b) Plant: growth habit (characteristic 2)
 - (c) Plant: height in relation to width (characteristic 4)
 - (d) Stem: type of spines (characteristic 8)
 - (e) Leaf blade: main color (characteristic 16) with the following groups:
 - Gr. 1: green
 - Gr. 2: yellow
 - Gr. 3: red
 - (f) Leaf blade: secondary color (characteristic 17)
 - (g) Floral type (characteristic 24)
 - (h) Fruit: shape in lateral view (characteristic 29)
 - 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 Not applicable

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

	English		français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1. (*)	PQ	VG					
	Plant: type	Plante : type	Pflanze: Typ	Planta: tipo			
	deciduous	à feuilles caduques	laubabwerfend	caducifolio	Helmond Pillar		1
	semi-evergreen	à feuilles semi-persistantes	halb-immergrün	semiperenne	Parkjuweel		2
	evergreen	à feuilles persistantes	immergrün	perenne	Tottenham		3
2. (*)	PQ	VG	(+)				
	Plant: growth habit	Plante : port	Pflanze: Wuchsform	Planta: hábito de crecimiento			
	upright	dressé	aufrecht	erguido	Helmond Pillar, Redtorch		1
	irregularly rounded	de forme irrégulièrement arrondie	unregelmäßig rundlich	redondeado irregular	Electra, Orange Dream, STARBUST		2
	compact rounded	de forme compacte arrondie	kompakt rundlich	redondeado compacto	Admiration, Lutin Rouge, Tiny Gold		3
	spreading	étalé	breitwüchsig	extendido	Green Ornament		4
3. (*)	QN	MG/MS/VG	(a)				
	Plant: height	Plante : hauteur	Pflanze: Höhe	Planta: altura			
	very short	très courte	sehr niedrig	muy baja	Fireball		1
	very short to short	très courte à courte	sehr niedrig bis niedrig	muy baja a baja			2
	short	courte	niedrig	baja	Admiration		3
	short to medium	courte à moyenne	niedrig bis mittel	baja a media			4
	medium	moyenne	mittel	media	Orange Rocket		5
	medium to tall	moyenne à haute	mittel bis hoch	media a alta			6
	tall	haute	hoch	alta	Fireflame		7
	tall to very tall	haute à très haute	hoch bis sehr hoch	alta a muy alta			8
	very tall	très haute	sehr hoch	muy alta	Decora		9
4. (*)	QN	VG	(a)				
	Plant: height in relation to width	Plante : hauteur par rapport à la largeur	Pflanze: Höhe im Verhältnis zur Breite	Planta: altura en relación con la anchura			
	taller than broad	plus haute que large	höher als breit	más alta que ancha	Helmond Pillar, Redtorch		1
	as tall as broad	aussi haute que large	gleich hoch wie breit	tan alta como ancha	Electra, Orange Dream, STARBUST		2
	broader than tall	plus large que haute	breiter als hoch	más ancha que alta	Admiration, Green Ornament, Lutin Rouge, Tiny Gold		3

	English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
5. (*)	QN	VG	(+)	(a)				
	Branch: attitude		Rameau : port		Ast: Haltung	Rama: porte		
	erect		dressé		aufrecht	erecto	Helmond Pillar, Lutin Rouge, Redtorch, Tiny Gold,	1
	semi-erect		demi-dressé		halbaufrecht	semierecto	Admiration	2
	horizontal		horizontal		waagrecht	horizontal	Electra, Green Ornament, STARBUST	3
	drooping		retombant		herabhängend	colgante	Autumnalis, Orange Dream	4
6.	PQ	VG	(a), (b)					
	Young shoot: stem color		Jeune rameau : couleur de la tige		Jungtrieb: Triebfarbe	Brote joven: pigmentación del tallo		
	green		vert		grün	verde	Graciella	1
	yellow		jaune		gelb	amarillo	Golden Rocket	2
	orange		orange		orange	naranja	Tiny Gold	3
	red		rouge		rot	rojo	Lutin Rouge	4
	purple		pourpre		purpurn	púrpura	Decora	5
7. (*)	PQ	VG	(a), (b)					
	Young shoot: leaf color		Jeune rameau : couleur de la feuille		Jungtrieb: Blattfarbe	Brote joven: pigmentación de la hoja		
	green		vert		grün	verde	Graciella	1
	yellow		jaune		gelb	amarilla	Golden Rocket	2
	orange		orange		orange	naranja	Orange Ice	3
	red		rouge		rot	roja	Lutin Rouge	4
	pink		rose		rosa	rosa		5
	purple		pourpre		purpurn	púrpura	Redtorch	6
8. (*)	QL	VG	(+)	(c)				
	Stem: type of spines		Tige : type d'épines		Trieb: Dornentyp	Tallo: tipo de espinas		
	simple		simple		einfach	simple	Redtorch	1
	trifid		trifide		dreistrahlig	trífido	Lombarts purple, Red Tears	2

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
9. (*)	QN VG	(c)				
	Stem: length of spines	Tige : longueur des épines	Trieb: Dornenlänge	Tallo: longitud de las espinas		
	short	courte	kurz	corta	Golden Torch	1
	short to medium	courte à moyenne	kurz bis mittel	corta a media		2
	medium	moyenne	mittel	media	Tottenham	3
	medium to long	moyenne à longue	mittel bis lang	media a larga		4
	long	longue	lang	larga	Dart's Superb	5
10. (*)	PQ MG/VG	(+)				
	Stem: leaves per node	Tige : feuilles par nœud	Trieb: Blätter pro Nodium	Tallo: hojas por nudo		
	one to three	une à trois	ein bis drei	una a tres	Golden Rocket	1
	four to six	quatre à six	vier bis sechs	cuatro a seis	Electra	2
	more than six	plus de six	mehr als sechs	más de seis	Dart's Superb	3
11. (*)	QN MG/MS/VG	(d)				
	Leaf: length	Feuille : longueur	Blatt: Länge	Hoja: longitud		
	very short	très courte	sehr kurz	muy corta	Crawley Gem	1
	very short to short	très courte à courte	sehr kurz bis kurz	muy corta a corta		2
	short	courte	kurz	corta	Lutin Rouge	3
	short to medium	courte à moyenne	kurz bis mittel	corta a media		4
	medium	moyenne	mittel	media	Select	5
	medium to long	moyenne à longue	mittel bis lang	media a larga		6
	long	longue	lang	larga	Decora	7
	long to very long	longue à très longue	lang bis sehr lang	larga a muy larga		8
	very long	très longue	sehr lang	muy larga	Dart's Superb	9
12. (*)	QN MG/MS/VG	(d)				
	Leaf: width	Feuille : largeur	Blatt: Breite	Hoja: anchura		
	very narrow	très étroite	sehr schmal	muy estrecha	Irwinii	1
	very narrow to narrow	très étroite à étroite	sehr schmal bis schmal	muy estrecha a estrecha		2
	narrow	étroite	schmal	estrecha	Tiny Gold	3
	narrow to medium	étroite à moyenne	schmal bis mittel	estrecha a media		4
	medium	moyenne	mittel	media	Forescate	5
	medium to broad	moyenne à large	mittel bis breit	media a ancha		6
	broad	large	breit	ancha	Decora	7
	broad to very broad	large à très large	breit bis sehr breit	ancha a muy ancha		8
	very broad	très large	sehr breit	muy ancha	Red Tears	9

	English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
13. (*)	PQ	VG	(+)	(d)				
	Leaf: shape	Feuille : forme	Blatt: Form	Hoja: forma				
	ovate	ovale	eiförmig	oval				1
	circular	circulaire	kreisförmig	circular				2
	broad elliptic	elliptique large	breit elliptisch	elíptica ancha				3
	narrow elliptic	elliptique étroite	schmal elliptisch	elíptica estrecha				4
	linear	linéaire	linear	lineal				5
	obovate	obovale	verkehrt eiförmig	oboval				6
	oblanceolate	oblancéolée	verkehrt lanzettlich	oblanceolada				7
	spatulate	spatulée	spatelförmig	espatulada				8
14. (*)	PQ	VG	(+)	(d)				
	Leaf: spines	Feuille : épines	Blatt: Stacheln	Hoja: espinas				
	absent	absentes	fehlend	ausentes	Golden Rocket			1
	only on apex	seulement à l'extrémité	nur am Apex	solo en el ápice	Suzanne			2
	on apex and margin	à l'extrémité et au bord	am Apex und am Rand	en el ápice y el borde	Red Tears			3
15. (*)	PQ	VG	(+)	(d)				
	Leaf: shape of apex	Feuille : forme de l'extrémité	Blatt: Form des Apex	Hoja: forma del ápice				
	acute	aiguë	spitz	aguda	Irwinii, Dart's Superb			1
	obtuse	obtuse	stumpf	obtusa	Suzanne			2
	rounded	arrondie	abgerundet	redondeada	Golden Rocket			3
16. (*)	PQ	VG		(d), (e)				
	Leaf blade: main color	Limbe : couleur principale	Blattspreite: Hauptfarbe	Limbo: color principal				
	RHS Colour Chart (indicate reference number)	Code RHS des couleurs (indiquer le numéro de référence)	RHS-Farbkarte (Nummer angeben)	Carta de colores RHS (indíquese el número de referencia)				
17. (*)	PQ	VG		(d), (e)				
	Leaf blade: secondary color	Limbe : couleur secondaire	Blattspreite: Sekundärfarbe	Limbo: color secundario				
	none	aucune	keine	ausente				1
	whitish	blanchâtre	weißlich	blanquecino				2
	green	vert	grün	verde				3
	yellow	jaune	gelb	amarillo				4
	orange	orange	orange	naranja				5
	pink	rose	rosa	rosa				6
	red	rouge	rot	rojo				7
	purple	pourpre	purpurn	púrpura				8

	English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
18. (*)	QL	VG	(+)	(d), (e)				
	Leaf blade: distribution of secondary color		Limbe : répartition de la couleur secondaire		Blattspreite: Verteilung der Sekundärfarbe	Limbo: distribución del color secundario		
	on margin		au bord		am Rand	en el borde	Admiration	1
	irregular		irrégulière		unregelmäßig	irregular	Hoho 1, Silver Pillar	2
19. (*)	PQ	VG		(d), (e)				
	Leaf blade: tertiary color		Limbe : couleur tertiaire		Blattspreite: Tertiärfarbe	Limbo: color terciario		
	none		aucune		keine	ausente		1
	whitish		blanchâtre		weißlich	blanquecino		2
	green		vert		grün	verde		3
	yellow		jaune		gelb	amarillo		4
	orange		orange		orange	naranja		5
	pink		rose		rosa	rosa		6
	red		rouge		rot	rojo		7
	purple		pourpre		purpurn	púrpura		8
20. (*)	PQ	VG		(d), (e)				
	Leaf blade: quaternary color		Limbe : couleur quaternaire		Blattspreite: Quartärfarbe	Limbo: color cuaternario		
	none		aucune		keine	ausente		1
	whitish		blanchâtre		weißlich	blanquecino		2
	green		vert		grün	verde		3
	yellow		jaune		gelb	amarillo		4
	orange		orange		orange	naranja		5
	pink		rose		rosa	rosa		6
	red		rouge		rot	rojo		7
	purple		pourpre		purpurn	púrpura		8
21.	QN	VG		(d)				
	Leaf blade: glossiness		Limbe : brillance		Blattspreite: Glanz	Limbo: brillo		
	absent or weak		absente ou faible		fehlend oder gering	ausente o débil	Fireball	1
	medium		moyenne		mittel	medio	Dart's Improvement	2
	strong		forte		stark	fuerte	Lutin Rouge	3

	English		français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
22. (*)	PQ	VG	(+)				
	Leaf: profile in cross-section	Feuille : profil en section transversale	Blatt: Profil im Querschnitt	Hoja: perfil de la sección transversal			
	flat or weakly convex	plat ou faiblement convexe	gerade oder leicht konvex	plano o débilmente convexo	Golden Rocket		1
	moderately convex	modérément convexe	mäßig konvex	moderadamente convexo	Latifolia		2
	revolute	révoluté	abwärts gerollt	revoluto	Irwinii		3
23. (*)	QN	VG	(+)				
	Leaf: undulation of margin	Feuille : ondulation du bord	Blatt: Randwellung	Hoja: ondulación del borde			
	absent or very weak	nulle ou très faible	fehlend oder sehr gering	ausente o muy débil	Golden Rocket		1
	very weak to weak	très faible à faible	sehr gering bis gering	muy débil a débil			2
	weak	faible	gering	débil	Parkjuweel		3
	weak to medium	faible à moyenne	gering bis mittel	débil a media			4
	medium	moyenne	mittel	media	Dart's Improvement		5
	medium to strong	moyenne à forte	mittel bis stark	media a fuerte			6
	strong	forte	stark	fuerte	Terra Nova		7
	strong to very strong	forte à très forte	stark bis sehr stark	fuerte a muy fuerte			8
	very strong	très forte	sehr stark	muy fuerte	Thunderbolt		9
24. (*)	QL	VG	(+)				
	Floral type	Type de fleur	Blütentyp	Tipo de flor			
	solitary	solitaire	einzeln	solitaria	Crawley Gem		1
	umbel	ombelle	Dolde	umbela	Red Rocket		2
	raceme	grappe	Blütentraube	racimo	Red Tears		3
	panicle	panicule	Rispe	panícula	Barbarossa		4
25. (*)	PQ	VG	(+)				
	Flower bud: color	Bouton floral : couleur	Blütenknospe: Farbe	Botón floral: color			
	light yellow	jaune clair	hellgelb	amarillo claro			1
	dark yellow	jaune foncé	dunkelgelb	amarillo oscuro			2
	orange	orange	orange	naranja			3
	red	rouge	rot	rojo			4
26. (*)	PQ	VG	(+)				
	Petal: main color	Pétale : couleur principale	Blütenblatt: Hauptfarbe	Pétalo: color principal			
	RHS Colour Chart (indicate reference number)	Code RHS des couleurs (indiquer le numéro de référence)	RHS-Farbkarte (Nummer angeben)	Carta de colores RHS (indíquese el número de referencia)			

	English		français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
27.	PQ	VG	(+)				
	Petal: shape of apex	Pétale : forme de l'extrémité	Blütenblatt: Form des Apex	Pétalo: forma del ápice			
	acute	aiguë	spitz	aguda			1
	rounded	arrondie	abgerundet	redondeada			2
	emarginate	échancrée	eingekerbt	emarginada			3
28. (*)	QN	VG	(+)	(f)			
	Plant: number of fruits	Plante : nombre de fruits	Pflanze: Anzahl Früchte	Planta: número de frutos			
	absent or few	nul ou petit	keine oder gering	ausente o bajo	Erecta, Golden Torch, Kobold, Orange Ice		1
	medium	moyen	mittel	medio	Orange Dream, Unique		2
	many	grand	hoch	alto	Forescate, Red Tears		3
29. (*)	PQ	VG	(+)	(f)			
	Fruit: shape in lateral view	Fruit : forme en vue latérale	Frucht: Form in der Seitenansicht	Fruto: forma en vista lateral			
	ovate	ovale	eiförmig	oval	Sibbertoft Coral		1
	circular	circulaire	kreisförmig	circular	Irwinii		2
	elliptic	elliptique	elliptisch	elíptica	Orange Rocket		3
	oblong	oblongue	rechteckig	oblonga	Dart's Superb		4
30.	QN	VG		(f)			
	Fruit: bloom of skin	Fruit : pruine de l'épiderme	Frucht: Bereifung der Haut	Fruto: pruina de la piel			
	absent or weak	absente ou faible	fehlend oder gering	ausente o débil			1
	medium	moyenne	mittel	media	Bunch of Grapes		2
	strong	forte	stark	fuerte	Dart's Improvement		3
31. (*)	PQ	VG	(+)	(f)			
	Fruit: color of skin	Fruit : couleur de l'épiderme	Frucht: Farbe der Haut	Fruto: color de la piel			
	RHS Colour Chart (indicate reference number)	Code RHS des couleurs (indiquer le numéro de référence)	RHS-Farbkarte (Nummer angeben)	Carta de colores RHS (indíquese el número de referencia)			

8. Explanations on the Table of Characteristics

8.1 *Explanations covering several characteristics*

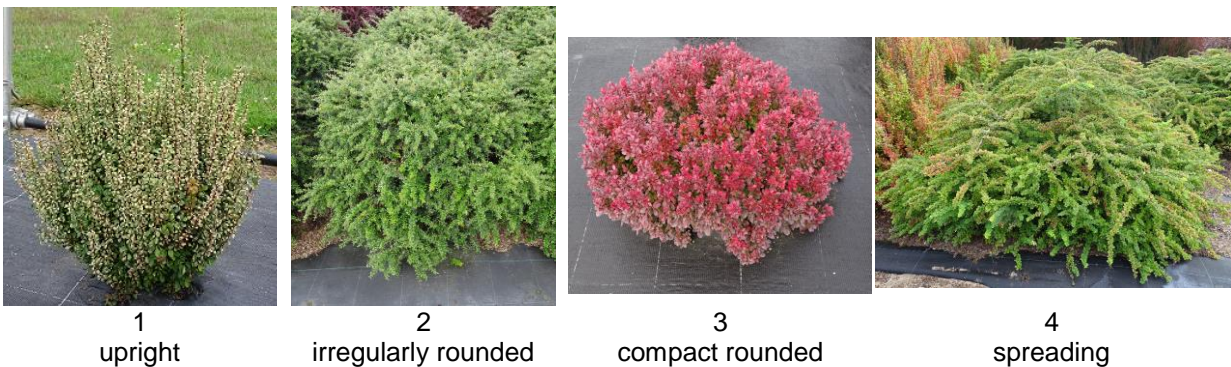
Unless otherwise indicated, observations should be made at the time of full flowering.

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

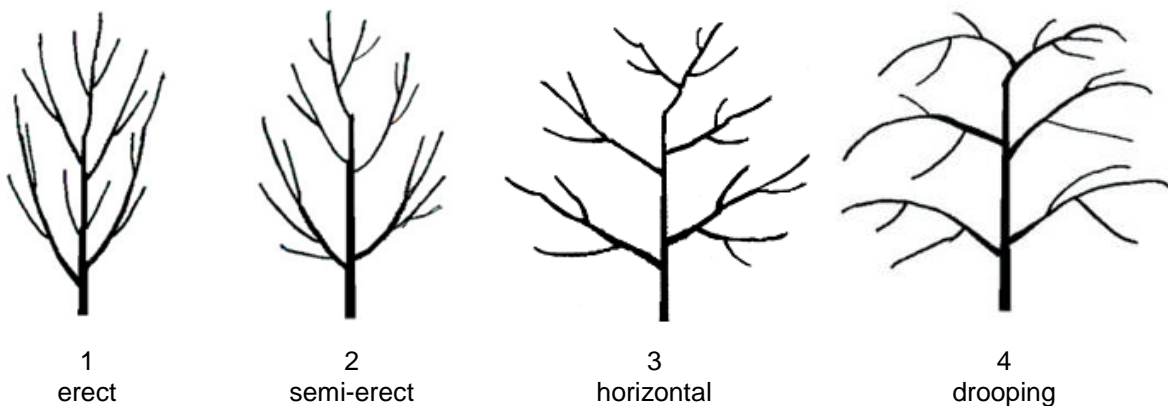
- (a) Observations should be made just before flowering.
- (b) Observations should be made on current year's shoots.
- (c) Observations should be made on fully expanded spines from the middle third of the stem.
- (d) Observations should be made on the upper side of fully expanded leaves from the middle third of the stem.
- (e) The main color is the color with the largest surface area. In cases, where the areas of the main and secondary colors are too similar to reliably decide which color has the largest area, the darker color is considered to be the main color. The same classification rules should be used for the secondary, tertiary, and the quaternary colors.
- (f) Observations should be made on fully developed fruits from the middle third of the stem.

8.2 *Explanations for individual characteristics*

Ad. 2: Plant: growth habit



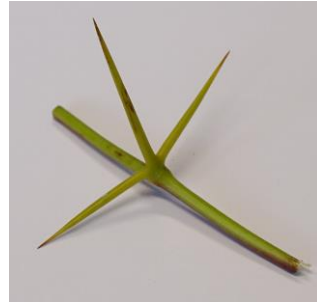
Ad. 5: Branch: attitude



Ad. 8: Stem: type of spines



1
simple










2
trifid

Ad. 10: Stem: leaves per node

Observations should be made on fully expanded leaves from the middle third of the stem.

Ad. 13: Leaf: shape

relative width	← broadest part →		
	below middle	at middle	above middle
narrow		 5 linear	
medium		 4 narrow elliptic	 7 oblanceolate
	 1 ovate	 3 broad elliptic	 6 obovate
broad		 2 circular	

Ad. 14: Leaf: spines



1
absent



2
only on apex



3
on apex and margin

Ad. 15: Leaf: shape of apex



1
acute



2
obtuse



3
rounded

Ad. 18: Leaf blade: distribution of secondary color



1
on margin



2
irregular

Ad. 22: Leaf: profile in cross-section

Observations should be made on fully expanded leaves from the middle third of the stem.



1
flat or weakly convex



2
moderately convex



3
revolute

Ad. 23: Leaf: undulation of margin

Observations should be made on fully expanded leaves from the middle third of the stem.

Ad. 24: Floral type



1
solitary



2
umbel



3
raceme

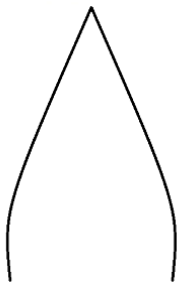


4
panicle

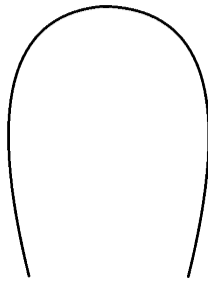
Ad. 25: Flower bud: color

Observation on the flower bud should be made on the middle third of the stem just before flower opening.

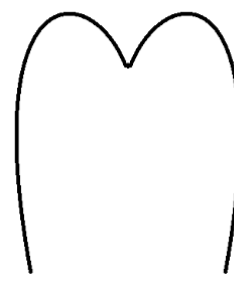
Ad. 27: Petal: shape of apex



1
acute



2
rounded







3
emarginate

Ad. 28: Plant: number of fruits

Observations should be made on the number of fruits, independently from the number of flowers.

Ad. 29: Fruit: shape in lateral view

relative width	← broadest part →		
	below middle	at middle	above middle
narrow		 4 oblong	
medium	 1 ovate	 3 elliptic	
broad		 2 circular	

Ad. 31: Fruit: color of skin

Observations should be made after removal of bloom on fruit.

9. Literature

Caduc Alain, 2012: *Berberis à feuillage pourpre : son origine. Jardin de France, n°618- Le Japon : influences et confluences*, July-August 2012. *Société Nationale d'Horticulture de France (SNHF)*. Paris, FR

Caduc Alain, 2017: *Inflorescences des Berberis, une diversité de formes. Jardin de France, n°647-La ville en vert et avec tous*, September-November 2017. *Société Nationale d'Horticulture de France (SNHF)*. Paris, FR

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="Berberis L."/>
1.2	Common name	<input type="text" value="Barberry, Berberis"/>
1.3	Species (please indicate):	<input type="text"/>
2. Applicant		
	Name	<input type="text"/>
	Address	<input type="text"/>
	Telephone No.	<input type="text"/>
	Fax No.	<input type="text"/>
	E-mail address	<input type="text"/>
	Breeder (if different from applicant)	<input type="text"/>
3. Proposed denomination and breeder's reference		
	Proposed denomination (if available)	<input type="text"/>
	Breeder's reference	<input type="text"/>

#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)	Cuttings	[]
(b)	<i>In vitro</i> propagation	[]
(c)	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 Plant: type (1)			
deciduous	Helmond Pillar	1 []	
semi-evergreen	Parkjuweel	2 []	
evergreen	Tottenham	3 []	
5.2 Plant: growth habit (2)			
upright	Helmond Pillar, Redtorch	1 []	
irregularly rounded	Electra, Orange Dream, STARBUST	2 []	
compact rounded	Admiration, Lutin Rouge, Tiny Gold	3 []	
spreading	Green Ornament	4 []	
5.3 Plant: height (3)			
very short	Fireball	1 []	
very short to short		2 []	
short	Admiration	3 []	
short to medium		4 []	
medium	Orange Rocket	5 []	
medium to tall		6 []	
tall	Fireflame	7 []	
tall to very tall		8 []	
very tall	Decora	9 []	
5.4 Plant: height in relation to width (4)			
taller than broad	Helmond Pillar, Redtorch	1 []	
as tall as broad	Electra, Orange Dream, STARBUST	2 []	
broader than tall	Admiration, Green Ornament, Lutin Rouge, Tiny Gold	3 []	
5.5 Stem: type of spines (8)			
simple	Redtorch	1 []	
trifid	Lombarts purple, Red Tears	2 []	

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

Characteristics	Example Varieties	Note
5.6(i) Leaf blade: main color (16) RHS Colour Chart (indicate reference number)		
5.6(ii) Leaf blade: main color (16) green		1 []
yellow		2 []
red		3 []
other (please indicate)		[]
5.7 Leaf blade: secondary color (17) none		1 []
whitish		2 []
green		3 []
yellow		4 []
orange		5 []
pink		6 []
red		7 []
purple		8 []
5.8 Floral type (24) solitary	Crawley Gem	1 []
umbel	Red Rocket	2 []
raceme	Red Tears	3 []
panicle	Barbarossa	4 []
5.9(i) Petal: main color (26) RHS Colour Chart (indicate reference number)		
5.9(ii) Petal: main color (26) green		1 []
yellow		2 []
red		3 []
other (please indicate)		4 []
5.10 Plant: number of fruits (28) absent or few	Erecta, Golden Torch, Kobold, Orange Ice	1 []
medium	Orange Dream, Unique	2 []
many	Forescate, Red Tears	3 []

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

Characteristics	Example Varieties	Note
5.11 Fruit: shape in lateral view (29)		
ovate	Sibbertoft Coral	1 []
circular	Irwinii	2 []
elliptic	Orange Rocket	3 []
oblong	Dart's Superb	4 []
5.12(i) Fruit: color of skin (31)		
RHS Colour Chart (indicate reference number)		
5.12(ii) Fruit: color of skin (31)		
whitish		1 []
green		2 []
yellow		3 []
orange		4 []
pink		5 []
red		6 []
purple		7 []
blackish blue		8 []
other (please indicate)		[]

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>Fruit: shape in lateral view</i>	<i>oblong</i>	<i>circular</i>
<p>Comments:</p>			

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.]

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]