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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

DRAFT

BLUEBERRY

UPOV Code(s): VACCI_ANG; VACCI_COR; VACCI_FOR; VACCI_MYD; VACCI_MYR; VACCI_SIM; VACCI_VIR

Vaccinium simulatum Small;
Vaccinium myrtilloides Michx.;
Vaccinium myrtillus L.;
Vaccinium formosum Andrews;
Vaccinium virgatum Aiton;
Vaccinium corymbosum L.;
Vaccinium angustifolium Aiton

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by experts from Australia
to be considered by the
Technical Working Party for Fruit Crops
at its forty-seventh session, to be held in Angers, France,
from 2016-11-14 to 2016-11-18

Disclaimer: this document does not represent UPOV policies or guidance

* 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.]

Alternative names:*

Botanical name	*English*	*French*	*German*	*Spanish*
Vaccinium angustifolium Aiton, *Vaccinium brittonii* Porter ex Bickn.	Lowbush Blueberry, Upland lowbush blueberry			
Vaccinium corymbosum L., *Vaccinium-Corymbosum-Hybridae*	Blueberry, High Bush Blueberry	Myrtille, Myrtille en Corymbe	Amerikanische Heidelbeere, Kulturheidelbeere	Arándano americano
Vaccinium formosum Andrews, *Vaccinium australe* Small	Swamp Highbush Blueberry			
Vaccinium myrtilloides Michx.	Canada blueberry; Sourtop blueberry; Velvetleaf blueberry		Kanadische Heidelbeere	
Vaccinium myrtillus L.	Bilberry, Blueberry, Whinberry, Whortleberry	Myrtille	Blaubeere, Heidelbeere	Arándano, Mirtillo
Vaccinium simulatum Small				
Vaccinium virgatum Aiton, *Vaccinium ashei* J. M. Reade	Rabbit-eye blueberry, Southern black blueberry			

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.

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1. Subject of these Test Guidelines

1.1 These Test Guidelines apply to all varieties of *Vaccinium angustifolium* Aiton, *Vaccinium corymbosum* L., *Vaccinium formosum* Andrews, *Vaccinium myrtilloides* Michx., *Vaccinium myrtillus* L., *Vaccinium simulatum* Smal and *Vaccinium virgatum* Aiton , *Vaccinium darrowii* Camp., *Vaccinium elliottii* Chapm. and hybrids of these species.

1.2 In the case of ornamental varieties, in particular, it may be necessary to use additional characteristics or additional states of expression to those included in the Table of Characteristics in order to examine Distinctness, Uniformity and Stability.

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 in pots with at least three well-developed shoots.

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

5 plants with at least three well-developed shoots.

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 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.

3.1.3 In particular the number of chilling hours required to ensure satisfactory flowering and fruiting of the varieties under test should be taken into consideration. In the case of a single growing cycle, the plants should have fruited in the previous season.

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.

3.4 Test Design

3.4.1 Each test should be designed to result in a total of at least 5 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.

In the case of observations of parts taken from single plants, the number of parts to be taken from each of the plants should be 3.

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 second column of 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 For the assessment of uniformity of vegetatively propagated varieties, a population standard of 95% and an acceptance probability of at least 1% should be applied. In the case of a sample size of 5 plants, no off-types are allowed.

4.3 Stability

4.3.1 In practice, it is not usual to perform tests of stability that produce results as certain as those of the testing of distinctness and uniformity. However, experience has demonstrated that, for many types of variety, when a variety has been shown to be uniform, it can also be considered to be stable.

4.3.2 Where appropriate, or in cases of doubt, stability may be 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: growth habit (characteristic 2)
(b) Fruit: color of skin (after removal of bloom) (characteristic 27)
(c) Plant: fruiting type (characteristic 31)
(d) Time of beginning of flowering on one-year-old shoot (characteristic 33)
(e) Only varieties which fruit on one-year-old and current season's shoots: Time of beginning of flowering on current year’s shoot (characteristic 34)
(f) Time of beginning of fruit ripening on one-year-old shoot (characteristic 35)
(g) Only varieties which fruit on one-year-old and current season's shoots: Time of beginning of fruit ripening on current year's shoot (characteristic 36)

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 In the case of qualitative and pseudo-qualitative characteristics (see Chapter 6.3), all relevant states of expression are presented in the characteristic. However, in the case of quantitative characteristics with 5 or more states, an abbreviated scale may be used to minimize the size of the Table of Characteristics. For example, in the case of a quantitative characteristic with 9 states, the presentation of states of expression in the Test Guidelines may be abbreviated as follows:

State	*Note*
small	3
medium	5
large	7

However, it should be noted that all of the following 9 states of expression exist to describe varieties and should be used as appropriate:

State	*Note*
very small	1
very small to small	2
small	3
small to medium	4
medium	5
medium to large	6
large	7
large to very large	8
very large	9

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.

(H) - example variety with high chilling requirements
(L) - example variety with low chilling requirements

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)-(g) See Explanations on the Table of Characteristics in Chapter 8.1

7 Not applicable

(H) - example variety with high chilling requirements
(L) - example variety with low chilling requirements

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

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1.	**(*)**	**QN VG**	**(+) (a)**				
		Plant: vigor					
		weak	faible	schwach	débil	Bluetta, Weymouth	3
		medium	moyenne	mittel	medio	Bluejay, Patriot	5
		strong	forte	stark	fuerte	Bluecrop, Duke(H), Earliblue(H)	7
2.	**(*)**	**QN VG**	**(a)**				
		Plant: growth habit					
		upright	dressé	aufrecht	erecto	Ivanhoe	1
		semi upright	demi dressé	halbaufrecht	semierecto	Bluetta	2
		spreading	étalé	breitwüchsig	rastrero	Jersey, Scintilla(L)	3
3.		**PQ VG**	**(a)**				
		One-year-old shoot: color					
		green	verte	grün	verde	Puru	1
		greenish red	rouge verdâtre	grünlichrot	rojo verdoso	Reka	2
		greyish red	rouge grisâtre	gräulichrot	rojo grisáceo	Berkeley	3
		reddish yellow	jaune rougeâtre	rötlichgelb	amarillo rojizo	Heerma	4
		reddish brown	brun rougeâtre	rötlichbraun	marrón rojizo	Earliblue(H)	5
		dark red	rouge foncé	dunkelrot	rojo oscuro	Aron	6
4.		**QN VG**	**(+) (a)**				
		One-year-old shoot: length of internode					
		short	court	kurz	corta		3
		medium	moyen	mittel	media		5
		long	long	lang	larga		7
5.	**(*)**	**QN MS/VG**	**(b)**				
		Leaf: length					
		short	courte	kurz	corta	Darrow	3
		medium	moyenne	mittel	media	Bluecrop, Patriot	5
		long	longue	lang	larga	Berkeley, Collins , Toro	7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
6.		**QN MS/VG**	**(b)**				
		Leaf: width					
		narrow	étroite	schmal	estrecha	Emil, Heerma, Putte	3
		medium	moyenne	mittel	media	Ama, Bluecrop	5
		broad	large	breit	ancha	Berkeley, Collins	7
7.		**QN MG/VG**	**(b)**				
		Leaf: ratio length/width					
		low				Gretha	3
		medium	moyen	mittel	media	Patriot	5
		high				Heerma	7
8.	**(*)**	**PQ VG**	**(+)** **(b)**				
		Leaf: shape					
		lanceolate	lancéolée	lanzettlich	lanceolada	Weymouth	1
		ovate	ovale	eiförmig	oval	Puru	2
		elliptic	elliptique	elliptisch	elíptica	Earliblue(H)	3
		oblong	oblongue	rechteckig	oblonga	Berkeley, Bluetta, Jersey	4
9.		**QL VG**	**(b)**				
		Leaf: color of upper side					
		yellow	jaune	gelb	amarillo	Geerdens	1
		green	verte	grün	verde		2
10.	**(*)**	**PQ VG**	**(b)**				
		Leaf: Color of upper side					
		yellow				Geerdens	1
		light green				Earliblue(H)	2
		medium green				Berkeley, Toro	3
		dark green				Darrow, Weymouth	4
11.	**(*)**	**QL VG**	**(b)**				
		Leaf: margin					
		entire	entier	ganzrandig	entero	Blueray, Jersey	1
		serrate	denté	gesägt	serrado	Brigitta, Rancocas	2

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
12.	**QN VG**	**(c)**				
	Flower bud: anthocyanin coloration					
	weak	faible	gering	débil	Hele	3
	medium	moyenne	mittel	media	Patriot	5
	strong	forte	stark	fuerte	Bluecrop	7
	very strong				Brigitta, Collins	9
13.	**QN MG/VG**	**(c)**				
	Inflorescence: length (excluding peduncle)					
	short	courte	kurz	corta	Bluetta, Collins	3
	medium	moyenne	mittel	media	Duke(H), Earliblue(H)	5
	long	longue	lang	larga	Berkeley, Bluecrop	7
14.	**PQ VG**	**(+)** **(c)**				
	Flower: shape of corolla					
	urceolate	urcéolée	urnenförmig	urceolada	Maru	1
	campanulate	campanulée	glockenförmig	acampanada		2
	cylindrical	cylindrique	zylindrisch	cilíndrica	Reka	3
15.	**QN VG**	**(c)**				
	Flower: size of corolla tube					
	very small					1
	small	petit	klein	pequeño	Blueray	3
	medium	moyen	mittel	medio	Heerma	5
	large	grand	groß	grande	Collins	7
	very large					9
16.	**QN VG**	**(c)**				
	Flower: anthocyanin coloration of corolla tube on outer side					
	absent or very weak	nulle ou très faible	fehlend oder sehr gering	ausente o muy débil	Camellia (L)	1
	weak	faible	gering	débil	Ama	3
	medium	moyenne	mittel	media	Gretha	5
	strong	forte	stark	fuerte	Bluecrop	7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
17.		**QN VG**	**(+) (c)**				
		Flower: conspicuousness of ridges on corolla tube					
		absent or weak				Ventura (L)	1
		medium				Camellia (L)	2
		strong				Corona, FL 02-40 (L)	3
18.		**QN VG**	**(d)**				
		Infructescence: density					
		sparse	lâche	locker	baja	Rahi	3
		medium	moyenne	mittel	media	Toro	5
		dense	dense	dicht	alta	Tifblue	7
19.		**QN VG**	**(+)**				
		Unripe fruit: intensity of green color					
		light	claire	hell	clara	Heerma	1
		medium	moyenne	mittel	media	Ama	3
		dark	foncée	dunkel	oscura	Berkeley	5
20.	**(*)**	**QN VG**	**(d)**				
		Fruit: size					
		very small				ZF08-095 (L)	1
		small	petit	klein	pequeño	Ama, Sweetcrisp (L)	3
		medium	moyen	mittel	medio	Concord, Emerald (L)	5
		large	gros	groß	grande	Darrow, FL05-627 (L)	7
21.	**(*)**	**PQ VG**	**(+) (d)**				
		Fruit: shape in longitudinal section					
		elliptic	elliptique	elliptisch	elíptica	Northland	1
		circular				Bluecrop, Jersey	2
		oblate	aplati	breitrund	oblata	Earliblue(H)	3

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
22.	**QN VG**	**(d)**				
	Fruit: attitude of sepals					
	erect	dressé	aufrecht	erecto	Powderblue	1
	erect to semi-erect	dressé à demi-dressé	aufrecht bis halbaufrecht	entre erecto y semierecto	Camellia (L), Sunset Blue	2
	semi-erect	demi-dressé	halbaufrecht	semierecto	Tifblue	3
	horizontal				Magnolia, Maru, Springhigh	4
23.	**QN VG**	**(d)**				
	Fruit: curvature of sepals					
	incurving	incurvé	aufgebogen	incurvado	Delite	1
	straight	droit	gerade	recto	Powderblue	2
	reflexed	récurvé	zurückgebogen	recurvado	Tifblue	3
24.	**QN VG**	**(d)**				
	Fruit: diameter of calyx basin					
	small	petit	klein	pequeño	Blueray	1
	medium	moyen	mittel	medio	Bluecrop	3
	large	grand	groß	grande	Darrow	5
25.	**QN VG**	**(d)**				
	Fruit: depth of calyx basin					
	absent or very shallow				Clockwork	1
	shallow	peu profonde	flach	poco profunda	Collins	3
	medium	moyenne	mittel	media	Blueray	5
	deep	profonde	tief	profunda	Heidi, Jersey	7
26. **(*)**	**QN VG**	**(d)**				
	Fruit: intensity of bloom					
	absent or very weak				Goldtraube, ZF08-095 (L)	1
	weak	faible	gering	débil	Gretha	3
	medium	moyenne	mittel	media	Ama, Bluetta	5
	strong	forte	stark	fuerte	Darrow, Gila	7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
27.	**(*)**	**PQ VG**	**(d)**				
		Fruit: color of skin (after removal of bloom)					
		light blue	bleu clair	hellblau	azul claro	Berkeley	1
		medium blue	bleu moyen	mittelblau	azul medio	Patriot	2
		dark blue	bleu foncé	dunkelblau	azul oscuro	Heerma	3
		blue red	bleu rouge	blaurot	rojo azulado	Delite	4
		pink					5
		blackish blue					6
28.		**QN MG/VG**	**(+) (d)**				
		Fruit: firmness					
		soft	mou	weich	blando		3
		soft to medium				Darrow	4
		medium	intermédiaire	mittel	medio	O'Neal	5
		firm	ferme	fest	firme	Duke(H)	7
		very firm	très ferme	sehr fest	muy firme	Rahi	9
29.		**QN VG**	**(d), (e)**				
		Fruit: sweetness					
		low	faible	gering	bajo	Bluetta	1
		medium	moyen	mittel	medio	Collins	3
		high	fort	stark	alto	Goldtraube	5
30.		**QN VG**	**(d), (e)**				
		Fruit: acidity					
		low	faible	gering	baja	Gretha	3
		medium	moyenne	mittel	media	Darrow	5
		high	forte	stark	alta	Ascorba, Bluecrop	7
31.	**(*)**	**QL VG**					
		Plant: fruiting type					
		on one-year-old shoots only	seulement sur des rameaux d'un an	nur an einjährigen Trieben	sólo en ramas de un año	Darrow, Patriot	1
		on one-year-old and current season shoots				Burlington, Concord	2

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
32.	**(*)**	**QN MG/VG**	**(+)**				
		Time of vegetative bud burst					
		early	précoce	früh	temprana	Patriot, Weymouth	3
		medium	moyenne	mittel	media	Bluecrop	5
		late	tardive	spät	tardía	Blueray	7
33.	**(*)**	**QN MG/VG**	**(f)**				
		Time of beginning of flowering on one-year-old shoot					
		very early	très précoce	sehr früh	muy temprana	Patriot	1
		early	précoce	früh	temprana	Weymouth	3
		medium	moyenne	mittel	media	Berkeley	5
		late	tardive	spät	tardía	Darrow	7
		very late	très tardive	sehr spät	muy tardía	Jersey	9
34.	**(*)**	**QN MG/VG**	**(f)**				
		Only varieties which fruit on one-year-old and current season's shoots: Time of beginning of flowering on current year's shoot					
		early				O'Neal	3
		medium				JU83	5
		late					7
35.	**(*)**	**QN MG/VG**	**(g)**				
		Time of beginning of fruit ripening on one-year-old shoot					
		very early				Bluetta	1
		early				Blueray	3
		medium				Heerma	5
		late				Darrow	7
		very late				Elizabeth	9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
36. (*)	**QN MG/VG**	**(g)**				
	Only varieties which fruit on one-year-old and current season's shoots: Time of beginning of fruit ripening on current year's shoot					
	early				O'Neal	3
	medium				JU83	5
	late					7
37.	**PQ VG**					
	Corolla tube: ground color of outer side					
	white				Southmoon (L)	1
	greenish white				Heerma	2
	yellowish white				Collins	3
38.	**QN VG**	**(b)**				
	Leaf:glaucosity on upper side					
	absent or weak				Puru, Reka	1
	medium				Dolce Blue, Magnolia	2
	strong				Maru, Takahe	3
39.	**PQ VG**	**(c)**				
	<u>Flower : color of receptacle</u>					
	green					1
	pink					2
	red					3
	blue					4
40.	**QN VG**					
	Fruit: height/width ratio					
	low				Magnolia	1
	medium				Island Blue	2
	high					3

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) Observations on the plant should be made on unpruned bushes in the dormant season.

(b) Observations on the leaf should be made on fully developed leaves in early summer.

(c) Observations on the inflorescence and flower should be made at the time of full flowering.

(d) Unless otherwise stated, observations on the fruit should be made on physiologically ripe fruits.

(e) Sweetness and acidity should be observed by tasting in comparison to the example varieties.

(f) The time of beginning of flowering is when 10% of the flowers are fully open.

(g) The time of beginning of fruit ripening is when 10% of the fruits are ripe.

8.2 Explanations for individual characteristics

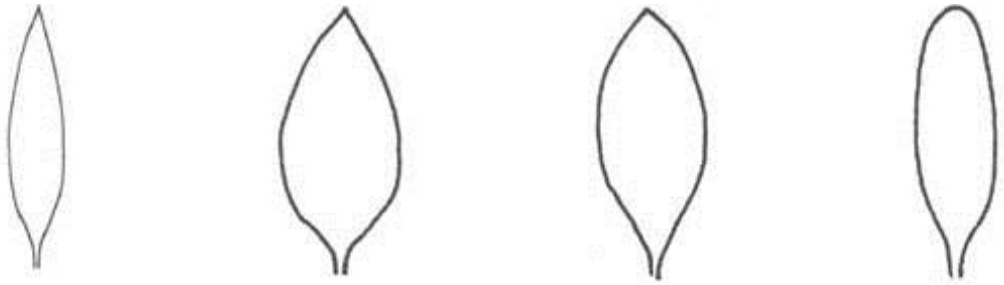
Ad. 1: Plant: vigor

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

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

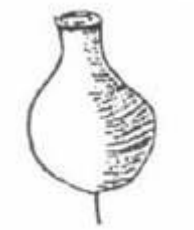
Observed on 4th internode from the tip.

Ad. 8: Leaf: shape



1	2	3	4
lanceolate	ovate	elliptic	oblong

Ad. 14: Flower: shape of corolla



1
urceolate

2
campanulate

3
cylindric

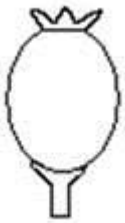
Ad. 17: Flower: conspicuousness of ridges on corolla tube

Observed on outer side

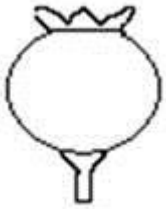
Ad. 19: Unripe fruit: intensity of green color

Observe on late green fruit with bloom

Ad. 21: Fruit: shape in longitudinal section



1
elliptic



2
circular

3
oblate

Ad. 28: Fruit: firmness

Firmness should be determined by hand in comparison to the example varieties, or measured using a penetrometer.

Ad. 32: Time of vegetative bud burst

The time of vegetative bud burst is when the first vegetative buds begin to burst.

9. Literature

Ebert, G., 2005: Anbau von Heidelbeeren und Cranberries. Ulmer Verlag, Stuttgart, DE.

Liebster, G., 1961: Die Kulturheidelbeere. Parey Verlag, Berlin und Hamburg, DE.

Rejman, A., 1994: Pomologia. PWRiL, Warszawa, PL.

Rejman, A., Pliszka, K., 1988: Borówka wysoka. PWRiL, Warszawa, PL.

Sękowski, B., 1993: Pomologia systematyczna. PWN, Warszawa, PL.

Sorge, P., 1984: Beerenobstsorten. J. Neumann-Neudamm, Melsungen, DE.

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

1.1.1	Botanical name	*Vaccinium angustifolium* Aiton	[ ]
1.1.2	Common name	Lowbush Blueberry, Upland lowbush blueberry	
1.2.1	Botanical name	*Vaccinium corymbosum* L.	[ ]
1.2.2	Common name	Blueberry, High Bush Blueberry	
1.3.1	Botanical name	*Vaccinium formosum* Andrews	[ ]
1.3.2	Common name	Swamp Highbush Blueberry	
1.4.1	Botanical name	*Vaccinium myrtilloides* Michx.	[ ]
1.4.2	Common name	Canada blueberry; Sourtop blueberry; Velvetleaf blueberry	
1.5.1	Botanical name	*Vaccinium myrtillus* L.	[ ]
1.5.2	Common name	Bilberry, Blueberry, Whinberry, Whortleberry	
1.6.1	Botanical name	*Vaccinium simulatum* Small	[ ]
1.6.2	Common name		
1.7.1	Botanical name	*Vaccinium virgatum* Aiton	[ ]
1.7.2	Common name	Rabbit-eye blueberry, Southern black blueberry	

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

2. Applicant

Name	
Address	
Telephone No.	
Fax No.	
E-mail address	
Breeder (if different from applicant)	

3. Proposed denomination and breeder's reference

Proposed denomination (if available)	
Breeder's reference	

#4. Information on the breeding scheme and propagation of the variety

4.1 Breeding scheme

Variety resulting from:

4.1.1 Crossing

(a) controlled cross [ ]

(please state parent varieties)

(……..……..…) 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)

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

4.2 Method of propagating the variety

4.2.1 Vegetative propagation

(a) Cuttings [ ]
(b) *In vitro* propagation [ ]
(c) Other (state method) [ ]

4.2.2 Other [ ]
(Please provide details)

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: growth habit**		
(2)			
	upright	Ivanhoe	1 [ ]
	semi upright	Bluetta	2 [ ]
	spreading	Jersey, Scintilla(L)	3 [ ]
5.2	**Fruit: color of skin (after removal of bloom)**		
(27)			
	light blue	Berkeley	1 [ ]
	medium blue	Patriot	2 [ ]
	dark blue	Heerma	3 [ ]
	blue red	Delite	4 [ ]
	pink		5 [ ]
	blackish blue		6 [ ]
5.3	**Plant: fruiting type**		
(31)			
	on one-year-old shoots only	Darrow, Patriot	1 [ ]
	on one-year-old and current season shoots	Burlington, Concord	2 [ ]
5.4	**Time of beginning of flowering on one-year-old shoot**		
(33)			
	very early	Patriot	1 [ ]
	early	Weymouth	3 [ ]
	medium	Berkeley	5 [ ]
	late	Darrow	7 [ ]
	very late	Jersey	9 [ ]
5.5	**Only varieties which fruit on one-year-old and current season's shoots: Time of beginning of flowering on current year's shoot**		
(34)			
	early	O'Neal	3 [ ]
	medium	JU83	5 [ ]
	late		7 [ ]

	Characteristics	Example Varieties	Note
5.6	**Time of beginning of fruit ripening on one-year-old shoot**		
(35)			
	very early	Bluetta	1 [ ]
	early	Blueray	3 [ ]
	medium	Heerma	5 [ ]
	late	Darrow	7 [ ]
	very late	Elizabeth	9 [ ]
5.7	**Only varieties which fruit on one-year-old and current season's shoots: Time of beginning of fruit ripening on current year's shoot**		
(36)			
	early	O'Neal	3 [ ]
	medium	JU83	5 [ ]
	late		7 [ ]

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
Example	*Fruit: size*	*small*	*medium*

Comments:

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

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

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

Yes [ ] No [ ]

(If yes, please provide details)

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

Yes [ ] No [ ]

(If yes, please provide details)

7.3 Other information

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

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

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

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

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

Authorities may allow certain of this information to be provided in a confidential section of the Technical Questionnaire.

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

8. Authorization for release

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

Yes [ ] No [ ]

(b) Has such authorization been obtained?

Yes [ ] No [ ]

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

9. Information on plant material to be examined or submitted for examination

9.1 The expression of a characteristic or several characteristics of a variety may be affected by factors, such as pests and disease, chemical treatment (e.g. growth retardants or pesticides), effects of tissue culture, different rootstocks, scions taken from different growth phases of a tree, etc.

9.2 The plant material should not have undergone any treatment which would affect the expression of the characteristics of the variety, unless the competent authorities allow or request such treatment. If the plant material has undergone such treatment, full details of the treatment must be given. In this respect, please indicate below, to the best of your knowledge, if the plant material to be examined has been subjected to:

(a)	Microorganisms (e.g. virus, bacteria, phytoplasma)	Yes [ ]	No [ ]
(b)	Chemical treatment (e.g. growth retardant, pesticide)	Yes [ ]	No [ ]
(c)	Tissue culture	Yes [ ]	No [ ]
(d)	Other factors	Yes [ ]	No [ ]

Please provide details for where you have indicated “yes”.

.....

10. I hereby declare that, to the best of my knowledge, the information provided in this form is correct:

Applicant’s name

Signature Date

[End of document]