

UPOV

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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 on the basis of documents:
France Cirad August 2000; Brazil May 2004*

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

Alternative Names: *

<i>Botanical name</i>	<i>English</i>	<i>French</i>	<i>German</i>	<i>Spanish</i>
<i>Ananas comosus</i> (L.) Merr.	Pineapple	Ananas	Ananas	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.]

1. Subject of these Test Guidelines

These Test Guidelines apply to all varieties of Pineapple (*Ananas comosus* (L.) Merr.) produced for fruit production.

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 suckers.

2.3 The suckers should conform to the original mother plant characteristics (spines, color, etc.) (which are the underlying problems?). Only one type (which one shall we recommend?) of sucker should be represented (aerial suckers, peduncle slips, crowns, etc.).

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

40 suckers. (Is it too much? Which are the limits?)

2.5 The plant material supplied should be visibly healthy, not lacking in vigor, nor affected by any important pest or disease.

2.6 The plant material should be healthy, sturdy and free from pests and diseases, mealy bug wilt and *fusariosis* in particular. In any case a sucker shall be taken from a plant showing wilt symptoms.

2.7 The size of the suckers should be homogenous and their quality should be sufficient enough to meet the requirements for planting.

2.8 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 indicated by a code in the first column of the Table of Characteristics:

- 1-T: Floral induction provoked (Is it necessary to provoke it? And how can we provoke it in an harmonious way ?)
- 2-A: Anthesis stage
- 3-I: Immature fruit stage
- 4-M: Maturity stage.

3.4 *Test Design*

3.4.1 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.

3.4.2 Suckers are planted in twin lines, distance between individual lines is 40 cm, distance between two successive suckers within a line is 30 cm. Distance between twin lines is 90 cm. (Is it necessary? Is it harmonized?)

3.4.3 Floral induction should be provoked (forcing) according to the best plant development stage. (to be more precise or to be confirmed)

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

Unless otherwise indicated, all observations should be made on { x } plants or parts taken from each of { x } plants. In the case of parts of plants, the number to be taken from each of the plants should be 2. (x=20 in Brésil; x=? in France)

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 40 plants, 3 off-types are allowed. (If 20 plants, 2 off-types are allowed)

4.3 *Stability*

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

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

5. Grouping of Varieties and Organization of the Growing Trial

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

5.2 Grouping characteristics are those in which the documented states of expression, even where produced at different locations, can be used, either individually or in combination with other such characteristics: (a) to select varieties of common knowledge that can be excluded

from the growing trial used for examination of distinctness; and (b) to organize the growing trial so that similar varieties are grouped together.

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

It is recommended that the competent authorities divide the triploid varieties (the AAA group) of *Musa acuminata* into subgroups and types which can be identified by the following characteristics: (unnecessary sentence ?)

- (a) Leaf: leaf edges aspect (piping/not piping) (characteristic 14)
- (b) Leaf: aspect of not-piping leaf edges (characteristic 15)
- (c) Fruit: shape when ripe (characteristic 53)
- (d) Fruit: predominant color when ripe (characteristic 54)
- (e) Fruit: eye profile (characteristic 68)
- (f) Fruit/flesh: color (characteristic 71)

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 (Section 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.

1-T See Chapter 3.3.2

2-A See Chapter 3.3.2

3-I See Chapter 3.3.2

4-M See Chapter 3.3.2

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

NOTE: 1st column: **xF** refers to the French (FR) doc.
Brx refers to the Brazilian (BR) doc.

7th column Example varieties or RHS color code:
Bold = Agreed by France (FR) and Brazil (BR)
Regular = Proposed by France (FR)
Italic = Proposed by Brazil (BR)

whole table: *Italic* = Brazil (BR) proposal

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1.	1-T plant: foliage habit (before flowering)	Plant: port du feuillage				
(*)	(a) upright	érigé			Perola	3
Br1	semi upright	semi-érigé			Cayenne	5
	spreading	étalé			Perolera	7
2.	1-T plant: leaf emission rate (number of leaves produced from 4 months after planting to forcing)	Plant: rythme d'émission foliaire (nombre de feuilles émises entre 4 mois après plantation et induction florale) (since which stage and until which stage, as we have difficulties for harmonizing the month number ?)				
Br2	(a) low	lent			<i>Perola</i>	3
(+)	medium	moyen			<i>S.Cayenne</i>	5
	quick	rapide				7
3.	1-T reference leaf: length (the longer leaf?)	Feuille de référence: longueur				
Br3	(a) <i>short</i>	petit			Queen	3
(+)	(b) medium	moyen			Cayenne, <i>Perola</i>	5
	<i>long</i>	grand			Perola	7

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
4.	1-T Reference leaf: maximum width	Feuille de référence: largeur maximale				
Br4	(a) narrow	étroite			Queen	3
(+)	(b) medium	moyen			Cayenne	5
	large or broad	large			Perola	7
5.	1-T Reference leaf: weight	Feuille de référence: poids (propose to be deleted except if linked to thickness)				
		Is it linked to thickness ?				
	(a) low	faible			Queen	3
	(b) medium	moyen			Cayenne	5
	high	fort			Perola	7
6.	1-T Leaf: predominant color (on upper side)	Feuille: couleur de base (sur la face supérieure)	(we suggest to divide the three characters in:			
(*)			6 leaf: predominant color			
			6' leaf: anthocyanin			
			6'' leaf: intensity of anthocyanin)			
Br5	(a) light green	vert clair			<i>S.Cayenne</i>	1
	medium green	Vert			Cayenne	2
	dark green	vert foncé			Jupi, <i>Perola</i>	3
	green purple		Is it necessary ?		Witness ?	
	red	rouge			Roxo de tefe	4
	dark red or purple (Br)	rouge foncé				5
	green purple	vert foncé				

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
7.	1-T Leaf: presence of variegations (on upper side)	Feuille: panachures achlorophylliennes ?? (sur la face supérieure)				
Br7	(a) absent	absente			<i>Perola, S.Cayenne</i>	1
	present	présente			<i>Abacaxi Tricolor</i>	9
8.	1-T Leaf: distribution of variegations (on upper face)	Feuille: répartition des panachures (sur la face supérieure) (to be precised by France and add a drawing)				
(+)	(a) on margins	marges achlorophylliennes				1
	in grooves	gouttière achlorophyllienne				2
9.	1-T Leaf: presence of anthocyanins (on upper side)	Feuille: anthocyane (sur la face supérieure) (Is it it for the 6' and 6'' character ?)				
(*)	(a) absent	absente			Spanish vert	1
	present	présente			<i>Perola, S.Cayenne</i>	9
10.	1-T Leaf: intensity of anthocyanin coloration	Feuille: expression des anthocyanes				
(*)	(a) weak	faible			Pot à eau	3
	medium	moyen			Champaka	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
11.	1-T Leaf: transversal distribution of anthocyanins	Feuille: répartition transversale des anthocyanes				
(a)	predominantly on margins	principalement sur les marges			Singapore canning	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 Longitudinal Leaf: distribution of anthocyanin coloration	Feuille: répartition longitudinale des anthocyanes				
(a)	predominantly towards the base	principalement vers la base			Manzana	1
	along the whole leaf	sur toute la longueur de la feuille				2
	predominantly towards the apex	principalement vers l'apex			Cayenne	3
13.	1-T Leaf: presence of trichomes on lower surface // Spines (Br car 8??)	Feuille: présence de trichomes sur la face inférieure				
(a)	few // or absent or very weak (Br car 8)	faible				3
	medium	moyen			Perolera	5
	a lot	fort			Cayenne	7
Br8 (+)	Leaf: spines	Feuille: épines				
	absent					1
	inconspicuous					2
	conspicuous					3

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
14. 1-T Leaf: piping edge (*)		Feuille: caractère “ourlé”/ “piping”				
(a)	absent	ourlé/piping			Manzana	1
	present	non ourlé/non-piping			Singapore canning, Cayenne, Queen	2
	<p>The characters 13 and 14 are to be harmonised with IPGRI descriptors ; you should explicit :</p> <p>- trichomes</p> <p>- piping</p> <p>Do you have photographs ?</p>					
15. 1-T Leaf: aspect of not-piping leaf edges (*)		Feuille: bordure du limbe des types non-piping				
(a)	spines along all margins	épineuse			Mac Gregor	1
	spines occur irregularly along both margins	demi épineuse			Fina de hiero	2
	spines behind tip only	épines d’extrémités			Champaka	3
	sand paper	lisse papier de verre			Samba	4
	smooth	lisse			Singapore canning	5
Br9 (+)	Leaf: Distribution of spines at margin					
	at base only					1
	at apex only				S.Cayenne	2
	at base and apex					3
	regular				Perola	4
	irregular					5

	English	français	deutsch	español	Example Varieties Exemples Beispielsorten Variedades ejemplo	Note/ Nota
16	1-T Leaf: distance between spines	Feuille: distance entre les épines				
	(a) small	courte			Perola	3
	medium	moyenne				5
	large	longue			Queen	7
17.	Spine: color in relation to leaf blade	Epines: couleur par rapport au limbe				
	(a) small	petite				3
	medium	moyenne				5
	large	grande				7
18.	1-T Spine: size	Epines : taille				
	(a) small	petite			Perola	3
	medium	moyenne			Singapore canning	5
	large	grande			Queen	7
19.	2-A Peduncle:bract color of ventral side	Pédoncule floral: couleur face ventrale/interne des feuilles bractéales (Is it the bracts of the peduncle ?)				
(*)	(c) green	vert				1
	light pink	rose pale				2
	medium pink	rose vif			50 A	3
	dark pink	rose foncé			46 C	4
	medium red	rouge			44 B	5
	dark red	rouge sombre			45 A, 45 B.	6

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
20.	2-A Inflorescence: floral bract size	Inflorescence/ bractée florale: taille (there should be a drawing + which bracts are you talking of ? And at which stage of the inflorescence ?)				
	(c) small	petite			Perola	3
	medium	moyen			Queen	5
	large	grande			Singapore canning	7
21.	2-A Inflorescence: flowering pattern	Inflorescence/ fleurs: type de floraison				
	(c) flowering proceeds from bottom to top or acropétale irregularly	acropétale			Champaka	1
					Perola	2
22.	2-A Inflorescence: proportion of open flowers	Inflorescence/ fleurs: proportion de fleurs ouvertes (Is it the same character as the character 14 ?)				
	(c) null	aucune				1
	weak	certaines			Singapore canning	2
	high (all)	toutes			Champaka	3
Or? Br10 (+)	Inflorescence: number of fertile flowers					
	low				Perola	3
	medium				S.Cayenne	5
	high					

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
23. Br14	2-A Inflorescence: coloration of apex	Inflorescence/ pétale: couleur de l'apex				
	(c) <i>whitish (Br)</i>					
	<i>light purple (Br)</i>					
	<i>medium purple (Br)</i>				<i>S. Cayenne</i>	
	red-purple or dark purple (Br)	violet rouge			Cayenne (89 A) or purple or blue	
	blue-purple	violet bleu			Perola (98 A) or blue?	
24. Br15 (+)	2-A Petal: size of white area	Inflorescence/ pétale: proportion de blanc visible				
	(c) (without removing the flower from the fruit)	(pétale en place) (why ?)				
	absent or very small	nulle ou très faible			Singapore canning	1
	small	faible			Cayenne	3
	medium	moyenne			Perolera	5
	large	forte			Jupi, Perola	7
25. Br12	2-A Inflorescence: petal length	Inflorescence/ pétale: longueur				
	(c) short	courte			Singapore canning	3
	medium	moyenne			Cayenne	5
	long	longue			Rondon	7
Br12	Flower: petals base	Is this character reliable ?				
	free					1
	fused					2
Br13	Flower: imbricate petals	Is this character reliable ?				
	absent					1
	present					9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
26.	2-A Inflorescence: sepal length	Inflorescence/ sépale: longueur				
	(c) short	courte			Perola	3
	medium	moyenne			Cayenne	5
	long	grande			Queen	7
Br11	Sepal: predominant color					
	whitish					1
	greenish					2
	purplish				S.Cayenne	3
27.	2-A Flower: style type	Fleur : type de fleur				
Br18 (+)	(c) brévistyle	brévistyle				1
	équistyle	équistyle				2
	longistyle	longistyle			<i>Perola, S.Cayenne</i>	3
Br16	Flower: distribution of anthers	(in accordance with IGPRI descriptor ??)				
	separate					1
	grouped					2
28. Br17	2-A Inflorescence/ stamens: pollen quantity	Inflorescence/ étamines: quantité de pollen (how can we estimate it ? Mexique and Israël are making a suppression suggestion)				
	(c) low	faible			Cayenne, Perola	3
	medium	moyenne			Queen	5
	high	forte			Perolera	7

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
29. 2-A Inflorescence: stamen length		Inflorescence/ étamines: longueur				
(c) short	short	courte			Cayenne	3
medium	medium	moyenne			Rondon	5
long	long	longue			Perolera	7
30. 2-A Inflorescence: style length		Inflorescence/ pistil: longueur (Is it the same character as the character 27?)	Style or pistill?			
(c) short	short	courte			Singapore canning	3
medium	medium	moyenne			Red Spanish	5
long	long	longue			Perolera	7

**Characters 28,29,30,
Isn't it to precise and
difficult for making
an evaluation?**

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
31.	3-I Fruit: color (fully developed immature fruit)	Fruit immature: couleur externe principale				
	(d) <i>grey green (Br)</i>		Is grey green identical to white green and grey?			x
Br31	white green =?Grey green	blanc vert			157 C	1
	<i>light green (Br)</i>				<i>Perola</i>	
	medium green	vert			143 A	2
	dark green	vert foncé			139 A, <i>S.Cayenne</i>	3
	brownish-green	vert brun				4
	pink	rose			52 A	5
	medium Red	rouge			45 A	6
	brown purple	rouge foncé			187 A	7
	brownish purple	brun rouge			178 A	8
	<i>purple (Br)</i>					
	dark brown	marron foncé			200 A	9
32.	3-I Fruit: presence of trichomes when unripe	Fruit immature: présence de trichomes				
	(d) low	faible			<i>Perola</i>	3
	medium	moyenne				5
	high	forte			<i>Cayenne</i>	7
33.	4-M Plant: fruit habit when ripe	Plant: port du fruit				
	(e) flattened	verse			<i>Perolera</i>	3
	bending	incliné			<i>Cayenne</i>	5
	upright	érigé			<i>Perola</i>	7

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
34.	4-M Plant: part of the plant bending or flattening	Plant: partie du plant responsable de la verse				
(e)	fruit	fruit				1
	peduncle	pédoncule			Cayenne	2
	whole plant	plant entier			Perolera	3
35.	4-M Plant: height from the ground to the top of the foliage	Plant: hauteur sol-limite supérieure du feuillage				
(e)	short	courte			Rondon	3
	medium	moyenne			Queen	5
	high	haute			Perola	7
36.	4-M Plant: height from the ground to fruit base	Plant: hauteur sol-base du fruit				
(e)	short	courte			Queen	3
	medium	moyenne			Perolera	5
	high	haute			Rondon	7
37.	4-M Peduncle length (*)	Pédoncule: longueur				
Br20 (+)	(e) short	courte			Cayenne	3
	medium	moyenne			Singapore canning	5
	long	longue			Perola	7

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
38. 4-M Peduncle diameter (at middle)	Pédoncule: diamètre				
Br21 (e) (+) small	petite			Singapore canning	3
medium	moyenne			Cayenne, Perola	5
large	grande				7
Br23	Peduncle: number of bracts				
low					3
medium					5
high					7
Br24	Imbricate bracts				
absent					1
present					9
Br25	Peduncle: trichomes				
absent					1
present					9
<i>Relation between Br 21/23/24/25 and France 19/20 characteristics to be studied.</i>					
39. 4-M Suckers: mean (* (*)	number of underground suckers per plant	Rejets: nombre moyen de rejets souterrains par plant (moyenne)			
Br19 (e) none or very few	nul ou très faible			Manzana,	1
few	faible			Cayenne, Perola	3
medium	moyen			Red Spanish	5
many	fort			Singapore canning	7

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
40.	4-M Suckers on peduncle: mean number of aerial suckers per plant	Rejets sur le pédoncule: nombre de rejets tige (cayeux) par plant				
(*)						
Br22						
(+)						
or						
Br34	<i>Br: number of younglets/bulbs/slips</i>					
(+)	<i>or</i>					
	<i>Br: number of fruit basal slips</i>					
(e)	none or very few	nul ou très faible			Perolera, <i>S.Cayenne</i>	1
	few	faible			Perola	3
	medium	moyen			Cayenne,	5
	many	fort			Queen, <i>Perola</i>	7
	very many (Br)					9
41.	4-M Suckers on peduncle: size of aerial suckers at fruit harvest	Rejets: taille des rejets tige (cayeux) à la récolte				
(*)						
Br34	(e) small	petite				3
?						
(+)						
	medium	moyenne			Champaka	5
	large	grande			Fils de Chalvet	7

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
42. (*)	4-M Slips: presence/absence	Bulbilles: présence/absence				
Br35 ?	(e) absent	absente			Cayenne	1
	present	présente			Queen, Perolera, Perola	9
Br35	Fruit: detachable fruitlets					
	absent					1
	present					9
Br36	Fruit: relief of fruitlet					
	flat				<i>S.Cayenne</i>	1
	prominent				<i>Perola</i>	3
	very prominent					5
43. (*)	4-M Slips: number of slips	Bulbilles: nombre de bulbilles				
Br34	(e) few	petit				3
	medium	moyen			Queen, Red Spanish	5
	many	grand				7
44.	4-M Slips: weight of the largest slip	Bulbilles: poids de la bulbille la plus développée				
	(e) small	petit			Queen	3
	medium	moyen				5
	large	grand			Perola	7
45.	4-M Crown: crown foliage attitude	Couronne: port				
Br45	(e) erect	dressé			Perola	3
	open	ouvert			Cayenne	5
	spreading	étalé				7
	drooping <i>or</i> <i>decumbent</i>	retombant				9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
46. 4-M Crown: color of crown leaves		Couronne: couleur des feuilles				
(e) same as plant leaves		identique à la feuille				1
with more anthocyanins than the plant leaves		plus anthocyanée que la feuille				2
47. 4-M Crown: proportion of plants bearing crownlets		Couronne: fréquence du phénotype “couronnes surnuméraires”				
(e) none or very few		nulle ou très faible			Cayenne	1
few		faible			Perolera	3
medium		moyenne				5
many		forte				7
48. 4-M Crown: number of crownlets per fruit		Couronne: nombre de couronnes surnuméraires par fruit				
(e) small		petit			Perolera	3
medium		moyen				5
high		grand				7
49. 4-M Crown: proportion of plants with multiple crowns		Couronne: fréquence du phénotype “couronnes multiples”				
Br48 (e) none or very low		nulle ou très faible				1
low		faible				3
medium		moyenne				5
high		forte				7
<i>very high (Br)</i>						9

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
50. 4-M Crown height (* (*)	Couronne: hauteur				
Br46 (e) very short (+)	très courte			Certains Queen	1
short	courte			Queen	3
medium	moyenne			Cayenne, Perola	5
high	haute			Singapore canning	7
51. 4-M Crown weight (* (*)	Couronne: poids				
Br47 (e) small (+)	petit			Rondon	3
medium	moyen			Mac Gregor, <i>Perola</i>	5
large	grand			Cayenne	7
52. 4-M Fruit: breaking (* (*)	Fruit: rupture fruit- pédoncule (cueillette)				
(e) very easy	très facile				1
easy	facile				2
difficult	difficile				3
53. 4-M Fruit: shape when (* (*)	Fruit: forme à maturité				
Br30 (e) trapezoid, upside (+) down	trapèze inversé			Singapore canning	1
cylindrical	cylindrique			Perolera, <i>S.Cayenne</i>	2
<i>cylindrical to conical (Br)</i>					
ovoid	ovoïde			Cayenne	3
conical	conique			Perola	4
<i>elliptic (Br)</i>					
trapezoid	trapèze				5
globular	globuleux			Red Spanish	6

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
54. (*)	4-M Fruit: “skin (Br)?” predominant color when ripe (or Br: color of skin at the point to consume)	Fruit: couleur externe principale				
Br31 (e)	white cream	blanc crème			155 A	1
	green	vert			147 A	2
	green and yellow =? <i>green with yellow spots (Br)</i>	vert jaune				3
	<i>light yellow (Br)</i>				<i>Perola</i>	
	yellow	jaune			13 A	4
	golden yellow	jaune d’or			21 A, <i>S.Cayenne</i>	5
	orange	orange			32 A	6
	orange red	rouge orangé			42 A	7
	red	rouge			53 A	8
	<i>purple (Br)</i>					
	brown	marron			200 A	9
55. (*)	4-M Fruit: color uniformity when ripe	Fruit: homogénéité de la coloration externe à maturité				
Br33 (e)	heterogeneous =? <i>absente</i>	irrégulière			Rondon	1
	with a gradient =? <i>absente</i>	en gradient			Cayenne	2
	uniform =? <i>présente</i>	uniforme			Queen	3
56.	4-M Fruit: presence of deformations	Fruit: déformations				
	(e) none or very slight	absentes				1
	definite, in a hollow shape	en creux				2
	definite, in a hump shape	en bosses				3

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
57.	4-M Fruit: presence of knobs on fruit base	Fruit: présence de knobs à la base du fruit				
	(e) absent	absente				1
	present	présente				9
58.	4-M Fruit: presence of a neck	Fruit: présence d'un collier sur le fruit				
	(e) absent or sessile like	absente ou très peu visible			Cayenne	1
	short	légère			Manzana	3
	medium	moyenne				5
	large	prononcée			Abacaxi verde	7
59.	4-M Fruit: height (*) (without neck)	Fruit: hauteur (hors collier)				
Br26 (+)	(e) short	courte			Singapore canning	3
	medium	moyen			Perolera, <i>S.Cayenne</i>	5
	high	haute			Perola	7
60.	4-M Fruit: diameter at the lower part (at mid height of the one before last eye)	Fruit: diamètre zone supérieure (mi-hauteur de l'avant-dernier œil)				
Br29 (+)	(e) small	petit			Perola	3
	medium	moyen			Singapore canning	5
	large or wide	grand			Perolera, <i>S.Cayenne</i>	7
61.	4-M Fruit: diameter at the middle (*)	Fruit: diamètre zone médiane				
Br28	(e) small	petit			Perola	3
	medium	moyen			Cayenne	5
	large or wide	grand			Red Spanish	7

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
62.	4-M Fruit: diameter at the upper part // at base (Br)	Fruit: diamètre zone inférieure (mi-hauteur du 2ème œil)				
Br27	(e) small	petit			Rondon	3
	medium	moyen			Perola	5
	large or wide	grand			Cayenne	7
63.	4-M Fruit: weight (*)	Fruit: poids (sans couronne)				
	(e) very low	très faible			Victoria	1
	low	faible			Singapore canning	3
	medium	moyen			Red Spanish	5
	high	fort			Cayenne	7
	very high	très fort			Cabeza de onca	9
64.	4-M Fruit: volume (without crown)	Fruit: volume (sans couronne)				
	(e) very low	très faible				1
	low	faible				3
	medium	moyen				5
	high	fort				7
	very high	très fort				9
65.	4-M Fruit: apparent density (floatation)	Fruit: densité apparente (flottaison)				
	(e) fruit is floating	fruit flotte			Rondon	3
	intermediate	fruit flotte entre deux			Pomare	5
	fruit is sinking	fruit coule			Manzana	7
66.	4-M Fruit: eyes number	Fruit/ œil: nombre d'yeux				
	(e) small	petit			Red Spanish	3
	medium	moyen			Cayenne	5
	large	grand			Queen	7

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
67. 4-M Fruit: eye relative surface (*)	Fruit/ œil: taille de l'œil				
(e) small	petite			Black antigua	3
medium	moyen			Cayenne	5
large	grande			Red Spanish	7
68. 4-M Fruit: eye profile (*)	Fruit/ œil: profil de l'œil				
(e) hollow or concave	concave			Singapore canning	1
flat	plat			Perola	2
slightly prominent	peu proéminent			Rondon	3
prominent	proéminent			Queen	4
69. 4-M Fruit: eye color	Fruit/ œil: coloration de l'œil				
(e) uniform	homogène			Queen	1
with a gradient	en gradient			Perola	2
70. 4-M Fruit: relative size of the floral bract compared to eye	Fruit/ œil: taille de la bractée par rapport à l'œil				
(e) ¼	environ 1/4				1
½	environ 1/2				3
¾	environ 3/4				5
equal to the eye	égale à l'œil				7
greater than the eye	supérieure à œil				9
71. 4-M Fruit/flesh: color (*)	Fruit/ pulpe: couleur de la chair		Fruit/flesh: color		
Br37 (e) white or <i>white cream (Br)</i>	blanc		white or <i>white cream (Br)</i>	Perola (155A)	1
pale yellow	jaune pale		pale yellow	Cayenne (11A)	2
yellow	jaune		yellow	Perolera (13B)	3
golden yellow	jaune d'or		golden yellow	Queen (21A)	4
<i>orange (Br)</i>			<i>orange (Br)</i>		

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
72.	4-M Fruit/flesh: color uniformity from the bottom to the top	Fruit/ pulpe: répartition de la coloration interne sur la hauteur				
	(e) uniform	homogène			Queen	1
	with a gradient	selon un gradient			Cayenne	2
73.	4-M Fruit/flesh: core diameter Or Br: diameter of central axis	Fruit/ pulpe: diamètre du cœur				
Br41 (+)	(e) small	petit			Singapore canning	3
	medium	moyen			Queen	5
	large or wide	grand			Champaka	7
74.	4-M Fruit/flesh: eye depth	Fruit/ pulpe: profondeur des yeux				
	(e) weak	faible				3
	medium	moyenne			Cayenne	5
	strong or deep	forte			Queen	7
75.	4-M Fruit/flesh: visual appraisal of density or pulp density (*)	Fruit/ pulpe: remplissage de la pulpe				
	(e) weak	faible			Queen	3
	medium	moyen			Cayenne	5
	strong	fort			Perolera	7
76.	4-M Fruit/flesh: firmness	Fruit/ pulpe: fermeté de la chair				
Br38	(e) weak or soft	faible			Rondon, <i>Perola</i>	3
	medium	moyenne			Cayenne	5
	strong or firm	forte			Perolera, <i>S.Cayenne</i>	7

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
77. 4-M Fruit/flesh: texture (*)	Fruit/ pulpe: texture de la chair				
(e) smooth	fondante			Perola	1
crisp	croquante			Queen	2
fibrous	fibreuse			Singapore canning	3
78. 4-M Fruit/flesh: fibrousness	Fruit/ pulpe: teneur en fibres				
Br39 (e) low	faible			Perola	3
medium	moyenne			Cayenne	5
high	forte			Singapore canning	7
79. 4-M Fruit/flesh: aroma or flavor	Fruit/ pulpe: arôme				
Br44 (e) low	faible				3
medium	moyen			<i>Perola</i>	5
high	fort			<i>S.Cayenne</i>	7
80. 4-M Fruit/flesh: sugar taste (*)	Fruit/ pulpe: appréciation du caractère sucré				
(e) low	faible			Singapore canning	5
medium	moyenne			Cayenne	
high	forte				7
81. 4-M Fruit/flesh: acidic taste (*)	Fruit/ pulpe: appréciation du caractère acide				
Br43 (e) low	faible			Perola	5
medium	moyenne			Cayenne	
high	forte			<i>S.Cayenne</i>	7

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
82. 4-M Fruit/flesh: (*) juiciness	Fruit/ pulpe: teneur en jus				
Br40 (e) low	faible			Pomare	3
medium	moyenne			Mac Gregor, <i>S.Cayenne</i>	5
high	forte			Cayenne, <i>Perola</i>	7
83. 4-M Fruit/juice: (*) ascorbic acid content	Fruit/ Jus: teneur en acide ascorbique				
(e) low	faible			Cayenne	5
(f) medium	moyenne			Perola	7
high	forte			Perolera	
84. 4-M Fruit/juice: free (*) acids content	Fruit/ Jus: acidité titrable				
(e) low	faible			Perola	3
(f) medium	moyenne			Rondon	5
high	forte			Red Spanish	7
85. 4-M Fruit/juice: sugar (*) content (using refractometer)	Fruit/ Jus: indice réfractométrique (IR mesuré)				
(e) low	faible			Singapore canning	3
(f) medium	moyen			Perolera	5
high	fort			Cayenne	7

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
Br42 (+)	Or Br: Concentration of soluble solids (Brix degrees)				
	low				3
	medium			Perola, S.Cayenne	5
	high				7
B49	Resistance to <i>Fusarium subglutinans</i>				
	high susceptible				1
	susceptible				2
	medium susceptible				3
	medium resistant				4
	resistant				5
	high resistant				6

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) (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).
- (b) (Characteristics 3 to 5) The *reference(to precise for France and Bresil. What is a reference leaf?In Brésil it is"the most physiological young active leaf before bud emergence.) leaf* is the longest at the time floral induction is provoked. Measurements to be taken on 20 leaves.
- (c) (Characteristics 19 to 30): 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 31 and 32): 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 33 to 85): 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.
- (f) (Characteristics 83 to 85): Analysis should be made on 10 different juices taken from each of 10 fruits. Methods are appended to this document (appendix 1).

8.2 *Explanations for individual characteristics*

OBSERVAÇÕES E FIGURAS / OBSERVATIONS AND FIGURES
FROM BRAZIL (**Br(+)** Characteristics)

Característica Br1: Planta: posição das folhas / *Characteristic Br1: Plant: attitude*



3
semi-ereta
semi-erect



5
intermediária
intermediary



7
aberta
open

Característica Br2: Planta: quantidade de folhas ativas /
Characteristic Br2: Plant: number of active leaves

Aproximadamente considera-se:

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

- baixa (*low*) < 40
- média (*medium*) 40 – 60
- alta (*high*) > 60

Característica Br3: Folha: comprimento / *Characteristic Br3: Leaf: length*

Aproximadamente considera-se:

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

- curto (*short*) < 90 cm
- médio (*medium*) 90 – 120 cm
- longo (*long*) > 120 cm

Característica Br4: Folha: largura / *Characteristic Br4: Leaf: width*

Aproximadamente considera-se:

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

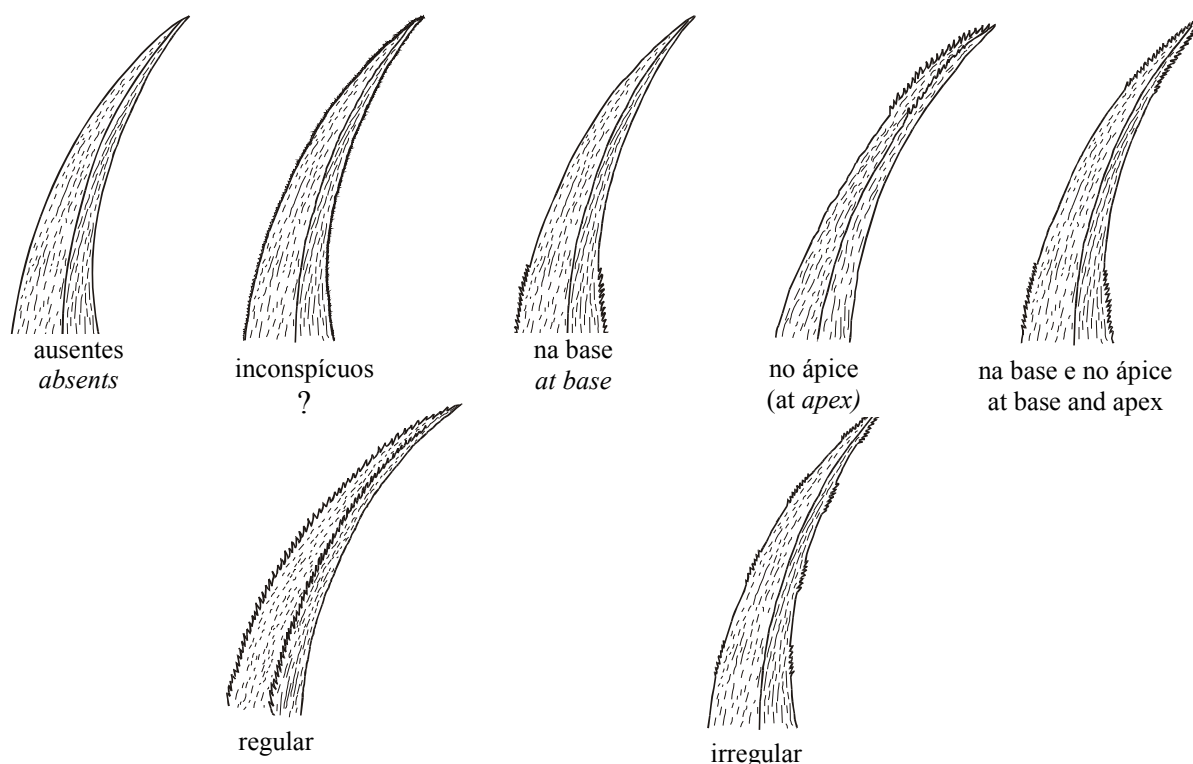
- estreita (*narrow*) < 6,0 cm
- média (*medium*) – 6,0 a 7,0 cm
- larga (*broad*) > 7,0 cm

Característica Br8: Folha: espinhos / Characteristic Br8: Leaf: spines

Característica Br9: Folha: distribuição dos espinhos na margem /
Characteristic Br9: Leaf: distribution of spines at margin

Inconspícuos são espinhos microscópicos que podem ser detectados através do tato. Passando-se a mão nas margens das folhas tem-se a sensação de se sentir uma lixa. (“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.)

São considerados espinhos conspícuos aqueles visíveis a olho nú. (“Conspícuos” are spines, which are visible with the naked eye.)



(Desenho adaptado por Maria da Conceição Borba)

Característica Br10: Inflorescência: quantidade de flores /

Characteristic Br10: Inflorescence: number of flowers

Aproximadamente considera-se:

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

- baixa (low) < 130
- média (medium) 130 - 170
- alta (high) > 170

Característica Br15: Flor: proporção da coloração branca na pétala /
Characteristic Br15: Flower: ratio of the white color in the petal

- Aproximadamente considera-se:
(*In approach, we can consider / We can consider near by*)
- baixa (*low*) < 30 %
 - média (*medium*) 30 – 60 %
 - alta (*high*) > 60 %

Característica 18: Flor: comprimento do estilete /
Characteristic Br18: Flower: length of style

- brevistilo: mais curto que os estames
shorter than the stamens
- equistilo: do mesmo comprimento dos estames
with the same length of the stamens
- longistilo: mais longo que os estames
longer than the stamens

Característica Br19: Rebentões: quantidade /
Characteristic Br19: Suckers: number

- Aproximadamente considera-se:
(*In approach, we can consider / We can consider near by*)
- baixa (*low*) < 1
 - média (*medium*) 1 - 2
 - alta (*high*) > 2

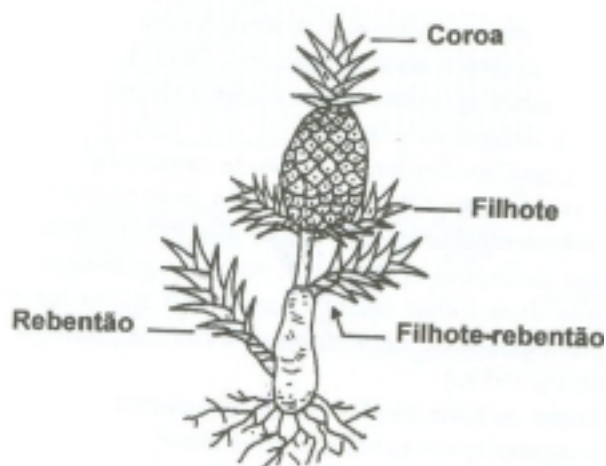
Característica Br20: Pedúnculo: comprimento / Characteristic Br20: Peduncle: length

- Aproximadamente considera-se:
(*In approach, we can consider / We can consider near by*)
- curto (*short*) < 18 cm
 - médio (*medium*) 18 – 28 cm
 - longo (*long*) > 28 cm

Característica Br21: Pedúnculo: diâmetro na porção mediana /
Characteristic Br21: Peduncle: diameter at the middle portion

- Aproximadamente considera-se:
(*In approach, we can consider / We can consider near by*)
- pequeno (*small*) < 2,5 cm
 - médio (*medium*) 2,5 – 3,5 cm
 - grande (*large*) > 3,5 cm

Característica Br22: Pedúnculo: quantidade de filhotes /
Characteristic Br22: Peduncle: number of slips



Aproximadamente considera-se:

- baixa (*low*) < 5
- média (*medium*) 5 – 10
- alta (*high*) > 10

Característica Br26: Fruto: comprimento. Medido da base até o topo sem considerar a coroa /
Characteristic Br26: Fruit: length. Measured from base to top without consider the crown

Aproximadamente considera-se:

(*In approach we can consider / We can consider near by*)

- curto (*short*) < 15 cm
- médio (*medium*) 15 – 20 cm
- longo (*long*) > 20 cm

Característica 27: Fruto: diâmetro basal / Characteristic Br27: Fruit: diameter of base

Aproximadamente considera-se:

(*In approach we can consider / We can consider near by*)

- pequeno (*small*) < 10 cm
- médio (*medium*) 10 – 12 cm
- grande (*large*) > 12 cm

Característica 29: Fruto: diâmetro apical / Characteristic Br29: Fruit: diameter of tip

Aproximadamente considera-se:

(*In approach we can consider / We can consider near by*)

- pequeno (*small*) < 6 cm
- médio (*medium*) 6 - 10 cm
- grande (*large*) > 10 cm

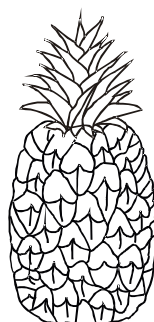
Característica Br30: Fruto: forma / Characteristic Br30: Fruit: shape



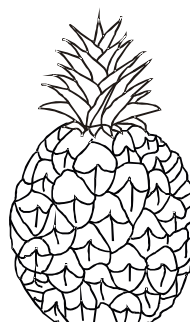
1
cônica
conic



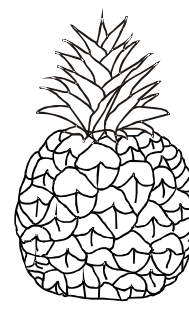
2
cônica a cilíndrica
conic to cylindric



3
cilíndrica
cylindric



4
elíptico
elliptic



5
globosa
global

Característica Br34: Fruto: quantidade de filhotes basais /
Characteristic Br34: Fruit: number of fruit basal slips

Aproximadamente considera-se:

(In approach we can consider / We can consider near by)

- baixa (*low*) < 1
- média (*medium*) 1 – 2
- alta (*high*) > 2

Característica Br41: Fruto: diâmetro do eixo central /
Ad. Br41: Fruit: diameter of central axis

Aproximadamente considera-se:

(In approach we can consider / We can consider near by)

- pequeno (*small*) < 1,5 cm
- médio (*medium*) 1,5 – 2,5 cm
- grande (*large*) > 2,5 cm

Característica Br42: Fruto: concentração de sólidos solúveis (graus Brix) /
Characteristic Br42: Fruit: concentration of soluble solids (Brix degrees)

Aproximadamente considera-se:

(In approach we can consider / We can consider near by)

- baixo (*low*) < 13
- médio (*medium*) 13 – 16
- alto (*high*) > 16

Característica Br43: Fruto: acidez (titulada em percentagem) /
Characteristic Br43: Fruit: acidity (fixed in percentage)

Aproximadamente considera-se:

(In approach we can consider / We can consider near by)

- baixa (*low*) < 0,5
- média (*medium*) 0,5 – 0,7
- alta (*high*) > 0,7

Característica Br46: Coroa: comprimento / Characteristic Br46: Crown: length

Aproximadamente considera-se:

(In approach we can consider / We can consider near by)

- curto (*short*) < 15 cm
- médio (*medium*) 15 – 20 cm
- longo (*long*) > 20 cm

Característica Br47: Coroa: peso / Characteristic Br47: Crown: weight

Aproximadamente considera-se:

(In approach we can consider / We can consider near by)

- baixo (*low*) < 100 g
- médio (*medium*) 100 – 130 g
- alto (*high*) > 130 g

8.3 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 (character 85)

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

Free acid content (character 84)

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

Ascorbic acid content (character 83)

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).

9. Literature

Py C., Lacoeylthe 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	<input type="text" value="Ananas comosus (L.) Merr."/>	
1.2 Common name	<input type="text" value="PINEAPPLE"/>	
2. Applicant		
Name	<input type="text"/>	
Address	<input type="text"/>	
Telephone No.	<input type="text"/>	
Fax No.	<input type="text"/>	
E-mail address	<input type="text"/>	
Breeder (if different from applicant)	<input type="text"/>	
3. Proposed denomination and breeder's reference		
Proposed denomination (if available)	<input type="text"/>	
Breeder's reference	<input type="text"/>	

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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#4. Information on the breeding scheme and propagation of the variety

4.1 Breeding scheme

- 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)

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

Characteristics	Example Varieties	Note
5.1 Plant: foliage attitude (1)		
erect // <i>semi erect (Br)</i>	Perola	3 []
semi-erect // <i>intermediate (Br)</i>	Cayenne	5 []
spreading // <i>open (Br)</i>	Perolera	7 []

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:
Characteristics	Example Varieties	Note	
5.2 Leaf: leaf edges aspect (piping/not piping) (14)			
piping	Manzana	1	[]
not piping	Singapore canning, Cayenne, Queen	2	[]
5.3 Leaf: aspect of not-piping leaf edges (15)			
spines along all margins	Mac gregor	1	[]
spines occur irregularly along both margins	Fina de hiero	2	[]
spines behind tip only	Champaka	3	[]
sand paper	Samba	4	[]
smooth	Singapore canning	5	[]
5.4 Slips: presence/absence (42)			
absent	Cayenne	1	[]
present	Queen, Perolera, Perola	9	[]
5.5 Fruit: shape when ripe (53)			
trapezoid, upside down	Singapore canning	1	[]
cylindrical	Perolera, <i>S.Cayenne</i>	2	[]
<i>cylindrical to conical (Br)</i>			
ovoid	Cayenne	3	[]
conical	Perola	4	[]
<i>elliptic (Br)</i>			
trapezoid		5	[]
globular	Red Spanish	6	[]

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:	
Characteristics	Example Varieties	Note	
5.6 Fruit: “skin (Br)?” predominant color when ripe (or Br: color of skin (54) at the point to consume)			
white cream	155 A	1[]	
green	147 A	2[]	
green and yellow =? <i>green with yellow spots (Br)</i>		3[]	
<i>light yellow (Br)</i>	<i>Perola</i>		
yellow	13 A	4[]	
golden yellow	21 A, <i>S.Cayenne</i>	5[]	
orange	32 A	6[]	
orange red	42 A	7[]	
red	53 A	8[]	
<i>purple (Br)</i>			
brown	200 A	9[]	
5.7 Fruit: eye profile (68)			
hollow or concave	Singapore canning	1[]	
flat	Perola	2[]	
slightly prominent	Rondon	3[]	
prominent	Queen	4[]	
5.8 Fruit/flesh: color (71)			
white or <i>white cream (Br)</i>	Perola (155A)	1[]	
pale yellow	Cayenne (11A)	2[]	
yellow	Perolera (13B)	3[]	
golden yellow	Queen (21A)	4[]	
<i>orange (Br)</i>			

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

Comments:

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

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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9. Information on plant material to be examined or submitted for examination.

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

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

- | | | |
|---|---------|--------|
| (a) Microorganisms (e.g. virus, bacteria, phytoplasma) | Yes [] | No [] |
| (b) Chemical treatment (e.g. growth retardant, pesticide) | Yes [] | No [] |
| (c) Tissue culture | Yes [] | No [] |
| (d) Other factors | Yes [] | No [] |

Please provide details of 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]