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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

BLACK WALNUT *

UPOV Code(s):
JUGLA_HIN; JUGLA_HRE;
JUGLA_MAJ; JUGLA_MRG;
JUGLA_NIG; JUGLA_NRE

Juglans hindsii (Jeps.) R. E. Sm.;
Juglans hindsii × *Juglans regia;*
Juglans major (Torr.) A. Heller;
Juglans major × *Juglans regia*;
Juglans nigra L.;
Juglans nigra × *Juglans regia* L.

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

* 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.]

lternative names:*

Botanical name	*English*	*French*	*German*	*Spanish*
Juglans hindsii (Jeps.) R. E. Sm.	Hinds's black walnut, Hinds's walnut, Northern California black walnut, Northern California walnut		Kalifornische Walnuss	
Juglans hindsii × *Juglans regia,* *Juglans ×paradox* Burbank				
Juglans major (Torr.) A. Heller	Arizona walnut			
Juglans major × *Juglans regia*				
Juglans nigra L.	Black Walnut	Noyer noir	Schwarznuss	Nogal negro
Juglans nigra × *Juglans regia* L., *Juglans ×intermedia* Jacques				

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

These Test Guidelines apply to all varieties of *Juglans hindsii* (Jeps.) R. E. Sm., *Juglans hindsii* × *Juglans regia*, *Juglans major* (Torr.) A. Heller, *Juglans major* × *Juglans regia*, *Juglans nigra* L. and *Juglans nigra* × *Juglans regia* L..

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 one-year-old grafts or budsticks.

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

5 trees (one-year-old grafts)
or
5 budsticks, sufficient to propagate 10 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 and concluding when the dormant period ends.

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

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

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

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

3.3.2 The optimum stage of development for the assessment of each characteristic is indicated by a number in the Table of Characteristics. The stages of development denoted by each number are described in Chapter 8.3

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 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 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: terminal leaflet (characteristic 4)
(b) Time of bud burst (characteristic 16)
(c) Time of female flowering (characteristic 18)

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

6. Introduction to the Table of Characteristics

6.1 Categories of Characteristics

6.1.1 Standard Test Guidelines Characteristics

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

6.1.2 Asterisked Characteristics

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

6.2 States of Expression and Corresponding Notes

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

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

State	*Note*
small	3
medium	5
large	7

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

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

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

6.3 Types of Expression

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

6.4 Example Varieties

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

6.5 Legend

	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)-(d) See Explanations on the Table of Characteristics in Chapter 8.1

7 Phenological stage keys See Explanations on the Table of Characteristics in Chapter 8.3

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

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1.	**(*)** **PQ** **VG**		**(+)** **(a)**				
		Tree: growth habit	**Arbre : port**	**Baum: Wuchsform**	**Árbol: hábito de crecimiento**		
		upright	dressé	aufrecht	erecto		1
		semi-upright	demi-dressé	halbaufrecht	semierecto	MB Ng-10	2
		spreading	étalé	breitwüchsig	extendido	Mj209	3
		drooping	pendant	überhängend	colgante		4
2.	**PQ** **VG**		**(a)**				
		Trunk: bark color	**Tronc : couleur de l'écorce**	**Stamm: Farbe der Rinde**	**Tronco: color de la corteza**		
		whitish	crème	weißlich	blanquecino	Eurowalnut B03, Eurowalnut B07, Mj209	1
		brownish	brunâtre	bräunlich	amarronado		2
		blackish	noirâtre	schwärzlich	negruzco	Beineke 10, Ng23	3
3.	**(*)** **QN** **MS/VG**		**(+)** **(b)**				
		Leaf: number of leaflets	**Feuille : nombre de folioles**	**Blatt: Anzahl der Blattfiedern**	**Hoja: número de folíolos**		
		very few	très petit	sehr gering	muy bajo	IRTA X-80	1
		few	petit	gering	bajo	Eurowalnut-8	2
		medium	moyen	mittel	medio	Beineke 3, Mj2-2	3
		many	grand	groß	alto	Beineke 10, Typpecanoe-1	4
		very many	très grand	sehr groß	muy alto		5
4.	**(*)** **QL** **VG**		**(b)**				
		Leaf: terminal leaflet	**Feuille : foliole terminale**	**Blatt: Endblattfieder**	**Hoja: folíolo terminal**		
		absent or rudimentary	absente ou rudimentaire	fehlend oder rudimentär	ausente o rudimentario	Emilie, MB Ng-13	1
		fully developed	complètement développée	voll entwickelt	completamente desarrollado	Eurowalnut B07, IRTA X-80	9

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
5.		**QN VG**	**(b)**				
		Leaf: size of terminal leaflet in relation to lateral leaflets	**Feuille : taille de la foliole terminale par rapport aux folioles latérales**	**Blatt: Größe der Endblattfieder im Verhältnis zu den Seitenblattfiedern**	**Hoja: tamaño del folíolo terminal en relación con los laterales**		
		smaller	plus petite	kleiner	más pequeño	Beineke 8, Mj2-2	1
		same size	de même taille	gleich groß	mismo tamaño		2
		bigger	plus grande	größer	más grande	Eurowalnut B07, IRTA X-80	3
6.	**(*)**	**QN VG**	**(c)**				
		Female inflorescence: predominant number of flowers	**Inflorescence femelle : nombre prédominant de fleurs**	**Weiblicher Blütenstand: vorwiegende Anzahl Blüten**	**Inflorescencia femenina: número predominante de flores**		
		one	une	eine	una		1
		two	deux	zwei	dos	IRTA X-80, Typpecanoe-1	2
		three	trois	drei	tres	Beineke 5, MB Hd-37, MB Ng-10	3
		four	quatre	vier	cuatro	Beineke 8	4
		five or more	cinq ou plus	fünf und mehr	cinco o más		5
7.		**QL VG**	**(+)** **(c)**	**C_f**			
		Female flower: conspicuousness	**Fleur femelle : visibilité**	**Weibliche Blüte: Sichtbarkeit**	**Flor femenina: visibilidad**		
		absent	absente	fehlend	ausente	MB Ng-10, MB Ng-2	1
		present	présente	vorhanden	presente	Beineke 5, Ng23	9
8.	**(*)**	**QL VG**	**(c)**				
		Female flower: anthocyanin coloration of stigma	**Fleur femelle : pigmentation anthocyanique du stigmate**	**Weibliche Blüte: Anthocyanfärbung der Narbe**	**Flor femenina: pigmentación antociánica del estigma**		
		absent	absente	fehlend	ausente	MB Hd-37, MB Ng-10	1
		present	présente	vorhanden	presente	Mj209, Typpecanoe-1	9
9.		**QN VG**	**(c)**				
		Female flower: length of stigma	**Fleur femelle : longueur du stigmate**	**Weibliche Blüte: Länge der Narbe**	**Flor femenina: longitud del estigma**		
		short	court	kurz	corta	IRTA X-80	1
		medium	moyen	mittel	media	Beineke 5	2
		long	long	lang	larga	MB Hd-37, MB Ng-10	3

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
10. (*)	**PQ VG**	**(+) (c)**	**F_{f2}**			
	Female flower: type of stigma	**Fleur femelle : type de stigmate**	**Weibliche Blüte: Narbentyp**	**Flor femenina: tipo de estigma**		
	upright	dressé	aufrecht	erecto	Mj209, Typpecanoe-1	1
	spreading	étalé	breitwüchsig	divergente		2
	drooping to one side	pendant d'un côté	auf eine Seite überhängend	colgante hacia un lado	Ng23	3
	drooping to both sides	pendant des deux côtés	auf beide Seiten überhängend	colgante hacia ambos lados		4
11.	**QL VG**	**(+) (c)**	**B_m - D_m**			
	Plant: fully developed catkins	**Plante : chatons pleinement développés**	**Pflanze: voll entwickelte Kätzchen**	**Planta: amentos plenamente desarrollados**		
	absent	absents	fehlend	ausentes	IRTA X95	1
	present	présents	vorhanden	presentes	MB Ng-10, Mj209	9
12.	**PQ VG**	**(+) (c)**	**B_m - C_m**			
	Only varieties with Plant: fully developed catkins: present: Catkin: shape	**Seulement les variétés avec Plante : chatons pleinement développés : présents : Chatons : forme**	**Nur Sorten mit Pflanze: voll entwickelte Kätzchen: vorhanden: Kätzchen: Form**	**Solo variedades con Planta: amentos plenamente desarrollados: presentes: forma**		
	broad oblong	oblongue large	breit rechteckig	oblonga ancha	MB Ng-2, MB Ng-7	1
	narrow oblong	oblongue étroite	schmal rechteckig	oblonga estrecha	MB Hd-37, Mj209	2
	ovate	ovale	eiförmig	oval	MB Ng-10, Ng23	3
13. (*)	**PQ VG**	**(+) (d)**				
	Nut: shape	**Noix : forme**	**Nuß: Form**	**Nuez: forma**		
	ovate	ovale	eiförmig	oval		1
	transverse oblong	oblongue transversale	quer rechteckig	oblonga transversal	Beineke 8	2
	broad elliptic	elliptique large	breit elliptisch	elíptica ancha	EccoVenner	3
	oblate	arrondie aplatie	breitrund	achatada	MB Ng-2	4
	medium elliptic	elliptique moyenne	mittel elliptisch	elíptica media	IRTA X-80	5
	circular	circulaire	kreisförmig	circular	Mj209	6
	narrow elliptic	elliptique étroite	schmal elliptisch	elíptica estrecha		7

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
14. (*) PQ VG		**(+) (d)**				
	Nut: shape of base	**Noix : forme de la base**	**Nuß: Form der Basis**	**Nuez: forma de la base**		
	pointed	pointue	spitz	en punta		1
	cuneate	cunée	keilförmig	cuneada	Beineke 4	2
	rounded	arrondie	abgerundet	redondeada	MB Ng-2	3
	truncate	tronquée	abgestumpft	truncada	Beineke 8	4
	emarginate	émarginée	eingekerbt	emarginada	Eurowalnut B07	5
	acuminate	acuminée	zugespitzt	acuminada	MB Hd-37	6
15. (*) PQ VG		**(+) (d)**				
	Nut: shape of apex	**Noix : forme du sommet**	**Nuß: Form der Spitze**	**Nuez: forma del ápice**		
	pointed	pointu	spitz	en punta	Eurowalnut B07, Purdue-1	1
	obtuse	obtus	stumpf	obtuso	Mj209, Ng23	2
	rounded	arrondi	abgerundet	redondeado	Beineke 7	3
	truncate	tronqué	abgestumpft	truncado	Beineke 8	4
	acuminate	acuminé	zugespitzt	acuminado		5
	trapezium	en trapèze	trapezförmig	trapezoidal	MB Hd-37	6
16. (*) QN MG		**(+)**	**C_f**			
	Time of bud burst	**Époque de débourrement**	**Zeitpunkt des Knospenaufbruchs**	**Época de brotación**		
	very early	très précoce	sehr früh	muy precoz	IRTA X-80, MB Hd-37	1
	early	précoce	früh	precoz	MB Ng-13	2
	medium	moyenne	mittel	media	MB Ng-2, MB Ng-3, Ng23	3
	late	tardive	spät	tardía	Beineke 8, Beineke 9	4
	very late	très tardive	sehr spät	muy tardía	Eurowalnut-8	5
17. (*) QN MG		**(c)**	**F_{m2}**			
	Time of male flowering	**Époque de floraison mâle**	**Zeitpunkt der männlichen Blüte**	**Época de la floración masculina**		
	very early	très précoce	sehr früh	muy precoz	IRTA X-80, MB Ng-13	1
	early	précoce	früh	precoz	Beineke 1, Mj209	2
	medium	moyenne	mittel	media	Beineke 6, Beineke 7, Ng23	3
	late	tardive	spät	tardía	Beineke 8, Beineke 9, Purdue-1	4
	very late	très tardive	sehr spät	muy tardía	Beineke 2	5

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
18. (*) QN MG		**(c)**	**F_{f1} - F_{f2}**			
	Time of female flowering	**Époque de floraison femelle**	**Zeitpunkt der weiblichen Blüte**	**Época de la floración femenina**		
	very early	très précoce	sehr früh	muy precoz	IRTA X-80, Mj209	1
	early	précoce	früh	precoz	Beineke 6, Ng23	2
	medium	moyenne	mittel	media	MB Ng-13, MB Ng-2	3
	late	tardive	spät	tardía	Beineke 1, MB Ng-10	4
	very late	très tardive	sehr spät	muy tardía	Beineke 10	5
19. (*) QN VG		**(c)**				
	Time of male flowering compared to female flowering	**Époque de floraison mâle par rapport à l'époque de floraison femelle**	**Zeitpunkt der männlichen Blüte im Vergleich zur weiblichen Blüte**	**Época de la floración masculina comparada con la floración femenina**		
	before	antérieure	früher	anterior	Beineke 1, Beineke 7, MB Ng-10, MB Ng-2	1
	simultaneous	simultanée	gleichzeitig	simultánea		2
	after	postérieure	später	posterior	Beineke 5, Mj209, Ng23	3
20. (*) QN MG		**(+)**				
	Time of leaf drop	**Époque de chute des feuilles**	**Zeitpunkt des Blattfalls**	**Época de defoliación**		
	very early	très précoce	sehr früh	muy precoz	Beineke 6	1
	early	précoce	früh	precoz	Beineke 5	2
	medium	moyenne	mittel	media	MB Ng-2, MB Ng-3, Ng23	3
	late	tardive	spät	tardía	Beineke 8, IRTA X-80, Mj209	4
	very late	très tardive	sehr spät	muy tardía	IRTA X95	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 on mature trees in the dormant season.

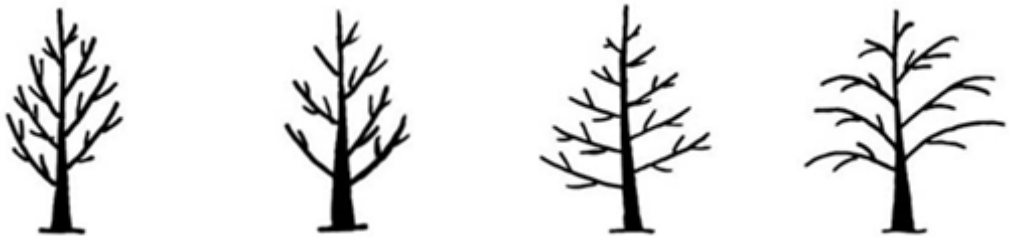
(b) Observations should be made on lateral leaves from the middle part of the canopy.

(c) Observations should be made at full flowering of male and female flowers, respectively.

(d) Observations should be made facing the suture on physiologically ripe nuts without pericarp.

8.2 Explanations for individual characteristics

Ad. 1: Tree: growth habit



1 upright | 2 semi-upright | 3 spreading | 4 drooping

Ad. 3: Leaf: number of leaflets

The number of leaflets should be assessed in the growing season when leaves are completely developed.

Very low	less than 9 leaflets
Low	between 9 and 13 leaflets
Medium	between14 and 17 leaflets
Many	between 18 and 21 leaflets
Very many	22 or more leaflets

Ad. 7: Female flower: conspicuousness

Conspicuousness is absent when flowers appear only when the leaves are fully developed.

Ad. 10: Female flower: type of stigma

1
upright

2
spreading

3
drooping to one side

4
drooping to both sides

Ad. 11: Catkins: fully developed catkins

Fully developed catkins means that the pollen sacs are full.

Ad. 12: Only varieties with Plant: fully developed catkins: present: Catkin: shape

1
broad oblong

2
narrow oblong

3
ovate

Ad. 13: Nut: shape

		< broadest part >	
		below middle	at middle
relative width	narrow		 7 narrow elliptic
		 1 ovate	 5 medium elliptic
			 6 circular
			 3 broad elliptic
			 4 oblate
	broad		 2 transverse oblong

Ad. 14: Nut: shape of base


1
pointed


2
cuneate

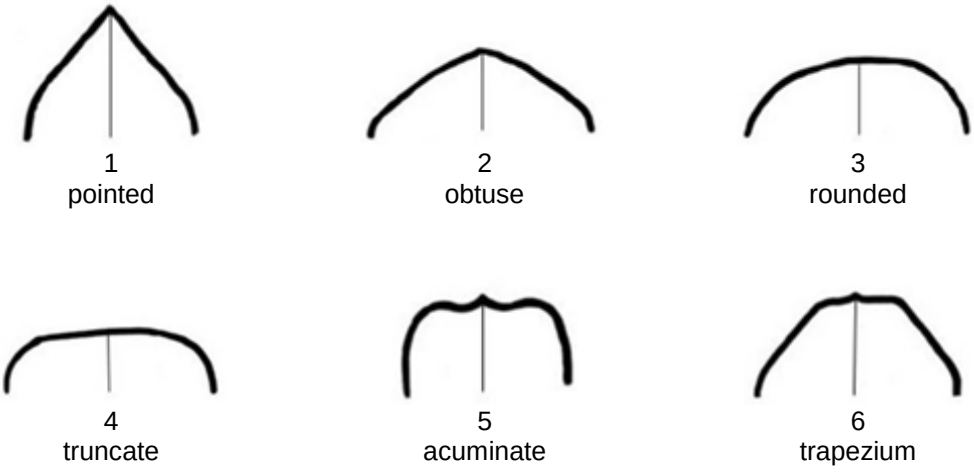

3
rounded


4
truncate


5
emarginate


6
acuminate

Ad. 15: Nut: shape of apex



1 pointed
2 obtuse
3 rounded
4 truncate
5 acuminate
6 trapezium

Ad. 16: Time of bud burst

Time of bud burst is reached when 50% of terminal buds have broken.

Ad. 20: Time of leaf drop

Time of defoliation is reached when the tree has lost 50% of its leaves.

8.3 Phenological stages

BUDBREAK

C_f **Budbreak**. Bud extends and scales open. Conspicuous leaf *primordium*

D_f Initial leaflet individualisation

PISTILATE FLOWERING

F_{f1} **Starting of stigma opening.** Intensive stigma coloration. Position clearly over the ovary. Maximum peak of female flowers

F_{f2} **Unfolded stigma.** Pistillate flower receptivity decreases

MALE FLOWERS

B_m **The growth starts.** Catkin lengthens. Color turns greenish.

C_m **Conspicuous inflorescence differentiation.** Catkin continues to lengthen, and male flowers are still closed.

D_m **Male flowers separation.** Catkin continues lengthening, losing stiffness and starts bending.

F_{m2} **Total dehiscence of anthers.** Peak of pollen emission. Catkins completely yellow.

9. Literature

Aletà, A., Vilanova, A., 2011: Criterios orientadores para la admisión de materiales de base del género *Juglans*. Ministerio de Medio Ambiente y Medio Rural y Marino (MAGRAMA), Madrid, ES, 39 pp.

Becquey, J., 1997: Les noyers à bois. Institut pour le Développement Forestier, Paris, FR, 144 pp.

Germain, E., Prunet, J.P., Garcin, A., 1999: Le Noyer. Centre Technique Interprofessionnel des Fruits et Legumes (CTIFL), Paris, FR, 279 pp.

International Plant Genetic Resources Institute (IPGRI) 1994: Descriptor for Walnut. IPGRI, Rome, IT, 51 pp.

UPOV, 1999: Directrices para la ejecución del examen de la distinción, la homogeneidad y la estabilidad. Nogal (*Juglans regia* L.), TG/125/6. Geneva, CH, 31 pp.

10. Technical Questionnaire

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

	Application date: (not to be filled in by the applicant)

TECHNICAL QUESTIONNAIRE
to be completed in connection with an application for plant breeders' rights

1. Subject of the Technical Questionnaire

1.1.1	Botanical name	*Juglans hindsii* (Jeps.) R. E. Sm.	[ ]
1.1.2	Common name	Hinds's black walnut, Hinds's walnut, Northern California black walnut, Northern California walnut	
1.2.1	Botanical name	*Juglans hindsii* × *Juglans regia*	[ ]
1.2.2	Common name		
1.3.1	Botanical name	*Juglans major* (Torr.) A. Heller	[ ]
1.3.2	Common name	Arizona walnut	
1.4.1	Botanical name	*Juglans major* × *Juglans regia*	[ ]
1.4.2	Common name		
1.5.1	Botanical name	*Juglans nigra* L.	[ ]
1.5.2	Common name	Black Walnut	
1.6.1	Botanical name	*Juglans nigra* × *Juglans regia* L.	[ ]
1.6.2	Common name		

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

2. Applicant

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

3. Proposed denomination and breeder's reference

Proposed denomination (if available)	
Breeder's reference	

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

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

4.1 Breeding scheme

Variety resulting from:

4.1.1 Crossing

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

(……..……..…) x (……..……..…)

female parent male parent

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

(……..……..…) x (……..……..…)

female parent male parent

(c) unknown cross [ ]

4.1.2 Mutation [ ]
(please state parent variety)

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

4.1.4 Other [ ]
(Please provide details)

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

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

4.2 Method of propagating the variety

4.2.1 Vegetative propagation

(a) *In vitro* propagation [ ]
(b) The micropropagation is the usual system of propagation used. But, in some cases varieties are grafted on seedlings of the same species. [ ]
(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 (4)	**Leaf: terminal leaflet**		
	absent or rudimentary	Emilie, MB Ng-13	1 [ ]
	fully developed	Eurowalnut B07, IRTA X-80	9 [ ]
5.2 (16)	**Time of bud burst**		
	very early	IRTA X-80, MB Hd-37	1 [ ]
	early	MB Ng-13	2 [ ]
	medium	MB Ng-2, MB Ng-3, Ng23	3 [ ]
	late	Beineke 8, Beineke 9	4 [ ]
	very late	Eurowalnut-8	5 [ ]
5.3 (18)	**Time of female flowering**		
	very early	IRTA X-80, Mj209	1 [ ]
	early	Beineke 6, Ng23	2 [ ]
	medium	MB Ng-13, MB Ng-2	3 [ ]
	late	Beineke 1, MB Ng-10	4 [ ]
	very late	Beineke 10	5 [ ]

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

6. Similar varieties and differences from these varieties

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

Denomination(s) of variety(ies) similar to your candidate variety	Characteristic(s) in which your candidate variety differs from the similar variety(ies)	Describe the expression of the characteristic(s) for the **similar** variety(ies)	Describe the expression of the characteristic(s) for **your** candidate variety
Example	*Nut: shape of base*	*rounded*	*pointed*

Comments:

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

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

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

Yes [ ] No [ ]

(If yes, please provide details)

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

Yes [ ] No [ ]

(If yes, please provide details)

7.3 Other information

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

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

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]