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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

DRAFT

BLACK WALNUT*

UPOV Code(s): JUGLA_HIN; JUGLA_MAJ; JUGLA_NIG

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

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by experts from Spain
to be considered by the
Technical Working Party for Fruit Crops
at its forty-eighth session, to be held in Kelowna, British Columbia, Canada,
from 2017-09-18 to 2017-09-22

Disclaimer: this document does not represent UPOV policies or guidance

Alternative 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 major (Torr.) A. Heller	Arizona walnut			nogal; nogal Silvestre
Juglans nigra L.				

The purpose of these guidelines ("Test Guidelines") is to elaborate the principles contained in the General Introduction (document TG/1/3), and its associated TGP documents, into detailed practical guidance for the harmonized examination of distinctness, uniformity and stability (DUS) and, in particular, to identify appropriate characteristics for the examination of DUS and production of harmonized variety descriptions.

ASSOCIATED DOCUMENTS

These Test Guidelines should be read in conjunction with the General Introduction and its associated TGP documents.

* These names were correct at the time of the introduction of these Test Guidelines but may be revised or updated. [Readers are advised to consult the UPOV Code, which can be found on the UPOV Website (www.upov.int), for the latest information.]

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1. Subject of these Test Guidelines

These Test Guidelines apply to all varieties of *Juglans hindsii* (Jeps.) R. E. Sm., *Juglans major* (Torr.) A. Helle and *Juglans nigra* L. and also to the varieties of the hybrids of those species with *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.

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

5 trees (one-year-old grafts). The rootstock to be used is the progeny Ng209xRa or any other commercial hybrid specified by the authority.

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 trees produce a satisfactory crop of fruit in each of the two growing cycles.

3.2 Testing Place

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

3.3 Conditions for Conducting the Examination

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

3.3.2 The optimum stage of development for the assessment of each characteristic is indicated by a number in the second column of the Table of Characteristics. The stages of development denoted by each number are described in Chapter 8.

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

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:

4.2.3 The assessment of uniformity for hybrid varieties depends on the type of hybrid and should be according to the recommendations for hybrid varieties in the General Introduction.

4.2.4 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: presence of terminal leaflet (characteristic 3)
(b) Time of budburst (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) See Explanations on the Table of Characteristics in Chapter 8.1

7 Growth stage key 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**	**(+)**	**2**			
		Tree: growth habit					
		upright					1
		semi-upright				MB Ng-10	2
		spreading				Mj209	3
		drooping					4
2.	**(*)**	**QN MS**	**(+)**	**1**			
		Leaf: number of leaflets					
		very low				IRTA X-80	1
		low				Eurowalnut-8	2
		medium				Mj2-2, Beineke 3	3
		high				Typpecanoe-1, Beineke 10	4
		very high					5
3.	**(*)**	**QL VG**		**1**			
		Leaf: presence of terminal leaflet					
		absent or rachitic				Emilie, MB Ng-13	1
		well developed				IRTA X-80, Eurowalnut B07	9
4.		**QN VG**		**1**			
		Leaf: size of terminal leaflet in relation to lateral leaflets					
		smaller				Mj2-2, Beineke 8	1
		same size				IRTA X-80, Eurowalnut B07, Eurowalnut B03	2
		bigger					3

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
5.		**PQ VG**	**(+)**	**2**			
		Trunk: bark color in the juvenile phase					
		whitish				Mj209, Eurowalnut B07, Eurowalnut B03	1
		brownish					2
		blackish				Beineke 10, Ng23	3
6.		**QL VG**	**(+)**	**3**			
		Female flower: Conspicuousness.					
		non conspicuous				MB Ng-10, MB Ng-2	1
		conspicuous				Ng23, Beineke 5	9
7.	**(*)**	**QN VG**	**(+)**	**3**			
		Female flower: number of flowers per inflorescence					
		One					1
		in group of two				IRTA X-80, Typpecanoe-1	2
		in group of three				MB Ng-10, Beineke 5, MB Hd-37	3
		in group of four				Beineke 8	4
		in group of five or more					5
8.	**(*)**	**QL VG**		**3**			
		Female flower: anthocyanin coloration of stigma					
		absent				MB Ng-10, MB Hd-37	1
		present				Mj209, Typpecanoe-1	9
9.		**QN VG**		**3**			
		Female flower: length of stigma					
		short				IRTA X-80	1
		medium				Beineke 5	2
		long				MB Ng-10, MB Hd-37	3

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
10.	**(*)**	**PQ VG**	**(+) (a)**	**3**			
		Female flower: stigma attitude					
		upright				Mj209, Typpecanoe-1	1
		spreading					2
		drooping to one side				Ng23	3
		drooping to both sides					4
11.		**QL VG**	**(+) (a)**	**3**			
		Catkins: Presence of fully developed catkins					
		absent				IRTA X95	1
		present				MB Ng-10, Mj209	9
12.		**PQ VG**	**(+) (a)**	**3**			
		Catkins: shape					
		broad oblong				MB Ng-2, MB Ng-7	1
		narrow oblong				Mj209, MB Hd-37	2
		ovate				MB Ng-10, Ng23	3
13.	**(*)**	**PQ VG**	**(+)**				
		Nut: shape in longitudinal section, perpendicular to suture					
		elliptic				EccoVenner	1
		oblate				MB Ng-2	2
		ovate					3
		circular				Mj209	4
		medium elliptic					5
		broad elliptic				IRTA X-80	6
		transverse oblong				Beineke 8	7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
14.	**(*)**	**PQ VG**	**(+)**				
		Nut: shape of base					
		pointed					1
		cuneate				Beineke 4	2
		rounded				MB Ng-2	3
		truncate				Beineke 8	4
		emarginate				Eurowalnut B07	5
		acuminate				MB Hd-37	6
15.	**(*)**	**PQ VG**	**(+)**				
		Nut: shape of apex perpendicular to suture					
		pointed				Eurowalnut B07, Purdue-1	1
		obtuse				Mj209, Ng23	2
		rounded				Beineke 7	3
		truncate				Beineke 8	4
		acuminate					5
		trapezium				MB Hd-37	6
16.	**(*)**	**QN MG**	**(+)**	**(a)**			
		Time of budburst					
		very early				IRTA X-80, MB Hd-37	1
		early				MB Ng-13	3
		medium				Ng23, MB Ng-2, MB Ng-3	5
		late				Beineke 8, Beineke 9	7
		very late				Eurowalnut-8	9
17.	**(*)**	**QN MG**	**(+)**	**(a)**			
		Time of male flowering					
		very early				IRTA X-80, MB Ng-13	1
		early				Mj209, Beineke 1	3
		medium				Ng23, Beineke 7, Beineke 6	5
		late				Beineke 8, Purdue-1, Beineke 9	7
		very late				Beineke 2	9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
18. (*) QN MG		**(+) (a)**				
	Time of female flowering					
	very early				Mj209, IRTA X-80	1
	early				Ng23, Beineke 6	3
	medium				MB Ng-2, MB Ng-13	5
	late				MB Ng-10, Beineke 1	7
	very late				Beineke 10	9
19. (*) QN VG		**(+)**				
	Time of male flowering compared to female flowering					
	before (protandric)				Mj209, Ng23, Beineke 5	1
	simultaneous (homogamic)					2
	after (protandric)				MB Ng-10, MB Ng-2, Beineke 7, Beineke 1	3
20. (*) QN MG		**(+)**				
	Time of leaf drop					
	very early				Beineke 6	1
	early				Beineke 5	3
	medium				Ng23, MB Ng-2, MB Ng-3	5
	late				Mj209, IRTA X-80, Beineke 8	7
	very late				IRTA X95	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:

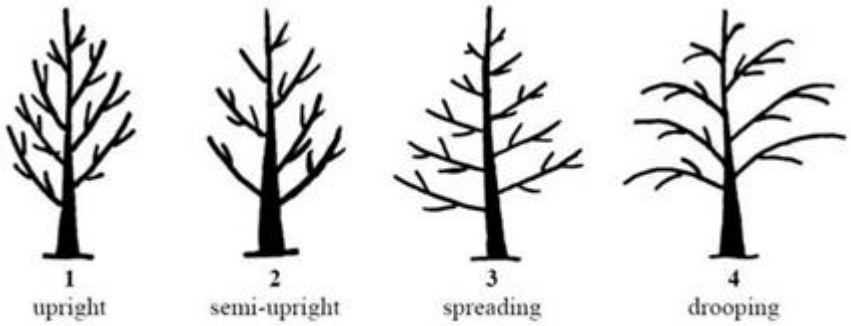
(a)

a. Budbreak			b. Pistilate flowering		
Stage		Description	Stage		Description
	A_f	**Dormant bud**		E_f	**Conspicuous female flowers.** At apical position on annual shoots.
	B_f	**Bud swelled.** Whitish hairiness.		F_f	**Conspicuous stigmas.** Yellowish or reddish stigma appears just on the top of ovary.
	C_f	**Budbreak.** Bud extends and scales open. Conspicuous leaf *primordium*.		F_{f1}	**Starting of stigma opening.** Intensive stigma coloration. Position clearly over the ovary. Maximum peak of female flower.
	C_{f2}	**Conspicuous external leafs.**		F_{f2}	**Unfolded stigma.** Pistillate flower receptivity decreases.
	D_f	**Initial leaflet individualisation**		F_{f3}	**Stigma drying starts.** Necrosis of aged stigmas and ovary increasing.
	D_{f2}	**Unfolded leaflets**		G_f	**Completely dried stigmas.** Nut set.

c. Male flowers					
Stage		Description	Stage		Description
	A_{mg}	**Dormant bud**		E_m	**Anther separation.** Flowers increases in size and look yellow.
	B_m	**The growth stars.** Catkin lengthens. Colour turns greenish.		F_m	**Anther dehiscence starts.** Catkin turns more yellow. Pollen emission starts.
	C_m	**Conspicuous inflorescence differentiation.** Catkin continues to lengthen, and male flowers are still closed.		F_{m2}	**Total dehiscence of anthers.** Peak of pollen emission. Catkins completely yellow.
	D_m	**Male flowers separation.** Catkin continues lengthening, losing stiffness and starts bending.		G_m	**Empty anthers.** Necrosis starts.
	D_{m2}	**Opening staminate flowers**		H_m	**Catkin drop.** Dried brown catkin.

8.2 Explanations for individual characteristics

Ad. 1: Tree: growth habit



Ad. 2: Leaf: number of leaflets

Number of leaflets to be assessed in growing season when leaves are completely developed.

Very low	number of leaflets $\leq$ 9
Low	9 < number of leaflets $\leq$ 13
Medium	13 < number of leaflets $\leq$ 17
High	17 < number of leaflets < 21
Very high	21 $\leq$ number of leaflets

Ad. 5: Trunk: bark color in the juvenile phase

Juvenile phase means that the tree is less than five years old.

Ad. 6: Female flower: Conspicuousness

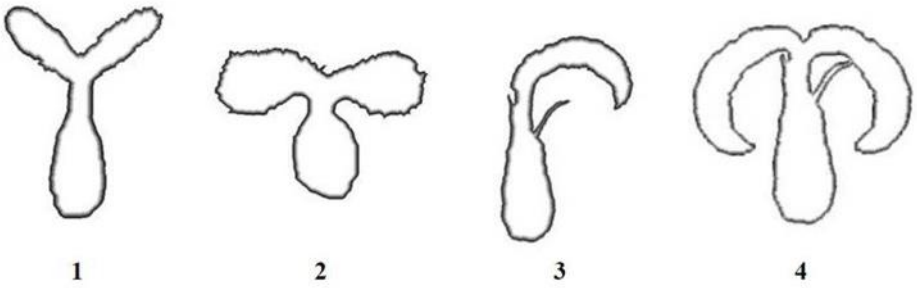
Female flower is considered conspicuous when the shoots show female flowers before stage Df, on the contrary non conspicuous is when the flowers are observed later, when leaves are already developed.

Ad. 7: Female flower: number of flowers per inflorescence

The note is assigned to the most frequent number of female flowers per inflorescence.

Ad. 10: Female flower: stigma attitude

The shape of stigmas is observed when they are completly unfolded, at Ff2 stage.



1 upright

2 spreading

3 drooping to one side

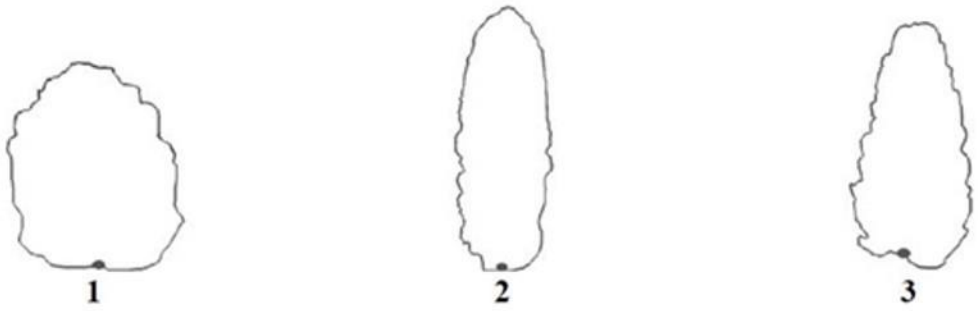
4 drooping to both sides

Ad. 11: Catkins: Presence of fully developed catkins

Fully developed catkins meaning catkins capable to produce pollen because some hybrids have catkins but they fall down before producing pollen. This can be observed in Bm, Cm and even Dm.

Ad. 12: Catkins: shape

Catikins shape to be assessed at Bm - Cm stages.



1 broad oblong

2 narrow oblong

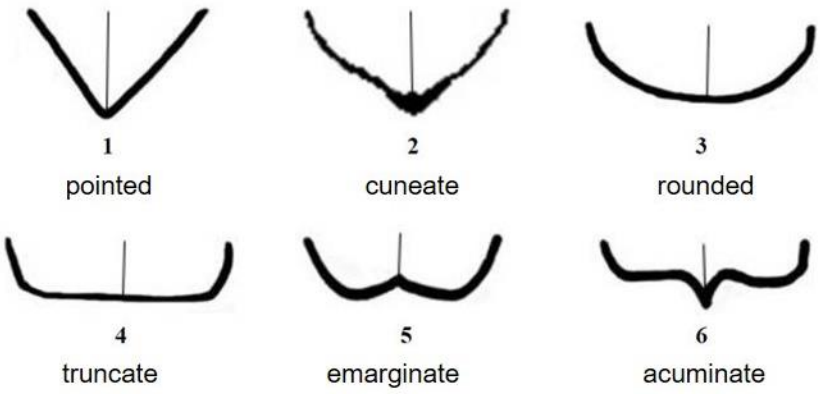
3 ovate

Ad. 13: Nut: shape in longitudinal section, perpendicular to suture

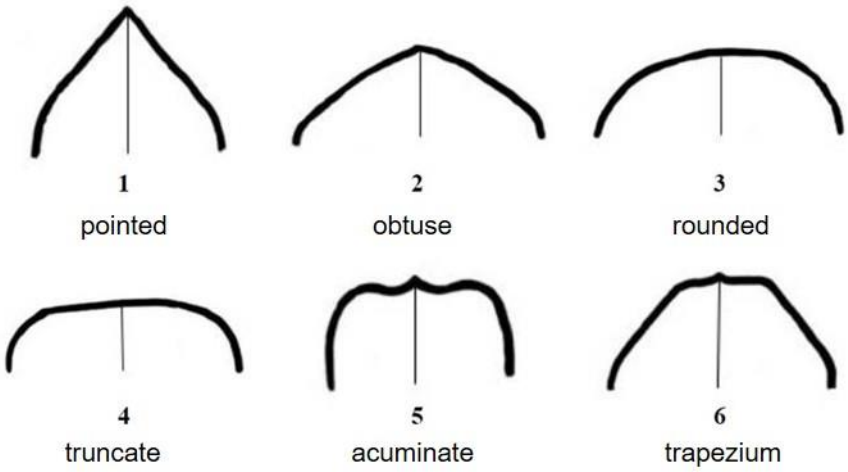
Width (ratio length/width)	← broadest part →				
	below middle		at middle		
narrow (hight)					
medium (medium)		 3 ovate	 4 circular	 5 medium elliptic	 6 broad elliptic
broad (low)			 2 oblate	 1 elliptic	 7 transverse oblong

Ad. 14: Nut: shape of base

Observation should be made facing the suture.



Ad. 15: Nut: shape of apex perpendicular to suture



Ad. 16: Time of budburst

Observations should be made when more of 50% of the terminal buds are at the Cf stage.

Ad. 17: Time of male flowering

Observations should be made when anthers are completely dehiscent during the period of pollen emission (Fm2).

Ad. 18: Time of female flowering

The period of female flower receptivity is between Ff1 and Ff2 stages.

Ad. 19: Time of male flowering compared to female flowering

The male and female flowering cannot coincide in time on the same tree; that is the definition of dicogamy. If catkins mature before female flowers that is protandry, when female flowers are the first that is protoginy; if there is coincidence in time that is homogamy.

Ad. 20: Time of leaf drop

The time of defoliation is defined as the moment in which the tree has lost over 50% of its leaves.

8.3 *Growth stages*

(1) 2º year of plantation in ahead
(2) 3 -4 years
(3) From the second male and female flowering

9. Literature

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IPGRI. 1994: Descriptor of Walnut. Ed. International Plant Genetic Resources Institute. Rome. 51 pp.
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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 nigra* L.	[ ]
1.1.2	Common name		
1.2.1	Botanical name	*Juglans major* (Torr.) A. Heller	[ ]
1.2.2	Common name	Arizona walnut	
1.3.1	Botanical name	*Juglans hindsii* (Jeps.) R. E. Sm.	[ ]
1.3.2	Common name	Hinds's black walnut; Hinds's walnut; northern California black walnut; northern California walnut	

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) 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 (3)	**Leaf: presence of terminal leaflet**		
	absent or rachitic	Emilie, MB Ng-13	1 [ ]
	well developed	Eurowalnut B07, IRTA X-80	9 [ ]
5.2 (16)	**Time of budburst**		
	very early	IRTA X-80, MB Hd-37	1 [ ]
	early	MB Ng-13	3 [ ]
	medium	MB Ng-2, MB Ng-3, Ng23	5 [ ]
	late	Beineke 8, Beineke 9	7 [ ]
	very late	Eurowalnut-8	9 [ ]
5.3 (18)	**Time of female flowering**		
	very early	IRTA X-80, Mj209	1 [ ]
	early	Beineke 6, Ng23	3 [ ]
	medium	MB Ng-13, MB Ng-2	5 [ ]
	late	Beineke 1, MB Ng-10	7 [ ]
	very late	Beineke 10	9 [ ]

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

6. Similar varieties and differences from these varieties

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

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