



## **PROTOCOL FOR TESTS ON DISTINCTNESS, UNIFORMITY AND STABILITY**

***Rubus ideaus L.***

**RASPBERRY**

UPOV Code: RUBUS\_IDA

**Adopted on 19/03/2014**

**Entry into force on 19/03/2014**

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## **1. SUBJECT OF THE PROTOCOL AND REPORTING**

### **1.1 Scope of the technical protocol**

This Technical Protocol applies to all varieties of *Rubus ideaus* L.

The protocol describes the technical procedures to be followed in order to meet the requirements of Council Regulation 2100/94 on Community Plant Variety Rights. The technical procedures have been agreed by the Administrative Council and are based on documents agreed by the International Union for the Protection of New Varieties of Plants (UPOV), such as the General Introduction to DUS (UPOV Document TG/1/3 [http://www.upov.int/en/publications/intro\\_dus.htm](http://www.upov.int/en/publications/intro_dus.htm)), its associated TGP documents (<http://www.upov.int/en/publications/tgp/>) and the relevant UPOV Test Guideline TG/43/7 dated 09/04/2003 (<http://www.upov.int/edocs/tgdocs/en/tg043.pdf>) for the conduct of tests for Distinctness, Uniformity and Stability.

### **1.2 Entry into Force**

The present protocol enters into force on **19.03.2014**. Any ongoing DUS examination of candidate varieties started before the aforesaid date will not be affected by the approval of the Technical Protocol. Technical examinations of candidate varieties are carried out according to the TP in force when the DUS test starts. The starting date of a DUS examination is considered to be the due date for submitting of plant material for the first test period.

In cases where the Office requests to take-over a DUS report for which the technical examination has either been finalized or which is in the process to be carried out at the moment of this request, such report can only be accepted if the technical examination has been carried out according to the CPVO TP which was in force at the moment when the technical examination started.

### **1.3 Reporting between Examination Office and CPVO and Liaison with Applicant**

#### **1.3.1 Reporting between Examination Office and CPVO**

The Examination Office shall deliver to the CPVO a preliminary report ("the preliminary report") no later than two weeks after the date of the request for technical examination by the CPVO.

The Examination Office shall also deliver to the CPVO a report relating to each growing period ("the interim report") and, when the Examination Office considers the results of the technical examination to be adequate to evaluate the variety or the CPVO so requests, a report relating to the examination ("the final report").

The final report shall state the opinion of the Examination Office on the distinctness, uniformity and stability of the variety. Where it considers those criteria to be satisfied, or where the CPVO so requests, a description of the variety shall be added to the report. If a report is negative the Examination Office shall set out the detailed reasons for its findings.

The interim and the final reports shall be delivered to the CPVO as soon as possible and no later than on the deadlines as laid down in the designation agreement.

#### **1.3.2 Informing on problems in the DUS test**

If problems arise during the course of the test the CPVO should be informed immediately so that the information can be passed on to the applicant. Subject to prior permanent agreement, the applicant may be directly informed at the same time as the CPVO particularly if a visit to the trial is advisable.

#### **1.3.3 Sample keeping in case of problems**

If the technical examination has resulted in a negative report, the CPVO shall inform the Examination Office as soon as possible in case that a representative sample of any relevant testing material shall be kept.

## **2. MATERIAL REQUIRED**

### **2.1 Plant material requirements**

Information with respect to the agreed closing dates and submission requirements of plant material for the technical examination of varieties can be found on <http://www.cpvo.europa.eu/main/en/home/documents-and-publications/s2-gazette> in the special issue S2 of the Official Gazette of the Office. General requirements on submission of samples are also to be found following the same link.

## **2.2 Informing the applicant of plant material requirements**

The CPVO informs the applicant that

- he is responsible for ensuring compliance with any customs and plant health requirements.
- the plant material supplied should be visibly healthy, not lacking in vigour, nor affected by any important pest or disease.
- 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.

## **2.3 Informing about problems on the submission of material**

The Examination Office shall report to the CPVO immediately in cases where the test material of the candidate variety has not arrived in time or in cases where the material submitted does not fulfil the conditions laid down in the request for material issued by the CPVO.

In cases where the examination office encounters difficulties to obtain plant material of reference varieties the CPVO should be informed.

## **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.

In particular, it is essential that the plants produce a satisfactory crop of fruit in each of the two 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"

[http://www.upov.int/export/sites/upov/en/publications/tgp/documents/tgp\\_9\\_1.pdf](http://www.upov.int/export/sites/upov/en/publications/tgp/documents/tgp_9_1.pdf).

### **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.

The optimum stage of development for the assessment of each characteristic is indicated by a number in the third column of the Table of Characteristics. The stages of development denoted by each number are described in Chapter 8.1.

### **3.4 Test design**

3.4.1 Each test should be designed to result in a total of at least 10 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**

In accordance with Article 83(3) of Council Regulation No. 2100/94 an applicant may claim either in the Technical Questionnaire or during the test that a candidate has a characteristic which would be helpful in establishing distinctness. If such a claim is made and is supported by reliable technical data, an additional test may be undertaken providing that a technically acceptable test procedure can be devised.

Additional tests will be undertaken, with the agreement of the President of CPVO, where distinctness is unlikely to be shown using the characters listed in the protocol.

### **3.6 Constitution and maintenance of a variety collection**

The process for the constitution and the maintenance of a variety collection can be summarized as follows:

Step 1: Making an inventory of the varieties of common knowledge

Step 2: Establishing a collection ("variety collection") of varieties of common knowledge which are relevant for the examination of distinctness of candidate varieties

Step 3: Selecting the varieties from the variety collection which need to be included in the growing trial or other tests for the examination of distinctness of a particular candidate variety.

#### **3.6.1 Forms of variety collection**

The variety collection shall comprise variety descriptions and living plant material, thus a living reference collection. The variety description shall be produced by the examination office unless special cooperation exists between examination offices and the CPVO. The descriptive and pictorial information produced by the examination office shall be held and maintained in a form of a database.

#### **3.6.2 Living Plant Material**

The examination office shall collect and maintain living plant material of varieties of the species concerned in the variety collection.

#### **3.6.3 Range of the variety collection**

The living variety collection shall cover at least those varieties that are suitable to climatic conditions of a respective examination office.

#### **3.6.4 Making an inventory of varieties of common knowledge for inclusion in the variety collection**

The inventory shall include varieties protected under National and Community PBR, varieties of National Catalogues for fruit species and varieties in trade or in commercial registers. In addition to the above, the inventory shall be extended to the appropriate to

- any commercial document in which varieties are marketed as propagating or harvested material, especially when there is no official registration system;
- any list including varieties which are publicly available within plant collections (varieties included in genetic resource collections, collection of old varieties, etc.);
- information provided by relevant plant experts;
- relevant example varieties referred to in the technical protocols for the examination of distinctness.

#### **3.6.5 Maintenance and renewal/update of a living variety collection**

The examination office shall maintain the variety collection under appropriate growing conditions (e.g. glasshouse, orchard, in vitro), where it shall be ensured that the plants are adequately irrigated, fertilised, pruned and protected from harmful pests and diseases. For the renewal of existing living material the identity of replacement living plant material shall be verified by conducting side-by-side plot comparisons between the material in the collection and the new material or by checking the identity of the new material against the variety description.

## **4. ASSESSMENT OF DISTINCTNESS, UNIFORMITY AND STABILITY**

The prescribed procedure is to assess distinctness, uniformity and stability in a growing trial.

### **4.1 Distinctness**

#### **4.1.1 General recommendations**

It is of particular importance for users of this Technical Protocol to consult the UPOV-General Introduction to DUS (link in chapter 1 of this document) and TGP 9 'Examining Distinctness' ([http://www.upov.int/export/sites/upov/en/publications/tgp/documents/tgp\\_9\\_1.pdf](http://www.upov.int/export/sites/upov/en/publications/tgp/documents/tgp_9_1.pdf)) prior to making decisions regarding distinctness. However, the following points are provided for elaboration or emphasis in this Technical Protocol.

#### 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 Technical Protocols are familiar with the recommendations contained in the UPOV-General Introduction to DUS prior to making decisions regarding distinctness.

#### 4.1.4 Number of plants/parts of plants to be examined

Unless otherwise indicated, for the purposes of distinctness, all observations on single plants should be made on 10 plants or parts taken from each of 10 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 third 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. colour 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**

It is of particular importance for users of this Technical Protocol to consult the UPOV-General Introduction to DUS (link in chapter 1 of this document) and TGP 10 'Examining Uniformity' ([http://www.upov.int/export/sites/upov/en/publications/tgp/documents/tgp\\_10\\_1.pdf](http://www.upov.int/export/sites/upov/en/publications/tgp/documents/tgp_10_1.pdf)) prior to making decisions regarding uniformity. However, the following points are provided for elaboration or emphasis in this Technical Protocol:

### **Uniformity assessment by off-types**

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 10 plants, 1 off-type is allowed.

### **4.3 Stability**

4.3.1 It is of particular importance for users of this Technical Protocol to consult the UPOV-General Introduction to DUS (link in chapter 1 of this document) and TGP 11 'Examining Stability' ([http://www.upov.int/export/sites/upov/en/publications/tgp/documents/tgp\\_11\\_1.pdf](http://www.upov.int/export/sites/upov/en/publications/tgp/documents/tgp_11_1.pdf))

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) Very young shoot: anthocyanin coloration of apex during rapid growth (characteristic 3)
- b) Spines: presence (characteristic 12)
- c) Fruit: colour (characteristic 35)
- d) Fruit: main bearing type (characteristic 39)
- e) Varieties which fruit on previous year's cane in summer: Time of beginning of fruit ripening on previous year's cane (characteristic 44)

or

Varieties which fruit on current year's cane in autumn: Time of beginning of fruit ripening on current year's cane (characteristic 45)

**5.4** If other characteristics than those from the TP are used for the selection of varieties to be included into the growing trial, the examination office shall inform the CPVO and seek the prior consent of the CPVO before using these characteristics.

## **6. INTRODUCTION TO THE TABLE OF CHARACTERISTICS**

### **6.1 Characteristics to be used**

The characteristics to be used in DUS tests and preparation of descriptions shall be those referred to in the table of characteristics. All the characteristics shall be used, providing that observation of a characteristic is not rendered impossible by the expression of any other characteristic, or the expression of a characteristic is prevented by the environmental conditions under which the test is conducted or by specific legislation on plant health. In the latter case, the CPVO should be informed.

The Administrative Council empowers the President, in accordance with Article 23 of Commission Regulation N°874/2009, to insert additional characteristics and their expressions in respect of a variety.

### States of expression and corresponding notes

In the case of qualitative and pseudo-qualitative characteristics, 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 Example Varieties

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

## 6.3 Legend

### For the CPVO N° column:

G	Grouping characteristic	– see Chapter 5
MG, MS, VG, VS		– see Chapter 4.1.5
QL	Qualitative characteristic	
QN	Quantitative characteristic	
PQ	Pseudo-qualitative characteristic	

### For the UPOV N° column:

The numbering of the characteristics is provided as a reference to the ad hoc UPOV guideline.

(\*) UPOV Asterisked characteristic – Characteristics that are important for the international harmonization of variety descriptions.

(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

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
<b>1.</b>	<b>1.</b>	<b>VG</b>	<b>Plant: habit</b>		
(+)			upright	Ontario, Watson	1
<b>PQ</b>			semi-upright	Autumn Bliss, Preußen, Schönemann	2
			arching	Joan Squire, Malling Joy, Meeker	3
<b>2.</b>	<b>2. (*)</b>	<b>VG</b>	<b>Plant: number of current season's canes</b>		
(+)			few	Rubaca, Rucami	3
<b>QN</b>			medium	Glen Ample, Multiraspa, Rumiloba	5
			many	Glen Clova, Skeena	7
			very many	Sumner	9
<b>3.</b>	<b>3. (*)</b>	<b>VG</b>	<b>Very young shoot: anthocyanin coloration of apex during rapid growth</b>		
<b>QL</b>		<b>(a)</b>	absent	Gelbe Antwerpener	1
<b>G</b>			present	Malling Promise	9
<b>4.</b>	<b>4. (*)</b>	<b>VG</b>	<b>Very young shoot: intensity of anthocyanin coloration of apex during rapid growth</b>		
<b>QN</b>		<b>(a)</b>	weak	Rumiloba, Rusilva	3
			medium	Cola 1, Rucami, Veten	5
			strong	Malling Joy, Rubaca	7
<b>5.</b>	<b>5.</b>	<b>VG</b>	<b>Current season's cane: bloom</b>		
<b>QN</b>		<b>(b)</b>	absent or very weak	Heritage, Willamette	1
			weak	Malling Promise, Zefa 2	3
			medium	Malling Delight	5
			strong	Glen Ample, September	7
			very strong	Ontario	9

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
6.	6.	VG	<b>Current season's cane: anthocyanin coloration</b>		
QN		(b)	absent or very weak	Chiliwak, Golden Bliss	1
			weak	Malling Leo, Tulameen	3
			medium	Malling Orion	5
			strong	Rode Radboud, Rubaca	7
7.	7.	VG/MS	<b>Current season's cane: length of internode</b>		
QN		(b)	short	Zefa 3	3
			medium	Rusilva, Zefa 2	5
			long	Caliber, Malling Joy	7
8.	8.	VG/MS	<b>Current season's cane: length of vegetative bud</b>		
(+)		(b)	short	Wilkran	3
QN			medium	Veten	5
			long	Baronne de Wavre, Phyllis King	7
9.	9. (* )	VG/MS	<b><u>Varieties which fruit on previous season's cane in summer:</u> Dormant cane: length</b>		
QN			short	Loganlike	3
			medium	Zefa 2	5
			long	Meeker, Schönemann	7
10.	10. (* )	VG/MS	<b><u>Varieties which fruit on current season's cane in autumn:</u> Current season's cane: length</b>		
QN		(b)	short	Orange Marie	3
			medium	Dinkum	5
			long	Watson	7

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
<b>11.</b>	<b>11. (* )</b>	<b>VG</b>	<b><u>Varieties which fruit on previous season's cane in summer:</u> Dormant cane: colour</b>		
(+)			brownish grey	Malling Leo, Schönemann	1
PQ			greyish brown	Malling Orion	2
			brown	Caliber, Glen Clova	3
			purplish brown	Festival, Malling Landmark	4
			brownish purple	Royalty, Titan	5
<b>12.</b>	<b>12. (* )</b>	<b>VG</b>	<b>Spines: presence</b>		
QL		(c)	absent	Glen Moy	1
G			present	Malling Promise	9
<b>13.</b>	<b>13. (* )</b>	<b>VG</b>	<b><u>Varieties with spines present only:</u> Spines: density</b>		
QN		(c)	sparse	Malling Orion, Rafzmach, Spica	3
			medium	Multiraspa, Zefa 2	5
			dense	Autumn Bliss, Malling Exploit	7
<b>14.</b>	<b>14.</b>	<b>VG</b>	<b><u>Varieties with spines present only:</u> Spines: size of base</b>		
QN		(c)	very small	Reveille	1
			small	Pujallup, Resa	3
			medium	Gevalo, Malling Exploit	5
			large	Autumn Bliss, Köstliche Selita	7
			very large	Malling Landmark, Matterhorn	9
<b>15.</b>	<b>15.</b>	<b>VG/MS</b>	<b><u>Varieties with spines present only:</u> Spines: length</b>		
QN		(c)	short	Gigant, Malling Delight, Vetten	3
			medium	Malling Leo	5
			long	Malling Exploit, Meeker	7

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
<b>16.</b>	<b>16.</b>	<b>VG</b>	<b><u>Varieties with spines present only:</u></b> <b>Spines: colour</b>		
<b>PQ</b>		<b>(c)</b>	green	Golden Bliss, Malling Delight	1
			brownish green	Malling Landmark	2
			greenish brown	Rode Radboud, Watson	3
			brown	Malling Orion, Spica	4
			purplish brown	Malling Leo, Pujallup	5
			brownish purple	Resa, Tulameen	6
			purple	Sirius, Veten, Zefa 3	7
<b>17.</b>	<b>17. (*)</b>	<b>VG</b>	<b>Leaf: green colour of upper side</b>		
<b>QN</b>		<b>(d)</b>	light	Watson, Skeena	3
			medium	Malling Orion	5
			dark	Malling Landmark, Resa, Rubaca	7
<b>18.</b>	<b>18. (*)</b>	<b>VG</b>	<b>Leaf: predominant number of leaflets</b>		
<b>PQ</b>		<b>(d)</b>	three	Veten, Zefa 3	1
			equally three and five	Malling Exploit, Multiraspa, Sirius	2
			five	Ontario, Pujallup, Rusilva	3
<b>19.</b>	<b>19.</b>	<b>VG</b>	<b>Leaf: profile of leaflets in cross section</b>		
<b>QN</b>		<b>(d)</b>	concave	Glen Clova, Glen Moy	1
			straight	Gevalo	2
			convex	Gigant	3
<b>20.</b>	<b>20. (*)</b>	<b>VG</b>	<b>Leaf: rugosity</b>		
<b>QN</b>		<b>(d)</b>	very weak	Heritage, Watson	1
			weak	Rusilva	3
			medium	Caliber, Malling Landmark, Pujallup	5
			strong	Malling Exploit, Spica	7
			very strong	Korbfüller	9

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
21. (+) QN	21.	VG (d)	<b>Leaf: relative position of lateral leaflets</b>		
			free	Willamette	1
			touching	Malling Orion	2
			overlapping	Gigant, Resa, Rumiloba	3
22. QN	22.	VG/MS (d)	<b>Terminal leaflet: length</b>		
			short	Royalty	3
			medium	Norfolk Giant, Wilkran	5
			long	Malling Joy	7
23. QN	23.	VG/MS (d)	<b>Terminal leaflet: width</b>		
			narrow	Rusilva	3
			medium	Zefa 2	5
			broad	Glen Ample	7
24. QN	24.	VG	<b>Pedicle: number of spines</b>		
			absent or very few	Glen Ample	1
			few	Multiraspa, Pechts Gigant	3
			medium	Glen Clova, Malling Leo	5
			many	Malling Joy, Orange Marie	7
			very many	Ariadne, Golden Bliss	9
25. QL	25. (*)	VG	<b>Peduncle: presence of anthocyanin coloration</b>		
			absent	Gelbe Antwerpener, Golden Bliss	1
			present	Willamette	9
26. QN	26. (*)	VG	<b>Peduncle: intensity of anthocyanin coloration</b>		
			very weak	Julia, Rumilo	1
			weak	Joan Squire, Malling Delight	3
			medium	Gevalo, Pujallup	5
			strong	Loganlike, Willamette	7
			very strong	Rafzmach	9

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
27. QN	27.	VG/MS (f)	<b>Flower: size</b>		
			small	Ontario	3
			medium	Rucami, Spica	5
			large	Gevalo, Isabel	7
28. QN	28.	VG (f)	<b><u>Varieties which fruit on previous year's cane in summer: Fruiting lateral: attitude</u></b>		
			erect	Malling Landmark, Ontario	1
			semi-erect	Schönemann	2
			horizontal to drooping	Rucami	3
29. QN	29. (*)	VG/MS (f)	<b><u>Varieties which fruit on previous year's cane in summer: Fruiting lateral: length</u></b>		
			very short	Galante, Glen Moy	1
			short	Multiraspa, Rafzmach	3
			medium	Gradina, Tulameen	5
			long	Meeker	7
			very long	Malling Joy, Malling Leo	9
30. QN	30. (*)	VG/MS (e) (f)	<b>Fruit: length</b>		
			short	Malling Promise, Ontario	3
			medium	Rafzmach	5
			long	Malling Delight	7
31. QN	31. (*)	VG/MS (e) (f)	<b>Fruit: width</b>		
			narrow	Haida	3
			medium	Meeker, Schönemann	5
			broad	Glen Ample	7
32. QN	32. (*)	VG/MS (e) (f)	<b>Fruit: ratio length/width</b>		
			small	Caliber, Zefa 2	3
			medium	Glen Clova, Rafzeter	5
			large	Malling Delight, Tulameen	7

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
<b>33.</b>	<b>33.</b> <b>(*)</b>	<b>VG</b>	<b>Fruit: general shape in lateral view</b>		
<b>(+)</b>		<b>(e)</b>	circular	Malling Landmark, Ontario	1
<b>PQ</b>		<b>(f)</b>	broad conical	Malling Orion, Meeker	2
			conical	Annamaria, Rafzmach	3
			trapezoidal	Gradina	4
<b>34.</b>	<b>34.</b>	<b>VG</b>	<b>Fruit: size of single drupe</b>		
<b>QN</b>		<b>(e)</b>	small	Malling Admiral, Polana	3
		<b>(f)</b>	medium	Autumn Bliss, Malling Orion	5
			large	Dinkum, Festival, Rafzeter	7
<b>35.</b>	<b>35.</b> <b>(*)</b>	<b>VG</b>	<b>Fruit: colour</b>		
<b>PQ</b>		<b>(e)</b>	yellow	Gelbe Antwerpener, Golden Bliss	1
		<b>(f)</b>	orange	Orange Marie	2
			light red	Malling Delight	3
			medium red	Glen Clova, Malling Orion	4
			dark red	Gigant, Schönemann, Zefa 2	5
			purple	Royalty	6
<b>G</b>			dark purple	Deep Purple	7
<b>36.</b>	<b>36.</b>	<b>VG</b>	<b>Fruit: glossiness</b>		
<b>QN</b>		<b>(e)</b>	weak	Gigant, Rumilo	3
		<b>(f)</b>	medium	Comox	5
			strong	Rafzmach, Tulameen	7
			very strong	Resa	9

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
<b>37.</b>	<b>37. (*)</b>	<b>VG</b>	<b>Fruit: firmness</b>		
<b>QN</b>		<b>(e)</b>	very soft	Caliber, Malling Delight	1
		<b>(f)</b>	soft	Gigant, Malling Landmark	3
			medium	Glen Clova, Malling Promise	5
			firm	Tulameen	7
			very firm	Glen Prosen	9
<b>38.</b>	<b>38.</b>	<b>VG</b>	<b>Fruit: adherence to plug</b>		
<b>QN</b>		<b>(e)</b>	very weak	Nootka	1
		<b>(f)</b>	weak	Rumilo, Zefa 2	3
			medium	Glen Clova, Meeker	5
			strong	Malling Delight	7
			very strong	Malling Landmark	9
<b>39.</b>	<b>39. (*)</b>	<b>VG</b>	<b>Fruit: main bearing type</b>		
<b>PQ</b>		<b>(e)</b>	only on previous year's cane in summer	Malling Promise	1
		<b>(f)</b>	both on previous year's cane in summer and on current year's cane in autumn	Isabel	2
<b>G</b>			only on current year's cane in autumn	Autumn Bliss	3
<b>40.</b>	<b>40. (*)</b>	<b>MG</b>	<b><u>Varieties which fruit on previous year's cane in summer:</u> Plant: time of vegetative bud burst</b>		
<b>(+)</b>			early	Glen Moy, Malling Promise	3
<b>QN</b>			medium	Delmes, Glen Clova	5
			late	Malling Orion, Multiraspa	7
			very late	Malling Joy	9
<b>41.</b>	<b>41. (*)</b>	<b>MG</b>	<b><u>Varieties which fruit on current year's cane in autumn:</u> Time of cane emergence</b>		
<b>(+)</b>			early	Polana	3
<b>QN</b>			medium	Autumn Bliss	5
			late	Watson	7



CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
<b>42.</b>	<b>42. (*)</b>	<b>MG</b>	<b><u>Varieties which fruit on previous year's cane in summer: Time of beginning of flowering on previous year's cane</u></b>		
<b>(+)</b>		<b>(f)</b>	very early	Glen Moy, Rafzmach	1
<b>QN</b>			early	Gevalo, Willamette	3
			medium	Rumiloba, Skeena	5
			late	Glen Prosen	7
			very late	Malling Joy, Malling Leo	9
<b>43.</b>	<b>43. (*)</b>	<b>MG</b>	<b><u>Varieties which fruit on current year's cane in autumn: Time of beginning of flowering on current season's cane</u></b>		
<b>(+)</b>		<b>(f)</b>	very early	Ariadne	1
<b>QN</b>			early	Autumn Bliss	3
			medium	Orange Marie	5
			late	Watson	7
			very late	September	9
<b>44.</b>	<b>44. (*)</b>	<b>MG</b>	<b><u>Varieties which fruit on previous year's cane in summer: Time of beginning of fruit ripening on previous year's cane</u></b>		
<b>(+)</b>		<b>(f)</b>	very early	Vene	1
<b>QN</b>			early	Glen Clova, Glen Moy, Rafzmach	3
			medium	Rusilva, Willamette	5
			late	Malling Landmark, Schönemann	7
<b>G</b>			very late	Malling Leo	9
<b>45.</b>	<b>45. (*)</b>	<b>MG</b>	<b><u>Varieties which fruit on current year's cane in autumn: Time of beginning of fruit ripening on current year's cane</u></b>		
<b>(+)</b>		<b>(f)</b>	very early	Ariadne	1
<b>QN</b>			early	Polana	3
			medium	Orange Marie, Watson	5
			late	Korbfüller	7
<b>G</b>			very late	Baronne de Wavre	9

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
46.	46.	MG	<b><u>Varieties which fruit on previous year's cane in summer:</u> Length of fruiting period on previous year's cane</b>		
(+)		(f)	short	Glen Moy	3
QN			medium	Glen Clova	5
			long	Schönemann	7
47.	47.	MG	<b><u>Varieties which fruit on current year's cane in autumn:</u> Length of fruiting period on current year's cane</b>		
(+)		(f)	short	Boheme	3
QN			medium	Autumn Bliss, Heritage	5
			long	Polana	7

## 8. EXPLANATIONS ON THE TABLE OF CHARACTERISTICS

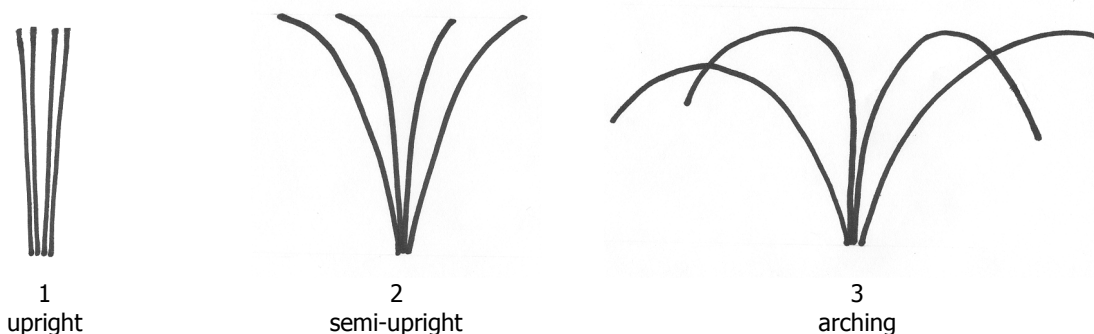
### 8.1 Explanations covering several characteristics

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

- a) Very young shoot: Observations on the very young shoot should be made when the shoots are about 15 cm long.
- b) Current season's cane: Observations on the current season's cane should be made when the cane is about 1 m to 1.50 m long. For summer bearing varieties, these observations should be made just after harvest, for autumn bearing ones just before or at harvest. The bloom of the current season's cane should only be observed when fully grown.
- c) Spines: Observations on spines should be made in the middle third of the current season's cane, when the cane is about 1 m to 1.50 m long.
- d) Leaf: Observations on the leaf should be made on fully developed leaves from the middle third of the cane.
- e) Fruit: Observations on the fruit should be made on fruit picked during the second and third harvest.
- f) Flower/fruit/length of the fruiting period: Observations on the flower and the fruit, as well as the length of the fruiting period, should be recorded from the summer harvest at the fruiting laterals only, except for varieties whose main fruiting is on the current year's cane in autumn. For these varieties, observations should be made during the autumn fruiting period.

### 8.2 Explanations for individual characteristics

#### Ad. 1: Plant: habit

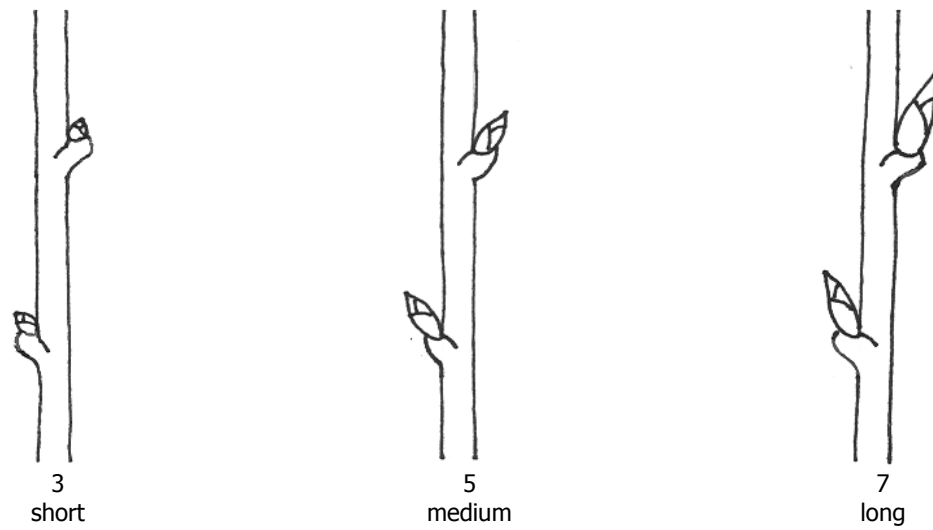


#### Ad. 2: Plant: number of current season's canes

The number of current season's canes should be considered as the number per meter length of the row before thinning for the first time, observed in the beginning of the second year.

Ad. 8: Current season's cane: length of vegetative bud

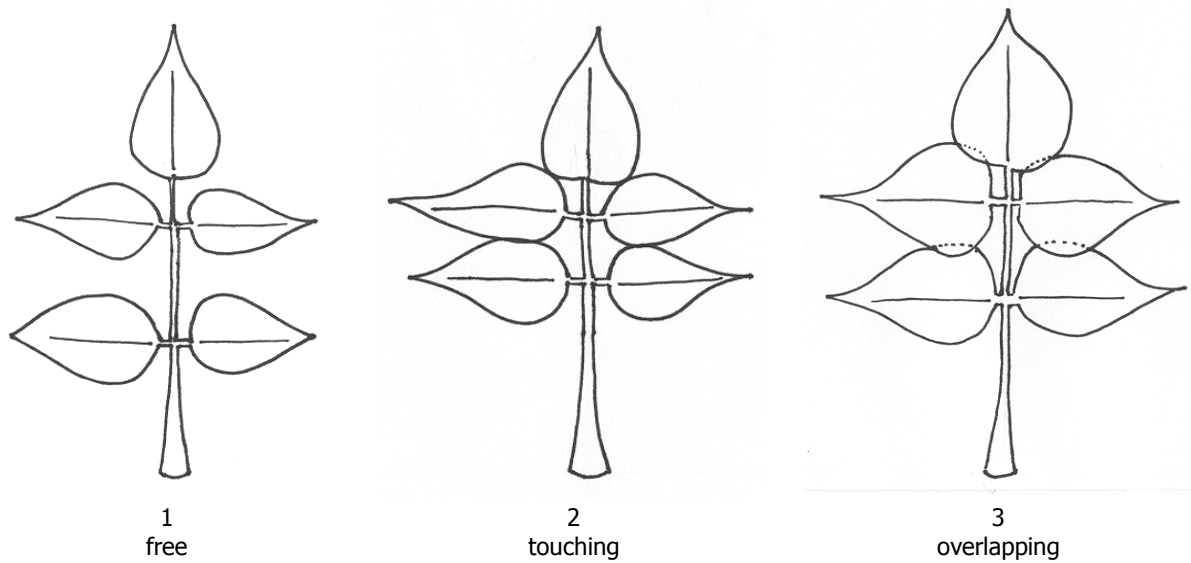
Observations on the vegetative bud should be made in the middle third of the cane.



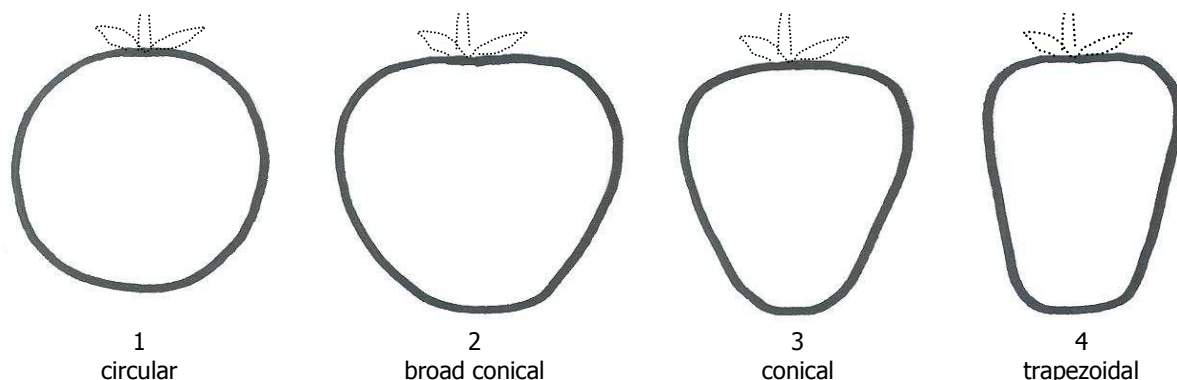
Ad. 11: Varieties which fruit on previous season's cane in summer: Dormant cane: colour

If the canes peel, the dominant colour should be the colour of the bark in an unpeeled area.

Ad. 21: Leaf: relative position of lateral leaflets



Ad. 33: Fruit: general shape in lateral view



Ad. 40, 42, 44, 46: Varieties which fruit on previous year's cane in summer:

Plant: time of vegetative bud burst (40)

Time of beginning of flowering on previous year's cane (42)

Time of beginning of fruit ripening on previous year's cane (44)

Length of fruiting period on previous year's cane (46)

These characteristics apply to all varieties which either fruit on previous year's cane in summer only, or which fruit both on previous year's cane in summer and on current year's cane in autumn.

Ad. 41, 43, 45, 47: Varieties which fruit on current year's cane in autumn:

Time of cane emergence (41)

Time of beginning of flowering on current season's cane (43)

Time of beginning of fruit ripening on current year's cane (45)

Length of fruiting period on current year's cane (47)

These characteristics apply to all varieties which either fruit both on previous year's cane in summer and on current year's cane in autumn or which fruit on current year's cane in autumn only.

Ad. 42 and 43: Time of beginning of flowering

The time of beginning of flowering should be considered as the time when 10% of the flowers have opened.

Ad. 44 and 45: Time of beginning of fruit ripening

The time of beginning of fruit ripening is when the fruit is most easily removed from the plug.

## 9. LITERATURE

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## **10. TECHNICAL QUESTIONNAIRE**

The Technical Questionnaire is available on the CPVO website under the following reference: CPVO-TQ/043/2