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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

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DRAFT

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UPOV Code(s): CRYLS_AVE; CRYLS_COL;
CRYLS_AME; CRYLS_MNA

Corylus avellana L.;
Corylus columna L.;
Corylus americana Marshall;
Hybrids between *Corylus americana* and
Corylus avellana

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by an expert from Italy

to be considered by the

*Technical Committee at its sixty-first session,
to be held Geneva from 2025-10-20 to 2025-10-21*

Disclaimer: this document does not represent UPOV policies or guidance

Alternative Names:*

Botanical name	English	French	German	Spanish
<i>Corylus avellana</i> L., <i>Corylus maxima</i> Mill., <i>Corylus pontica</i> K. Koch	Hazelnut	Noisetier	Haselnuss	Avellano
<i>Corylus columna</i> L., <i>Corylus iberica</i> Wittm. ex Bobrov	Turkish Hazel	Noisetier de Byzance, Noisetier de Turquie	Baumhasel, Türkische Baumhasel	Avellano de Turquía
<i>Corylus americana</i> Marshall	American filbert, American hazel, Hazelnut		Amerikanische Hasel	
Hybrids between <i>Corylus americana</i> and <i>Corylus avellana</i>				

* 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.]

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.

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1. Subject of these Test Guidelines

1.1 These Test Guidelines apply to all varieties of *Corylus avellana* L., *Corylus colurna* L., *Corylus americana* Marshall and Hybrids between *Corylus americana* and *Corylus avellana* for fruit production.

1.2 Guidance on the use of Test Guidelines for interspecific hybrids that are not explicitly covered by Test Guidelines is provided in document TGP/13 "Guidance for New Types and 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 young plants on their own roots.

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 two independent growing cycles may be observed from a single planting, examined in two separate growing cycles.

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

3.1.4 The growing cycle is considered to be the duration of a single growing season, beginning with the dormancy period, followed by bud burst (flowering and/or vegetative), flowering and fruit harvest and concluding when the following dormant period starts.

3.1.5 The testing of a variety may be concluded when the competent authority can determine with certainty the outcome of the test.

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*

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 or Parts of Plants to be Examined

Unless otherwise indicated, for the purposes of distinctness, all observations on single plants should be made on 3 plants or parts of plants taken from each of 3 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 5.

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 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, 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) Leaf blade: shape (characteristic 10)
- (b) Involucre: length in relation to length of nut (characteristic 15)
- (c) Involucre: depth of indentations (characteristic 16)
- (d) Nut: size (characteristic 20)
- (e) Nut: shape in lateral view (characteristic 21)
- (f) Nut: shape in cross-section (characteristic 22)
- (g) Nut: percentage of kernel (characteristic 40)
- (h) Time of beginning of female flowering (characteristic 41)
- (i) Time of beginning of male flowering (characteristic 42)
- (j) Time of harvest maturity (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 All relevant states of expression are presented in the characteristic.

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

		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)-(f) See Explanations on the Table of Characteristics in Chapter 8.1
- 7 Not applicable

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

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1.		QN	VG	(+)	(a)				
		Plant: vigor		Plante : vigueur		Pflanze: Wuchsstärke	Planta: vigor		
		weak		faible		gering	débil	Kargalak, Tombul	1
		weak to medium		faible à moyenne		gering bis mittel	débil a medio	Merveille de Bollwiller	2
		medium		moyenne		mittel	medio	Tonda Gentile delle Langhe	3
		medium to strong		moyenne à forte		mittel bis stark	medio a fuerte	Daviana	4
		strong		forte		stark	fuerte	Fertile de Coutard	5
2.	(*)	PQ	VG		(a)				
		Plant: growth habit		Plante : port		Pflanze: Wuchsform	Planta: hábito de crecimiento		
		fastigate		fastigié		sehr aufrecht	fastigiado	Daviana	1
		upright		dressé		aufrecht	erguido	Butler, San Giovanni, Segorbe	2
		semi-upright		demi-dressé		halbaufrecht	semierguido	Fertile de Coutard, Negret, Tonda Gentile delle Langhe, Tonda Romana	3
		spreading		étalé		breitwüchsig	extendido	Morell, Tombul	4
		drooping		retombant		überhängend	colgante	Kargalak, Palaz	5
3.		QN	VG	(+)					
		Plant: suckers		Plante : drageons		Pflanze: Ausläufer	Planta: chupones		
		absent or very few		absents ou très peu		fehlend oder sehr wenige	ausente o muy pocos	Balázs, Tonda Bianca	1
		few		peu		wenige	pocos	Cosford, Daviana	2
		medium		moyen		mittel	medios	Segorbe	3
		many		nombreux		viele	abundantes	Fertile de Coutard	4
		very many		très nombreux		sehr viele	muy abundantes	Kargalak	5
4.		QN	VG	(+)	(a),(b)				
		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		
		absent or sparse		absente ou lâche		fehlend oder locker	ausente o laxa	Segorbe	1
		medium		moyenne		mittel	media	Mortarella	2
		dense		dense		dicht	densa	Tonda Gentile delle Langhe	3

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
5.		QN	VG	(+)	(a),(b)		
		One-year-old-shoot: density of hairs	Rameau d'un an : densité de la pilosité	Einjähriger Trieb: Dichte der Behaarung	Rama de un año: densidad de la vellosidad		
		absent or sparse	absente ou lâche	fehlend oder locker	ausente o laxa	Mortarella, Segorbe	1
		medium	moyenne	mittel	media	Fertile de Coutard, Tonda Gentile delle Langhe	2
		dense	dense	dicht	densa	Kargalak, Tonda di Giffoni	3
6.		PQ	VG	(+)	(a),(b)		
		Bud: shape	Bouton : forme	Knospe: Form	Botón: forma		
		conic	conique	kegelförmig	cónica	Cosford, Merveille de Bollwiller	1
		ovoid	ovoïde	eiartig	ovoide	Fertile de Coutard, Negret	2
		globose	globuleuse	kugelförmig	globosa	Lambert's Filbert	3
7.	(*)	PQ	VG		(a),(b)		
		Bud: color	Bouton : couleur	Knospe: Farbe	Botón: color		
		green	vert	grün	verde	Lambert's Filbert, Riccia di Talanico, Segorbe	1
		reddish green	vert rougeâtre	rötlichgrün	verde rojizo	Bergeri, Kargalak, Negret	2
		red	rouge	rot	rojo	Fructo rubro, Merveille de Bollwiller	3
8.	(*)	PQ	VG		(b),(c)		
		Male inflorescence: color	Inflorescence mâle : couleur	Männlicher Blütenstand: Farbe	Inflorescencia masculina: color		
		green	vert	grün	verde	Fertile de Coutard, Segorbe, Tonda Gentile delle Langhe	1
		pink brown	marron-rose	rosabraun	marrón rosado	Bergeri, Cosford, Merveille de Bollwiller	2
		red	rouge	rot	rojo	Rote Zellernuss	3
9.	(*)	PQ	VG		(b),(c)		
		Stigma: color	Stigmate : couleur	Narbe: Farbe	Estigma: color		
		light yellow	jaune clair	hellgelb	amarillo claro	Daviana	1
		pink	rose	rosa	rosa	San Giovanni	2
		red	rouge	rot	rojo	Fertile de Coutard	3
		purple red	rouge pourpre	purpurrot	rojo púrpura	Merveille de Bollwiller	4

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
10.	(*)	PQ	VG	(+)	(b),(d)				
		Leaf blade: shape		Limbe : forme		Blattspreite: Form	Limbo: forma		
		elliptic		elliptique		elliptisch	elíptica	Merveille de Bollwiller	1
		ovate		ovale		eiförmig	oval	Lambert's Filbert	2
		obovate		obovale		verkehrt eiförmig	oboval	Tonda di Giffoni	3
		circular		circulaire		kreisförmig	circular	Segorbe	4
11.	(*)	QN	MG/VG		(b),(d)				
		Leaf blade: size		Limbe : taille		Blattspreite: Größe	Limbo: tamaño		
		very small		très petite		sehr klein	muy pequeño	Bearn, Gunslebert	1
		small		petite		klein	pequeño	Cosford, Nocchione, Tonda Rossa	2
		medium		moyenne		mittel	medio	Kargalak, Tonda Bianca	3
		large		grande		groß	grande	Merveille de Bollwiller, Tonda di Giffoni	4
		very large		très grande		sehr groß	muy grande	Barcelona, Segorbe	5
12.		QN	MG/VG		(b),(d)				
		Petiole: length		Pétiole : longueur		Blattstiel: Länge	Peciololo: longitud		
		short		courte		kurz	corta	Tonda di Giffoni	1
		medium		moyenne		mittel	media	Segorbe	2
		long		longue		lang	larga	Cosford, Fertile de Coutard, Tonda Gentile delle Langhe	3
13.		QN	VG		(b),(d)				
		Petiole: density of hairs		Pétiole : densité de la pilosité		Blattstiel: Dichte der Haare	Peciololo: densidad de la vellosidad		
		absent or sparse		absente ou lâche		fehlend oder locker	ausente o laxa	Segorbe	1
		medium		moyenne		mittel	media	Merveille de Bollwiller	2
		dense		dense		dicht	densa	Fertile de Coutard, Tonda di Giffoni	3
14.	(*)	QL	VG	(+)	(e)				
		Involucre: constriction		Involucre : constriction		Hülle: Einschnürung	Involucro: constricción		
		absent		absente		fehlend	ausente	Fertile de Coutard, Tonda Gentile delle Langhe	1
		present		présente		vorhanden	presente	Kargalak	9

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
15.	(*)	QN	MG/VG	(+)	(e)				
		Involucre: length in relation to length of nut		Involucre : longueur par rapport à la longueur de la noix		Hülle: Länge im Verhältnis zur Länge der Nuss	Involucro: longitud en relación con la longitud de la nuez		
		shorter		plus courte		kürzer	más corta	Tonda Bianca	1
		same length		même longueur		gleiche Länge	misma longitud	Cosford, Fertile de Coutard, Merveille de Bollwiller	2
		longer		plus longue		länger	más larga	Kargalak, Lambert's Filbert, Segorbe, Tombul, Tonda Gentile delle Langhe	3
16.	(*)	QN	VG	(+)	(e)				
		Involucre: depth of indentations		Involucre : profondeur des incisions		Hülle: Tiefe der Einbuchtungen	Involucro: profundidad de las indentaciones		
		shallow		peu profonde		flach	poco profunda	Lambert's Filbert, Tombul	1
		medium		moyenne		mittel	media	Fertile de Coutard, Tonda Gentile delle Langhe	2
		deep		profonde		tief	profunda	Gunslebert	3
17.	(*)	QN	VG	(+)	(e)				
		Involucre: serration		Involucre : dentelure		Hülle: Einschnitte	Involucro: serrado		
		weak		faible		gering	débil	Lambert's Filbert, Segorbe, Tombul, Tonda Bianca	1
		medium		moyenne		mittel	medio	Fertile de Coutard, Tonda Gentile delle Langhe	2
		strong		forte		stark	fuerte	Gunslebert, Morell, Negret	3
18.		QN	VG	(+)	(e)				
		Involucre: size of basal support		Involucre : taille du support basal		Hülle: Größe der basalen Stütze	Involucro: tamaño del soporte basal		
		small		petite		klein	pequeño	Cosford	1
		medium		moyenne		mittel	medio	Merveille de Bollwiller, Segorbe	2
		large		grande		groß	grande	Fertile de Coutard, Tonda di Giffoni	3
19.		QN	VG	(+)	(e)				
		Involucre: jointing of bracts		Involucre : soudure des bractées		Hülle: Zusammenwachsen der Deckblätter	Involucro: juntura de brácteas		
		absent		absente		fehlend	ausente	Corabel, Ferwiller, Gunslebert	1
		on one side only		d'un seul côté		nur auf einer Seite	sólo por un lado	Fertile de Coutard, Negret, Tonda di Giffoni, Tonda Gentile delle Langhe	2
		on both sides		des deux côtés		auf beiden Seiten	en ambos lados	Tombul	3

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
20.	(*)	QN	MG/VG		(f)				
		Nut: size		Noix : taille		Nuss: Größe	Nuez: tamaño		
		very small		très petite		sehr klein	muy pequeño	Sivri	1
		small		petite		klein	pequeño	Negret, Tombul, Tonda Gentile delle Langhe	2
		medium		moyenne		mittel	medio	Morell, Segorbe, Tonda di Giffoni	3
		large		grande		groß	grande	Fertile de Coutard, Merveille de Bollwiller	4
		very large		très grande		sehr groß	muy grande	Apoldaer Zellernuss, Bergeri, Ennis	5
21.	(*)	PQ	VG	(+)	(f)				
		Nut: shape in lateral view		Noix : forme en vue latérale		Nuss: Form in Seitenansicht	Nuez: forma en vista lateral		
		oblate		arrondie-aplatie		breitrund	achatada	Kargalak	1
		ovate		ovale		eiförmig	oval	Imperatrice Eugenie, Negret	2
		circular		circulaire		kreisförmig	circular	Clark, Fertile de Coutard, Tonda Gentile delle Langhe	3
		obovate		obovale		verkehrt eiförmig	oboval	Butler	4
		conical		conique		kegelförmig	cónica	Ennis, Jean's, Merveille de Bollwiller	5
		oblong		oblongue		rechteckig	oblonga	Cosford, Lambert's Filbert	6
22.	(*)	PQ	VG	(+)	(f)				
		Nut: shape in cross-section		Noix : forme en section transversale		Nuss: Form im Querschnitt	Nuez: forma en sección transversal		
		elliptic		elliptique		elliptisch	elíptica	Lambert's Filbert, Negret	1
		circular		circulaire		kreisförmig	circular	Merveille de Bollwiller, Tonda Romana	2
		angular		angulaire		eckig	angular	Tonda Gentile delle Langhe	3
		transverse oblong		transverse oblongue		quer rechteckig	transversal oblonga	Gunslebert	4
23.		PQ	VG		(f)				
		Nut: color		Noix : couleur		Nuss: Farbe	Nuez: color		
		greenish yellow		jaune verdâtre		grünlichgelb	amarillo verdoso	Tonda Bianca	1
		light brown		brun clair		hellbraun	marrón claro	Cosford, Daviana, Morell, Tonda Gentile delle Langhe	2
		dark brown		brun foncé		dunkelbraun	marrón oscuro	Ennis, Fertile de Coutard, Negret, Tonda Romana	3

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
24.		QN	VG		(f)				
		Nut: presence of stripes on shell		Noix : présence de stries sur la coque		Nuss: Vorhandensein von Streifen auf der Schale	Nuez: presencia de rayas en la cáscara		
		absent or weak		absente ou faible		fehlend oder gering	ausente o débil	Kargalak, Segorbe	1
		medium		moyenne		mittel	media	Cosford, Daviana	2
		strong		forte		stark	fuerte	Camponica	3
25.	(*)	PQ	VG	(+)	(f)				
		Nut: shape of apex		Noix : forme de l'apex		Nuss: Form des Apex	Nuez: forma del ápice		
		narrow acute		aiguë étroite		schmal spitz	aguda estrecha	Imperatrice Eugénie, Jean's	1
		broad acute		aiguë large		breit spitz	aguda ancha	Merveille de Bollwiller, Negret	2
		obtuse		obtuse		stumpf	obtusa	Fertile de Coutard, Tonda Gentile delle Langhe	3
		truncate		tronquée		gerade	truncada	Kargalak	4
26.	(*)	QN	VG	(+)	(f)				
		Nut: prominence of mucron		Noix : netteté du mucron		Nuss: Ausprägung der aufgesetzten Spitze	Nuez: prominencia del mucrón		
		weak		faible		gering	débil	Cosford, Fertile de Coutard, Tonda di Giffoni	1
		medium		moyenne		mittel	media	Lambert's Filbert	2
		strong		forte		stark	fuerte	Tonda Romana	3
27.	(*)	QN	VG	(+)	(f)				
		Nut: size of pistil scar		Noix : taille de l'attache pistillaire		Nuss: Größe der Griffelnarbe	Nuez: tamaño de la cicatriz pistilar		
		small		petite		klein	pequeño	Negret, Tonda Gentile delle Langhe	1
		medium		moyenne		mittel	medio	Sivri, Tonda di Giffoni	2
		large		grande		groß	grande	Feriale, Tombul	3
28.	(*)	QN	VG		(f)				
		Nut density of hairiness at apex		Noix : densité de la pilosité à l'apex		Nuss: Dicht der Behaarung am Apex	Nuez: densidad de la vellosidad en el ápice		
		absent or sparse		absente ou lâche		fehlend oder locker	ausente o laxa	Cosford, Kargalak	1
		medium		moyenne		mittel	media	Fertile de Coutard	2
		dense		dense		dicht	densa	Apoldaer Zellernuss, Lambert's Filbert	3

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
29.	(*)	QN	VG	(+)	(f)				
		Nut size of basal scar in relation to size of nut		Noix : taille de la cicatrice basale par rapport à la taille de la noix		Nuss: Größe der Basisnarbe im Verhältnis zur Größe der Nuss	Nuez: tamaño de la cicatriz basal en relación con el tamaño de la nuez		
		small		petite		klein	pequeño	Tonda Gentile delle Langhe	1
		medium		moyenne		mittel	medio	Fertile de Coutard	2
		large		grande		groß	grande	Cosford, Kargalak, Merveille de Bollwiller	3
30.	(*)	QN	VG	(+)	(f)				
		Nut: curvature of basal scar		Noix : courbure de la cicatrice basale		Nuss: Krümmung der Basisnarbe	Nuez: curvatura de la cicatriz basal		
		concave		concave		konkav	cóncava	Feriale	1
		flat		plate		flach	plana	Kargalak, Merveille de Bollwiller	2
		convex		convexe		konvex	convexa	Cosford, Lambert's Filbert, Negret	3
31.	(*)	QN	MG/VG		(f)				
		Kernel: size		Amandon : taille		Kern: Größe	Semilla: tamaño		
		very small		très petite		sehr klein	muy pequeño	Sivri, Tömbül	1
		small		petite		klein	pequeño	Negret, Tonda Gentile delle Langhe	2
		medium		moyenne		mittel	medio	Segorbe, Tonda di Giffoni, Tonda Romana	3
		large		grande		groß	grande	Daviana, Fertile de Coutard, Merveille de Bollwiller	4
		very large		très grande		sehr groß	muy grande	Pallagrossa	5
32.	(*)	PQ	VG	(+)	(f)				
		Kernel: shape in lateral view		Amandon : forme en vue latérale		Kern: Form in Seitenansicht	Semilla: forma en vista lateral		
		angular		angulaire		eckig	angular	Kargalak	1
		ovate		ovale		eiförmig	oval	Imperatrice Eugénie, Merveille de Bollwiller	2
		circular		circulaire		kreisförmig	circular	Segorbe, Tonda di Giffoni, Tonda Gentile delle Langhe, Tonda Romana	3
		obovate		obovale		verkehrt eiförmig	oboval	Daviana, San Giovanni	4
		oblong		oblongue		rechteckig	oblonga	Cosford, Gunslebert	5

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
33.		PQ	VG	(+)	(f)				
		Kernel: shape of apex		Amandon : forme de l'apex		Kern: Form des Apex	Semilla: forma del ápice		
		pointed		pointue		zugespitzt	puntiaguda	Fertile de Coutard, Negret	1
		rounded		arrondie		abgerundet	redondeada	Gunslebert, San Giovanni, Tonda Romana	2
		truncate		tronquée		gerade	truncada	Kargalak	3
34.		PQ	VG	(+)	(f)				
		Kernel: shape in cross-section		Amandon : forme en section transversale		Kern: Form im Querschnitt	Semilla: forma en sección transversal		
		oblong		oblongue		rechteckig	oblonga	Lambert's Filbert	1
		circular		circulaire		kreisförmig	circular	Kargalak, Tonda Romana	2
		obovate		obovale		verkehrt eiförmig	oboval	Tonda Gentile delle Langhe	3
35.		PQ	VG	(+)	(f)				
		Kernel: shape of base		Amandon : forme de la base		Kern: Form der Basis	Semilla: forma de la base		
		pointed		pointue		zugespitzt	puntiaguda	Tombul	1
		rounded		arrondie		abgerundet	redondeada	Fertile de Coutard, Merveille de Bollwiller, Negret	2
		truncate		tronquée		gerade	truncada	Kargalak, Tonda Gentile delle Langhe, Tonda Romana	3
36.		PQ	VG		(f)				
		Kernel color of skin		Amandon : couleur du péricarpe		Kern: Farbe der Haut	Semilla: color de la piel		
		yellow brown		jaune brun		gelbbraun	marrón amarillento	Ennis	1
		light brown		Lumière		hellbraun	marrón claro	Cosford	2
		dark brown		foncée		dunkelbraun	marrón oscuro	Lambert's Filbert, Merveille de Bollwiller	3
37.	(*)	QL	VG	(+)	(f)				
		Kernel: lateral groove		Amandon : cannelure latérale		Kern: Seitenfurche	Semilla: acanaladura lateral		
		absent		absente		fehlend	ausente	Fertile de Coutard, Merveille de Bollwiller	1
		present		présente		vorhanden	presente	Imperatrice Eugenie, Lambert's Filbert, Tonda di Giffoni	9

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
38.	(*)	QN	VG	(+)	(f)				
		Kernel: presence of fiber		Amandon : présence de fibres		Kern: Vorhandensein von Fasern	Semilla: presencia de fibra		
		absent or weak		absente ou faible		fehlend oder gering	ausente o débil	Daviana, Kargalak, Lambert's Filbert	1
		medium		moyenne		mittel	media	Fertile de Coutard, Negret, Segorbe	3
		strong		forte		stark	fuerte	Cosford	5
39.		QN	VG		(f)				
		Kernel: inner cavity		Amandon : cavité interne		Kern: innerer Hohlraum	Semilla: cavidad interior		
		absent or small		absente ou petite		fehlend oder klein	ausente o pequeña	Mortarella	1
		medium		moyenne		mittel	media	Negret, Tonda Gentile delle Langhe, Tonda Romana	2
		large		grande		groß	grande	Daviana, Ennis, Merveille de Bollwiller	3
40.	(*)	QN	MG/VG		(f)				
		Nut: percentage of kernel		Amandon : pourcentage d'amandon		Nuss: Kernanteil	Nuez: porcentaje de semilla		
		very low		très bas		sehr klein	muy bajo	Merveille de Bollwiller	1
		low		bas		klein	bajo	Fertile de Coutard, Segorbe	2
		medium		moyen		mittel	medio	Negret, Tonda Gentile delle Langhe	3
		high		élevé		groß	alto	Daviana, Imperatrice Eugenie	4
		very high		très élevé		sehr groß	muy alto	Cosford, Tombul	5
41.	(*)	QN	MG	(+)	(c)				
		Time of beginning of female flowering		Époque de début de floraison femelle		Zeitpunkt des Beginns der weiblichen Blüte	Época de inicio de la floración femenina		
		very early		très précoce		sehr früh	muy temprana	San Giovanni	1
		early		précoce		früh	temprana	Comen, Fertile de Coutard, Tonda di Giffoni	2
		medium		moyenne		mittel	media	Tonda Bianca, Tonda Gentile delle Langhe	3
		late		tardive		spät	tardía	Daviana, Lambert's Filbert, Morell, Segorbe	4
		very late		très tardive		sehr spät	muy tardía	Bergeri, Gunslebert, Merveille de Bollwiller	5

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
42.	(*)	QN	MG	(+)	(c)				
		Time of beginning of male flowering		Époque de début de floraison mâle		Zeitpunkt des Beginns der männlichen Blüte	Época de inicio de la floración masculina		
		very early		très précoce		sehr früh	muy temprana	Tonda Gentile delle Langhe	1
		early		précoce		früh	temprana	Palaz	2
		medium		moyenne		mittel	media	Negret	3
		late		tardive		spät	tardía	Lambert's Filbert	4
		very late		très tardive		sehr spät	muy tardía	Morell	5
43.	(*)	QN	MG		(c)				
		Time of female flowering compared to time of male flowering		Époque de floraison femelle comparée à l'époque de floraison mâle		Zeitpunkt der weiblichen Blüte im Vergleich zur männlichen Blüte	Época de floración femenina comparada con la época de floración masculina		
		earlier		précoce		früher	temprana	Negret, San Giovanni, Tonda Romana	1
		same time		même époque		gleichzeitig	misma época	Merveille de Bollwiller, Morell	2
		later		tardive		später	tardía	Bergeri, Cosford, Tonda Gentile delle Langhe	3
44.	(*)	QN	MG		(b)				
		Time of beginning of leaf budburst		Époque de début de débourrement foliaire		Zeitpunkt des Beginns des Blattaustriebs	Época de inicio de la brotación de las yemas foliares		
		very early		très précoce		sehr früh	muy temprana	San Giovanni	1
		early		précoce		früh	temprana	Tonda di Giffoni, Tonda Gentile delle Langhe	2
		medium		moyenne		mittel	media	Negret, Tonda Romana	3
		late		tardive		spät	tardía	Bergeri, Cosford	4
		very late		très tardive		sehr spät	muy tardía	Lambert's Filbert, Merveille de Bollwiller	5
45.	(*)	QN	MG	(+)	(f)				
		Time of harvest maturity		Époque de maturité de récolte		Zeitpunkt der Erntereife	Época de madurez para la cosecha		
		very early		très précoce		sehr früh	muy temprana	San Pere	1
		early		précoce		früh	temprana	Tonda Gentile delle Langhe	2
		medium		moyenne		mittel	media	Daviana, Morell, Tonda Romana	3
		late		tardive		spät	tardía	Merveille de Bollwiller, Negret	4
		very late		très tardive		sehr spät	muy tardía	Bergeri	5

8. Explanations on the Table of Characteristics

8.1 *Explanations covering several characteristics*

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

- (a) Observations should be made in dormant period.
- (b) Observations should be made in the central third of the branches.
- (c) Observations should be made when 50% of the respective inflorescence are in full flowering (pollen dehiscence or fully developed stigmas).
- (d) Observations should be made on fully developed leaves.
- (e) Observations should be made before drying off, on normal developed fruits.
- (f) Observations on the fruit and kernel should be made on at least 50 fruits with a humidity content of less than 8% (the samples in paper bags shall be stored in dry conditions for about one month after harvesting).

8.2 *Explanations for individual characteristics*

Ad. 1: Plant: vigor

The vigor of the plants should be considered as the overall abundance of vegetative growth, after at least one satisfactory crop of fruit. It can either be assessed at the peak of vegetative growth in late summer, or during the dormant season considering shoot length and thickness.

Ad. 3: Plant: suckers

Observations on the emission of suckers should be made in early summer.

Ad. 4: One-year-old shoot: density of lenticels



Ad. 5: One-year-old-shoot: density of hairs



1
absent or sparse



2
medium



3
dense

Ad. 6: Bud: shape



1
conic

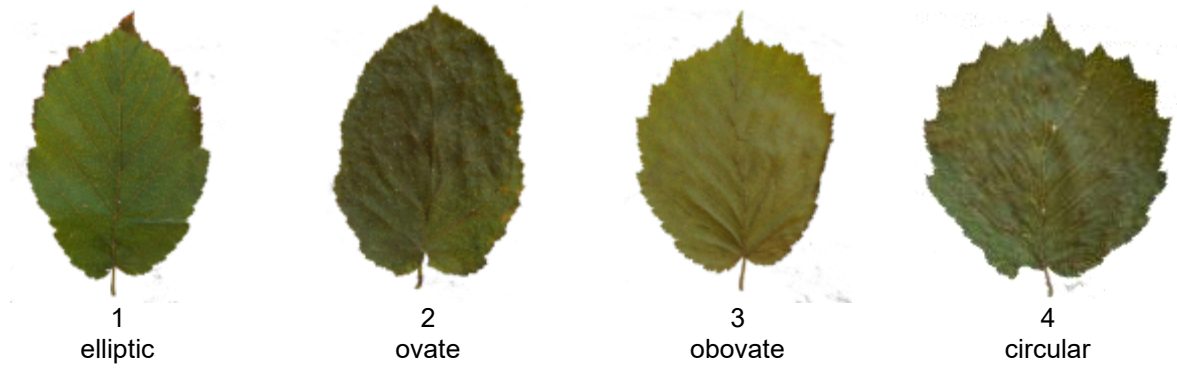


2
ovoid



3
globose

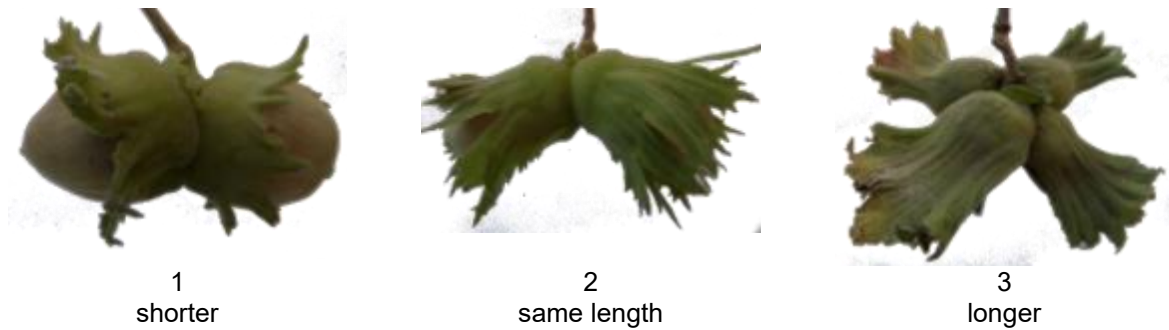
Ad. 10: Leaf blade: shape



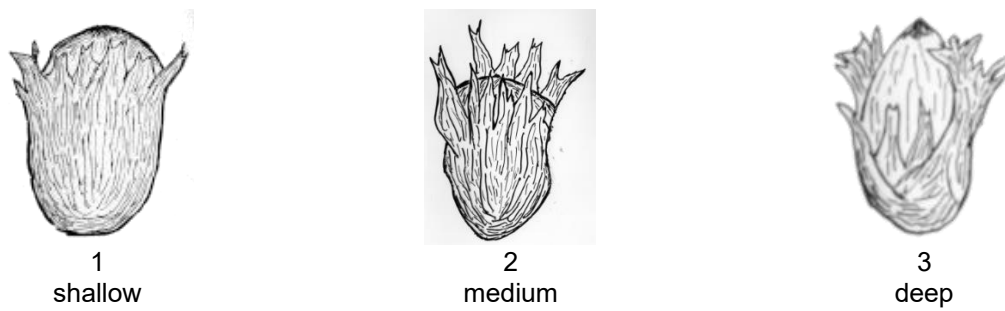
Ad. 14: Involucre: constriction



Ad. 15: Involucre: length in relation to length of nut



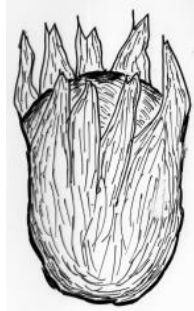
Ad. 16: Involucre: depth of indentations



Ad. 17: Involucre: serration



1
weak



2
medium



3
strong

Ad. 18: Involucre: size of basal support



1
small



2
medium



3
large

Ad. 19: Involucre: jointing of bracts



1
absent



2
on one side only



3
on both sides

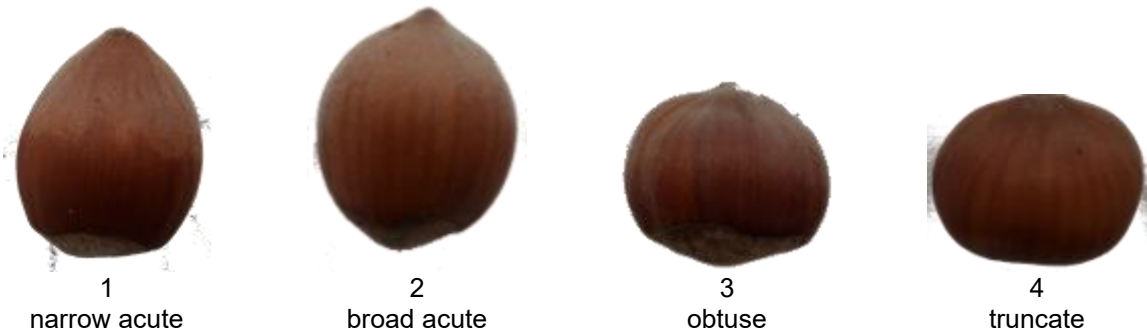
Ad. 21: Nut: shape in lateral view

		ratio height/diameter		
		← low	medium	high →
↑ broadest part	above middle		 4 obovate	
	at middle	 1 oblate	 3 circular	 6 oblong
	↓ below middle		 2 ovate	 5 conic

Ad. 22: Nut: shape in cross-section



Ad. 25: Nut: shape of apex



Ad. 26: Nut: prominence of mucron



1
weak



3
strong

Ad. 27: Nut: size of pistil scar



1
small



2
medium



3
large

Ad. 29: Nut size of basal scar in relation to size of nut



1
small



2
medium



3
large

Ad. 30: Nut: curvature of basal scar



1
concave



2
flat



3
convex

Ad. 32: Kernel: shape in lateral view

		← ratio height/diameter →		
		low	medium	high
↑ broadest part ↓	above middle	 1 angular	 4 obovate	
	at middle		 3 circular	 5 oblong
	below middle		 2 ovate	

Ad. 33: Kernel: shape of apex



1
pointed

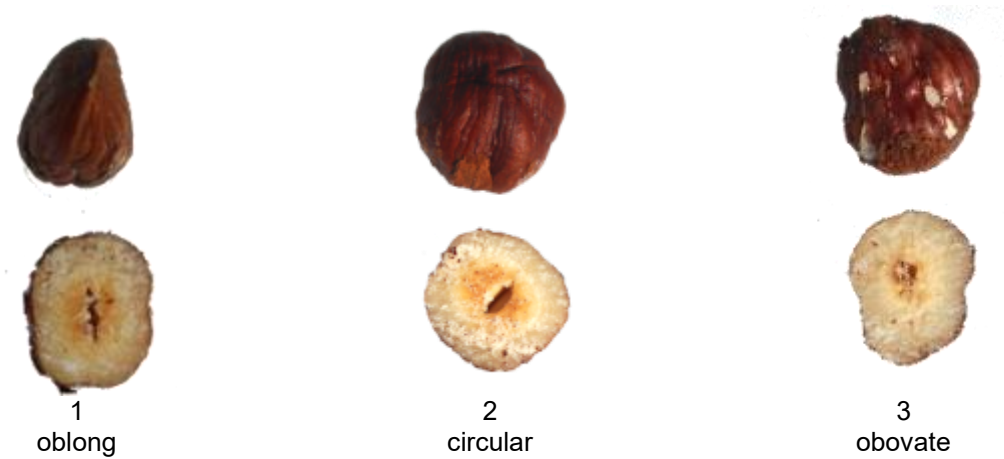


2
rounded



3
truncate

Ad. 34: Kernel: shape in cross-section



Ad. 35: Kernel: shape of base



Ad. 37: Kernel: lateral groove



Ad. 38: Kernel: presence of fiber



Ad. 41: Time of beginning of female flowering

Time of beginning of female flowering is reached when 10% of stigmas are visible.

Ad. 42: Time of beginning of male flowering

Time of beginning of male flowering is reached when 10% of catkins are open.

Ad. 45: Time of harvest maturity

Time of harvest maturity is reached when 50% of the fruits have fallen off.

8.3 *Synonyms of example varieties*

Example variety	Synonym(s)
Apoldaer Zellernuss	Apolda
Bergeri	Bergère, Bergers Zellernuss, La Berger, Louis Berge
Camponica	Campanica, Tonda Napoletana, Tonda Tempestiva, Camponeca
Fertile de Coutard	Barcelona, Castanyera, Grada di Viseu, Grande
Gunslebert	Grosse Gunslebener Zellernuss, Gunslebener Riesennuss, Gunslebert Zellernuss, Gunslebener Zellernuss
Kargalak	Imperiale de Trapezunt, Imperiale de Trèbizonde, Trapezunski, Trapezunter
Lambert's Filbert	Kaiserhasel, Karidaty, Karidati
	Longa de Spagna, Du Chilly, Filbert Cop, Kentish Cob, Korthaset Zellernuss, Lambert
	Filbert, Grosse Longue
Merveille de Bollwiller	Bollwiller, Wissmanns Zellernuss, Wunder aus Bollwiller, Hallesche
	Riesennus, Zàzrak z Bollwilleru, Gèante du Halle
Morell	Flocal, Falsetana
Negret	Negreta
Palaz	Pallaz
Tombul	Mehmet Arif, Yaglii Findik, Giresum Yaglisi

9. Literature

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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

Corylus avellana L.

☐

1.1.2

Common name

Hazelnut

1.2.1

Botanical name

Corylus colurna L.

☐

1.2.2

Common name

Turkish Hazel

1.3.1

Botanical name

Corylus americana Marshall

☐

1.3.2

Common name

American filbert, American hazel, Hazelnut

1.4.1

Botanical name

Hybrids between *Corylus americana* and *Corylus avellana*

☐

1.4.2

Common name

1.5.1

Botanical name

Species (please indicate):

☐

1.5.2

Common name

2. Applicant

Name

Address

Telephone No.

Fax No.

E-mail address

Breeder (if different from applicant)

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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3. Proposed denomination and breeder's reference

Proposed denomination
(if available)

Breeder's reference

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

4.1 Breeding scheme

Variety resulting from:

4.1.1 Crossing

(a) controlled cross []

(please state parent variety)

(.....) x (.....)

female parent male parent

(b) partially known cross []

(please state 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) Stool bed layering []
- (b) Budding and grafting []
(please indicate rootstock)
- (c) Other (state method) []

4.2.2 Other []
(Please provide details)

TECHNICAL QUESTIONNAIRE		Page {x} of {y}	Reference Number:
5. Characteristics of the variety to be indicated (the number in brackets refers to the corresponding characteristic in Test Guidelines; please mark the note which best corresponds).			
	Characteristics	Example Varieties	Note
5.1 (10)	Leaf blade: shape		
	elliptic	Merveille de Bollwiller	1 []
	ovate	Lambert's Filbert	2 []
	obovate	Tonda di Giffoni	3 []
	circular	Segorbe	4 []
5.2 (15)	Involucre: length in relation to length of nut		
	shorter	Tonda Bianca	1 []
	same length	Cosford, Fertile de Coutard, Merveille de Bollwiller	2 []
	longer	Kargalak, Lambert's Filbert, Segorbe, Tombul, Tonda Gentile delle Langhe	3 []
5.3 (16)	Involucre: depth of indentations		
	shallow	Lambert's Filbert, Tombul	1 []
	medium	Fertile de Coutard, Tonda Gentile delle Langhe	2 []
	deep	Gunslebert	3 []
5.4 (20)	Nut: size		
	very small	Sivri	1 []
	small	Negret, Tombul, Tonda Gentile delle Langhe	2 []
	medium	Morell, Segorbe, Tonda di Giffoni	3 []
	large	Fertile de Coutard, Merveille de Bollwiller	4 []
	very large	Apoldaer Zellernuss, Bergeri, Ennis	5 []
5.5 (21)	Nut: shape in lateral view		
	oblate	Kargalak	1 []
	ovate	Imperatrice Eugenie, Negret	2 []
	circular	Clark, Fertile de Coutard, Tonda Gentile delle Langhe	3 []
	obovate	Butler	4 []
	conical	Ennis, Jean's, Merveille de Bollwiller	5 []
	oblong	Cosford, Lambert's Filbert	6 []
5.6 (22)	Nut: shape in cross-section		
	elliptic	Lambert's Filbert, Negret	1 []
	circular	Merveille de Bollwiller, Tonda Romana	2 []
	angular	Tonda Gentile delle Langhe	3 []
	transverse oblong	Gunslebert	4 []

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	Characteristics	Example Varieties	Note
5.7 (40)	Nut: percentage of kernel		
	very low	Merveille de Bollwiller	1 []
	low	Fertile de Coutard, Segorbe	2 []
	medium	Negret, Tonda Gentile delle Langhe	3 []
	high	Daviana, Imperatrice Eugenie	4 []
	very high	Cosford, Tombul	5 []
5.8 (41)	Time of beginning of female flowering		
	very early	San Giovanni	1 []
	early	Comen, Fertile de Coutard, Tonda di Giffoni	2 []
	medium	Tonda Bianca, Tonda Gentile delle Langhe	3 []
	late	Daviana, Lambert's Filbert, Morell, Segorbe	4 []
	very late	Bergeri, Gunslebert, Merveille de Bollwiller	5 []
5.9 (42)	Time of beginning of male flowering		
	very early	Tonda Gentile delle Langhe	1 []
	early	Palaz	2 []
	medium	Negret	3 []
	late	Lambert's Filbert	4 []
	very late	Morell	5 []
5.10 (45)	Time of harvest maturity		
	very early	San Pere	1 []
	early	Tonda Gentile delle Langhe	2 []
	medium	Daviana, Morell, Tonda Romana	3 []
	late	Merveille de Bollwiller, Negret	4 []
	very late	Bergeri	5 []

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6. Similar varieties and differences from these varieties

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

Denomination(s) of variety(ies) similar to your candidate variety	Characteristic(s) in which your candidate variety differs from the similar variety(ies)	Describe the expression of the characteristic(s) for the similar variety(ies)	Describe the expression of the characteristic(s) for your candidate variety
<i>Example</i>	<i>Nut: size</i>	<i>small</i>	<i>large</i>

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Comments

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

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

Yes ☐ No ☐

(If yes, please provide details)

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

Yes ☐ No ☐

(If yes, please provide details)

7.3 Other information

A representative color photograph of the variety displaying its main distinguishing feature(s), should accompany the Technical Questionnaire. The photograph will provide a visual illustration of the candidate variety which supplements the information provided in the Technical Questionnaire.

The key points to consider when taking a photograph of the candidate variety are:

- Indication of the date and geographic location
- Correct labeling (breeder's reference)
- Good quality printed photograph (minimum 10 cm x 15 cm) and/or sufficient resolution electronic format version (minimum 960 x 1280 pixels)"

Further guidance on providing photographs with the Technical Questionnaire is available in document TGP/7 "Development of Test Guidelines", Guidance Note 35 (<http://www.upov.int/tgp/en/>).

[The link provided may be deleted by members of the Union when developing authorities' own test guidelines.]

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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".

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

Yes ☐

(please provide details as specified by the Authority)

No ☐

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

Applicant's name

Signature

Date

[End of document]