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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

DRAFT

LITCHI

UPOV Code: LITCH_CHI

Litchi chinensis Sonn.

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by experts from China

to be considered by the

Technical Committee at its fiftieth session,
to be held in Geneva from April 7 to 9, 2014

Alternative Names:*

Botanical name	*English*	*French*	*German*	*Spanish*
Litchi chinensis Sonn.	Litchi, Lychee	Litchi	Litschi	Litchi

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 varieties of *Litchi chinensis* Sonn..

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 air-layerings or grafts. If the material is supplied in the form of grafts, the rootstocks of the grafts should also be supplied at the same time.

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

5 plants.

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

2.5 The plant material should not have undergone any treatment which would affect the expression of the characteristics of the variety, unless the competent authorities allow or request such treatment. If it has been treated, full details of the treatment must be given.

3. Method of Examination

3.1 Number of Growing Cycles

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

3.1.2 The growing cycle is considered to be the duration of a single growing season, beginning with bud burst, flowering and fruit harvest and concluding when the following dormant period ends with the swelling of new season buds.

3.2 Testing Place

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

3.3 Conditions for Conducting the Examination

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

3.4 Test Design

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

3.5 Additional Tests

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

4. Assessment of Distinctness, Uniformity and Stability

4.1 Distinctness

4.1.1 General Recommendations

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

4.1.2 Consistent Differences

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

4.1.3 Clear Differences

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

4.1.4 Number of Plants / Parts of Plants to be Examined

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

4.1.5 Method of Observation

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

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

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

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

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

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

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

4.2 Uniformity

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

4.2.2 For the assessment of uniformity, a population standard of 1% and an acceptance probability of at least 95% should be applied. In the case of a sample size of 5 plants, no off-types are allowed.

4.3 Stability

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

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

5. Grouping of Varieties and Organization of the Growing Trial

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

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

5.3 The following have been agreed as useful grouping characteristics:

(a) Fruit: size (characteristic 34)
(b) Fruit: color of skin (characteristic 39)
(c) Fruit: surface (characteristic 40)
(d) Time of beginning of flowering (characteristic 50)

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

6. Introduction to the Table of Characteristics

6.1 Categories of Characteristics

6.1.1 Standard Test Guidelines Characteristics

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

6.1.2 Asterisked Characteristics

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

6.2 States of Expression and Corresponding Notes

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

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

State	Note
small	3
medium	5
large	7

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

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

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

6.3 Types of Expression

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

6.4 Example Varieties

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

6.5 Legend

(*)	Asterisked characteristic	– see Chapter 6.1.2
QL	Qualitative characteristic	– see Chapter 6.3
QN	Quantitative characteristic	– see Chapter 6.3
PQ	Pseudo-qualitative characteristic	– see Chapter 6.3
MG, MS, VG, VS		– see Chapter 4.1.5
(a)-(e)	See Explanations on the Table of Characteristics in Chapter 8.1	
(+)	See Explanations on the Table of Characteristics in Chapter 8.2.	

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

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1. **(*)** **(+)**	**VG**	**Plant: growth habit**	**Plante : port**	**Pflanze: Wuchsform**	**Planta: porte**		
QN	**(a)**	upright	dressé	aufrecht	erecto	Baitangying	1
		spreading	étalé	breitwüchsig	abierto	Guiwei	2
		drooping	retombant	hängend	colgante	Yuanzhi	3
2. **(+)**	**VG**	**Plant: shape**	**Plante : forme**	**Pflanze: Form**	**Planta: forma**		
PQ	**(a)**	circular	circulaire	rund	circular	Nuomici	1
		elliptic	elliptique	elliptisch	elíptica	Baitangying	2
		triangular	triangulaire	dreieckig	triangular		3
3. **(*)** **(+)**	**VG**	**Plant: vigor**	**Plante : vigueur**	**Pflanze: Wuchsstärke**	**Planta: vigor**		
QN	**(a)**	weak	faible	gering	débil	Baitangying	1
		medium	moyenne	mittel	medio	Huaizhi	2
		strong	forte	stark	fuerte	Zhuangyuanhong	3
4.	**VG/ MS**	**One-year-old shoot: thickness**	**Rameau d'un an : épaisseur**	**Einjähriger Trieb: Dicke**	**Rama de un año: grosor**		
QN	**(b)**	thin	mince	dünn	delgada	Shangshuhuai	3
		medium	moyen	mittel	media	Guiwei	5
		thick	épais	dick	gruesa	Sanyuehong	7
5.	**VG**	**One-year-old shoot: attitude**	**Rameau d'un an : port**	**Einjähriger Trieb: Stellung**	**Rama de un año: porte**		
QN	**(b)**	upwards	dressé	aufwärts gerichtet	ascendente	Baitangying	1
		outwards	vers l'exterieur	abstehend	orientada hacia el exterior	Nuomici	2
		downwards	retombant	abwärts gerichtet	descendente	Yuanzhi	3
6. **(+)**	**VG/ MS**	**One-year-old shoot: length of internode**	**Rameau d'un an : longueur de l'entre-nœud**	**Einjähriger Trieb: Internodienlänge**	**Rama de un año: longitud del entrenudo**		
QN	**(b)**	short	court	kurz	corto	Dianbaibaila	3
		medium	moyen	mittel	mediano	Sanyuehong	5
		long	long	lang	largo	Yuanzhi	7
7.	**VG**	**One-year-old shoot: size of lenticels**	**Rameau d'un an : taille des lenticelles**	**Einjähriger Trieb: Größe der Lentizellen**	**Rama de un año: tamaño de las lenticelas**		
QN	**(b)**	small	petites	klein	pequeñas	Xiapuli	1
		medium	moyennes	mittel	medianas	Yuanzhi	2
		large	grandes	groß	grandes	Luhebao	3

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
8.	**VG**	**One-year-old shoot: density of lenticels**	**Rameau d'un an : densité des lenticelles**	**Einjähriger Trieb: Dichte der Lentizellen**	**Rama de un año: densidad de las lenticelas**		
QN	**(b)**	sparse	faible	locker	escasa	Baitangying	1
		medium	moyenne	mittel	media	Guiwei	2
		dense	dense	dicht	alta	Nuomici	3
9.	**VG**	**Young shoot: color**	**Jeune rameau : couleur**	**Junger Trieb: Farbe**	**Rama joven: color**		
PQ	**(b)**	yellow green	vert jaune	gelbgrün	verde amarillento	Nuomici	1
		green	vert	grün	verde		2
		reddish green	vert rougeâtre	rötlichgrün	verde rojizo	Guiwei	3
		brown	brun	braun	marrón	Sanyuehong	4
10. **(+)**	**VG**	**Leaf: arrangement of leaflets**	**Feuille : disposition des folioles**	**Blatt: Anordnung der Blattfiedern**	**Hoja: disposición de los folíolos**		
PQ	**(c)**	opposite	opposés	gegenständig	opuestos	Nuomici	1
		slightly alternate	légèrement alternés	leicht wechselständig	subopuestos	Chenzi	2
		strongly alternate	fortement alternés	stark wechselständig	claramente alternos	Heiye	3
11. **(*)** **(+)**	**MS/** **VG**	**Leaf: length**	**Feuille : longueur**	**Blatt: Länge**	**Hoja: longitud**		
QN	**(c)**	very short	très courte	sehr kurz	muy corta	Ziniangxi	1
		short	courte	kurz	corta	Huaizhi	3
		medium	moyenne	mittel	media	Xuehuaizi	5
		long	longue	lang	larga	Yuanzhi	7
		very long	très longue	sehr lang	muy larga	Tianjiazi	9
12. **(*)**	**VG**	**Petiole: color of upper side**	**Pétiole : couleur de la face supérieure**	**Blattstiel: Farbe der Oberseite**	**Peciolo: color de la cara superior**		
PQ	**(c)**	green	vert	grün	verde	Tianjiazi	1
		green brown	vert clair	grünbraun	marrón verdoso	Feizixiao	2
		brown	brun	braun	marrón	Yuanzhi	3
		brown red	rouge brun	braunrot	rojo amarronado	Guiwei	4
13. **(*)** **(+)**	**VG**	**Leaflet: shape**	**Foliole : forme**	**Blattfieder: Form**	**Folíolo: forma**		
PQ	**(c)**	ovate	ovale	eiförmig	oval	Heiye	1
		elliptic	elliptique	elliptisch	elíptico	Baitangying	2
		oblong	oblongue	rechteckig	oblongo	Lanzhu	3
		obovate	obovale	verkehrt eiförmig	oboval	Qingpitian	4
		oblanceolate	oblancéolée	verkehrt lanzettlich	oblanceolado	Yuanzhi	5

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
14. (*)	**VG**	**Leaflet: shape in cross section**	**Foliole : forme en section transversale**	**Blattfieder: Form im Querschnitt**	**Folíolo: forma en sección transversal**		
QN	**(c)**	convex	convexe	konvex	convexo	Shangshuhuai	1
		flat	plate	gerade	plano	Sanyuehong	2
		moderately concave	modérément concave	mäßig konkav	moderadamente cóncavo	Nuomici	3
		strongly concave	fortement concave	stark konkav	fuertemente cóncavo	Baitangying	4
15.	**VG**	**Leaflet: surface of upper side**	**Foliole : surface de la face supérieure**	**Blattfieder: Oberfäche der Oberseite**	**Folíolo: superficie de la cara superior**		
QN	**(c)**	smooth	lisse	glatt	suave	Guiwei	1
		moderately rough	modérément rugueuse	mäßig rauh	moderadamente áspera		2
		very rough	très rugueuse	sehr rauh	muy áspera	Xuehuaizi	3
16. (+)	**MS/ VG**	**Leaflet: length of petiolule**	**Foliole : longueur de la pétiolule**	**Blattfieder: Länge des Stiels**	**Folíolo: longitud del peciólulo**		
QN	**(c)**	short	courte	kurz	corto	Yuanzhi	1
		medium	moyenne	mittel	medio	Huaizhi	2
		long	longue	lang	largo	Dianbaibaila	3
17. (+)	**VG/ MS**	**Leaflet blade: length**	**Limbe de la foliole : longueur**	**Blattfiederspreite: Länge**	**Limbo del folíolo: longitud**		
QN	**(c)**	very short	très court	sehr kurz	muy corto	Ziniangxi	1
		short	court	kurz	corto	Nuomici	3
		medium	moyen	mittel	medio	Zhongshanzhuangyuanhong	5
		long	long	lang	largo	Heiye	7
		very long	très long	sehr lang	muy largo	Yuanzhi	9
18. (+)	**VG/ MS**	**Leaflet blade: width**	**Limbe de la foliole : largeur**	**Blattfiederspreite: Breite**	**Limbo del folíolo: anchura**		
QN	**(c)**	very narrow	très étroit	sehr schmal	muy estrecho	Ziniangxi	1
		narrow	étroit	schmal	estrecho	Shuijingqiu	3
		medium	moyen	mittel	medio	Nuomici	5
		broad	large	breit	ancho	Baitangying	7
		very broad	très large	sehr breit	muy ancho	Tianjiazi	9
19. (*) (+)	**VG/ MS**	**Leaflet blade: ratio length/width**	**Limbe de la foliole : rapport longueur/largeur**	**Blattfiederspreite: Verhältnis Länge/Breite**	**Limbo del folíolo: relación longitud/anchura**		
QN	**(c)**	low	bas	klein	baja	Huaizhi	1
		medium	moyen	mittel	media	Guiwei	3
		high	élevé	groß	alta	Yuanzhi	5

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
20. **(+)**	**VG**	**Leaflet: length of tip**	**Foliole : longueur de la pointe**	**Blattfieder: Länge der Spitze**	**Folíolo: longitud de la punta**		
QN	**(c)**	very short	très courte	sehr kurz	muy corta		1
		short	courte	kurz	corta	Baitangying, Huaizhi	2
		medium	moyenne	mittel	media	Guiwei, Nuomici	3
		long	longue	lang	larga	Yuanzhi (Shuidong)	4
21. **(+)**	**VG**	**Leaflet: symmetry of base**	**Foliole : symétrie de la base**	**Blattfieder: Symmetrie der Basis**	**Folíolo: simetría de la base**		
QN	**(c)**	symmetric or weakly asymmetric	symétrique ou faiblement asymétrique	symmetrisch oder schwach asymmetrisch	simétrica o ligeramente asimétrica	Nuomici	1
		moderately asymmetric	modérément asymétrique	mäßig asymmetrisch	moderadamente asimétrica		2
		strongly asymmetric	fortement asymétrique	stark asymmetrisch	fuertemente asimétrica	Guiwei	3
22. **(+)**	**VG**	**Leaflet: shape of base**	**Foliole : forme de la base**	**Blattfieder: Form der Basis**	**Folíolo: forma de la base**		
PQ	**(c)**	acute	aiguë	spitz	aguda	Heiye	1
		obtuse	obtuse	stumpf	obtusa	Feizixiao	2
		truncate	tronquée	gerade	truncado	Huaizhi	3
23. **(*)** **(+)**	**VG**	**Leaflet: undulation of margin**	**Foliole : ondulation du bord**	**Blattfieder: Randwellung**	**Folíolo: ondulación del borde**		
QN	**(c)**	absent or weak	absente ou faible	fehlend oder gering	ausente o débil	Lanzhu	1
		medium	moyenne	mittel	media	Nuomici	2
		strong	forte	stark	fuerte	Baitangying	3
24. **(*)**	**VG**	**Leaflet: intensity of green color**	**Foliole : intensité de la couleur verte**	**Blattfieder: Intensität der Grünfärbung**	**Folíolo: intensidad del color verde**		
QN	**(c)**	light	clair	hell	claro	Qingpitian	1
		medium	moyen	mittel	medio	Nuomici	2
		dark	foncé	dunkel	oscuro	Heiye	3
25.	**VG**	**Leaflet: glossiness of upper side**	**Foliole : brillance de la face supérieure**	**Blattfieder: Glanz der Oberseite**	**Folíolo: brillo del haz**		
QN	**(c)**	weak	faible	gering	débil	Heiye	1
		medium	moyenne	mittel	medio	Huaizhi	2
		strong	forte	stark	fuerte	Dianbaibaila	3
26.	**VG**	**Leaflet: conspicuousness of lateral veins**	**Foliole : netteté des nervures latérales**	**Blattfieder: Ausprägung der Seitenadern**	**Folíolo: visibilidad de los nervios laterales**		
QN	**(c)**	weak	faible	gering	débil	Guiwei	1
		medium	moyenne	mittel	media	Nuomici	2
		strong	forte	stark	fuerte	Sanyuehong	3

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
27. (*) (+)	**VG/ MS**	**Inflorescence: length**	**Inflorescence : longueur**	**Blütenstand: Länge**	**Inflorescencia: longitud**		
QN	**(d)**	short	courte	kurz	corta	Ziniangxi	3
		medium	moyenne	mittel	media	Huaizhi	5
		long	longue	lang	larga	Chenzi	7
28. (*) (+)	**VG/ MS**	**Inflorescence: width**	**Inflorescence : largeur**	**Blütenstand: Breite**	**Inflorescencia: anchura**		
QN	**(d)**	narrow	étroite	schmal	estrecha	Xuehuaizi	1
		medium	moyenne	mittel	media	Guiwei	2
		broad	large	breit	ancha	Chenzi	3
29. (*) (+)	**VG/ MS**	**Inflorescence: ratio length/width**	**Inflorescence : rapport longueur/largeur**	**Blütenstand: Verhältnis Länge/Breite**	**Inflorescencia: relación longitud/anchura**		
QN	**(d)**	low	bas	klein	baja	Huaizhi	1
		medium	moyen	mittel	media	Guiwei	3
		high	élevé	groß	alta	Feizixiao	5
30.	**VG**	**Inflorescence: density of branching**	**Inflorescence : densité de la ramification**	**Blütenstand: Dichte der Verzweigung**	**Inflorescencia: densidad de ramificación**		
QN	**(d)**	sparse	faible	locker	escasa	Yuanzhi	3
		medium	moyenne	mittel	media	Guiwei	5
		dense	dense	dicht	alta	Sanyuehong	7
31.	**VG**	**Inflorescence: density of flowers**	**Inflorescence : densité des fleurs**	**Blütenstand: Dichte der Blüten**	**Inflorescencia: densidad de las flores**		
QN	**(d)**	sparse	faible	locker	escasa	Chenzi	3
		medium	moyenne	mittel	media	Nuomici	5
		dense	dense	dicht	alta	Shuijingqiu	7
32.	**VG**	**Inflorescence: intensity of green color of main axis**	**Inflorescence : intensité de la couleur verte de l'axe central**	**Blütenstand: Intensität der Grünfärbung der Hauptachse**	**Inflorescencia: intensidad del color verde del eje principal**		
QN	**(d)**	light	claire	hell	claro	Nuomici	1
		medium	moyenne	mittel	medio	Huaizhi	2
		dark	foncée	dunkel	oscuro	Sanyuehong	3
33. (*) (+)	**VG**	**Flower: depth of stigma splitting**	**Fleur : profondeur de la scission du stigmate**	**Blüte: Tiefe der Narbenspaltung**	**Flor: profundidad de la hendidura del estigma**		
QN	**(d)**	shallow	peu profonde	flach	poco profunda	Chenzi	1
		medium	moyenne	mittel	media	Huaizhi	2
		deep	profonde	tief	profunda	Xuehuaizi	3

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
34. (*)	**VG**	**Fruit: size**	**Fruit : taille**	**Frucht: Größe**	**Fruto: tamaño**		
QN	**(e)**	very small	très petit	sehr klein	muy pequeño	Xinxingxiangli	1
		small	petit	klein	pequeño	Chenzi	3
		medium	moyen	mittel	mediano	Guiwei	5
		large	grand	groß	grande	Sanyuehong	7
		very large	très grand	sehr groß	muy grande	Ziniangxi	9
35. (*) (+)	**VG**	**Fruit: shape**	**Fruit : forme**	**Frucht: Form**	**Fruto: forma**		
PQ	**(e)**	cordiform	cordiforme	herzförmig	cordiforme		1
		ovate	ovale	eiförmig	oval		2
		circular	circulaire	rund	circular		3
		elliptic	elliptique	elliptisch	elíptico		4
36. (*) (+)	**VG**	**Fruit: shape of shoulder at stalk end**	**Fruit : forme de l'épaulement à l'extrémité pédonculaire**	**Frucht: Form der Schulter am Stielende**	**Fruto: forma del hombro en el extremo peduncular**		
PQ	**(e)**	rounded	arrondi	abgerundet	redondeado		1
		truncate	tronqué	abgestumpft	truncado		2
		symmetrically depressed	symétriquement creux	symmetrisch eingesenkt	deprimido simétricamente		3
		asymmetrically depressed	asymétriquement creux	asymmetrisch eingesenkt	deprimido asimétricamente		4
37. (+)	**VG**	**Fruit: depth at stalk end**	**Fruit : profondeur à l'extrémité pédonculaire**	**Frucht: Tiefe am Stielende**	**Fruto: profundidad del extremo peduncular**		
QN	**(e)**	shallow	peu profonde	flach	poco profundo	Yuanzhi	1
		medium	moyenne	mittel	medio	Heiye	2
		deep	profonde	tief	profundo	Xuehuaizi	3
38. (+)	**VG**	**Fruit: conspicuousness of suture**	**Fruit : netteté de la suture**	**Frucht: Ausprägung der Naht**	**Fruto: visibilidad de la sutura**		
QN	**(e)**	weak	faible	schwach	débil	Yuanzhi	1
		medium	moyenne	mittel	media	Heiye	2
		strong	forte	stark	fuerte	Xuehuaizi	3
39. (*)	**VG**	**Fruit: color of skin**	**Fruit : couleur de la peau**	**Frucht: Farbe der Schale**	**Fruto: color de la epidermis**		
PQ	**(e)**	green	verte	grün	verde		1
		green and red	verte et rouge	grün und rot	verde y rojo	Feizixiao	2
		yellow and red	jaune et rouge	gelb und rot	amarillo y rojo	Guangming	3
		pink red	rose rouge	rosarot	rojo rosado	Kwai May Pink	4
		medium red	rouge moyen	mittelrot	rojo medio	Nuomici	5
		dark red	rouge foncé	dunkelrot	rojo oscuro	Jizuili	6
		purplish red	rouge pourpre	purpurrot	rojo púrpura	Ziniangxi	7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
40. **(*)** **(+)**	**VG**	**Fruit: surface**	**Fruit : surface**	**Frucht: Oberfläche**	**Fruto: superficie**		
QN	**(e)**	smooth or slight protuberances	protubérances lisses ou légères	glatte oder leichte Ausstülpungen	protuberancias lisas o ligeras	Huaizhi	1
		moderate protuberances	protubérances modérées	mäßige Ausstülpungen	protuberancias moderadas	Nuomici	2
		strong protuberances	fortes protubérances	starke Ausstülpungen	protuberancias fuertes	Guiwei	3
41. **(+)**	**VG**	**Fruit: thickness of skin**	**Fruit : épaisseur de la peau**	**Frucht: Dicke der Schale**	**Fruto: grosor de la epidermis**		
QN	**(e)**	thin	fine	dünn	delgada	Nuomici	1
		medium	moyenne	mittel	media	Baitangying	2
		thick	épaisse	dick	gruesa	Ziniangxi	3
42.	**VG**	**Fruit: color of flesh**	**Fruit : couleur de la chair**	**Frucht: Farbe des Fleisches**	**Fruto: color de la pulpa**		
PQ	**(e)**	whitish	blanchâtre	weißlich	blanquecino	Huaizhi	1
		yellowish	jaunâtre	gelblich	amarillento		2
		yellow	jaune	gelb	amarillo	Guangming	3
43. **(+)**	**MG**	**Fruit: weight of flesh compared to weight of fruit**	**Fruit : poids de la chair comparée au poids du fruit**	**Frucht: Gewicht des Fleisches im Vergleich zum Gewicht der Frucht**	**Fruto: peso de la pulpa en comparación con el peso del fruto**		
QN	**(e)**	low	faible	gering	bajo	Dazao	3
		medium	moyen	mittel	medio	Huaizhi	5
		high	élevé	hoch	alto	Nuomici	7
44. **(+)**	**VG**	**Seed: shape**	**Graine : forme**	**Samen: Form**	**Semilla: forma**		
PQ	**(e)**	circular	circulaire	rund	circular		1
		elliptic	elliptique	elliptisch	elíptica		2
		ovate	ovale	eiförmig	oval		3
		irregular	irrégulière	unregelmäßig	irregular		4
45.	**VG**	**Seed: color**	**Graine : couleur**	**Samen: Farbe**	**Semilla: color**		
PQ	**(e)**	red brown	brun rouge	rotbraun	marrón rojizo	Dazao	1
		medium brown	brun moyen	mittelbraun	marrón medio	Huaizhi	2
		dark brown	brun foncé	dunkelbraun	marrón oscuro	Nuomici	3
46. **(*)** **(+)**	**VG**	**Fruit: brown color on the inner side of aril**	**Fruit : couleur brune sur la face interne de l'arille**	**Frucht: Braunfärbung der Innenseite des Samenmantels**	**Fruto: color marrón en la superficie interna del arilo**		
QN	**(e)**	light brown	brun clair	hellbraun	marrón claro	Huaizhi	1
		medium brown	brun moyen	mittelbraun	marrón medio	Feizixiao	2
		dark brown	brun foncé	dunkelbraun	marrón oscuro	Yuanzhi	3

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
47. **(+)**	**VG**	**Fruit: ratio of abortive embryos**	**Fruit : ratio d'embryons avortés**	**Frucht: Anteil abgestoßener Embryonen**	**Fruto: proporción de embriones abortivos**		
QN	**(e)**	low	bas	gering	baja	Heiye	1
		medium	moyen	mittel	media	Guiwei	2
		high	élevé	hoch	alta	Nuomici	3
48. **(+)**	**MG**	**Fruit: sweetness of flesh**	**Fruit : goût sucré de la chair**	**Frucht: Süße des Fleisches**	**Fruto: dulzor de la pulpa**		
QN	**(e)**	low	faible	niedrig	bajo	Ziniangxi	1
		medium	moyen	mittel	medio	Feizixiao	3
		high	élevé	hoch	alto	Nuomici	5
49. **(+)**	**VG**	**Fruit: juiciness**	**Fruit : jutosité de la chair**	**Frucht: Saftgehalt**	**Fruto: jugosidad**		
QN	**(e)**	low	faible	niedrig	baja	Baitangying	1
		medium	moyenne	mittel	media	Heiye	2
		high	élevée	hoch	alta	Feizixiao	3
50. **(*)** **(+)**	**MG**	**Time of beginning of flowering**	**Époque du début de floraison**	**Zeitpunkt des Blühbeginns**	**Época de inicio de la floración**		
QN		early	précoce	früh	temprana	Sanyuehong	3
		medium	moyenne	mittel	media	Heiye	5
		late	tardive	spät	tardía	Nuomici	7
51. **(*)** **(+)**	**MG**	**Time of harvest maturity**	**Époque de maturité de récolte**	**Zeitpunkt der Erntereife**	**Época de madurez para la cosecha**		
QN	**(e)**	early	précoce	früh	temprana	Baitangying	3
		medium	moyenne	mittel	media	Feizixiao	5
		late	tardive	spät	tardía	Nuomici	7

8. Explanations on the Table of Characteristics

8.1 Explanations covering several characteristics

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

(a) Observations on the whole plant should be made during the dormant season before pruning.

(b) Observations on the shoot should be made on the mature autumnal shoots at the outside of the upper canopy, when all leaves have turned green in automn.

(c) Observations on the leaf should be made on well developed leaves at the central third of the mature autumnal shoots at the outside of the upper canopy.

(d) Observations on the flower should be made on the well developed flowers from the outside of the upper canopy, when 25% to 75% of the flowers are in blossom.

(e) Observations on the fruit should be made at the time of physiological ripeness from outside of the upper canopy.

8.2 Explanations for individual characteristics

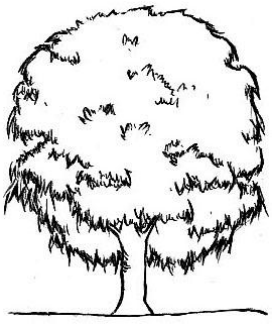
Ad. 1: Plant: growth habit

1
upright

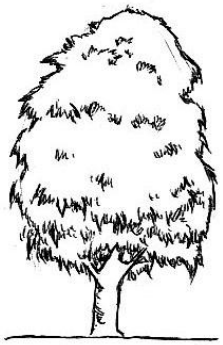
2
spreading

3
drooping

Ad. 2: Plant: shape



1
circular



2
elliptic

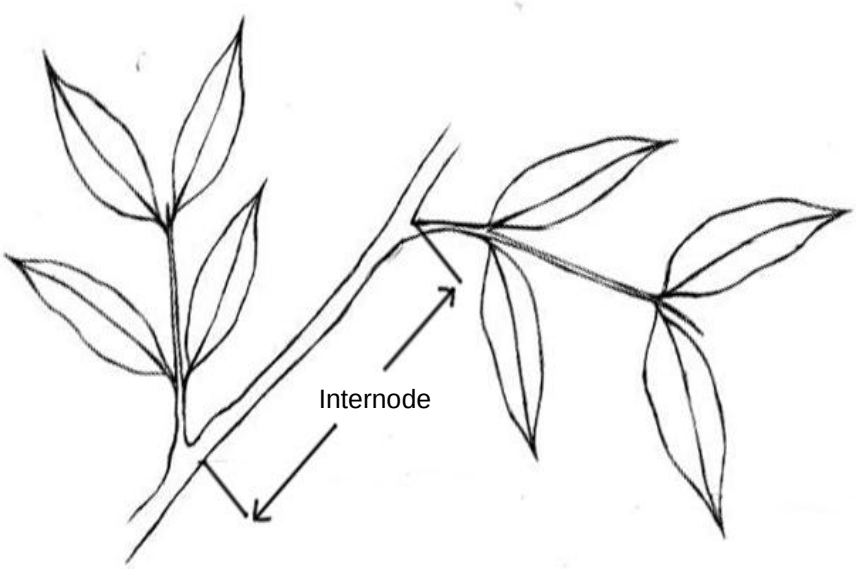
3
triangular

Ad. 3: Plant: vigor

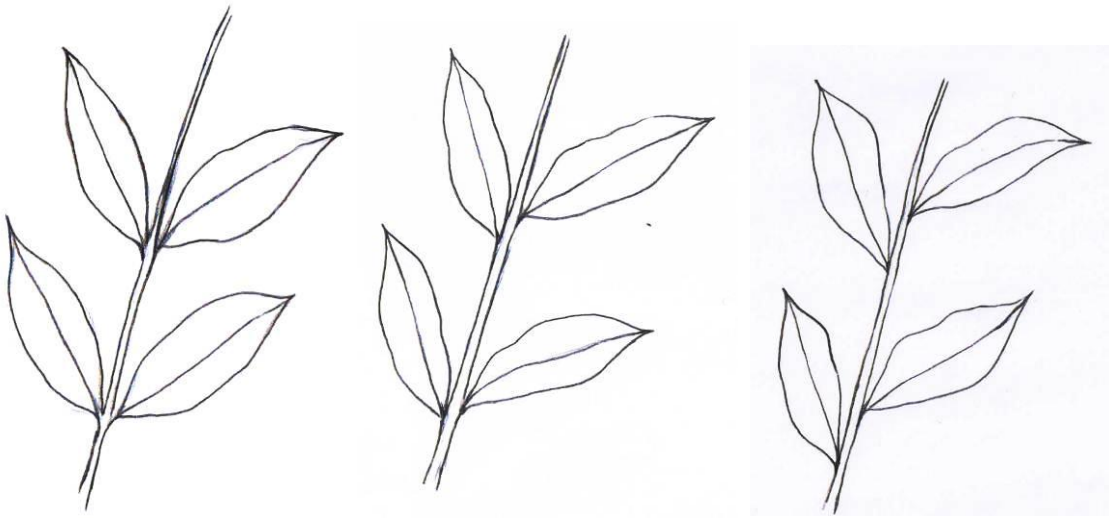
Plant vigor is determined by the overall abundance of vegetative growth.

Ad. 6: One-year-old shoot: length of internode

Observing the stems of growing terminal autumnal shoots, especially the nodal portion. Internodes to be observed on the middle third of the shoot.

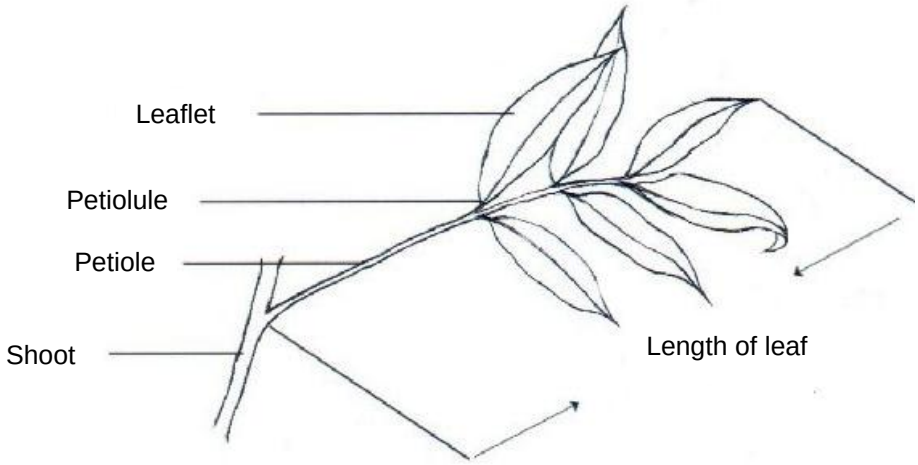


Ad. 10: Leaf: arrangement of leaflets

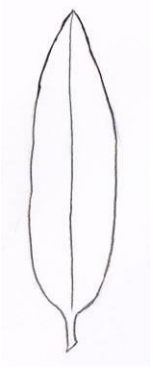
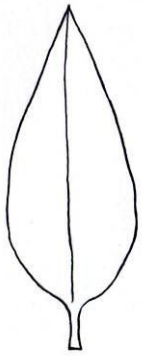
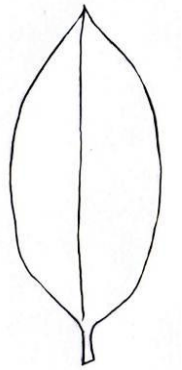
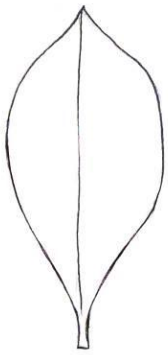


1	2	3
opposite	slightly alternate	strongly alternate

Ad. 11: Leaf: length

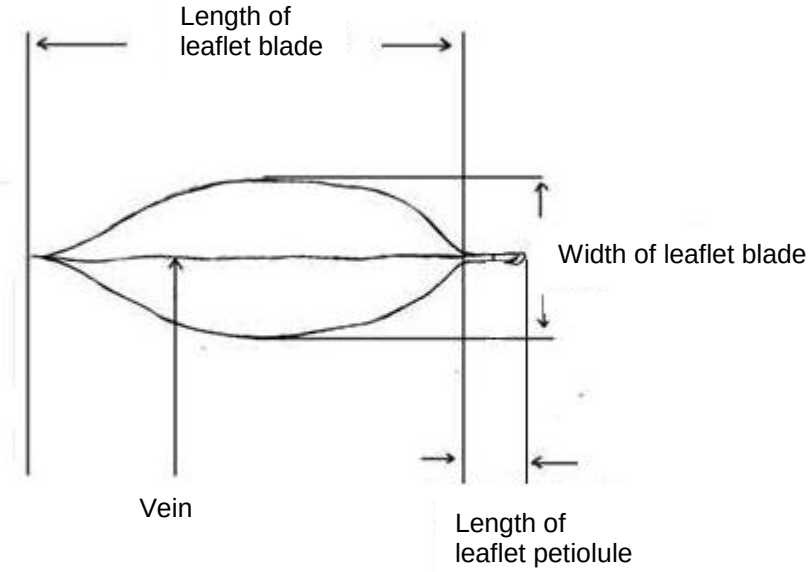


Ad. 13: Leaflet: shape

	← broadest part →		
	below middle	at middle	above middle
narrow (high) →			 5 oblanceolate
← width (ratio length/width)		 3 oblong	
broad (low)	 1 ovate	 2 elliptic	 4 obovate

Ad. 16: Leaflet: length of petiolule
Ad. 17: Leaflet blade: length
Ad. 18: Leaflet blade: width

All observations on the leaflet should be made on the largest leaflet of the lowest pair.



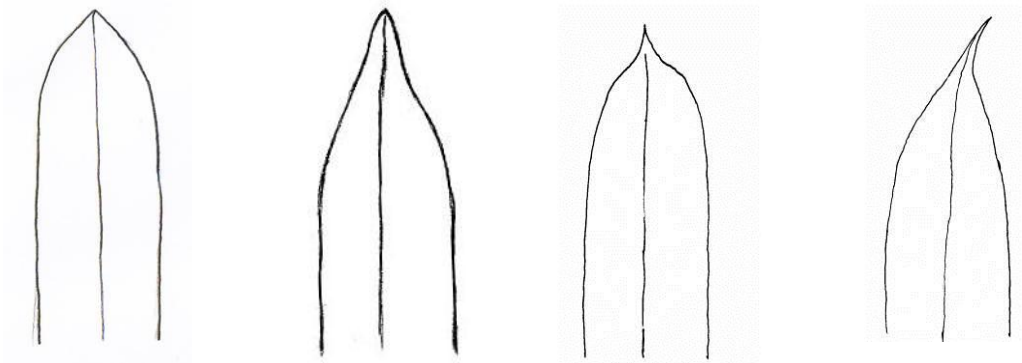
Ad. 19: Leaflet blade: ratio length/width

1
low

3
medium

5
high

Ad. 20: Leaflet: length of tip



1
very short

2
short

3
medium

4
long

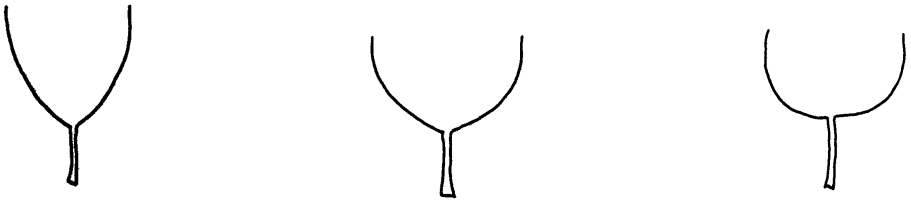
Ad. 21: Leaflet: symmetry of base

1
symmetric or weakly asymmetric

2
moderately asymmetric

3
strongly asymmetric

Ad. 22: Leaflet: shape of base

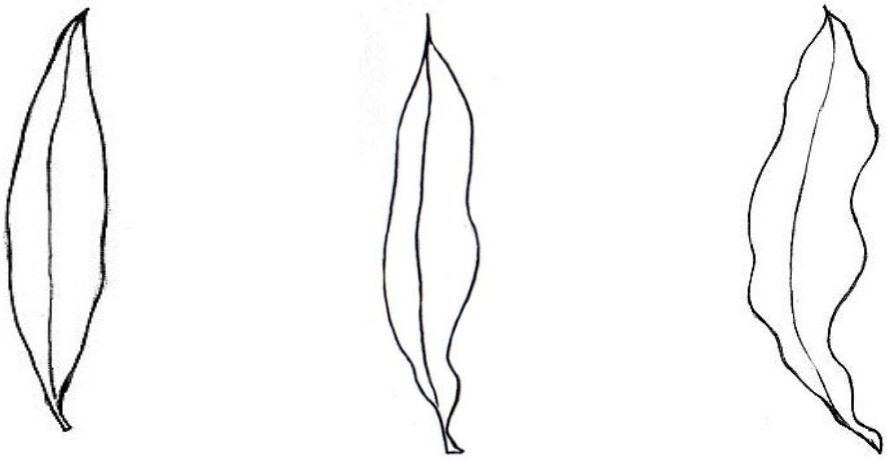


1
acute

2
obtuse

3
truncate

Ad. 23: Leaflet: undulation of margin

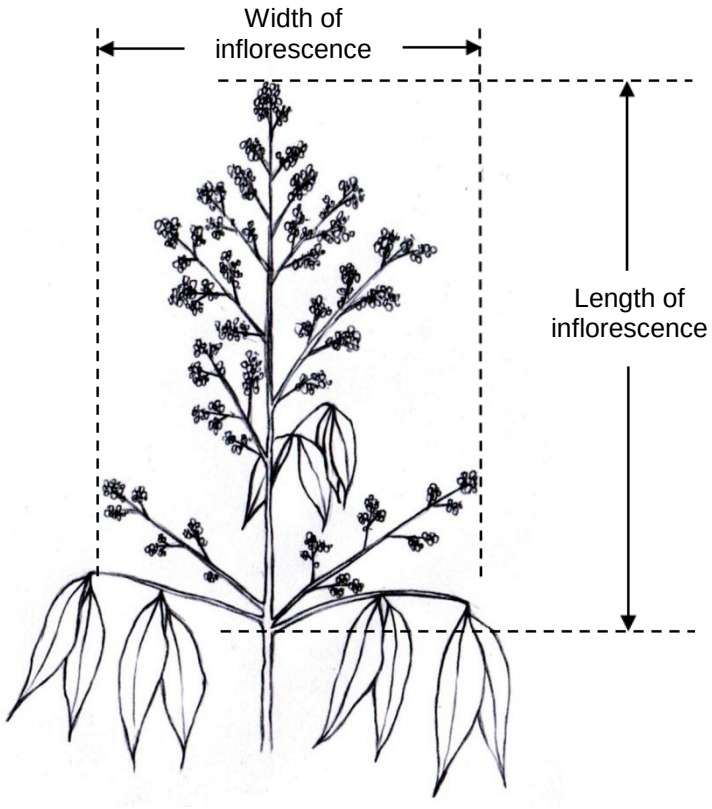


1
absent or weak

2
medium

3
strong

Ad. 27: Inflorescence: length
Ad. 28: Inflorescence: width



Ad. 29: Inflorescence: ratio length/width

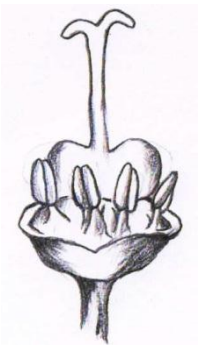
1
low

3
medium

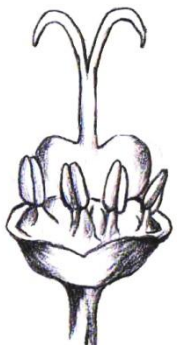
5
high

Ad. 33: Flower: depth of stigma splitting

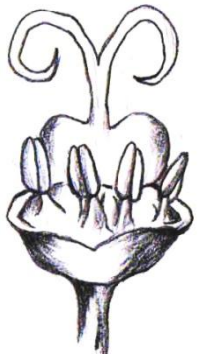
This applies to female flowers only.



1
shallow

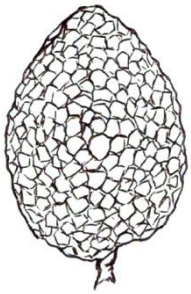
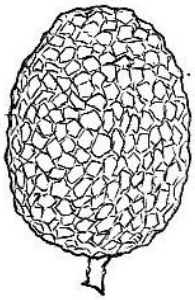
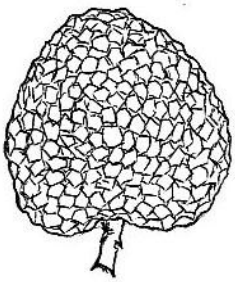
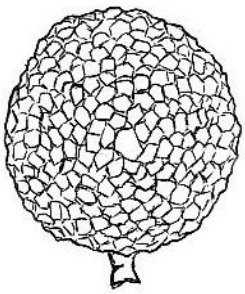


2
medium

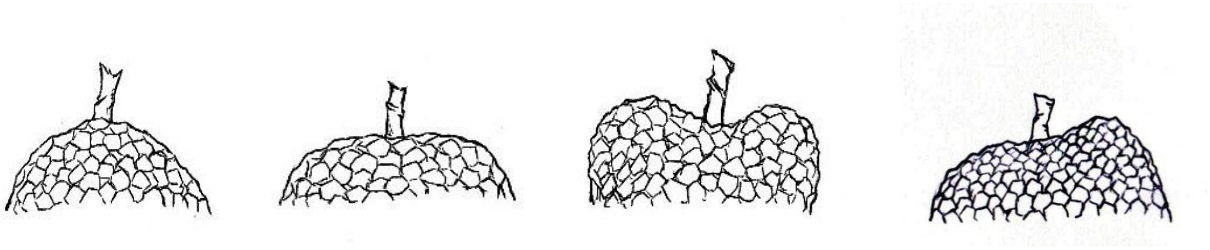


3
deep

Ad. 35: Fruit: shape

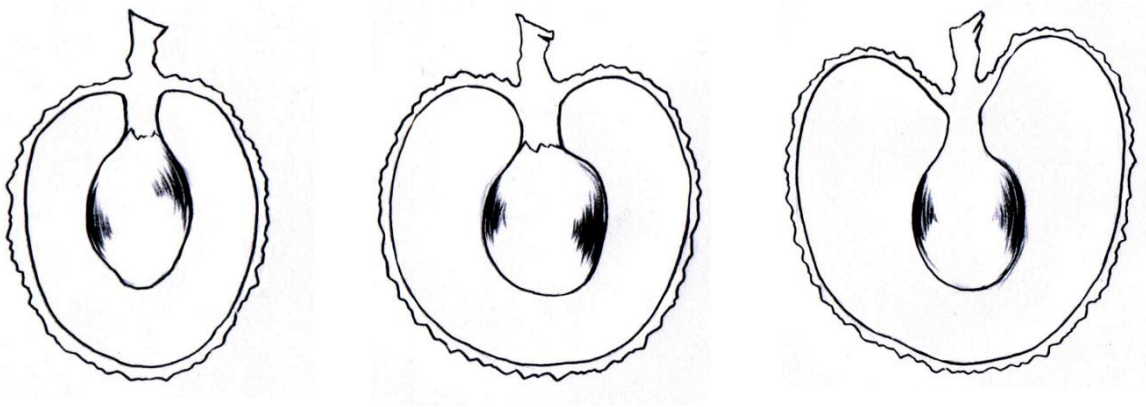
width (ratio length/width) ↓ narrow (high) → broad (low)	← broadest part →		
	below middle	at middle	above middle
	 2 ovate	 4 elliptic	
	 1 cordiform		
		 3 circular	

Ad. 36: Fruit: shape of shoulder at stalk end



1	2	3	4
rounded	truncate	symmetrically depressed	asymmetrically depressed

Ad. 37: Fruit: depth at stalk end



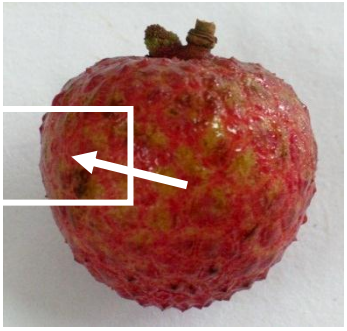
1	2	3
shallow	medium	deep

Ad. 38: Fruit: conspicuousness of suture

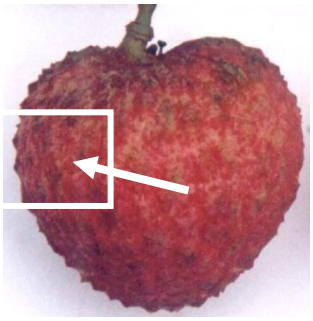
The conspicuousness of suture should be observed based on color, width and depth.

1	2	3
weak	medium	strong

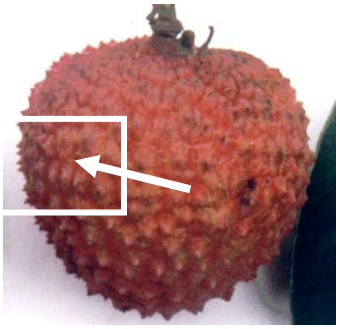
Ad. 40: Fruit: surface



1
smooth or slight protuberances

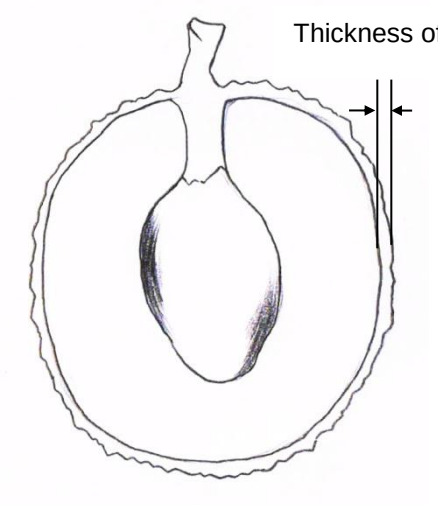


2
moderate protuberances



3
strong protuberances

Ad. 41: Fruit: thickness of skin

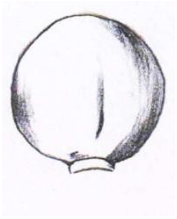


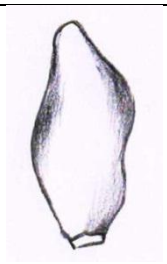
Ad. 43: Fruit: weight of flesh compared to weight of fruit

Flesh should be assessed at time of harvest maturity and to be determined on 20 fruits. When weighing the flesh, fruit skin and seed should be removed.

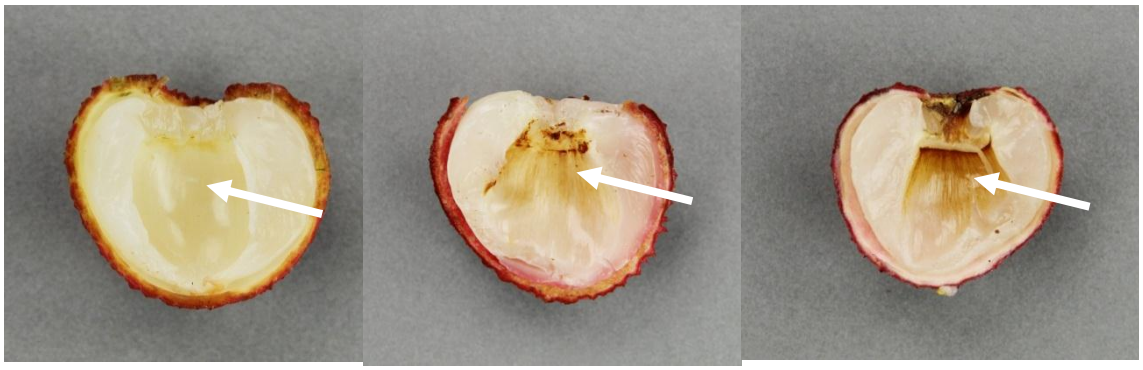
Ad. 44: Seed: shape

← broadest part →	
at middle	above middle

width (ratio length/width)		
broad (low) ←		→ narrow (high)
	 2 elliptic	 3 conical
	 1 circular	

Other	 4 irregular

Ad. 46: Fruit: brown color on the inner side of aril



1 light brown | 2 medium brown | 3 dark brown

Ad. 47: Fruit: ratio of abortive embryos

Select 20 fruits randomly, then cut the fruit into pieces along the suture to take out the seeds and then vertically cut the seed open to check the number of the aborted embryos.

Low: less than 4 seeds aborted
Medium: 4-16 seeds aborted
High: more than 16 seeds aborted

Ad. 48: Fruit: sweetness of flesh

The content of total soluble solids should be measured by using a refractometer.

Ad. 49: Fruit: juiciness

The fruit is cut into two pieces along the suture with a knife and then the skin and the core are removed. Afterward, the flesh is wrapped with four layers of absorbent paper for 5 seconds to observe the following:

Low: the absorbent paper is not completely wet
Medium: the absorbent paper is completely wet
High: the absorbent paper is completely wet and juice is dripping naturally

Ad. 50: Time of beginning of flowering

The beginning of flowering is when 10% of the inflorescences on each plant have started to flower.

Ad. 51: Time of harvest maturity

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

9. Literature

Fu, L.J., 1985: An Album of Guangdong Litchi Varieties in Full Colour. Science Popularization Press Guangzhou Branch. Guangzhou, CN, 78 pp.

Menzel, C.M. and Waite, G.K., 2005: Litchi and Longan, Botany, Production and Uses. CABI Publishing. Nambour, Queensland, AU, pp. 59-86

Wu, S.X., 1998: Encylopaedia of China Fruits: Litchi. Forestry Press, Beijing, CN, pp. 94-206

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	*Litchi chinensis* Sonn.
1.2 Common name	Litchi

2. Applicant

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

3. Proposed denomination and breeder's reference

Proposed denomination (if available)	
Breeder's reference	

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

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

4.1 Breeding scheme

Variety resulting from:

4.1.1 Crossing

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

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

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

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

(c) unknown cross [ ]

4.1.2 Mutation [ ]
(please state parent variety)

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

4.1.4 Other [ ]
(please provide details)

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

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

4.2 Method of propagating the variety

4.2.1 Vegetative propagation

(a) cuttings [ ]

(b) air layering [ ]

(c) grafting (budding) [ ]

(d) *in vitro* propagation [ ]

(e) other (state method) [ ]

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 (34)	**Fruit: size**		
	very small	Xinxingxiangli	1[ ]
	very small to small		2[ ]
	small	Chenzi	3[ ]
	small to medium		4[ ]
	medium	Guiwei	5[ ]
	medium to large		6[ ]
	large	Sanyuehong	7[ ]
	large to very large		8[ ]
	very large	Ziniangxi	9[ ]
5.2 (39)	**Fruit: color of skin**		
	green		1[ ]
	green and red	Feizixiao	2[ ]
	yellow and red	Guangming	3[ ]
	pink red	Kwai May Pink	4[ ]
	medium red	Nuomici	5[ ]
	dark red	Jizuili	6[ ]
	purplish red	Ziniangxi	7[ ]
5.3 (40)	**Fruit: surface**		
	smooth or slight protuberances	Huaizhi	1[ ]
	moderate protuberances	Nuomici	2[ ]
	strong protuberances	Guiwei	3[ ]

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

	Characteristics	Example Varieties	Note
5.4 (50)	**Time of beginning of flowering**		
	very early		1[ ]
	very early to early		2[ ]
	early	Sanyuehong	3[ ]
	early to medium		4[ ]
	medium	Heiye	5[ ]
	medium to late		6[ ]
	late	Nuomici	7[ ]
	late to very late		8[ ]
	very late		9[ ]

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

6. Similar varieties and differences from these varieties

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

Denomination(s) of variety(ies) similar to your candidate variety	Characteristic(s) in which your candidate variety differs from the similar variety(ies)	Describe the expression of the characteristic(s) for the **similar** variety(ies)	Describe the expression of the characteristic(s) for **your** candidate variety
Example	*Fruit: size*	*small*	*medium*

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 image of the variety should accompany the Technical Questionnaire.

8. Authorization for release

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

Yes [ ] No [ ]

(b) Has such authorization been obtained?

Yes [ ] No [ ]

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

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

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

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

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

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

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

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

.....

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

Applicant’s name

Signature

Date

[End of document]