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## INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

**CHESTNUT**

UPOV Code(s):

CASTA\_CRE; CASTA\_MOL;  
CASTA\_SAT*Castanea mollissima* Blume;  
*Castanea crenata* Siebold & Zucc.;  
*Castanea sativa* Mill.**GUIDELINES****FOR THE CONDUCT OF TESTS****FOR DISTINCTNESS, UNIFORMITY AND STABILITY**

Alternative names:\*

<i>Nom botanique</i>	<i>anglais</i>	<i>français</i>	<i>allemand</i>	<i>espagnol</i>
<i>Castanea mollissima</i> Blume	Chinese Chestnut	Châtaignier de Chine	Chinesische Kastanie	Castaño chino
<i>Castanea sativa</i> Mill., <i>Castanea vesca</i> Gaertn., <i>Castanea vulgaris</i> , <i>Fagus castanea</i> L.	Chestnut	Chataignier	Kastanie	Castaño
<i>Castanea crenata</i> Siebold & Zucc.	Japanese chestnut	Châtaignier du Japon	Japanische Kastanie	Castaño del Japón

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](http://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 *Castanea mollissima* Blume, *Castanea sativa* Mill and *Castanea crenata* Siebold & Zucc. and hybrids between these species.

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 dormant shoots for grafting or two-year-old trees grafted on a rootstock selected by the testing authority.
- 2.3 The minimum quantity of plant material, to be supplied by the applicant, should be:
- 10 dormant shoots or
  - 6 two-year-old- trees.
- 2.4 The plant material supplied should be visibly healthy, not lacking in vigor, nor affected by any important pest or disease.
- 2.5 The plant material should not have undergone any treatment which would affect the expression of the characteristics of the variety, unless the competent authorities allow or request such treatment. If it has been treated, full details of the treatment must be given.

3. Method of Examination

3.1 *Number of Growing Cycles*

- 3.1.1 The minimum duration of tests should normally be two independent growing cycles.
- 3.1.2 The growing cycle is considered to be the duration of a single growing season, beginning with bud burst, flowering and fruit harvest and concluding when the following dormant period ends with the swelling of new season buds.

3.2 *Testing Place*

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

3.3 *Conditions for Conducting the Examination*

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

3.4 *Test Design*

- 3.4.1 Each test should be designed to result in a total of at least 5 trees.
- 3.4.2 The design of the tests should be such that plants or parts of plants may be removed for measurement or counting without prejudice to the observations which must be made up to the end of the growing cycle.

3.5 *Additional Tests*

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

## 4. Assessment of Distinctness, Uniformity and Stability

### 4.1 *Distinctness*

#### 4.1.1 General Recommendations

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

#### 4.1.2 Consistent Differences

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

#### 4.1.3 Clear Differences

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

#### 4.1.4 Number of plants or 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 of plants 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 These Test Guidelines have been developed for the examination of vegetatively propagated varieties. For varieties with other types of propagation the recommendations in the General Introduction and document TGP/13 "Guidance for new types and species", Section 4.5 "Testing Uniformity" should be followed.
- 4.2.3 For the assessment of uniformity of vegetatively propagated varieties, 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 seed or plant stock to ensure that it exhibits the same characteristics as those shown by the initial material supplied.

### 5. Grouping of Varieties and Organization of the Growing Trial

- 5.1 The selection of varieties of common knowledge to be grown in the trial with the candidate varieties and the way in which these varieties are divided into groups to facilitate the assessment of distinctness are aided by the use of grouping characteristics.
- 5.2 Grouping characteristics are those in which the documented states of expression, even where produced at different locations, can be used, either individually or in combination with other such characteristics: (a) to select varieties of common knowledge that can be excluded from the growing trial used for examination of distinctness; and (b) to organize the growing trial so that similar varieties are grouped together.
- 5.3 The following have been agreed as useful grouping characteristics:
  - (a) Nut: shape (characteristic 31)
  - (b) Nut: color of skin (characteristic 37)
  - (c) Nut: size (characteristic 38)
  - (d) Time of maturity for consumption (characteristic 45)
- 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:

<i>State</i>	<i>Note</i>
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:

<i>State</i>	<i>Note</i>
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.

The different species are indicated with (A), (B), (C) after the example varieties.

(A): *Castanea sativa* Mill.

(B): *Castanea crenata* Siebold & Zucc.

(C): *Castanea mollissima* Blume

## 6.5 Legend

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1	2	3	4	5	6	7	
	Name of characteristics in English		Nom du caractère en français	Name des Merkmals auf Deutsch	Nombre del carácter en español		
	states of expression		types d'expression	Ausprägungsstufen	tipos de expresión		

1 Characteristic number

2 (\*) Asterisked characteristic – see Chapter 6.1.2

3 Type of expression  
 QL Qualitative characteristic – see Chapter 6.3  
 QN Quantitative characteristic – see Chapter 6.3  
 PQ Pseudo-qualitative characteristic – see Chapter 6.3

4 Method of observation (and type of plot, if applicable)  
 MG, MS, VG, VS – see Chapter 4.1.5

5 (+) See Explanations on the Table of Characteristics in Chapter 8.2

6 (a)-(e) See Explanations on the Table of Characteristics in Chapter 8.1

7 Not applicable

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

	English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>1.</b>	<b>QN</b>	<b>VG</b>	<b>(+)</b>	<b>(a)</b>				
	<b>Tree: vigor</b>		<b>Arbre : vigueur</b>		<b>Baum: Wuchsstärke</b>	<b>Árbol: vigor</b>		
	weak		faible		schwach	débil	Hong Mao Zao (C), Toyotamawase(B)	3
	medium		moyenne		mittel	medio	Ibuki (B), Ishizuchi (B), Zhong Chi Li (C)	5
	strong		forte		stark	fuerte	Da Hong Pao (C), Ganne (B), Tsukuba (B)	7
<b>2. (*)</b>	<b>QN</b>	<b>VG</b>	<b>(+)</b>	<b>(a)</b>				
	<b>Tree: growth habit</b>		<b>Arbre : port</b>		<b>Baum: Wuchsform</b>	<b>Árbol: hábito de crecimiento</b>		
	upright		dressé		aufrecht	erguido	Akatyu (B), Arima (B), Bouche rouge (A), Song Jia Zao (C), Tsukuba (B)	1
	semi-upright		demi-dressé		halbaufrecht	semierguido	Maraval (A), Otomune (B), Rihei (B), Yan Hong (C)	2
	spreading		étalé		breitwüchsig	extendido	Belle Epine (A), Ibuki (B), Zhong Chi Li (C)	3
<b>3. (*)</b>	<b>QN</b>	<b>MS/VG</b>		<b>(b)</b>				
	<b>Current season's shoot: thickness</b>		<b>Rameau en croissance : grosseur</b>		<b>Jahrestrieb: Dicke</b>	<b>Rama del año en curso: grosor</b>		
	thin		fin		dünn	delgada	Arima (B), Ginrei (B), Marsol (A)	1
	medium		moyen		mittel	media	Ginyose (B), Ishizuchi (B), Marron de Chevenceaux (A), Tanzawa (B)	3
	thick		épais		dick	gruesa	Belle Epine (A), Ibuki (B), Tsukuba (B)	5
<b>4. (*)</b>	<b>QN</b>	<b>MS/VG</b>		<b>(b)</b>				
	<b>Current season's shoot: length of internodes</b>		<b>Rameau en croissance : longueur des entre-nœuds</b>		<b>Jahrestrieb: Länge der Internodien</b>	<b>Rama del año en curso: longitud de los entrenudos</b>		
	short		courts		kurz	cortos	Ibuki (B), Marigoule (A), Yanshan Duan Zhi (C)	3
	medium		moyens		mittel	medios	Ganne (B), Kui Li (C), Maraval (A), Shihou (B)	5
	long		longs		lang	largos	Jiu Yue Han (C), Marsol (A), Rihei (B)	7



	English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>5. (*)</b>	<b>QL</b>	<b>VG</b>	<b>(+)</b>	<b>(b)</b>				
	<b>Current season's shoot: arrangement of leaves</b>		<b>Rameau en croissance : disposition des feuilles</b>		<b>Jahrestrieb: Anordnung der Blätter</b>	<b>Rama del año en curso: disposición de las hojas</b>		
	opposite		opposées		gegenständig	opuestas	Marsol (A)	1
	alternate		alternées		abwechselnd	alternas	Belle Epine (A)	2
<b>6. (*)</b>	<b>PQ</b>	<b>VG</b>		<b>(b)</b>				
	<b>Current season's shoot: color of upper side of stem</b>		<b>Rameau en croissance : couleur de la face supérieure de la tige</b>		<b>Jahrestrieb:</b>	<b>Rama del año en curso: color de la cara superior del tallo</b>		
	yellow brown		brun-jaune		gelbbraun	marrón amarillento	Ganne (B), Ishizuchi (B), Okkwang (B), Shen Ci Da Ban Li (C)	1
	brown		brune		braun	marrón	Ginyose (B), Tsukuba (B)	2
	red brown		brun-rouge		rotbraun	marrón rojizo	Arima (B), Hong Guang You Li (C), Imakita (B), Tamatsukuri (B)	3
<b>7. (*)</b>	<b>QN</b>	<b>VG</b>		<b>(b)</b>				
	<b>Current season's shoot: density of lenticels</b>		<b>Rameau en croissance : densité des lenticelles</b>		<b>Jahrestrieb: Dichte der Lentizellen</b>	<b>Rama del año en curso: densidad de las lenticelas</b>		
	sparse		faible		locker	laxa	Marsol (A), Yan Kui (B)	1
	medium		moyenne		mittel	media	Da Ban Hong (C), Ginyose (B), Ibuki (B), Rousse de Nay (A), Tanzawa (B), Tsukuba (B)	3
	dense		dense		dicht	densa	Bournette (A), Ginrei (B), Tamatsukuri (B), Taziriginyose (B), Yin Feng (C)	5
<b>8.</b>	<b>QN</b>	<b>MS/VG</b>	<b>(+)</b>					
	<b>Shoot: number of female flowers</b>		<b>Rameau : nombre de fleurs femelles</b>		<b>Trieb: Anzahl der weiblichen Blüten</b>	<b>Tallo: número de flores femeninas</b>		
	few		petit		wenige	bajo	Moriwase (B)	1
	medium		moyen		mittel	medio	Tanzawa (B), Tsukuba (B)	3
	many		élevé		viele	alto	Arima (B), Ishizuchi (B)	5

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>9. (*)</b>	<b>QN</b>	<b>MS/VG</b>	<b>(+)</b>			
	<b>Male flower: length of filament</b>	<b>Fleur mâle : longueur du filament</b>	<b>Männliche Blüte: Länge des Filaments</b>	<b>Flor masculina: longitud del filamento</b>		
	very short	très court	sehr kurz	muy corto	Bouche rouge (A)	1
	short	court	kurz	corto	Marron d' Olargues (A)	2
	medium	moyen	mittel	medio	Marron de Redon (A)	3
	long	long	lang	largo	Belle Epine (A)	4
	very long	très long	sehr lang	muy largo		5
<b>10. (*)</b>	<b>QN</b>	<b>VG</b>	<b>(+)</b>			
	<b>Catkin: length</b>	<b>Chaton : longueur</b>	<b>Kätzchen: Länge</b>	<b>Ameno: longitud</b>		
	short	court	kurz	corto	Belle Epine (A), Ganne (B), Ishizuchi (B), Jiu Jia Zhong (C), Toyotamawase (B)	3
	medium	moyen	mittel	medio	Akatyu (B), Da Di Qing (C), Ginyose (B), Izumo (B), Marron de Goujo unac (A)	5
	long	long	lang	largo	Arima (B), Chu Shu Hong (C), Ibuki (B), Marron de Chevanceaux (A), Tanzawa (B), Tsukuba (B)	7
<b>11. (*)</b>	<b>QL</b>	<b>VG</b>	<b>(+)</b>			
	<b>Young leaf: bronze coloration</b>	<b>Jeune feuille : coloration bronze</b>	<b>Junges Blatt: Bronzefärbung</b>	<b>Hoja joven: coloración bronceada</b>		
	absent	absente	fehlend	ausente	Bouche rouge (A)	1
	present	présente	vorhanden	presente	Belle Epine (A)	9
<b>12. (*)</b>	<b>QN</b>	<b>MS/VG</b>	<b>(+)</b>	<b>(c)</b>		
	<b>Leaf: size</b>	<b>Feuille : taille</b>	<b>Blatt: Größe</b>	<b>Hoja: tamaño</b>		
	small	petite	klein	pequeña	Maraval (A), Moriwase (B), Toyotamawase (B), Wu Hua Li (C)	3
	medium	moyenne	mittel	media	Bournette (A), Ginyose (B), Ibuki(B), Kui Li (C), Tanzawa (B)	5
	large	grande	groß	grande	Marsol (A), Qian Ci Da Ban Li (C), Riheiguri (B), Tsukuba (B)	7

	English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
13.	QN	VG	(+)	(c)				
	<b>Leaf: profile in cross section</b>		<b>Feuille : profil en section transversale</b>		<b>Blatt: Profil im Querschnitt</b>	<b>Hoja: perfil en sección transversal</b>		
	straight		droit		gerade	recto	Belle Epine (A)	1
	slightly concave		légèrement concave		leicht konkav	ligeramente cóncavo		2
	strongly concave		fortement concave		stark konkav	muy cóncavo	Comballe (A)	3
14.	QN	VG		(c)				
	<b>Leaf: symmetry</b>		<b>Feuille : symétrie</b>		<b>Blatt: Symmetrie</b>	<b>Hoja: simetría</b>		
	symmetric to slightly asymmetric		symétrique ou légèrement asymétrique		symmetrisch bis leicht asymmetrisch	simétrica a ligeramente asimétrica	Marsol (A)	1
	moderately asymmetric		modérément asymétrique		mäßig asymmetrisch	moderadamente asimétrica		2
	strongly asymmetric		fortement asymétrique		stark asymmetrisch	muy asimétrica	Bournette (A)	3
15.	QN	MS/VG	(+)	(c)				
	<b>Leaf: length/width ratio</b>		<b>Feuille : rapport longueur/largeur</b>		<b>Blatt: Verhältnis Länge/Breite</b>	<b>Hoja: relación longitud/anchura</b>		
	low		bas		klein	baja	Marsol (A)	3
	medium		moyen		mittel	media	Marron de Chevanceaux (A)	5
	high		élevé		groß	alta	Bournette (A)	7
16.	QN	VG	(+)	(c)				
	<b>Leaf: attitude in relation to shoot</b>		<b>Feuille : port par rapport au rameau</b>		<b>Blatt: Haltung im Verhältnis zum Trieb</b>	<b>Hoja: porte en relación con la rama</b>		
	upwards		vers le haut		aufwärts gerichtet	ascendente	Bouche rouge (A)	1
	outwards		vers l'extérieur		abstehend	orientado hacia el exterior	Belle Epine (A)	2
	downwards		vers le bas		abwärts gerichtet	orientado hacia abajo	Marron de Chevanceaux (A)	3
17. (*)	QN	VG		(c)				
	<b>Leaf blade: intensity of green color of upper side</b>		<b>Limbe : intensité de la couleur verte de la face supérieure</b>		<b>Blattspreite: Intensität der grünen Farbe auf der Oberseite</b>	<b>Limbo: intensidad del color verde en el haz</b>		
	light		claire		hell	claro	Belle Epine (A), Da Di Qing (C)	1
	medium		moyenne		mittel	medio	Er Xin Zao (C), Ganne (B), Ginyose (B), Rousse de Nay (A), Tsukuba (B)	3
	dark		foncée		dunkel	oscuro	Bouche rouge (A), Dabufen Pinzhong (C)	5

	English		français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>18. (*)</b>	<b>QL</b>	<b>VG</b>	<b>(c)</b>				
	<b>Leaf: color of lower side</b>	<b>Feuille : couleur de la face inférieure</b>	<b>Blatt: Farbe der Unterseite</b>	<b>Hoja: color del envés</b>			
	whitish	blanchâtre	weißlich	blanquecino	Bansekí (B), Marsol (A)	1	
	light green	vert clair	hellgrün	verde claro	Bouche rouge (A), Ginyose (B)	2	
<b>19. (*)</b>	<b>PQ</b>	<b>VG</b>	<b>(+)</b>	<b>(c)</b>			
	<b>Leaf: shape</b>	<b>Feuille : forme</b>	<b>Blatt: Form</b>	<b>Hoja: forma</b>			
	lanceolate	lancéolée	lanzettlich	lanceolada	Jiu Yue Han (C)	1	
	narrow elliptic	elliptique étroite	schmal elliptisch	elíptica estrecha	Dae han (B), Ganne (B), Ginyose (B), Mipung (B), Qian Ci Da Ban Li (C), Tsukuba (B)	2	
	broad elliptic	elliptique large	breit elliptisch	elíptica ancha	Zhong Chi Li (C)	3	
<b>20. (*)</b>	<b>PQ</b>	<b>VG</b>	<b>(+)</b>	<b>(c)</b>			
	<b>Leaf: shape of apex</b>	<b>Feuille : forme du sommet</b>	<b>Blatt: Form der Spitze</b>	<b>Hoja: forma del ápice</b>			
	narrow acuminate	acuminée étroite	schmal zugespitzt	acuminado estrecho	Ishizuchi (B), Qian Ci Da Ban Li (C), Tanzawa (B), Tsukuba (B)	1	
	broad acuminate	acuminée large	breit zugespitzt	acuminado ancho	Ginyose (B), Ibuki (B), Jian Ding You Li (C)	2	
	acute	aiguë	spitz	agudo	Ginrei (B), Imakita (B)	3	
<b>21. (*)</b>	<b>PQ</b>	<b>VG</b>	<b>(+)</b>	<b>(c)</b>			
	<b>Leaf: shape of base</b>	<b>Feuille : forme de la base</b>	<b>Blatt: Form der Basis</b>	<b>Hoja: forma de la base</b>			
	acute	aiguë	spitz	agudo	Bournette (A), Ginyose (B), Ibuki (B), Jiu Yue Han (C), Tanzawa (B)	1	
	obtuse	obtuse	stumpf	obtusa	Qian Ci Da Ban Li (C), Verdale (A)	2	
	cordate	cordiforme	herzförmig	cordiforme	Comballe (A), Hui Huang You Li (C)	3	
<b>22. (*)</b>	<b>PQ</b>	<b>VG</b>	<b>(+)</b>	<b>(c)</b>			
	<b>Leaf: shape of margin</b>	<b>Feuille : forme du bord</b>	<b>Blatt: Form des Randes</b>	<b>Hoja: forma del margen</b>			
	needle shape	en forme d'aiguille	nadelförmig	en forma de aguja	Ibuki (B), Ishizuchi (B), Tanzawa (B)	1	
	acute	aiguë	spitz	agudo	Akatyu (B), Izumo (B)	2	
	flare shape	évasée	flammenförmig	atrompetado	Marsol (A)	3	

	English		français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>23. (*)</b>	<b>QN</b>	<b>VG</b>	<b>(c)</b>				
	<b>Leaf: symmetry of base</b>	<b>Feuille : symétrie de la base</b>	<b>Blatt: Symmetrie der Basis</b>	<b>Hoja: simetría de la base</b>			
	symmetric or slightly asymmetric	symétrique ou légèrement asymétrique	symmetrisch bis leicht asymmetrisch	simétrica o ligeramente asimétrica	Belle Epine (A)		1
	moderately asymmetric	modérément asymétrique	mäßig asymmetrisch	moderadamente asimétrica			2
	strongly asymmetric	fortement asymétrique	stark asymmetrisch	muy asimétrica	Marsol (A)		3
<b>24. (*)</b>	<b>QL</b>	<b>VG</b>	<b>(c)</b>				
	<b>Leaf: color of petiole</b>	<b>Feuille : couleur du pétiole</b>	<b>Blatt: Farbe des Blattstiels</b>	<b>Hoja: color de peciolo</b>			
	yellow	jaune	gelb	amarillo	Marsol (A)		1
	green	vert	grün	verde	Belle Epine (A)		2
<b>25. (*)</b>	<b>QN</b>	<b>MS/VG</b>	<b>(+)</b>	<b>(c)</b>			
	<b>Leaf: ratio length of leaf blade/length of petiole</b>	<b>Feuille : rapport longueur du limbe/longueur du pétiole</b>	<b>Blatt: Verhältnis Länge der Blattspreite/Länge des Blattstiels</b>	<b>Hoja: relación longitud del limbo/longitud del peciolo</b>			
	low	bas	klein	baja	Arima (B), Maraval (A), Riheiguri (B), Tsukuba (B)		3
	medium	moyen	mittel	media	Ginyose (B), Ishizuchi (B), Marsol (A), Tanzawa (B)		5
	high	élevé	groß	alta	Ganne (B), Ibuki (B), Toyotamawase (B), Verdale (A)		7
<b>26. (*)</b>	<b>PQ</b>	<b>VG</b>	<b>(+)</b>	<b>(d)</b>			
	<b>Bur: shape</b>	<b>Bogue : forme</b>	<b>Fruchtbecher: Form</b>	<b>Zurrón: forma</b>			
	globose	globuleuse	kugelförmig	globoso	Ganne (B), Ibuki (B), Jiao Ci (C)		1
	obloid	obloïde	abgeplattet kugelförmig	obloide	Arima (B), Ishizuchi (B), Jiu Jia Zhong (C), Tanzawa (B), Tsukuba (B)		2
	transverse cylindric	cylindrique transverse	quer zylindrisch	cilíndrico transversal	Ginyose (B), Imakita (B)		3
<b>27. (*)</b>	<b>QN</b>	<b>VG</b>	<b>(d)</b>				
	<b>Bur: density of prickles</b>	<b>Bogue : densité des épines</b>	<b>Fruchtbecher: Dichte der Stacheln</b>	<b>Zurrón: densidad de las espinas</b>			
	sparse	faible	locker	laxa	Duan Ci You Li (C), Tanzawa (B), Tsukuba (B)		1
	medium	moyenne	mittel	media	Cha Wan Li (C), Moriwase (B)		3
	dense	dense	dicht	densa	Ginyose (B), Ishizuchi (B), Shen Ci Da Ban Li (C)		5

	English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>28. (*)</b>	<b>QL</b>	<b>VG</b>	<b>(+)</b>	<b>(e)</b>				
	<b>Nut: embryony</b>		<b>Noix : embryonnie</b>		<b>Nuß: Embryonie</b>	<b>Castaña: embrionía</b>		
	mono-embryonic		monoembryonnaire		monoembryonal	monoembrionía	Belle Epine (A)	1
	poly-embryonic		polyembryonnaire		polyembryonal	poliembrionía	Laguepie (A)	2
<b>29. (*)</b>	<b>QN</b>	<b>VG</b>		<b>(e)</b>				
	<b><u>Poly-embryonic varieties only:</u> Nut: coherence of embryos</b>		<b><u>Variétés polyembryonnaires seulement :</u> Noix : cohérence des embryons</b>		<b><u>Nur polyembryonale Sorten:</u> Nuß: Zusammenhaften der Embryonen</b>	<b><u>Solo variedades poliembrionales:</u> Castaña: cohesión entre los embriones</b>		
	weak		faible		gering	débil	Maraval (A)	3
	medium		moyenne		mittel	media	Precoce Migoule (A)	5
	strong		élevée		stark	fuerte	Laguepie (A)	7
<b>30. (*)</b>	<b>QN</b>	<b>VG</b>		<b>(e)</b>				
	<b>Nut: degree of penetration of seed coat into embryo</b>		<b>Noix : importance de la pénétration du tégument dans l'embryon</b>		<b>Nuß: Grad des Eindringens der Samenschale in den Embryo</b>	<b>Castaña: grado de penetración del tegumento en el embrión</b>		
	absent or very weak		absente ou très faible		fehlend oder gering	ausente o muy débil	Marigoule (A)	1
	weak		faible		gering	débil	Maraval (A)	3
	medium		moyenne		mittel	media	Bournette (A)	5
	strong		forte		stark	profunda	Laguepie (A)	7
<b>31. (*)</b>	<b>PQ</b>	<b>VG</b>	<b>(+)</b>	<b>(e)</b>				
	<b>Nut: shape</b>		<b>Noix : forme</b>		<b>Nuß: Form</b>	<b>Castaña: forma</b>		
	broad ovate		ovale large		breit eiförmig	oval ancha	Marsol (A)	1
	medium ovate		ovale moyenne		mittel eiförmig	oval media	Jian Ding You Li (C), Marki (A)	2
	circular		circulaire		kreisförmig	circular	Arima (B), Da Hong Pao (C), Ishizuchi (B), Marron de Chevanceaux (A)	3
	medium oblate		aplatie moyenne		mittel breitrund	achatada media	Laguepie (A)	4
	broad oblate		aplatie large		breit breitrund	achatada ancha	Izumo (B), Marigoule (A), Qian Ci Da Ban Li (C), Riheiguri (B)	5

	English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>32. (*)</b>	<b>QN</b>	<b>VG</b>	<b>(+)</b>	<b>(e)</b>				
	<b>Nut: area of pubescence on upper part</b>	<b>Noix : surface de la pilosité sur la partie supérieure</b>	<b>Nuß: Behaarte Fläche an der Oberseite</b>	<b>Castaña: superficie pubescente en la parte superior</b>				
	small	petite	klein	pequeña	Ginyose (B), Tamatsukuri (B), Tsukuba (B), You Li (C)	1		
	medium	moyenne	mittel	media	Ibuki (B), Ishizuchi (B), Tanzawa (B)	3		
	large	grande	groß	grande	Ganne (B), Riheiguri (B), Yang Mao Li (C)	5		
<b>33. (*)</b>	<b>QN</b>	<b>VG</b>	<b>(+)</b>	<b>(e)</b>				
	<b>Nut: area of hilum</b>	<b>Noix : taille du hile</b>	<b>Nuß: Nabelfläche</b>	<b>Castaña: zona del hilo</b>				
	small	petit	klein	pequeña	Comballe (A), Da Ban Hong (C), Ishizuchi (B), Riheiguri (B), Toyotamawase (B)	3		
	medium	moyen	mittel	media	Ibuki (B), Marron d'Olargues (A), Tanzawa (B), Tsukuba (B), Yanshan Zao Feng (C)	5		
	large	grand	groß	grande	Arima (B), Da Di Qing (C), Ganne (B), Ginrei (B), Marigoule (A)	7		
<b>34. (*)</b>	<b>PQ</b>	<b>VG</b>	<b>(+)</b>	<b>(e)</b>				
	<b>Nut: shape of border line of hilum and pericarp</b>	<b>Noix : forme de la limite entre le hile et le péricarpe</b>	<b>Nuß: Form der Grenze zwischen Nabel und Perikarp</b>	<b>Castaña: forma de la línea divisoria entre el hilo y el pericarpio</b>				
	straight	droite	gerade	recta	Arima (B), Cui Jia Bao Zi 2399 (C), Imakita (B)	1		
	curved	recourbée	gekrümmt	curva	Hong Li (C), Ibuki (B), Tanzawa (B), Tsukuba (B)	2		
	wavy	ondulée	wellig	ondulada	Ganne (B), Otomune (B), Riheiguri (B), Xinyang Da Ban Li (C)	3		
<b>35. (*)</b>	<b>QL</b>	<b>VG</b>		<b>(e)</b>				
	<b>Nut: conspicuousness of hilum</b>	<b>Noix : netteté du hile</b>	<b>Nuß: Ausprägung des Nabels</b>	<b>Castaña: visibilidad del hilo</b>				
	inconspicuous	peu net	undeutlich	inconspicuo	Rousse de Nay (A)	1		
	conspicuous	net	deutlich	conspicuo	Marigoule (A)	2		
<b>36. (*)</b>	<b>QL</b>	<b>VG</b>	<b>(+)</b>	<b>(e)</b>				
	<b>Nut: glossiness</b>	<b>Noix : brillance</b>	<b>Nuß: Glanz</b>	<b>Castaña: brillo</b>				
	absent	absente	fehlend	ausente	Marigoule (A)	1		
	present	présente	vorhanden	presente	Belle Epine (A)	9		

	English		français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>37. (*)</b>	<b>PQ</b>	<b>VG</b>	<b>(e)</b>				
	<b>Nut: color of skin</b>	<b>Noix : couleur du péricarpe</b>	<b>Nuß: Farbe der Haut</b>	<b>Castaña: color de la piel</b>			
	light brown	brun clair	hellbraun	marrón claro	Comballe (A), Hangawii (B), Hong Guang (C), Otomune (B), Tanzawa (B)	1	
	medium brown	brun moyen	mittelbraun	marrón medio	Arima (B), Belle Epine (A), Mipung (B), Okkwang (B), Taziriginyose (B), Zhong Chi Li (C)	2	
	dark brown	brun foncé	dunkelbraun	marrón oscuro	Akatyu (B), Ishizuchi (B), Jiao Zha (C), Tsukuba (B)	3	
	reddish brown	brun rougeâtre	rötlich braun	marrón rojizo	Daekwang (B), Ganne (B), Ginyose (B), Ibuki (B), Liu Yue Pu (C), Marron de Var (A)	4	
	blackish brown	brun noirâtre	schwärzlich braun	marrón negruzco	Marigoule (A), Riheiguri (B), WuKe Li (C)	5	
<b>38. (*)</b>	<b>QN</b>	<b>MS/VG</b>	<b>(e)</b>				
	<b>Nut: size</b>	<b>Noix : taille</b>	<b>Nuß: Größe</b>	<b>Castaña: tamaño</b>			
	small	petite	klein	pequeña	Hangan Tie Dan Li (C), Imakita (B), Roussette de Montpazier (A), Toyotamawase (B)	3	
	medium	moyenne	mittel	media	Arima (B), Ibuki (B), Laguepie (A), Tanzawa (B), Yan Hong (C)	5	
	large	grosse	groß	grande	Ganne (B), Ginyose (B), Marigoule (A), Tsukuba (B), Xinyang Da Ban Li (C)	7	
<b>39. (*)</b>	<b>QN</b>	<b>VG</b>	<b>(+)</b>	<b>(e)</b>			
	<b>Seed coat: adherence to kernel</b>	<b>Tégument : adhérence à la graine</b>	<b>Samenschale: Anhaften am Kern</b>	<b>Tegumento: adherencia a la semilla</b>			
	weak	faible	schwach	débil	Marigoule (A), Riheiguri (B)	3	
	medium	moyenne	mittel	media	Akatyu (B), Ishizuchi (B), Tanzawa (B)	5	
	strong	forte	stark	fuerte	Ginyose (B), Ibuki (B), Laguepie (A), Tsukuba (B)	7	



	English		français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>40. (*)</b>	<b>PQ</b>	<b>VG</b>	<b>(e)</b>				
	<b>Kernel: color of flesh</b>	<b>Graine : couleur de la chair</b>	<b>Kern: Farbe des Fleisches</b>	<b>Semilla: color de la pulpa</b>			
	white	blanche	weiss	blanco	Akatyu (B), Ginrei (B), Hubei You Li (C), Imakita (B), Marigoule (A)	1	
	whitish yellow	jaune blanchâtre	weißlich gelb	amarillo blanquecino	Arima (B), Belle Epine (A), Ginyose (B), Hangawii (B), Ishizuchi (B), Okkwang (B), Yu Luo Hong(C)	2	
	yellow	jaune	gelb	amarillo	Ibuki (B), Mipung (B), Riheiguri (B), Tanzawa (B), Tsukuba (B), Zhong Chi Ban Li (C)	3	
<b>41. (*)</b>	<b>QL</b>	<b>VG</b>	<b>(e)</b>				
	<b><u>Mono-embryonic varieties only:</u> Kernel: inner cavity</b>	<b><u>Variétés monoembryonnaires seulement :</u> Graine : cavité interne</b>	<b><u>Nur monoembryonale Sorten:</u> Kern: innerer Hohlraum</b>	<b><u>Solo variedades monoembrionales:</u> Semilla: cavidad interior</b>			
	absent	absente	fehlend	ausente	Belle Epine (A)	1	
	present	présente	vorhanden	presente	Bouche rouge (A)	9	
<b>42. (*)</b>	<b>QN</b>	<b>MG/VG</b>	<b>(+)</b>				
	<b>Time of leaf bud burst</b>	<b>Époque de débourrement foliaire</b>	<b>Zeitpunkt des Öffnens der Blattknopse</b>	<b>Época de brotación de la yema foliar</b>			
	very early	très précoce	sehr früh	muy temprana	Maraval (A), Shen Ci Da Ban Li (C)	1	
	early	précoce	früh	temprana	Ginyose (B), Précoce de Vans (A), Toyotamawase (B), Zao Li Zi (C)	3	
	medium	moyenne	mittel	media	Doree de Lyon (A), Er Hung Zao (C), Ganne (B), Tanzawa (B), Tsukuba (B)	5	
	late	tardive	spät	tardía	Arima (B), Ishizuchi (B), Marron Dauphine (A), Riheiguri (B), Yan Chang (C)	7	
	very late	très tardive	sehr spät	muy tardía	Banseki (B), Marron Comballe (A), Yin Feng (C)	9	

	English		français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>43. (*)</b>	<b>QN</b>	<b>MG/VG</b>	<b>(+)</b>				
	<b>Time of male flowering</b>	<b>Époque de début de la floraison mâle</b>	<b>Zeitpunkt der männlichen Blüte</b>	<b>Época de la floración masculina</b>			
	very early	très précoce	sehr früh	muy temprana	Moriwase (B), Shandong Lai Xi Da You Li (C), Soulage Premiere (A)	1	
	early	précoce	früh	temprana	Akatyu (B), Marigoule (A), Qing Mao Zao (C), Tamatsukuri (B), Toyotamawase (B)	3	
	medium	moyenne	mittel	media	Chu Shu Hong (C), Ginyose (B), Ibuki (B), Marron de Chevanceaux (A), Tanzawa (B)	5	
	late	tardive	spät	tardía	Belle Epine (A), Ganne (B), Ishizuchi (B), Jiu Jia Zhong (C), Tsukuba (B)	7	
	very late	très tardive	sehr spät	muy tardía	Banseki (B), Jiu Hua 2 (C), Marron de Goujo unac (A)	9	
<b>44. (*)</b>	<b>QN</b>	<b>MG/VG</b>	<b>(+)</b>				
	<b>Time of female flowering</b>	<b>Époque de début de la floraison femelle</b>	<b>Zeitpunkt der weiblichen Blüte</b>	<b>Época de la floración femenina</b>			
	very early	très précoce	sehr früh	muy temprana	Chu Shu Hong (C), Moriwase (B), Soulage Premiere (A)	1	
	early	précoce	früh	temprana	Akatyu (B), Jiu Jia Zhong (C), Marigoule (A), Tamatsukuri (B)	3	
	medium	moyenne	mittel	media	Arima (B), Bouche rouge (A), Hua Guang (C), Ibuki (B)	5	
	late	tardive	spät	tardía	Belle Epine (A), Ishizuchi (B), Qing Mao Ruan Ci (C)	7	
	very late	très tardive	sehr spät	muy tardía	Banseki (B), Verdale (A)	9	

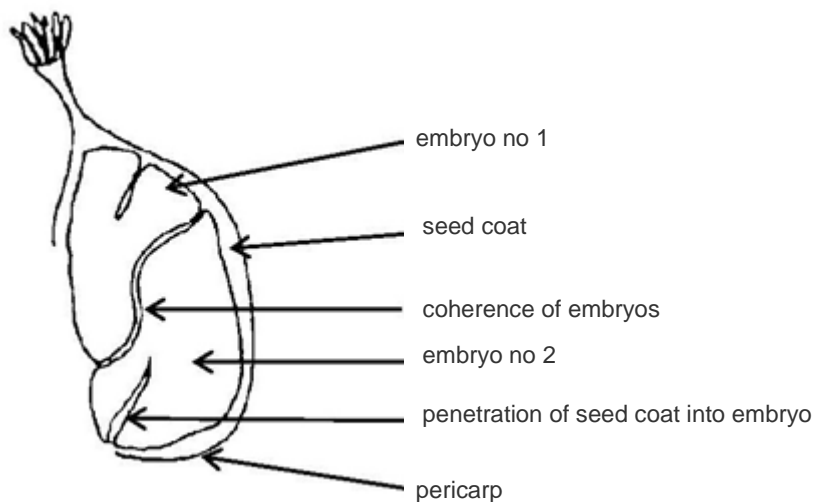
	English		français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>45. (*)</b>	<b>QN</b>	<b>MG/VG</b>	<b>(+)</b>				
	<b>Time of maturity for consumption</b>	<b>Époque de maturité pour la consommation</b>	<b>Zeitpunkt der Genußreife</b>	<b>Época de madurez para el consumo</b>			
	very early	très précoce	sehr früh	muy temprana	Bouche de Betizac (A), Eli1 (C), Moriwase (B), Toyotamawase (B)	1	
	early	précoce	früh	temprana	Izumo (B), Précoce Migoule (A), Song Jia Zao (C), Tamatsukuri (B), Tanzawa (B)	3	
	medium	moyenne	mittel	media	Arima (B), Hua Guang (C), Marigoule (A), Tsukuba (B)	5	
	late	tardive	spät	tardía	Bouche rouge (A), Ganne (B), Ishizuchi (B), Qing Mao Ruan Ci (C)	7	
	very late	très tardive	sehr spät	muy tardía	Banseki (B), Verdale (A)	9	

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) Plant: Observations on the plant should be made in the dormant season.
- (b) Current season's shoot: Observations on the current season's shoot should be made on the middle third of the shoot in the dormant season.
- (c) Leaf: Observations on the leaf should be made on fully developed leaves. Leaves should be taken from the middle third of bearing shoots.
- (d) Bur: Observations on the bur should be made just before dehiscence.
- (e) Nut: Observations on the nut should be made on nuts mature for consumption. In case of bur containing three nuts, the middle one should be disregarded.

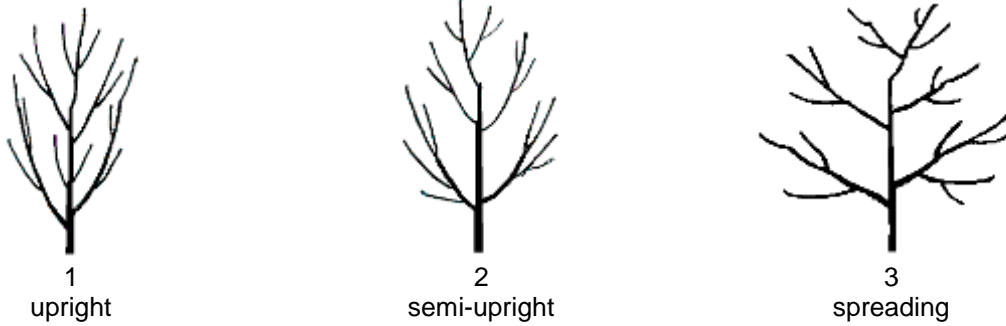


8.2 Explanations for individual characteristics

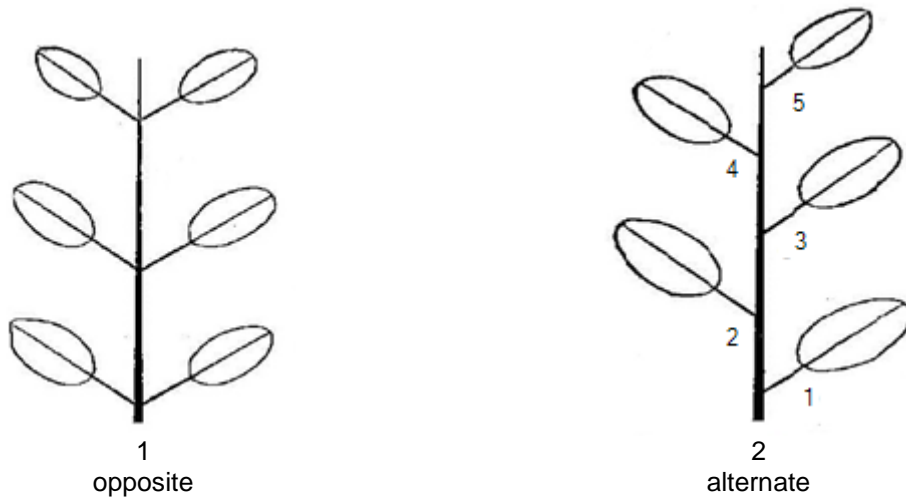
Ad. 1: Tree: vigor

The vigor of the tree should be considered as the overall abundance of vegetative growth.

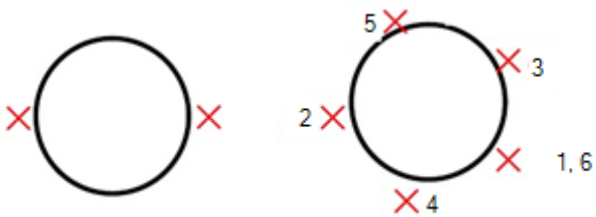
Ad. 2: Tree: growth habit



Ad. 5: Current season's shoot: arrangement of leaves



View from top on the shoot:



× = leaf position

Ad. 8: Shoot: number of female flowers

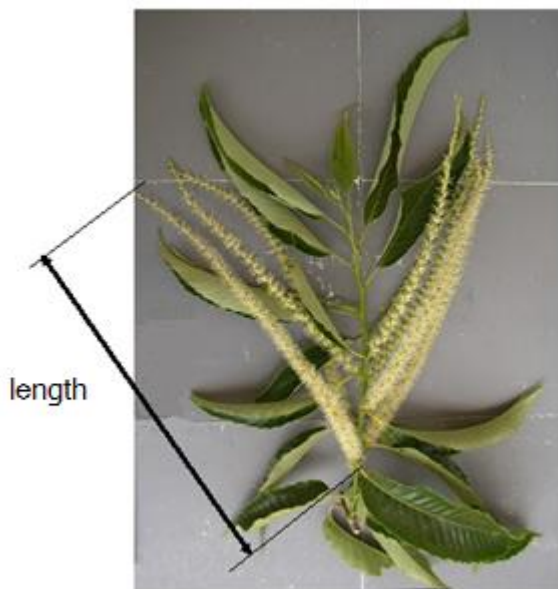
The number of female flowers should be observed on the bearing shoots at full flowering time.

Ad. 9: Male flower: length of filament

The length of the filament of the male flower should be observed on the longest filament on the middle third of the catkin at full flowering time.

Ad. 10: Catkin: length

The longest catkin on a fully developed inflorescence should be observed.



Ad. 11: Young leaf: bronze coloration

Bronze coloration of young leaf should be observed at distal part of current shoot.

Ad. 12: Leaf: size

The total area of the leaf should be observed.

Ad. 13: Leaf: profile in cross section



1  
straight

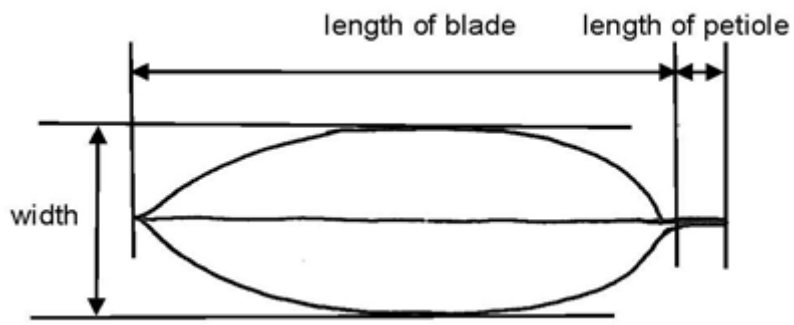


2  
slightly concave



3  
strongly concave

Ad. 15: Leaf: length/width ratio



Ad. 16: Leaf: attitude in relation to shoot

The attitude should be observed on upright shoots.



1  
upwards



2  
outwards



3  
downwards

Ad. 19: Leaf: shape



1  
lanceolate

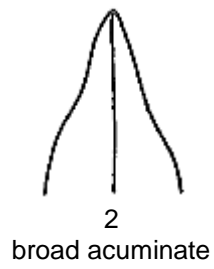
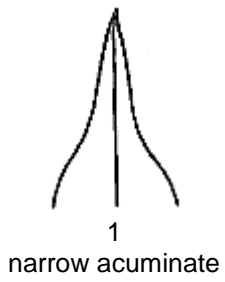


2  
narrow elliptic

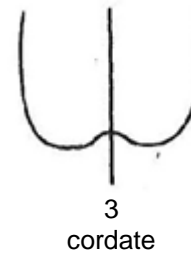
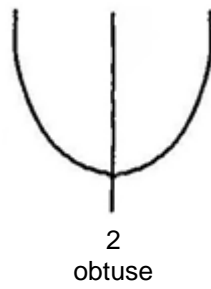
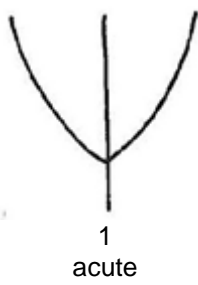


3  
broad elliptic

Ad. 20: Leaf: shape of apex



Ad. 21: Leaf: shape of base



Ad. 22: Leaf: shape of margin



Ad. 25: Leaf: ratio length of leaf blade/length of petiole

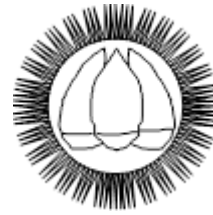
See Ad. 15



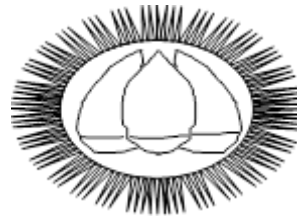
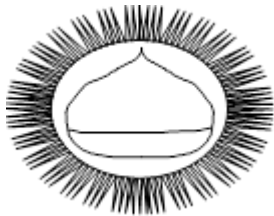
Ad. 26: Bur: shape

front view

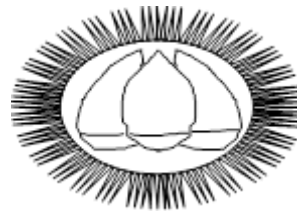
lateral view



1  
globose



2  
obloid



3  
transverse cylindric

Ad. 28: Nut: embryony








1  
mono-embryonic



2  
poly-embryonic

Ad. 31: Nut: shape

		← broadest part →	
		below middle	at middle
width (ratio length/width)			
narrow (high)	 2 medium ovate		
medium (medium)	 1 broad ovate	 3 circular	 4 medium oblate
broad (low)		 5 broad oblate	

Ad. 32: Nut: area of pubescence on upper part



1  
small

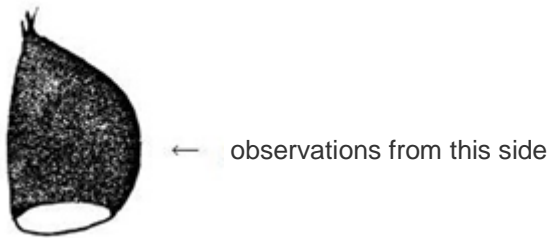
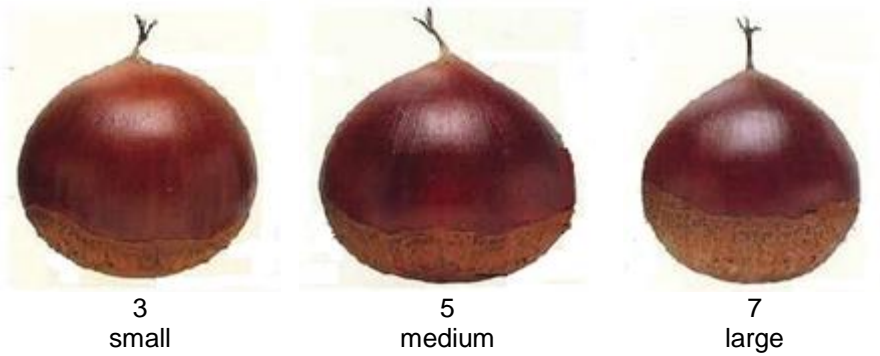


3  
medium

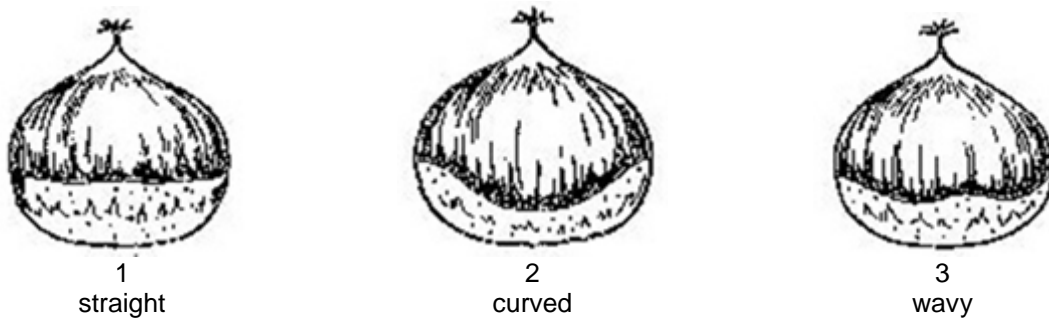


5  
large

Ad. 33: Nut: area of hilum



Ad. 34: Nut: shape of border line of hilum and pericarp



Ad. 36: Nut: glossiness

The glossiness of nut should be observed immediately after opening of the involucre.

Ad. 39: Seed coat: adherence to kernel

The adherence to kernel should be determined by observation of the ease of peeling the seed coat by hand following steaming or roasting. Nuts should be cut in half before steaming or roasting.

Ad. 42: Time of leaf bud burst

The time of leaf bud burst is when 20% of buds show green color at the top of the bud.

Ad. 43: Time of male flowering

The time of male flowering is when 50% of the flowers are fully open.

Ad. 44: Time of female flowering

The time of female flowering is when 50% of the flowers are fully open.

Ad. 45: Time of maturity for consumption

The time of maturity for consumption is when 50% of the nuts are harvested.

9. Literature

Bruneton – Governatori A., 1984: Le Pain de bois. Ethnohistoire de la châtaigne et du châtaignier, Eche Ed., pp. 533

Chapa, J.- INRA, 1982: Situation de la castaneiculture française. Convegno internazionale di Frutticoltura montana, Saint – Vincent d'Aoste, IT

CHAPA, J. – INRA, 1987: Châtaignes et marrons, variétés inscrites au Catalogue officiel. Arboriculture fruitière, No. 399, pp. 21-30

Congreso Internacional Sobre el Castano: Lourizan Pontevedra, Espagna, 1-5 octobre 1984, parution 1986, Xunta de Galicai, pp.429

INRA. CTPS., 1986 + 1987: Premier catalogue officiel des variétés de châtaignes et marrons, Documents GEVES, pp. 31-33, FR

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

Pitte, J.R., 1986: Terres de Castanide, Hommes et paysages du châtaignier de l'antiquité à nos jours, Editions Fayard, pp. 480

Shimura, I. et al., 1999: Chestnut, The encyclopedia of fruit horticulture, Nosangyoson Bunka Kyokai, v.5, JP

Solignat, G., Chapa, J., 1978: La Biologie florale du châtaignier, Invuelec, pp. 35

10. Technical Questionnaire

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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	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		
1.1.1	Botanical name	<input type="text" value="Castanea crenata Siebold &amp; Zucc."/>	[ ]
1.1.2	Common name	<input type="text" value="Japanese chestnut"/>	
1.2.1	Botanical name	<input type="text" value="Castanea mollissima Blume"/>	[ ]
1.2.2	Common name	<input type="text" value="Chinese Chestnut"/>	
1.3.1	Botanical name	<input type="text" value="Castanea sativa Mill."/>	[ ]
1.3.2	Common name	<input type="text" value="Chestnut"/>	
1.4.1	Botanical name	<input type="text" value="Castanea x Castanea"/>	[ ]
1.4.2	Common name	<input type="text" value="Chestnut (in case of interspecific hybrid )"/>	

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"/>

#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)

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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4.2 Method of propagating the variety

4.2.1 Vegetative propagation

- (a) cuttings
- (b) grafting
- (c) other (state method)

4.2.2 Other   
(Please provide details)



TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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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
<b>5.1 Nut: shape (31)</b>		
broad ovate	Marsol (A)	1 [ ]
medium ovate	Jian Ding You Li (C), Marki (A)	2 [ ]
circular	Arima (B), Da Hong Pao (C), Ishizuchi (B), Marron de Chevanceaux (A)	3 [ ]
medium oblate	Laguepie (A)	4 [ ]
broad oblate	Izumo (B), Marigoule (A), Qian Ci Da Ban Li (C), Riheiguri (B)	5 [ ]
<b>5.2 Nut: color of skin (37)</b>		
light brown	Comballe (A), Hangawii (B), Hong Guang (C), Otomune (B), Tanzawa (B)	1 [ ]
medium brown	Arima (B), Belle Epine (A), Mipung (B), Okkwang (B), Taziriginyose (B), Zhong Chi Li (C)	2 [ ]
dark brown	Akatyu (B), Ishizuchi (B), Jiao Zha (C), Tsukuba (B)	3 [ ]
reddish brown	Daekwang (B), Ganne (B), Ginyose (B), Ibuki (B), Liu Yue Pu (C), Marron de Var (A)	4 [ ]
blackish brown	Marigoule (A), Riheiguri (B), WuKe Li (C)	5 [ ]
<b>5.3 Nut: size (38)</b>		
very small		1 [ ]
very small to small		2 [ ]
small	Hangan Tie Dan Li (C), Imakita (B), Roussette de Montpazier (A), Toyotamawase (B)	3 [ ]
small to medium		4 [ ]
medium	Arima (B), Ibuki (B), Laguepie (A), Tanzawa (B), Yan Hong (C)	5 [ ]
medium to large		6 [ ]
large	Ganne (B), Ginyose (B), Marigoule (A), Tsukuba (B), Xinyang Da Ban Li (C)	7 [ ]
large to very large		8 [ ]
very large		9 [ ]

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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Characteristics	Example Varieties	Note
<b>5.4 Time of maturity for consumption (45)</b>		
very early	Bouche de Betizac (A), Eli1 (C), Moriwase (B), Toyotamawase (B)	1 [ ]
very early to early		2 [ ]
early	Izumo (B), Precoce Migoule (A), Song Jia Zao (C), Tamatsukuri (B), Tanzawa (B)	3 [ ]
early to medium		4 [ ]
medium	Arima (B), Hua Guang (C), Marigoule (A), Tsukuba (B)	5 [ ]
late	Bouche rouge (A), Ganne (B), Ishizuchi (B), Qing Mao Ruan Ci (C)	7 [ ]
medium to late		8 [ ]
very late	Banseki (B), Verdale (A)	9 [ ]

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 <b>similar</b> variety(ies)	Describe the expression of the characteristic(s) for <b>your</b> candidate variety
<i>Example</i>	<i>Tree: growth habit</i>	<i>upright</i>	<i>semi-upright</i>
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	

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

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]