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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

DRAFT

BLUEBERRY

UPOV Codes: VACCI_COR; VACCI_MYR

(Vaccinium corymbosum L.; Vaccinium myrtillus L.)

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

*prepared by experts from Poland**to be considered by the Technical Working Party for Fruit Crops at its thirty-sixth session,
to be held in Kôfu, Japan, from September 5 to 9, 2005*

Alternative Names:*

<i>Botanical name</i>	<i>English</i>	<i>French</i>	<i>German</i>	<i>Spanish</i>
<i>Vaccinium corymbosum</i> L.	Blueberry, High Bush Blueberry	Myrtille, Myrtille en Corymbe	Kulturheidelbeere	Arándano americano
<i>Vaccinium myrtillus</i> L.	Bilberry, Blueberry, Whinberry, Whortleberry	Myrtille	Heidelbeere	Arándano, Mirtillo

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.]

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1. Subject of these Test Guidelines

These Test Guidelines apply to all varieties of *Vaccinium corymbosum* L. and *Vaccinium myrtillus* L. of the family *Ericaceae*.

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 in pots 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 two independent growing cycles.

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.

3.2 *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. In particular, it is essential that the plants produce a satisfactory crop of fruit in each of the two growing cycles.

3.3.2 Stage of development for the assessment

The optimum stage of development for the assessment of each characteristic is indicated by a note in the second column of the Table of Characteristics. The stages of development denoted by each note are described in Chapter 8.

3.3.3 Type of observation

The recommended method of observing the characteristic is indicated by the following key in the second column of the Table of Characteristics:

MG: single measurement of a group of plants or parts of plants

VG: visual assessment by a single observation of a group of plants or parts of plants

3.4 *Test Design*

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

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

Unless otherwise indicated, all observations should be made on 5 plants or parts taken from each of 5 plants.

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.

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) Plant: growth habit (characteristic 2)
- (b) Leaf: shape (characteristic 4)
- (c) Flower: size (characteristic 7)
- (d) Fruit: size (characteristic 9)
- (e) Fruit: intensity of blue color of skin (after removal of bloom) (characteristic 13)
- (f) Time of beginning of flowering (characteristic 17)
- (g) Time of fruit ripening (characteristic 18)

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

6. Introduction to the Table of Characteristics

6.1 *Categories of Characteristics*

6.1.1 Standard Test Guidelines Characteristics

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

6.1.2 Asterisked Characteristics

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

6.2 *States of Expression and Corresponding Notes*

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

6.3 *Types of Expression*

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

6.4 *Example Varieties*

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

6.5 *Legend*

(*) Asterisked characteristic – see 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

MG: single measurement of a group of plants or parts of plants – see Chapter 3.3.1

VG: visual assessment by a single observation of a group of plants or parts of plants – Chapter 3.3.1

(a)-(f) 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/ Beispielssorten/ Variedades ejemplo	Note/ Nota
1. VG/ Plant: vigor						
(new) MG						
(*)						
QN	(a) weak				Bluetta, Weymouth	3
	medium				Patriot, Bluejay	5
	strong				Duke, Earliblue, Bluecrop	7
2. VG Plant: growth habit						
(new)						
(*)						
(+)						
PQ	(a) upright				Ivanhoe	1
	semi-upright				Bluetta	2
	spreading				Jersey	3
3. MG/ Leaf: size						
(new) VG						
(*)						
QN	(b) small				Darrow	3
	medium				Duke, Ealiblue, Weymouth	5
	large				Berkeley, Herbert	7
4. VG Leaf: shape						
(new)						
(*)						
PQ	(b) lanceolate				Weymouth	1
	elliptic				Rancocas, Earliblue	2
	oblong				Jersey, Bluetta, Berkeley	3

English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
5. VG Leaf: intensity of green color					
(new) (*)					
QN (b)	light			Earliblue	3
	medium				5
	dark			Weymouth, Darrow	7
6. VG Leaf: margin of blade					
(new) (*)					
QL (b)	entire			Blueray, Jersey	1
	serrate			Rancocas	2
7. VG Flower: size					
(*)					
QN (c)	small			Blueray	3
	medium			Heerma	5
	large			Collins	7
8. VG Flower: anthocyanin coloration of petal					
(*)					
QN (c)	weak			Ama	3
	medium			Gretha	5
	strong			Bluecrop	7
9. MG Fruit: size					
(*)					
QN (d)	small			Ama	3
	medium			Concord	5
	large			Darrow	7

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
10. VG Fruit: shape (new) (*)						
PQ (d)	oblong				Northland	1
	globose				Bluecrop, Jersey	2
	flat globose				Earliblue	3
11. VG Unripe fruit: intensity of green color (new) (*)						
QN	light				Heerma	3
	medium				Ama	5
	dark				Berkeley	7
12. VG Fruit: intensity of bloom (*)						
QN (d)	very weak				Goldtraube	1
	weak					3
	medium				Bluetta	5
	strong				Darrow	7
	very strong					9
13. VG Fruit: intensity of blue color of skin (after removal of bloom) (*)						
QN (d)	light				Berkeley	3
	medium				Patriot	5
	dark				Heerma	7
14. MG Fruit: sweetness (*)						
QN (d)	weak				Bluetta	3
	medium				Collins	5
	strong				Goldtraube	7

English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
15. MG Fruit: acidity					
(*)					
QN	(d)	weak		Gretha	3
		medium		Darrow	5
		strong		Ascorba, Bluecrop	7
16. VG Time of bud burst					
(+)					
(*)					
QN		early		Patriot, Weymouth	3
		medium		Bluecrop	5
		late		Blueray	7
17. VG Time of beginning of flowering					
(*)					
QN		very early		Patriot	1
		early		Weymouth	3
		medium		Berkeley	5
		late		Darrow	7
		very late		Jersey	9
18. VG Time of fruit ripening					
(*)					
QN	(d)	very early		Bluetta	1
		early		Blueray	3
		medium		Heerma	5
		late		Darrow	7
		very late		Elizabeth	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) All observations on the plant should be made on unpruned bushes in the dormant season.
- (b) All observations on the leaf should be made on fully developed leaves of the first bud burst.
- (c) All observations on the inflorescence and flower should be made at the time of full flowering.
- (d) Unless otherwise stated, all observations on the fruit should be made on physiologically ripe fruits.

8.2 *Explanations for individual characteristics*

Ad. 2: Plant: growth habit

All observations on the young shoot should be made on shoots approximately 30 cm long.

Ad. 16: Time of bud burst

Observations should be made at the time when the buds begin to swell

9. Literature

Sorge, P., 1984: "Beerenobstsorten", J. Neumann-Neudamm

Zbiorowe ,1994: "Pomologia", PWRiL Warszawa

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

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	<input type="text" value="Vaccinium corymbosum L."/>	[]
1.1.2 Common name	<input type="text" value="BLUEBERRY, HIGH BUSH BLUEBERRY"/>	
1.2.1 Botanical name	<input type="text" value="Vaccinium myrtillus L."/>	[]
1.2.2 Common name	<input type="text" value="BILBERRY, BLUEBERRY, WHINBERRY, WHORTLEBERRY"/>	
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) cuttings []

(b) *in vitro* propagation []

(c) other (state method) []

4.2.2 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:
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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 Plant: growth habit (2)		
upright	Ivanhoe	1 []
semi-upright	Bluetta	2 []
spreading	Jersey	3 []
5.2 Leaf: shape (4)		
lanceolate	Weymouth	1 []
elliptic	Rancocas, Earliblue	2 []
oblong	Jersey, Bluetta, Berkeley	3 []
5.3 Flower: size (7)		
small	Blueray	3 []
medium	Heerma	5 []
large	Collins	7 []
5.4 Fruit: size (9)		
small	Ama	3 []
medium	Concord	5 []
large	Darrow	7 []
5.5 Fruit: intensity of blue color of skin (after removal of bloom) (13)		
light	Berkeley	3 []
medium	Patriot	5 []
dark	Heerma	7 []

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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	Characteristics	Example Varieties	Note
5.6	Time of beginning of flowering		
(17)			
	very early	Patriot	1 []
	early	Weymouth	3 []
	medium	Berkeley	5 []
	late	Darrow	7 []
	very late	Jersey	9 []
5.7	Time of fruit ripening		
(18)			
	very early	Bluetta	1 []
	early	Blueray	3 []
	medium	Heerma	5 []
	late	Darrow	7 []
	very late	Elizabeth	9 []

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>(example to be inserted)</i>	<i>(example to be inserted)</i>
Comments:			

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
<p>#7. Additional information which may help in the examination of the variety</p> <p>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?</p> <p>Yes [] No []</p> <p>(If yes, please provide details)</p> <p>7.2 Are there any special conditions for growing the variety or conducting the examination?</p> <p>Yes [] No []</p> <p>(If yes, please provide details)</p> <p>7.3 Other information</p> <p>A representative color photograph of the variety should accompany the Technical Questionnaire.</p>		
<p>8. Authorization for release</p> <p>(a) Does the variety require prior authorization for release under legislation concerning the protection of the environment, human and animal health?</p> <p>Yes [] No []</p> <p>(b) Has such authorization been obtained?</p> <p>Yes [] No []</p> <p>If the answer to (b) is yes, please attach a copy of the authorization.</p>		

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 for where you have indicated "yes".

.....

9.3 Has the plant material to be examined been tested for the presence of virus or other pathogens?

Yes []

(please provide details as specified by the Authority)

No []

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

Applicant's name

Signature Date