CPVO · OCVV
Community Plant Variety Office
Office Communautaire des Variétés Végétales

PROTOCOL FOR TESTS ON DISTINCTNESS, UNIFORMITY AND STABILITY

Prunus persica (L.) Batsch.

PEACH / NECTARINE

UPOV Code: PRUNU_PER

Adopted on 11/03/2015

Entry into force on 01/01/2015

TABLE OF CONTENTS

CPVO-TP/053/2 Rev.

1. SUBJECT OF THE PROTOCOL AND REPORTING

1.1 Scope of the technical protocol

This Technical Protocol applies to all varieties of ***Prunus persica*** **(L.) Batsch**.

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/export/sites/upov/resource/en/tg_1_3.pdf), its associated TGP documents (http://www.upov.int/tgp/en/) and the relevant UPOV Test Guideline TG/53/7 Rev. dated 24/03/2010 and 09/04/2014 (http://www.upov.int/edocs/tgdocs/en/tg053.pdf) for the conduct of tests for Distinctness, Uniformity and Stability.

1.2 Entry into Force

The present protocol enters into force on **01.01.2015**. 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://cpvo.europa.eu/applications-and-examinations/technical-examinations/submission-of-plant-material-s2-publication 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/edocs/tgpdocs/en/tgp_9.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 3 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 EO unless special cooperation exists between EOs and the CPVO. The descriptive and pictorial information produced by the EO shall be held and maintained in a form of a database.

3.6.2 Living Plant Material

The EO 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 EO.

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 EO 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/edocs/tgpdocs/en/tgp_9.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 3 plants or parts taken from each of 3 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 at least 5.

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/edocs/tgpdocs/en/tgp_10.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, a population standard of 1% and an acceptance probability of at least 95 % should be applied. In the case of a sample size of 3 plants, no off-types are 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/edocs/tgpdocs/en/tgp_11.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 seed or 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) Tree size (characteristic 1)

b) Flower: type (characteristic 9)

c) Leaf blade: red mid-vein on the lower side (characteristic 28)

d) Petiole: nectaries (characteristic 30)

e) Petiole: shape of nectaries (characteristic 31)

f) Fruit: shape (in ventral view) (characteristic 33)

g) Fruit: pubescence of skin (characteristic 44)

h) Fruit: carotenoid coloration of flesh (characteristic 51)

i) Fruit: acidity (characteristic 60) with the following groups:

- low
- medium
- high

j) Fruit: flesh type (TQ characteristic) with the following groups:

- melting
- non-melting
- stony hard

k) Time of beginning of flowering (characteristic 69)

l) Time of maturity (characteristic 70)

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 EO 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)-(g)	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
1.	**1. (*)**	**VG**	**Tree: size**		
QN		**(a)**	very small	Bonanza, Bonfire, Pix Zee, Zaino	1
			small	Richaven	3
			medium	Robin	5
			large	Redhaven	7
G			very large	Champion	9
2.	**2.**	**VG**	**Tree: vigour**		
(+)		**(b)**	weak	J. H. Hale	3
QN			medium	Robin	5
			strong	Springtime	7
3.	**3. (*)**	**VG**	**Tree: habit**		
(+)		**(a)**	fastigiate	Nectarose, Pillar	1
QN			upright	Fairhaven, Redwing	2
			upright to spreading	Albertina, Elegant Lady, Mercil	3
			spreading	Charles Roux	4
			drooping	Biancopendulo	5
4.	**4.**	**VG**	**Flowering shoot: thickness**		
QN		**(a)**	thin	Mayred	3
			medium	Redhaven	5
			thick	Flavorcrest, Lizzie	7
5.	**5.**	**VG**	**Flowering shoot: length of internodes**		
QN		**(a)**	very short	Bonanza, Bonfire, Pix Zee, Zaino	1
		(d)	short	June Gold, Merrill Sundance	3
			medium	Redhaven	5
			long	Fairhaven	7
			very long	Flacara	9

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
6.	**6. (*)**	**VG**	**Flowering shoot: presence of anthocyanin coloration**		
QL		**(d)**	absent	De flor doble blanca	1
			present	Robin	9
7.	**7.**	**VG**	**Flowering shoot: intensity of anthocyanin coloration**		
(+)		**(d)**	very weak	Biancopendulo, De flor doble blanca	1
QN			weak	Springtime	3
			medium	Fuzalode	5
			strong	Robin, Sanguine Chanas	7
8.	**8.**	**VG**	**Flowering shoot: density of flower buds**		
(+)		**(a)**	very sparse	Monline	1
QN		**(d)**	sparse	Mercil, Zaitabo	3
			medium	Craucail, Flacara, Michelini, Rich Lady	5
			dense	Momée	7
			very dense	Armking, Harco	9
9.	**9. (*)**	**VG**	**Flower: type**		
(+)		**(d)**	campanulate	Dida, Springtime	1
QL G		**(e)**	rosette	Robin, Vesuvio	2
10.	**10. (*)**	**VG**	**Corolla: main colour (inner side)**		
(+)		**(d)**	white	Baincopendulo, De flor doble blanca	1
PQ		**(e)**	very light pink	Cardinal	2
			light pink	Michelini	3
			medium pink	Alexia, Fuzalode	4
			dark pink	Flacara, Vivian	5
			violet pink	Candor	6
			red	Red Flower Peach	7

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
11.	**11. (*)**	**VG**	**Petal: shape**		
(+)		**(d)**	narrow ovate		1
PQ		**(e)**	medium ovate		2
			narrow elliptic		3
			medium elliptic		4
			circular		5
12.	**12.**	**VG/MS**	**Only variety with flower type campanulate: Petal: width**		
(+)		**(d)**	very narrow		1
		(e)	narrow	Meydicte	2
			medium	Bradgust	3
			broad	Monnail	4
			very broad		5
13.	**13. (*)**	**VG/MS**	**Only varieties with flower type: rosette: Petal: width**		
(+)		**(d)**	very narrow	Triumph	1
QN		**(e)**	narrow	Shasta	2
			medium	Robin	3
			broad	Michelini	4
			very broad	Veteran	5
14.	**14. (*)**	**VG**	**Flower: number of petals**		
QL		**(d)**	five	Redhaven	1
		(e)	more than five	Red Flower Peach, Royal Glo	2
15.	**15.**	**VG**	**Stamen: position compared to petals**		
(+)		**(d)**	below	Loring	1
QN		**(e)**	same level	Robin, Springtime	2
			above	Redhaven	3

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
16.	**16. (*)**	**VG**	**Stigma: position compared to anthers**		
(+)		**(d)**	below	Vivian	1
QN		**(e)**	same level	Crimson Gold	2
			above	Fuzalode	3
17.	**17. (*)**	**VG**	**Anthers: pollen**		
QL		**(d)**	absent	J. H. Hale	1
		(e)	present	Redhaven	9
18.	**18. (*)**	**VG**	**Ovary: pubescence**		
QL		**(d)**	absent	Fuzalode	1
		(e)	present	Redhaven	9
19.	**19.**	**VG/MS**	**Stipule: length**		
(+)		**(d)**	short	Redhaven	3
QN		**(e)**	medium	Robin	5
			long	Dixired	7
20.	**20. (*)**	**VG/MS**	**Leaf blade: length**		
(+)		**(b)**	short	Jeronimo	3
QN			medium	Fairhaven	5
			long	Southland	7
21.	**21. (*)**	**VG/MS**	**Leaf blade: width**		
(+)		**(b)**	narrow	Redhaven	3
QN			medium	Robin	5
			broad	Dixired	7
22.	**22. (*)**	**VG/MS**	**Leaf blade: ratio length/width**		
(+)		**(b)**	low	Mountaingold	3
QN			medium	Early Sungrand	5
			high	Springtime, Vivian	7

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
23.	**23.**	**VG**	**Leaf blade: shape in cross section**		
(+)		**(b)**	concave	Merrill Gemfree	1
QL			flat	Mayred	2
24.	**24.**	**VG**	**Leaf blade: margin**		
(+)		**(b)**	crenate	Crimson Glo	1
PQ			shallow serrate	Fiesta Red	2
			deep serrate	Bailey	3
25.	**25.**	**VG**	**Leaf blade: angle at base**		
(+)		**(b)**	acute	Springtime	1
QN			right angle	Redhaven	2
			obtuse	Merrill Franciscan	3
26.	**26.**	**VG**	**Leaf blade: angle at apex**		
(+)		**(b)**	small	Red June	3
QN			medium	Earlired	5
			large	Merrill Franciscan	7
27.	**27.**	**VG**	**Leaf blade: colour**		
PQ		**(b)**	greenish yellow	Redhaven	1
			light green	Silver Fire	2
			medium green	Robin	3
			dark green	Fiesta Red	4
			purplish red	Garnem, Goldcrest, Rubira	5
28. (+)	**28. (*)**	**VG**	**Leaf blade: red mid-vein on the lower side**		
QL		**(b)**	absent	Redhaven	1
G			present	Sanguine Chanas	9
29.	**29.**	**VG/MS**	**Petiole: length**		
(+)			short	Redhaven	3
QN			medium	Grenadix 7	5
			long	Andross	7

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
30.	**30. (*)**	**VG**	**Petiole: nectaries**		
(+)		**(c)**	absent	Crimson Glo, Tejon	1
QL G			present	Redhaven	9
31.	**31. (*)**	**VG**	**Petiole: shape of nectaries**		
(+)		**(c)**	round	Springtime	1
QL G			reniform	Redhaven	2
32.	**32. (*)**	**VG/MS**	**Fruit: size**		
QN		**(f)**	very small	Nectarine-Cerise	1
			small	Minastar, Springtime	3
			medium	Momée, Springlady, Sunhaven	5
			large	Loring, , Zaifer, Zaitabo	7
			very large	Comanche, Maillarbig	9
33.	**33. (*)**	**VG**	**Fruit: shape (in ventral view)**		
(+)		**(f)**	broad oblate	Alex, Bailou, UFO3	1
PQ			medium oblate	Herastrau, Robin	2
			circular	Redwing	3
			broad elliptic	Cavalier	4
G			medium elliptic	Elberta	5
34.	**34.**	**VG**	**Fruit: mucron tip at pistil end**		
(+)		**(f)**	absent	Robin	1
QL			present	Jerseyland, Springtime	9

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
35.	**35.**	**VG**	**Fruit: shape of pistil end (without mucron tip)**		
(+)			prominently pointed	Jerseyland	1
QN			weakly pointed	Springtime	2
			flat	Redhaven	3
			weakly depressed	Robin	4
			strongly depressed	Bailou, UFO3	5
36.	**36.**	**VG**	**Fruit: symmetry (viewed from pistil end)**		
(+)		**(f)**	symmetric	Redhaven	1
QN			moderately asymmetric	Brittney Lane, Jim Dandy	2
			strongly asymmetric	Precocissima Morettini	3
37.	**37.**	**VG**	**Fruit: prominence of suture**		
QN		**(f)**	weak	Redhaven	3
			medium	Précoce de Hale, Amsden, May Flower	5
			strong	Precicissima Morettini	7
38.	**38.**	**MS/VG**	**Fruit: depth of stalk cavity**		
QN		**(f)**	shallow	Robin	3
			medium	Triumph	5
			deep	Southland	7
39.	**39.**	**MS/VG**	**Fruit: width of stalk cavity**		
QN		**(f)**	narrow	Redhaven	3
			medium	Maygrand	5
			broad	Robin	7

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
40.	**40. (*)**	**VG**	**Fruit: ground colour of skin**		
(+)		**(f)**	not visible	Fiesta Red	1
PQ			green	Ruberrina	2
			cream green	Carman	3
			greenish white	Morton	4
			cream white	Antonia, Michelini	5
			cream	Amsden	6
			pink white	Précoce de Hale	7
			greenish yellow	Veteran	8
			cream yellow	Fuzalode	9
			yellow	Sudanell	10
			orange yellow	Redtop, Victoria	11
41.	**41. (*)**	**VG**	**Fruit: relative area of over colour of skin**		
(+)		**(f)**	absent or very small	Ghiaccio 1, Veteran, Zholty	1
QN			small	Amsden	3
			medium	Redhaven	5
			large	Redtop	7
			very large	Rich Lady, Zaitabo	9
42.	**42.**	**VG**	**Fruit: hue of over colour of skin**		
PQ		**(f)**	orange red	Velvet	1
			pink	Genard	2
			pink red	Fuzalode	3
			light red	Redtop	4
			medium red	Red Diamond	5
			dark red	Redwing	6
			blackish red	Monec, Monid	7

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
43.	**43.**	**VG**	**Fruit: pattern of over colour of skin**		
(+)		**(f)**	solid flush	Zaitabo	1
PQ			mottled	Merrill Sundance	2
			striped	Velvet	3
			marbled	Grenadix 7	4
44.	**44. (*)**	**VG**	**Fruit: pubescence of skin**		
QL		**(f)**	absent	Daisy, Fantasia, Monco, Zaitabo	1
G			present	Merspri, Moncav, Rich May	9
45.	**45. (*)**	**VG**	**Fruit: density of pubescence**		
QN		**(f)**	very sparse	Merrill Gemfree	1
			sparse	Suncrest	3
			medium	Dixired	5
			dense	Erlyvee, Veteran	7
			very dense	Arp Beauty, Triumph	9
46.	**46.**	**VG**	**Only varieties with fruit pubescence: absent: Fruit: glossiness**		
QN		**(f)**	absent or weak		1
			medium		2
			strong		3
47.	**47.**	**VG**	**Only varieties with fruit pubescence: absent: Fruit: conspicuousness of lenticels**		
(+)		**(f)**	weak	Flavortop	1
QN			medium	Ruby Diamond	2
			strong	Zairegem	3
48.	**48.**	**VG**	**Fruit: thickness of skin**		
QN		**(f)**	thin	Fuzalode	1
			medium	Mme Girerd	2
			thick	Carman	3

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
49.	**49.**	**VG**	**Fruit: adherence of skin to flesh**		
QN		**(f)**	very weak	Mme Girerd	1
			weak	Redhaven	3
			medium	Early Sungrand	5
			strong	Babygold 5	7
			very strong	Vivian	9
50.	**50.**	**MS**	**Fruit: firmness of flesh**		
QN		**(f)**	very soft	Amsden, Morettini n°1, Springtime	1
			soft	Fairhaven	3
			medium	Flavorcrest, Redtop	5
			firm	Honey Blaze, Zaitabo	7
			very firm	Babygold 6, Ghiaccio 2	9
51.	**51. (*)**	**VG**	**Fruit: carotenoid coloration of flesh**		
PQ		**(f)**	greenish white	Charles Roux	1
			white	Caldesi 2000, Springtime	2
			cream white	Michelini	3
			light yellow	Armking, Spring Gold	4
			yellow	Early Sungrand	5
			orange yellow	Lovell, Merrill Franciscan	6
G			orange	Sungold	7
52.	**52. (*)**	**VG**	**Fruit: anthocyanin coloration of flesh next to skin**		
QL		**(f)**	absent	Springfire	1
			present	Sanguine Vineuse	9

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
53.	**53. (*)**	**VG**	**Fruit: intensity of anthocyanin coloration of flesh next to skin**		
(+)		**(f)**	weak	Daisy, Dolores, Monco	1
QN			medium	Rich May, Zairegem, Merril Franciscan	2
			strong	Monalu, Monof, Sanguine Chanas, Sanguine Vineuse	3
54.	**54. (*)**	**VG**	**Fruit: anthocyanin coloration of flesh in central part of flesh**		
QL		**(f)**	absent	Springfire	1
			present	Monof	9
55.	**55. (*)**	**VG**	**Fruit: intensity of anthocyanin coloration of flesh in central part of flesh**		
(+)		**(f)**	weak	Robin	1
QN			medium	Dolores, Monco, Suncrest	2
			strong	Monof, Zairegem	3
56.	**56. (*)**	**VG**	**Fruit: anthocyanin coloration of flesh around stone**		
QL		**(f)**	absent	Springfire	1
			present	Summer Lady	9
57.	**57. (*)**	**VG**	**Fruit: intensity of anthocyanin coloration of flesh around stone**		
(+)		**(f)**	weak	Andross, Ghiaccio 1	1
QN			medium	Ryans Sun	2
			strong	Summer Lady, Zaipeo	3
58.	**58.**	**VG**	**Fruit: flesh fibre**		
QN		**(f)**	absent or weak	Redhaven	1
(+)			moderate		2
			strong	Sunhigh	3

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
59.	**59.**	**MG**	**Fruit: sweetness**		
(+)		**(f)**	low	Alexandra, Armking, Merrill Gemfree	1
QN			medium	Dixired, Redhaven	2
			high	Maillardoux	3
60.	**60. (*)**	**MG**	**Fruit: acidity**		
(+)		**(f)**	very low	Monnam, Moncav, Monna Redwing, Zaibomi, Zaidaso	1
QN			low	Maillarboom, Monnude, Zaifave, Zaifuro, Zairesu, Zaitabo	2
			medium	Mercil, Monprime, Ryans Sun	3
			high	Craucail, Kraprim, Nectaross, Orion, Rich May, Zailice, Zainara	4
G			vey high	Armking, Bracid, Maycrest, Red Robin, Savana Red, Star Bright, Zaibri, Zaitop	5
61.	**61. (*)**	**VG**	**Stone: size in relation to fruit**		
(+)		**(g)**	small	Alex, Robin	3
QN			medium	Redhaven	5
			large	Somervee	7
62.	**62. (*)**	**VG**	**Stone: shape (in lateral view)**		
(+)		**(g)**	oblate	Alex, Bailou, UFO3	1
PQ			circular	Robin	2
			elliptic	Loring	3
			obovate	Rubidoux	4

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
63.	**63.**	**VG**	**Stone: anthocyanin coloration**		
QN		**(g)**	absent of very weak	Oom Sarel	1
			weak	Alpine	3
			medium	Jim Dandy	5
			strong	Margaret's Pride	7
			very strong	Arctic Red	9
64.	**64.**	**VG**	**Stone: intensity of brown colour**		
(+)		**(g)**	light	Robin	3
QN			medium	Alexia, Amalia, Victoria	5
			dark	Vivian	7
65.	**65.**	**VG**	**Stone: relief of surface**		
(+)		**(g)**	only pits		1
PQ			predominantly pits		2
			equally pits and grooves		3
			predominantly grooves		4
			only grooves		5
66.	**66. (*)**	**VG**	**Stone: adherence to flesh**		
QL		**(g)**	absent	Fairhaven, Fuzalode	1
			present	Sweet Gold, Vivian	9
67.	**67.**	**VG**	**Stone: degree of adherence to flesh**		
QN		**(g)**	weak	Dixired	3
			medium	Springcrest	5
			strong	Vivian	7

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
68.	**68.**	**MG**	**Time of beginning of leaf bud burst**		
(+)			very early	Sunred	1
QN			early	Springtime	3
			medium	Redhaven	5
			late	Genadix 7	7
			very late	Reine des Vergers	9
69.	**69. (*)**	**MG**	**Time of beginning of flowering**		
(+)			very early	Zaibop, Zaitolio	1
QN			early	Rich Lady, Springtime	3
			medium	Monnude, Zaitabo	5
			late	Maillarflat, Maillarlau	7
G			very late	Summerqueen	9
70.	**70. (*)**	**MG**	**Time of maturity**		
(+)			very early	Rich May, Springtime, Zaibaro	1
QN			very early to early	Zainoar, Zaitani	2
			early	Antonia, Redwing, Rich Lady, Robin	3
			early to medium	Craucail, Diamond Princess	4
			medium	Fairhaven, Fantasia, Summer Bright, Zee Lady	5
			medium to late	Maillarbig, Savana Red, Zaimor	6
			late	Fairlane, Flacara, Veteran, Western Red, Zailati, Zairova	7
			late to very late	Andgold, Tardibelle	8
G			very late	Rubidoux	9

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) Observations should be made during winter dormancy.

b) Observations on the leaf should be made on fully developed leaves in the central third of a current season shoot.

c) Observations on the nectaries (glands) should be made on leaves as soon as they are fully developed.

d) Observations on the flowering shoot and the flower should be made in the central third of the shoot.

e) Observations on the flower should be made on fully opened flowers at the beginning of anther dehiscence.

f) Observations on the fruit should be made on fruits mature for consumption (see Ad. 68).

g) Observations on the stone should be made on the dry stone after removal of the flesh.

Explanations for the grouping and TQ characteristic "Fruit: flesh type"

Fruits with melting flesh correspond to fruits used for fresh consumption.
Fruits with non-melting flesh correspond to fruits used for canning. The flesh is harder and elastic (clingstones/pavies).

The table below illustrates the principle in greater detail

Definition

type	activity			explanation
	ethylene	polygalacturonase		
		end-type	exo-type	
melting *(standard peaches)*	exist	exist	exist	Activity both ethylene and polygalacturonase exists in the flesh. Therefore flesh begins melting quickly after harvest.
non-melting *(clingstones/pavies)*	exist	exist	absent	Activity of exo-type polygalacturonase is absent in the flesh. Therefore melting speed of flesh is very slow.
stony hard *(others)*	absent	absent	absent	Activity both ethylene and polygalacturonase are absent in the flesh. Therefore flesh does not begin to melt. Ex. varieties: Odoroki, Yumyeong

8.2 Explanations for individual characteristics

Ad. 2: Tree: vigour

The vigour of the tree should be considered as the overall abundance of vegetative growth, during the growing period.

Ad. 3: Tree habit

To be observed the year before the main pruning.

1
fastigate

2
upright

3
upright to spreading

4
spreading

5
drooping

Ad. 7: Flowering shoot: intensity of anthocyanin coloration

The intensity of anthocyanin coloration should be observed on the shaded sideof the shoot.

Ad. 8: Flowering shoot: density of flower buds

To be observed along the shoot on one metre

3
sparse

7
dense

Ad. 9: Flower: type

'Campanulate' (bell-shaped) is also referred to as 'non showy': these types have small petals and stamens often higher than the petals
'Rosette' (rose-shaped) is also referred to as 'showy': these types have large petals

1
campanulate (non showy)

2
rosette (showy)

Ad. 10: Corolla: main colour (inner side)

The main colour is the colour with the largest area.

Ad. 11: Petal: shape


1
narrow ovate

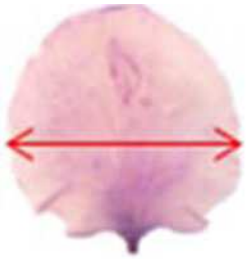

2
medium ovate


3
narrow elliptic


4
medium elliptic


5
circular

Ad. 12: Only varieties with flower type: campanulate: Petal: width
Ad. 13: Only varieties with flower type: rosette: Petal: width



Ad. 14: Flower: number of petals


1
five


2
more than five

Varieties with note 1 may have occasional flowers with more than 5 petals and varieties with note 2 may have occasional flowers with five petals.

Ad. 15: Stamen: position compared to petals


1
below


2
same level


3
above

Ad. 16: Stigma: position compared to anthers

To be observed on 5 flowers per tree

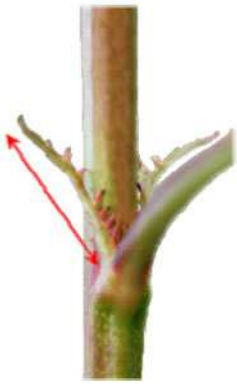
1
below

2
same level

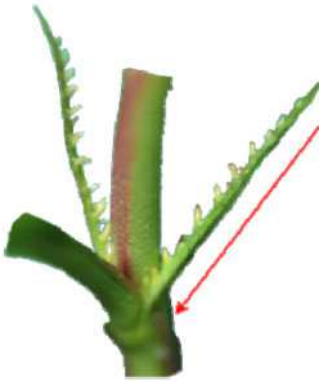
3
above

Ad. 19: Stipule: length (on fully expanded leaf on young shoot)

The length of the stipule should be observed on a fully expanded leaf on a young shoot. The characteristic should be observed on 5 stipules per tree.



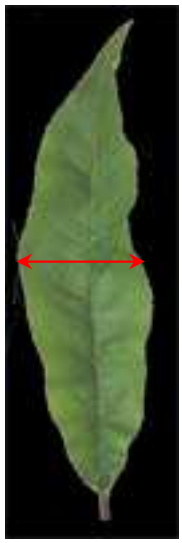
5
medium



7
long

Ad. 20: Leaf blade: length

Ad. 21: Leaf blade: width



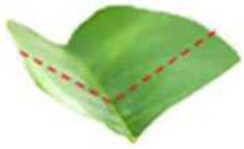
Ad. 22: Leaf blade: ratio length/width

3
low

5
medium

7
high

Ad. 23: Leaf blade: shape in cross section



1
concave

2
flat

Ad. 24: Leaf blade: margin

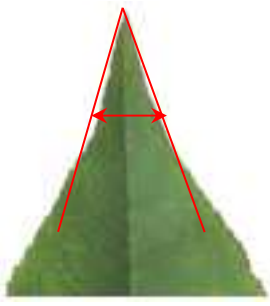
1
crenate

2
shallow serrate

3
deep serrate

Ad. 25: Leaf blade: angle at base

Ad. 26: Leaf blade: angle at apex



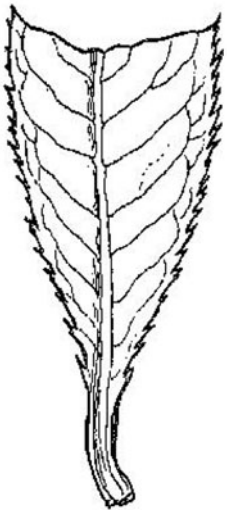
Ad. 28: Leaf blade: red mid-vein on the lower side

To be observed during the period of new leaf growth.

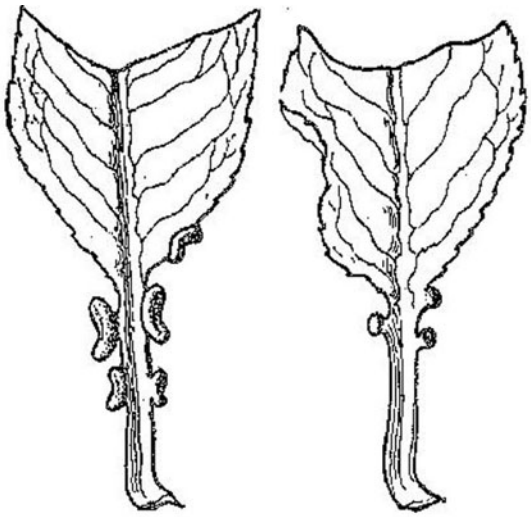
Ad. 29: Petiole: length

To be evaluated on 5 leaves per tree.

Ad. 30: Petiole: nectaries

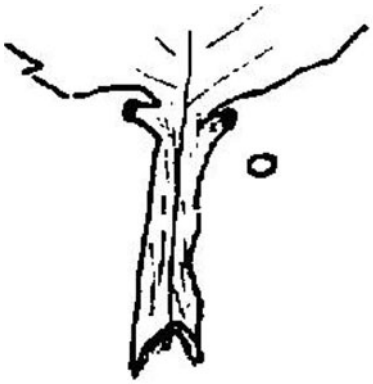


1
absent

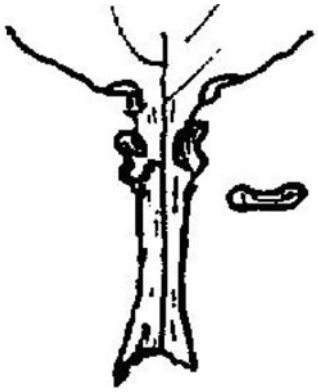


9
present

Ad. 31: Petiole: shape of nectaries



1
round



2
reniform

Ad. 33: Fruit: shape (in ventral view)

1 broad oblate | 2 medium oblate | 3 circular | 4 broad elliptic | 5 medium elliptic

Ad. 34: Fruit: mucron tip at pistil end

1 absent | 9 present

Ad. 35 Fruit: shape of pistil end (without mucron tip)

1 prominently pointed | 2 weakly pointed | 3 flat | 4 weakly depressed | 5 strongly depressed

Ad. 36: Fruit: symmetry (viewed from pistil end)

1 symmetric | 3 strongly asymmetric

Ad. 40: Fruit: ground colour of skin

The ground colour is the first colour to appear chronologically during the development of the skin and upon which the over colour will develop in time. It is not always necessarily the largest area of the skin.

Ad. 41: Fruit: relative area of over colour of skin

3
small

5
medium

7
large

Ad. 43: Fruit: pattern of over colour of skin

1
solid flush

2
mottled

3
striped

4
marbled

Ad. 47: Only varieties with fruit pubescence: absent: Fruit: conspicuousness of lenticels

3
weak

5
medium

7
strong

The conspicuousness of lenticels is determined by the size and the colour contrast.

Ad. 53: Fruit: intensity of anthocyanin coloration of flesh next to skin

1
weak

2
medium

3
strong

Ad. 55: Fruit: intensity of anthocyanin coloration of flesh in central part of flesh

1
weak

2
medium

3
strong

Ad. 57: Fruit: intensity of anthocyanin coloration of flesh around stone

1
absent or very weak

2
medium

3
strong

Ad. 58: Fruit: flesh fibre

The flesh fibre is evaluated by biting inot the flesh to determine the amount of fibre.

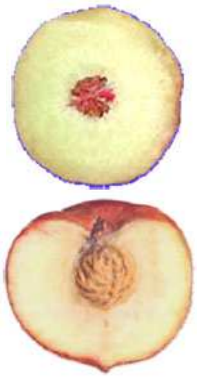
Ad. 59: Fruit: sweetness

The sweetness of the fruit should be observed in degrees Brix.

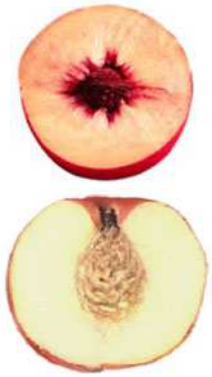
Ad. 60: Fruit: acidity

The acidity of the fruit should be observed as titratable acidity in meq/100ml.

Ad. 61: Stone: size in relation to fruit



3
small



5
medium

7
large

Ad. 62: Stone: shape (in lateral view)

1
oblate

2
circular

3
elliptic

4
obovate

Ad. 64: Stone: intensity of brown colour

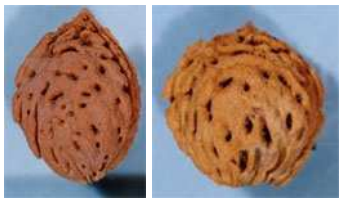
To be observed on fresh stones

3
light

5
medium

7
dark

Ad. 65: Stone: relief of surface



pits

grooves

pits and grooves

Ad. 68: Time of beginning of leaf bud burst

The time of the beginning of leaf bud burst should be observed as the appearance of first leaves on all trees.

Ad. 69: Time of beginning of flowering

The time of beginning of flowering is when all trees have 10% open flowers.

Ad. 70: Time of maturity

The time of maturity for consumption is when the overall appearance, firmness and taste indicate that the fruit is ready for consumption.

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10. TECHNICAL QUESTIONNAIRE

The Technical Questionnaire is available on the CPVO website under the following reference: CPVO-TQ/053/2 Rev