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UPOV

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

DRAFT

PINEAPPLE
edible varieties

UPOV Code: ANANA_COM

Ananas comosus (L.) Merr.

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by an expert from France

to be considered by the
Technical Working Party for Fruit Crops
at its thirty-ninth session, to be held in Lisbon, Portugal, from June 2 to 6, 2008

Alternative Names:*

Botanical name	*English*	*French*	*German*	*Spanish*
Ananas comosus (L.) Merr.	Pineapple, edible varieties	Ananas, variétés comestibles	Ananas, essbare Sorten	Piña

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 *Ananas comosus* (L.) Merr. of the family *Bromeliaceae*.

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 aerial suckers.

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

20 aerial suckers

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

The minimum duration of tests should normally be two independent growing cycles.

3.2 Testing Place

Tests are normally conducted at one place. In the case of tests conducted at more than one place, guidance is provided in TGP/9 “Examining Distinctness”.

3.3 Conditions for Conducting the Examination

3.3.1 The tests should be carried out under conditions ensuring satisfactory growth for the expression of the relevant characteristics of the variety and for the conduct of the examination.

3.3.2 The optimum stage of development for the assessment of each characteristic is described in Chapter 8.

3.4 Test Design

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

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

3.5 Number of Plants / Parts of Plants to be Examined

Unless otherwise indicated, all observations should be made on 20 plants or parts taken from each of 20 plants. In the case of parts of plants, the number to be taken from each of the plants should be 2.

3.6 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.

4.2 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 20 plants, 1 off-type is allowed.

4.3 Stability

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

4.3.2 Where appropriate, or in cases of doubt, stability may be tested, either by growing a further generation, or by testing a new plant stock to ensure that it exhibits the same characteristics as those shown by the previous material supplied.

5. Grouping of Varieties and Organization of the Growing Trial

5.1 The selection of varieties of common knowledge to be grown in the trial with the candidate varieties and the way in which these varieties are divided into groups to facilitate the assessment of distinctness are aided by the use of grouping characteristics.

5.2 Grouping characteristics are those in which the documented states of expression, even where produced at different locations, can be used, either individually or in combination with other such characteristics: (a) to select varieties of common knowledge that can be excluded from the growing trial used for examination of distinctness; and (b) to organize the growing trial so that similar varieties are grouped together.

5.3 The following have been agreed as useful grouping characteristics: (*to review*)

(a) Leaf: raised margin (piping) (characteristic 12)
(b) Leaf: aspect of 'not-piping leaf' edges (characteristic 13 *deleted*).....*or* char New 14, 15 and 16)
(c) Fruit: shape when ripe (bi dimensional) (characteristic 43)
(d) Fruit: predominant color when ripe (characteristic 47)
(e) Fruit: eye profile (characteristic 53)
(f) Flesh: color (characteristic 56)

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

6. Introduction to the Table of Characteristics

6.1 Categories of Characteristics

6.1.1 Standard Test Guidelines Characteristics

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

6.1.2 Asterisked Characteristics

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

6.2 States of Expression and Corresponding Notes

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

6.3 Types of Expression

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

6.4 Example Varieties

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

6.5 Legend

(*) Asterisked characteristic – see Chapter 6.1.2

QL Qualitative characteristic – see Chapter 6.3
QN Quantitative characteristic – see Chapter 6.3
PQ Pseudo-qualitative characteristic – see Chapter 6.3

(a)-(f) See Explanations on the Table of Characteristics in Chapter 8.1
(+) See Explanations on the Table of Characteristics in Chapter 8.2

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

Grey shaded italics: 2006 observations
Italics: 2007 TWF decisions or still to be decided

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1. **(*)** **(+)**	**VG** **1-T**	**Plant: foliage habit (before flowering)** *or* **foliage of habit**	**Plant: port du feuillage (avant floraison)**				
QN	**(a)**	upright	érigé			Perola	1
		semi upright	semi-érigé			Smooth Cayenne	3
		spreading	étalé			Perolera	5
2. **(*)** **(+)**	**1-T**	**Plant: number of leaves (produced from 4 months after planting to floral induction)** (*to be placed in par 8 ?)*	**Plant: nombre de feuilles (émises entre 4 mois après plantation et l'induction florale)**				
QN	**(a)**	few	peu			Perola	3
		medium	moyen			Smooth Cayenne	5
		many	beaucoup				7
3. **(*)** **(+)**	**1-T**	**Reference leaf: length**	**Feuille de référence: longueur**				
QN	**(a)**	short	petit			Queen	3
	(b)	medium	moyen			Smooth Cayenne	5
		long	grand			Perola	7
4. **(*)** **(+)**	**1-T**	**Reference leaf: width**	**Feuille de référence: largeur**				
QN	**(a)**	narrow	étroite			Queen	3
	(b)	medium	moyen			Smooth Cayenne	5
		broad	large			Perola	7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
5. (*)	**1-T**	**Leaf: main colorof upper side**	**Feuille: couleur principale de la face supérieure**				
PQ		green	vert			Jupi, Perola, Smooth Cayenne	1
		reddish	rougeâtre			Roxo de tefe	2
		purplish	violacé				3
		green purple	vert violacé				4
6.	**1-T**	**Varieties with only green color leaf: Leaf: intensity of green color**	**Variétés avec une couleur de feuille verte: Feuille: intensité de la couleur verte**				
QN		light	faible				3
		medium	moyenne				5
		dark	forte				7
~~**7. (*)**~~	~~**1-T**~~	~~**Leaf: variegation**~~	*Deleted in 2007*				
~~**8.**~~	~~**1-T**~~	~~**Leaf: distribution of variegations (on upper side)**~~	*Deleted in 2007*				
~~**9. (*)**~~	~~**1-T**~~	~~**Leaf: presence of anthocyanin (on upper side)**~~	*Deleted in 2007*				
7. (*)	**1-T**	**Leaf: intensity of anthocyanin coloration (on upper side)**	**Feuille: expression des anthocyanes (sur la face supérieure)**				
QN	**(a)**	absent or very weak	absent ou très faible			Selangor Green / Green Spanish, MD2 / Golden Ripe/ Extra sweet	1
		weak	faible			Pot à eau	3
		medium	moyen			Smooth Cayenne	5
		strong	fort			Rondon	7
		very strong	très fort			Roxo de Tefe	9

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
8.	**1-T**	**Leaf: transversal distribution of anthocyanin**	**Feuille: répartition transversale des anthocyanes**				
QL	**(a)**	predominantly on margins	principalement sur les marges			Singapore Canning/Singapore Spanish	1
		even on margins and in groove	uniformément sur les marges et dans la gouttière				2
		predominantly in the groove	principalement dans la gouttière			Rondon	3
~~**12.**~~	~~**1-T**~~	~~**Leaf: longitudinal distribution of anthocyanin coloration**~~	*Deleted in 2007*				
9.	**1-T**	**Leaf: density of trichomes (hairs) on lower side**	**Feuille: densité de trichomes (poils) sur la face inférieure**				
QN	**(a)**	absent or very sparse	absente ou peu dense				1
		intermediate	intermédiaire			Perolera	2
		dense	dense			Smooth Cayenne	3
10. **(*)** **(+)**		**Leaf: spines**	**Feuille: épines**				
QL		absent	absentes			Samba, Singapore Canning / Singapore Spanish	1
		present	présentes			Queen, Ananas bouteille	9
11. **(+)**		**Leaf: conspicuousness of spines**	**Feuille: … ?……..des épines**			*Japan 08 : how to asseess it ? in relation with char 18*	
QL		inconspicuous				Ananas Bouteille	
		conspicuous				Queen	

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
12. (*) (+)	**1-T**	**Leaf: raised margin (piping)**	**Feuille: marge ourlée**				
QL	**(a)**	absent	absente			Manzana / Burmanguesa	1
		present	présente			Queen, Singapore Canning / Singapore Spanish, Smooth Cayenne	2
13 (*) (+)	**1-T**	**Leaf: aspect of 'not-piping' leaf edges**	**Feuille: bordure du limbe des types' non-piping'**			*TWF 2007, Brazil, Jpan 08 proposes to delete: char 14-15-16 are suffisant ? or Cirad has to precise the meaning of sand paper and smooth*	
QL	**(a)**	spines along all margins	épines tout le long des bords			Queen	1
		spines occur irregularly along both margins	épines irrégulières le long des bords			Fina de Hiero	2
		spines behind tip only	épines d'extrémités			Smooth Cayenne	3
		sand paper	'lisse - papier de verre'		*07 Cirad: à l'oeil, le bord du limbe apparait lisse, mais au toucher il se révèle très finement dentelé, comme une lime très fine. Visually the leaf blade is smooth, but when touching, the leaf is slightly spiny*	Samba	4
		smooth	*lisse , N'est ce pas le niveau 1 du caractère 11?*		*The leaf edge is perfectly smooth*	Singapore Canning / Singapore Spanish	5
14. New (+)		**Leaf: aspect of leaf blade**				*Japan 08 wants a +*	
		sand paper like				Samba	1
		visually spiny				Champaka, Fina de Hiero, Queen	2

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
15. **(*)** **(+)**		**Leaf: position of spines at margin**	**Feuille: position des épines sur le bord foliaire**				
QL		at base only	à la base seulement				1
		at apex only	à l'apex seulement			Smooth Cayenne	2
		at base and apex	à la base et à l'apex				3
		along all margins	tout le long du bord			Queen	4
16. **(*)** **(+)**		**Leaf: distribution of spines**	**Feuille : distribution des épines**			*Japan 08 : to be deleted*	
		regular	régulière			Queen	1
		irregular	irrégulière			Fina de Hiero	2
~~**20.**~~		~~**Leaf: distance between spines**~~	*Deleted in 2007*				
17.		**Leaf: color of the spine in relation to leaf blade**	**Feuille: couleur de l'épine par rapport au limbe**				
QL	**(a)**	same as leaf blade	la même que le limbe			Ananas bouteille	1
		different from leaf blade	différente de celle du limbe			Queen	2
18. **(*)**	**1-T**	**Leaf : size of the spine**	**Feuille : taille de l'épine**				
QN	**(a)**	small	petite			Perola	3
		medium	moyenne			Singapore Canning / Singapore Spanish	5
		large	grande			Queen	7
19. **(+)**	**2-A**	**Inflorescence: floral bract size (before fruit development)**	**Inflorescence: taille de la bractée florale**			*With a drawing to indicate the floral bract*	
QN	**(c)**	small	petite			Perola	3
		medium	moyenne			Queen	5
		large	grande			Singapore Canning / Singapore Spanish	7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
20.	**2-A**	**Inflorescence: flowering pattern**	**Inflorescence: type de floraison**				
QL	**(c)**	flowering proceeds from bottom to top	acropétale			Smooth Cayenne	1
		flowering proceeds in any order	irrégulièrement			Perola	2
21.	**2-A**	**Petal : color of apex**	**Pétale: couleur de l'apex**				
PQ	**(c)**	whitish	blanchâtre			*To be provided by CIRAD*	1
		blue purple	violet bleu			Smooth Cayenne	2
		red-purple	violet rouge			Perola	3
~~**26.**~~ ~~**(+)**~~	~~**2-A**~~	~~**Petal: size of white area (without removing the flower from the fruit)**~~	*DELETED in 2007*				
22.	**2-A**	**Petal length**	**Pétale: longueur**				
QN	**(c)**	short	courte			Singapore Canning / Singapore Spanish	3
		medium	moyenne			Smooth Cayenne	5
		long	longue			Rondon	7
~~**28.**~~	~~**2-A**~~	~~**Sepal length**~~	*DELETED in 2007*				
23. **(*)** **(+)**	**2-A**	**Stamen: length in relation to style**	**Etamine: longueur en relation avec le style**				
QL	**(c)**	shorter than style	brévistyle				1
		as the style	équistyle			Perolera	2
		longer than style	longistyle			Perola, Smooth Cayenne	3
.	~~**2-A**~~	~~**Stamens: pollen quantity**~~	*DELETED in 2007*				

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
24.	**2-A**	**Inflorescence: stamen length**	**Inflorescence: étamines: longueur**	*Brazil proposes to delete, partly linked to 29 ?*	*O7 Cirad: It is not linked to 29. 29 refers to the relative sizes of stamens and pistil. This is not easy to assess for non DUS specialists.*	*07 Geves: keep it* *TWF2007: deleted* *CIRAD 2008: wants to keep it*	
QN	**(c)**	short	courte			Smooth Cayenne	3
		medium	moyenne			Rondon	5
		long	longue			Perolera	7
25.	**2-A**	**Style: length**	**Style: longueur**		*Brazil proposes to delete ? partly linked to 29* *Cirad: Idem 31*	*07 Geves: keep it* *TWF2007: deleted* *CIRAD 2008: wants to keep it*	
QN	**(c)**	short	courte			Singapore Canning / Singapore Spanish	3
		medium	moyenne			Red Spanish/ Española Roja	5
		long	longue			Perolera	7
			CIRAD: *Do you agree to delete char 24 and 25 ?*				

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
26. (*)	**3-I**	**Immature fruit: color (fully grown immature fruit)**	**Fruit immature: couleur (fruit immature complètement développé)**				
PQ		grey	gris			RHS 157 C	1
		medium green	vert moyen			RHS 143 A	2
		dark green	vert foncé			RHS 139 A, Smooth Cayenne	3
		pink	rose			RHS 52 A	5
		medium red	rouge			RHS 45 A	6
		brownish purple	brun rouge			RHS 178 A	8
		purple				RHS 187A, Roxo de Tefe	9
		dark brown	marron foncé			RHS 200 A	10
27.	**3-I**	**Immature fruit: density of trichomes (on fully grown immature fruit)**	**Fruit immature: présence de trichomes (fruit immature complètement développé)**				
QN	**(d)**	sparse	peu dense			Perola	3
		medium	moyenne				5
		dense	dense			Smooth Cayenne	7
~~**35. (*)**~~	~~**4-M**~~	~~**Plant: fruit habit when ripe**~~	*DELETED in 2007*				
~~**36.**~~	~~**4-M**~~	~~**Plant: part of the plant bending or flattening**~~	*DELETED in 2007*				

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
28. **(+)**	**4-M**	**Plant: height to top of foliage**	**Plant: hauteur jusque l'extrémité supérieure du feuillage**				
QN	**(e)**	short	courte			Rondon	3
		medium	moyenne			Queen	5
		high	haute			Perola	7
29. **(+)**	**4-M**	**Plant: height to fruit base**	**Plant: hauteur jusque la base du fruit**				
QN	**(e)**	short	courte			Queen	3
		medium	moyenne			Perolera	5
		high	haute			Rondon	7
30. **Ex 19** **(+)**	**2-A**	**Floral peduncle: color of the upper side of the bract**	**Pédoncule floral: couleur de la face supérieure de la feuille bractéale**			*with a drawing*	
PQ		green	vert				
		light pink	rose clair				
		medium pink	rose moyen				
		dark pink	rose foncé				
		medium red	rouge moyen				
		dark red	rouge foncé				
31. **(*)** **(+)**	**4-M**	**Peduncle: length**	**Pédoncule: longueur**				
QN	**(e)**	short	courte			Smooth Cayenne	3
		medium	moyenne			Singapore Canning / Singapore Spanish	5
		long	longue			Perola	7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
32. **(+)**	**4-M**	**Peduncle diameter (at middle)**	**Pédoncule: diamètre (à mi longueur)**				
QN	**(e)**	small	petite			Singapore Canning / Singapore Spanish	3
		medium	moyenne			Perola, Smooth Cayenne	5
		large	grande				7
33.		**Peduncle: number of bracts**	**Pédoncule : nombre de bractées**				
QN		few	petit				3
		medium	moyen				5
		many	grand				7
34.		**Peduncle: trichomes**	**Pédoncule : trichomes**			*Brazil will provide example varieties*	
QL		absent	absent				1
		present	présent				9
35.	**4-M**	**Plant: underground suckers**	**Plante: rejets souterrains**			*To be checked by CIRAD*	
QN	**(e)**	absent or very weak	absent ou très faible			Manzana/Bumanguesa	1
		present	présent			Perola, Red Spanish/ Española Roja, Singapore Canning /Singapore Spanish Smooth Cayenne	9

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
36. **(+)**	**4-M**	**Plant: number of aerial suckers on stem**	**Plante: nombre de rejets aériens sur tige (cayeux)**				
QN	**(e)**	none or very few	nul ou très faible			Smooth Cayenne ?	1
		few	faible				3
		medium	moyen			Smooth Cayenne	5
		many	nombreux			Perolera, Queen	7
		very many (Br)	très nombreux			*Brazil to provide example varieties:* Perola ?	9
37. **(*)** **(+)**	**4-M**	**Plant: size of aerial suckers on stem at fruit harvest**	**Plante: taille des rejets aériens sur tige (cayeux) à la récolte**				
QN	**(e)**	small	petite				3
		medium	moyenne			Smooth Cayenne	5
		large	grande			Fils de Chalvet	7
38. **(*)**	**4-M**	**Plant: slips**	**Plante : bulbilles**				
QL	**(e)**	absent	absente			Smooth Cayenne	1
		present	présente			Perola, Perolera, Queen	9
39.		**Fruit: relief of fruitlet**	**Fruit : …???...**	*Japan 08: is fruit eye same as eye ?*		*To be placed with fruit characteristics*	
QL		flat	plate			Smooth Cayenne	1
		(slightly ?) prominent	proéminente			Perola	3
		very prominent	très proéminente				5

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
40. (*) (+)	**4-M**	**Plant: number of slips**	**Plante : nombre de bulbilles**				
QN	**(e)**	few	petit				3
		medium	moyen			Queen, Red Spanish / Española Roja	5
		many	grand				7
	~~4-M~~	**~~Slips: weight of the largest slip~~**	*DELETED in 2007*				
41. (*) (+)	**4-M**	**Crown: attitude**	**Couronne: port**				
QN	**(e)**	upright	dressé			Perola	1
		semi upright	demi dressé			Smooth Cayenne	2
		spreading	étalé				3
~~50.~~	**~~4-M~~**	**~~Crown: anthocyanin coloration~~**	*DELETED in 2007*				
~~47.~~	**~~4-M~~**	**~~Crown: proportion of plants bearing crownlets~~**	*DELETED in 2007*				
~~48.~~	**~~4-M~~**	**~~Crown: number of crownlets per fruit~~**	*DELETED in 2007*				
~~49.~~	**~~4-M~~**	**~~Crown: proportion of plants with multiple crowns~~**	*DELETED in 2007*				
~~51.~~	**~~4-M~~**	**~~Crown: height~~**	*DELETED in 2007*				
42. (*) (+)	**4-M**	**Crown: size**	**Couronne: taille**				
QN	**(e)**	small	petite			Rondon	3
		medium	moyenne			Queen Perola	5
		large	grande			Smooth Cayenne	7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
~~52.~~	~~4-M~~	~~Fruit: breaking from peduncle~~	*DELETED in 2007*				
43. **(*)** **(+)**	**4-M**	**Fruit: shape when ripe (bi dimensional)**	**Fruit: forme (bi dimensionnelle) à maturité**	*Brazil proposes to delete ?*	*Characteristic deleted end replaced by the following: bidimensional shape, and if necessary length, max diameter, ratio, position of the broadest place.* *07 Cirad: I don't understand these new shapes (drawings needed), moreover, they do not encompass all the different shapes observed in cultivars.*	*How to place Singapore canning with this new presentation?*	
QN		ovate	ovale				
		oblong	oblong				
		elliptic	elliptique				
		circular	circulaire			Red Spanish/ Española Roja	
			For 43, explore as new presentation : L (car 44), D (car 45), 46 and ratio L/D , to replace car 43 shape				
44. **(*)** **(+)**	**4-M**	**Fruit: height (without neck)**	**Fruit : hauteur (hors collier)**				
QN	**(e)**	short	courte			Singapore Canning / Singapore Spanish	3
		medium	moyenne			Perolera, Smooth Cayenne	5
		high	haute			Perola	7
45. **(*)**		**Fruit: (maximum) diameter at the broadest part**	**Fruit: (maximum) diamètre au niveau de la partie la plus large**				
QN	**(e)**	thin	étroit			Perola	
		medium	moyen			Singapore Canning / Singapore Spanish	
		large	large			Perolera, Smooth Cayenne	

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
46. (*)	**4-M**	**Fruit: position of the broadest part**	**Fruit : position de la partie la plus large**				
	(e)	towards the base	vers la base				
		at the middle	au milieu				
		towards the apex	vers l'apex				
47. (*)	**4-M**	**Fruit: predominant color when ripe**	**Fruit: couleur prédominante à maturité**			*Example varieties by CIRAD*	
PQ	**(e)**						
		green	vert			RHS 147 A	2
		grey green					
		green yellow	vert jaune				3
		light yellow (Br)				Perola	
		medium yellow	jaune			RHS 13 A	4
		golden yellow	jaune d'or		*07 Cirad: Yellow, golden yellow, light yellow does not mean anything since it has not the same value for two different observers. A standard like RHS chart is unavoidable*	RHS 21 A, Smooth Cayenne	5
		orange	orange			RHS 32 A	6
		orange red	rouge orange			RHS 42 A	7
		red	rouge			RHS 53 A	8
		purple (*Br*)					
		brown	marron			RHS 200 A	9

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
48. (*)	**4-M**	**Fruit: color uniformity when ripe**	**Fruit: homogénéité de la coloration externe à maturité**		*To be discussed in 2007. Position from Brazil and Cirad , 07 Cirad proposes to delete. This one is not obvious, Brazil to check in 2008*		
QN	**(e)**	heterogeneous =? *absent*	irrégulière			Rondon	1
		with a gradient =? *absent*	rn gradient			Smooth Cayenne	2
		uniform =? *present*	uniforme			Queen	3
~~**59.**~~	~~**4-M**~~	~~**Fruit: presence of deformations**~~	*DELETED in 2007*				
~~**60.**~~	~~**4-M**~~	~~**Fruit: presence of knobs on fruit base**~~	*DELETED in 2007*				
49. (*)	**4-M**	**Fruit: presence of a neck**	**Fruit: présence d'un collier sur le fruit**				
QN	**(e)**	absent or sessile like	absente ou très peu visible			Smooth Cayenne	1
		short	légère			Manzana/Bumanguesa	3
		medium	moyenne				5
		large	prononcée			Abacaxi verde	7
50. (*)	**4-M**	**Fruit: size (without crown)**	**Fruit: taille (sans couronne)**				
QN	**(e)**	very small	très petite			Victoria	1
		small	petite			Singapore Canning /Singapore Spanish	3
		medium	moyenne			Red Spanish/ Española Roja	5
		large	grande			Smooth Cayenne	7
		very large	très grande			Cabeza de onca	9
~~**64.**~~	~~**4-M**~~	~~**Fruit: volume (without crown)**~~	*DELETED in 2007*				

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
~~**65.**~~	~~**4-M**~~	~~**Fruit: apparent density (floatation)**~~ *Char 51-52-53-54-55-59, Japan 08: is fruit eye same as eye ? Eye may be confused with hollow under bract and calyx of fruit*	*DELETED in 2007*				
51.	**4-M**	**Fruit: number of eyes**	**Fruit: nombre d'yeux**				
QN	**(e)**	few	petit			Red Spanish/ Española Roja	3
		medium	moyen			Smooth Cayenne	5
		many	grand			Queen	7
52. **(*)**	**4-M**	**Fruit: size of eye**	**Fruit: taille de l'œil**				
QN	**(e)**	small	petite			Black Antigua	3
		medium	moyen			Cayenne	5
		large	grande			Red Spanish/ Española Roja	7
53. **(*)**	**4-M**	**Fruit: eye profile**	**Fruit: profil de l'œil**				
QN	**(e)**	hollow or concave	concave			Singapore Canning / Singapore Spanish	1
		flat	plat			Perola	2
		slightly prominent	peu proéminent			Rondon	3
		prominent	proéminent			Queen	4
54.	**4-M**	**Fruit: eye color**	**Fruit: coloration de l'œil**				
QN	**(e)**	even	homogène			Queen	1
		uneven	en gradient			Perola	2

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
55. **(+)**	**4-M**	**Fruit: relative size of floral bract compared to eye**	**Fruit: taille de la bractée par rapport à l'œil**				
QN	**(e)**	much smaller	beaucoup plus petite				1
		smaller	plus petite				3
		slightly smaller	légèrement plus petite				5
		equal	identique				7
		larger	plus grande				9
56. **(*)**	**4-M**	**Flesh: color**	**Pulpe (chair): couleur**				
PQ	**(e)**	whitish cream	blanchâtre			Perola (RHS 155A)	1
		light yellow	jaune clair			Smooth Cayenne (RHS 11A)	2
		medium yellow	jaune moyen			Perolera (RHS13B)	3
		yellowish orange	jaune d'or			Queen (RHS 21A)	4
		orange	orange			Manzana/Bumanguesa	5
57.	**4-M**	**Flesh: internal color evenness**	**Pulpe: uniformité de la coloration interne**				
QN	**(e)**	even	homogène			Queen	1
		uneven	selon un gradient			Smooth Cayenne	2
58. **(+)**	**4-M**	**Fruit: diameter of central axis**	**Fruit: diamètre du cœur**				
QN	**(e)**	small	petit			Singapore Canning / Singapore Spanish	3
		medium	moyen			Queen	5
		large	grand			Smooth Cayenne	7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
59.	**4-M**	**Fruit: thickness of eye layer**	**Fruit : épaisseur des yeux**				
QN	**(e)**	thin	fine				3
		medium	moyenne			Smooth Cayenne	5
		thick	épaisse			Queen	7
60. (*)	**4-M**	**Flesh: compactness**	**Pulpe (chair ?): compacité (= densité)**				
QN	**(e)**	loose	lâche (=peu dense)			Queen	3
		medium	moyen			Smooth Cayenne	5
		compact	dense			Perolera	7
61.	**4-M**	**Flesh: firmness**	**Pulpe (chair): fermeté**				
QN	**(e)**	soft	molle			Perola, Rondon	3
		medium	moyenne			Smooth Cayenne	5
		firm	ferme			Perolera, Smooth Cayenne	7
~~**77. (*)**~~	~~**4-M**~~	~~**Fruit/flesh: texture**~~	*DELETED in 2007*				
62.	**4-M**	**Flesh: presence of fiber**	**Pulpe (chair): teneur en fibres**				
	(e)	weak	faible			Perola	3
		medium	moyenne			Smooth Cayenne	5
		strong	forte			Singapore Canning / Singapore Spanish	7
63.	**4-M**	**Flesh: aroma**	**Pulpe (chair): arôme**				
QN	**(e)**	low, weak	faible				3
		medium	moyen			Perola	5
		high, strong	fort			Smooth Cayenne	7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
64. (*) (+)	**4-M**	**Flesh: sugar content**	**Pulpe: teneur en sucre**				
QN	**(e)**	low	faible			Singapore Canning / Singapore Spanish	3
		medium	moyenne			Smooth Cayenne	5
		high	forte				7
65. (*) (+)	**4-M**	**Flesh: acidity**	**Fruit/ pulpe: appréciation du caractère acide**				
QN	**(e)**	low	faible			Perola	3
		medium	moyenne			Queen	5
		high	forte			Smooth Cayenne	7
66. (*)	**4-M**	**Flesh: juiciness**	**Pulpe: teneur en jus**				
QN	**(e)**	dry	faible			Pomare	3
		medium	moyenne			Queen, Smooth Cayenne	5
		juicy	forte			Perola	7
67. (*)	**4-M**	**Fruit/juice: ascorbic acid content**	**Fruit/ Jus: teneur en acide ascorbique**				
QN	**(e)**	low	faible			Smooth Cayenne	5
	(f)	medium	moyenne			Perola	7
		high	forte			Perolera	9
68. (*)	**4-M**	**Fruit/juice: free acids content**	**Fruit/ Jus: acidité titrable**				
QN	**(e)**	low	faible			Perola	3
	(f) ?	medium	moyenne			Rondon	5
		high	forte			Red Spanish/ Española Roja	7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
69. (*)	**4-M**	**Fruit/juice: sugar content (using refractometer)**	**Fruit/ Jus: indice réfractométrique (IR mesuré)**				
QN	**(e)**	low	faible			Singapore Canning / Singapore Spanish	3
	(f) ?	medium	moyen			Perolera	5
		high	fort			Smooth Cayenne	7
~~**80.**~~		~~**Plant: Resistance to *Fusarium subglutinans***~~	*DELETED in 2007*				

Japan 08 remarks

Char. 64: flesh: sugar content

→ *I suggest to delete, because char.68 is enough for assessing sugar content.*

Char. 65: flesh: acidity

→ *I suggest to delete, because char.69 is enough for assessing acidity*

Char.68 Fruit/juice: free acids content

→ *to read* "Fruit: acidity of flesh juice"

To delete (f)

Char. 69 Fruit/juice: sugar content (using refract meter)

→ *to read* "acidity of flesh juice"

To delete (f)

8. Explanations on the Table of Characteristics

8.1 Explanations covering several characteristics

The optimum stage of development for the assessment of each characteristic is indicated by a code in the first column of the Table of Characteristics:

- 1-T: at vegetative maturity growth stage, immediately before flower induction (*or before flower emergence*?)
- 2-A: Anthesis stage
- 3-I: Immature fruit stage
- 4-M: Maturity stage.

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

(a) (Characteristics 1 to 18) All observations related to the vegetative characters should be made on 20 plants or parts of them at the time floral induction is provoked (about 8 months after planting—stage 1-T).
"Raised margins" (characteristic 16) is known as 'piping edge' in the industry area.

(b) (Characteristics 3 to 4) The reference *leaf* is the longest at the time floral induction is provoked. Measurements to be taken on 20 leaves.
For reference leaf length (Characteristic 3), proceed with the longer leaf.

(c) (Characteristics 19 to 25): Observations related to flowering, inflorescence and flowers should be made on 20 inflorescences, at the time of anthesis (stage 2-A). Measurements of floral parts to be taken on 10 flowers removed at mid-anthesis.

(d) (Characteristics 26 and 27): Observations of fruits before maturity should be made on 20 fruits, 4 months after floral induction is provoked (immature fruit—stage 3-I).

(e) (Characteristics 35 to 70): Qualitative observations related to plant and fruit at harvest should be made in the plot on 20 plants and 20 fruits. It is considered that harvest time is the stage at which the fruit is good to be eaten (actual maturity—stage 4-M). Measures to be made on 10 fruits.

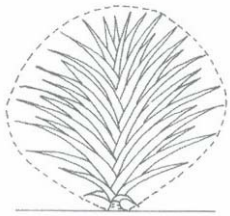
8.2 Explanations for individual characteristics

Example varieties : List of synonyms

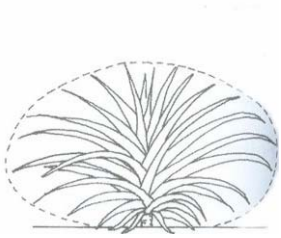
MD2 / Golden Ripe/ Extra sweet
Manzana/Bumanguesa"
Selangor Green / Green Spanish
Singapore Canning/ Singapore Spanish
Red Spanish/ Española Roja

Ad. 1: Plant: foliage habit (before flowering) or foliage of habit

1
upright



3
semi upright



5
spreading

Ad. 2: Plant: number of leaves (produced from 4 month after planting to floral induction)

In approach, we can consider / We can consider near by		
- few	< 40	3
- medium	40 – 60	5
- many	> 60	7

Ad. 3: Reference leaf: length

In approach, we can consider / We can consider near by		
- short	< 90 cm	3
- medium	90 – 120 cm	5
- long	> 120 cm	7

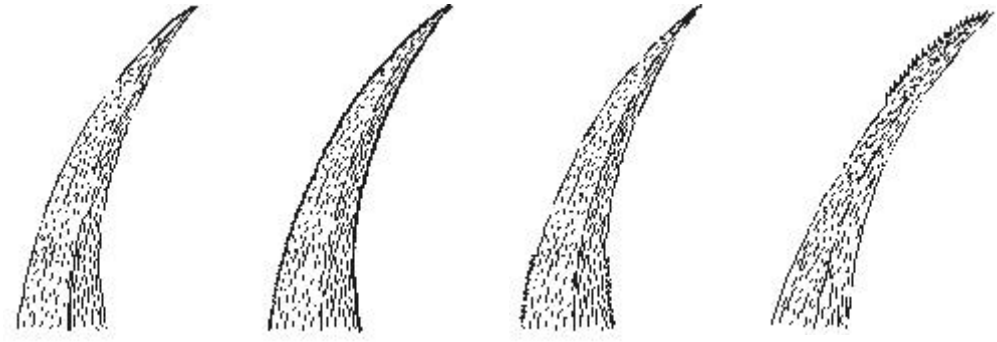
Ad. 4: Reference leaf: width

In approach, we can consider / We can consider near by		
- narrow	< 6,0 cm	3
- medium	– 6,0 a 7,0 cm	5
- broad	> 7,0 cm	7

Ad. 10: Leaf: spines
Ad. 11: Leaf: conspicuousness of spines
Ad. 12: Leaf: raised margin (piping)
Ad. 13: Leaf: aspect of 'not-piping' leaf edges
Ad. 14: Leaf: aspect of leaf blade
Ad. 15: Leaf: position of spines at margin
Ad. 16: Leaf: distribution of spines

"Inconspícuos" are microscopic spines, which can be detected through the sense of touch. When we touch our hands at the margins of leaves, we feel that it´s like a sandpaper.

"Conspícuos" are spines, which are visible with the naked eye.



absent | inconspicuous | at base | at apex

at base and apex | regular | irregular

Ad. 12: Leaf: raised margin (piping)
"Piping" as named by Collins and Kerns (1946). The meaning is that the lower epidermis is folded over the leaf edge

Ad. 19: Inflorescence: floral bract size (before fruit development)

[to be provided]

Ad. 23: Stamen: length in relation to style

[to be provided]

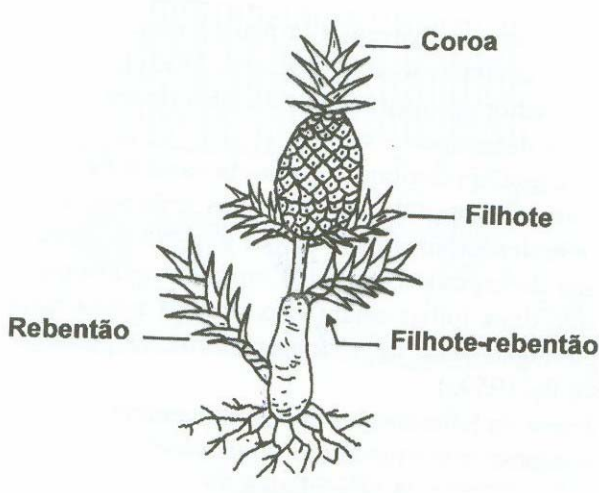
Ad. 28: Plant: height to top of foliage

[to be provided]

Ad. 29: Plant: height to the fruit base

[to be provided]

Ad. 30: Floral peduncle: color of the upper side of the bract
Ad. 40: Plant: number of slips
Ad. 41: Crown: attitude
Ad. 55: Fruit: relative size of floral bract compared to eye



Brazil: Place peduncle, and the two type of bracts

-	low	< 5
-	medium	5 – 10
-	high	> 10

Ad. 31: Peduncle: length

In approach, we can consider / We can consider near by

-	short	< 18 cm	3
-	medium	18 – 28 cm	5
-	long	> 28 cm	7

Ad. 32: Peduncle: diameter at the middle portion

In approach, we can consider / We can consider near by

-	small	< 2.5 cm	3
-	medium	2.5 – 3.5 cm	5
-	large	> 3.5 cm	7

Ad. 36: Plant: number of aerial suckers on stem
[to be updated]

In approach, we can consider / We can consider near by	
- low	< 1
- medium	1 - 2
- high	> 2

Ad. 37: Plant: size of aerial suckers on stem at fruit harvest

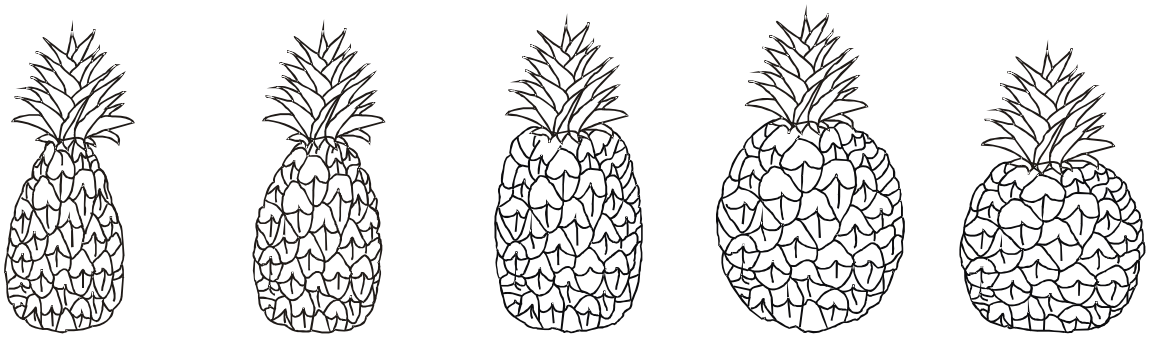
[to be provided]

Ad. 42: Crown: size

In approach we can consider / We can consider near by		
- small	< 100 g	3
- medium	100 – 130 g	5
- large	> 130 g	7

Ad. 43: Fruit: shape when ripe (bi dimensionsional)

To correct depending of the 2007/2008 discussions



1	2	3	4	5
conic	*conic to cylindric*	*cylindric*	*elliptic*	*global*

Ad. 44: Fruit: height (without neck)

Measured from base to top without considering the crown

In approach we can consider / We can consider near by		
- short	< 15 cm	3
- medium	15 – 20 cm	5
- high	> 20 cm	7

Ad. 45: Fruit: diameter at the broadest part

		In approach we can consider / We can consider near by
-	thin	< 10 cm ?
-	medium	10 – 12 cm ?
-	large	> 12 cm ?

Ad. 58: Fruit: diameter of central axis

		In approach we can consider / We can consider near by
-	small	< 1.5 cm 3
-	medium	1.5 – 2,5 cm 5
-	large	> 2.5 cm 7

Ad. 64: Flesh: sugar content
(Brix degrees)

		In approach we can consider / We can consider near by
-	low	< 13 3
-	medium	13 – 16 5
-	high	> 16 7

Ad. 65: Flesh: acidity
(fixed in percentage)

		In approach we can consider / We can consider near by
-	low	< 0.5 3
-	medium	0.5 – 0.7 5
-	high	> 0.7 7

8.3 The stage of development for the assessment

The optimum stage of development for the assessment of each characteristic is indicated by a code in the first column of the Table of Characteristics:

- 1-T: at vegetative maturity growth stage, immediately before flower induction (or before flower emergence?)
- 2-A: Anthesis stage
- 3-I: Immature fruit stage
- 4-M: Maturity stage.

The emergence of inflorescence should be invoked artificially about 36 weeks after plantation, with a variation of two weeks depending of place and varieties

8.4 APPENDIX: Methods of measurements (pineapple juice) from France Cirad

Juice

The juice is squeezed out from pineapple flesh and strained through muslin. It can be frozen to be used later.

Sugar content (characteristic 64)

Sugar content (Brix value) is recorded via refractometer. It is given as a percentage (%Brix).

Ascorbic acid content (characteristic 67)

Ascorbic acid content is determined by titration with 2,6-dichlorophenol-indophenol (DCPIP). It is compared to a control scale (see below). Measure is brought to 100 ml of juice and is given in mg/100ml.

Reagents

Sol 1 : Metaphosphoric acid 2 % / TCA 4 %
Dissolve 2 mg metaphosphoric acid and 4 mg trichloroacetic acid in 100 ml distilled water.

Sol 2 : DCPIP 250 mg/l
Dissolve 125 mg 2,6-dichlorophenol-indophenol in 500 ml warm distilled water, then filter
Add 104 mg sodium bicarbonate
Note: Dissolved DCPIP is unstable. Protect from light.

Sol 3 : Ascorbic acid control
Dissolve 50 mg ascorbic acid in 100 ml Sol 1 + 100 ml distilled water

Control

Ascorbic acid content (mg):	0	0.25	0.50	0.75	1.0	1.25
Sol 3 (ml)	0	1	2	3	4	5
Sol 1 (ml)	4	3.5	3	2.5	2	1.5
Distilled water (ml)	4	3.5	3	2.5	2	1.5

Titration

Add 4 ml Sol 1 to 4 ml juice. Pour slowly Sol 2 until pink coloration appears. Compare the volume poured to the control scale to determine the ascorbic acid content within 4 ml juice.

Note: if acid ascorbic measurement should be made later, add 4 ml Sol 1 to 4 ml juice immediately after it has been squeezed and strained (e.g. before freezing).

Free acid content (characteristic 69)

Free acid content is determined by titration of 10 ml filtered juice with 0.1 NaOH with phenolphtaleine as indicator. The result is given in meq per 100 ml of juice (meq/100ml).

9. Literature

Bartholomew, D. P., Paul, R. E., and Rohrbach, K. G., eds., 2002: The Pineapple: Botany, Production and Uses; editeurs., University of Hawaii, Manoa, Honolulu, USA. 320 p.

Py, C., Lacoeuilhe, J.J., Teisson, C. 1984 : L'ananas, sa culture, ses produits. Collection techniques agricoles et productions tropicales. Editions Maisonneuve et Larose, Paris, 562 p.

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	*Ananas comosus* (L.) Merr.
1.2 Common name	Pineapple

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

4.1.1 Seedling [ ]
(please state parent varieties)

4.1.2 Mutation, selected clone [ ]
(please state parent variety)

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

4.1.4 Other [ ]
(please provide details)

4.2 Method of propagating the variety

4.2.1 *In vitro* propagation [ ]

4.2.2 Other [ ]
(please provide details)

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

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

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 (1)	**Plant: foliage habit (before flowering)**		
	upright	Perola	1[ ]
	semi upright	Smooth Cayenne	3[ ]
	spreading	Perolera	5[ ]
5.2 (12)	**Leaf: raised margin (piping)**		
	absent	Manzana/ Burmanguesa	1[ ]
	present	Queen, Singapore Canning/ Singapore Spanish, Smooth Cayenne	2[ ]
5.3 (13)	**Leaf: aspect of not-piping leaf edges** *to be up-to-date*		
	spines along all margins	Queen	1[ ]
	spines occur irregularly along both margins	Fina de hiero	2[ ]
	spines behind tip only	Smooth Cayenne	3[ ]
	'sand paper'	Samba	4[ ]
	smooth	Singapore Canning / Singapore Spanish	5[ ]
5.4 (40)	**Plant: number of slips**		
	few		3[ ]
	medium	Queen, Red Spanish / Española Roja	5[ ]
	many		7[ ]

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

	Characteristics		Example Varieties	Note
5.5 (43)	**Fruit: shape when ripe (bi dimensional)**	*states to be decided in 2007*		
	ovate			
	oblong			
	elliptic			
	circular		Red Spanish/ Espanola Roja	
5.6 (47)	**Fruit: predominant color when ripe**			
	green		RHS 147 A	2[ ]
	green and yellow			3[ ]
	green yellow		Perola	
	light yellow		RHS 13 A	4[ ]
	medium yellow		RHS 21 A, Smooth Cayenne	5[ ]
	orange		RHS 32 A	6[ ]
	orange red		RHS 42 A	7[ ]
	red		RHS 53 A	8[ ]
	purple (Br)			
	brown		RHS 200 A	9[ ]

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

	Characteristics	Example Varieties	Note
5.7 (53)	**Fruit: eye profile**		
	hollow or concave	Singapore Canning/ Singapore Spanish	1[ ]
	flat	Perola	2[ ]
	slightly prominent	Rondon	3[ ]
	prominent	Queen	4[ ]
5.8 (56)	**Flesh: color**		
	whitish cream	Perola (RHS 155A)	1[ ]
	light yellow	Smooth Cayenne (RHS 11A)	2[ ]
	medium yellow	Perolera (RHS 13B)	3[ ]
	yellowish yellow	Queen (RHS 21A)	4[ ]
	orange	Manzana/ Bumanguesa	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	[to be *provided*]		

Comments:

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

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

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

Yes [ ] No [ ]

(If yes, please provide details)

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

Yes [ ] No [ ]

(If yes, please provide details)

7.3 Other information

A representative color photograph of the variety 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.

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

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

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

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

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

(c) Tissue culture Yes [ ] No [ ]

(d) Other factors Yes [ ] No [ ]

Please provide details for where you have indicated "yes".

……

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

Yes [ ]

(please provide details as specified by the Authority)

No [ ]

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

Applicant's name

Signature Date

[End of document]