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UPOV

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

DRAFT

KUMQUAT

UPOV Code: FORTU

Fortunella Swingle

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by an expert from Japan

to be considered by the

Technical Working Party for Fruit Crops
at its forty-second session, to be held in Hiroshima, Japan, from November 14 to 18, 2011

Alternative Names:*

Botanical name	*English*	*French*	*German*	*Spanish*
Fortunella Swingle *Citrus japonica* Thunb.	Kumquat	Kumquat	Kumquat	Kumquat

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 edible varieties of *Fortunella* Swingle.

IL: *Fortunella* Swingle should be replaced *Citrus japonica* Thunb. and UPOV code should be also changed according to Botanical name (see annex).

Office of the Union: please refer to GRIN for botanical names. (GRIN clarifies that *Citrus Japonica* Thunb. is a synonym of *Fortunella japonica* (Thunb.) Swingle (see annex))

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 budsticks with sufficient buds to propagate 5 trees (to be sent at budding time), dormant shoots grafted on a rootstock selected by the testing authority or one-year-old trees grafted on a rootstock selected by the testing authority.

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

5 budsticks or
5 dormant shoots or
5 one-year-old trees

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. In particular, it is essential that the trees 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 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

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. Trees should only be pruned in the year of planting to ensure good branch formation.

3.4 Test Design

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

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

3.5 Additional Tests

Additional tests, for examining relevant characteristics, may be established.

4. Assessment of Distinctness, Uniformity and Stability

4.1 Distinctness

4.1.1 General Recommendations

It is of particular importance for users of these Test Guidelines to consult the General Introduction prior to making decisions regarding distinctness. However, the following points are provided for elaboration or emphasis in these Test Guidelines.

4.1.2 Consistent Differences

The differences observed between varieties may be so clear that more than one growing cycle is not necessary. In addition, in some circumstances, the influence of the environment is not such that more than a single growing cycle is required to provide assurance that the differences observed between varieties are sufficiently consistent. One means of ensuring that a difference in a characteristic, observed in a growing trial, is sufficiently consistent is to examine the characteristic in at least two independent growing cycles.

4.1.3 Clear Differences

Determining whether a difference between two varieties is clear depends on many factors, and should consider, in particular, the type of expression of the characteristic being examined, i.e. whether it is expressed in a qualitative, quantitative, or pseudo-qualitative manner. Therefore, it is important that users of these Test Guidelines are familiar with the

recommendations contained in the General Introduction prior to making decisions regarding distinctness.

4.1.4 Number of Plants / Parts of Plants to be Examined

Unless otherwise indicated, for the purposes of distinctness, all observations on single plants should be made on 5 plants or parts taken from each of 5 plants and any other observations made on all plants in the test, disregarding any off-type plants. In the case of observations of parts taken from single plants, the number of parts to be taken from each of the plants should be 2.

4.1.5 Method of Observation

The recommended method of observing the characteristic for the purposes of distinctness is indicated by the following key in the second column of the Table of Characteristics (see document TGP/9 "Examining Distinctness", Section 4 "Observation of characteristics"):

MG: single measurement of a group of plants or parts of plants
MS: measurement of a number of individual plants or parts of plants
VG: visual assessment by a single observation of a group of plants or parts of plants
VS: visual assessment by observation of individual plants or parts of plants

Type of observation: visual (V) or measurement (M)

"Visual" observation (V) is an observation made on the basis of the expert's judgment. For the purposes of this document, "visual" observation refers to the sensory observations of the experts and, therefore, also includes smell, taste and touch. Visual observation includes observations where the expert uses reference points (e.g. diagrams, example varieties, side-by-side comparison) or non-linear charts (e.g. color charts). Measurement (M) is an objective observation against a calibrated, linear scale e.g. using a ruler, weighing scales, colorimeter, dates, counts, etc.

Type of record: for a group of plants (G) or for single, individual plants (S)

For the purposes of distinctness, observations may be recorded as a single record for a group of plants or parts of plants (G), or may be recorded as records for a number of single, individual plants or parts of plants (S). In most cases, "G" provides a single record per variety and it is not possible or necessary to apply statistical methods in a plant-by-plant analysis for the assessment of distinctness."

In cases where more than one method of observing the characteristic is indicated in the Table of Characteristics (e.g. VG/MG), guidance on selecting an appropriate method is provided in document TGP/9, Section 4.2.

4.2 Uniformity

4.2.1 It is of particular importance for users of these Test Guidelines to consult the General Introduction prior to making decisions regarding uniformity. However, the following points are provided for elaboration or emphasis in these Test Guidelines:

4.2.2 For the assessment of uniformity, 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 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) Fruit: weight (characteristic 18)
(b) Fruit: shape (characteristic 21)
(c) Fruit: color of skin (characteristic 22)
(d) Time of beginning of fruit ripening (characteristic 30)

5.4 Guidance for the use of grouping characteristics, in the process of examining distinctness, is provided through the General Introduction and document TGP/9 “Examining Distinctness”.

6. Introduction to the Table of Characteristics

6.1 Categories of Characteristics

6.1.1 Standard Test Guidelines Characteristics

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

6.1.2 Asterisked Characteristics

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

6.2 States of Expression and Corresponding Notes

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

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

State	Note
small	3
medium	5
large	7

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

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

6.2.3 Further explanation of the presentation of states of expression and notes is provided in document TGP/7 “Development of Test Guidelines”.

6.3 Types of Expression

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

6.4 Example Varieties

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

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, MS, VG, VS		– see Chapter 4.1.5

(a)-(e) 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.	**MG**	**Ploidy**					
(+)							
QL	**(a)**	diploid					2
		triploid					3
		tetraploid					4
2.	**VG**	**Plant: growth habit**					
(*)							
(+)							
PQ	**(b)**	upright				Meiwa	1
		semi upright					2
		spread					3
3.	**VG**	**Plant: density of branches**					
(*)							
QN	**(b)**	sparse				Tetraploid-Meiwa	3
		medium					5
		dense				Meiwa	7
4.	**MS/ VG**	**One-year-old shoot: length**					
(*)							
(+)							
QN	**(b)**	short				Nagami	3
		medium				Meiwa	5
		long					7
5.	**MS/ VG**	**One-year-old shoot: thickness**					
(*)							
QN	**(b)**	thin					3
		medium				Nagami	5
		thick				Meiwa	7

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
6. (*)	**MS/ VG**	**One-year-old shoot: length of internode**					
QN	**(b)**	short				Nagami	3
		medium				Meiwa	5
		long					7
7. (*)	**VG**	**One-year-old shoot: number of spines**					
QN	**(b)**	absent or very few				Fukushu, Nagami	1
		few				Marumi	3
		medium				Meiwa	5
		many					7
8. (*) (+)	**MS/ VG**	**Leaf blade: length**					
QN	**(c)**	short				Meiwa	3
		medium					5
		long					7
9. (*) (+)	**MS/ VG**	**Leaf blade: width**					
QN	**(c)**	narrow				Meiwa	1
		medium					3
		broad					5
10. (*) (+)	**MS**	**Leaf blade: ratio length/width**					
QN	**(c)**	small					3
		medium					5
		large					7

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
11. (*) (+)	**VG**	**Leaf blade: shape**					
PQ	**(c)**	lanceolate				Nagami	1
		elliptic				Meiwa	2
12. (*) (+)	**VG**	**Leaf blade: shape of apex**					
PQ	**(c)**	acuminate				Meiwa	1
		acute					2
13. (*) (+)	**VG**	**Leaf blade: shape of base**					
PQ	**(c)**	acute				Nagami	1
		obtuse				Meiwa	2
14. (*) (+)	**VG**	**Leaf blade: undulation of margin**					
QN	**(c)**	weak				Meiwa, Nagami	1
		medium					2
		strong					3
15. (*)	**MS/ VG**	**Leaf: length of petiole**					
QN	**(c)**	short				Meiwa	1
		medium					3
		long					5
16. (*)	**MS/ VG**	**Flower: diameter**					
QN	**(d)**	small				Meiwa	1
		medium					3
		large					5

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
17. (*)	**MS**	**Flower: number of filament**					
QN	**(d)**	few				Nagami	1
		medium		.		Meiwa	3
		many					5
18. (*) (+)	**MG**	**Fruit: weight**					
QN	**(e)**	light				Nagami	3
		medium				Meiwa	5
		heavy					7
19. (*) (+)	**MS/ VG**	**Fruit: length**					
QN	**(e)**	short					1
		medium					3
		long					5
20. (*) (+)	**MS/ VG**	**Fruit: diameter**					
QN	**(e)**	small					1
		medium					3
		large					5
21. (*) (+)	**VG**	**Fruit: shape**					
PQ	**(e)**	oblong					1
G		ellipsoid				Meiwa	2
		globose				Marumi,	3
		obovoid				Fukushu, Nagami	4

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
22. (*)	**VG**	**Fruit: color of skin**					
PQ	**(e)**	yellowish orange				Nagami	1
G		orange				Meiwa	2
		dark orange					3
23 (*) (+)	**MS/ VG**	**Fruit: thickness of skin**					
QN	**(e)**	thin				Fukushu, Marumi	1
		medium				Meiwa	3
		thick					5
24. (*)	**MG**	**Fruit: sweetness of flesh**					
QN	**(e)**	low				Nagami	3
		medium				Meiwa	5
		high					7
25. (*) (+)	**MG**	**Fruit: acidity of flesh**					
QN	**(e)**	low					3
		medium				Meiwa	5
		high				Nagami	7
26. (*) (+)	**MG**	**Fruit: sweetness of skin (flavedo)**					
QN	**(e)**	low					3
		medium				Meiwa	5
		high					7

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
27. (*)	**VG**	**Fruit: juiciness**					
QN	**(e)**	low					3
		medium				Meiwa	5
		high					7
28. (*)	**MS**	**Fruit: number of complete seeds**					
QN	**(e)**	absent or very few					1
		few				Marumi	2
		medium					3
		many					4
29. (*)	**VG**	**Seed: embryony**					
QL	**(e)**	monoembryonic				Meiwa	1
		polyembryonid				Nagami	2
30.	**VG**	**Time of beginning of flowering**					
QN	**(c)**	early					3
		medium					5
		late					7
31. (*) (+).	**VG**	**Time of beginning of fruit ripening**					
QN	**(e)**	early					3
G		medium				Meiwa	5
		late					7

8. Explanations on the Table of Characteristics

8.1 Explanations covering several characteristics

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

(a) Observations should be made at physiological ripeness.
(b) Plant: All observations on the plant should be made in winter season
(c) One-year-old shoot: All observations on the one-year-old shoot should be made on moderate shoots at equatorial part of outer side of plant.
(d) Leaf blade: All observations on the leaf blade should be made on fully developed leaves. Leaves should be taken from the middle third of one-year-old shoot.
(e) Flower: All observations on the flower should be made on first flower.
(f) Fruit: All observations on the fruit should be made on first fruit.

8.2 Explanations for individual characteristics

Ad. 1: Ploidy

Ploidy is determined by counting chromosomes or by flow cytometry.

Ad. 11: Leaf blade: shape

1 lanceolate | 2 elliptic

Ad. 12: Leaf blade: shape of apex

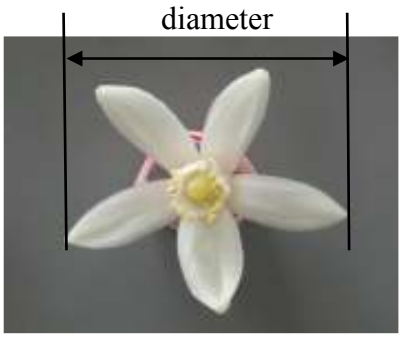
1 acuminate | 2 acute

Ad. 13: Leaf blade: shape of base

1
acute

2
obtuse

Ad. 16: Flower: diameter



Ad. 21: Fruit: shape

to be provided

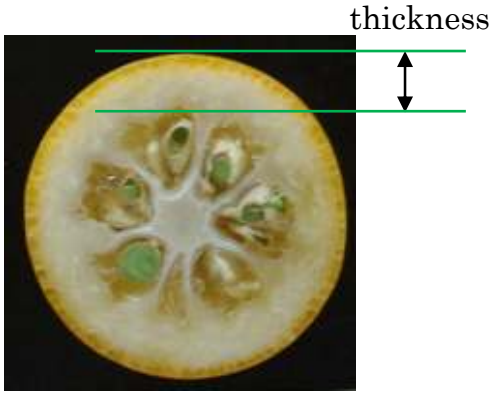
1
oblong

2
ellipsoid

3
globose

4
obovoid

Ad. 23: Fruit: thickness of skin



Ad. 24: Fruit: sweetness of flesh

The sweetness should be determined by brix.

Ad. 25: Fruit: acidity of flesh

The acidity should be determined by titratable acidity.

Ad. 26: Fruit: sweetness of skin (flavedo)

The sweetness of skin should be determined juice from peeled skin (flavedo) at the middle part of fruit by brix meter.

9. Literature

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Itaru, Kozaki et al., 1996: The fruit in Japan. Yokendo Ltd. JP, pp. 423, pp. 382 to 383

Kenji, Kawase, 2007: Kumquat. Nosangyoson Bunka Kyokai. JP, 204 pp.

Masao, Iwamasa, 1976: The varieties of Citrus. Sizuoka prefecture Citrus Agricultural cooperative. JP, pp. 255, pp. 243 to 245.

Saunt, J., 2000: Citrus varieties of the world: an illustrated guide. Sinclair International Ltd. Norwich, GB, pp. 134 to 137.

Shuichi, Iwabori et al., 1999: The introduction to Citrus. Yokendo Ltd. JP, pp. 708, pp. 197 to 199.

Reuther,W., Webber, H.J., Batchelor, L. D., (Editors), 1967: 'The Citrus Industry,' Volume 1. University of California, Division of Agricultural Sciences. Pp. 329 to 335, pp. 580 to 583.

10. Technical Questionnaire

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

	Application date: (not to be filled in by the applicant)

TECHNICAL QUESTIONNAIRE
to be completed in connection with an application for plant breeders' rights

1. Subject of the Technical Questionnaire

1.1 Botanical name	*Fortunella* Swingle
1.2 Common name	Kumquat

2. Applicant

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

3. Proposed denomination and breeder's reference

Proposed denomination (if available)	
Breeder's reference	

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

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

4.1 Breeding scheme

Variety resulting from:

4.1.1 Crossing

(a) controlled cross [ ]
(please state parent varieties)

(……..……..…) x (……..……..…)
female parent male parent

(b) partially known cross [ ]
(please state known parent variety(ies))

(……..……..…) x (……..……..…)
female parent male parent

4.1.2 Mutation [ ]
(please state parent variety)

4.1.3 Discovery and development [ ]
(please state where and when discovered and how developed)

4.1.4 Other [ ]
(please provide details)”

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

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

4.2 Method of propagating the variety

4.2.1 Vegetative propagation

(a) cuttings [ ]

(b) *in vitro* propagation [ ]

(c) other (state method) [ ]

4.2.2 Seed [ ]

4.2.3 Other [ ]
(please provide details)

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

5. Characteristics of the variety to be indicated (the number in brackets refers to the corresponding characteristic in Test Guidelines; please mark the note which best corresponds).

	Characteristics	Example Varieties	Note
5.1 (18)	**Fruit: weight**		
	very light		1[ ]
	very light to light		2[ ]
	light	Nagami	3[ ]
	light to medium		4[ ]
	medium	Meiwa	5[ ]
	medium to heavy		6[ ]
	heavy		7[ ]
	heavy to very heavy		8[ ]
	very heavy		9[ ]
5.2 (21)	**Fruit: shape**		
	oblong		1[ ]
	ellipsoid	Meiwa	2[ ]
	globose	Marumi	3[ ]
	obovoid	Fukushu, Nagami,	4[ ]
5.3 (22)	**Fruit: color of skin**		
	yellowish orange	Nagami	1[ ]
	orange	Meiwa	2[ ]
	dark orange		3[ ]

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

	Characteristics	Example Varieties	Note
5.4 (31)	**Time of beginning of fruit ripening**		
	early		1[ ]
	early to medium		2[ ]
	medium	Meiwa	3[ ]
	medium to late		4[ ]
	late		5[ ]

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

6. Similar varieties and differences from these varieties

Please use the following table and box for comments to provide information on how your candidate variety differs from the variety (or varieties) which, to the best of your knowledge, is (or are) most similar. This information may help the examination authority to conduct its examination of distinctness in a more efficient way.

Denomination(s) of variety(ies) similar to your candidate variety	Characteristic(s) in which your candidate variety differs from the similar variety(ies)	Describe the expression of the characteristic(s) for the **similar** variety(ies)	Describe the expression of the characteristic(s) for **your** candidate variety
Example	*Fruit color*	*orange*	*dark orange*

Comments:

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

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

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

Yes [ ] No [ ]

(If yes, please provide details)

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

Yes [ ] No [ ]

(If yes, please provide details)

7.3 What is this variety used for?

Fruit [ ] Ornamental [ ]

7.4 Other information

A representative color image of the variety should accompany the Technical Questionnaire.

8. Authorization for release

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

Yes [ ] No [ ]

(b) Has such authorization been obtained?

Yes [ ] No [ ]

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

[#] 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:

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

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

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

(a) Microorganisms (e.g. virus, bacteria, phytoplasma) Yes [ ] No [ ]

(b) Chemical treatment (e.g. growth retardant, pesticide) Yes [ ] No [ ]

(c) Tissue culture Yes [ ] No [ ]

(d) Other factors Yes [ ] No [ ]

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

……

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

Applicant’s name

Signature Date

[Annex follows]

ANNEX

Comments from experts (from Israel)

Kumquat Botanical name.

The genus name *Fortunella* was introduced by Swingle in 1915. At that time he identified 6 known types of Kumquat, so he created 6 new species in the newly formed genus. All of these cultivated types were previously identified by Thunberg (in 1784) as being *Citrus japonica* Thunb (Table 1).

According to the International Code of Botanical Nomenclature (Tokyo Code) 1994 Ch. II, Sec. III Article 11.3: "For any taxon from family to genus inclusive, the correct name is the earliest legitimate one with the same rank". Therefore, the name *Fortunella* was returned to *Citrus* (IPNI, 2009; TROPICOS, 2009; Flora of China, 2008).
This act is supported by scientific studies. Phylogenetic analysis of molecular data suggested that *Fortunella* cannot be separated from *Citrus* (Nicolosi et al., 2000). Recent Chloroplast DNA analyses (Zhen-hua et al., 2011) support the view that *Furtunella* and *Citrus* cannot be separate genera.

Table 1. Kumquat classification.

Thunberg, 1784	Swingle, 1915	Common Name
Citrus japonica Thunb.	Fortunella japonica (Thunb.) Swingle	Marumi
	Fortunella margarita (Lour.) Swingle	Nagami
	Fortunella crassifolia Swingle	Meiwa
	Fortunella hindsii (Champ. ex Benth.) Swingle	Hongkong
	Fortunella obovata Tanaka	Fukushu
	Fortunella polyandra Swingle	Malayan

Since the original classification is valid, the various kumquat types Nagami, Meiwa, Fukushu, Hong Kong, Malayan and Marumi are cultivated varieties of the one species *Citrus japonica* Thunb (Flora of China, 2008). It was suggested that many of the synonyms used to describe *Furtunella* species could be referred to as cultivar groups (Flora of China, 2008).

Therefore, we suggest to change the Botanical name and UPOV code of Kumkuat to *Citrus japonica* Thunb., and CITRU_JAP, respectively in document 20110805 tg_fortunella_proj_0. We also suggest making the necessary changes in the GENIE database.

Comments from the Office of the Union

GRIN Species Records of *Fortunella*

1. ***Fortunella* ×*crassifolia* Swingle**
2. ***Fortunella hindsii* (Champ. ex Benth.) Swingle**
   Synonyms:
   - (≡) *Atalantia hindsii* (Champ. ex Benth.) Oliv.
   - (≡) *Sclerostylis hindsii* Champ. ex Benth.
3. ***Fortunella hindsii* var. *chintou* Swingle**
4. ***Fortunella* hybr.**
5. ***Fortunella japonica* (Thunb.) Swingle**
   Synonyms:
   - (≡) *Citrus japonica* Thunb.
   - (=) *Citrus madurensis* Lour.
6. ***Fortunella margarita* (Lour.) Swingle**
   Synonyms:
   - (≡) *Citrus margarita* Lour.
7. ***Fortunella* ×*obovata* hort. ex Tanaka**
8. ***Fortunella polyandra* (Ridl.) Tanaka**
   Synonyms:
   - (≡) *Atalantia polyandra* Ridl.
9. ***Fortunella* spp.**

[End of Annex and of document]